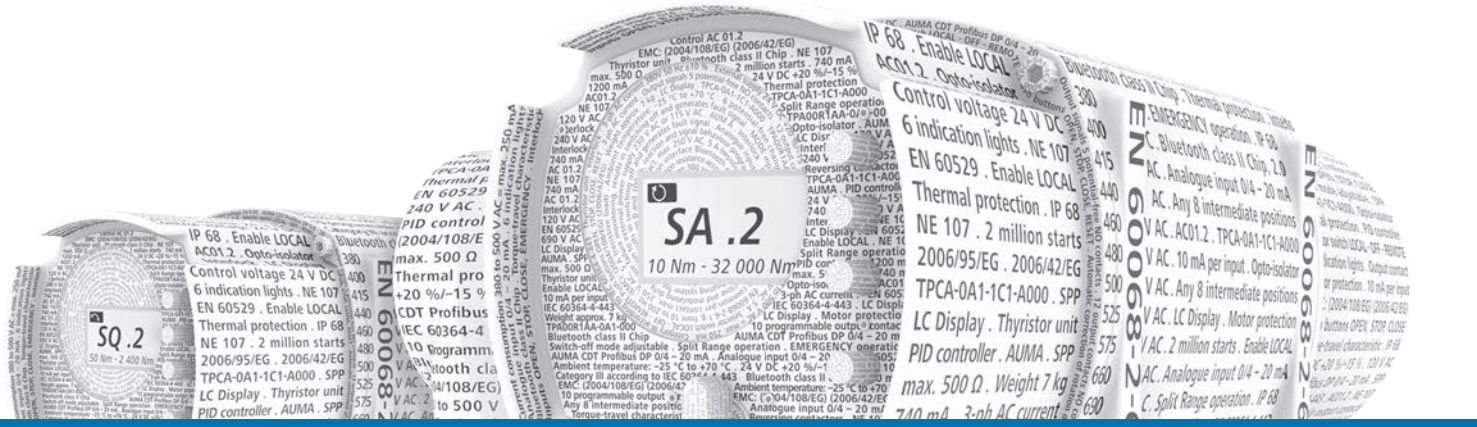
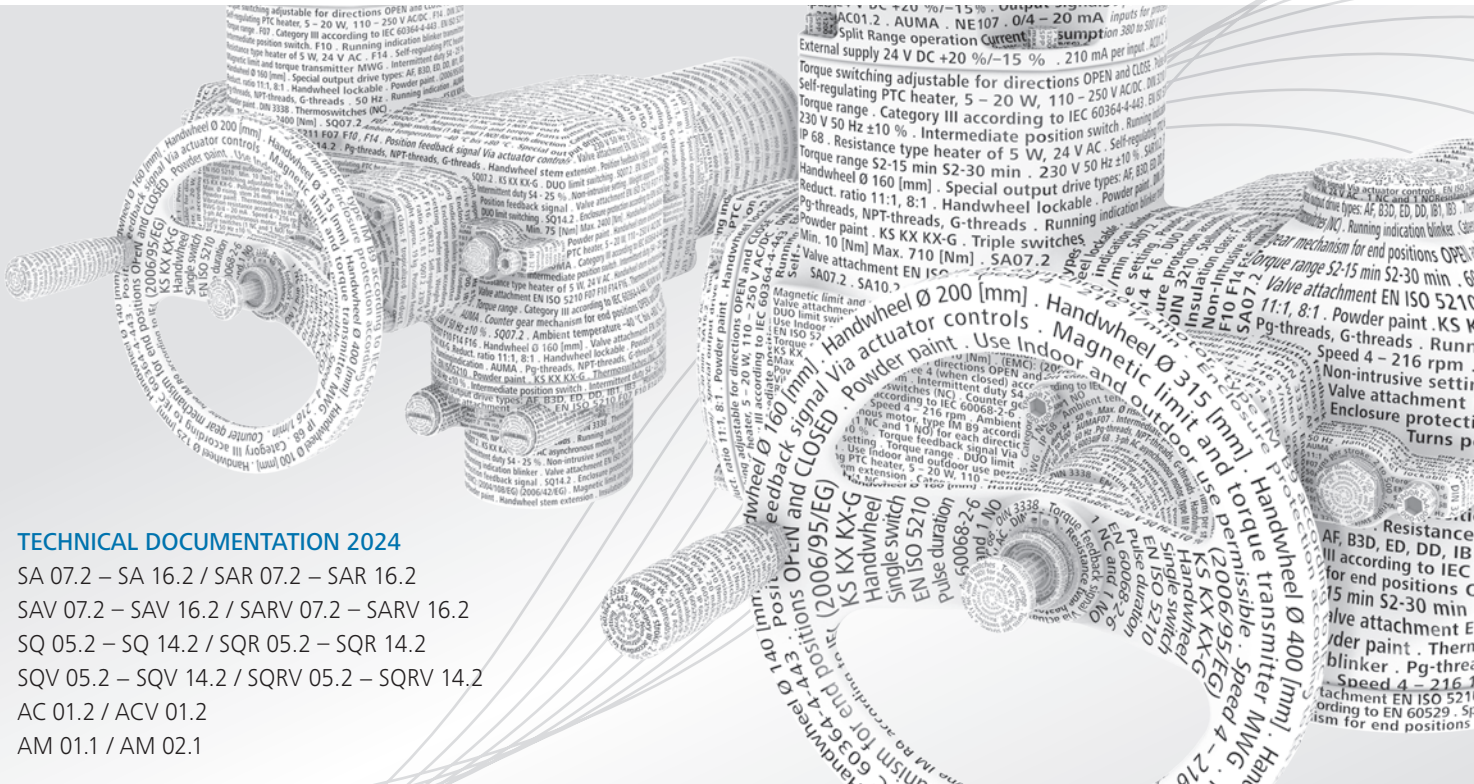
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ELECTRIC ACTUATORS

for industrial valve automation



TECHNICAL DOCUMENTATION 2024

SA 07.2 – SA 16.2 / SAR 07.2 – SAR 16.2
SAV 07.2 – SAV 16.2 / SARV 07.2 – SARV 16.2
SQ 05.2 – SQ 14.2 / SQR 05.2 – SQR 14.2
SQV 05.2 – SQV 14.2 / SQRV 05.2 – SQRV 14.2
AC 01.2 / ACV 01.2
AM 01.1 / AM 02.1

Manual
Technical documentation
1st edition 2024

We reserve the right to alter data according to improvements made.

Please refer to our website: www.auma.com to access
the individual documents included in this folder.
Previous documents become invalid with the issue of this document.

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1 Technical data Actuators

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General information

AUMA NORM multi-turn actuators require electric controls. For the SA type range, AUMA offers AM and AC actuator controls. These can also easily be mounted to the actuator at a later date.

Type	Output speed rpm		Torque range[1]			Number of starts	Valve attachment[2]			Handwheel		Weight[3]
	50 Hz	60 Hz	Min. [Nm]	S2-15 min Max. [Nm]	S2-30 min Max. [Nm]	Starts Max. [1/h]	Standard EN ISO 5210	Option DIN 3210	Max. Ø rising Stem [mm]	Ø [mm]	Reduction ratio	approx. [kg]
SA 07.2	4	4.8	10	30	20	60	F07 F10	– G0	26 34[4]	160	11 : 1	19
	5.6	6.7									8 : 1	
	8	9.6									11 : 1	
	11	13									8 : 1	
	16	19									11 : 1	
	22	26									8 : 1	
	32	38									11 : 1	20
	45	54									8 : 1	
	63	75									11 : 1	
	90	108									8 : 1	
	125	150									5.5 : 1	
	180	216		25							4 : 1	
SA 07.6	4	4.8	20	60	40	60	F07 F10	– G0	26 34[4]	160	11 : 1	20
	5.6	6.7									8 : 1	
	8	9.6									11 : 1	
	11	13									8 : 1	
	16	19									11 : 1	
	22	26									8 : 1	
	32	38									11 : 1	21
	45	54									8 : 1	
	63	75									11 : 1	
	90	108									8 : 1	
	125	150									5.5 : 1	
	180	216		50	30						4 : 1	
SA 10.2	4	4.8	40	120	90	60	F10	G0	40	200	11 : 1	22
	5.6	6.7									8 : 1	
	8	9.6									11 : 1	
	11	13									8 : 1	
	16	19									11 : 1	
	22	26									8 : 1	
	32	38									11 : 1	25
	45	54									8 : 1	
	63	75									11 : 1	
	90	108									8 : 1	
	125	150									5.5 : 1	
	180	216		100	70						4 : 1	
SA 14.2	4	4.8	100	250	180	60	F14	G1/2	58	315	11 : 1	44
	5.6	6.7									8 : 1	
	8	9.6									11 : 1	
	11	13									8 : 1	
	16	19									11 : 1	
	22	26									8 : 1	
	32	38									11 : 1	48
	45	54									8 : 1	
	63	75									11 : 1	
	90	108									8 : 1	
	125	150									5.5 : 1	
	180	216		200	140						4 : 1	

Type	Output speed rpm		Torque range[1]			Number of starts	Valve attachment[2]			Handwheel		Weight[3]
	50 Hz	60 Hz	Min. [Nm]	S2-15 min Max. [Nm]	S2-30 min Max. [Nm]	Starts Max. [1/h]	Standard EN ISO 5210	Option DIN 3210	Max. Ø rising Stem [mm]	Ø [mm]	Reduction ratio	approx. [kg]
SA 14.6	4	4.8	200	500	360	60	F14	G1/2	58	400	11 : 1	46
	5.6	6.7									8 : 1	
	8	9.6									11 : 1	
	11	13									8 : 1	
	16	19									11 : 1	53
	22	26									8 : 1	
	32	38									11 : 1	
	45	54									8 : 1	
	63	75									11 : 1	
	90	108									8 : 1	
	125	150									5.5 : 1	
	180	216		400	290						4 : 1	
SA 16.2	4	4.8	400	1,000	710	60	F16	G3	77	500	11 : 1	67
	5.6	6.7									8 : 1	
	8	9.6									11 : 1	
	11	13									8 : 1	
	16	19									11 : 1	
	22	26									8 : 1	
	32	38									11 : 1	79
	45	54									8 : 1	
	63	75									11 : 1	83
	90	108									8 : 1	
	125	150		800	570						5.5 : 1	
	180	216									4 : 1	

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Indicated flange sizes apply for output drive types A and B1. Refer to separate dimension sheets for further output drive types.
3) Indicated weight includes AUMA NORM multi-turn actuator with 3-phase AC motor, electrical connection in standard version, output drive type B1 and handwheel.
4) Stem diameter for rising stem in combination with AUMA stem protection tube made of PMMA max. 30 mm.

Features and functions		
Type of duty	Standard:	Short-time duty S2 - 15 min, classes A and B according to EN ISO 22153
	Option:	Short-time duty S2 - 30 min, classes A and B according to EN ISO 22153
	For nominal voltage and +40 °C ambient temperature and at load with 35 % of the max. torque.	
Motors	3-phase AC asynchronous squirrel-cage motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	
Mains voltage, mains frequency	Standard voltages: Refer to table: 3-phase AC standard voltages [▶ 3] Special voltages: Refer to table: 3-phase AC special voltages [▶ 3] Further voltages on request Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %	
Overvoltage category	Category III according to IEC 60364-4-44	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized
Motor protection	Standard:	Thermoswitches (NC)
	Option:	PTC thermistors (according to DIN 44082) PTC thermistors additionally require a suitable tripping device in the actuator controls.
Self-locking	Self-locking: Output speeds up to 90 rpm (50 Hz), 108 rpm (60 Hz) NOT self-locking: Output speeds from 125 rpm (50 Hz), 150 rpm (60 Hz) Multi-turn actuators are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.	
Motor heater (option)	Voltages: 110 – 120 V AC, 220 – 240 V AC or 380 – 480 V AC	
	Power 12.5 W	

Features and functions		
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
	Options:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	Terminals or crimp-type connection Gold-plated control plug (sockets and pins)
Threads for cable entries	Standard:	Metric threads
	Option:	Pg threads, NPT threads, G threads
Wiring diagram	TPA00R1AA-101-000 (basic version)	
Valve attachment	Standard:	B1 in accordance with ISO 5210
	Options:	A, B2, B3, B4, C, D according to ISO 5210 A, B, D, E according to DIN 3210 C according to DIN 3338
	Special valve attachments: AF, AK, AG, B3D, ED, DD, IB1, IB3 A prepared for permanent lubrication of stem	

Table 1: 3-phase AC standard voltages

Voltages/frequencies											
Volt [3~]	220	230	380	380	400	400	415	440	460	480	500
Hz	60	50	50	60	50	60	50	60	60	60	50

Table 2: 3-phase AC special voltages

Voltages/frequencies							
Volt [3~]	220	440	525	575	600	660	690
Hz	50	50	50	50	60	50	50

Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED Turns per stroke: 2 to 500 (standard) or 2 to 5,000 (option)	
	Standard:	Single switch (1 NC and 1 NO) for each end position, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switch galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switch galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switch (1 NC and 1 NO) for each direction, not galvanically isolated
	Option:	Tandem switch (2 NC and 2 NO) for each direction, switch galvanically isolated
Switch contact materials	Standard:	Silver (Ag)
	Option:	Gold (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20mA (electronic position transmitter)	
Mechanical position indicator (option)	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication	Blinker transmitter	
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC
	Options:	24 – 48 V AC/DC or 380 – 400 V AC
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with AM or AC actuator controls.	

Electronic control unit (option, only in combination with AC actuator controls)	
Non-intrusive settings	Magnetic limit and torque transmitter (MWG) Turns per stroke: 2 to 500 (standard) or 10 to 5,000 (option)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Mechanical position indicator (option)	Continuous self-adjusting indication with symbols OPEN and CLOSED
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +80 °C –60 °C to +60 °C 0 °C to +120 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	IP68 with AUMA 3-phase AC motor For special motors, differing enclosure protection is possible
	Option:	Terminal compartment additionally sealed against interior of actuator (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz (AUMA NORM), 1 g, 10 to 200 Hz (for actuators with AM or AC actuator controls) Resistant to vibration during start-up or for failures of the plant. Valid for multi-turn actuators-turn actuators in version AUMA NORM and in version with actuator controls, each with AUMA plug/socket connector. Not valid in combination with gearboxes.	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Options:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution. KX-G: Same as KX, however aluminium-free version (outer parts)
Coating	Double layer powder coating	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA multi-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Sound pressure level	< 72 dB (A)	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Dimensions SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2 Electrical data SA 07.2 – SA 16.2

SA 07.2-UW – SA 16.2-UW
for continuous underwater use

Technical data Multi-turn actuators for open-close duty with 3-phase AC motor

General information

Multi-turn actuators for continuous underwater use require AC actuator controls. Actuator controls are mounted on a wall bracket and are not immersed. A special cable set for connection between actuator and actuator controls is required.

Type	Output speed rpm		Torque range[1]			Number of starts	Valve attachment[2]		Handwheel (Option)		Weight[3]
	50 Hz	60 Hz	Min. [Nm]	S2-15 min Max. [Nm]	S2-30 min Max. [Nm]	Starts Max. [1/h]	Standard EN ISO 5210	Option DIN 3210	Ø [mm]	Reduction ratio	approx. [kg]
SA 07.2-UW	4	4.8	10	30	20	60	F07 F10	– G0[4]	160	11 : 1	25
	5.6	6.7								8 : 1	
	8	9.6								11 : 1	
	11	13								8 : 1	
	16	19								11 : 1	
	22	26								8 : 1	
	32	38								11 : 1	26
	45	54								8 : 1	
	63	75								11 : 1	
	90	108								8 : 1	
	125	150								5.5 : 1	
	180	216		25						4 : 1	
SA 07.6-UW	4	4.8	20	60	40	60	F07 F10	– G0[4]	160	11 : 1	25
	5.6	6.7								8 : 1	
	8	9.6								11 : 1	
	11	13								8 : 1	
	16	19								11 : 1	
	22	26								8 : 1	
	32	38								11 : 1	27
	45	54								8 : 1	
	63	75								11 : 1	
	90	108								8 : 1	
	125	150								5.5 : 1	
	180	216		50	30					4 : 1	
SA 10.2-UW	4	4.8	40	120	90	60	F10	G0[4]	200	11 : 1	31
	5.6	6.7								8 : 1	
	8	9.6								11 : 1	
	11	13								8 : 1	
	16	19								11 : 1	
	22	26								8 : 1	
	32	38								11 : 1	33
	45	54								8 : 1	
	63	75								11 : 1	
	90	108								8 : 1	
	125	150								5.5 : 1	
	180	216		100	70					4 :1	
SA 14.2-UW	4	4.8	100	250	180	60	F14	G1/2	315	11 : 1	54
	5.6	6.7								8 : 1	
	8	9.6								11 : 1	
	11	13								8 : 1	
	16	19								11 : 1	
	22	26								8 : 1	
	32	38								11 : 1	58
	45	54								8 : 1	
	63	75								11 : 1	
	90	108								8 : 1	
	125	150								5.5 : 1	
	180	216		200	140					4 : 1	

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Type	Output speed rpm		Torque range[1]			Number of starts	Valve attachment[2]		Handwheel (Option)		Weight[3]
	50 Hz	60 Hz	Min. [Nm]	S2-15 min Max. [Nm]	S2-30 min Max. [Nm]	Starts Max. [1/h]	Standard EN ISO 5210	Option DIN 3210	Ø [mm]	Reduction ratio	approx. [kg]
SA 14.6-UW	4	4.8	200	500	360	60	F14	G1/2	400	11 : 1	56
	5.6	6.7								8 : 1	
	8	9.6								11 : 1	
	11	13								8 : 1	
	16	19								11 : 1	62
	22	26								8 : 1	
	32	38								11 : 1	
	45	54								8 : 1	
	63	75								11 : 1	
	90	108								8 : 1	
	125	150								5.5 : 1	
	180	216		400	290					4 : 1	
SA 16.2-UW	4	4.8	400	1,000	710	60	F16	G3	500	11 : 1	77
	5.6	6.7								8 : 1	
	8	9.6								11 : 1	
	11	13								8 : 1	
	16	19								11 : 1	
	22	26								8 : 1	
	32	38								11 : 1	88
	45	54								8 : 1	
	63	75								11 : 1	93
	90	108								8 : 1	
	125	150		800	570					5.5 : 1	
	180	216								4 : 1	

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Indicated flange sizes apply for output drive type B1. Refer to separate dimension sheets for further output drive types.
3) Indicated weight includes multi-turn actuator with 3-phase AC motor, electrical connection with cable glands and output drive type B1.
4) G0 valve attachment is designed without spigot hub.

Features and functions		
Type of duty	Standard:	Short-time duty S2- 15 min, classes A and B according to EN ISO 22153
	Option:	Short-time duty S2- 30 min, classes A and B according to EN ISO 22153
	For nominal voltage and +40 °C ambient temperature and at load with 35 % of the max. torque.	
Motors	3-phase AC asynchronous squirrel-cage motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	
Mains voltage, mains frequency	Standard voltages:	

3-phase AC Voltages/frequencies											
Volt	220	230	380	380	400	400	415	440	460	480	500
Hz	60	50	50	60	50	60	50	60	60	60	50

Special voltages:

3-phase AC Voltages/frequencies								
Volt	220	440	525	575	575	600	660	690
Hz	50	50	50	50	60	60	50	50

Further voltages on request
Permissible variation of mains voltage: ±10 %
Permissible variation of mains frequency: ±5 %

Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized

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Features and functions		
Motor protection	Standard:	Thermoswitches (NC)
	Option:	PTC thermistors (according to DIN 44082) PTC thermistors additionally require a suitable tripping device in the actuator controls.
Self-locking	Self-locking: Output speeds up to 90 rpm (50 Hz), 108 rpm (60 Hz) NOT self-locking: Output speeds from 125 rpm (50 Hz), 150 rpm (60 Hz) Multi-turn actuators are self-locking, if the valve position cannot be changed from standstill while torque acts upon the output drive.	
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC or 380 – 480 V AC
	Power depending on the size 12.5 – 25 W	
Manual operation (option)	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	The AUMA plug/socket connector is part of the cable set with wall bracket which must be ordered separately and which is customised for connection. Terminal compartment additionally sealed against interior (double sealed)	
Terminal plan	TPA00R100-0I1-000 (basic version)	
Valve attachment	Standard:	B1 according to EN ISO 5210
	Option:	B3, B4, D according to EN ISO 5210; B2 on request B, D, E according to DIN 3210
	Special valve attachments: B3D, DD	

Electronic control unit	
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG) Turns per stroke: 1 to 500 (standard) or 10 to 5,000 (option)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions		
Use	For continuous underwater use as well as indoor and outdoor use.	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	–30 °C to +70 °C	
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	Increased enclosure protection IP68-C15. The maximum head of water is 15 m.
	Option:	Increased enclosure protection IP68-C60. The maximum head of water is 60 m. In combination with handwheel permissible head of water of more than 15 m on request
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. They are not valid in combination with gearboxes.	
Corrosion protection	KX-G: Suitable for use in freshwater (Im1), seawater (Im2) and on seafloor (Im3), aluminium-free version (outer parts)	
Coating	Two-layer powder coating with additional wet painting	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA multi-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Noise level	< 72 dB (A)	

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Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Dimensions SA 07.2-UW – SA 16.2-UW/SAR 07.2-UW – SAR 16.2-UW Electrical data SA 07.2 – SA 16.2

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SA 07.2 – SA 14.6
AUMA NORM
Technical data Multi-turn actuators for open-close duty with 1-phase AC motor

General information

AUMA NORM multi-turn actuators require electric controls. For sizes SA 07.2 – SA 14.6, AUMA offers AM or AC actuator controls. These can also easily be mounted to the actuator at a later date.

Type	Output speed rpm		Torque range[1]		Number of starts[2]	Valve attachment[3]			Handwheel		Weight[4]
	50 Hz	60 Hz	Min. [Nm]	Max. [Nm]	Starts Max. [1/h]	Standard EN ISO 5210	Option DIN 3210	Max. Ø rising stem [mm]	Ø [mm]	Reduction ratio	approx. [kg]
SA 07.2	4	4.8	10	30	60	F07 F10	– G0	26 34[5]	160	11 : 1	21
	5.6	6.7								8 : 1	
	8	9.6								11 : 1	
	11	13								8 : 1	
	16	19								11 : 1	
	22	26								8 : 1	
	32	38								11 : 1	28
	45	54								8 : 1	
	63	75			30					11 : 1	
	90	108								8 : 1	
	125	150								5.5 : 1	
	180	216		25						4 : 1	
SA 07.6	4	4.8	20	60	60	F07 F10	– G0	26 34[5]	160	11 : 1	21
	5.6	6.7								8 : 1	
	8	9.6								11 : 1	
	11	13								8 : 1	
	16	19								11 : 1	
	22	26								8 : 1	
	32	38								11 : 1	28
	45	54								8 : 1	
	63	75			30					11 : 1	
	90	108								8 : 1	37
	125	150								5.5 : 1	
	180	216		50						4 : 1	
SA 10.2	4	4.8	40	120	60	F10	G0	40	200	11 : 1	28
	5.6	6.7								8 : 1	
	8	9.6								11 : 1	
	11	13								8 : 1	31
	16	19								11 : 1	
	22	26								8 : 1	
	32	38			30					11 : 1	40
	45	54								8 : 1	
	63	75								11 : 1	
	90	108								8 : 1	43
	125	150								5.5 : 1	
	180	216		100						4 :1	
SA 14.2	4	4.8	100	250	60	F14	G1/2	58	315	11 : 1	59
	5.6	6.7								8 : 1	
	8	9.6								11 : 1	
	11	13								8 : 1	
	16	19			30					11 : 1	61
	22	26								8 : 1	
	32	38								11 : 1	63
	45	54								8 : 1	
SA 14.6	4	4.8	200	500	60	F14	G1/2	58	400	11 : 1	63
	5.6	6.7								8 : 1	
	8	9.6		400	30					11 : 1	
	11	13								8 : 1	
	16	19								11 : 1	66
	22	26								8 : 1	

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) For actuators equipped 1-phase AC motors with integral permanent split capacitors (motor type VE/AE), an off-time (reversing prevention time) of 2.5 Seconds is required prior to starting in opposite direction.
3) Indicated flange sizes apply for output drive types A and B1. Refer to separate dimension sheets for further output drive types.
4) Indicated weight includes AUMA NORM multi-turn actuator with 1-phase AC motor, electrical connection in standard version, output drive type B1 and handwheel.
5) Stem diameter for rising stem in combination with AUMA stem protection tube made of PMMA max. 30 mm.

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Features and functions		
Type of duty	Short-time duty S2- 15 min, classes A and B according to EN ISO 22153	
	For nominal voltage and +40 °C ambient temperature and at load with 35 % of the max. torque.	
Motors	1-phase AC motor with integral permanent split capacitor (PSC), type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6 1-phase AC motor with integral starting capacitor and solid state switch (CSIR), type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	
	Motor type depending on actuator type/output speed. Refer also to Electrical data SA 07.2 – SA 16.2 with 1-phase AC motors.	
Mains voltage, mains frequency	Standard voltages:	
	1-phase AC Voltages/frequencies	
	Volt: 110 – 120 / 110 – 120 / 220 – 240 / 220 – 240 Hz: 50 / 60 / 50 / 60	
	Further voltages on request Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %	
Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	F, tropicalized	
Motor protection	Thermoswitches (NC)	
Self-locking	Self-locking: Output speeds up to 90 rpm (50 Hz), 108 rpm (60 Hz) NOT self-locking: Output speeds from 125 rpm (50 Hz), 150 rpm (60 Hz) Multi-turn actuators are self-locking, if the valve position cannot be changed from standstill while torque acts upon the output drive.	
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC
	Power depending on the size 12.5 – 25 W	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
	Option:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Option:	Terminals or crimp connection Gold-plated control plug (sockets and pins)
Threads for cable entries	Standard:	Metric threads
	Option:	Pg-threads, NPT-threads, G-threads
Terminal plan	TPA01R1AA-101-000, 1-phase AC motor with permanent split capacitor TPA02R1AA-101-000, 1-phase AC motor with starting capacitor and solid state switch 110 – 120 V AC TPA03R1AA-101-000, 1-phase AC motor with starting capacitor and solid state switch 220 – 240 V AC Depending on motor type/output speed. Refer also to Electrical data SA 07.2 – SA 16.2 with 1-phase AC motors.	
Valve attachment	Standard:	B1 according to EN ISO 5210
	Option:	A, B2, B3, B4, C, D according to EN ISO 5210 A, B, D, E according to DIN 3210 C according to DIN 3338
	Special valve attachments: AF, AK, AG, B3D, ED, DD, IB1, IB3 A prepared for permanent lubrication of stem	

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Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED Turns per stroke: 1 to 500 (standard) or 1 to 5,000 (option)	
	Standard:	Single switch (1 NC and 1 NO) for each end position, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switches galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switches galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switch (1 NC and 1 NO) for each direction, not galvanically isolated
	Option:	Tandem switch (2 NC and 2 NO) for each direction, switches galvanically isolated
Switch contact materials	Standard:	Silver (Ag)
	Option:	Gold (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20 mA (electronic position transmitter)	
Mechanical position indicator (option)	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication	Blinker transmitter	
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC
	Options:	24 – 48 V AC/DC
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with AM or AC actuator controls.	

Electronic control unit (option, only in combination with AC actuator controls)	
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG) Turns per stroke: 1 to 500 (standard) or 10 to 5,000 (option)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Mechanical position indicator (option)	Continuous self-adjusting indication with symbols OPEN and CLOSED
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +80 °C –60 °C to +60 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	IP68 with 1-phase AC motors of types VB..., AE..., VE..., AC..., VC... For special motors, differing enclosure protection is possible
	Option:	Terminal compartment additionally sealed against interior of actuator (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: Maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	

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Service conditions		
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Two-layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA multi-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Noise level	< 72 dB (A)	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Dimensions SA 07.2 – SA 14.6/SAR 07.2 – SAR 14.6 Electrical data SA 07.2 – SA 14.6

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Technical data Multi-turn actuators for open-close duty with DC motor

General information

AUMA NORM multi-turn actuators require electric controls. For sizes SA 07.2 – SA 16.2 with DC motors, AUMA offer AC actuator controls. These can also easily be mounted to the actuator at a later date.

Type	Output speed rpm	Torque range[1]		Number of starts	Valve attachment[2]			Handwheel		Weight[3]
	50 Hz	Min. [Nm]	Max. [Nm]	Starts Max. [1/h]	Standard EN ISO 5210	Option DIN 3210	Max. Ø rising stem [mm]	Ø [mm]	Reduction ratio	approx. [kg]
SA 07.2	4	10	30	60	F07 F10	– G0	26 34[4]	160	11 : 1	29
	5.6								8 : 1	
	8								11 : 1	
	11								8 : 1	
	16								11 : 1	
	22								8 : 1	
	32								11 : 1	32
	45								8 : 1	
	63								11 : 1	
	90								8 : 1	
	125								5.5 : 1	
	180		25						4 : 1	
SA 07.6	4	20	60	60	F07 F10	– G0	26 34[4]	160	11 : 1	30
	5.6								8 : 1	
	8								11 : 1	
	11								8 : 1	
	16								11 : 1	
	22								8 : 1	
	32								11 : 1	44
	45								8 : 1	
	63								11 : 1	
	90								8 : 1	
	125								5.5 : 1	
	180		50						4 : 1	
SA 10.2	4	40	120	60	F10	G0	40	200	11 : 1	33
	5.6								8 : 1	
	8								11 : 1	
	11								8 : 1	36
	16								11 : 1	
	22								8 : 1	
	32								11 : 1	56
	45								8 : 1	
	63								11 : 1	
	90								8 : 1	
	125								5.5 : 1	
	180		100						4 :1	
SA 14.2	4	100	250	60	F14	G1/2	58	315	11 : 1	68
	5.6								8 : 1	
	8								11 : 1	
	11								8 : 1	
	16								11 : 1	
	22								8 : 1	
	32								11 : 1	100
	45								8 : 1	
	63								11 : 1	
	90								8 : 1	
	125								5.5 : 1	
	180		200						4 : 1	
SA 14.6	4	200	500	60	F14	G1/2	58	400	11 : 1	76
	5.6								8 : 1	
	8								11 : 1	
	11								8 : 1	
	16								11 : 1	
	22								8 : 1	
	32								11 : 1	122
	45								8 : 1	

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Type	Output speed rpm	Torque range[1]		Number of starts	Valve attachment[2]			Handwheel		Weight[3]
	50 Hz	Min. [Nm]	Max. [Nm]	Starts Max. [1/h]	Standard EN ISO 5210	Option DIN 3210	Max. Ø rising stem [mm]	Ø [mm]	Reduction ratio	approx. [kg]
SA 16.2	4	400	1,000	60	F16	G3	77	500	11 : 1	123
	5.6								8 : 1	
	8								11 : 1	
	11								8 : 1	
	16								11 : 1	
	22								8 : 1	

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Indicated flange sizes apply for output drive types A and B1. Refer to separate dimension sheets for further output drive types.
3) Indicated weight includes AUMA NORM multi-turn actuator with DC motor, electrical connection in standard version, output drive type B1 and handwheel.
4) Stem diameter for rising stem in combination with AUMA stem protection tube made of PMMA max. 30 mm.

Features and functions		
Type of duty	Short-time duty S2- 15 min, classes A and B according to EN ISO 22153	
	For nominal voltage and +40 °C ambient temperature and at load with 35 % of the max. torque.	
Motors	DC shunt motor, type IM B14 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6 DC compound motor, type IM B14 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	
	Motor type depending on actuator type/output speed. Refer also to Electrical data SA 07.2 – SA 16.2 with DC motors.	
Mains voltage, mains frequency	Standard voltages: **Gleichstrom -** Spannungen Volt: 24 / 48 / 60 / 110 / 125 / 220 Permissible variation of mains voltage: ±10 %	
Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	F, tropicalized	
Motor protection	Without	
Self-locking	Self-locking: Output speeds up to 90 rpm (50 Hz), 108 rpm (60 Hz) NOT self-locking: Output speeds from 125 rpm (50 Hz), 150 rpm (60 Hz) Multi-turn actuators are self-locking, if the valve position cannot be changed from standstill while torque acts upon the output drive.	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
	Option:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Controls:	AUMA plug/socket connector with screw-type connection
	Motor:	AUMA plug/socket connector with screw-type connection or motor terminal board
	Options:	Power connection via terminals or crimp type connection Gold-plated control plug (sockets and pins)

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Features and functions		
Threads for cable entries	Cable entries for AUMA plug/socket connector with screw-type connection:	
	Standard:	Metric threads
	Option:	Pg-threads, NPT-threads, G-threads
	Cable entries for motor connection via separate motor terminal board:	
	Standard:	Metric threads

Motor size	24 V	48 V	60 V	110 V	125 V	220 V
FN00063-4	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5
FN00063-2	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5
FN00071-4	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5
FN00071-2	2 x M25 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5
FN00080-4	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
FN00080-2	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
FN00090-4	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
FN00090-2	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
FL00100-4	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
FL00100-2	–	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
FL00112-4	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5

Terminal plan	TPA11R0AA-101-000, DC shunt motor, motor connection on AUMA plug/socket connector TPA12R0AA-101-000, DC shunt motor, motor connection on separate terminal box TPA13R0AA-101-000, DC compound motor, motor connection on separate terminal box TPA14R0AA-101-000, DC compound motor, motor connection on AUMA plug/socket connector Depending on motor type/output speed. Refer to Electrical data SA 07.2 – SA 16.2 with DC motors	
Valve attachment	Standard:	B1 according to EN ISO 5210
	Option:	A, B2, B3, B4, C, D according to EN ISO 5210 A, B, D, E according to DIN 3210 C according to DIN 3338
	Special valve attachments: AF, AK, AG, B3D, ED, DD, IB1, IB3 A prepared for permanent lubrication of stem	

Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED Turns per stroke: 1 to 500 (standard) or 1 to 5,000 (option)	
	Standard:	Single switch (1 NC and 1 NO) for each end position, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switches galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switches galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switch (1 NC and 1 NO) for each direction, not galvanically isolated
	Option:	Tandem switch (2 NC and 2 NO) for each direction, switches galvanically isolated
Switch contact materials	Standard:	Silver (Ag)
	Option:	Gold (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20 mA (electronic position transmitter)	
Mechanical position indicator (option)	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication	Blinker transmitter	
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC
	Options:	24 – 48 V AC/DC
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with AC actuator controls.	

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Electronic control unit (option, only in combination with AC actuator controls)		
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG) Turns per stroke: 1 to 500 (standard) or 10 to 5,000 (option)	
Position feedback signal	Via actuator controls	
Torque feedback signal	Via actuator controls	
Mechanical position indicator (option)	Continuous self-adjusting indication with symbols OPEN and CLOSED	
Running indication	Blinking signal via actuator controls	
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC	

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +80 °C Lower temperatures on request
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	IP68 with AUMA DC motor For special motors, differing enclosure protection is possible
	Option:	Terminal compartment additionally sealed against interior of actuator (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: Maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Two-layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA multi-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Noise level	< 72 dB (A)	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Electrical data SA 07.2 – SA 16.2

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SA 07.2 – SA 07.6
VK type range
Technical data Multi-turn actuators for open-close duty with DC motor

General information

AUMA NORM multi-turn actuators require electric controls. For sizes SA 07.2 – SA 07.6 with DC motors, AUMA offer AC actuator controls. These can also easily be mounted to the actuator at a later date.

Type	Output speed[1] rpm	Torque range[2]		Number of starts	Valve attachment[3]			Handwheel		Weight[4]
	50 Hz	Min. [Nm]	Max. [Nm]	Starts Max. [1/h]	Standard EN ISO 5210	Option DIN 3210	Max. Ø rising stem [mm]	Ø [mm]	Reduction ratio	approx. [kg]
SA 07.2	4 – 5.5	10	30	60	F07	–	26	160	11 : 1	20
	6 – 7.5				F10	–	34[5]		8 : 1	
	7.5 – 11				–	G0	34[5]		11 : 1	
	10 – 15.5								8 : 1	
	12.5 – 17								11 : 1	
	17 – 23.5								8 : 1	
SA 07.6	3.5 – 5.5	20	60	60	F07	–	26	160	11 : 1	20
	5 – 7.5				F10	–	34[5]		8 : 1	
	6 – 8				–	G0	34[5]		11 : 1	
	8 – 11								8 : 1	
	12 – 17		40						11 : 1	
	16 – 23.5								8 : 1	

1) The higher the torque, the lower the output speed.
2) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
3) Indicated flange sizes apply for output drive types A and B1. Refer to separate dimension sheets for further output drive types.
4) Indicated weight includes AUMA NORM multi-turn actuator with DC motor, electrical connection in standard version, output drive type B1 and handwheel.
5) Stem diameter for rising stem in combination with AUMA stem protection tube made of PMMA max. 30 mm.

Features and functions

Type of duty	Short-time duty S2- 15 min, classes A and B according to EN ISO 22153	
	For nominal voltage and +40 °C ambient temperature and at load with 35 % of the max. torque.	
Motors	DC shunt motor, type IM B14 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	
Mains voltage, mains frequency	24 V DC Permissible variation of mains voltage: ±10 %	
Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	F, tropicalized	
Motor protection	Thermoswitches (NC)	
Self-locking	Yes, multi-turn actuators are self-locking, if the valve position cannot be changed from standstill while torque acts upon the output drive.	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
	Option:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Option:	Power connection via terminals or crimp type connection Gold-plated control plug (sockets and pins)
Threads for cable entries	Standard:	Metric threads
	Option:	Pg threads, NPT threads, G threads
Terminal plan	TPA37R1AA-001-000 (basic version)	
Valve attachment	Standard:	B1 according to EN ISO 5210
	Option:	A, B2, B3, B4, C, D according to EN ISO 5210 A, B, D, E according to DIN 3210 C according to DIN 3338
	Special valve attachments: AF, AK, AG, B3D, ED, DD, IB1, IB3 A prepared for permanent lubrication of stem	

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Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED Turns per stroke: 1 to 500 (standard) or 1 to 5,000 (option)	
	Standard:	Single switch (1 NC and 1 NO) for each end position, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switches galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switches galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switch (1 NC and 1 NO) for each direction, not galvanically isolated
	Option:	Tandem switch (2 NC and 2 NO) for each direction, switches galvanically isolated
Switch contact materials	Standard:	Silver (Ag)
	Option:	Gold (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20 mA (electronic position transmitter)	
Mechanical position indicator (option)	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication	Blinker transmitter	
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC
	Options:	24 – 48 V AC/DC
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with AC actuator controls.	

Electronic control unit (option, only in combination with AC actuator controls)	
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG) Turns per stroke: 1 to 500 (standard) or 10 to 5,000 (option)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Mechanical position indicator (option)	Continuous self-adjusting indication with symbols OPEN and CLOSED
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Option:	-40 °C to +80 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	IP68 with AUMA DC motor
	Option:	Terminal compartment additionally sealed against interior of actuator (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

Service conditions		
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA multi-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Noise level	< 72 dB (A)	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Electrical data SA 07.2 – SA 16.2

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SA 07.2 – SA 16.2

Technical Data Torques at different running times
Short-time duty S2 - 15 min, with 3-phase AC motors

Type	Output speed	Max. adjustable torque	Motor Power	Torques[1] at 100 % U_N for running time			
	[rpm]	[Nm]	[kW]	2 min [Nm]	5 min [Nm]	10 min [Nm]	15 min [Nm]
SA 07.2	4	30	0.02	30	30	30	30
	5.6			30	30	30	30
	8		0.04	30	30	30	30
	11			30	30	30	30
	16		0.06	30	30	30	30
	22			30	30	30	30
	32		0.10	30	30	30	30
	45			30	30	30	30
	63		0.20	30	30	30	25
	90			30	30	30	25
	125		0.30	30	30	25	20
	180	25		25	25	20	18
SA 07.6	4	60	0.03	60	60	60	60
	5.6			60	60	60	60
	8		0.06	60	60	60	60
	11			60	60	60	55
	16		0.12	60	60	60	55
	22			60	60	60	50
	32		0.20	60	60	50	35
	45			60	60	45	30
	63		0.40	60	50	45	40
	90			60	50	40	35
	125		0.50	60	50	35	30
	180	50		50	45	30	25
SA 10.2	4	120	0.06	120	120	120	120
	5.6			120	120	120	120
	8		0.12	120	120	120	120
	11			120	120	120	110
	16		0.25	120	120	120	95
	22			120	120	95	75
	32		0.40	120	120	120	100
	45			120	120	110	85
	63		0.70	120	120	95	80
	90			120	110	80	70
	125		1.00	120	115	80	60
	180	100		100	85	60	50
SA 14.2	4	250	0.12	250	250	250	250
	5.6			250	250	250	250
	8		0.25	250	250	250	250
	11			250	250	250	250
	16		0.45	250	250	250	240
	22			250	250	250	220
	32		0.75	250	250	250	210
	45			250	250	220	190
	63		1.40	250	250	200	170
	90			250	250	190	150
	125		1.80	250	200	140	110
	180	200		200	150	110	90
SA 14.6	4	500	0.20	500	500	500	500
	5.6			500	500	500	500
	8		0.40	500	500	500	450
	11			500	500	500	400
	16		0.80	500	500	400	300
	22			500	500	380	280
	32		1.60	500	500	340	260
	45			500	500	340	260
	63		3.00	500	380	230	170
	90			500	380	230	170
	125		3.30	500	330	200	160
	180	400		400	300	180	140
SA 16.2	4	1,000	0.40	1,000	1,000	1,000	1,000
	5.6			1,000	1,000	1,000	1,000
	8		0.80	1,000	1,000	800	600
	11			1,000	1,000	800	600
	16		1.50	1,000	1,000	600	450
	22			1,000	1,000	600	450
	32		3.00	1,000	800	500	400
	45			1,000	800	500	400
	63		5.00	1,000	600	350	300
	90			1,000	600	350	300
	125	800	6.00	800	550	350	250
	180			700	450	300	200

1) Refer to notes on page 2.

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Technical Data Torques at different running times
Short-time duty S2 - 15 min, with 3-phase AC motors

General information
For detailed technical data refer to Technical data Multi-turn actuators SA 07.2 – SA 16.2 for open-close duty with 3-phase AC motors.

Notes on table on page 1	
1) Torque	Available torque at constant load for the indicated running time at an ambient temperature of +20°C.

Features and functions	
Type of duty	Short-time duty S2 For operation with constant load during a defined running time, the duration of the load is reduced so that the thermal equilibrium is not reached. This is observed for all values specified. Once the running time according to table has been reached applying the max. available torques, allow for sufficient time at actuator standstill to ensure that the device cools down to ambient temperature.

Service conditions	
Ambient temperature	The specified torques at constant load for the indicated running times are valid for an ambient temperature of 20 °C. For higher ambient temperatures, the running times of the torques mentioned in the table decrease accordingly.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Technical Data Torques at different running times
Short-time duty S2 - 30 min, with 3-phase AC motors

Type	Output speed	Max. adjustable torque	Motor Power	Torques[1] at 100 % U_N for running time		
	[rpm]	[Nm]	[kW]	10 min [Nm]	20 min [Nm]	30 min [Nm]
SA 07.2	4	20	0.01	20	20	20
	5.6			20	20	20
	8		0.03	20	20	20
	11			20	20	20
	16		0.04	20	20	20
	22			20	20	20
	32		0.07	20	20	18
	45			20	20	15
	63		0.14	20	20	15
	90			20	15	15
	125		0.21	20	15	13
	180	15		15	13	10
SA 07.6	4	40	0.02	40	40	40
	5.6			40	40	40
	8		0.04	40	40	40
	11			40	40	38
	16		0.08	40	40	35
	22			40	40	30
	32		0.14	40	35	25
	45			40	30	20
	63		0.28	40	35	30
	90			40	30	25
	125		0.35	35	25	20
	180	30		30	20	15
SA 10.2	4	90	0.04	90	90	90
	5.6			90	90	90
	8		0.08	90	90	90
	11			90	90	85
	16		0.17	90	90	75
	22			90	70	60
	32		0.28	90	90	70
	45			90	75	55
	63		0.50	90	70	50
	90			80	55	40
	125		0.70	70	50	35
	180	70		55	35	25
SA 14.2	4	180	0.08	180	180	180
	5.6			180	180	180
	8		0.18	180	180	180
	11			180	180	180
	16		0.30	180	180	180
	22			180	180	180
	32		0.50	180	170	140
	45			180	150	120
	63		1.00	180	140	100
	90			180	120	90
	125		1.30	130	100	70
	180	140		110	80	60
SA 14.6	4	360	0.14	360	360	360
	5.6			360	360	360
	8		0.30	360	360	300
	11			360	320	280
	16		0.60	360	300	240
	22			360	260	200
	32		1.00	340	220	180
	45			340	220	180
	63		2.00	230	150	110
	90			230	150	100
	125		2.30	200	130	90
	180	290		180	120	80
SA 16.2	4	710	0.30	710	710	710
	5.6			710	710	710
	8		0.60	710	500	400
	11			710	500	400
	16		1.00	600	400	300
	22			600	400	300
	32		2.00	500	350	250
	45			500	350	250
	63		3.50	350	250	180
	90			350	250	180
	125	570	4.00	350	200	150
	180			300	180	120

1) Refer to notes on page 2.

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Technical Data Torques at different running times
Short-time duty S2 - 30 min, with 3-phase AC motors

General information
For detailed technical data refer to Technical data Multi-turn actuators SA 07.2 – SA 16.2 for open-close duty with 3-phase AC motors.

Notes on table on page 1	
1) Torque	Available torque at constant load for the indicated running time at an ambient temperature of +20°C.

Features and functions	
Type of duty	Short-time duty S2 For operation with constant load during a defined running time, the duration of the load is reduced so that the thermal equilibrium is not reached. This is observed for all values specified. Once the running time according to table has been reached applying the max. available torques, allow for sufficient time at actuator standstill to ensure that the device cools down to ambient temperature.

Service conditions	
Ambient temperature	The specified torques at constant load for the indicated running times are valid for an ambient temperature of 20 °C. For higher ambient temperatures, the running times of the torques mentioned in the table decrease accordingly.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

General information

AUMA NORM multi-turn actuators require electric controls. For the SAR type range, AUMA offers AM and AC actuator controls. These can also easily be mounted to the actuator at a later date.

Type	Output speed rpm		Torque range[1]			Modulating torque[2]		Number of starts	Pulse duration[3]	Pulse duration on reversal[4]	Valve attachment[5]			Handwheel		Weight[6]
	50 Hz	60 Hz	Min. [Nm]	S4-25% S5-25% Max. [Nm]	S4-50% Max. [Nm]	S4-25% Max. [Nm]	S4-50% Max. [Nm]	Starts Max. [1/h]	Min. [ms]	Max. [ms]	Standard EN ISO 5210	Option DIN 3210	Max. Ø rising Stem [mm]	Ø [mm]	Reduction ratio	approx. [kg]
SAR 07.2	4	4.8	15	30	20	15	10	1,500	50	260	F07 F10	– G0	26 34[7]	160	11 : 1	19
	5.6	6.7								200					8 : 1	
	8	9.6								155					11 : 1	
	11	13								130					8 : 1	
	16	19								100					11 : 1	
	22	26								90					8 : 1	
	32	38								75					11 : 1	20
	45	54								70					8 : 1	
	63	75						1,200		65					11 : 1	
	90	108								60					8 : 1	
SAR 07.6	4	4.8	30	60	40	30	20	1,500	50	260	F07 F10	– G0	26 34[7]	160	11 : 1	20
	5.6	6.7								200					8 : 1	
	8	9.6								155					11 : 1	
	11	13								130					8 : 1	
	16	19								100					11 : 1	
	22	26								90					8 : 1	
	32	38								75					11 : 1	21
	45	54								70					8 : 1	
	63	75				20	15	1,200		65					11 : 1	
	90	108								60					8 : 1	
SAR 10.2	4	4.8	60	120	90	60	45	1,500	50	260	F10	G0	40	200	11 : 1	22
	5.6	6.7								200					8 : 1	
	8	9.6								155					11 : 1	
	11	13								130					8 : 1	
	16	19								100					11 : 1	
	22	26								90					8 : 1	
	32	38								75					11 : 1	25
	45	54								70					8 : 1	
	63	75				50	35	1,200		65					11 : 1	
	90	108								60					8 : 1	
SAR 14.2	4	4.8	120	250	180	120	90	1,200	70	280	F14	G1/2	58	315	11 : 1	44
	5.6	6.7								220					8 : 1	
	8	9.6								175					11 : 1	
	11	13								150					8 : 1	
	16	19						900		120					11 : 1	48
	22	26								110					8 : 1	
	32	38						600		100					11 : 1	
	45	54								90					8 : 1	
	63	75				100	70	400		85					11 : 1	
	90	108								80					8 : 1	
SAR 14.6	4	4.8	250	500	360	200	180	1,200	70	280	F14	G1/2	58	400	11 : 1	46
	5.6	6.7								220					8 : 1	
	8	9.6								175					11 : 1	
	11	13								150					8 : 1	
	16	19						900		120					11 : 1	53
	22	26								110					8 : 1	
	32	38				175	125	600		100					11 : 1	
	45	54								90					8 : 1	
	63	75				150	105	400		85					11 : 1	
	90	108								80					8 : 1	

Type	Output speed rpm		Torque range[1]			Modulating torque[2]		Num-ber of starts	Pulse dura-tion[3]	Pulse duration on re-versal[4]	Valve attachment[5]			Handwheel		Weight[6]
	50 Hz	60 Hz	Min. [Nm]	S4-25% S5-25% Max. [Nm]	S4-50% Max. [Nm]	S4-25% Max. [Nm]	S4-50% Max. [Nm]	Starts Max. [1/h]	Min. [ms]	Max. [ms]	Stand-ard EN ISO 5210	Option DIN 3210	Max. Ø rising Stem [mm]	Ø [mm]	Reduc-tion ra-tio	approx. [kg]
SAR 16.2	4	4.8	500	1,000	710	400	280	900	100	300	F16	G3	77	500	11 : 1	67
	5.6	6.7								250					8 : 1	
	8	9.6								200					11 : 1	
	11	13								175					8 : 1	
	16	19				350	250	600		150					11 : 1	
	22	26								140					8 : 1	
	32	38						300		130					11 : 1	79
	45	54								120					8 : 1	
	63	75				200	175	200		115					11 : 1	83
	90	108								110					8 : 1	

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Maximum permissible torque for modulating duty.
3) For identical direction of rotation: Time duration for which the motor must be electrically powered until there is a movement at the output drive.
4) For reversal of rotation direction: Time duration for which the motor must be electrically powered until there is a movement at the output drive.
5) Indicated flange sizes apply for output drive types A and B1. Refer to separate dimension sheets for further output drive types.
6) Indicated weight includes AUMA NORM multi-turn actuator with 3-phase AC motor, electrical connection in standard version, output drive type B1 and handwheel.
7) Stem diameter for rising stem in combination with AUMA stem protection tube made of PMMA max. 30 mm.

Features and functions		
Type of duty	Standard:	Intermittent duty S4 - 25 %, class C according to EN ISO 22153
	Option:	Intermittent duty S4 - 50 %, class C according to EN ISO 22153 Intermittent duty S5 - 25 % (insulation class H required), class C according to EN ISO 22153
	For nominal voltage and +40 °C ambient temperature and at modulating torque load.	
Motors	3-phase AC asynchronous squirrel-cage motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	
Mains voltage, mains frequency	Standard voltages: Refer to table: 3-phase AC standard voltages [▶ 3] Special voltages: Refer to table: 3-phase AC special voltages [▶ 3] Further voltages on request Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %	
Overvoltage category	Category III according to IEC 60364-4-44	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized
Motor protection	Standard:	Thermoswitches (NC)
	Option:	PTC thermistors (according to DIN 44082) PTC thermistors additionally require a suitable tripping device in the actuator controls.
Self-locking	Yes (actuator are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.)	
Motor heater (option)	Voltages: 110 – 120 V AC, 220 – 240 V AC or 380 – 480 V AC	
	Power 12.5 W	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
	Options:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	Terminals or crimp-type connection Gold-plated control plug (sockets and pins)

Features and functions		
Threads for cable entries	Standard:	Metric threads
	Option:	Pg threads, NPT threads, G threads
Wiring diagram	TPA00R1AA-001-000 (basic version)	
Valve attachment	Standard:	B1 in accordance with ISO 5210
	Options:	A, B2, B3, B4, C, D according to ISO 5210 A, B, D, E according to DIN 3210 C according to DIN 3338
	Special valve attachments: AF, AK, AG, B3D, ED, DD, IB1, IB3 A prepared for permanent lubrication of stem	

Table 1: 3-phase AC standard voltages

Voltages/frequencies											
Volt [3~]	220	230	380	380	400	400	415	440	460	480	500
Hz	60	50	50	60	50	60	50	60	60	60	50

Table 2: 3-phase AC special voltages

Voltages/frequencies							
Volt [3~]	220	440	525	575	600	660	690
Hz	50	50	50	50	60	50	50

Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED Turns per stroke: 2 to 500 (standard) or 2 to 5,000 (option)	
	Standard:	Single switch (1 NC and 1 NO) for each end position, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switch galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switch galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switch (1 NC and 1 NO) for each direction, not galvanically isolated
	Option:	Tandem switch (2 NC and 2 NO) for each direction, switch galvanically isolated
Switch contact materials	Standard:	Silver (Ag)
	Option:	Gold (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20mA (electronic position transmitter)	
Mechanical position indicator (option)	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication (option)	Blinker transmitter	
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC
	Options:	24 – 48 V AC/DC or 380 – 400 V AC
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with AM or AC actuator controls.	

Electronic control unit (option, only in combination with AC actuator controls)	
Non-intrusive settings	Magnetic limit and torque transmitter (MWG) Turns per stroke: 2 to 500 (standard) or 10 to 5,000 (option)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Mechanical position indicator (option)	Continuous self-adjusting indication with symbols OPEN and CLOSED
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions	
Use	Indoor and outdoor use permissible
Mounting position	Any position
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level on request

Service conditions		
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +70 °C –60 °C to +60 °C Temperatures exceeding +70 °C on request.
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	IP68 with AUMA 3-phase AC motor For special motors, differing enclosure protection is possible
	Option:	Terminal compartment additionally sealed against interior of actuator (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz (AUMA NORM), 1 g, 10 to 200 Hz (for actuators with AM or AC actuator controls) Resistant to vibration during start-up or for failures of the plant. Valid for multi-turn actuators-turn actuators in version AUMA NORM and in version with actuator controls, each with AUMA plug/socket connector. Not valid in combination with gearboxes.	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Options:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution. KX-G: Same as KX, however aluminium-free version (outer parts)
Coating	Double layer powder coating	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA multi-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Sound pressure level	< 72 dB (A)	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Dimensions SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2 Electrical data SAR 07.2 – SAR 16.2

SAR 07.2-UW – SAR 16.2-UW
for continuous underwater use

Technical data Multi-turn actuators for modulating duty with 3-phase AC motor

General information

Multi-turn actuators for continuous underwater use require ACExC actuator controls. Actuator controls are mounted on a wall bracket and are not immersed. A special cable set for connection between actuator and actuator controls is required.

Type	Output speed rpm		Torque range[1]			Modulating torque[2]		Number of starts	Pulse duration[3]	Pulse duration on reversal[4]	Valve attachment[5]		Handwheel (option)		Weight[6]
	50 Hz	60 Hz	Min. [Nm]	S4 - 25% S5-25% Max. [Nm]	S4 - 50% Max. [Nm]	S4 - 25% Max. [Nm]	S4 - 50% Max. [Nm]	Starts Max. [1/h]	Min. [ms]	Max. [ms]	Standard EN ISO 5210	Option DIN 3210	Ø [mm]	Reduction ratio	approx. [kg]
SAR 07.2-UW	4	4.8	15	30	20	15	10	1,500	50	260	F07 F10	– G0[7]	160	11 : 1	25
	5.6	6.7								200				8 : 1	
	8	9.6								155				11 : 1	
	11	13								130				8 : 1	
	16	19								100				11 : 1	
	22	26								90				8 : 1	
	32	38								75				11 : 1	26
	45	54								70				8 : 1	
	63	75						1,200		65				11 : 1	
	90	108								60				8 : 1	
SAR 07.6-UW	4	4.8	30	60	40	30	20	1,500	50	260	F07 F10	– G0[7]	160	11 : 1	25
	5.6	6.7								200				8 : 1	
	8	9.6								155				11 : 1	
	11	13								130				8 : 1	
	16	19								100				11 : 1	
	22	26								90				8 : 1	
	32	38								75				11 : 1	27
	45	54								70				8 : 1	
	63	75				20	15	1,200		65				11 : 1	
	90	108								60				8 : 1	
SAR 10.2-UW	4	4.8	60	120	90	60	45	1,500	50	260	F10	G0[7]	200	11 : 1	31
	5.6	6.7								200				8 : 1	
	8	9.6								155				11 : 1	
	11	13								130				8 : 1	
	16	19								100				11 : 1	
	22	26								90				8 : 1	
	32	38								75				11 : 1	33
	45	54								70				8 : 1	
	63	75				50	35	1,200		65				11 : 1	
	90	108								60				8 : 1	
SAR 14.2-UW	4	4.8	120	250	180	120	90	1,200	70	280	F14	G1/2	315	11 : 1	54
	5.6	6.7								220				8 : 1	
	8	9.6								175				11 : 1	
	11	13								150				8 : 1	
	16	19						900		120				11 : 1	58
	22	26								110				8 : 1	
	32	38						600		100				11 : 1	
	45	54								90				8 : 1	
	63	75				100	70	400		85				11 : 1	
	90	108								80				8 : 1	
SAR 14.6-UW	4	4.8	250	500	360	200	180	1,200	70	280	F14	G1/2	400	11 : 1	56
	5.6	6.7								220				8 : 1	
	8	9.6								175				11 : 1	
	11	13								150				8 : 1	
	16	19						900		120				11 : 1	62
	22	26								110				8 : 1	
	32	38				175	125	600		100				11 : 1	
	45	54								90				8 : 1	
	63	75				150	105	400		85				11 : 1	
	90	108								80				8 : 1	

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Type	Output speed rpm		Torque range[1]			Modulating torque[2]		Number of starts	Pulse duration[3]	Pulse duration on reversal[4]	Valve attachment[5]		Handwheel (option)		Weight[6]
	50 Hz	60 Hz	Min. [Nm]	S4 - 25% S5-25% Max. [Nm]	S4 - 50% Max. [Nm]	S4 - 25% Max. [Nm]	S4 - 50% Max. [Nm]	Starts Max. [1/h]	Min. [ms]	Max. [ms]	Standard EN ISO 5210	Option DIN 3210	Ø [mm]	Reduction ratio	approx. [kg]
SAR 16.2-UW	4	4.8	500	1,000	710	400	280	900	100	300	F16	G3	500	11 : 1	77
	5.6	6.7								250				8 : 1	
	8	9.6								200				11 : 1	
	11	13								175				8 : 1	
	16	19				350	250	600		150				11 : 1	
	22	26								140				8 : 1	
	32	38						300		130				11 : 1	88
	45	54								120				8 : 1	
	63	75				250	175	200		115				11 : 1	93
	90	108								110				8 : 1	

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Maximum permissible torque for modulating duty.
3) For identical direction of rotation: time during which the motor must be electrically supplied until there is a movement at the output drive.
4) For reversal of direction of rotation: time during which the motor must be electrically supplied until there is a movement at the output drive.
5) Indicated flange sizes apply for output drive type B1. Refer to separate dimension sheets for further output drive types.
6) Indicated weight includes multi-turn actuator with 3-phase AC motor, electrical connection with cable glands and output drive type B1.
7) G0 valve attachment is designed without spigot hub.

Features and functions		
Type of duty	Standard:	Intermittent duty S4 - 25 %, class C according to EN ISO 22153
	Option:	Intermittent duty S4 - 50 %, class C according to EN ISO 22153 Intermittent duty S5 - 25 % (insulation class H required), class C according to EN ISO 22153
	For nominal voltage and +40 °C ambient temperature and at modulating torque load.	
Motors	3-phase AC asynchronous squirrel-cage motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	
Mains voltage, mains frequency	Standard voltages:	

3-phase AC
Voltages/frequencies

Volt	220	230	380	380	400	400	415	440	460	480	500
Hz	60	50	50	60	50	60	50	60	60	60	50

Special voltages:

3-phase AC
Voltages/frequencies

Volt	220	440	525	575	575	600	660	690
Hz	50	50	50	50	60	60	50	50

Further voltages on request
Permissible variation of mains voltage: ±10 %
Permissible variation of mains frequency: ±5 %

Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized
Motor protection	Standard:	Thermoswitches (NC)
	Option:	PTC thermistors (according to DIN 44082) PTC thermistors additionally require a suitable tripping device in the actuator controls.
Self-locking	Yes, multi-turn actuators are self-locking, if the valve position cannot be changed from standstill while torque acts upon the output drive.	
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC or 380 – 480 V AC
	Power depending on the size 12.5 – 25 W	

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Features and functions		
Manual operation (option)	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	The AUMA plug/socket connector is part of the cable set with wall bracket which must be ordered separately and which is customised for connection. Terminal compartment additionally sealed against interior (double sealed)	
Terminal plan	TPA00R100-0I1-000 (basic version)	
Valve attachment	Standard:	B1 according to EN ISO 5210
	Option:	B3, B4, D according to EN ISO 5210; B2 on request B, D, E according to DIN 3210
	Special valve attachments: B3D, DD	

Electronic control unit	
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG) Turns per stroke: 1 to 500 (standard) or 10 to 5,000 (option)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions		
Use	For continuous underwater use as well as indoor and outdoor use.	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	–30 °C to +70 °C	
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	Increased enclosure protection IP68-C15. The maximum head of water is 15 m.
	Option:	Increased enclosure protection IP68-C60. The maximum head of water is 60 m. In combination with handwheel permissible head of water of more than 15 m on request
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. They are not valid in combination with gearboxes.	
Corrosion protection	KX-G: Suitable for use in freshwater (Im1), seawater (Im2) and on seafloor (Im3), aluminium-free version (outer parts)	
Coating	Two-layer powder coating with additional wet painting	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA multi-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Noise level	< 72 dB (A)	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Dimensions SA 07.2-UW – SA 16.2-UW/SAR 07.2-UW – SAR 16.2-UW Electrical data SAR 07.2 – SAR 16.2

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SAR 07.2 – SAR 14.6
AUMA NORM
Technical data Multi-turn actuators for modulating duty with 1-phase AC motor

General information

AUMA NORM multi-turn actuators require electric controls. For sizes SAR 07.2 – SAR 14.6, AUMA offers AM or AC actuator controls. These can also easily be mounted to the actuator at a later date.

Type	Output speed rpm		Torque range[1]		Modulating torque[2]	Number of starts[3]	Pulse duration[4]	Pulse duration on reversal[5]	Valve attachment[6]			Handwheel		Weight[7]
	50 Hz	60 Hz	Min. [Nm]	Max. [Nm]	Max. [Nm]	Starts Max. [1/h]	Min. [ms]	Max. [ms]	Standard EN ISO 5210	Option DIN 3210	Max. Ø rising stem [mm]	Ø [mm]	Reduction ratio	approx. [kg]
SAR 07.2	4	4.8	15	30	15	600	50	276	F07 F10	– G0	26 34[8]	160	11 : 1	21
	5.6	6.7						220					8 : 1	
	8	9.6						155					11 : 1	
	11	13						130					8 : 1	
	16	19						100					11 : 1	
	22	26						90					8 : 1	
	32	38						75					11 : 1	28
	45	54						70					8 : 1	
SAR 07.6	4	4.8	30	60	30	600	50	260	F07 F10	– G0	26 34[8]	160	11 : 1	21
	5.6	6.7						200					8 : 1	
	8	9.6						155					11 : 1	
	11	13						130					8 : 1	
	16	19						100					11 : 1	
	22	26						90					8 : 1	
	32	38						75					11 : 1	28
	45	54						70					8 : 1	
SAR 10.2	4	4.8	60	120	60	600	50	260	F10	G0	40	200	11 : 1	28
	5.6	6.7						200					8 : 1	
	8	9.6						155					11 : 1	31
	11	13						130					8 : 1	
	16	19						100					11 : 1	
	22	26						90					8 : 1	
SAR 14.2	4	4.8	120	250	120	600	70	280	F14	G1/2	58	315	11 : 1	59
	5.6	6.7						220					8 : 1	
	8	9.6						175					11 : 1	
	11	13						150					8 : 1	
SAR 14.6	4	4.8	250	500	200	600	70	280	F14	G1/2	58	400	11 : 1	63
	5.6	6.7						220					8 : 1	

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Maximum permissible torque for modulating duty.
3) An off-time (reversing prevention time) of 2.5 seconds is required prior to starting in opposite direction.
4) For identical direction of rotation: time during which the motor must be electrically supplied until there is a movement at the output drive.
5) For reversal of direction of rotation: time during which the motor must be electrically supplied until there is a movement at the output drive.
6) Indicated flange sizes apply for output drive types A and B1. Refer to separate dimension sheets for further output drive types.
7) Indicated weight includes AUMA NORM multi-turn actuator with 1-phase AC motor, electrical connection in standard version, output drive type B1 and handwheel.
8) Stem diameter for rising stem in combination with AUMA stem protection tube made of PMMA max. 30 mm.

Features and functions

Type of duty	Intermittent duty S4 - 25 %, class C according to EN ISO 22153
	For nominal voltage and +40 °C ambient temperature and at modulating torque load.
Motors	1-phase AC motor with integral permanent split capacitor (PSC), type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6
Mains voltage, mains frequency	Standard voltages:

1-phase AC
Voltages/frequencies

Volt	110 – 120	110 – 120	220 – 240	220 – 240
Hz	50	60	50	60

Further voltages on request
Permissible variation of mains voltage: ±10 %
Permissible variation of mains frequency: ±5 %

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Features and functions		
Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	F, tropicalized	
Motor protection	Thermoswitches (NC)	
Self-locking	Yes, multi-turn actuators are self-locking, if the valve position cannot be changed from standstill while torque acts upon the output drive.	
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC
	Power depending on the size 12.5 – 25 W	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
	Option:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Option:	Terminals or crimp connection Gold-plated control plug (sockets and pins)
Threads for cable entries	Standard:	Metric threads
	Option:	Pg-threads, NPT-threads, G-threads
Terminal plan	TPA01R1AA-001-000, 1-phase AC motor with permanent split capacitor	
Valve attachment	Standard:	B1 according to EN ISO 5210
	Option:	A, B2, B3, B4, C, D according to EN ISO 5210 A, B, D, E according to DIN 3210 C according to DIN 3338
	Special valve attachments: AF, AK, AG, B3D, ED, DD, IB1, IB3 A prepared for permanent lubrication of stem	

Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED Turns per stroke: 1 to 500 (standard) or 1 to 5,000 (option)	
	Standard:	Single switch (1 NC and 1 NO) for each end position, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switches galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switches galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switch (1 NC and 1 NO) for each direction, not galvanically isolated
	Option:	Tandem switch (2 NC and 2 NO) for each direction, switches galvanically isolated
Switch contact materials	Standard:	Silver (Ag)
	Option:	Gold (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20 mA (electronic position transmitter)	
Mechanical position indicator (option)	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication (option)	Blinker transmitter	
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC
	Options:	24 – 48 V AC/DC
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with AM or AC actuator controls.	

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Electronic control unit (option, only in combination with AC actuator controls)		
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG) Turns per stroke: 1 to 500 (standard) or 10 to 5,000 (option)	
Position feedback signal	Via actuator controls	
Torque feedback signal	Via actuator controls	
Mechanical position indicator (option)	Continuous self-adjusting indication with symbols OPEN and CLOSED	
Running indication	Blinking signal via actuator controls	
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC	

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +70 °C –60 °C to +60 °C Temperatures exceeding +70 °C on request.
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	IP68 with 1-phase AC motors of types VB..., AE..., VE... For special motors, differing enclosure protection is possible
	Option:	Terminal compartment additionally sealed against interior of actuator (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: Maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Two-layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA multi-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Noise level	< 72 dB (A)	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Dimensions SA 07.2 – SA 14.6/SAR 07.2 – SAR 14.6 Electrical data SAR 07.2 – SAR 14.6

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SAR 07.2 – SAR 16.2
AUMA NORM
Technical data Multi-turn actuators for modulating duty with DC motor

General information

AUMA NORM multi-turn actuators require electric controls. For sizes SAR 07.2 – SAR 16.2 with DC motors, AUMA offer AC actuator controls. These can also easily be mounted to the actuator at a later date.

Type	Output speed rpm	Torque range[1]		Modulating torque[2]	Number of starts[3]	Pulse duration[4]	Pulse duration on reversal[5]	Valve attachment[6]			Handwheel		Weight[7]
	50 Hz	Min. [Nm]	Max. [Nm]	Max. [Nm]	Starts Max. [1/h]	Min. [ms]	Max. [ms]	Standard EN ISO 5210	Option DIN 3210	Max. Ø rising stem [mm]	Ø [mm]	Reduction ratio	approx. [kg]
SAR 07.2	4	15	30	15	600	50	275	F07 F10	– G0	26 34[8]	160	11 : 1	29
	5.6						220					8 : 1	
	8						155					11 : 1	
	11						130					8 : 1	
	16				200		100					11 : 1	
	22						90					8 : 1	
	32						75					11 : 1	32
	45						70					8 : 1	
SAR 07.6	4	30	60	30	600	50	275	F07 F10	– G0	26 34[8]	160	11 : 1	30
	5.6						220					8 : 1	
	8						155					11 : 1	
	11						130					8 : 1	
	16				200		100					11 : 1	
	22						90					8 : 1	
	32						75					11 : 1	44
	45						70					8 : 1	
SAR 10.2	4	60	120	60	600	50	275	F10	G0	40	200	11 : 1	33
	5.6						220					8 : 1	
	8				300		155					11 : 1	36
	11						130					8 : 1	
	16				100		100					11 : 1	
	22						90					8 : 1	
	32				200		75					11 : 1	56
	45						70					8 : 1	
SAR 14.2	4	120	250	120	600	70	275	F14	G1/2	58	315	11 : 1	
	5.6						220					8 : 1	
	8				200		155					11 : 1	
	11						130					8 : 1	
	16				50		100					11 : 1	48
	22						90					8 : 1	
	32				200		75					11 : 1	
	45						70					8 : 1	
SAR 14.6	4	250	500	200	600	70	275	F14	G1/2	58	400	11 : 1	76
	5.6						220					8 : 1	
	8				200		155					11 : 1	
	11						130					8 : 1	
	16				100		100					11 : 1	
	22						90					8 : 1	
	32			175			75					11 : 1	122
	45						70					8 : 1	
SAR 16.2	4	500	1,000	400	300	100	275	F16	G3	77	500	11 : 1	123
	5.6						220					8 : 1	
	8				200		155					11 : 1	
	11						130					8 : 1	
	16			350	100		90					11 : 1	
	22						80					8 : 1	

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Maximum permissible torque for modulating duty.
3) For actuators equipped with AC .2 actuator controls and contactors of power class A2 or A4, maximum 300 starts/h.
4) For identical direction of rotation: time during which the motor must be electrically supplied until there is a movement at the output drive.
5) For reversal of direction of rotation: time during which the motor must be electrically supplied until there is a movement at the output drive.
6) Indicated flange sizes apply for output drive types A and B1. Refer to separate dimension sheets for further output drive types.
7) Indicated weight includes AUMA NORM multi-turn actuator with DC motor, electrical connection in standard version, output drive type B1 and handwheel.
8) Stem diameter for rising stem in combination with AUMA stem protection tube made of PMMA max. 30 mm.

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Features and functions	
Type of duty	Intermittent duty S4 - 25 %, class C according to EN ISO 22153 For nominal voltage and +40 °C ambient temperature and at modulating torque load.
Motors	DC shunt motor, type IM B14 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6 DC compound motor, type IM B14 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6 Motor type depending on actuator type/output speed. Refer also to Electrical data SAR 07.2 – SAR 16.2 with DC motors.
Mains voltage, mains frequency	Standard voltages:

Gleichstrom - Spannungen						
Volt	24	48	60	110	125	220

Permissible variation of mains voltage: ±10 %

Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	F, tropicalized	
Motor protection	Without	
Self-locking	Yes, multi-turn actuators are self-locking, if the valve position cannot be changed from standstill while torque acts upon the output drive.	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
	Option:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Controls:	AUMA plug/socket connector with screw-type connection
	Motor:	AUMA plug/socket connector with screw-type connection or motor terminal board
	Options:	Power connection via terminals or crimp type connection Gold-plated control plug (sockets and pins)
Threads for cable entries	Cable entries for AUMA plug/socket connector with screw-type connection:	
	Standard:	Metric threads
	Option:	Pg-threads, NPT-threads, G-threads
	Cable entries for motor connection via separate motor terminal board:	
	Standard:	Metric threads

Motor size	24 V	48 V	60 V	110 V	125 V	220 V
FN0R063-4	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5
FN0R063-2	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5
FN0R071-4	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5
FN0R071-2	2 x M25 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5
FN0R080-4	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
FN0R080-2	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
FN0R090-4	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
FN0R090-2	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
FL0R100-4	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
FL0R100-2	–	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
FL0R112-4	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5

Terminal plan	TPA11R0AA-001-000, DC shunt motor, motor connection on AUMA plug/socket connector TPA12R0AA-001-000, DC shunt motor, motor connection on separate terminal box TPA13R0AA-001-000, DC compound motor, motor connection on separate terminal box TPA14R0AA-001-000, DC compound motor, motor connection on AUMA plug/socket connector Depending on motor type/output speed. Refer to Electrical data SAR 07.2 – SAR 16.2 with DC motors.

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Features and functions		
Valve attachment	Standard:	B1 according to EN ISO 5210
	Option:	A, B2, B3, B4, C, D according to EN ISO 5210 A, B, D, E according to DIN 3210 C according to DIN 3338
	Special valve attachments: AF, AK, AG, B3D, ED, DD, IB1, IB3 A prepared for permanent lubrication of stem	

Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED Turns per stroke: 1 to 500 (standard) or 1 to 5,000 (option)	
	Standard:	Single switch (1 NC and 1 NO) for each end position, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switches galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switches galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switch (1 NC and 1 NO) for each direction, not galvanically isolated
	Option:	Tandem switch (2 NC and 2 NO) for each direction, switches galvanically isolated
Switch contact materials	Standard:	Silver (Ag)
	Option:	Gold (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20 mA (electronic position transmitter)	
Mechanical position indicator (option)	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication (option)	Blinker transmitter	
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC
	Options:	24 – 48 V AC/DC
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with AC actuator controls.	

Electronic control unit (option, only in combination with AC actuator controls)	
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG) Turns per stroke: 1 to 500 (standard) or 10 to 5,000 (option)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Mechanical position indicator (option)	Continuous self-adjusting indication with symbols OPEN and CLOSED
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +70 °C Temperatures exceeding +70 °C on request. Lower temperatures on request
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	

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Service conditions		
Enclosure protection in accordance with IEC 60529	Standard:	IP68 with AUMA DC motor For special motors, differing enclosure protection is possible
	Option:	Terminal compartment additionally sealed against interior of actuator (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: Maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Two-layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA multi-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Noise level	< 72 dB (A)	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Electrical data SAR 07.2 – SAR 16.2

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SA 07.2 – 16.2, SAR 07.2 – 16.2, SAEx 07.2 – 16.2, SAREx 07.2 – 16.2

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Technical data Torques at different voltages
Short-time duty S2 - 15 min, intermittent duty S4 - 25 %, with 3-phase AC motors

Type	Output speed		Motor			Tripping torque adjustable		Torque at stall torque[1] of the motor (without considering inertia) at nominal voltage, overvoltage and undervoltage (... % U_N)							
	50 Hz [rpm]	60 Hz [rpm]	Power [kW]	Speed at 50 Hz [rpm]	Size	Min. [Nm]	Max. [Nm]	100 %	105 %	110 %	95 %	90 %	85 %	80 %	75 %
SA 07.2	4	4.8	0.02	1,400	63	10	30	96	105	116	86	77	69	61	54
	5.6	6.7						84	93	102	76	68	61	54	47
	8	9.6	0.04	1,400	63			61	67	74	55	49	44	39	34
	11	13						53	59	64	48	43	38	34	30
	16	19	0.06	2,800	63			71	78	85	64	57	51	45	40
	22	26						61	67	74	55	49	44	39	34
	32	38	0.10	1,400	63			55	61	67	50	45	40	35	31
	45	54						48	53	58	43	39	35	31	27
	63	75	0.20	2,800	63			67	73	81	60	54	48	43	37
	90	108						57	63	69	51	46	41	36	32
	125	150	0.30	2,800	63			46	50	55	41	37	33	29	26
	180	216					25	36	40	44	33	29	26	23	20
SA 07.6	4	4.8	0.03	1,400	63	20	60	139	154	168	126	113	101	89	78
	5.6	6.7						120	133	145	109	97	87	77	68
	8	9.6	0.06	1,400	63			120	132	145	108	97	87	77	68
	11	13						106	117	128	96	86	77	68	60
	16	19	0.12	2,800	63			128	141	155	116	104	93	82	72
	22	26						112	123	135	101	91	81	72	63
	32	38	0.20	1,400	63			135	149	163	122	109	98	86	76
	45	54						115	127	139	104	93	83	74	65
	63	75	0.40	2,800	63			136	150	164	122	110	98	87	76
	90	108						114	125	137	103	92	82	73	64
	125	150	0.50	2,800	63			92	101	111	83	74	66	59	52
	180	216					50	73	80	88	66	59	53	47	41
SA 10.2	4	4.8	0.06	1,400	71	40	120	318	350	385	287	257	230	203	179
	5.6	6.7						245	270	296	221	198	177	157	138
	8	9.6	0.12	1,400	71			253	279	307	229	205	183	162	143
	11	13						195	215	235	176	158	141	125	109
	16	19	0.25	2,800	71			234	258	283	211	190	169	150	132
	22	26						179	198	217	162	145	129	115	101
	32	38	0.40	1,400	71			253	279	307	229	205	183	162	143
	45	54						196	216	237	177	159	141	125	110
	63	75	0.70	2,800	71			280	309	339	253	227	202	179	157
	90	108						215	237	260	194	174	155	138	121
	125	150	1.00	2,800	71			180	198	217	162	145	130	115	101
	180	216					100	134	148	163	121	109	97	86	76
SA 14.2	4	4.8	0.12	1,400	90	100	250	459	506	555	414	372	332	294	258
	5.6	6.7						415	458	502	375	336	300	266	234
	8	9.6	0.25	1,400	90			434	478	525	391	351	313	278	244
	11	13						385	425	466	348	312	278	247	217
	16	19	0.45	2,800	90			421	464	510	380	341	304	270	237
	22	26						369	407	446	333	299	267	236	208
	32	38	0.75	1,400	90			475	524	575	429	385	343	304	267
	45	54						412	454	498	372	334	298	264	232
	63	75	1.40	2,800	90			550	606	665	496	445	397	352	309
	90	108						472	520	571	426	382	341	302	265
	125	150	1.80	2,800	90			357	393	432	322	289	258	228	201
	180	216					200	287	317	348	259	233	208	184	162
SA 14.6	4	4.8	0.20	1,400	90	200	500	949	1,047	1,149	857	769	686	608	534
	5.6	6.7						840	926	1,016	758	680	607	537	472
	8	9.6	0.40	1,400	90			842	929	1,019	760	682	609	539	474
	11	13						755	832	914	681	612	546	483	425
	16	19	0.80	2,800	90			936	1,032	1,133	845	758	676	599	527
	22	26						824	908	997	743	667	595	527	463
	32	38	1.60	1,400	90			1,125	1,240	1,361	1,015	911	812	720	633
	45	54						959	1,058	1,161	866	777	693	614	540
	63	75	3.00	2,800	90			1,170	1,290	1,416	1,056	948	845	749	658
	90	108						1,007	1,110	1,218	908	815	727	644	566
	125	150	3.30	2,800	90			765	843	926	690	620	553	490	430
	180	216					400	611	673	739	551	495	441	391	343
SA 16.2	4	4.8	0.40	1,400	112	400	1,000	1,951	2,151	2,360	1,761	1,580	1,409	1,248	1,097
	5.6	6.7						1,809	1,995	2,189	1,633	1,465	1,307	1,158	1,018
	8	9.6	0.80	1,400	112			2,065	2,276	2,498	1,863	1,672	1,492	1,321	1,161
	11	13						1,882	2,075	2,278	1,699	1,525	1,360	1,205	1,059
	16	19	1.50	2,800	112			2,214	2,441	2,679	1,998	1,793	1,600	1,417	1,245
	22	26						1,940	2,139	2 348	1,751	1,572	1,402	1,242	1,091
	32	38	3.00	1,400	112			1,688	1,860	2,042	1,523	1,367	1,219	1,080	949
	45	54						1,460	1,610	1,767	1,318	1,183	1,055	935	821
	63	75	5.00	2,800	112			1,789	1,972	2 164	1,614	1,449	1,292	1,145	1,006
	90	108						1,535	1,692	1,857	1,385	1,243	1,109	982	863
	125	150	6.00	2,800	112		800	1,148	1,265	1,388	1,036	929	829	734	645
	180	216						928	1,023	1,123	838	752	671	594	522

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Notes on table on page 1	
1) Stall torque	Stall torque indications are calculated nominal values. In practical applications, they might differ due to gear and motor tolerances.

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SA 07.2 – 16.2, SAR 07.2 – 16.2, SAEx 07.2 – 16.2, SAREx 07.2 – 16.2

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Technical data Torques at different voltages
Short-time duty S2 - 30 min, intermittent duty S4 - 50 %, with 3-phase AC-motors

Type	Output speed		Motor			Tripping torque adjustable		Torque at stall torque[1] of the motor (without considering inertia) at nominal voltage, overvoltage and undervoltage (... % U_N)							
	50 Hz [rpm]	60 Hz [rpm]	Power [kW]	Speed at 50 Hz [rpm]	Size	Min. [Nm]	Max. [Nm]	100 %	105 %	110 %	95 %	90 %	85 %	80 %	75 %
SA 07.2	4	4.8	0.01	1,400	63	10	20	96	105	116	86	77	69	61	54
	5.6	6.7						84	93	102	76	68	61	54	47
	8	9.6	0.03	1,400	63			50	55	61	45	41	36	32	28
	11	13						44	49	53	40	36	32	28	25
	16	19	0.04	2,800	63			58	64	71	53	47	42	37	33
	22	26						50	56	61	45	41	36	32	28
	32	38	0.07	1,400	63			46	50	55	41	37	33	29	26
	45	54						40	44	48	36	32	29	25	22
	63	75	0.14	2,800	63			55	61	67	50	45	40	35	31
	90	108						47	52	57	42	38	34	30	26
	125	150	0.21	2,800	63			38	42	46	34	31	27	24	21
	180	216						30	33	36	27	24	22	19	17
SA 07.6	4	4.8	0.02	1,400	63	20	40	115	127	139	104	93	83	74	65
	5.6	6.7						99	110	120	90	80	72	64	56
	8	9.6	0.04	1,400	63			99	109	120	90	80	72	64	56
	11	13						88	97	106	79	71	63	56	49
	16	19	0.08	2,800	63			106	117	128	96	86	77	68	60
	22	26						92	102	112	83	75	67	59	52
	32	38	0.14	1,400	63			112	123	135	101	90	81	71	63
	45	54						95	105	115	86	77	69	61	54
	63	75	0.28	2,800	63			112	124	136	101	91	81	72	63
	90	108						94	104	114	85	76	68	60	53
	125	150	0.35	2,800	63			76	84	92	69	62	55	49	43
	180	216					30	60	66	73	54	49	44	39	34
SA 10.2	4	4.8	0.04	1,400	71	40	90	263	290	318	237	213	190	168	148
	5.6	6.7						202	223	245	183	164	146	129	114
	8	9.6	0.08	1,400	71			209	231	253	189	170	151	134	118
	11	13						161	177	195	145	130	116	103	90
	16	19	0.17	2,800	71			193	213	234	175	157	140	124	109
	22	26						148	163	179	134	120	107	95	83
	32	38	0.28	1,400	71			209	231	253	189	170	151	134	118
	45	54						162	178	196	146	131	117	104	91
	63	75	0.50	2,800	71			231	255	280	209	187	167	148	130
	90	108						178	196	215	160	144	128	114	100
	125	150	0.70	2,800	71			148	164	180	134	120	107	95	83
	180	216					70	111	122	134	100	122	134	100	90
SA 14.2	4	4.8	0.08	1,400	90	100	180	379	418	459	342	307	274	243	213
	5.6	6.7						343	378	415	310	278	248	220	193
	8	9.6	0.18	1,400	90			358	395	434	323	290	259	229	202
	11	13						319	351	385	287	258	230	204	179
	16	19	0.30	2,800	90			356	393	431	322	289	257	228	200
	22	26						312	344	378	282	253	226	200	176
	32	38	0.50	1,400	90			393	433	475	354	318	284	251	221
	45	54						340	375	412	307	276	246	218	191
	63	75	1.00	2,800	90			454	501	550	410	368	328	291	256
	90	108						390	430	472	352	316	282	250	219
	125	150	1.30	2,800	90			295	325	357	266	239	213	189	166
	180	216					140	238	262	287	214	192	172	152	134
SA 14.6	4	4.8	0.14	1,400	90	200	360	785	865	949	708	636	567	502	441
	5.6	6.7						694	765	840	626	562	501	444	390
	8	9.6	0.30	1,400	90			696	768	842	628	564	503	446	392
	11	13						624	688	755	563	505	451	399	351
	16	19	0.60	2,800	90			774	853	936	698	627	559	495	435
	22	26						681	751	824	614	551	492	436	383
	32	38	1.00	1,400	90			929	1,025	1,125	839	753	671	595	523
	45	54						793	874	959	716	642	573	507	446
	63	75	2.00	2,800	90			967	1,066	1,170	873	783	699	619	544
	90	108						832	917	1,007	751	674	601	532	468
	125	150	2.30	2,800	90			632	697	765	571	512	457	405	356
	180	216					290	505	556	611	455	409	365	323	284
SA 16.2	4	4.8	0.30	1,400	112	400	710	1,612	1,777	1,951	1,455	1,306	1,165	1,032	907
	5.6	6.7						1,495	1,648	1,809	1,349	1,211	1,080	957	841
	8	9.6	0.60	1,400	112			1,706	1,881	2,065	1,540	1,382	1,233	1,092	960
	11	13						1,556	1,715	1,882	1,404	1,260	1,124	996	875
	16	19	1.00	2,800	112			1,830	2,017	2,214	1,651	1,482	1,322	1,171	1,029
	22	26						1,604	1,768	1,940	1,447	1,299	1,159	1,026	902
	32	38	2.00	1,400	112			1,395	1,538	1,688	1,259	1,130	1,008	893	784
	45	54						1,207	1,331	1,460	1,089	978	872	772	679
	63	75	3.50	2,800	112			1,478	1,630	1,789	1,334	1,197	1,068	946	832
	90	108						1,268	1,398	1,535	1,145	1,027	916	812	713
	125	150	4.00	2,800	112		570	948	1,046	1,148	856	768	685	607	533
	180	216						767	846	928	692	621	554	491	431

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Notes on table on page 1	
1) Stall torque	Stall torque indications are calculated nominal values. In practical applications, they might differ due to gear and motor tolerances.

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Technical data Manual force at handwheel at multi-turn actuators

Standard

Type	Output speed 50 Hz	Torque Max. [Nm]	Reduct. ratio[1]	Factor[2]	Handwheel input torque[3] approx. [Nm]	Permissible input torque at handwheel Max. [Nm]	Hand-wheel Standard Ø [mm]	Manual force at handwheel Standard[4] approx. [N]	Hand-wheel Option Ø [mm]	Manual force at handwheel Option[4] approx. [N]
SA 07.2	4; 8; 16; 32; 63	30	11 : 1	4.5	7	40	160	83	200	67
	5.6; 11; 22; 45; 90		8 : 1	3.2	9			117		94
	125		5.6 : 1	3.4	9			111		89
	180	25	4 : 1	2.4	10			130		104
SA 07.6	4; 8; 16; 32; 63	60	11 : 1	4.5	13	40	160	167	200	133
	5.6; 11; 22; 45; 90		8 : 1	3.2	19			234		188
	125		5.6 : 1	3.4	18			222		178
	180	50	4 : 1	2.4	21			260		208
SA 10.2	4; 8; 16; 32; 63	120	11 : 1	4.4	27	80	200	273	250	218
	5.6; 11; 22; 45; 90		8 : 1	3.2	38			375		300
	125		5.6 : 1	3.3	36			364		291
	180	100	4 : 1	2.4	42			417		333
SA 14.2	4; 8; 16; 32; 63	250	11 : 1	4.5	56	300	315	353	400	278
	5.6; 11; 22; 45; 90		8 : 1	3.3	76			481		379
	125		5.6 : 1	3.4	74			470		370
	180	200	4 : 1	2.5	81			513		404
SA 14.6	4; 8; 16; 32; 63	500	11 : 1	4.5	111	300	400	556	500	444
	5.6; 11; 22; 45; 90		8 : 1	3.3	152			758		606
	125		5.6 : 1	3.4	148			741		593
	180	400	4 : 1	2.5	162			808		646
SA 16.2	4; 8; 16; 32; 63	1,000	11 : 1	4.5	222	600	500	889	630	705
	5.6; 11; 22; 45; 90		8 : 1	3.3	303			1,212		962
	125	800	5.6 : 1	3.4	237			948		752
	180		4 : 1	2.5	323			1,293		1,026

Option for reduction of manual force[5]

Type	Output speed 50 Hz	Torque Max. [Nm]	Reduct. ratio[1]	Factor[2]	Handwheel input torque[3] approx. [Nm]	Permissible input torque at handwheel Max. [Nm]	Hand-wheel Standard Ø [mm]	Manual force at handwheel Standard[4] approx. [N]	Hand-wheel Option Ø [mm]	Manual force at handwheel Option[4] approx. [N]
SA 07.2	4; 8; 16; 32; 63	30	45 : 1	18	2	10	160	21	200	17
	5.6; 11; 22; 45; 90		32 : 1	13	2			29		23
	125		22.5 : 1	14	2			28		22
	180	25	16 : 1	10	3			33		26
SA 07.6	4; 8; 16; 32; 63	60	45 : 1	18	3	10	160	42	200	33
	5.6; 11; 22; 45; 90		32 : 1	13	5			59		47
	125		22.5 : 1	14	4			56		44
	180	50	16 : 1	10	5			65		52
SA 10.2	4; 8; 16; 32; 63	120	45 : 1	18	7	20	200	68	250	55
	5.6; 11; 22; 45; 90		32 : 1	13	9			94		75
	125		22 : 1	13	9			91		73
	180	100	16 : 1	10	10			104		83
SA 14.2	4; 8; 16; 32; 63	250	45 : 1	18	14	75	315	88	400	69
	5.6; 11; 22; 45; 90		32 : 1	13	19			120		95
	125		22.5 : 1	14	19			118		93
	180	200	16 : 1	10	20			128		101
SA 14.6	4; 8; 16; 32; 63	500	45 : 1	18	28	75	400	139	500	111
	5.6; 11; 22; 45; 90		32 : 1	13	38			189		152
	125		22.5 : 1	14	37			185		148
	180	400	16 : 1	10	40			202		162
SA 16.2	4; 8; 16; 32; 63	1,000	45 : 1	18	56	150	500	222	630	176
	5.6; 11; 22; 45; 90		32 : 1	13	76			303		241
	125	800	22.5 : 1	14	59			237		188
	180		16 : 1	10	81			323		257

Notes on tables

1) Reduction ratio	From handwheel to actuator output drive.
2) Factor	Ratio of output torque to handwheel input torque, $f = T_{output}/T_{manual}$. Includes efficiency rating at run torque with approx. 35 % of the maximum torque.
3) Handwheel input torque	For maximum output torque.
4) Required manual force	Required manual force at handwheel at max. output torque. The actually required manual force depends on the required output torque and the service conditions.
5) Order code	Handwheel options characteristic: 000-000-000-1

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical data Multi-turn actuators for open-close duty

General information

Multi-turn actuators of the SAV .2 type range with variable speeds. AUMA actuator controls of ACV .2 type are required to change the output speed.

Type of duty S2 - 15 min

Type	Output speed rpm	Torque range[1]		Run torque[2]	Number of starts	Available mains voltage/mains frequency			
						1-phase AC		3-phase AC	
	50 Hz	Min. [Nm]	Max.[3]. [Nm]	Max. [Nm]	Starts Max. [1/h]	110 V – 120 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	380 V – 480 V/ 50 – 60 Hz
SAV 07.2	6 – 60	10	30	11	60	■ [4]	■	■	■
	12 – 120					■	■	■	■
	24 – 240		25	10		■	■	■	■
SAV 07.6	6 – 60	20	60	21	60	■	■	■	■
	12 – 120					■	■	■	■
	24 – 240		50	18		■	■	■	■
SAV 10.2	6 – 60	40	120	42	60	● [5]	■	■	■
	12 – 120					–	■	■	■
	24 – 240		100	35		–	■	■	■
SAV 14.2	6 – 60	100	250	88	60	–	■	■	■
	12 – 120					–	●	●	■
	24 – 240		200	70		–	–	▲ [6]	■
SAV 14.6	6 – 60	200	500	175	60	–	–	▲	■
	12 – 120					–	–	–	●
	24 – 240		400	140		–	–	–	●
SAV 16.2	6 – 60	400	1,000	350	60	–	–	–	●

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Permissible average torque for 15 min or 30 min running time and at maximum output speed.
3) Maximum torque to approx. 50 % of maximum output speed
4) Square = Without restriction to +70 °C ambient temperature
5) Circle = For ambient temperatures exceeding +40 °C, restrictions may occur for Maximum permissible run torque, mode of operation and running time. Detailed information on request.
6) Triangle= Special sizing on request

Type of duty S2 - 30 min

Type	Output speed rpm	Torque range[1]		Run torque[2]	Number of starts	Available mains voltage/mains frequency			
						1-phase AC		3-phase AC	
	50 Hz	Min. [Nm]	Max.[3]. [Nm]	Max. [Nm]	Starts Max. [1/h]	110 V – 120 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	380 V – 480 V/ 50 – 60 Hz
SAV 07.2	6 – 60	10	20	8	60	■ [4]	■	■	■
	12 – 120					■	■	■	■
	24 – 240			6		■	■	■	■
SAV 07.6	6 – 60	20	40	15	60	● [5]	■	■	■
	12 – 120					●	■	■	■
	24 – 240		30	13		●	■	■	■
SAV 10.2	6 – 60	40	90	30	60	▲ [6]	■	■	■
	12 – 120					–	■	■	■
	24 – 240		70	25		–	■	■	■
SAV 14.2	6 – 60	100	180	63	60	–	■	■	■
	12 – 120					–	●	●	■
	24 – 240		140	49		–	–	▲	■

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Technical data Multi-turn actuators for open-close duty

Type of duty S2 - 30 min

Type	Output speed rpm	Torque range[1]		Run torque[2]	Number of starts	Available mains voltage/mains frequency			
						1-phase AC		3-phase AC	
	50 Hz	Min. [Nm]	Max.[3]. [Nm]	Max. [Nm]	Starts Max. [1/h]	110 V – 120 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	380 V – 480 V/ 50 – 60 Hz
SAV 14.6	6 – 60	200	360	123	60	–	–	▲	■
	12 – 120					–	–	–	●
	24 – 240		290	102		–	–	–	●
SAV 16.2	6 – 60	400	710	249	60	–	–	–	●

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Permissible average torque for 15 min or 30 min running time and at maximum output speed.
3) Maximum torque to approx. 50 % of maximum output speed
4) Square = Without restriction to +70 °C ambient temperature
5) Circle = For ambient temperatures exceeding +40 °C, restrictions may occur for Maximum permissible run torque, mode of operation and running time. Detailed information on request.
6) Triangle= Special sizing on request

Valve attachments and weights

Type	Output speed rpm	Valve attachment[1]			Handwheel		Weight[2]
		Standard EN ISO 5210	Option DIN 3210	Max. Ø rising stem [mm]	Ø [mm]	Reduction ratio	approx. [kg]
SAV 07.2	6 – 60	F07 F10	– G0	26 34[3]	160	8 : 1	20
	12 – 120					8 : 1	
	24 – 240					4 : 1	
SAV 07.6	6 – 60	F07 F10	– G0	26 34[3]	160	8 : 1	21
	12 – 120					8 : 1	
	24 – 240					4 : 1	
SAV 10.2	6 – 60	F10	G0	40	200	8 : 1	25
	12 – 120					8 : 1	
	24 – 240					4 : 1	
SAV 14.2	6 – 60	F14	G1/2	58	315	8 : 1	48
	12 – 120					8 : 1	
	24 – 240					4 : 1	
SAV 14.6	6 – 60	F14	G1/2	58	400	8 : 1	53
	12 – 120					8 : 1	
	24 – 240					4 : 1	
SAV 16.2	6 – 60	F16	G3	77	500	8 : 1	79

1) Indicated flange sizes apply for output drive types A and B1. Refer to separate dimension sheets for further output drive types.
2) Indicated weight includes SAV multi-turn actuator with 3-phase AC motor, electrical connection in standard version, output drive type B1 and handwheel.
3) Stem diameter for rising stem in combination with AUMA stem protection tube made of PMMA max. 30 mm.

Features and functions

Type of duty	Standard:	Short-time duty S2- 15 min, classes A and B according to EN ISO 22153
	Option:	Short-time duty S2- 30 min, classes A and B according to EN ISO 22153
	For 100 % nominal voltage and +40 °C ambient temperature and at run torque load at maximum output speed.	
Motors	3-phase AC asynchronous squirrel-cage motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	
Mains voltage, mains frequency	For available mains voltage and mains frequency, refer to table on page 1. Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %	
Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized
Motor protection	Standard:	Thermoswitches (NC)
	Option:	PTC thermistors (according to DIN 44082)

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Technical data Multi-turn actuators for open-close duty

Features and functions		
Self-locking	Self-locking: Speed ranges 6 – 60 rpm and 12 – 120 rpm NOT self-locking: Speed range variant 24 – 240 rpm Applications of NON self-locking speed variants with pulling loads (like protective weirs, fishbelly flap gates and sluice gates, etc.) on request.	
	Multi-turn actuators are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.	
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC or 380 – 480 V AC
	Power depending on the size 12.5 – 25 W	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
	Option:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Option:	Terminals or crimp connection Gold-plated control plug (sockets and plugs)
Threads for cable entries	Standard:	Metric threads
	Option:	Pg-threads, NPT-threads, G-threads
Terminal plan	TPA00R1AA-101-000 (basic version)	
Valve attachment	Standard:	B1 according to EN ISO 5210
	Option:	A, B2, B3, B4, C, D according to EN ISO 5210 A, B, D, E according to DIN 3210 C according to DIN 3338
	Special valve attachments: AF, AK, AG, B3D, ED, DD, IB1, IB3 A prepared for permanent lubrication of stem	

Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED Turns per stroke: 2 to 500 (standard) or 2 to 5,000 (option)	
	Standard:	Single switch (1 NC and 1 NO) for each end position, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switches galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switches galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switch (1 NC and 1 NO) silver contact (Ag) for each direction, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each direction, switches galvanically isolated
Switch contact material	Standard:	Silver (Ag)
	Options:	Gold (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (option)	Potentiometer or 0/4 – 20 mA (electronic position transmitter)	
Mechanical position indicator (option)	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication	Blinker transmitter	
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC	

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Technical data Multi-turn actuators for open-close duty

Electronic control unit (option)		
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG) Turns per stroke: 1 to 500 (standard) or 10 to 5,000 (option)	
Position feedback signal	Via actuator controls	
Torque feedback signal	Via actuator controls	
Mechanical position indicator (option)	Continuous self-adjusting indication with symbols OPEN and CLOSED	
Running indication	Blinking signal via actuator controls	
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC	

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +70 °C –60 °C to +60 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	IP68 with AUMA 3-phase AC motor For special motors differing enclosure protection available (refer to motor name plate)
	Option:	DS terminal compartment additionally sealed against interior of actuator (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz (AUMA NORM) 1 g, 10 to 200 Hz (for actuators with ACV 01.2 actuator controls) Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. They are not valid in combination with gearboxes.	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
		KX-G : same as KX, however aluminium-free version (outer parts)
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA multi-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Noise level	< 72 dB (A)	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Dimensions SAV 07.2 – SAV 16.2/SARV 07.2 – SARV 16.2 with ACV 01.2 Electrical data SAV 07.2 – SAV 16.2 Technical data ACV 01.2

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

SAV 07.2-UW – SAV 16.2-UW
for continuous underwater use
Technical data Multi-turn actuators for open-close duty

General information

Variable speed multi-turn actuators for continuous underwater use require ACV actuator controls. Actuator controls are mounted on a wall bracket and are not immersed. A special cable set for connection between actuator and actuator controls is required.

Type of duty S2 - 15 min

Type	Output speed rpm	Torque range[1]		Run torque[2]	Number of starts	Available mains voltage/mains frequency			
						1-phase AC		3-phase AC	
	50 Hz	Min. [Nm]	Max.[3]. [Nm]	Max. [Nm]	Starts Max. [1/h]	110 V – 120 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	380 V – 480 V/ 50 – 60 Hz
SAV 07.2-UW	6 – 60	10	30	11	60	■ 4)	■	■	■
	12 – 120					■	■	■	■
	24 – 240		25	10		■	■	■	■
SAV 07.6-UW	6 – 60	20	60	21	60	■	■	■	■
	12 – 120					■	■	■	■
	24 – 240		50	18		■	■	■	■
SAV 10.2-UW	6 – 60	40	120	42	60	● 5)	■	■	■
	12 – 120					–	■	■	■
	24 – 240		100	35		–	■	■	■
SAV 14.2-UW	6 – 60	100	250	88	60	–	■	■	■
	12 – 120					–	●	●	■
	24 – 240		200	70		–	–	▲ 6)	■
SAV 14.6-UW	6 – 60	200	500	175	60	–	–	▲	■
	12 – 120					–	–	–	●
	24 – 240		400	140		–	–	–	●
SAV 16.2-UW	6 – 60	400	1,000	350	60	–	–	–	●

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Permissible average torque for 15 min or 30 min running time and at maximum output speed.
3) Maximum torque to approx. 50 % of maximum output speed
4) Square = Without restriction to +70 °C ambient temperature
5) Circle = For ambient temperatures exceeding +40 °C, restrictions may occur for Maximum permissible run torque, mode of operation and running time. Detailed information on request.
6) Triangle= Special sizing on request

Type of duty S2 - 30 min

Type	Output speed rpm	Torque range[1]		Run torque[2]	Number of starts	Available mains voltage/mains frequency			
						1-phase AC		3-phase AC	
	50 Hz	Min. [Nm]	Max.[3]. [Nm]	Max. [Nm]	Starts Max. [1/h]	110 V – 120 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	380 V – 480 V/ 50 – 60 Hz
SAV 07.2-UW	6 – 60	10	20	8	60	■ 4)	■	■	■
	12 – 120					■	■	■	■
	24 – 240			6		■	■	■	■
SAV 07.6-UW	6 – 60	20	40	15	60	● 5)	■	■	■
	12 – 120					●	■	■	■
	24 – 240		30	13		●	■	■	■
SAV 10.2-UW	6 – 60	40	90	30	60	▲ 6)	■	■	■
	12 – 120					–	■	■	■
	24 – 240		70	25		–	■	■	■
SAV 14.2-UW	6 – 60	100	180	63	60	–	■	■	■
	12 – 120					–	●	●	■
	24 – 240		140	49		–	–	▲	■

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Type of duty S2 - 30 min

Type	Output speed rpm	Torque range[1]		Run torque[2]	Number of starts	Available mains voltage/mains frequency			
						1-phase AC		3-phase AC	
	50 Hz	Min. [Nm]	Max.[3]. [Nm]	Max. [Nm]	Starts Max. [1/h]	110 V – 120 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	380 V – 480 V/ 50 – 60 Hz
SAV 14.6-UW	6 – 60	200	360	123	60	–	–	▲	■
	12 – 120					–	–	–	●
	24 – 240		290	102		–	–	–	●
SAV 16.2-UW	6 – 60	400	710	249	60	–	–	–	●

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Permissible average torque for 15 min or 30 min running time and at maximum output speed.
3) Maximum torque to approx. 50 % of maximum output speed
4) Square = Without restriction to +70 °C ambient temperature
5) Circle = For ambient temperatures exceeding +40 °C, restrictions may occur for Maximum permissible run torque, mode of operation and running time. Detailed information on request.
6) Triangle= Special sizing on request

Valve attachments and weights

Type	Output speed rpm	Valve attachment[1]		Handwheel		Weight[2]
		Standard EN ISO 5210	Option DIN 3210	Ø [mm]	Reduction ratio	approx. [kg]
SAV 07.2-UW	6 – 60	F07 F10	– G0[3]	160	8 : 1	26
	12 – 120				8 : 1	
	24 – 240				4 : 1	
SAV 07.6-UW	6 – 60	F07 F10	– G0[3]	160	8 : 1	27
	12 – 120				8 : 1	
	24 – 240				4 : 1	
SAV 10.2-UW	6 – 60	F10	G0[3]	200	8 : 1	33
	12 – 120				8 : 1	
	24 – 240				4 : 1	
SAV 14.2-UW	6 – 60	F14	G1/2	315	8 : 1	58
	12 – 120				8 : 1	
	24 – 240				4 : 1	
SAV 14.6-UW	6 – 60	F14	G1/2	400	8 : 1	62
	12 – 120				8 : 1	
	24 – 240				4 : 1	
SAV 16.2-UW	6 – 60	F16	G3	500	8 : 1	88

1) Indicated flange sizes apply for output drive type B1. Refer to separate dimension sheets for further output drive types.
2) Indicated weight includes multi-turn actuator with 3-phase AC motor, electrical connection with cable glands and output drive type B1.
3) G0 valve attachment is designed without spigot hub.

Features and functions

Type of duty	Standard:	Short-time duty S2- 15 min, classes A and B according to EN ISO 22153
	Option:	Short-time duty S2- 30 min, classes A and B according to EN ISO 22153
	For 100 % nominal voltage and +40 °C ambient temperature and at run torque load at maximum output speed.	
Motors	3-phase AC asynchronous squirrel-cage motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	
Mains voltage, mains frequency	For available mains voltage and mains frequency, refer to table on page 1. Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %	
Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized
Motor protection	Standard:	Thermoswitches (NC)
	Option:	PTC thermistors (according to DIN 44082)

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

Features and functions		
Self-locking	Self-locking: Speed ranges 6 – 60 rpm and 12 – 120 rpm NOT self-locking: Speed range variant 24 – 240 rpm Applications of NON self-locking speed variants with pulling loads (like protective weirs, fishbelly flap gates and sluice gates, etc.) on request.	
	Multi-turn actuators are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.	
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC or 380 – 480 V AC
Manual operation (option)	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	The AUMA plug/socket connector is part of the cable set with wall bracket which must be ordered separately and which is customised for connection. Terminal compartment additionally sealed against interior (double sealed).	
Terminal plan	TPA00R100-0I1-000 (basic version)	
Valve attachment	Standard:	B1 according to EN ISO 5210
	Option:	B3, B4, D according to EN ISO 5210; B2 on request B, D, E according to DIN 3210
	Special valve attachments: B3D, DD	

Electronic control unit	
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions		
Use	For continuous underwater use as well as indoor and outdoor use.	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	–30 °C to +70 °C	
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	Increased enclosure protection IP68-C15. The maximum head of water is 15 m.
	Options:	Increased enclosure protection IP68-C60. The maximum head of water is 60 m. In combination with handwheel permissible head of water of more than 15 m on request.
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz (AUMA NORM) Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. They are not valid in combination with gearboxes.	
Corrosion protection	KX-G:	Suitable for use in freshwater (IM1), seawater (Im2) and on seafloor (Im3), aluminium-free version (outer parts).
Coating	Two-layer powder coating with additional wet painting	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA multi-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Noise level	< 72 dB (A)	

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Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Dimensions SA 07.2-UW – SA 16.2-UW/SAR 07.2-UW – SA 16.2-UW; SAV 07.2-UW – SAV 16.2-UW/SARV 07.2-UW – SARV 16.2-UW Electrical data SAV 07.2 – SAV 16.2 Technical data ACV 01.2

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Technical data Multi-turn actuators for modulating duty

General information

Multi-turn actuators of the SARV .2 type range with variable speeds. AUMA actuator controls of ACV .2 type are required to change the output speed.

Type of duty S4 - 25 %

Type	Output speed rpm	Torque range[1]		Modulating torque[2]	Number of starts	Available mains voltage/mains frequency			
						1-phase AC		3-phase AC	
	50 Hz	Min. [Nm]	Max.[3]. [Nm]	Max. [Nm]	Starts Max. [1/h]	110 V – 120 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	380 V – 480 V/ 50 – 60 Hz
SARV 07.2	6 – 60	15	30	15	1,500	■ [4]	■	■	■
	12 – 120					■	■	■	■
	24 – 240		25		1,200	■	■	■	■
SARV 07.6	6 – 60	30	60	30	1,500	■	■	■	■
	12 – 120			20		■	■	■	■
	24 – 240		50		1,200	■	■	■	■
SARV 10.2	6 – 60	60	120	60	1,500	● [5]	■	■	■
	12 – 120			50		–	■	■	■
	24 – 240		100		1,200	–	■	■	■
SARV 14.2	6 – 60	120	250	120	1,200	–	■	■	■
	12 – 120			100		–	●	●	■
	24 – 240		200		600	–	–	▲ [6]	■
SARV 14.6	6 – 60	250	500	175	1,200	–	–	▲	■
	12 – 120			150		–	–	–	●
	24 – 240		400		600	–	–	–	●
SARV 16.2	6 – 60	500	1,000	350	900	–	–	–	●

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Maximum torque for modulating duty.
3) Maximum torque to approx. 50 % of maximum output speed
4) Square = Without restriction to +70 °C ambient temperature
5) Circle = For ambient temperatures exceeding +40 °C, restrictions may occur for Maximum permissible run torque, mode of operation and running time. Detailed information on request.
6) Triangle= Special sizing on request

Type of duty S4 - 50 %

Type	Output speed rpm	Torque range[1]		Modulating torque[2]	Number of starts	Available mains voltage/mains frequency			
						1-phase AC		3-phase AC	
	50 Hz	Min. [Nm]	Max.[3]. [Nm]	Max. [Nm]	Starts Max. [1/h]	110 V – 120 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	380 V – 480 V/ 50 – 60 Hz
SARV 07.2	6 – 60	15	20	10	1,500	■ [4]	■	■	■
	12 – 120					■	■	■	■
SARV 07.6	6 – 60	30	40	20	1,500	● [5]	■	■	■
	12 – 120			15		●	■	■	■
SARV 10.2	6 – 60	60	90	45	1,500	▲ [6]	■	■	■
	12 – 120			35		–	■	■	■
SARV 14.2	6 – 60	120	180	90	1,200	–	■	■	■
	12 – 120			70		–	●	●	■
SARV 14.6	6 – 60	250	360	125	1,200	–	–	▲	■
	12 – 120			105		–	–	–	●
SARV 16.2	6 – 60	500	710	250	900	–	–	–	●

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Maximum torque for modulating duty.
3) Maximum torque to approx. 50 % of maximum output speed
4) Square = Without restriction to +70 °C ambient temperature
5) Circle = For ambient temperatures exceeding +40 °C, restrictions may occur for Maximum permissible run torque, mode of operation and running time. Detailed information on request.
6) Triangle= Special sizing on request

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Technical data Multi-turn actuators for modulating duty

Valve attachments and weights

Type	Output speed rpm	Valve attachment[1]			Handwheel		Weight[2]
		Standard EN ISO 5210	Option DIN 3210	Max. Ø rising stem [mm]	Ø [mm]	Reduction ratio	approx. [kg]
SARV 07.2	6 – 60	F07 F10	– G0[3]	26 34[4]	160	8 : 1	20
	12 – 120					8 : 1	
	24 – 240					4 : 1	
SARV 07.6	6 – 60	F07 F10	G0[3]	26 34[4]	160	8 : 1	21
	12 – 120					8 : 1	
	24 – 240					4 : 1	
SARV 10.2	6 – 60	F10	G0	40	200	8 : 1	25
	12 – 120					8 : 1	
	24 – 240					4 : 1	
SARV 14.2	6 – 60	F14	G1/2	58	315	8 : 1	48
	12 – 120					8 : 1	
	24 – 240					4 : 1	
SARV 14.6	6 – 60	F14	G1/2	58	400	8 : 1	53
	12 – 120					8 : 1	
	24 – 240					4 : 1	
SARV 16.2	6 – 60	F16	G3	77	500	8 : 1	79

1) Indicated flange sizes apply for output drive types A and B1. Refer to separate dimension sheets for further output drive types.
2) Indicated weight includes SARV multi-turn actuator with 3-phase AC motor, electrical connection in standard version, output drive type B1 and handwheel.
3) G0 valve attachment is designed without spigot hub.
4) Stem diameter for rising stem in combination with AUMA stem protection tube made of PMMA max. 30 mm.

Features and functions

Type of duty	Standard:	Intermittent duty S4 - 25 %, class C according to EN ISO 22153
	Option:	Intermittent duty S4 - 50 %, class C according to EN ISO 22153
	For 100 % nominal voltage and +40 °C ambient temperature and at modulating torque load.	
Motors	3-phase AC asynchronous squirrel-cage motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	
Mains voltage, mains frequency	For available mains voltage and mains frequency, refer to table on page 1. Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %	
Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized
Motor protection	Standard:	Thermoswitches (NC)
	Option:	PTC thermistors (according to DIN 44082)
Self-locking	Self-locking: Speed ranges 6 – 60 rpm and 12 – 120 rpm NOT self-locking: Speed range variant 24 – 240 rpm Applications of NON self-locking speed variants with pulling loads (like protective weirs, fishbelly flap gates and sluice gates, etc.) on request.	
	Multi-turn actuators are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.	
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC or 380 – 480 V AC
	Power depending on the size 12.5 – 25 W	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
	Option:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Option:	Terminals or crimp connection Gold-plated control plug (sockets and plugs)

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Technical data Multi-turn actuators for modulating duty

Features and functions		
Threads for cable entries	Standard:	Metric threads
	Option:	Pg-threads, NPT-threads, G-threads
Terminal plan	TPA00R1AA-001-000 (basic version)	
Valve attachment	Standard:	B1 according to EN ISO 5210
	Option:	A, B2, B3, B4, C, D according to EN ISO 5210 A, B, D, E according to DIN 3210 C according to DIN 3338
	Special valve attachments: AF, AK, AG, B3D, ED, DD, IB1, IB3 A prepared for permanent lubrication of stem	

Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED Turns per stroke: 2 to 500 (standard) or 2 to 5,000 (option)	
	Standard:	Single switch (1 NC and 1 NO) for each end position, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switches galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switches galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switch (1 NC and 1 NO) silver contact (Ag) for each direction, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each direction, switches galvanically isolated
Switch contact material	Standard:	Silver (Ag)
	Options:	Gold (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (option)	Potentiometer or 0/4 – 20 mA (electronic position transmitter)	
Mechanical position indicator (option)	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication (option)	Blinker transmitter	
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC	

Electronic control unit (option)	
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG) Turns per stroke: 1 to 500 (standard) or 10 to 5,000 (option)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Mechanical position indicator (option)	Continuous self-adjusting indication with symbols OPEN and CLOSED
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +70 °C –60 °C to +60 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	

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Technical data Multi-turn actuators for modulating duty

Service conditions		
Enclosure protection in accordance with IEC 60529	Standard:	IP68 with AUMA 3-phase AC motor For special motors differing enclosure protection available (refer to motor name plate)
	Option:	DS terminal compartment additionally sealed against interior of actuator (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz (AUMA NORM) 1 g, 10 to 200 Hz (for actuators with ACV 01.2 actuator controls) Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. They are not valid in combination with gearboxes.	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
		KX-G : same as KX, however aluminium-free version (outer parts)
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA multi-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Noise level	< 72 dB (A)	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Dimensions SAV 07.2 – SAV 16.2/SARV 07.2 – SARV 16.2 with ACV 01.2 Electrical data SARV 07.2 – SARV 16.2 Technical data ACV 01.2

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SARV 07.2-UW – SARV 16.2-UW
for continuous underwater use
Technical data Multi-turn actuators for modulating duty

General information

Variable speed multi-turn actuators for continuous underwater use require ACV actuator controls. Actuator controls are mounted on a wall bracket and are not immersed. A special cable set for connection between actuator and actuator controls is required.

Type of duty S4 - 25 %

Type	Output speed rpm	Torque range[1]		Modulating torque[2]	Number of starts	Available mains voltage/mains frequency			
						1-phase AC		3-phase AC	
	50 Hz	Min. [Nm]	Max.[3]. [Nm]	Max. [Nm]	Starts Max. [1/h]	110 V – 120 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	380 V – 480 V/ 50 – 60 Hz
SARV 07.2-UW	6 – 60	15	30	15	1,500	■ [4]	■	■	■
	12 – 120					■	■	■	■
	24 – 240		25		1,200	■	■	■	■
SARV 07.6-UW	6 – 60	30	60	30	1,500	■	■	■	■
	12 – 120			20		■	■	■	■
	24 – 240		50		1,200	■	■	■	■
SARV 10.2-UW	6 – 60	60	120	60	1,500	● [5]	■	■	■
	12 – 120			50		–	■	■	■
	24 – 240		100		1,200	–	■	■	■
SARV 14.2-UW	6 – 60	120	250	120	1,200	–	■	■	■
	12 – 120			100		–	●	●	■
	24 – 240		200		600	–	–	▲ [6]	■
SARV 14.6-UW	6 – 60	250	500	175	1,200	–	–	▲	■
	12 – 120			150		–	–	–	●
	24 – 240		400		600	–	–	–	●
SARV 16.2-UW	6 – 60	500	1,000	350	900	–	–	–	●

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Maximum torque for modulating duty.
3) Maximum torque to approx. 50 % of maximum output speed
4) Square = Without restriction to +70 °C ambient temperature
5) Circle = For ambient temperatures exceeding +40 °C, restrictions may occur for Maximum permissible run torque, mode of operation and running time. Detailed information on request.
6) Triangle= Special sizing on request

Type of duty S4 - 50 %

Type	Output speed rpm	Torque range[1]		Modulating torque[2]	Number of starts	Available mains voltage/mains frequency			
						1-phase AC		3-phase AC	
	50 Hz	Min. [Nm]	Max.[3]. [Nm]	Max. [Nm]	Starts Max. [1/h]	110 V – 120 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	220 V – 240 V/ 50 – 60 Hz	380 V – 480 V/ 50 – 60 Hz
SARV 07.2-UW	6 – 60	15	20	10	1,500	■ [4]	■	■	■
	12 – 120					■	■	■	■
SARV 07.6-UW	6 – 60	30	40	20	1,500	● [5]	■	■	■
	12 – 120			15		●	■	■	■
SARV 10.2-UW	6 – 60	60	90	45	1,500	▲ [6]	■	■	■
	12 – 120			35		–	■	■	■
SARV 14.2-UW	6 – 60	120	180	90	1,200	–	■	■	■
	12 – 120			70		–	●	●	■
SARV 14.6-UW	6 – 60	250	360	125	1,200	–	–	▲	■
	12 – 120			105		–	–	–	●
SARV 16.2-UW	6 – 60	500	710	250	900	–	–	–	●

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Maximum torque for modulating duty.
3) Maximum torque to approx. 50 % of maximum output speed
4) Square = Without restriction to +70 °C ambient temperature

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5) Circle = For ambient temperatures exceeding +40 °C, restrictions may occur for Maximum permissible run torque, mode of operation and running time. Detailed information on request.
6) Triangle= Special sizing on request

Valve attachments and weights

Type	Output speed rpm	Valve attachment[1]		Handwheel		Weight[2]
		Standard EN ISO 5210	Option DIN 3210	Ø [mm]	Reduction ratio	approx. [kg]
SARV 07.2-UW	6 – 60	F07 F10	– G0[3]	160	8 : 1	26
	12 – 120				8 : 1	
	24 – 240				4 : 1	
SARV 07.6-UW	6 – 60	F07 F10	– G0[3]	160	8 : 1	27
	12 – 120				8 : 1	
	24 – 240				4 : 1	
SARV 10.2-UW	6 – 60	F10	G0[3]	200	8 : 1	33
	12 – 120				8 : 1	
	24 – 240				4 : 1	
SARV 14.2-UW	6 – 60	F14	G1/2	315	8 : 1	58
	12 – 120				8 : 1	
	24 – 240				4 : 1	
SARV 14.6-UW	6 – 60	F14	G1/2	400	8 : 1	62
	12 – 120				8 : 1	
	24 – 240				4 : 1	
SARV 16.2-UW	6 – 60	F16	G3	500	8 : 1	88

1) Indicated flange sizes apply for output drive type B1. Refer to separate dimension sheets for further output drive types.
2) Indicated weight includes multi-turn actuator with 3-phase AC motor, electrical connection with cable glands and output drive type B1.
3) G0 valve attachment is designed without spigot hub.

Features and functions		
Type of duty	Standard:	Intermittent duty S4 - 25 %, class C according to EN ISO 22153
	Option:	Intermittent duty S4 - 50 %, class C according to EN ISO 22153
	For 100 % nominal voltage and +40 °C ambient temperature and at modulating torque load.	
Motors	3-phase AC asynchronous squirrel-cage motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	
Mains voltage, mains frequency	For available mains voltage and mains frequency, refer to table on page 1. Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %	
Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized
Motor protection	Standard:	Thermoswitches (NC)
	Option:	PTC thermistors (according to DIN 44082)
Self-locking	Self-locking: Speed ranges 6 – 60 rpm and 12 – 120 rpm NOT self-locking: Speed range variant 24 – 240 rpm Applications of NON self-locking speed variants with pulling loads (like protective weirs, fishbelly flap gates and sluice gates, etc.) on request.	
	Multi-turn actuators are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.	
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC or 380 – 480 V AC
Manual operation (option)	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	The AUMA plug/socket connector is part of the cable set with wall bracket which must be ordered separately and which is customised for connection. Terminal compartment additionally sealed against interior (double sealed).	
Terminal plan	TPA00R100-0I1-000 (basic version)	

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Features and functions		
Valve attachment	Standard:	B1 according to EN ISO 5210
	Option:	B3, B4, D according to EN ISO 5210; B2 on request B, D, E according to DIN 3210
	Special valve attachments: B3D, DD	

Electronic control unit	
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG) Turns per stroke: 1 to 500 (standard) or 10 to 5,000 (option)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions		
Use	For continuous underwater use as well as indoor and outdoor use.	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	–30 °C to +70 °C	
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	Increased enclosure protection IP68-C15. The maximum head of water is 15 m.
	Options:	Increased enclosure protection IP68-C60. The maximum head of water is 60 m. In combination with handwheel permissible head of water of more than 15 m on request.
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz (AUMA NORM) Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. They are not valid in combination with gearboxes.	
Corrosion protection	KX-G:	Suitable for use in freshwater (IM1), seawater (Im2) and on seafloor (Im3), aluminium-free version (outer parts).
Coating	Two-layer powder coating with additional wet painting	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA multi-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Noise level	< 72 dB (A)	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Dimensions SA 07.2-UW – SA 16.2-UW/SAR 07.2-UW – SA 16.2-UW; SAV 07.2-UW – SAV 16.2-UW/SARV 07.2-UW – SARV 16.2-UW Electrical data SARV 07.2 – SARV 16.2 Technical data ACV 01.2

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General information

AUMA NORM part-turn actuators require external controls. For the SQ type range, AUMA offers AM and AC actuator controls. These can also easily be mounted to the actuator at a later date.

Type	Operating times for 90° in seconds		Torque range[1]		Number of starts	Valve attachment		Valve shaft			Handwheel		Weight
	50 Hz	60 Hz	Min. [Nm]	Max. [Nm]	Starts Max. [1/h]	Standard EN ISO 5211	Option EN ISO 5211	Cylindrical Max. [Nm]	Square Max. [Nm]	Two-flat Max. [Nm]	Ø [mm]	Turns for 90°	approx. [kg]
SQ 05.2	4	3	50	150	60	F05/F07	F10	25.4	22	22	160	11	21[2] 27[3]
	5.6	4.5										16	
	8	6										11	
	11	9										16	
	16	12										11	
	22	17										16	
	32	25										11	
	63	50										11	
SQ 07.2	4	3	100	300	60	F05/F07	F10	25.4	22	22	160	11	21[2] 27[3]
	5.6	4.5										16	
	8	6										11	
	11	9										16	
	16	12										11	
	22	17										16	
	32	25										11	
	63	50										11	
SQ 10.2	8	6	200	450	60	F10	F12	38	30	27	200	11	26[2] 31[3]
	11	9		600								15	
	16	12										11	
	22	17										15	
	32	25										11	
	42	35										15	
	63	50										11	
SQ 12.2	11	9	400	900	60	F12	F14	50	36	41	200	30	35[2] 43[3]
	16	12										22	
	22	17		1,200								30	
	32	25										22	
	45	35										30	
	63	50										22	
	84	70										30	
	125	108										22	
SQ 14.2	24	20	800	1,800	60	F14	F16	60	46	46	200	70	44[2] 55[3]
	36	30										51	
	48	40		2,400								70	
	72	60										51	
	100	85										70	

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Indicated weight includes AUMA NORM part-turn actuator with 3-phase AC motor, electrical connection in standard version, unbored coupling and handwheel
3) Indicated weight includes AUMA NORM part-turn actuator with 3-phase AC motor electrical connection in standard version, unbored coupling and handwheel, including base and lever.

Features and functions

Type of duty	Short-time duty S2 - 15 min, classes A and B according to EN ISO 22153
	For nominal voltage, +40 °C ambient temperature and at load with 35 % of the max. torque.
Motors	3-phase AC asynchronous squirrel-cage motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6

Features and functions		
Mains voltage, mains frequency	Standard voltages: Refer to table: 3-phase AC standard voltages [▶ 2] Special voltages: Refer to table: 3-phase AC special voltages [▶ 2] Further voltages on request Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %	
Overvoltage category	Category III according to IEC 60364-4-44	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized
Motor protection	Standard:	Thermoswitches (NC)
	Option:	PTC thermistors (according to DIN 44082) PTC thermistors additionally require a suitable tripping device in the actuator controls.
Self-locking	Yes (actuator are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.)	
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC or 380 – 480 V AC
	Power 12.5 W	
Swing angle	Standard:	Adjustable between 75° and < 105°
	Options:	15° to < 45°, 45° to < 75°, 105° to < 135°, 135° to < 165°, 165° to < 195°, 195° to < 225°
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
	Options:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	Terminals or crimp-type connection Gold-plated control plug (sockets and pins)
Threads for cable entries	Standard:	Metric threads
	Option:	Pg threads, NPT threads, G threads
Wiring diagram	TPA00R1AA-101-000 (basic version)	
Splined coupling for connection to the valve shaft	Standard:	Coupling without bore
	Options:	Machined coupling with bore and keyway, square bore or bore with two-flats according to EN ISO 5211
Valve attachment	Dimensions according to EN ISO 5211 without spigot	

Table 1: 3-phase AC standard voltages

Voltages/frequencies											
Volt [3~]	220	230	380	380	400	400	415	440	460	480	500
Hz	60	50	50	60	50	60	50	60	60	60	50

Table 2: 3-phase AC special voltages

Voltages/frequencies							
Volt [3~]	220	440	525	575	600	660	690
Hz	50	50	50	50	60	50	50

With base and lever (option)	
Swing lever	Made of spheroidal cast iron with two or three bores for fixing a lever arrangement. Considering the installation conditions, the lever may be mounted to the output shaft in any desired position.
Ball joints (option)	Two ball joints matching the lever, including lock nuts and two welding nuts, suitable for pipe according to dimension sheet.
Fixing	Base and four holes for fastening screws

Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED	
	Standard:	Single switch (1 NC and 1 NO) for each end position, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switch galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switch galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation

Electromechanical control unit		
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switch (1 NC and 1 NO) for each direction, not galvanically isolated
	Option:	Tandem switch (2 NC and 2 NO) for each direction, switch galvanically isolated
Switch contact materials	Standard:	Silver (Ag)
	Option:	Gold (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20mA (electronic position transmitter)	
Mechanical position indication	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication	Blinker transmitter	
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC
	Options:	24 – 48 V AC/DC or 380 – 400 V AC
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with AM or AC actuator controls.	
Electronic control unit (option, only in combination with AC actuator controls)		
Non-intrusive settings	Magnetic limit and torque transmitter (MWG)	
Position feedback signal	Via actuator controls	
Torque feedback signal	Via actuator controls	
Mechanical position indicator	Continuous self-adjusting indication with symbols OPEN and CLOSED	
Running indication	Blinking signal via actuator controls	
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC	
Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +80 °C –60 °C to +60 °C 0 °C to +120 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	IP68 with AUMA 3-phase AC motor
	Option:	Terminal compartment additionally sealed against interior of actuator (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz (AUMA NORM), 1 g, 10 to 200 Hz (for actuators with AM or AC actuator controls) Resistant to vibration during start-up or for failures of the plant. Valid for part-turn actuators in version AUMA NORM and in version with actuator controls, each with AUMA plug/socket connector. Not valid in combination with gearboxes.	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Options:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution. KX-G: Same as KX, however aluminium-free version (outer parts)
Coating	Double layer powder coating	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA part-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Sound pressure level	< 72 dB (A)	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Dimensions SQ 05.2 – SQ 14.2/SQR 05.2 – SQR 14.2 Electrical data SQ 05.2 – SQ 14.2

SQ 05.2 – SQ 14.2
AUMA NORM
Technical data Part-turn actuators for open-close duty with 1-phase AC motors

Type	Operating time for 90° in seconds		Torque range[1]		Valve attachment		Valve shaft			Handwheel		Weight
	50 Hz	60 Hz	Min. [Nm]	Max. [Nm]	Standard EN ISO 5211	Option EN ISO 5211	Cylindrical max. [mm]	Square max. [mm]	Two-flat max. [mm]	Ø mm	Turns for 90°	approx. [kg]
SQ 05.2	4	3	50	150	F05/F07	F10	25.4	22	22	160	11	23[2] 29[3]
	5.6	4.5									16	
	8	6									11	
	11	9									16	
	16	12									11	
	22	17									16	
	32	25									11	
	63	50									11	
SQ 07.2	4	3	100	300	F05/F07	F10	25.4	22	22	160	11	23[2] 29[3]
	5.6	4.5									16	
	8	6									11	
	11	9									16	
	16	12									11	
	22	17									16	
	32	25									11	
	63	50									11	
SQ 10.2	8	6	200	450	F10	F12	38	30	27	200	11	28[2] 32[3]
	11	9									15	
	16	12		600							11	
	22	17									15	
	32	25									11	
	42	35									15	
	63	50									11	
SQ 12.2	11	9	400	900	F12	F14	50	36	41	200	30	37[2] 45[3]
	16	12									22	
	22	17		1,200							30	
	32	25									22	
	45	35									30	
	63	50									22	
	84	70									30	
	125	108									22	
SQ 14.2	24	20	800	1,800	F14	F16	60	46	46	200	70	46[2] 57[3]
	36	30									51	
	48	40		2,400							70	
	72	60									51	
	100	85									70	

General information

Part-turn actuators AUMA NORM require external controls.
For sizes SQ 05.2 – SQ 14.2, AUMA offer AM or AC actuator controls. These can also easily be mounted to the actuator at a later date.

Notes on table	
1) Torque range	The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Weight	Indicated weight includes part-turn actuator AUMA NORM with 1-phase AC motor, electrical connection in standard version, unbored coupling and handwheel
3) Weight with base and lever	Indicated weight includes AUMA NORM part-turn actuator with 1-phase AC motor, electrical connection in standard version, and handwheel, including base and lever

Features and functions	
Type of duty	Short-time duty S2 - 10 min, classes A and B according to EN 15714-2
	For nominal voltage, +40 °C ambient temperature and at load with 35 % of the max. torque
Motors	1-phase AC motor with integral permanent split capacitor (PSC), type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Mains voltage, mains frequency	Standard voltages:	
	1-phase AC current Voltages/frequencies	
	Volt: 110 – 120 / 110 – 120 / 220 – 240 / 220 – 240	
	Hz: 50 / 60 / 50 / 60	
	Further voltages on request Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %	
Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized
Motor protection	Standard:	Thermoswitches (NC)
	Option:	PTC thermistors (according to DIN 44082) PTC thermistors additionally require a suitable tripping device in the actuator controls.
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC
	Power:	12.5 W
Swing angle	Standard:	Adjustable between 75° and < 105°
	Options:	15° to < 45°, 45° bis < 75°, 105° to < 135°, 135° to < 165°, 165° to < 195°, 195° to < 225°
Self-locking	Yes (Part-turn actuators are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.)	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation	
	Options:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact) For further information refer to separate data sheet Technical data for switches.	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	Terminals or crimp-type connection Gold-plated control plug (sockets and pins)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Terminal plan	TPA01R1AA-101-000, 1-phase AC motor with permanent split capacitor	
Splined coupling for connection to the valve shaft	Standard:	Coupling without bore
	Options:	Machined coupling with bore and keyway, square bore or bore with two-flats according to EN ISO 5211
Valve attachment	Dimensions according to EN ISO 5211 without spigot	

With base and lever (option)	
Swing lever	Made of spheroidal cast iron with two or three bores for fixing a lever arrangement. Considering the installation conditions, the lever may be mounted to the output shaft in any desired position.
Ball joints (option)	Two ball joints matching the lever, including lock nuts and two welding nuts, suitable for pipe according to dimension sheet
Fixing	Base with four holes for fastening screws

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Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED Turns per stroke: 2 to 500 (standard) or 2 to 5,000 (option)	
	Standard:	Single switch (1 NC and 1 NO) for each end position, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switch galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switch galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switch (1 NC and 1 NO) for each direction, not galvanically isolated
	Option:	Tandem switch (2 NC and 2 NO) for each direction, switch galvanically isolated
Switch contact materials	Standard:	Silver (Ag)
	Option:	Gold (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20mA (electronic position transmitter)	
Mechanical position indicator	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication	Blinker transmitter	
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC
	Options:	24 – 48 V DC/DC
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with the AM or AC actuator controls.	

Electronic control unit (option, only in combination with AC actuator controls)	
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Mechanical position indicator	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +70 °C –60 °C to +60 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection according to EN 60529	Standard:	IP68 with AUMA 1-phase AC motor
	Option:	Terminal compartment additionally sealed against interior of actuator (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Duration of continuous immersion in water: Max. 96 hours • Up to 10 operations during continuous immersion	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz (AUMA NORM), 1 g, 10 to 200 Hz (for actuators with AM or AC integral controls) Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. Valid for part-turn actuators in version AUMA NORM and in version with integral actuator controls, each with AUMA plug/socket connector. Not valid in combination with gearboxes.	

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Corrosion protection	Standard:	KS	Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Options:	KX	Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
		KX-G	Same as KX, however aluminium-free version (outer parts)
Coating	Double layer powder coating Two-component iron-mica combination		
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)	
	Option:	Available colours on request	
Lifetime	AUMA part-turn actuators meet or exceed the lifetime requirements of EN 15714-2. Detailed information can be provided on request.		

Further information	
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for industrial valve automation Electrical data Part-turn actuators SQ 05.2 – SQ 14.2 with 1-phase AC motor Technical data Electronic position transmitter/potentiometer Technical data for switches Technical data Sizing of reduction gearings

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 10.2
AUMA NORM

Technical data Part -turn actuators for open-close duty with DC motors of type range VK

Type	Operating time for 90° in seconds[1]	Torque range[2] Min. [Nm]	Torque range[2] Max. [Nm]	Valve attachment Standard EN ISO 5211	Valve attachment Option EN ISO 5211	Valve shaft Cylindrical max. [mm]	Valve shaft Square max. [mm]	Valve shaft Two-flat max. [mm]	Handwheel Ø mm	Handwheel Turns for 90°	Weight approx. [kg]
SQ 05.2	3.5 – 5	50	150	F05/F07	F10	25.4	22	22	160	11	22[3] 28[4]
	5 – 6.5									16	
	5 – 8									11	
	7.5 – 10.5									16	
	11 – 13.5									11	
	16 – 18.5									16	
SQ 07.2	11 – 16	100	300	F05/F07	F10	25.4	22	22	160	11	22[3]
	16 – 21									16	28[4]
SQ 10.2	15 – 28	200	450	F10	F12	38	30	27	200	11	27[3] 32[4]

General information
AUMA NORM part-turn actuators require external controls. For sizes SQ 05.2 – SQ 10.2, AUMA offers AM or AC actuator controls. These can also easily be mounted to the actuator at a later date.

Notes on table	
1) Operating time	The operating speed is reduced with increasing torque.
2) Torque range	The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
3) Weight	Indicated weight includes AUMA NORM part-turn actuator with 3-phase AC motor, standard electrical connection, unbored coupling and handwheel
4) Weight with base and lever	Indicated weight includes AUMA NORM part-turn actuator with 3-phase AC motor, standard electrical connection, and handwheel, including base and lever

Features and functions		
Type of duty	Short-time duty S2 - 15 min, classes A and B according to EN 15714-2	
	For nominal voltage, +40 °C ambient temperature and at load with 35 % of the max. torque	
Motors	DC shunt motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	
Mains voltage, mains frequency	24 V DC current Permissible variation of mains voltage: ±10 %	
Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	Standard:	F, tropicalized
Motor protection	Standard:	Thermoswitches (NC)
Swing angle	Standard:	Adjustable between 75° and < 105°
	Options:	15° to < 45°, 45° bis < 75°, 105° to < 135°, 135° to < 165°, 165° to < 195°, 195° to < 225°
Self-locking	Yes (Part-turn actuators are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.)	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation	
	Options:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact) For further information refer to separate data sheet Technical data for switches.	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	Terminals or crimp-type connection Gold-plated control plug (sockets and pins)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Terminal plan	TPA37R1AA-001-000	

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Splined coupling for connection to the valve shaft	Standard:	Coupling without bore
	Options:	Machined coupling with bore and keyway, square bore or bore with two-flats according to EN ISO 5211
Valve attachment	Dimensions according to EN ISO 5211 without spigot	

With base and lever (option)		
Swing lever	Made of spheroidal cast iron with two or three bores for fixing a lever arrangement. Considering the installation conditions, the lever may be mounted to the output shaft in any desired position.	
Ball joints (option)	Two ball joints matching the lever, including lock nuts and two welding nuts, suitable for pipe according to dimension sheet	
Fixing	Base with four holes for fastening screws	

Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED Turns per stroke: 2 to 500 (standard) or 2 to 5,000 (option)	
	Standard:	Single switch (1 NC and 1 NO) for each end position, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switch galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switch galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switch (1 NC and 1 NO) for each direction, not galvanically isolated
	Option:	Tandem switch (2 NC and 2 NO) for each direction, switch galvanically isolated
Switch contact materials	Standard:	Silver (Ag)
	Option:	Gold (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20mA (electronic position transmitter)	
Mechanical position indicator	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication	Blinker transmitter	
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC
	Options:	24 – 48 V AC/DC or 380 – 400 V AC
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with the AM or AC actuator controls.	

Electronic control unit (option, only in combination with AC actuator controls)	
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Mechanical position indicator	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +80 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Enclosure protection according to EN 60529	Standard:	IP68 with AUMA DC motor	
	Option:	Terminal compartment additionally sealed against interior of actuator (double sealed)	
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Duration of continuous immersion in water: Max. 96 hours • Up to 10 operations during continuous immersion		
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)		
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz (AUMA NORM), 1 g, 10 to 200 Hz (for actuators with integral actuator controls AM or AC) Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. Valid part-turn actuators in AUMA NORM version (with AUMA plug/socket connector, without actuator controls).		
Corrosion protection	Standard:	KS	Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Options:	KX	Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination		
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)	
	Option:	Available colours on request	
Lifetime	AUMA part-turn actuators meet or exceed the lifetime requirements of EN 15714-2. Detailed information can be provided on request.		

Further information	
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for industrial valve automation Dimensions Part-turn actuators SQ 05.2 – SQ 10.2/SQR 05.2 – SQR 10.2 Electrical data Part-turn actuators SQ 05.2 – SQ 14.2 with DC motors Technical data Electronic position transmitter/potentiometer Technical data for switches Technical data Sizing of reduction gearings

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

General information

AUMA NORM part-turn actuators require external controls. For the SQR type range, AUMA offers AM and AC actuator controls. These can also easily be mounted to the actuator at a later date.

Type	Operating times for 90° in seconds		Torque range[1]			Modulating torque[2]		Number of starts	Pulse duration[3]	Pulse duration on reversal[4]	Valve attachment		Valve shaft			Handwheel		Weight
	50 Hz	60 Hz	Min. [Nm]	S4-25% Max. [Nm]	S4-50% Max. [Nm]	S4-25% Max. [Nm]	S4-50% Max. [Nm]	Starts Max. [1/h]	[ms]	[ms]	Standard EN ISO 5211	Option EN ISO 5211	Cylindrical Max. [Nm]	Square Max. [Nm]	Two-flat Max. [Nm]	Ø [mm]	Turns for 90°	approx. [kg]
SQR 05.2	8	6	75	150	110	75	55	1,500	50	160	F05/ F07	F10	25.4	22	22	160	11	21[5] 27[6]
	11	9								200							16	
	16	12								265							11	
	22	17								350							16	
	32	25								480							11	
	63	50			–		–			800							11	
SQR 07.2	8	6	150	300	220	150	110	1,500	50	160	F05/ F07	F10	25.4	22	22	160	11	21[5] 27[6]
	11	9								200							16	
	16	12								265							11	
	22	17								350							16	
	32	25								480							11	
	63	50			–		–			200							11	
SQR 10.2	11	9	300	600	420	300	210	1,500	50	200	F10	F12	38	30	27	200	15	26[5] 31[6]
	16	12								265							11	
	22	17								350							15	
	32	25								480							11	
	42	35								650							15	
	63	50								900							11	
SQR 12.2	16	12	600	900	630	450	315	1,500	50	180	F12	F14	50	36	41	200	22	35[5] 43[6]
	22	17		1,200	840	600	420			230							30	
	32	25								320							22	
	45	35								430							30	
	63	50								580							22	
	84	70								800							30	
	125	108								1 100							22	
SQR 14.2	36	30	1,200	1,800	1,260	900	630	1,500	50	250	F14	F16	60	46	46	200	51	44[5] 55[6]
	48	40		2,400	1,680	1,200	840			315							70	
	72	60								450							51	
	100	85								600							70	

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.

2) Maximum permissible torque for modulating duty.

3) For identical direction of rotation: Time duration for which the motor must be electrically powered until there is a movement at the output drive.

4) For reversal of rotation direction: Time duration for which the motor must be electrically powered until there is a movement at the output drive.

5) Indicated weight includes AUMA NORM part-turn actuator with 3-phase AC motor, electrical connection in standard version, unbored coupling and handwheel

6) Indicated weight includes AUMA NORM part-turn actuator with 3-phase AC motor electrical connection in standard version, unbored coupling and handwheel, including base and lever.

Features and functions

Type of duty	Standard:	Intermittent duty S4 - 25 %, class C according to EN ISO 22153
	Option:	Intermittent duty S4 - 50 %, class C according to EN ISO 22153
	For nominal voltage and +40 °C ambient temperature and at modulating torque load.	
Motors	3-phase AC asynchronous squirrel-cage motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	

Features and functions		
Mains voltage, mains frequency	Standard voltages: Refer to table: 3-phase AC standard voltages [▶ 2] Special voltages: Refer to table: 3-phase AC special voltages [▶ 2] Further voltages on request Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %	
Overvoltage category	Category III according to IEC 60364-4-44	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized
Motor protection	Standard:	Thermoswitches (NC)
	Option:	PTC thermistors (according to DIN 44082) PTC thermistors additionally require a suitable tripping device in the actuator controls.
Self-locking	Yes (actuator are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.)	
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC or 380 – 480 V AC
	Power 12.5 W	
Swing angle	Standard:	Adjustable between 75° and < 105°
	Options:	15° to < 45°, 45° to < 75°, 105° to < 135°, 135° to < 165°, 165° to < 195°, 195° to < 225°
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
	Options:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	Terminals or crimp-type connection Gold-plated control plug (sockets and pins)
Threads for cable entries	Standard:	Metric threads
	Option:	Pg threads, NPT threads, G threads
Wiring diagram	TPA00R1AA-001-000 (basic version)	
Splined coupling for connection to the valve shaft	Standard:	Coupling without bore
	Options:	Machined coupling with bore and keyway, square bore or bore with two-flats according to EN ISO 5211
Valve attachment	Dimensions according to EN ISO 5211 without spigot	

Table 1: 3-phase AC standard voltages

Voltages/frequencies											
Volt [3~]	220	230	380	380	400	400	415	440	460	480	500
Hz	60	50	50	60	50	60	50	60	60	60	50

Table 2: 3-phase AC special voltages

Voltages/frequencies							
Volt [3~]	220	440	525	575	600	660	690
Hz	50	50	50	50	60	50	50

With base and lever (option)		
Swing lever	Made of spheroidal cast iron with two or three bores for fixing a lever arrangement. Considering the installation conditions, the lever may be mounted to the output shaft in any desired position.	
Ball joints (option)	Two ball joints matching the lever, including lock nuts and two welding nuts, suitable for pipe according to dimension sheet.	
Fixing	Base and four holes for fastening screws	

Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED	
	Standard:	Single switch (1 NC and 1 NO) for each end position, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switch galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switch galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation

Electromechanical control unit		
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switch (1 NC and 1 NO) for each direction, not galvanically isolated
	Option:	Tandem switch (2 NC and 2 NO) for each direction, switch galvanically isolated
Switch contact materials	Standard:	Silver (Ag)
	Option:	Gold (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20mA (electronic position transmitter)	
Mechanical position indication	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication (option)	Blinker transmitter	
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC
	Options:	24 – 48 V AC/DC or 380 – 400 V AC
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with AM or AC actuator controls.	
Electronic control unit (option, only in combination with AC actuator controls)		
Non-intrusive settings	Magnetic limit and torque transmitter (MWG)	
Position feedback signal	Via actuator controls	
Torque feedback signal	Via actuator controls	
Mechanical position indicator	Continuous self-adjusting indication with symbols OPEN and CLOSED	
Running indication	Blinking signal via actuator controls	
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC	
Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +70 °C –60 °C to +60 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	IP68 with AUMA 3-phase AC motor
	Option:	Terminal compartment additionally sealed against interior of actuator (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz (AUMA NORM), 1 g, 10 to 200 Hz (for actuators with AM or AC actuator controls) Resistant to vibration during start-up or for failures of the plant. Valid for part-turn actuators in version AUMA NORM and in version with actuator controls, each with AUMA plug/socket connector. Not valid in combination with gearboxes.	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Options:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution. KX-G: Same as KX, however aluminium-free version (outer parts)
Coating	Double layer powder coating	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA part-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Dimensions SQ 05.2 – SQ 14.2/SQR 05.2 – SQR 14.2 Electrical data SQR 05.2 – SQR 14.2

SQR 05.2 – SQR 14.2
AUMA NORM

Technical data Part-turn actuators for modulating duty with 1-phase AC motors

Type	Operating time for 90° in seconds		Torque range[1]		Modulating torque[2]	Number of starts	Pulse duration[3]	Pulse duration on reversal[4]	Valve attachment		Valve shaft			Handwheel		Weight
	50 Hz	60 Hz	Min. [Nm]	Max. [Nm]	Max. [Nm]	Max. [1/h]	[ms]	[ms]	Standard EN ISO 5211	Option EN ISO 5211	Cylindrical max. [mm]	Square max. [mm]	Two-flat max. [mm]	Ø [mm]	Turns for 90°	approx. [kg]
SQR 05.2	8	6	75	150	75	1,500	50	160	F05/F07	F10	25.4	22	22	160	11	23[5] 29[6]
	11	9						200							16	
	16	12						265							11	
	22	17						350							16	
	32	25						480							11	
	63	50						800							11	
SQR 07.2	8	6	150	300	150	1,500	50	160	F05/F07	F10	25.4	22	22	160	11	23[5] 29[6]
	11	9						200							16	
	16	12						265							11	
	22	17						350							16	
	32	25						480							11	
	63	50						800							11	
SQR 10.2	11	9	300	600	300	1,500	50	200	F10	F12	38	30	27	200	15	28[5] 32[6]
	16	12						265							11	
	22	17						350							15	
	32	25						480							11	
	42	35						650							15	
	63	50						900							11	
SQR 12.2	16	12	600	900	450	1,500	50	180	F12	F14	50	36	41	200	22	37[5] 45[6]
	22	17		1,200	600			230							30	
	32	25						320							22	
	45	35						430							30	
	63	50						580							22	
	84	70						800							30	
	125	108						1,000							22	
SQR 14.2	36	30	1,200	1,800	900	1,500	50	250	F14	F16	60	46	46	200	51	46[5] 57[6]
	48	40		2,400	1,200			315							70	
	72	60						450							51	
	100	85						600							70	

General information

Part-turn actuators AUMA NORM require external controls.
For sizes SQR 05.2 – SQR 14.2, AUMA offer AM or AC actuator controls. These can also easily be mounted to the actuator at a later date.

Notes on table	
1) Torque range	The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Modulating torque	Maximum permissible torque for modulating duty
3) Pulse duration	For identical direction of rotation: time during which the motor must be electrically supplied until there is a movement at the output drive.
4) Pulse duration on reversal	For reversal of direction of rotation: time during which the motor must be electrically supplied until there is a movement at the output drive.
5) Weight	Indicated weight includes AUMA NORM part-turn actuator with 3-phase AC motor, electrical connection in standard version, unbored coupling and handwheel
6) Weight with base and lever	Indicated weight includes AUMA NORM part-turn actuator with 3-phase AC motor, electrical connection in standard version, and handwheel, including base and lever

Features and functions	
Type of duty	Intermittent duty S4 - 20 %, class C according to EN 15714-2
	For nominal voltage, +40 °C ambient temperature and at modulating torque load.
Motors	1-phase AC motor with integral permanent split capacitor (PSC), type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Mains voltage, mains frequency	Standard voltages: **1-phase AC current** Voltages/frequencies Volt: 110 – 120 | 110 – 120 | 220 – 240 | 220 – 240 Hz: 50 | 60 | 50 | 60 Further voltages on request Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %	
Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized
Motor protection	Standard:	Thermoswitches (NC)
	Option:	PTC thermistors (according to DIN 44082) PTC thermistors additionally require a suitable tripping device in the actuator controls.
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC
	Power:	12.5 W
Swing angle	Standard:	Adjustable between 75° and < 105°
	Options:	15° to < 45°, 45° bis < 75°, 105° to < 135°, 135° to < 165°, 165° to < 195°, 195° to < 225°
Self-locking	Yes (Part-turn actuators are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.)	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation	
	Options:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact) For further information refer to separate data sheet Technical data for switches.	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	Terminals or crimp connection Gold-plated control plug (sockets and plugs)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Terminal plan	TPA01R1AA-001-000 (Basic version)	
Splined coupling for connection to the valve shaft	Standard:	Coupling without bore
	Options:	Machined coupling with bore and keyway, square bore or bore with two-flats according to EN ISO 5211
Valve attachment	Dimensions according to EN ISO 5211 without spigot	

With base and lever (option)	
Swing lever	Made of spheroidal cast iron with two or three bores for fixing a lever arrangement. Considering the installation conditions, the lever may be mounted to the output shaft in any desired position.
Ball joints (option)	Two ball joints matching the lever, including lock nuts and two welding nuts, suitable for pipe according to dimension sheet
Fixing	Base with four holes for fastening screws

Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED	
	Standard:	Single switch (1 NC and 1 NO) silver contact (Ag) for each end position, not galvanically isolated
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switch galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switch galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation Gold plated contacts (Au), recommended for low voltage actuator controls

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Torque switching	Torque switching adjustable for directions OPEN and CLOSE		
	Standard:	Single switch (1 NC and 1 NO) silver contact (Ag) for each direction, not galvanically isolated	
	Options:	Tandem switch (2 NC and 2 NO) for each direction, switch galvanically isolated Gold plated contacts (Au), recommended for low voltage actuator controls	
Switch contact materials	Standard:	Silver (Ag)	
	Option:	Gold (Au), recommended for low voltage actuator controls	
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20mA (electronic position transmitter)		
Mechanical position indicator	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED		
Running indication (option)	Blinker transmitter		
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC	
	Options:	24 – 48 V DC/DC	
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with the AM or AC actuator controls.		

Electronic control unit (option, only in combination with AC actuator controls)	
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Mechanical position indicator	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions			
Use	Indoor and outdoor use permissible		
Mounting position	Any position		
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level on request		
Ambient temperature	Standard:	–30 °C to +70 °C	
	Options:	–40 °C to +70 °C –60 °C to +60 °C	
Enclosure protection according to EN 60529	Standard:	IP68 with AUMA 1-phase AC motor	
	Option:	Terminal compartment additionally sealed against interior of actuator (double sealed)	
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Duration of continuous immersion in water: Max. 96 hours • Up to 10 operations during continuous immersion • Modulating duty is not possible during continuous immersion		
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)		
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz (AUMA NORM), 1 g, 10 to 200 Hz (for actuators with AM or AC integral controls) Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. Valid for part-turn actuators in version AUMA NORM and in version with integral actuator controls, each with AUMA plug/socket connector. Not valid in combination with gearboxes.		
Humidity	Up to 100 % relative humidity across the entire permissible temperature range		
Corrosion protection	Standard:	KS	Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Options:	KX	Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
		KX-G	Same as KX, however aluminium-free version (outer parts)
Coating	Double layer powder coating Two-component iron-mica combination		

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Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA part-turn actuators meet or exceed the lifetime requirements of EN 15714-2. Detailed information can be provided on request.	

Further information	
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for industrial valve automation Electrical data Part-turn actuators SQR 05.2 – SQR 14.2 with 1-phase AC motor Technical data Electronic position transmitter/potentiometer Technical data for switches Technical data Sizing of reduction gearings

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical data Torques at different voltages for 3-phase AC motors
Short-time duty S2 - 15 min, intermittent duty S4 - 25 %

Type	Operating time for 90° in seconds		Motor			Tripping torque adjustable		Torque at stall torque of the motor (without considering inertia) at nominal voltage, overvoltage and undervoltage (... % U_N)							
	50 Hz	60 Hz	Power [kW]	Speed at 50 Hz [rpm]	Size	Min. [Nm]	Max. [Nm]	100 %	105 %	110 %	95 %	90 %	85 %	80 %	75 %
SQ 05.2	4[2)]	3[2)]	0.06	2,800	63	50	150	302	333	365	272	244	218	193	170
	5.6[2)]	4.5[2)]						349	385	423	315	283	252	224	196
	8	6	0.04	1,400	63			264	291	319	238	213	190	169	148
	11	9						301	332	364	272	244	218	193	169
	16	12	0.02	1,400	63			417	460	505	377	338	302	267	235
	22	17						473	522	573	427	383	342	303	266
	32	25	0.01	1,400	63			406	447	491	366	328	293	260	228
	63	50		700	63			444	489	537	400	359	320	284	249
SQ 07.2	4[2)]	3[2)]	0.12	2,800	63	100	300	554	611	670	500	449	400	354	311
	5.6[2)]	4.5[2)]						635	700	769	573	515	459	407	357
	8	6	0.06	1,400	63			525	578	635	473	425	379	336	295
	11	9						594	655	719	536	481	429	380	334
	16	12	0.03	1,400	63			595	656	720	537	482	430	381	335
	22	17						689	760	834	622	558	498	441	388
	32	25	0.01	1,400	63			547	604	662	494	443	396	350	308
	63	50		700	63			497	548	601	448	402	359	318	279
SQ 10.2	8[2)]	6[2)]	0.10	1,400	63	200	450	650	717	787	587	527	470	416	366
	11	9					600	847	934	1,025	764	686	612	542	476
	16	12	0.06	1,400	63			1,115	1,229	1,349	1,006	903	805	713	627
	22	17						1,448	1,596	1,752	1,307	1,173	1,046	927	814
	32	25	0.04	1,400	63			882	972	1,067	796	714	637	564	496
	45	35						1,171	1,291	1,417	1,057	948	846	749	659
	63	50	0.02	1,400	63			1,249	1,378	1,512	1,128	1,012	903	800	703
SQ 12.2	11[2)]	9[2)]	0.19	2,800	63	400	900	1,788	1,971	2,163	1,613	1,448	1,292	1,144	1,006
	16	12	0.10	1,400	63			1,300	1,433	1,573	1,173	1,053	939	832	731
	22	17					1,200	1,694	1,867	2,049	1,528	1,372	1,224	1,084	953
	32	25	0.06	1,400	63			2,230	2,458	2,698	2,012	1,806	1,611	1,427	1,254
	45	35						2,895	3,192	3,503	2,613	2,345	2,092	1,853	1,629
	63	50	0.04	1,400	63			1,764	1,945	2,134	1,592	1,429	1,274	1,129	992
	84	70						2,342	2,582	2,834	2,113	1,897	1,692	1,499	1,317
	125	108						2,499	2,755	3,024	2,255	2,024	1,805	1,599	1,406
SQ 14.2	24[2)]	20[2)]	0.19	2,800	63	800	1,800	3,701	4,080	4,478	3,340	2,997	2,674	2,368	2,082
	36	30	0.10	1,400	63			2,691	2,967	3,256	2,429	2,180	1,944	1,722	1,514
	48	40					2,400	3,506	3,865	4,242	3,164	2,840	2,533	2,244	1,972
	72	60	0.06	1,400	63			4,615	5,088	5,585	4,165	3,738	3,335	2,954	2,596
	100	85						5,994	6,608	7,252	5,409	4,855	4,330	3,836	3,371

Notes on table on page 1	
1) Stall torque	Stall torque indications are calculated nominal values. In practical applications, they might differ due to gear and motor tolerances.
2) Short operating times	These operating times are not available for intermittent duty S4 – 25%.

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SQ 05.2 – 14.2, SQR 05.2 – 14.2, SQEx 05.2 – 14.2, SQREx 05.2 – 14.2 AUMA NORM

Technical data Handwheel forces at Part-turn actuators

Standard

Type	Operating time for 90° in seconds	Torque	Reduction ratio[1]	Factor[2]	Handwheel input torque[3]	Permissible input torque at hand-wheel	Handwheel Standard Ø	Manual force at handwheel Standard[4]	Handwheel Option Ø	Manual force at handwheel Option[4]
	50 Hz	Max. [Nm]			approx. [Nm]	Max. [Nm]	[mm]	approx. [N]	[mm]	approx. [N]
SQ 05.2	4; 8; 16; 32; 63	150	44 : 1	16	12	40	160	153	200	122
	5.6; 11; 22		62 : 1	23	11			135		108
SQ 07.2	4; 8; 16; 32; 63	300	44 : 1	16	22	40	160	279	200	223
	5.6; 11; 22		62 : 1	23	19			241		192
SQ 10.2	8	450	44 : 1	16	42	80	200	421	250	337
	11; 22; 42	600	61 : 1	22	32			324		259
	16; 32; 63		44 : 1	16	42			421		337
SQ 12.2	11	900	121 : 1	44	32	80	200	324	250	259
	16		88 : 1	32	42			421		337
	22; 45; 84	1,200	121 :1	44	32			324		259
	32; 63; 125		88 : 1	32	42			421		337
SQ 14.2	24	1,800	278 : 1	91	31	80	200	313	250	251
	36		202 : 1	66	41			407		325
	48; 100	2,400	278 : 1	91	31			313		251
	72		202 : 1	66	41			407		325

1) From handwheel to actuator output drive.
2) Ratio of output torque to handwheel input torque, $f = T_{output\ drive}/T_{hand.}$ Includes efficiency rating at run torque with approx. 35 % of the maximum torque.
3) For maximum output torque.
4) Required manual force at handwheel at max. output torque. The actually required manual force depends on the required output torque and the service conditions.

Option for reduction of manual force[1]

Type	Operating time for 90° in seconds	Torque	Reduction ratio[2]	Factor[3]	Handwheel input torque[4]	Permissible input torque at hand-wheel	Handwheel Standard Ø	Manual force at handwheel Standard[5]	Handwheel Option Ø	Manual force at handwheel Option[5]
	50 Hz	Max. [Nm]			approx. [Nm]	Max. [Nm]	[mm]	approx. [N]	[mm]	approx. [N]
SQ 05.2	4; 8; 16; 32; 63	150	167 : 1	64	3	10	160	38	200	31
	5.6; 11; 22		248 : 1	90	3			34		27
SQ 07.2	4; 8; 16; 32; 63	300	167 : 1	64	6	10	160	70	200	56
	5.6; 11; 22		248 : 1	90	5			60		48
SQ 10.2	8	450	167 : 1	64	11	20	200	105	250	84
	11; 22; 42	600	248 : 1	90	8			81		65
	16; 32; 63		167 : 1	64	11			105		84
SQ 12.2	11	900	495 : 1	180	8	20	200	81	250	65
	16		352 : 1	128	11			105		84
	22; 45; 84	1,200	495 : 1	180	8			81		65
	32; 63; 125		352 : 1	128	11			105		84
SQ 14.2	24	1,800	1,139 : 1	373	8	20	200	78	250	63
	36		810 : 1	266	10			102		81
	48; 100	2,400	1,139 : 1	373	8			78		63
	72		810 : 1	266	10			102		81

1) Order code: Handwheel options characteristic: 000-000-000-1.
2) From handwheel to actuator output drive.
3) Ratio of output torque to handwheel input torque, $f = T_{output\ drive}/T_{hand.}$ Includes efficiency rating at run torque with approx. 35 % of the maximum torque.
4) For maximum output torque.
5) Required manual force at handwheel at max. output torque. The actually required manual force depends on the required output torque and the service conditions.

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Technical data Part-turn actuators for open-close duty

General information

Part-turn actuators of the SQV .2 type range with variable operating times. AUMA actuator controls of ACV .2 type are required to change the operating time.

Type	Operating time for 90°	Torque range[1]		Run torque[2]	Number of starts
	[s]	Min. [Nm]	Max.[3] [Nm]	Max. [Nm]	Starts Max. [1/h]
SQV 05.2	4 – 28	50	150	52	60
	12 – 120				
SQV 07.2	4 – 28	100	300	105	60
	12 – 120				
SQV 10.2	12 – 120	200	600	210	60
SQV 12.2	24 – 240	400	1,200	420	60
SQV 14.2	40 – 360	800	2,400	840	60

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range
2) Permissible average torque for a travel of 90°
3) Max. torque to approx. 50 % of shortest operating time

Valve attachments and weight

Type	Valve attachment		Valve shaft			Handwheel		Weight
	Standard EN ISO 5211	Option EN ISO 5211	Cylindrical Max. [mm]	Square Max. [mm]	Two-flat Max. [mm]	Ø [mm]	Turns for 90°	approx. [kg]
SQV 05.2	F05/F07	F10	25.4	22	22	160	11	21[1]
							16	27[2]
SQV 07.2	F05/F07	F10	25.4	22	22	160	11	21[1]
							16	27[2]
SQV 10.2	F10	F12	38	30	27	200	11	26[1]
							16	31[2]
SQV 12.2	F12	F14	50	36	41	200	11	35[1]
							16	43[2]
SQV 14.2	F14	F16	60	46	46	200	11	44[1]
								55[2]

1) Indicated weight includes SQV part-turn actuator with electrical connection in standard version, unbored coupling and handwheel.
2) Indicated weight includes SQV part-turn actuator with electrical connection in standard version, unbored coupling and handwheel, including base and lever.

Features and functions

Type of duty	Short-time duty S2 - 15 min, classes A and B according to EN 15714-2
	For 100 % nominal voltage and +40 °C ambient temperature and at load with 35 % of the max. torque.
Motors	3-phase AC asynchronous motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6
Mains voltage, mains frequency	**3-phase AC** Voltages/frequencies

Volt	220 – 240	380 – 480
Hz	50 – 60	50 – 60

1–phase AC Voltages/frequencies

Volt	110 – 120	220 – 240
Hz	50 – 60	50 – 60

Permissible variation of mains voltage: ±10 %
Permissible variation of mains frequency: ±5 %

Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

Technical data Part-turn actuators for open-close duty

Features and functions		
Motor protection	Standard:	Thermoswitches (NC)
	Option:	PTC thermistors (according to DIN 44082)
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC or 380 – 480 V AC
	Power	12.5 W
Swing angle	Standard:	Adjustable between 75° and < 105°
	Options:	15° to < 45°, 45° bis < 75°, 105° to < 135°, 135° to < 165°, 165° to < 195°, 195° to < 225°
Self-locking	Yes (Part-turn actuators are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.)	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
	Option:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Option:	Terminals or crimp-type connection Gold-plated control plug (sockets and pins)
Threads for cable entries	Standard:	Metric threads
	Option:	Pg-threads, NPT-threads, G-threads
Terminal plan	TPA00R100-0I1-000 (basic version)	
Splined coupling for connection to the valve shaft	Standard:	Coupling without bore
	Options:	Machined coupling with bore and keyway, square bore or bore with two-flats according to EN ISO 5211
Valve attachment	Dimensions according to EN ISO 5211 without spigot	

With base and lever (option)	
Swing lever	Made of spheroidal cast iron with two or three bores for fixing a lever arrangement. Considering the installation conditions, the lever may be mounted to the output shaft in any desired position.
Ball joints (option)	Two ball joints matching the lever, including lock nuts and two welding nuts, suitable for pipe according to dimension sheet.
Fixing	Base and four holes for fastening screws

Electronic control unit	
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +70 °C –60 °C to +60 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	

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Technical data Part-turn actuators for open-close duty

Service conditions		
Enclosure protection according to EN 60529	Standard:	IP68
	Option:	DS terminal compartment additionally sealed against interior of actuator (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Duration of continuous immersion in water: Max. 96 hours • Up to 10 operations during immersion	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA part-turn actuators meet or exceed the lifetime requirements of EN 15714-2. Detailed information can be provided on request.	
Sound pressure level	< 72 dB (A)	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU RED Directive 2014/53/EU

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Technical data Part-turn actuators for modulating duty

General information

Part-turn actuators of the SQRV .2 type range with variable operating times. AUMA actuator controls of ACV .2 type are required to change the operating time.

Type	Operating time for 90°	Torque range[1]		Modulating torque[2]	Number of starts
	[s]	Min. [Nm]	Max.[3] [Nm]	Max. [Nm]	Starts Max. [1/h]
SQRV 05.2	4 – 28	75	150	75	1,500
	12 – 120				
SQRV 07.2	4 – 28	150	300	150	1,500
	12 – 120				
SQRV 10.2	12 – 120	300	600	300	1,500
SQRV 12.2	24 – 240	600	1,200	600	1,500
SQRV 14.2	40 – 360	1,200	2,400	1,200	1,500

1) The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range
2) Maximum torque for modulating duty
3) Maximum torque to approx. 50 % of shortest operating time

Valve attachments and weight

Type	Valve attachment		Valve shaft			Handwheel		Weight
	Standard EN ISO 5211	Option EN ISO 5211	Cylindrical Max. [mm]	Square Max. [mm]	Two-flat Max. [mm]	Ø [mm]	Turns for 90°	approx. [kg]
SQRV 05.2	F05/F07	F10	25.4	22	22	160	11	21[1] 27[2]
							16	
SQRV 07.2	F05/F07	F10	25.4	22	22	160	11	21[1] 27[2]
							16	
SQRV 10.2	F10	F12	38	30	27	200	11	26[1] 31[2]
							16	
SQRV 12.2	F12	F14	50	36	41	200	11	35[1] 43[2]
							16	
SQRV 14.2	F14	F16	60	46	46	200	11	44[1] 55[2]

1) Indicated weight includes SQRV part-turn actuator with electrical connection in standard version, unbored coupling and handwheel.
2) Indicated weight includes SQRV part-turn actuator with electrical connection in standard version, unbored coupling and handwheel, including base and lever.

Features and functions

Type of duty	Intermittent duty S4 - 25 %, class C according to EN ISO 22153	
	For 100 % nominal voltage and +40 °C ambient temperature and at modulating torque load.	
Motors	3-phase AC asynchronous motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	
Mains voltage, mains frequency	**3-phase AC** Voltages/frequencies	
	Volt	220 – 240 / 380 – 480
	Hz	50 – 60 / 50 – 60
	1–phase AC Voltages/frequencies	
	Volt	110 – 120 / 220 – 240
	Hz	50 – 60 / 50 – 60
	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %	
Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized

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Technical data Part-turn actuators for modulating duty

Features and functions		
Motor protection	Standard:	Thermoswitches (NC)
	Option:	PTC thermistors (according to DIN 44082)
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC or 380 – 480 V AC
	Power	12.5 W
Swing angle	Standard:	Adjustable between 75° and < 105°
	Options:	15° to < 45°, 45° bis < 75°, 105° to < 135°, 135° to < 165°, 165° to < 195°, 195° to < 225°
Self-locking	Yes (Part-turn actuators are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.)	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation.	
	Option:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Option:	Terminals or crimp-type connection Gold-plated control plug (sockets and pins)
Threads for cable entries	Standard:	Metric threads
	Option:	Pg-threads, NPT-threads, G-threads
Terminal plan	TPA00R100-0I1-000 (basic version)	
Splined coupling for connection to the valve shaft	Standard:	Coupling without bore
	Options:	Machined coupling with bore and keyway, square bore or bore with two-flats according to EN ISO 5211
Valve attachment	Dimensions according to EN ISO 5211 without spigot	

With base and lever (option)	
Swing lever	Made of spheroidal cast iron with two or three bores for fixing a lever arrangement. Considering the installation conditions, the lever may be mounted to the output shaft in any desired position.
Ball joints (option)	Two ball joints matching the lever, including lock nuts and two welding nuts, suitable for pipe according to dimension sheet.
Fixing	Base and four holes for fastening screws

Electronic control unit	
Non-Intrusive setting	Magnetic limit and torque transmitter (MWG)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +70 °C –60 °C to +60 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	

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Technical data Part-turn actuators for modulating duty

Service conditions		
Enclosure protection according to EN 60529	Standard:	IP68
	Option:	DS terminal compartment additionally sealed against interior of actuator (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Duration of continuous immersion in water: Max. 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during immersion	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	AUMA part-turn actuators meet or exceed the lifetime requirements of EN ISO 22153. Detailed information can be provided on request.	
Sound pressure level	< 72 dB (A)	

Further information	
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU RED Directive 2014/53/EU

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Technical data Fail safe unit

Type	Fail safe operation in s/90°[1]	Min. torque	Suitable part-turn actuator		Valve attachment		Valve shaft			Weight[2]
	Configurable in factory	[Nm]	Type	Possible operating times s/90°	Standard EN ISO 5211	Option EN ISO 5211	Cylindrical Max. [mm]	Square Max. [mm]	Two-flat Max. [mm]	approx. [kg]
FQM 05.1	9 to 34	150	SQ 05.2	5.6 to 32	F07	F10	25.4	22	22	63
FQM 07.1	8 to 26	300	SQ 07.2	5.6 to 32	F07	F10	25.4	22	22	66
FQM 10.1	15 to 54	600	SQ 10.2	11 to 63	F10	F12	50	36	36	137
FQM 12.1	13 to 39	1,200	SQ 12.2	22 to 63	F12	F14	50	36	36	140

1) Operating time increases when higher torque is required.
2) The weights of SQ .2 actuators and AC .2 actuator controls must be added.

Features and functions		
Type of duty	Standard:	FQM: Short-time duty S2 - 15 min, classes A and B according to EN 15714-2
	Option:	FQMR: Intermittent duty S4 - 25 %, class C according to EN 15714-2 (not available in SIL version)
Mains voltage, mains frequency	Standard voltages: **3-phase AC** Voltages/frequencies Volt: 200 – 240 / 200 – 240 / 380 – 690 / 380 – 690 Hz: 50 / 60 / 50 / 60 Special voltages: **1-phase AC** Voltages/frequencies Volt: 100 – 240 / 100 – 240 Hz: 50 / 60 Further voltages on request Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %	
Overvoltage category	Category III according to IEC 60364-4-443	
ESD input	24 V DC, current consumption: approx. 1 A Permissible voltage variation: +20 %/–15 %	
Status signals	Single switch (1 NC and 1 NO) for each end position, galvanically isolated for OPEN and CLOSED: max. 0.1 A at 30 V DC Output contact for fail safe function ready signal: max. 0.1 A at 30 V DC	
Swing angle	Adjustable between 80° and 96°	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	Terminals or crimp-type connection
Threads for cable entries	Standard:	Metric threads
	Option:	Pg-threads, NPT-threads, G-threads
Terminal plan	Terminal plan according to order number enclosed with delivery	
Splined coupling for connection to the valve shaft	Standard:	Coupling without bore
	Option:	Machined coupling with bore and keyway, square bore or bore with two-flats according to EN ISO 5211
Valve attachment	Dimensions according to EN ISO 5211 without spigot	

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Technical data Fail safe unit

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position (for horizontal mounting position, a support is required)	
Installation altitude	≤ 2 000 m above sea level > 2 000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Option:	–60 °C to +60 °C
	For exact version, refer to actuator name plate.	
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection according to EN 60529	IP68	
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Duration of continuous immersion in water: Max. 96 hours	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	FQM 05.1/07.1 with valve attachment F07 = 0.3 g, 10 to 200 Hz FQM 05.1/07.1 with valve attachment F10 = 0.5 g, 10 to 200 Hz FQM 10.1/12.1 with valve attachment F10 = 0.3 g, 10 to 200 Hz FQM 10.1/12.1 with valve attachment F12 = 0.5 g, 10 to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this.	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	500 fail safe operations (ESD cycles) AUMA fail safe units meet or even exceed the lifetime requirements of EN 15714-2 in motor operation. Detailed information can be provided on request.	

Further information	
EU Directives	• Electromagnetic Compatibility (EMC): (2014/30/EU) • Machinery Directive: (2006/42/EC)

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Technical data Actuator controls

General information

Actuator controls AM 01.1/AM 02.1 for controlling multi-turn actuators of the SA/SAR .1, SA/SAR .2 type ranges and part-turn actuators of the SQ/SQR .2 type range.

Features and functions

Power supply

Standard voltages AC:

3-phase AC Voltages/frequencies											
Volt	220	230	380	380	400	400	415	440	460	480	500
Hz	60	50	50	60	50	60	50	60	60	60	50

1-phase AC Voltages/frequencies				
Volt	110 – 120	110 – 120	220 – 240	220 – 240
Hz	50	60	50	60

Special voltages AC:

3-phase AC Voltages/frequencies									**1-phase AC** Voltages/frequencies	
Volt	220	240	525	575	575	600	660	690	Volt	208
Hz	50	50	50	50	60	60	50	50	Hz	60

Permissible variation of mains voltage: ±10 %
Permissible variation of mains frequency: ±5 %
Further permissible variations of the mains voltage (options): (–20 %/+15 %), (–20 %/+10 %), (–30 %/+30 %), (–30 %/+10 %)

External supply of the electronics (option)

24 V DC +20 % / –15 %
Current consumption: Basic version approx. 250 mA, with options up to 500 mA
For external electronics supply, the power supply of actuator controls must have an enhanced isolation against mains voltage in compliance with IEC 61010-1 and the output power be limited to 150 VA.

Current consumption

Current consumption of controls depending on mains voltage:
For permissible variation of mains voltage of ±10 %:
100 to 120 V AC = max. 575 mA
208 to 240 V AC = max. 275 mA
380 to 690 V AC = max. 160 mA

Current consumption for mains voltage variation: > ±10 % on request

Overvoltage category

Category III according to IEC 60364-4-443

Rated power

Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator

Switchgear

Standard:	Reversing contactors (mechanically and electrically interlocked) for AUMA power classes A1/A2
Options:	Reversing contactors (mechanically and electrically interlocked) for AUMA power classes A1/A2 with additional contacts, 1 NC + 1 NO each
	Reversing contactors (mechanically and electrically interlocked) for AUMA power class A3
	Thyristor unit for mains voltage up to 500 V AC (recommended for modulating actuators) for AUMA power classes B1, B2 and B3

Reversing contactors are designed for a lifetime of 2 million starts. For applications requiring a high number of starts, we recommend using thyristor units.
For the assignment of AUMA power classes, refer to the Electric data pertaining to the actuator.

Control inputs (control)

3 digital inputs: OPEN, STOP, CLOSE (via opto-isolator with one common), respect minimum pulse duration for modulating actuators

Control voltage/current consumption for control inputs

Standard:	24 V DC, current consumption: approx. 10 mA per input
Option:	115 V AC, current consumption: approx. 15 mA per input

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Technical data Actuator controls

Features and functions		
Status signals (output signals)	Standard:	5 output contacts: • 4 NO contacts with one common, max. 250 V AC, 0.5 A (resistive load) - Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, selector switch LOCAL • 1 potential-free change-over contact, max. 250 V AC, 0.5 A (resistive load) for collective fault signal - Default configuration: Torque fault, phase failure, motor protection tripped
	Options:	5 output contacts with integrated running indication(blinking) for directions OPEN and CLOSE in combination with blinker transmitter • 4 NO contacts with one common, max. 250 V AC, 0.5 A (resistive load) - Default configuration: End position and running indication CLOSED, end position OPEN, selector switch REMOTE, selector switch LOCAL • 1 potential-free change-over contact, max. 250 V AC, 0.5 A (resistive load) for collective fault signal - Default configuration: Torque fault, phase failure, motor protection tripped
Voltage output	Standard:	Auxiliary voltage 24 V DC ±5 %, max. 50 mA for supply of control inputs, galvanically isolated from internal voltage supply
	Option:	115 V AC ±10 %, max. 30 mA for supply of the control inputs, galvanically isolated from internal voltage supply (Not possible in combination with PTC tripping device)
Local controls	Standard:	• Selector switch LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons OPEN, STOP, CLOSE • 3 indication lights: End position CLOSED (yellow), collective fault signal (red), end position OPEN (green)
	Options:	• Protection cover, lockable • Special colours for the 3 indication lights
Application functions	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Overload protection against excessive torques over the whole travel • Excessive torque (torque fault) can be excluded from collective fault signal. • Phase failure monitoring with automatic phase correction • Push-to-run operation or self-retaining in REMOTE • Push-to-run operation or self-retaining in LOCAL • Blinker signal from actuator (option) for running indication via indication lights of local controls can be activated/deactivated.	
Motor protection evaluation	Standard:	• Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Options:	• Additional thermal overload relay in the controls in combination with thermoswitches within the actuator • PTC tripping device in combination with PTC thermistors within actuator motor
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	• Terminals or crimp connection • Gold-plated control plug (sockets and plugs)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Wiring diagram (basic version)	MSP1110KC3--F18E1 TPA00R1AA-101-000	

Further options for version with electronic position transmitter in actuator	
Position feedback signal (option)	Analogue output E2 = 0/4 – 20 mA (load max. 500 Ω)
Wiring diagram (basic version)	MSP1110KC3--F18E1 TPA00R1AA-1E1-000

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Technical data Actuator controls

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level, please contact AUMA	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–60 °C to +60 °C, extreme low temperature version
		Low temperature versions incl. heating system for connection to external power supply 230 V AC or 115 V AC.
Enclosure protection according to EN 60529	Standard:	IP68
	Option:	DS Terminal compartment additionally sealed against interior (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Duration of continuous immersion in water: Max. 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	1 g, from 10 to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. (Not valid in combination with gearboxes)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Options:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
		KX-G: Same as KX, however aluminium-free version (outer parts)
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

Accessories	
Wall bracket	For AM mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or heavy vibration during service. Cable length between actuator and AM max. 100 m. Not suitable for version with potentiometer in the actuator. Instead of the potentiometer, the actuator has to be equipped with an electronic position transmitter.

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)

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Technical data Actuator controls

General information

AC 01.2 actuator controls for controlling multi-turn actuators of the SA/SAR .1, SA/SAR .2 type ranges and part-turn actuators of the SQ/SQR .2 type range.

Features and functions

Power supply

Standard voltages AC:

3-phase AC Voltages/frequencies											
Volt	220	230	380	380	400	400	415	440	460	480	500
Hz	60	50	50	60	50	60	50	60	60	60	50

1-phase AC Voltages/frequencies				
Volt	110 – 120	110 – 120	220 – 240	220 – 240
Hz	50	60	50	60

Special voltages AC:

3-phase AC Voltages/frequencies								
Volt	220	240	525	575	575	600	660	690
Hz	50	50	50	50	60	60	50	50

1-phase AC Voltages/frequencies	
Volt	208
Hz	60

Permissible variation of mains voltage: ±10 %
Permissible variation of mains voltage: ±30 % (option)
Permissible variation of mains frequency: ±5 %
Special voltages DC: On request

DC current Voltages						
Volt	24	48	60	110	125	220

Permissible voltage deviation: On request

External supply of the electronics (option)

24 V DC: +20 %/-15 %
Current consumption: Basic version approx. 250 mA, with options up to 500 mA
For external electronics supply, the power supply of integral controls must have an enhanced isolation against mains voltage in compliance with IEC 61010-1 and the output power be limited to 150 VA.

Current consumption

Current consumption of the actuator controls depending on mains voltage:
For permissible variation of mains voltage of ±10 %:

- 100 to 120 V AC = max. 740 mA
- 208 to 240 V AC = max. 400 mA
- 380 to 500 V AC = max. 250 mA
- 515 V AC = max. 200 mA

For permissible variation of mains voltage of ±30 %:

- 100 to 120 V AC = max. 1,200 mA
- 208 to 240 V AC = max. 750 mA
- 380 to 500 V AC = max. 400 mA
- 515 to 690 V AC= max. 400 mA

Overvoltage category

Category III according to IEC 60364-4-443

Rated power

Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator

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Technical data Actuator controls

Features and functions		
Switchgear	Standard:	Reversing contactors (mechanically and electrically interlocked) for AUMA power classes A1/A2
	Options:	Reversing contactors (mechanically and electrically interlocked) for AUMA power class A3
		Thyristor unit for mains voltage up to 500 V AC (recommended for modulating actuators) for AUMA power classes B1, B2 and B3
	The reversing contactors are designed for a lifetime of 2 million starts. For applications requiring a high number of starts, we recommend the use of thyristor units. For the assignment of AUMA power classes, please refer to Electrical data on actuator	
Control inputs	6 digital inputs: OPEN, STOP, CLOSE, EMERGENCY (via opto-isolator, thereof OPEN, STOP, CLOSE with one common and EMERGENCY without common, respect minimum pulse duration for modulating actuators).	
Control voltage/current consumption for control inputs	Standard:	24 V DC, current consumption: approx. 10 mA per input
	Options:	48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 100 – 125 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input
	All input signals must be supplied with the same potential.	
Status signals (output signals)	Standard:	• 6 programmable output contacts: - 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, fault CLOSE, torque fault OPEN - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) • Analogue output signal for position feedback - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)
	Options:	• 6 programmable output contacts: - 5 change-over contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 12 programmable output contacts: - 10 potential-free NO contacts, 5 with one common each, max. 250 V AC, 1 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 6 potential-free change-over contacts without one common, per contact max. 250 V AC, 5 A (resistive load) • 10 programmable output contacts: - 10 potential-free change-over contacts without one common, per contact max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free NO contact, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), • 12 programmable output contacts: - 8 mains failure proof potential-free NO contacts, max. 250 V AC, 1 A (resistive load), 2 potential-free NO contacts, max. 250 V AC, 1 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load) • 12 programmable output contacts: - 8 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 4 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), All output signals must be supplied with the same potential.

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Technical data Actuator controls

Features and functions		
with additional output signals (option)	Additional, binary output signals (only available in combination with additional input signals (option)) • 6 programmable output contacts: - 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) • 6 programmable output contacts: - 5 potential-free change-over contacts with one common, max. 250 V AC, 1 A (resistive load) - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 6 potential-free change-over contacts without one common, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free NO contact, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), All binary output signals must be supplied with the same potential. • Analogue output signal for position feedback - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)	
Voltage output	Standard:	Auxiliary voltage 24 V DC: max. 100 mA for supply of control inputs, galvanically isolated from internal voltage supply.
	Option:	Auxiliary voltage 115 V AC: max. 30 mA for supply of control inputs, galvanically isolated from internal voltage supply (Not possible in combination with PTC tripping device)
Analogue output (option)	2 analogue outputs: With position transmitter option: Output of travel and torque as continuous values between 0/4 and 20 mA	
Analogue input (option)	2 analogue inputs: With positioner/process controller option: Input of actual position value/actual process value as continuous values of 0/4 – 20 mA.	
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth Communication interface	Bluetooth Class II Chip, Version 2.1: With a range up to 10 m in industrial environments supports the SSP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool)	

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Technical data Actuator controls

Features and functions		
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Any 8 intermediate positions: can be set between 0 and 100 %, reaction and signal behaviour programmable • Running indication blinking: can be set
	Options:	• Positioner - Position setpoint via analogue input 0/4 – 20 mA - Programmable behaviour on loss of signal - Automatic adaptation of dead band (adaptive behaviour selectable) - Split range operation - MODE input for selecting between OPEN-CLOSE and setpoint control • PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set • Static and dynamic torque recording for both rotation directions with torque measurement flange as additional accessory
Safety functions	Standard:	• EMERGENCY operation (programmable behaviour) - Digital input: Low active - Reaction can be selected: Stop, run to end position CLOSED, run to end position OPEN, run to intermediate position - Torque monitoring can be by-passed during EMERGENCY operation - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	• Enabling local controls via digital input Enable LOCAL. Thus, actuator operation can be enabled or disabled via push buttons on local controls. • Interlock for main/by-pass valve: Enabling the operation commands OPEN or CLOSE via two digital inputs • EMERGENCY Stop push button (latching): Interrupts electrical operation, irrespective of the selector switch position • PVST (Partial Valve Stroke Test): programmable to check the function of both actuator and actuator controls: Direction, stroke, operation time, reversing time
Monitoring functions	• Valve overload protection: Adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): Results in switching off and generates fault signal • Monitoring the heater within actuator: Generates warning signal • Monitoring of permissible on-time and number of starts: Adjustable, generates warning signal • Operating time monitoring: Adjustable, generates warning signal • Phase failure monitoring: Results in switching off and generates fault signal • Automatic correction of rotation direction upon wrong phase sequence (3-ph AC current)	
Diagnostic functions	• Electronic device ID with order and product data • Operating data logging: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings • Time-stamped event report with history for setting, operation and faults • Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" • Torque characteristics (for version with MWG in actuator): - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately. - Torque characteristics stored can be shown on the display.	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Options:	• Thermal overload relay in controls combined with thermoswitches within actuator • PTC tripping device in combination with PTC thermistors within actuator motor
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Option:	Gold-plated control plug (sockets and plugs)

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Technical data Actuator controls

Features and functions		
Threads for cable entries	Standard:	Metric threads
	Options:	• Pg-threads, NPT-threads, G-threads • Terminals or crimp-type connection
Wiring diagram (basic version)	TPCA-0A1-1C1-A000 TPA00R1AA-0A1-000	

Further options for Non-intrusive version with MWG in the actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω).
Wiring diagram (basic version)	TPCA-0A1-1C1-A000 TPA00R100-0I1-000

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	Standard:	–30 °C to +70 °C
		–40 °C to +70 °C
	Options:	–60 °C to +60 °C, extreme low temperature version
		Low temperature versions incl. heating system for connection to external power supply 230 V AC or 115 V AC, or internal version 400 V AC.
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	IP68
	Option:	Terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: Maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. (Not valid in combination with gearboxes)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or in case of heavy vibration during service. Cable length between actuator and actuator controls is max. 100 m. An MWG is required for position feedback.
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool)
Torque measurement flange DMF	Accessory for torque measurement for SA/SAR 07.2 – SA/SAR 16.2

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Technical data Actuator controls

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Reference documents	Dimensions SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2 with AC 01.2 Dimensions SQ 05.2 – SQ 14.2/SQR 05.2 – SQR 14.2 with AC 01.2 Electrical data SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2 Electrical data SQ 05.2 – SQ 14.2/SQR 05.2 – SQR 14.2

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General information

AC 01.2 actuator controls for controlling multi-turn actuators of the SA/SAR .1, SA/SAR .2 type range and part-turn actuators of the SQ/SQR type range with Profibus DP interface.

Features and functions

Power supply

Standard voltages AC:

3-phase AC Voltages/frequencies											
Volt	220	230	380	380	400	400	415	440	460	480	500
Hz	60	50	50	60	50	60	50	60	60	60	50

1-phase AC Voltages/frequencies				
Volt	110 – 120	110 – 120	220 – 240	220 – 240
Hz	50	60	50	60

Special voltages:
Voltage >500 V AC are only permissible with external control box.

3-phase AC Voltages/frequencies									**1-phase AC** Voltages/frequencies	
Volt	220	240	525	575	575	600	660	690	Volt	208
Hz	50	50	50	50	60	60	50	50	Hz	60

Permissible variation of mains voltage: ±10 %
Permissible variation of mains voltage: ±30 % (option)
Permissible variation of mains frequency: ±5 %
Special voltages DC: (on request)

DC current Voltages						
Volt	24	48	60	110	125	220

Permissible voltage deviation: (on request)

External supply of the electronics (option)

24 V DC +20 %/–15 %
Current consumption: Basic version approx. 250 mA, with options up to 500 mA
External power supply must have reinforced insulation against mains voltage in accordance with IEC 61010-1 and may only be supplied by a circuit limited to 150 VA in accordance with IEC 61010-1.

Current consumption

Current consumption of the actuator controls depending on mains voltage:
For permissible variation of mains voltage of ±10 %:

- 100 to 120 V AC = max. 740 mA
- 208 to 240 V AC = max. 400 mA
- 380 to 500 V AC = max. 250 mA
- 515 to 690 V AC = max. 200 mA

For permissible variation of mains voltage of ±30 %:

- 100 to 120 V AC = max. 1,200 mA
- 208 to 240 V AC = max. 750 mA
- 380 to 500 V AC = max. 400 mA
- 515 to 690 V AC = max. 400 mA

Overvoltage category

Category III according to IEC 60364-4-443

Rated power

Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator

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Features and functions		
Switchgear	Standard:	Reversing contactors (mechanically and electrically interlocked) for AUMA power classes A1/A2
	Options:	Reversing contactors (mechanically and electrically interlocked) for AUMA power class A3
		Thyristor unit for mains voltage up to 500 V AC (recommended for modulating actuators) for AUMA power classes B1, B2 and B3
	The reversing contactors are designed for a lifetime of 2 million starts. For applications requiring a high number of starts, we recommend the use of thyristor units. For the assignment of AUMA power classes, please refer to Electrical data on actuator	
Control and feedback signals	Via Profibus DP interface	
Fieldbus interface with additional input signals (option)	• 2 free analogue inputs (0/4 – 20 mA), 4 free digital inputs - Signal transmission is made via fieldbus interface • Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - OPEN, STOP, CLOSE, EMERGENCY control inputs - I/O interface: Selection of control type (fieldbus interface or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for position setpoint • Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - OPEN, STOP, CLOSE, EMERGENCY control inputs - I/O interface: Selection of control type (fieldbus interface or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for setpoint position and 1 analogue input (0/4 – 20 mA) for actual process value	
Control voltage and current consumption of optional, digital additional inputs	Standard	24 V DC, current consumption: approx. 10 mA per input
	Options:	48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 115 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input
	All input signals must be supplied with the same potential.	
Status signals	Via Profibus DP interface	
Fieldbus interface with additional output signals (option)	Additional, binary output signals (only available in combination with additional input signals (option) • 6 programmable output contacts: - 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) • 6 programmable output contacts: - 5 potential-free change-over contacts with one common, max. 250 V AC, 1 A (resistive load) - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 6 potential-free change-over contacts without one common, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free NO contact, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), All binary output signals must be supplied with the same potential. • Analogue output signal for position feedback - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)	

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Features and functions		
Voltage output	Standard:	Auxiliary voltage 24 V DC: max. 100 mA for supply of control inputs, galvanically isolated from internal voltage supply.
	Option:	Auxiliary voltage 115 V AC: max. 30 mA for supply of control inputs, galvanically isolated from internal voltage supply (Not possible in combination with PTC tripping device)
Profibus DP-V1 (option)	Access to parameters, the electronic name plate and the operating and diagnostic data with acyclic write/read services	
Profibus DP-V2 (option)	Redundancy behaviour according to Profibus DP-V2 specification no. 2.212 (Primary and Backup with RedCom) Synchronisation of time between actuator controls and Profibus master with subsequent time stamp of the most important events such as malfunctions, end position and torque signals from actuator controls	
Redundancy (option)	Requires Profibus DP-V2 (option) Redundant line topology with universal redundancy behaviour according to AUMA redundancy I or II Redundant line topology and redundancy behaviour according to Profibus DP-V2 specification no. 2.212 (Primary and Backup with RedCom)	
FO cable connection (option)	• Connector types: ST or SC connector • FO cables - Multi-mode: 62,5(50)/125 µm, range approx. 2.5 km (max. 2.0 dB/km) - Single-mode: 9/125 µm, range approx. 15 km (max. 0.4 dB/km) • Topologies: Line, star and redundant loop (with single-channel Profibus DP interface) • Baud rate: up to 1.5 Mbit/s • Optical budget: - Multi-mode: 13 dB - Single-mode: 17 dB • Wave length: 1,310 mm • FO coupler by EKS required at DCS, reference addresses: AUMA or www.eks-engel.com	
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments, supports the SPP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)	

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Features and functions		
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Any 8 intermediate positions: can be set between 0 and 100 %, reaction and signal behaviour programmable • Running indication blinking: can be set • Positioner - Position setpoint via Profibus DP interface - Automatic adaptation of dead band (adaptive behaviour selectable) - Change-over between OPEN-CLOSE control and setpoint control possible viafieldbus interface Profibus DP interface
	Options:	• PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value • Multiport valve: Up to 16 positions, signals (pulse or edge) • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set • Static and dynamic torque recording for both rotation directions with torque measurement flange as additional accessory
Safety functions	Standard:	• EMERGENCY operation (programmable behaviour) - Via additional input (option, low aktive) or via fieldbus interface - Reaction can be selected: Stop, run to end position CLOSED, run to end position OPEN, run to intermediate position - Torque monitoring can be by-passed during EMERGENCY operation - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	• Release of local controls via fieldbus interface. Thus, actuator operation can be enabled or disabled via push buttons on local controls. • Local STOP - The actuator can be stopped via push button Stop of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • Interlock for main/by-pass valve: Enabling the operation commands OPEN or CLOSE via fieldbus interface • EMERGENCY Stop push button (latching): interrupts electrical operation, irrespective of the selector switch position. • PVST (Partial Valve Stroke Test): programmable to check the function of both actuator and actuator controls: Direction, stroke, operation time, reversing time
Monitoring functions	• Valve overload protection: adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): results in switching off and generates fault indication • Monitoring the heater within actuator: generates warning signal • Monitoring of permissible on-time and number of starts: adjustable, generates warning signal • Operation time monitoring: adjustable, generates warning signal • Phase failure monitoring: results in switching off and generates fault signal • Automatic correction of rotation direction upon wrong phase sequence (3-ph AC current)	
Diagnostic functions	• Electronic device ID with order and product data • Logging of operating data: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings • Time-stamped event report with history for setting, operation and faults • Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" • Torque characteristics (for version with MWG in actuator): - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately. - Torque characteristics stored can be shown on the display.	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Options:	• Thermal overload relay in controls combined with thermoswitches within actuator • PTC tripping device in combination with PTC thermistors within actuator motor

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Features and functions		
Overvoltage protection (option)	Protection of the actuator and control electronics against overvoltages on the fieldbus cables of up to 4 kV	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Option:	Gold-plated control plug (sockets and plugs)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Wiring diagram (basic version)	TPCAA000-1A1-A000 TPA00R1AA-0A1-000	

Further options for Non-intrusive version with MWG in the actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Via Profibus DP interface Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω). Option, only possible in combination with output contacts.
Wiring diagram (basic version)	TPCAA000-1A1-A000 TPA00R100-0I1-000

Settings/programming the Profibus DP interface	
Baud rate setting	Automatic baud rate recognition
Setting the fieldbus address	The Profibus DP address is set via the actuator controls display.
Configurable process representation via GSD file	For optimum adaptation to the process control system, the process representation input (feedback) can be freely configured.

General Profibus DP interface data		
Communication protocol	Profibus DP according to IEC 61158 and IEC 61784	
Network topology	Line (fieldbus) structure. When using repeaters, tree structures can also be implemented. Coupling and uncoupling of devices during operation without affecting other devices is possible.	
Transmission medium	Twisted, screened copper cable according to IEC 61158	
Profibus DP interface	EIA-485 (RS-485)	
Transmission rate/cable length		

Baud rate (kbit/s)	Max. cable length (segment length) without repeater	Possible cable length with repeater (total network cable length):
9.6 – 93.75	1,200 m	approx. 10 km
187.5	1,000 m	approx. 10 km
500	400 m	approx. 4 km
1,500	200 m	approx. 2 km

Device types	DP master class 1, e.g. central controllers such as PLC, PC, ... DP master class 2, e.g. programming/configuration tools DP slave, e.g. devices with digital and/or analogue inputs/outputs such as actuators, sensors	
Number of devices	32 devices without repeater, with repeater expandable to 126	
Fieldbus access	Token-passing between masters and polling for slaves. Mono-master or multi-master systems are possible.	
Supported Profibus DP functions	Cyclic data exchange, sync mode, freeze mode, fail safe mode	
Profibus DP ident no.	0x0C4F:	Standard applications with Profibus DP-V0 and DP-V1
	0x0CBD:	Applications with Profibus DP-V2

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Commands and signals of the Profibus DP interface	
Process representation output (command signals)	OPEN, STOP, CLOSE, position setpoint, RESET, EMERGENCY operation command, enable local controls, Interlock OPEN/CLOSE
Process representation input (feedback signals)	• End positions OPEN, CLOSED • Actual position value • Actual torque value, requires MWG in actuator • Selector switch in position LOCAL/REMOTE • Running indication (directional) • Torque switches OPEN, CLOSED • Limit switches OPEN, CLOSED • Manual operation by handwheel or via local controls • Analogue (2) and digital (4) customer inputs
Process representation input (fault signals)	• Motor protection tripped • Torque switch tripped in mid-travel • Failure of analogue customer inputs • One phase missing
Behaviour on loss of communication	The behaviour of the actuator is programmable: • Stop in current position • Travel to end position OPEN or CLOSED • Travel to any intermediate position • Execute last received operation command

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–60 °C to +60 °C, extreme low temperature version
		Low temperature versions incl. heating system for connection to external power supply 230 V AC or 115 V AC, or internal version 400 V AC.
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection according to EN 60529	Standard:	IP68
	Option:	Terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: Maximum 8 m head of water • Duration of continuous immersion in water: Maximum 96 hours • Up to 10 operations during continuous immersion • Modulating duty is not possible during continuous immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. (Not valid in combination with gearboxes)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

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Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or heavy vibration during service. Cable length between actuator and actuator controls is max. 100 m (Not suitable for version with potentiometer in the actuator). Instead of the potentiometer, the actuator has to be equipped with an electronic position transmitter. (MWG requires a separate data cable.)
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)
Torque measurement flange DMF	Accessory for torque measurement for SA/SAR 07.2 – SA/SAR 16.2

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for industrial valve automation Dimensions Multi-turn actuators with AUMATIC integral controls Dimensions Part-turn actuators with AUMATIC integral controls

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General information

AC 01.2 actuator controls for controlling multi-turn actuators of the SA/SAR .1, SA/SAR .2 type range and part-turn actuators of the SQ/SQR .2 type range with Profinet interface.

Features and functions

Power supply

Standard voltages AC:

3-phase AC Voltages/frequencies											
Volt	220	230	380	380	400	400	415	440	460	480	500
Hz	60	50	50	60	50	60	50	60	60	60	50

1-phase AC Voltages/frequencies				
Volt	110 – 120	110 – 120	220 – 240	220 – 240
Hz	50	60	50	60

Special voltages AC:

3-phase AC Voltages/frequencies								
Volt	220	240	525	575	575	600	660	690
Hz	50	50	50	50	60	60	50	50

1-phase AC Voltages/frequencies	
Volt	208
Hz	60

Permissible variation of mains voltage: ±10 %; at 600 V AC: ±5 %
Permissible variation of mains frequency: ±5 %

External supply of the electronics (option)

24 V DC +20 %/–15 %
Current consumption: Basic version approx. 250 mA, with options up to 500 mA
For external electronics supply, the power supply of integral controls must have an enhanced isolation against mains voltage in compliance with IEC 61010-1 and the output power be limited to 150 VA.

Current consumption

Current consumption of the actuator controls depending on mains voltage:
For permissible variation of mains voltage of ±10 %:

- 100 to 120 V AC = max. 740 mA
- 208 to 240 V AC = max. 400 mA
- 380 to 500 V AC = max. 250 mA
- 515 V AC = max. 200 mA

Overvoltage category

Category III according to IEC 60364-4-443

Rated power

Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator

Control and feedback signals

Via Profinet interface

Control voltage/current consumption for control inputs

Standard:	24 V DC, current consumption: approx. 10 mA per input
Options:	48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 100 – 125 V DC, current consumption : approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input

All input signals must be supplied with the same potential.

Voltage output

Standard:	Auxiliary voltage 24 V DC: max. 100 mA for supply of control inputs, galvanically isolated from internal voltage supply.
Option:	Auxiliary voltage 115 V AC: max. 30 mA for supply of control inputs, galvanically isolated from internal voltage supply (Not possible in combination with PTC tripping device)

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Features and functions		
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments, supports the SPP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)	
Profinet acyclic services (option)	Access to parameters, the electronic name plate and the operating and diagnostic data with acyclic write/read services Integration in configuration tools and asset management systems via FDI package.	
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Any 8 intermediate positions: can be set between 0 and 100 %, reaction and signal behaviour programmable • Running indication blinking: can be set • Positioner - Position setpoint via Profinet interface - Programmable behaviour on loss of signal - Automatic adaptation of dead band (adaptive behaviour selectable) - Split range operation - Change-over between OPEN-CLOSE control and setpoint control possible via Profinet interface
	Options:	• PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set • Static and dynamic torque recording for both rotation directions with torque measurement flange as additional accessory
Safety functions	Standard:	• EMERGENCY operation (programmable behaviour) - Via additional input (option, low active) or via Profinet interface - Reaction can be selected: Stop, run to end position CLOSED, run to end position OPEN, run to intermediate position - Torque monitoring can be by-passed during EMERGENCY operation - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	• Release of local controls via Profinet interface. Thus, actuator operation can be enabled or disabled via push buttons on local controls. • Local STOP - The actuator can be stopped via push button Stop of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • Interlock for main/by-pass valve: Enabling the operation commands OPEN or CLOSE via Profinet interface • PVST (Partial Valve Stroke Test): programmable to check the function of both actuator and actuator controls: Direction, stroke, operation time, reversing time

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Features and functions		
Monitoring functions	• Valve overload protection: adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): results in switching off and generates fault indication • Monitoring the heater within actuator: generates warning signal • Monitoring of permissible on-time and number of starts: adjustable, generates warning signal • Operation time monitoring: adjustable, generates warning signal • Phase failure monitoring: results in switching off and generates fault signal • Automatic correction of rotation direction upon wrong phase sequence (3-ph AC current)	
Diagnostic functions	• Electronic device ID with order and product data • Logging of operating data: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings • Time-stamped event report with history for setting, operation and faults • Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" • Torque characteristics (for version with MWG in actuator): - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately. - Torque characteristics stored can be shown on the display.	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Option:	PTC tripping device in combination with PTC thermistors within actuator motor
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Option:	Gold-plated control plug (sockets and plugs)
Threads for cable entries	Standard:	Metric threads
	Options:	• Pg-threads, NPT-threads, G-threads • Terminals or crimp-type connection
Wiring diagram (basic version)	RJ45 connection: TPCAN000K1A2-A000 TPA00R1AA-0A1-000 Ethernet connection terminals: TPCAN000K1A2-A000 TPA00R1AA-0A1-000	

Further options for Non-intrusive version with MWG in the actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	RJ45 connection: TPCAN000K1A2-A000 TPA00R100-0I1-000 Ethernet connection terminals: TPCAN000N1A2-A000 TPA00R100-0I1-000 Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω). Option, only possible in combination with output contacts.
Wiring diagram (basic version)	TPCAN000K1A2-A000 TPA00R100-0I1-000

Settings/programming the Profinet interface
The Profinet interface is set (assignment of device name as well as assignment of the IP address) using the Profinet engineering tools of the DCS.

General data of the Profinet interface	
Communication protocol	Profinet according to IEC 61158 and IEC 61784
Network topology	Star topology, point-to-point wiring Due to the switch function integrated within the AC 01.2, both line topology and redundant ring topology (MRP) are available.
Connection	Ethernet IEEE 802.3 2-pair cabling in compliance with IEC 61784-5-3 Auto Polarity Exchange, Auto Negotiation and Auto Crossover are supported.
Profinet connection	2 x Ethernet connection terminals with insulation displacement connection, integral screen with strain relief, suitable for all Ethernet cable types or 2 x RJ-45 Connection via connector for field assembly, one RJ-45 connector for Cat.5 (K009.706) is included in the scope of supply of the electrical connection.
Transmission rate	100 Mbits/s (100BASE-TX), full duplex
Cable length	Max. 100 m

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General data of the Profinet interface		
Device classes	I/O controller (usually the PLC/DCS) I/O devices (field devices) I/O supervisor (programming device, PC or HMI for diagnostics/commissioning)	
Fieldbus access	Provider - consumer model	
Supported Profinet specification	Version V2.32	
Supported Profinet functions	Cyclic Profinet communication (RT) Acyclic Profinet communication (Read/Write Record)	
Supported Profinet alarms	Status Alarm Update Alarm Port Data Change Notification Alarm Sync Data Change Notification Alarm	
Supported network diagnostic and management protocols	ACD (Address Conflict Detection) ARP (Address Resolution Protocol) DCP (Discovery and Basic Configuration Protocol) SNMP (Simple Network Management Protocol) LLDP (Link Layer Discovery Protocol) in accordance with IEEE 802.1AB These functions allow assignment of the Profinet device name, a graphic representation of the plant topology, port-granular diagnostics as well as neighbourhood detection as the basis for quick commissioning and easy device replacement.	
Profinet redundancy	Standard:	Media Redundancy Protocol in compliance with IEC 62439 (switch function integrated within AC 01.2)
	Option:	System redundancy S2 Single NAP
Vendor ID	319	
Ident Code	1	
Profinet device type	AUMA-Actuator-AC01-2	
Identification & Maintenance properties	I&M0 Profile ID:	62976
	I&M0 Profile Specification Type:	4
	I&M0 Version:	257
	I&M0 Supported:	30
Profinet Ident Nr.	0x013F; 0x0001	
DAP (Device Access Point)	0x80010000	
Conformance class	CC-B (Conformance Class B) for the Profinet application of the AC actuator controls CC-C (Conformance Class C) for the integral switch function	
Netload Class	III	
Device diagnostics via Ethernet	Via TCP/IP and integral web server possible Via FDI package & software for diagnostics/commissioning (e. g. Siemens PDM, Emerson AMS)	
Device integration	Via GSD (ml) file (available for download at www.auma.com)	

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Commands and signals of the Profinet interface	
Process representation output (command signals)	OPEN, STOP, CLOSE, position setpoint, RESET, EMERGENCY operation command, enable local controls, Interlock OPEN/CLOSE, PVST
Process representation input (feedback signals)	End positions OPEN, CLOSED Actual position value Actual torque value, requires MWG in actuator Selector switch in position LOCAL/REMOTE Running indication (directional) Torque switches OPEN, CLOSED Limit switches OPEN, CLOSED Manual operation by handwheel or via local controls Analogue (2) and digital (4) customer inputs
Process representation input (fault signals)	Motor protection tripped Torque switch tripped in mid-travel One phase missing Failure of analogue customer inputs
Behaviour on loss of communication	The behaviour of the actuator is programmable: • Stop in current position • Travel to end position OPEN or CLOSED • Travel to any intermediate position • Execute last received operation command

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	Standard:	–30 °C to +70 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection according to EN 60529	Standard:	IP68
	Option:	Terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: Maximum 8 m head of water • Duration of continuous immersion in water: Maximum 96 hours • Up to 10 operations during continuous immersion • Modulating duty is not possible during continuous immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. (Not valid in combination with gearboxes)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

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Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or in case of heavy vibration during service. Cable length between actuator and actuator controls is max. 100 m (not suitable for version with potentiometer in the actuator). Instead of the potentiometer, an MWG has to be used. (MWG requires separate data cable.)
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)
Torque measurement flange DMF	Accessory for torque measurement for SA/SAR 07.2 – SA/SAR 16.2

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for industrial valve automation Dimensions Multi-turn actuators with AUMATIC integral controls Dimensions Part-turn actuators with AUMATIC integral controls

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General information

AC 01.2 actuator controls for controlling multi-turn actuators of the SA/SAR .2 type range and part-turn actuators of the SQ/SQR type range with Modbus RTU interface.

Features and functions

Power supply

Standard voltages AC:

3-phase AC Voltages/frequencies											
Volt	220	230	380	380	400	400	415	440	460	480	500
Hz	60	50	50	60	50	60	50	60	60	60	50

1-phase AC Voltages/frequencies				
Volt	110 – 120	110 – 120	220 – 240	220 – 240
Hz	50	60	50	60

Special voltages:
Voltage >500 V AC are only permissible with external control box.

3-phase AC Voltages/frequencies									**1-phase AC** Voltages/frequencies	
Volt	220	240	525	575	575	600	660	690	Volt	208
Hz	50	50	50	50	60	60	50	50	Hz	60

Permissible variation of mains voltage: ±10 %
Permissible variation of mains voltage: ±30 % (option)
Permissible variation of mains frequency: ±5 %
Special voltages DC: (on request)

DC current Voltages						
Volt	24	48	60	110	125	220

Permissible voltage deviation: (on request)

External supply of the electronics (option)

24 V DC +20 %/–15 %
Current consumption: Basic version approx. 250 mA, with options up to 500 mA
External power supply must have reinforced insulation against mains voltage in accordance with IEC 61010-1 and may only be supplied by a circuit limited to 150 VA in accordance with IEC 61010-1.

Current consumption

Current consumption of the actuator controls depending on mains voltage:
For permissible variation of mains voltage of ±10 %:

- 100 to 120 V AC = max. 740 mA
- 208 to 240 V AC = max. 400 mA
- 380 to 500 V AC = max. 250 mA
- 515 to 690 V AC = max. 200 mA

For permissible variation of mains voltage of ±30 %:

- 100 to 120 V AC = max. 1,200 mA
- 208 to 240 V AC = max. 750 mA
- 380 to 500 V AC = max. 400 mA
- 515 to 690 V AC = max. 400 mA

Overvoltage category

Category III according to IEC 60364-4-443

Rated power

Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator

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Features and functions		
Switchgear	Standard:	Reversing contactors (mechanically and electrically interlocked) for AUMA power classes A1/A2
	Options:	Reversing contactors (mechanically and electrically interlocked) for AUMA power class A3
		Thyristor unit for mains voltage up to 500 V AC (recommended for modulating actuators) for AUMA power classes B1, B2 and B3
	The reversing contactors are designed for a lifetime of 2 million starts. For applications requiring a high number of starts, we recommend the use of thyristor units. For the assignment of AUMA power classes, please refer to Electrical data on actuator	
Control and feedback signals	Via Modbus RTU interface	
Fieldbus interface with additional input signals (option)	• 2 free analogue inputs (0/4 – 20 mA), 4 free digital inputs - Signal transmission is made via fieldbus interface • Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - OPEN, STOP, CLOSE, EMERGENCY control inputs - I/O interface: Selection of control type (fieldbus interface or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for position setpoint • Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - OPEN, STOP, CLOSE, EMERGENCY control inputs - I/O interface: Selection of control type (fieldbus interface or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for setpoint position and 1 analogue input (0/4 – 20 mA) for actual process value	
Control voltage and current consumption of optional, digital additional inputs	Standard	24 V DC, current consumption: approx. 10 mA per input
	Options:	48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 115 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input
	All input signals must be supplied with the same potential.	
Status signals	Via Modbus RTU interface	
Fieldbus interface with additional output signals (option)	Additional, binary output signals (only available in combination with additional input signals (option) • 6 programmable output contacts: - 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) • 6 programmable output contacts: - 5 potential-free change-over contacts with one common, max. 250 V AC, 1 A (resistive load) - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 6 potential-free change-over contacts without one common, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free NO contact, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), All binary output signals must be supplied with the same potential. • Analogue output signal for position feedback - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)	

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Features and functions		
Voltage output	Standard:	Auxiliary voltage 24 V DC: max. 100 mA for supply of control inputs, galvanically isolated from internal voltage supply.
	Option:	Auxiliary voltage 115 V AC: max. 30 mA for supply of control inputs, galvanically isolated from internal voltage supply (Not possible in combination with PTC tripping device)
Redundancy (option)	Redundant line topology with universal redundancy behaviour according to AUMA redundancy I or II Redundant loop topology in combination with SIMA Master Station • Max. number of actuators with actuator controls per redundant loop: 247 units • Max. possible cable length between the actuators equipped with actuator controls without external repeater: 1,200 m • Max. possible total length per redundant ring: approx. 290 km • Automatic commissioning of the redundant ring by means of the SIMA Master Station	
FO cable connection (option)	• Connector types: ST or SC connector • FO cables - Multi-mode: 62,5(50)/125 µm, range approx. 2.5 km (max. 2.0 dB/km) - Single-mode: 9/125 µm, range approx. 15 km (max. 0.4 dB/km) • Topologies: Line, star and redundant ring (with single-channel Modbus RTU interface) • Baud rate: up to 115.2 kbit/s • Optical budget: - Multi-mode: 13 dB - Single-mode: 17 dB • Wave length: 1,310 mm • FO coupler by EKS required at DCS, reference addresses: AUMA or www.eks-engel.com	
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments, supports the SPP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)	

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Features and functions		
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Any 8 intermediate positions: can be set between 0 and 100 %, reaction and signal behaviour programmable • Running indication blinking: can be set • Positioner - Position setpoint via Modbus RTU interface - Automatic adaptation of dead band (adaptive behaviour selectable) - Change-over between OPEN-CLOSE control and setpoint control possible viafieldbus interface
	Options:	• PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value • Multiport valve: Up to 16 positions, signals (pulse or edge) • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set • Static and dynamic torque recording for both rotation directions with torque measurement flange as additional accessory
Safety functions	Standard:	• EMERGENCY operation (programmable behaviour) - Via additional input (option, low aktive) or via fieldbus interface - Reaction can be selected: Stop, run to end position CLOSED, run to end position OPEN, run to intermediate position - Torque monitoring can be by-passed during EMERGENCY operation - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	• Release of local controls via fieldbus interface. Thus, actuator operation can be enabled or disabled via push buttons on local controls. • Local STOP - The actuator can be stopped via push button Stop of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • Interlock for main/by-pass valve: Enabling the operation commands OPEN or CLOSE via fieldbus interface • EMERGENCY Stop push button (latching): interrupts electrical operation, irrespective of the selector switch position. • PVST (Partial Valve Stroke Test): programmable to check the function of both actuator and actuator controls: Direction, stroke, operation time, reversing time
Monitoring functions	• Valve overload protection: adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): results in switching off and generates fault indication • Monitoring the heater within actuator: generates warning signal • Monitoring of permissible on-time and number of starts: adjustable, generates warning signal • Operation time monitoring: adjustable, generates warning signal • Phase failure monitoring: results in switching off and generates fault signal • Automatic correction of rotation direction upon wrong phase sequence (3-ph AC current)	
Diagnostic functions	• Electronic device ID with order and product data • Logging of operating data: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings • Time-stamped event report with history for setting, operation and faults • Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" • Torque characteristics (for version with MWG in actuator): - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately. - Torque characteristics stored can be shown on the display.	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Options:	• Thermal overload relay in controls combined with thermoswitches within actuator • PTC tripping device in combination with PTC thermistors within actuator motor

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Features and functions		
Overvoltage protection (option)	Protection of the actuator and control electronics against overvoltages on the fieldbus cables of up to 4 kV	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Option:	Gold-plated control plug (sockets and plugs)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Wiring diagram (basic version)	TPCAC000-1A1-A000 TPA00R1AA-0A1-000	

Further options for Non-intrusive version with MWG in the actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Via Modbus RTU interface Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω). Option, only possible in combination with output contacts.
Wiring diagram (basic version)	TPCAC000-1A1-A000 TPA00R100-0I1-000

Settings/programming the Modbus RTU interface	
Setting the fieldbus address	Baud rate, parity and Modbus address are set via the display of actuator controls

General data of the Modbus RTU interface	
Communication protocol	Modbus RTU according to IEC 61158 and IEC 61784
Network topology	• Line (fieldbus) structure. When using repeaters, tree structures can also be implemented. • Coupling and uncoupling of devices during operation without affecting other devices is possible.
Transmission medium	Twisted, screened copper cable according to IEC 61158
Fieldbus interface	EIA-485 (RS-485)
Transmission rate/cable length	Redundant line topology:

Baud rate (kbit/s)	Max. cable length (segment length) without repeater	Possible cable length with repeater (total network cable length)
9.6 – 115.2	1,200 m	approx. 10 km

Redundant ring topology:

Baud rate (kbit/s)	Max. cable length between actuators (without repeater)	Max. possible cable length of redundant loop
9.6 – 115.2	1,200 m	approx. 290 km

Device types	Modbus slave, e.g. devices with digital and/or analogue inputs/outputs such as actuators, sensors

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General data of the Modbus RTU interface	
Number of devices	32 devices in each segment without repeater, with repeaters expandable to 247
Fieldbus access	Polling between master and slaves (query response)
Supported Modbus functions (services)	01 Read Coil Status 02 Read Input Status 03 Read Holding Registers 04 Read Input Registers 05 Force Single Coil 15 (0FHex) Force Multiple Coils 06 Preset Single Register 16 (10Hex) Preset Multiple Registers 17 (11Hex) Report Slave ID 08 Diagnostics: • 00 00 Loopback • 00 10 (0AHex) Clear Counters and Diagnostic Register • 00 11 (0BHex) Return Bus Message Count • 00 12 (0CHex) Return Bus Communication Error Count • 00 13 (0DHex) Return Bus Exception Error Count • 00 14 (0EHex) Return Slave Message Count • 00 15 (0FHex) Return Slave No Response Count • 00 16 (10Hex) Return Slave NAK Count • 00 17 (11Hex) Return Slave Busy Count • 00 18 (12Hex) Return Character Overrun Count

Commands and signals of the Modbus RTU interface	
Process representation output (command signals)	OPEN, STOP, CLOSE, position setpoint, RESET, EMERGENCY operation command, enable LOCAL, Interlock OPEN/CLOSE
Process representation input (feedback signals)	• End position OPEN, CLOSED • Actual position value • Actual torque value, requires MWG in actuator • Selector switch in position LOCAL/REMOTE • Running indication (directional) • Torque switch OPEN, CLOSED • Limit switch OPEN, CLOSED • Manual operation by handwheel or via local controls • Analogue (2) and digital (4) customer inputs
Process representation input (fault signals)	• Motor protection tripped • Torque switch tripped in mid-travel • One phase missing • Loss of the analogue customer inputs
Behaviour on loss of communication	The behaviour of the actuator is programmable: • Stop in current position • Travel to end position OPEN or CLOSED • Travel to any intermediate position • Execute last received operation command

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–60 °C to +60 °C, extreme low temperature version
		Low temperature versions incl. heating system for connection to external power supply 230 V AC or 115 V AC, or internal version 400 V AC.
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	

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Service conditions		
Enclosure protection according to EN 60529	Standard:	IP68
	Option:	Terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: Maximum 8 m head of water • Duration of continuous immersion in water: Maximum 96 hours • Up to 10 operations during continuous immersion • Modulating duty is not possible during continuous immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. (Not valid in combination with gearboxes)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or heavy vibration during service. Cable length between actuator and actuator controls is max. 100 m (Not suitable for version with potentiometer in the actuator). Instead of the potentiometer, the actuator has to be equipped with an electronic position transmitter. (MWG requires a separate data cable.)
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)
Torque measurement flange DMF	Accessory for torque measurement for SA/SAR 07.2 – SA/SAR 16.2

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for industrial valve automation Dimensions Multi-turn actuators with AUMATIC integral controls Dimensions Part-turn actuators with AUMATIC integral controls

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General information

AC 01.2 actuator controls for controlling multi-turn actuators of the SA/SAR .2 type range and part-turn actuators of the SQ/SQR type range with Modbus TCP/IP interface.

Features and functions

Power supply

Standard voltages AC:

3-phase AC Voltages/frequencies											
Volt	220	230	380	380	400	400	415	440	460	480	500
Hz	60	50	50	60	50	60	50	60	60	60	50

1-phase AC Voltages/frequencies				
Volt	110 – 120	110 – 120	220 – 240	220 – 240
Hz	50	60	50	60

Special voltages:
Voltage >500 V AC are only permissible with external control box.

3-phase AC Voltages/frequencies									**1-phase AC** Voltages/frequencies	
Volt	220	240	525	575	575	600	660	690	Volt	208
Hz	50	50	50	50	60	60	50	50	Hz	60

Permissible variation of mains voltage: ±10 %
Permissible variation of mains voltage: ±30 % (option)
Permissible variation of mains frequency: ±5 %
Special voltages DC: (on request)

DC current Voltages						
Volt	24	48	60	110	125	220

Permissible voltage deviation: (on request)

External supply of the electronics (option)

24 V DC +20 %/–15 %
Current consumption: Basic version approx. 250 mA, with options up to 500 mA
External power supply must have reinforced insulation against mains voltage in accordance with IEC 61010-1 and may only be supplied by a circuit limited to 150 VA in accordance with IEC 61010-1.

Current consumption

Current consumption of the actuator controls depending on mains voltage:
For permissible variation of mains voltage of ±10 %:

- 100 to 120 V AC = max. 740 mA
- 208 to 240 V AC = max. 400 mA
- 380 to 500 V AC = max. 250 mA
- 515 to 690 V AC = max. 200 mA

For permissible variation of mains voltage of ±30 %:

- 100 to 120 V AC = max. 1,200 mA
- 208 to 240 V AC = max. 750 mA
- 380 to 500 V AC = max. 400 mA
- 515 to 690 V AC = max. 400 mA

Overvoltage category

Category III according to IEC 60364-4-443

Rated power

Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Features and functions		
Switchgear	Standard:	Reversing contactors (mechanically and electrically interlocked) for AUMA power classes A1/A2
	Options:	Reversing contactors (mechanically and electrically interlocked) for AUMA power class A3
		Thyristor unit for mains voltage up to 500 V AC (recommended for modulating actuators) for AUMA power classes B1, B2 and B3
	The reversing contactors are designed for a lifetime of 2 million starts. For applications requiring a high number of starts, we recommend the use of thyristor units. For the assignment of AUMA power classes, please refer to Electrical data on actuator	
Control and feedback signals	Via Modbus TCP/IP interface	
Modbus TCP/IP interface with additional input signals (option)	• 2 free analogue inputs (0/4 – 20 mA), 4 free digital inputs - Signal transmission is made via fieldbus interface • Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - OPEN, STOP, CLOSE, EMERGENCY control inputs - I/O interface: Selection of control type (fieldbus interface or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for position setpoint • Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - OPEN, STOP, CLOSE, EMERGENCY control inputs - I/O interface: Selection of control type (fieldbus interface or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for setpoint position and 1 analogue input (0/4 – 20 mA) for actual process value	
Control voltage and current consumption of optional, digital additional inputs	Standard	24 V DC, current consumption: approx. 10 mA per input
	Options:	48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 115 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input
	All input signals must be supplied with the same potential.	
Status signals	Via Modbus TCP/IP interface	
Modbus TCP/IP interface with additional output signals (option)	Additional, binary output signals (only available in combination with additional input signals (option) • 6 programmable output contacts: - 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) • 6 programmable output contacts: - 5 potential-free change-over contacts with one common, max. 250 V AC, 1 A (resistive load) - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 6 potential-free change-over contacts without one common, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free NO contact, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), All binary output signals must be supplied with the same potential. • Analogue output signal for position feedback - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)	

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Features and functions		
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments, supports the SPP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)	
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Any 8 intermediate positions: can be set between 0 and 100 %, reaction and signal behaviour programmable • Running indication blinking: can be set • Positioner - Position setpoint via Modbus TCP/IP interface - Automatic adaptation of dead band (adaptive behaviour selectable) - Change-over between OPEN-CLOSE control and setpoint control possible viafieldbus interface
	Options:	• PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value • Multiport valve: Up to 16 positions, signals (pulse or edge) • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set • Static and dynamic torque recording for both rotation directions with torque measurement flange as additional accessory
Safety functions	Standard:	• EMERGENCY operation (programmable behaviour) - Via additional input (option, low aktive) or via fieldbus interface - Reaction can be selected: Stop, run to end position CLOSED, run to end position OPEN, run to intermediate position - Torque monitoring can be by-passed during EMERGENCY operation - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	• Release of local controls via fieldbus interface. Thus, actuator operation can be enabled or disabled via push buttons on local controls. • Local STOP - The actuator can be stopped via push button Stop of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • Interlock for main/by-pass valve: Enabling the operation commands OPEN or CLOSE via fieldbus interface • EMERGENCY Stop push button (latching): interrupts electrical operation, irrespective of the selector switch position. • PVST (Partial Valve Stroke Test): programmable to check the function of both actuator and actuator controls: Direction, stroke, operation time, reversing time

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Features and functions		
Monitoring functions	• Valve overload protection: adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): results in switching off and generates fault indication • Monitoring the heater within actuator: generates warning signal • Monitoring of permissible on-time and number of starts: adjustable, generates warning signal • Operation time monitoring: adjustable, generates warning signal • Phase failure monitoring: results in switching off and generates fault signal • Automatic correction of rotation direction upon wrong phase sequence (3-ph AC current)	
Diagnostic functions	• Electronic device ID with order and product data • Logging of operating data: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings • Time-stamped event report with history for setting, operation and faults • Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" • Torque characteristics (for version with MWG in actuator): - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately. - Torque characteristics stored can be shown on the display.	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Options:	• Thermal overload relay in controls combined with thermoswitches within actuator • PTC tripping device in combination with PTC thermistors within actuator motor
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Option:	Gold-plated control plug (sockets and plugs)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Wiring diagram (basic version)	TPCAC000-1A1-A5E0 TPA00R1AA-0A1-000	

Further options for Non-intrusive version with MWG in the actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Via Modbus TCP/IP interface Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω). Option, only possible in combination with output contacts.
Wiring diagram (basic version)	TPCAC000-1A1-A5E0 TPA00R100-0I1-000

Settings/programming the Modbus TCP/IP interface	
Setting the fieldbus address	Baud rate, parity and Modbus address are set via the display of actuator controls
Setting the Modbus gateway	Settings are made via web server Default settings of the IP interface:

IP Address Selection	
Address Type	Static IP
Static IP Address	192.168.255.1
Subnet Mask	255.255.0.0
Default Gateway	192.168.0.1

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General Modbus TCP/IP data	
Communication protocol	Modbus TCP/IP according to IEC 61158 and IEC 61784
Network topology	Star topology/ point-to-point topology
Transmission medium	IEC IEEE 802.3, cable recommendation: Cat. 6_A
Transmission rate/cable length	• Baud rate of 10/100 Mbits/s • Maximum cable length: 100 m
Supported Modbus functions (services)	01 Read Coil Status 02 Read Input Status 03 Read Holding Registers 04 Read Input Registers 05 Force Single Coil 15 (0FHex) Force Multiple Coils 06 Preset Single Register 16 (10Hex) Preset Multiple Registers 17 (11Hex) Report Slave ID 08 Diagnostics: • 00 00 Loopback • 00 10 (0AHex) Clear Counters and Diagnostic Register • 00 11 (0BHex) Return Bus Message Count • 00 12 (0CHex) Return Bus Communication Error Count • 00 13 (0DHex) Return Bus Exception Error Count • 00 14 (0EHex) Return Slave Message Count • 00 15 (0FHex) Return Slave No Response Count • 00 16 (10Hex) Return Slave NAK Count • 00 17 (11Hex) Return Slave Busy Count • 00 18 (12Hex) Return Character Overrun Count

Commands and signals of the Modbus TCP/IP interface	
Process representation output (command signals)	OPEN, STOP, CLOSE, position setpoint, RESET, EMERGENCY operation command, enable LOCAL, Interlock OPEN/CLOSE
Process representation input (feedback signals)	• End positions OPEN, CLOSED • Actual position value • Actual torque value, requires magnetic limit and torque transmitter (MWG) in actuator • Selector switch in position LOCAL/REMOTE • Running indication (directional) • Torque switches OPEN, CLOSED • Limit switches OPEN, CLOSED • Manual operation by handwheel or via local controls • Analogue (2) and digital (4) customer inputs
Process representation input (fault signals)	• Motor protection tripped • Torque switch tripped in mid-travel • One phase missing • Failure of analogue customer inputs
Behaviour on loss of communication	The behaviour of the actuator is programmable: • Stop in current position • Travel to end position OPEN or CLOSED • Travel to any intermediate position • Execute last received operation command

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	Standard:	–25 °C to +70 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	

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Service conditions		
Enclosure protection according to EN 60529	Standard:	IP68
	Option:	Terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: Maximum 8 m head of water • Duration of continuous immersion in water: Maximum 96 hours • Up to 10 operations during continuous immersion • Modulating duty is not possible during continuous immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	Resistance against vibration can be given on request	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or heavy vibration during service. Cable length between actuator and actuator controls is max. 100 m (Not suitable for version with potentiometer in the actuator). Instead of the potentiometer, the actuator has to be equipped with an electronic position transmitter. (MWG requires a separate data cable.)
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)
Torque measurement flange DMF	Accessory for torque measurement for SA/SAR 07.2 – SA/SAR 16.2

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for industrial valve automation Dimensions Multi-turn actuators with AUMATIC integral controls Dimensions Part-turn actuators with AUMATIC integral controls

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General information

AC 01.2 actuator controls for controlling multi-turn actuators of the SA/SAR .2 type range and part-turn actuators of the SQ/SQR type range with Foundation Fieldbus interface.

Features and functions

Power supply

Standard voltages AC:

3-phase AC Voltages/frequencies											
Volt	220	230	380	380	400	400	415	440	460	480	500
Hz	60	50	50	60	50	60	50	60	60	60	50

1-phase AC Voltages/frequencies				
Volt	110 – 120	110 – 120	220 – 240	220 – 240
Hz	50	60	50	60

Special voltages:
Voltage >500 V AC are only permissible with external control box.

3-phase AC Voltages/frequencies									**1-phase AC** Voltages/frequencies	
Volt	220	240	525	575	575	600	660	690	Volt	208
Hz	50	50	50	50	60	60	50	50	Hz	60

Permissible variation of mains voltage: ±10 %
Permissible variation of mains voltage: ±30 % (option)
Permissible variation of mains frequency: ±5 %
Special voltages DC: (on request)

DC current Voltages						
Volt	24	48	60	110	125	220

Permissible voltage deviation: (on request)

External supply of the electronics (option)

24 V DC +20 %/–15 %
Current consumption: Basic version approx. 250 mA, with options up to 500 mA
External power supply must have reinforced insulation against mains voltage in accordance with IEC 61010-1 and may only be supplied by a circuit limited to 150 VA in accordance with IEC 61010-1.

Current consumption

Current consumption of the actuator controls depending on mains voltage:
For permissible variation of mains voltage of ±10 %:

- 100 to 120 V AC = max. 740 mA
- 208 to 240 V AC = max. 400 mA
- 380 to 500 V AC = max. 250 mA
- 515 to 690 V AC = max. 200 mA

For permissible variation of mains voltage of ±30 %:

- 100 to 120 V AC = max. 1,200 mA
- 208 to 240 V AC = max. 750 mA
- 380 to 500 V AC = max. 400 mA
- 515 to 690 V AC = max. 400 mA

Overvoltage category

Category III according to IEC 60364-4-443

Rated power

Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator

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Features and functions		
Switchgear	Standard:	Reversing contactors (mechanically and electrically interlocked) for AUMA power classes A1/A2
	Options:	Reversing contactors (mechanically and electrically interlocked) for AUMA power class A3
		Thyristor unit for mains voltage up to 500 V AC (recommended for modulating actuators) for AUMA power classes B1, B2 and B3
	The reversing contactors are designed for a lifetime of 2 million starts. For applications requiring a high number of starts, we recommend the use of thyristor units. For the assignment of AUMA power classes, please refer to Electrical data on actuator	
Control and feedback signals	Via Foundation Fieldbus H1 interface	
Fieldbus interface with additional input signals (option)	• 2 free analogue inputs (0/4 – 20 mA), 4 free digital inputs - Signal transmission is made via fieldbus interface • Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - OPEN, STOP, CLOSE, EMERGENCY control inputs - I/O interface: Selection of control type (fieldbus interface or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for position setpoint • Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - OPEN, STOP, CLOSE, EMERGENCY control inputs - I/O interface: Selection of control type (fieldbus interface or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for setpoint position and 1 analogue input (0/4 – 20 mA) for actual process value	
Control voltage and current consumption of optional, digital additional inputs	Standard	24 V DC, current consumption: approx. 10 mA per input
	Options:	48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 115 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input
	All input signals must be supplied with the same potential.	
Status signals	Via Foundation Fieldbus H1 interface	
Fieldbus interface with additional output signals (option)	Additional, binary output signals (only available in combination with additional input signals (option) • 6 programmable output contacts: - 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) • 6 programmable output contacts: - 5 potential-free change-over contacts with one common, max. 250 V AC, 1 A (resistive load) - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 6 potential-free change-over contacts without one common, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free NO contact, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), All binary output signals must be supplied with the same potential. • Analogue output signal for position feedback - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)	

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Features and functions		
Voltage output	Standard:	Auxiliary voltage 24 V DC: max. 100 mA for supply of control inputs, galvanically isolated from internal voltage supply.
	Option:	Auxiliary voltage 115 V AC: max. 30 mA for supply of control inputs, galvanically isolated from internal voltage supply (Not possible in combination with PTC tripping device)
Redundancy (option)	Redundant FF H1 interface in accordance with AUMA redundancy I	
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments, supports the SPP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)	
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Any 8 intermediate positions: can be set between 0 and 100 %, reaction and signal behaviour programmable • Running indication blinking: can be set • Positioner - Position setpoint via Foundation Fieldbus interface - Automatic adaptation of dead band (adaptive behaviour selectable) - Change-over between OPEN-CLOSE control and setpoint control possible viafieldbus interface
	Options:	• PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value • Multiport valve: Up to 16 positions, signals (pulse or edge) • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set • Static and dynamic torque recording for both rotation directions with torque measurement flange as additional accessory

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Features and functions		
Safety functions	Standard:	• EMERGENCY operation (programmable behaviour) - Via additional input (option, low aktive) or via fieldbus interface - Reaction can be selected: Stop, run to end position CLOSED, run to end position OPEN, run to intermediate position - Torque monitoring can be by-passed during EMERGENCY operation - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	• Release of local controls via fieldbus interface. Thus, actuator operation can be enabled or disabled via push buttons on local controls. • Local STOP - The actuator can be stopped via push button Stop of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • Interlock for main/by-pass valve: Enabling the operation commands OPEN or CLOSE via fieldbus interface • EMERGENCY Stop push button (latching): interrupts electrical operation, irrespective of the selector switch position. • PVST (Partial Valve Stroke Test): programmable to check the function of both actuator and actuator controls: Direction, stroke, operation time, reversing time
Monitoring functions	• Valve overload protection: adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): results in switching off and generates fault indication • Monitoring the heater within actuator: generates warning signal • Monitoring of permissible on-time and number of starts: adjustable, generates warning signal • Operation time monitoring: adjustable, generates warning signal • Phase failure monitoring: results in switching off and generates fault signal • Automatic correction of rotation direction upon wrong phase sequence (3-ph AC current)	
Diagnostic functions	• Electronic device ID with order and product data • Logging of operating data: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings • Time-stamped event report with history for setting, operation and faults • Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" • Torque characteristics (for version with MWG in actuator): - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately. - Torque characteristics stored can be shown on the display.	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Options:	• Thermal overload relay in controls combined with thermoswitches within actuator • PTC tripping device in combination with PTC thermistors within actuator motor
Overvoltage protection (option)	Protection of the actuator and control electronics against overvoltages on the fieldbus cables of up to 4 kV	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Option:	Gold-plated control plug (sockets and plugs)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Wiring diagram (basic version)	TPCAF000-1A1-A000 TPA00R1AA-0A1-000	

Further options for Non-intrusive version with MWG in the actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Via Foundation Fieldbus interface Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω). Option, only possible in combination with output contacts.
Wiring diagram (basic version)	TPCAF000-1A1-A000 TPA00R100-0I1-000

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Settings/programming the Foundation Fieldbus interface	
Setting the fieldbus address	The address is set via Foundation Fieldbus using the provided system management services and a configuration software for Foundation Fieldbus (e.g. NI-FBUS).
Configurable feedback signals	The feedback signals of the “Analog Input” (AI) and “Discrete Input” (DI) function blocks may be configured according to the requirements using channels and the appropriate transducer blocks. Configuration is made via Foundation Fieldbus while using the device description and a configuration software for Foundation Fieldbus (e.g. NI-FBUS).
Programming of AUMATIC user functions	AUMATIC user functions (e.g. stepping mode, intermediate positions, ...) may either be programmed via AUMATIC display or via Foundation Fieldbus using AUMATIC device description and a configuration software for Foundation Fieldbus (e.g. NI-FBUS).

General data of the Foundation Fieldbus interface	
Communication protocol	Foundation Fieldbus H1 (31.25 kbit/s) in accordance with IEC 61158 and IEC 61784-1
Physical Layer	Separate supply, standard data transmission
Network topology	Line, star and tree structures (trunks combined with spurs) are supported. Internal drop line length of AC 01.2 is 0.27 m.
Transmission medium	Two-wire copper cable with data transmission and voltage supply on the same wire pair in accordance with • ISA S50.02-1992 ISA Physical Layer Standard or • IEC 61158-2:2000 (ed. 2.0), fieldbus standard for use in industrial control systems, part 2: Physical Layer specification and service definition Recommendation: Use cable type A (screened and twisted)
Current consumption	approx. 13 mA at +24 V DC
Transmission rate	31.25 kbit/s
Cable length	Max. 1,900 m (only when using the recommended A type cable); with repeaters (4 units max.) expandable up to a max. of 9.5 km
Number of devices	• Max. 32 devices per segment; altogether max. 240 devices can be addressed. • Typical number of devices: approx. 6 – 15 devices per segment
Communication services	• Publisher/subscriber communication for the transmission of process data • Client/server communication for programming and configuration • Report Distribution for transmission of alarm signals
Supported Foundation Fieldbus functions	AC 01.2 is a Link Master device. Link Master devices can take over the Link Active Scheduler (LAS) function for co-ordination of bus communication.
Permissive connection	AC 01.2/ACExC 01.2 offer an automatic polarity detection and polarity correction of the Foundation Fieldbus cable.

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Function blocks of Foundation Fieldbus interface	
Function blocks of the output signals	• 8 Discrete Output (DO) function blocks for discrete output signals, e.g.: - OPEN, STOP, CLOSE - RESET - EMERGENCY - Interlock OPEN/CLOSE - Enable Local - Intermediate positions - Digital customer outputs • 2 Analog Output (AO) function blocks for analogue output signals, e.g.: - Setpoint position - Analogue customer outputs
Function blocks for input signals	• 10 Discrete Input (DI) function blocks for discrete feedback signals, e.g.: - End positions OPEN/CLOSED - Selector switch in position LOCAL/REMOTE - Running indication (directional) - Torque switch OPEN, CLOSED - Limit switch OPEN, CLOSED - Manual operation by handwheel or via local controls - Intermediate positions - Digital customer inputs • 4 Analog Input (AI) function blocks for analogue output signals, e.g.: - Actual position - Torque - Analogue 0 – 20 mA customer inputs
Further function blocks	• 1 Signal Characterizer function block (SC) for conversion of analogue signals • 1 Input Selector (IS) function block for the selection of analogue input signals • 1 Process controller (PID) block as function block for modulating applications • Resource Block (RB) for definition of characteristic Foundation Fieldbus device data • 4 Transducer blocks (AOTB, DOTB, AITB, DITB) as connection blocks of discrete and analogue input and output signals • 1 Transducer Block (PTB) as connection block for control • 1 Transducer Block (AUMACTB) for configuration and programming • 1 Transducer Block (AUMADTB) for monitoring and diagnostics

Special features of the AUMATIC Foundation Fieldbus interface	
Manufacturer ID	0x0A01FF
Device type	0x0001
Device revision	0x01 or 0x02
Device ID	0A01FF0001-(serial number of AC 01.2-x)-(serial number FF module)
Baud rate	31.25 kbit/s
Polarity	No polarity (automatic polarity dectection and correction)
Segment information	
Standard	FF H1
Link master (LAS) function	Yes
Current consumption	13 mA
FF supply current	< 20 mA
Device voltage min/max	9 – 32 V DC
FISCO ic characteristics	FF capacity: < 5 nF, FF inductivity: < 10 µH, Minimum input current: Ii = 380 mA, Minimum input voltage: Ui = 17.5 V, Minimum input power: Pi = 5.32 W
Jitter tolerance range	< ±8 µs
Min. transmission level (Vp-t-p)	> 0.75 V
Available server VCRs	23

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Special features of the AUMATIC Foundation Fieldbus interface	
Available source VCRs	23
Available publisher VCRs	23
Available subscriber VCRs	23
DD revision	0x01
CFF revision	020101
ITK revision	6.1.2
Available channels	
Analog Output (AO) function blocks	0, 1, 3, 20, 21
Discrete Output (DO) function blocks	0, 2, 4 – 19
Analog Input (AI) function blocks	0, 67, 68, 69, 70
Discrete Input (DI) function blocks	0, 22 – 66, 71
Number of function blocks with their respective execution times [ms]	
8 Discrete Output (DO) function blocks	30 ms
2 Analog Output (AO) function blocks	30 ms
10 Discrete Input (DI) function blocks	20 ms
4 Analog Input (AI) function blocks	30 ms
1 Signal Characterizer (SC) function block	40 ms
1 Input Selector (IS) function block	30 ms
1 Proportional/Integral/Differential (PID) function block	40 ms

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–60 °C to +60 °C, extreme low temperature version
		Low temperature versions incl. heating system for connection to external power supply 230 V AC or 115 V AC, or internal version 400 V AC.
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection according to EN 60529	Standard:	IP68
	Option:	Terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: Maximum 8 m head of water • Duration of continuous immersion in water: Maximum 96 hours • Up to 10 operations during continuous immersion • Modulating duty is not possible during continuous immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. (Not valid in combination with gearboxes)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

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Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or heavy vibration during service. Cable length between actuator and actuator controls is max. 100 m (Not suitable for version with potentiometer in the actuator). Instead of the potentiometer, the actuator has to be equipped with an electronic position transmitter. (MWG requires a separate data cable.)
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)
Torque measurement flange DMF	Accessory for torque measurement for SA/SAR 07.2 – SA/SAR 16.2

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for industrial valve automation Dimensions Multi-turn actuators with AUMATIC integral controls Dimensions Part-turn actuators with AUMATIC integral controls

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Allgemeine Informationen
Stellantriebs-Steuerung AC 01.2 zur Steuerung von Drehantrieben der Baureihe SA/SAR .2 und Schwenkantriebe der Baureihe SQ/SQR .2 mit HART Schnittstelle

Features and functions	
Power supply	Standard voltages AC: **3-phase AC** Voltages/frequencies Volt: 220, 230, 380, 380, 400, 400, 415, 440, 460, 480, 500 Hz: 60, 50, 50, 60, 50, 60, 50, 60, 60, 60, 50 **1-phase AC** Voltages/frequencies Volt: 110 – 120, 110 – 120, 220 – 240, 220 – 240 Hz: 50, 60, 50, 60 Special voltages: Voltage >500 V AC are only permissible with external control box. **3-phase AC** Voltages/frequencies Volt: 220, 240, 525, 575, 575, 600, 660, 690 Hz: 50, 50, 50, 50, 60, 60, 50, 50 **1-phase AC** Voltages/frequencies Volt: 208 Hz: 60 Permissible variation of mains voltage: ±10 % Permissible variation of mains voltage: ±30 % (option) Permissible variation of mains frequency: ±5 % Special voltages DC: (on request) **DC current** Voltages Volt: 24, 48, 60, 110, 125, 220 Permissible voltage deviation: (on request)
External supply of the electronics (option)	24 V DC +20 %/–15 % Current consumption: Basic version approx. 250 mA, with options up to 500 mA External power supply must have reinforced insulation against mains voltage in accordance with IEC 61010-1 and may only be supplied by a circuit limited to 150 VA in accordance with IEC 61010-1.
Current consumption	Current consumption of the actuator controls depending on mains voltage: For permissible variation of mains voltage of ±10 %: • 100 to 120 V AC = max. 740 mA • 208 to 240 V AC = max. 400 mA • 380 to 500 V AC = max. 250 mA • 515 to 690 V AC = max. 200 mA For permissible variation of mains voltage of ±30 %: • 100 to 120 V AC = max. 1,200 mA • 208 to 240 V AC = max. 750 mA • 380 to 500 V AC = max. 400 mA • 515 to 690 V AC = max. 400 mA
Overvoltage category	Category III according to IEC 60364-4-443
Rated power	Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator

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Features and functions		
Switchgear	Standard:	Reversing contactors (mechanically and electrically interlocked) for AUMA power classes A1/A2
	Options:	Reversing contactors (mechanically and electrically interlocked) for AUMA power class A3
		Thyristor unit for mains voltage up to 500 V AC (recommended for modulating actuators) for AUMA power classes B1, B2 and B3
	The reversing contactors are designed for a lifetime of 2 million starts. For applications requiring a high number of starts, we recommend the use of thyristor units. For the assignment of AUMA power classes, please refer to Electrical data on actuator	
Control and feedback signals	Via HART interface Device category: Actuator Analogue 4 – 20 mA setpoint with digital HART communication Device category: Current Output Analogue 4 – 20 mA position feedback signal with digital HART communication	
HART interface with additional input signals (option)	Device category: “Actuator”: • Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, (via opto-isolator thereof OPEN, STOP, CLOSE with one common and EMERGENCY, I/O interface respectively without common) - OPEN, STOP, CLOSE, EMERGENCY control inputs - I/O interface: Selection of control type (HART or additional input signals) Device category: “Current Output”: • Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - OPEN, STOP, CLOSE, EMERGENCY control inputs - I/O interface: Selection of control type (HART or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint)	
Control voltage and current consumption of optional, digital additional inputs	Standard	24 V DC, current consumption: approx. 10 mA per input
	Options:	48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 115 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input
	All input signals must be supplied with the same potential.	
Status signals	Via HART interface	
HART interface with additional output signals (option)	Additional, binary output signals (only available in combination with additional input signals (option) • 6 programmable output contacts: - 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) • 6 programmable output contacts: - 5 potential-free change-over contacts with one common, max. 250 V AC, 1 A (resistive load) - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 6 potential-free change-over contacts without one common, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free NO contact, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), All binary output signals must be supplied with the same potential. In combination with device category: “Actuator”: • Analogue output signal for position feedback - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)	

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Features and functions		
Voltage output	Standard:	Auxiliary voltage 24 V DC: max. 100 mA for supply of control inputs, galvanically isolated from internal voltage supply.
	Option:	Auxiliary voltage 115 V AC: max. 30 mA for supply of control inputs, galvanically isolated from internal voltage supply (Not possible in combination with PTC tripping device)
Analogue output (option)	2 analogue outputs: With position transmitter option: Output of travel and torque as continuous values between 0/4 and 20 mA	
Analogue input (option)	2 analogue inputs: With positioner/process controller option: Input of actual position value/actual process value as continuous values between 0/4 and 20 mA	
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments, supports the SPP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)	
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Any 8 intermediate positions: can be set between 0 and 100 %, reaction and signal behaviour programmable • Running indication blinking: can be set • Positioner - Position setpoint via HART interface - Automatic adaptation of dead band (adaptive behaviour selectable) - Change-over between OPEN-CLOSE control and setpoint control possible via HART interface
	Options:	• PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value • Multiport valve: Up to 16 positions, signals (pulse or edge) • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set • Static and dynamic torque recording for both rotation directions with torque measurement flange as additional accessory

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Features and functions		
Safety functions	Standard:	• EMERGENCY operation (programmable behaviour) - Digital input: Low active (option) - Reaction can be selected: Stop, run to end position CLOSED, run to end position OPEN, run to intermediate position - Torque monitoring can be by-passed during EMERGENCY operation - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	• Local STOP - The actuator can be stopped via push button Stop of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • Interlock for main/by-pass valve: Enabling the operation commands OPEN or CLOSE via HART interface • EMERGENCY Stop push button (latching): interrupts electrical operation, irrespective of the selector switch position. • PVST (Partial Valve Stroke Test): programmable to check the function of both actuator and actuator controls: Direction, stroke, operation time, reversing time
Monitoring functions	• Valve overload protection: adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): results in switching off and generates fault indication • Monitoring the heater within actuator: generates warning signal • Monitoring of permissible on-time and number of starts: adjustable, generates warning signal • Operation time monitoring: adjustable, generates warning signal • Phase failure monitoring: results in switching off and generates fault signal • Automatic correction of rotation direction upon wrong phase sequence (3-ph AC current)	
Diagnostic functions	• Electronic device ID with order and product data • Logging of operating data: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings • Time-stamped event report with history for setting, operation and faults • Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" • Torque characteristics (for version with MWG in actuator): - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately. - Torque characteristics stored can be shown on the display.	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Options:	• Thermal overload relay in controls combined with thermoswitches within actuator • PTC tripping device in combination with PTC thermistors within actuator motor
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Option:	Gold-plated control plug (sockets and plugs)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Wiring diagram (basic version)	Device category: “Actuator” TPCAI000-1A1-A000 TPA00R1AA-0A1-000 Device category: „Current Output“:TPCAJ000-1A1-A000 TPA00R1AA-0A1-000	

Further options for Non-intrusive version with MWG in the actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Via HART interface Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω). Option, only possible in combination with output contacts.
Wiring diagram (basic version)	Device category: “Actuator” TPCAI000-1A1-A000 TPA00R100-0I1-000 Device category: “Current Output”: TPCAJ000-1A1-A000 TPA00R100-0I1-000

Einstellungen/Programmierung der HART Schnittstelle	
Setting the HART address	Die Einstellung der HART Adresse erfolgt über das HART Kommando 6 bzw. alternativ über das Display der AC 01.2 (Defaultwert: 0)

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Allgemeine Daten der HART Schnittstelle	
Network topology	Point-to-point wiring
Communication signal	HART, baud rate 1.2 kbit/s Device class: "Actuator" • FSK (Frequency Shift Key) modulated to 4 – 20 mA setpoint signal • Eingangsimpedanz: 250 Ω. Die Impedanzen anderer angeschlossener HART Geräte (parallel oder seriell) müssen innerhalb der HART Spezifikation liegen. • Point-to-point wiring • Signal range: 4 – 20 mA • Working range: 2 – 22 mA • Minimum operation voltage: 7 V (at 22 mA) • Integrated reverse polarity protection Gerätekategorie: „Current Output": • FSK (Frequency Shift Key) auf 4 – 20 mA Stellungsrückmeldung aufmoduliert • Eingangsimpedanz: 40 kΩ. Die Impedanzen anderer angeschlossener HART Geräte (parallel oder seriell) müssen innerhalb der HART Spezifikation liegen. • Punkt-zu-Punkt oder Multidrop Verdrahtung • Stromausgang aktiv, kurzschlussfest. Keine weitere externe Spannungsversorgung erlaubt
HART cable specification	Refer to HART specification
Power supply	Interne Spannungsversorgung der HART Schnittstelle durch die Stellantriebs-Steuerung (erfordert außer der HART Versorgungsspannung keine weitere Versorgung)
Device identification	Manufacturer name: AUMA Manufacturer ID: 0x607C HART protocol revision: 7.4 Number of device variables: 12 Model name: AUMATIC AC 01.2/ACExC 01.2 Device type code: 0xE1FD
Supported HART commands	• Universal Commands • Common Practice Commands: - Command 33 (Read Device Variables) - Command 40 (Enter/Exit Fixed Current Mode) - Command 42 (Perform Device Reset) - Command 45 (Trim Loop Current Zero) - Command 46 (Trim Loop Current Gain) - Command 50 (Read Dynamic Variable Assignments) - Command 79 (Write Device Variable) - Command 95 (Read Device Communication Statistics) • Device Specific Commands: - Command 128 (Write Operation Command) - Command 131 (Read Software Version) - Command 132 (Reset to Factory Default) - Command 133 (Reset Operational Data) - Command 134 (Reset HART Configuration) - Command 160 (Read Parameter) - Command 161 (Write Parameter) - Command 162 (Read Process Data)

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Befehle und Meldungen der HART Schnittstelle	
Output data	Device class: "Actuator" Supported control types: • Loop Current Mode activated: Analogue 4 – 20 mA control signal for position setpoint • Loop Current Mode deactivated: Digital HART commands for position setpoint (0 – 100.0 %) or for discrete operation in directions OPEN and CLOSE Gerätekategorie: „Current Output": • Loop Current Mode activated: Analoges 4 – 20 mA Ausgangssignal zur Stellungsrückmeldung (Punkt-zu-Punkt Verdrahtung) Digitale HART Kommandos für Stellungssollwert (0 – 100,0 %) bzw. für diskrete Fahrbefehle in Fahrtrichtung AUF und ZU • Loop Current Mode deaktiviert: Analoges Ausgangssignal zur Stellungsrückmeldung auf 4 mA fixiert (Multidrop Verdrahtung) Digital HART commands for position setpoint (0 – 100.0 %) or for discrete operation in directions OPEN and CLOSE
Feedback signals	End positions OPEN, CLOSED Position setpoint Actual torque value, requires magnetic limit and torque transmitter (MWG) in actuator Selector switch in position LOCAL/REMOTE Running indication (directional) Torque switches OPEN, CLOSED Limit switches OPEN, CLOSED Manual operation by handwheel or via local controls Analogue (2) and digital (4) customer inputs Device Status Informationen • Field Device Status • Device Specific Status • Extended Device Status Information • Standardized Status • Analog Channel Saturated • Analog Channel Fixed
Fehlermeldungen	Motor protection tripped Torque switch tripped in mid-travel One phase missing Failure of analogue customer inputs

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–60 °C to +60 °C, extreme low temperature version
		Low temperature versions incl. heating system for connection to external power supply 230 V AC or 115 V AC, or internal version 400 V AC.
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection according to EN 60529	Standard:	IP68
	Option:	Terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: Maximum 8 m head of water • Duration of continuous immersion in water: Maximum 96 hours • Up to 10 operations during continuous immersion • Modulating duty is not possible during continuous immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Service conditions		
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. (Not valid in combination with gearboxes)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or heavy vibration during service. Cable length between actuator and actuator controls is max. 100 m (Not suitable for version with potentiometer in the actuator). Instead of the potentiometer, the actuator has to be equipped with an electronic position transmitter. (MWG requires a separate data cable.)
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)
Torque measurement flange DMF	Accessory for torque measurement for SA/SAR 07.2 – SA/SAR 16.2

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for industrial valve automation Dimensions Multi-turn actuators with AUMATIC integral controls Dimensions Part-turn actuators with AUMATIC integral controls

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Technical data Actuator controls in SIL version

General information
AC 01.2 actuator controls in SIL version for controlling multi-turn actuators of the SA/SAR type range and part-turn actuators of the SQ/SQR .2 type range.

Information on SIL features of AC 01.2-SIL actuator controls

Features and functions		
SIL control	Via digital inputs Safe ESD a,b and/or Safe STOP OPEN/CLOSE	
Control voltage/current consumption for inputs of the SIL functions	24 V DC, current consumption: approx. 10 mA per input	
SIL status signal	1 potential-free change-over contact (max. 24 V DC/1 A) for SIL collective failure signal	
SIL functions - safety functions	Standard:	• Safe ESD - Digital inputs (redundant inputs) low active - Reaction can be selected: Run to end position CLOSED (Safe ESD CLOSE, CLOSE), run to end position OPEN (Safe ESD OPEN, OPEN) - Torque monitoring and forced limit seating (OPEN and CLOSE) for Safe ESD can be by-passed - Thermal protection for Safe ESD can be by-passed • Seating types can be set - Forced limit seating in end position (Actuator only stops once end positions OPEN or CLOSED are reached irrespective of the torque applied.) - Limit seating with overload protection (Once the set tripping point in end positions OPEN or CLOSED has been reached, the actuator will be switched off. If excessive torque is applied during travel, the actuator is already switched off prior to reaching the end position.) - Forced torque seating (Actuator only stops when reaching the set end position torque.)
	Options:	• Safe STOP - 2 digital inputs (OPEN and CLOSE) low active - Reaction can be selected: STOP in direction OPEN (Safe STOP OPEN) and/or STOP in direction CLOSE (Safe STOP CLOSE) • Combination of Safe ESD and Safe STOP
Local controls	Safety functions are executed irrespective of selector switch position LOCAL - OFF - REMOTE.	
SIL monitoring functions	• Actuator operation monitoring, generates SIL fault signal • Monitoring of redundant wiring Safe ESD: In case of incorrect wiring, a SIL fault signal is generated • Internal monitoring of the SIL components of the controls. In case of a fault, a SIL fault signal is generated.	
Configuration	Due to the requirements on functional safety, other restrictions with regard to configuration options of the actuator and the actuator controls not listed here do apply.	
Actuator version in combination with AC .2-SIL	• The actuator must be equipped with a blinker transmitter. • The actuator is supplied with the motor locked in disengaged position. Motor operation will only be possible once the lock is disabled.	

Further options for version with MWG in actuator	
SIL limit switches	Forced limit seating in end position
Actuator version in combination with AC .2-SIL	Only actuators in clockwise closing version may be used.

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Technical data Actuator controls in SIL version

Information on general features of AC 01.2-SIL actuator controls

Features and functions

Power supply

Standard voltages AC:

3-phase AC Voltages/frequencies											
Volt	220	230	380	380	400	400	415	440	460	480	500
Hz	60	50	50	60	50	60	50	60	60	60	50

Special voltages AC:

3-phase AC Voltages/frequencies								
Volt	220	240	525	575	575	600	660	690
Hz	50	50	50	50	60	60	50	50

Permissible variation of mains voltage: ±10 %
Permissible variation of mains frequency: ±5 %

660 V and 690 V not permissible in combination with thyristors

External supply of the electronics (option)

24 V DC +20 %/–15 %
Current consumption: Basic version approx. 250 mA, with options up to 500 mA
External power supply must have reinforced insulation against mains voltage in accordance with IEC 61010-1 and may only be supplied by a circuit limited to 150 VA in accordance with IEC 61010-1.
The "external supply of electronics" option refers to the components of the standard actuator controls. However, the SIL components of the actuators controls are not supplied.

Current consumption

Current consumption of the actuator controls depending on mains voltage:
For permissible variation of mains voltage of ±10 %:

- 208 to 240 V AC = max. 400 mA
- 380 to 500 V AC = max. 250 mA
- 515 to 690 V AC = max. 200 mA

Overvoltage category

Category III according to IEC 60364-4-443

Rated power

Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator

Switchgear

Open-close duty: Reversing contactors (mechanically and electrically interlocked) for AUMA power classes A1/A2

Modulating duty: Thyristor unit for mains voltage up to 600 V AC (required to meet the safety figures for modulating actuators) for AUMA power classes B1 and B2

The reversing contactors are designed for a lifetime of 2 million starts. For applications requiring a high number of starts, we recommend the use of thyristor units.
For the assignment of AUMA power classes, please refer to Electrical data on actuator

Control inputs

6 digital inputs: OPEN, STOP, CLOSE, EMERGENCY (via opto-isolator, thereof OPEN, STOP, CLOSE with one common and EMERGENCY without common, respect minimum pulse duration for modulating actuators).

Status signals (output signals)

Standard:

- 6 programmable output contacts:
  - 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load)
    Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, SIL function active, SIL fault, torque fault CLOSE, torque fault OPEN
  - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load)
    Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped)
- Analogue output signal for position feedback
  - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)

Options:

- 6 programmable output contacts:
  - 5 change-over contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load)
- 6 programmable output contacts:
  - 6 potential-free change-over contacts without one common, per contact max. 250 V AC, 5 A (resistive load)

All output signals must be supplied with the same potential.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical data Actuator controls in SIL version

Information on general features of AC 01.2-SIL actuator controls		
Features and functions		
Analogue output (option)	2 analogue outputs: With position transmitter option: Output of travel and torque as continuous values between 0/4 and 20 mA	
Analogue input (option)	2 analogue inputs: With positioner/process controller option: Input of actual position value/actual process value as continuous values between 0/4 and 20 mA	
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments, supports the SPP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)	
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Any 8 intermediate positions: can be set between 0 and 100 %, reaction and signal behaviour programmable • Running indication blinking: can be set
	Options:	• Positioner - Position setpoint via analogue input 0/4 – 20 mA - Programmable behaviour on loss of signal - Automatic adaptation of dead band (adaptive behaviour selectable) - Split range operation - MODE input for selecting between OPEN-CLOSE and setpoint control • PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value
Monitoring functions	• Valve overload protection: adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): results in switching off and generates fault indication • Monitoring the heater within actuator: generates warning signal • Monitoring of permissible on-time and number of starts: adjustable, generates warning signal • Operation time monitoring: adjustable, generates warning signal • Phase failure monitoring: results in switching off and generates fault signal	
Diagnostic functions	• Electronic device ID with order and product data • Logging of operating data: A resettable counter and a lifetime counter each for: • Time-stamped event report with history for setting, operation and faults • Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required"	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Option:	PTC tripping device in combination with PTC thermistors within actuator motor
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	• Screw-type or crimp-type connection • Gold-plated control plug (sockets and plugs)

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Technical data Actuator controls in SIL version

Information on general features of AC 01.2-SIL actuator controls		
Features and functions		
Threads for cable entries	Standard:	Metric threads
	Options:	• Pg-threads, NPT-threads, G-threads • Terminals or crimp-type connection
Wiring diagram (basic version)	TPCC-0A1-1A1-A000 TPA00R1AA-1A1-AB0	

Further options for Non-intrusive version with MWG in the actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω).
Diagnostic function	• Torque characteristics - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately. Torque characteristics stored can be shown on the display.
Wiring diagram (basic version)	TPCC-0A1-1A1-A000 TPA00R10A-1I1-AB0

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	Standard:	–25 °C to +70 °C
	Options:	–60 °C to +60 °C, extreme low temperature version
		Low temperature versions with heating system only
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection according to EN 60529	Standard:	IP68
	Option:	Terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: Maximum 8 m head of water • Duration of continuous immersion in water: Maximum 96 hours	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or heavy vibration during service. Cable length between actuator and actuator controls is max. 100 m (Not suitable for version with potentiometer in the actuator). Instead of the potentiometer, the actuator has to be equipped with an electronic position transmitter. (MWG requires a separate data cable.)
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical data Actuator controls in SIL version

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Functional safety of electrical/electronic/programmable electronic safety-related systems: (IEC 61508) Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for industrial valve automation Dimensions Multi-turn actuators with AUMATIC integral controls Dimensions Part-turn actuators with AUMATIC integral controls Manual Functional Safety Actuators SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2/SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2, SQ 05.2 – SQ 14.2/ SQR 05.2 – SQR 14.2/ SQEx 05.2 – SQEx 14.2/ SQREx 05.2 – SQREx 14.2 with actuator controls AC 01.2/ACExC 01.2 in SIL version

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AC 01.2-SIL
Profibus DP
Technical data Actuator controls in SIL version

General information

AC 01.2 actuator controls in SIL version for controlling multi-turn actuators of the SA/SAR type range and part-turn actuators of the SQ/SQR .2 type range with Profibus DP interface.

Information on SIL features of AC 01.2-SIL actuator controls

Features and functions		
SIL control	Via digital inputs Safe ESD a,b and/or Safe STOP OPEN/CLOSE	
Control voltage/current consumption for inputs of the SIL functions	24 V DC, current consumption: approx. 10 mA per input	
SIL status signal	1 potential-free change-over contact (max. 24 V DC/1 A) for SIL collective failure signal	
SIL functions - safety functions	Standard:	• Safe ESD - Digital inputs (redundant inputs) low active - Reaction can be selected: Run to end position CLOSED (Safe ESD CLOSE, CLOSE), run to end position OPEN (Safe ESD OPEN, OPEN) - Torque monitoring and forced limit seating (OPEN and CLOSE) for Safe ESD can be by-passed - Thermal protection for Safe ESD can be by-passed • Seating types can be set - Forced limit seating in end position (Actuator only stops once end positions OPEN or CLOSED are reached irrespective of the torque applied.) - Limit seating with overload protection (Once the set tripping point in end positions OPEN or CLOSED has been reached, the actuator will be switched off. If excessive torque is applied during travel, the actuator is already switched off prior to reaching the end position.) - Forced torque seating (Actuator only stops when reaching the set end position torque.)
	Options:	• Safe STOP - 2 digital inputs (OPEN and CLOSE) low active - Reaction can be selected: STOP in direction OPEN (Safe STOP OPEN) and/or STOP in direction CLOSE (Safe STOP CLOSE) • Combination of Safe ESD and Safe STOP
Local controls	Safety functions are executed irrespective of selector switch position LOCAL - OFF - REMOTE.	
SIL monitoring functions	• Actuator operation monitoring, generates SIL fault signal • Monitoring of redundant wiring Safe ESD: In case of incorrect wiring, a SIL fault signal is generated • Internal monitoring of the SIL components of the controls. In case of a fault, a SIL fault signal is generated.	
Configuration	Due to the requirements on functional safety, other restrictions with regard to configuration options of the actuator and the actuator controls not listed here do apply.	
Actuator version in combination with AC .2-SIL	• The actuator must be equipped with a blinker transmitter. • The actuator is supplied with the motor locked in disengaged position. Motor operation will only be possible once the lock is disabled.	

Further options for version with MWG in actuator	
SIL limit switches	Forced limit seating in end position
Actuator version in combination with AC .2-SIL	Only actuators in clockwise closing version may be used.

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Information on general features of AC 01.2-SIL actuator controls	
Features and functions	
Power supply	Standard voltages AC: **3-phase AC** Voltages/frequencies Volt: 220 230 380 380 400 400 415 440 460 480 500 Hz: 60 50 50 60 50 60 50 60 60 60 50 Special voltages AC: **3-phase AC** Voltages/frequencies Volt: 220 240 525 575 575 600 660 690 Hz: 50 50 50 50 60 60 50 50 Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %
	660 V and 690 V not permissible in combination with thyristors
External supply of the electronics (option)	24 V DC +20 %/–15 % Current consumption: Basic version approx. 250 mA, with options up to 500 mA External power supply must have reinforced insulation against mains voltage in accordance with IEC 61010-1 and may only be supplied by a circuit limited to 150 VA in accordance with IEC 61010-1. The "external supply of electronics" option refers to the components of the standard actuator controls. However, the SIL components of the actuators controls are not supplied.
Current consumption	Current consumption of the actuator controls depending on mains voltage: For permissible variation of mains voltage of ±10 %: • 208 to 240 V AC = max. 400 mA • 380 to 500 V AC = max. 250 mA • 515 to 690 V AC = max. 200 mA
Overvoltage category	Category III according to IEC 60364-4-443
Rated power	Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator
Switchgear	Open-close duty: Reversing contactors (mechanically and electrically interlocked) for AUMA power classes A1/A2 Modulating duty: Thyristor unit for mains voltage up to 600 V AC (required to meet the safety figures for modulating actuators) for AUMA power classes B1 and B2
	The reversing contactors are designed for a lifetime of 2 million starts. For applications requiring a high number of starts, we recommend the use of thyristor units. For the assignment of AUMA power classes, please refer to Electrical data on actuator
Control and feedback signals	Via Profibus DP interface
Profibus DP-V1 (option)	Access to parameters, the electronic name plate and the operating and diagnostic data with acyclic write/read services
Profibus DP-V2 (option)	Redundancy behaviour according to Profibus DP-V2 specification no. 2.212 (Primary and Backup with RedCom) Synchronisation of time between actuator controls and Profibus master with subsequent time stamp of the most important events such as malfunctions, end position and torque signals from actuator controls
Redundancy (option)	Requires Profibus DP-V2 (option) Redundant line topology with universal redundancy behaviour according to AUMA redundancy I or II Redundant line topology and redundancy behaviour according to Profibus DP-V2 specification no. 2.212 (Primary and Backup with RedCom)

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Information on general features of AC 01.2-SIL actuator controls		
Features and functions		
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments, supports the SPP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)	
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Any 8 intermediate positions: can be set between 0 and 100 %, reaction and signal behaviour programmable • Running indication blinking: can be set • Positioner - Position setpoint via Profibus DP interface - Programmable behaviour on loss of signal - Automatic adaptation of dead band (adaptive behaviour selectable) - Split range operation - Change-over between OPEN-CLOSE control and setpoint control possible via Profibus DP interface
	Options:	• PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value
Monitoring functions	• Valve overload protection: adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): results in switching off and generates fault indication • Monitoring the heater within actuator: generates warning signal • Monitoring of permissible on-time and number of starts: adjustable, generates warning signal • Operation time monitoring: adjustable, generates warning signal • Phase failure monitoring: results in switching off and generates fault signal	
Diagnostic functions	• Electronic device ID with order and product data • Logging of operating data: A resettable counter and a lifetime counter each for: • Time-stamped event report with history for setting, operation and faults • Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required"	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Option:	PTC tripping device in combination with PTC thermistors within actuator motor
Overvoltage protection (option)	Protection of the actuator and control electronics against overvoltages on the fieldbus cables of up to 4 kV	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	• Screw-type or crimp-type connection • Gold-plated control plug (sockets and plugs)
Threads for cable entries	Standard:	Metric threads
	Options:	• Pg-threads, NPT-threads, G-threads • Terminals or crimp-type connection
Wiring diagram (basic version)	TPCCA0G4-1A1-A000 TPA00R1AA-1A1-AB0	

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Further options for Non-intrusive version with MWG in the actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Via Profibus DP interface Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω). Option, only possible in combination with output contacts.
Diagnostic function	• Torque characteristics - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately. Torque characteristics stored can be shown on the display.
Wiring diagram (basic version)	TPCCA0G4-1A1-A000 TPA00R10A-1I1-AB0

Settings/programming the Profibus DP interface	
Baud rate setting	Automatic baud rate recognition
Setting the fieldbus address	The Profibus DP address is set via the actuator controls display.
Configurable process representation via GSD file	For optimum adaptation to the process control system, the process representation input (feedback) can be freely configured.

General Profibus DP interface data	
Communication protocol	Profibus DP according to IEC 61158 and IEC 61784
Network topology	Line (fieldbus) structure. When using repeaters, tree structures can also be implemented. Coupling and uncoupling of devices during operation without affecting other devices is possible.
Transmission medium	Twisted, screened copper cable according to IEC 61158
Profibus DP interface	EIA-485 (RS-485)
Transmission rate/cable length	

Baud rate (kbit/s)	Max. cable length (segment length) without repeater	Possible cable length with repeater (total network cable length):
9.6 – 93.75	1,200 m	approx. 10 km
187.5	1,000 m	approx. 10 km
500	400 m	approx. 4 km
1,500	200 m	approx. 2 km

Device types	DP master class 1, e.g. central controllers such as PLC, PC, ... DP master class 2, e.g. programming/configuration tools DP slave, e.g. devices with digital and/or analogue inputs/outputs such as actuators, sensors	
Number of devices	32 devices without repeater, with repeater expandable to 126	
Fieldbus access	Token-passing between masters and polling for slaves. Mono-master or multi-master systems are possible.	
Supported Profibus DP functions	Cyclic data exchange, sync mode, freeze mode, fail safe mode	
Profibus DP ident no.	0x0C4F:	Standard applications with Profibus DP-V0 and DP-V1
	0x0CBD:	Applications with Profibus DP-V2

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Commands and signals of the Profibus DP interface	
Process representation output (command signals)	OPEN, STOP, CLOSE, position setpoint, RESET, EMERGENCY operation command, enable local controls, Interlock OPEN/CLOSE
Process representation input (feedback signals)	• End positions OPEN, CLOSED • Actual position value • Actual torque value, requires MWG in actuator • Selector switch in position LOCAL/REMOTE • Running indication (directional) • Torque switches OPEN, CLOSED • Limit switches OPEN, CLOSED • Manual operation by handwheel or via local controls • Analogue (2) and digital (4) customer inputs
Process representation input (fault signals)	• Motor protection tripped • Torque switch tripped in mid-travel • One phase missing • SIL fault (option, must not be used in SIS)
Behaviour on loss of communication	The behaviour of the actuator is programmable: • Stop in current position • Travel to end position OPEN or CLOSED • Travel to any intermediate position • Execute last received operation command

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	Standard:	–25 °C to +70 °C
	Options:	–60 °C to +60 °C, extreme low temperature version
		Low temperature versions with heating system only
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection according to EN 60529	Standard:	IP68
	Option:	Terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: Maximum 8 m head of water • Duration of continuous immersion in water: Maximum 96 hours	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. (Not valid in combination with gearboxes)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or heavy vibration during service. Cable length between actuator and actuator controls is max. 100 m (Not suitable for version with potentiometer in the actuator). Instead of the potentiometer, the actuator has to be equipped with an electronic position transmitter. (MWG requires a separate data cable.)
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Functional safety of electrical/electronic/programmable electronic safety-related systems: (IEC 61508) Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for industrial valve automation Dimensions Multi-turn actuators with AUMATIC integral controls Dimensions Part-turn actuators with AUMATIC integral controls Manual Functional Safety Actuators SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2/SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2, SQ 05.2 – SQ 14.2/ SQR 05.2 – SQR 14.2/ SQEx 05.2 – SQEx 14.2/ SQREx 05.2 – SQREx 14.2 with actuator controls AC 01.2/ACExC 01.2 in SIL version

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AC 01.2-SIL
Modbus RTU
Technical data Actuator controls in SIL version

General information

AC 01.2 actuator controls in SIL version for controlling multi-turn actuators of the SA/SAR type range and part-turn actuators of the SQ/SQR .2 type range with Modbus RTU interface.

Information on SIL features of AC 01.2-SIL actuator controls

Features and functions		
SIL control	Via digital inputs Safe ESD a,b and/or Safe STOP OPEN/CLOSE	
Control voltage/current consumption for inputs of the SIL functions	24 V DC, current consumption: approx. 10 mA per input	
SIL status signal	1 potential-free change-over contact (max. 24 V DC/1 A) for SIL collective failure signal	
SIL functions - safety functions	Standard:	• Safe ESD - Digital inputs (redundant inputs) low active - Reaction can be selected: Run to end position CLOSED (Safe ESD CLOSE, CLOSE), run to end position OPEN (Safe ESD OPEN, OPEN) - Torque monitoring and forced limit seating (OPEN and CLOSE) for Safe ESD can be by-passed - Thermal protection for Safe ESD can be by-passed • Seating types can be set - Forced limit seating in end position (Actuator only stops once end positions OPEN or CLOSED are reached irrespective of the torque applied.) - Limit seating with overload protection (Once the set tripping point in end positions OPEN or CLOSED has been reached, the actuator will be switched off. If excessive torque is applied during travel, the actuator is already switched off prior to reaching the end position.) - Forced torque seating (Actuator only stops when reaching the set end position torque.)
	Options:	• Safe STOP - 2 digital inputs (OPEN and CLOSE) low active - Reaction can be selected: STOP in direction OPEN (Safe STOP OPEN) and/or STOP in direction CLOSE (Safe STOP CLOSE) • Combination of Safe ESD and Safe STOP
Local controls	Safety functions are executed irrespective of selector switch position LOCAL - OFF - REMOTE.	
SIL monitoring functions	• Actuator operation monitoring, generates SIL fault signal • Monitoring of redundant wiring Safe ESD: In case of incorrect wiring, a SIL fault signal is generated • Internal monitoring of the SIL components of the controls. In case of a fault, a SIL fault signal is generated.	
Configuration	Due to the requirements on functional safety, other restrictions with regard to configuration options of the actuator and the actuator controls not listed here do apply.	
Actuator version in combination with AC .2-SIL	• The actuator must be equipped with a blinker transmitter. • The actuator is supplied with the motor locked in disengaged position. Motor operation will only be possible once the lock is disabled.	

Further options for version with MWG in actuator	
SIL limit switches	Forced limit seating in end position
Actuator version in combination with AC .2-SIL	Only actuators in clockwise closing version may be used.

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Information on general features of AC 01.2-SIL actuator controls	
Features and functions	
Power supply	Standard voltages AC: **3-phase AC** Voltages/frequencies Volt: 220 230 380 380 400 400 415 440 460 480 500 Hz: 60 50 50 60 50 60 50 60 60 60 50 Special voltages AC: **3-phase AC** Voltages/frequencies Volt: 220 240 525 575 575 600 660 690 Hz: 50 50 50 50 60 60 50 50 Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %
	660 V and 690 V not permissible in combination with thyristors
External supply of the electronics (option)	24 V DC +20 %/–15 % Current consumption: Basic version approx. 250 mA, with options up to 500 mA External power supply must have reinforced insulation against mains voltage in accordance with IEC 61010-1 and may only be supplied by a circuit limited to 150 VA in accordance with IEC 61010-1. The "external supply of electronics" option refers to the components of the standard actuator controls. However, the SIL components of the actuators controls are not supplied.
Current consumption	Current consumption of the actuator controls depending on mains voltage: For permissible variation of mains voltage of ±10 %: • 208 to 240 V AC = max. 400 mA • 380 to 500 V AC = max. 250 mA • 515 to 690 V AC = max. 200 mA
Overvoltage category	Category III according to IEC 60364-4-443
Rated power	Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator
Switchgear	Open-close duty: Reversing contactors (mechanically and electrically interlocked) for AUMA power classes A1/A2 Modulating duty: Thyristor unit for mains voltage up to 600 V AC (required to meet the safety figures for modulating actuators) for AUMA power classes B1 and B2
	The reversing contactors are designed for a lifetime of 2 million starts. For applications requiring a high number of starts, we recommend the use of thyristor units. For the assignment of AUMA power classes, please refer to Electrical data on actuator
Control and feedback signals	Via Modbus RTU interface
Redundancy (option)	Redundant line topology with universal redundancy behaviour according to AUMA redundancy I or II Redundant loop topology in combination with SIMA Master Station • Max. number of actuators with actuator controls per redundant loop: 247 units • Max. possible cable length between the actuators equipped with actuator controls without external repeater: 1,200 m • Max. possible total length per redundant ring: approx. 290 km • Automatic commissioning of the redundant ring by means of the SIMA Master Station

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Information on general features of AC 01.2-SIL actuator controls		
Features and functions		
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments, supports the SPP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)	
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Any 8 intermediate positions: can be set between 0 and 100 %, reaction and signal behaviour programmable • Running indication blinking: can be set • Positioner - Position setpoint via Modbus RTU interface - Programmable behaviour on loss of signal - Automatic adaptation of dead band (adaptive behaviour selectable) - Split range operation - Change-over between OPEN-CLOSE control and setpoint control possible viafieldbus interface
	Options:	• PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value
Monitoring functions	• Valve overload protection: adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): results in switching off and generates fault indication • Monitoring the heater within actuator: generates warning signal • Monitoring of permissible on-time and number of starts: adjustable, generates warning signal • Operation time monitoring: adjustable, generates warning signal • Phase failure monitoring: results in switching off and generates fault signal	
Diagnostic functions	• Electronic device ID with order and product data • Logging of operating data: A resettable counter and a lifetime counter each for: • Time-stamped event report with history for setting, operation and faults • Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required"	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Option:	PTC tripping device in combination with PTC thermistors within actuator motor
Overvoltage protection (option)	Protection of the actuator and control electronics against overvoltages on the fieldbus cables of up to 4 kV	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	• Screw-type or crimp-type connection • Gold-plated control plug (sockets and plugs)
Threads for cable entries	Standard:	Metric threads
	Options:	• Pg-threads, NPT-threads, G-threads • Terminals or crimp-type connection
Wiring diagram (basic version)	TPCCC0G4-1A1-A000 TPA00R1AA-1A1-AB0	

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Further options for Non-intrusive version with MWG in the actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Via Modbus RTU interface Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω). Option, only possible in combination with output contacts.
Diagnostic function	• Torque characteristics - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately. Torque characteristics stored can be shown on the display.
Wiring diagram (basic version)	TPCCC0G4-1A1-A000 TPA00R10A-1I1-AB0

Settings/programming the Modbus RTU interface	
Setting the fieldbus address	Baud rate, parity and Modbus address are set via the display of actuator controls

General data of the Modbus RTU interface	
Communication protocol	Modbus RTU according to IEC 61158 and IEC 61784
Network topology	• Line (fieldbus) structure. When using repeaters, tree structures can also be implemented. • Coupling and uncoupling of devices during operation without affecting other devices is possible.
Transmission medium	Twisted, screened copper cable according to IEC 61158
Fieldbus interface	EIA-485 (RS-485)
Transmission rate/cable length	Redundant line topology:

Baud rate (kbit/s)	Max. cable length (segment length) without repeater	Possible cable length with repeater (total network cable length)
9.6 – 115.2	1,200 m	approx. 10 km

Redundant ring topology:

Baud rate (kbit/s)	Max. cable length between actuators (without repeater)	Max. possible cable length of redundant loop
9.6 – 115.2	1,200 m	approx. 290 km

Device types	Modbus slave, e.g. devices with digital and/or analogue inputs/outputs such as actuators, sensors
Number of devices	32 devices in each segment without repeater, with repeaters expandable to 247
Fieldbus access	Polling between master and slaves (query response)
Supported Modbus functions (services)	01 Read Coil Status 02 Read Input Status 03 Read Holding Registers 04 Read Input Registers 05 Force Single Coil 15 (0FHex) Force Multiple Coils 06 Preset Single Register 16 (10Hex) Preset Multiple Registers 17 (11Hex) Report Slave ID 08 Diagnostics: • 00 00 Loopback • 00 10 (0AHex) Clear Counters and Diagnostic Register • 00 11 (0BHex) Return Bus Message Count • 00 12 (0CHex) Return Bus Communication Error Count • 00 13 (0DHex) Return Bus Exception Error Count • 00 14 (0EHex) Return Slave Message Count • 00 15 (0FHex) Return Slave No Response Count • 00 16 (10Hex) Return Slave NAK Count • 00 17 (11Hex) Return Slave Busy Count • 00 18 (12Hex) Return Character Overrun Count

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Commands and signals of the Modbus RTU interface	
Process representation output (command signals)	OPEN, STOP, CLOSE, position setpoint, RESET, EMERGENCY operation command, enable LOCAL, Interlock OPEN/CLOSE
Process representation input (feedback signals)	• End position OPEN, CLOSED • Actual position value • Actual torque value, requires MWG in actuator • Selector switch in position LOCAL/REMOTE • Running indication (directional) • Torque switch OPEN, CLOSED • Limit switch OPEN, CLOSED • Manual operation by handwheel or via local controls • Analogue (2) and digital (4) customer inputs
Process representation input (fault signals)	• Motor protection tripped • Torque switch tripped in mid-travel • One phase missing • Loss of the analogue customer inputs
Behaviour on loss of communication	The behaviour of the actuator is programmable: • Stop in current position • Travel to end position OPEN or CLOSED • Travel to any intermediate position • Execute last received operation command

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level, on request	
Ambient temperature	Standard:	–25 °C to +70 °C
	Options:	–60 °C to +60 °C, extreme low temperature version
		Low temperature versions with heating system only
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection according to EN 60529	Standard:	IP68
	Option:	Terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: Maximum 8 m head of water • Duration of continuous immersion in water: Maximum 96 hours	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. (Not valid in combination with gearboxes)	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

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Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or heavy vibration during service. Cable length between actuator and actuator controls is max. 100 m (Not suitable for version with potentiometer in the actuator). Instead of the potentiometer, the actuator has to be equipped with an electronic position transmitter. (MWG requires a separate data cable.)
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Functional safety of electrical/electronic/programmable electronic safety-related systems: (IEC 61508) Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for industrial valve automation Dimensions Multi-turn actuators with AUMATIC integral controls Dimensions Part-turn actuators with AUMATIC integral controls Manual Functional Safety Actuators SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2/SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2, SQ 05.2 – SQ 14.2/ SQR 05.2 – SQR 14.2/ SQEx 05.2 – SQEx 14.2/ SQREx 05.2 – SQREx 14.2 with actuator controls AC 01.2/ACExC 01.2 in SIL version

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Technical data Actuator controls

General information
ACV 01.2 actuator controls for controlling actuators with variable speed or operating times of the SAV/SARV .2 and SQV/SQRV .2 type range .

Features and functions	
Power supply	Standard voltages AC:

3-phase AC Voltages/frequencies					**1-phase AC** Voltages/frequencies				
Volt	220 – 240		380 – 480		Volt	110 – 120		220 – 240	
Hz	50	60	50	60	Hz	50	60	50	60

Permissible variation of mains frequency: ±5 %
Permissible variation of mains voltage: ±10 %
–30 % for maximum 10 seconds within a range of 380 V – 480 V with the following restrictions:

- If required, the motor speed will be reduced down to nominal speed depending on the load of the actuators used
- A low mains voltage increases the mains current consumption; a higher mains voltage reduces the mains current consumption
- The torque limits of the actuators used might be decreased for a short time, if applicable

External supply of the electronics (option)	24 V DC: +20 % / –15 % Current consumption: Basic version approx. 250 mA, with options up to 500 mA For external electronics supply, the power supply of integral controls must have an enhanced isolation against mains voltage in compliance with IEC 61010-1 and the output power be limited to 150 VA.	
Rated power	Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator	
Control inputs	6 digital inputs: OPEN, STOP, CLOSE, EMERGENCY (via opto-isolator, thereof OPEN, STOP, CLOSE with one common and EMERGENCY without common, respect minimum pulse duration for modulating actuators.	
Control voltage/current consumption for control inputs	Standard	24 V DC, current consumption: approx. 10 mA per input
	Options:	48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 100 – 125 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input
	All input signals must be supplied with the same potential.	

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Technical data Actuator controls

Features and functions		
Status signals (output signals)	Standard:	• 6 programmable output contacts: - 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) • Analogue output signal for position feedback - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)
	Options:	• 6 programmable output contacts: - 5 change-over contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 12 programmable output contacts: - 10 potential-free NO contacts, 5 with one common each, max. 250 V AC, 1 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 6 potential-free change-over contacts without one common, per contact max. 250 V AC, 5 A (resistive load) • 10 programmable output contacts: - 10 potential-free change-over contacts without one common, per contact max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free NO contact, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), • 12 programmable output contacts: - 8 mains failure proof potential-free NO contacts, max. 250 V AC, 1 A (resistive load), 2 potential-free NO contacts, max. 250 V AC, 1 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load) • 12 programmable output contacts: - 8 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 4 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), All output signals must be supplied with the same potential.
Voltage output	Standard:	Auxiliary voltage 24 V DC: max. 100 mA for supply of control inputs, galvanically isolated from internal voltage supply.
	Option:	Auxiliary voltage 115 V AC: max. 30 mA for supply of control inputs, galvanically isolated from internal voltage supply (Not possible in combination with PTC tripping device)
Analogue output	Standard:	2 analogue outputs: With position transmitter option: Output of travel, torque or output speed as continuous values between 0/4 and 20 mA
Analogue input	Option:	2 analogue inputs: With positioner/process controller option: Input of actual position value/actual process value as continuous values of 0/4 – 20 mA
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons: OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)

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Technical data Actuator controls

Features and functions		
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments; supports the SSP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool)	
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Operation profile with any 8 intermediate positions: Position can be set between 0 and 100 %, reaction and signal behaviour programmable • Velocity profile with up to 10 ranges, velocity can be individually adjusted for positions OPEN and CLOSED for each range • Running indication blinking: can be set • Speed/operating time source can be selected (REMOTE, LOCAL) • 4 internal nominal speeds or operating times can be programmed (and selected in LOCAL) • Nominal speed source/nominal operating time source can be selected for REMOTE (binary, analogue) • Soft start, soft stop with velocity reduction (adjustable)
	Options:	• Positioner: - Position setpoint via analogue inputs 0/4 – 20 mA - Programmable behaviour on loss of signal - Automatic adaptation of dead band (adaptive behaviour selectable) - Split range operation - MODE input for selecting between OPEN-CLOSE and setpoint control - Modulating duty with proportional operation (2 % – 20 %) • PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value • Multiport valve: Up to 16 positions, signals (pulse or edge) (SAV/SARV .2 only) • Lift Plug Valve: In combination with multiport valve (SAV/SARV. 2 only) • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set • Static and dynamic torque recording for both rotation directions with torque measurement flange as additional accessory
Safety functions	Standard:	• EMERGENCY operation (programmable behaviour) - Digital input: Low active - Reaction can be selected: STOP, run to end position (OPEN, CLOSED) or intermediate position at defined speed - Torque monitoring can be by-passed during EMERGENCY operation - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	• Enabling local controls via Enable LOCAL digital input: Thus, actuator operation can be enabled or disabled via push buttons on the local controls. • Interlock for main/by-pass valve: Enabling the operation commands OPEN or CLOSE via two digital inputs • EMERGENCY Stop push button (latching): Interrupts electrical operation, irrespective of the selector switch position • PVST (Partial Valve Stroke Test): programmable to check the function of both actuator and actuator controls: Direction, stroke, operation time, reversing time
Monitoring function	• Valve overload protection: Adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): Results in switching off and generates fault signal • Monitoring the heater within actuator: Generates warning signal • Monitoring of permissible on-time and number of starts: Adjustable, generates warning signal • Operating time monitoring: Adjustable, generates warning signal • Phase failure monitoring: Results in switching off and generates fault signal	

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Technical data Actuator controls

Features and functions		
Diagnostic functions	• Electronic device ID with order and product data • Operating data logging: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings • Time-stamped event report with history for setting, operation and faults: - Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" • Torque characteristics (for version with MWG in actuator): - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately - Torque characteristics stored can be shown on the display.	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Option:	PTC tripping device (TMS module) in combination with PTC thermistors within actuator motor
ACV 01.2 heating system (option)	Temperature version below –30 °C including heating system: • in version with internal power supply at 400 V AC, or • in version with external power supply for 230 V AC or 115 V AC	
	For external power supply of the heating system, the minimum operational temperature may not fall below –40 °C in case of danger of disconnection of the mains voltage.	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	• Terminals or crimp connection • Gold-plated control contacts (pins and sockets)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads

For version with MWG within actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω).
Wiring diagram (basic version)	TPCH-0A1-1AF-A000 TPA00R100-0I1-000, 3-phase AC current; 380 V – 480 V TPCH-0A1-1AE-A000 TPA00R100-0I1-000, 1-phase AC current; 220 V – 240 V

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +70 °C –60 °C to +60 °C, extreme low temperature version
		Low temperature versions including heating system. For further options, refer to line "ACV 01.2 heating system (option)".
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	IP68
	Option:	DS terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	

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Technical data Actuator controls

Service conditions		
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. Not valid in combination with gearboxes.	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or in case of heavy vibration during service. Cable length between actuator and actuator controls is max. 16 m.
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool)
Torque measurement flange DMF (SAV/SARV .2 only)	Accessory for torque measurement

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU RED Directive 2014/53/EU
Reference documents	Dimensions SAV 07.2 – SAV 16.2/SARV 07.2 – SARV 16.2 with ACV 01.2 Dimensions SQV 05.2 – SQV 14.2/SQRV 05.2 – SQRV 14.2 with ACV 01.2 Electrical data SAV 07.2 – SAV 16.2/SARV 07.2 – SARV 16.2 Electrical data SQV 05.2 – SQV 14.2/SQRV 05.2 – SQRV 14.2

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General information
ACV 01.2 actuator controls for controlling actuators with variable speed or operating times of the SAV/SARV .2 and SQV/SQRV .2 type range with Profibus DP interface.

Features and functions	
Power supply	Standard voltages AC: **3-phase AC** Voltages/frequencies Volt: 220 – 240 / 380 – 480 Hz: 50, 60 / 50, 60 **1-phase AC** Voltages/frequencies Volt: 110 – 120 / 220 – 240 Hz: 50, 60 / 50, 60 Permissible variation of mains frequency: ±5 % Permissible variation of mains voltage: ±10 % –30 % for maximum 10 seconds within a range of 380 V – 480 V with the following restrictions: • If required, the motor speed will be reduced down to nominal speed depending on the load of the actuators used • A low mains voltage increases the mains current consumption; a higher mains voltage reduces the mains current consumption • The torque limits of the actuators used might be decreased for a short time, if applicable
External supply of the electronics (option)	24 V DC: +20 % / –15 % Current consumption: Basic version approx. 250 mA, with options up to 500 mA For external electronics supply, the power supply of integral controls must have an enhanced isolation against mains voltage in compliance with IEC 61010-1 and the output power be limited to 150 VA.
Rated power	Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator
Control and feedback signals	Via Profibus DP interface
Additional input signals for Fieldbus interface (option)	• 2 free analogue inputs (0/4 – 20 mA), 4 free digital inputs - Signal transmission is made via Fieldbus interface • Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - Control inputs: OPEN, STOP, CLOSE, EMERGENCY - I/O interface: Selection of control type (fieldbus or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for setpoint position or additionally 1 analogue input (0/4 – 20 mA) for setpoint position and 1 analogue input (0/4 – 20 mA) for actual process value
Control voltage/current consumption for control inputs	Standard: 24 V DC, current consumption: approx. 10 mA per input Options: 48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 100 – 125 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input All input signals must be supplied with the same potential.
Status signals	Via Profibus DP interface

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Features and functions		
Additional output signals for Fieldbus interface (option, only available in combination with additional input signals)	• 6 programmable output contacts: - 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) • 6 programmable output contacts: - 5 potential-free change-over contacts with one common, max. 250 V AC, 1 A (resistive load) - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 6 potential-free change-over contacts without one common, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free NO contact, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), All binary output signals must be supplied with the same potential. • Analogue output signal for position feedback - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)	
Voltage output	Standard:	Auxiliary voltage 24 V DC: max. 100 mA for supply of control inputs, galvanically isolated from internal voltage supply.
	Option:	Auxiliary voltage 115 V AC: max. 30 mA for supply of control inputs, galvanically isolated from internal voltage supply (Not possible in combination with PTC tripping device)
Profibus DP-V1 (option)	Access to parameters, the electronic name plate and the operating and diagnostic data with acyclic write/read services	
Profibus DP-V2 (option)	Redundancy behaviour according to Profibus DP-V2 specification no. 2.212 (Primary and Backup with RedCom) Synchronisation of time between AC(Not possible in combination with PTC tripping device) 01.2 and Profibus master with subsequent time stamp of the most important events such as faults, end position and torque signals from the ACV 01.2	
Redundancy (option)	Requires Profibus DP-V2 (option) Redundant line topology with universal redundancy behaviour according to AUMA redundancy I or II Redundant line topology and redundancy behaviour according to Profibus DP-V2 specification no. 2.212 (Primary and Backup with RedCom)	
FO cable connection (option)	• Connector types: ST or SC connector • FO cables - Multi-mode: 62,5(50)/125 µm, range approx. 2.5 km (max. 2.0 dB/km) - Single-mode: 9/125 µm, range approx. 15 km (max. 0.4 dB/km) • Topologies: Line, star and redundant loop (with single-channel Profibus interface) • Baud rate: up to 1.5 Mbit/s • Optical budget: - Multi-mode: 13 dB - Single-mode: 17 dB • Wave length: 1 310 mm • FO coupler by EKS required at DCS, reference addresses: AUMA or www.eks-engel.com	

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Features and functions		
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons: OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments; supports the SSP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool)	
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Operation profile with any 8 intermediate positions: Position can be set between 0 and 100 %, reaction and signal behaviour programmable • Velocity profile with up to 10 ranges, velocity can be individually adjusted for positions OPEN and CLOSED for each range • Running indication blinking: can be set • Speed/operating time source can be selected (REMOTE, LOCAL) • 4 internal nominal speeds or operating times can be programmed (and selected in LOCAL) • Nominal speed source can be selected for REMOTE (binary, analogue, fieldbus) • Soft start, soft stop with velocity reduction (adjustable) • Positioner: - Position setpoint via fieldbus interface - Programmable behaviour on loss of signal - Automatic adaptation of dead band (adaptive behaviour selectable) - Change-over between OPEN-CLOSE control and setpoint control via fieldbus - Modulating duty with proportional operation (2 % – 20 %) - Positioning accuracy <0.2 % (SAV/SARV .2 only)
	Options:	• PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value • Multiport valve: Up to 16 positions, signals (pulse or edge) (SAV/SARV .2 only) • Lift Plug Valve: In combination with multiport valve (SAV/SARV. 2 only) • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set • Static and dynamic torque recording for both rotation directions with torque measurement flange as additional accessory

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Features and functions		
Safety functions	Standard:	• EMERGENCY operation (programmable behaviour) - Via additional input (option, low active) or via fieldbus interface - Reaction can be selected: STOP, run to end position (OPEN, CLOSED) or intermediate position at defined speed - Torque monitoring can be by-passed during EMERGENCY operation - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	• Enabling local controls via Enable LOCAL digital input: Thus, actuator operation can be are or disabled via push buttons on local controls. • Interlock for main/by-pass valve: Enabling the operation commands OPEN or CLOSE via two digital inputs • EMERGENCY Stop push button (latching): Interrupts electrical operation, irrespective of the selector switch position • PVST (Partial Valve Stroke Test): programmable to check the function of both actuator and actuator controls: Direction, stroke, operation time, reversing time
Monitoring function	• Valve overload protection: Adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): Results in switching off and generates fault signal • Monitoring the heater within actuator: Generates warning signal • Monitoring of permissible on-time and number of starts: Adjustable, generates warning signal • Operating time monitoring: Adjustable, generates warning signal • Phase failure monitoring: Results in switching off and generates fault signal	
Diagnostic functions	• Electronic device ID with order and product data • Operating data logging: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings • Time-stamped event report with history for setting, operation and faults: - Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" • Torque characteristics (for version with MWG in actuator): - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately - Torque characteristics stored can be shown on the display.	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Option:	PTC tripping device (TMS module) in combination with PTC thermistors within actuator motor
ACV 01.2 heating system (option)	Temperature version below –30 °C including heating system: • in version with internal power supply at 400 V AC, or • in version with external power supply for 230 V AC or 115 V AC	
	For external power supply of the heating system, the minimum operational temperature may not fall below –40 °C in case of danger of disconnection of the mains voltage.	
Overvoltage protection (option)	Protection of the actuator and control electronics against overvoltages on the fieldbus cables of up to 4 kV	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	• Terminals or crimp connection • Gold-plated control contacts (pins and sockets)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads

For version with MWG within actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Via fieldbus interface Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω).
Wiring diagram (basic version)	TPCHA000-1AF-A000 TPA00R100-0I1-000, 3-phase AC current, 380 V – 480 V TPCHA000-1AE-A000 TPA00R100-0I1-000, 1-phase AC current, 220 V – 240 V

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Settings/programming the Profibus DP interface	
Baud rate setting	Automatic baud rate recognition
Setting the fieldbus address	The Profibus DP address is set via the actuator controls display.
Configurable process representation via GSD file	For an optimum adaptation to the process control system, the process representation input (feedback signals) can be configured as desired.

General Profibus DP interface data		
Communication protocol	Profibus DP according to IEC 61158 and IEC 61784	
Network topology	Line (fieldbus) structure. When using repeaters, tree structures can also be implemented. Coupling and uncoupling of devices during operation without affecting other devices is possible.	
Transmission medium	Twisted, screened copper cable according to IEC 61158	
Profibus DP interface	EIA-485 (RS-485)	
Transmission rate/cable length	Baud rate (kbit/s)	Max. cable length (segment length) without repeater / Possible cable length with repeater (total network cable length):
	9.6 – 93.75	1,200 m / approx. 10 km
	187.5	1,000 m / approx. 10 km
	500	400 m / approx. 4 km
	1,500	200 m / approx. 2 km
Device types	DP master class 1, e.g. central controllers such as PLC, PC, ... DP master class 2, e.g. programming/configuration tools DP slave, e.g. devices with digital and/or analogue inputs/outputs such as actuators, sensors	
Number of devices	32 devices without repeater, with repeater expandable to 126	
Fieldbus access	Token-passing between masters and polling for slaves. Mono-master or multi-master systems are possible.	
Supported Profibus DP functions	Cyclic data exchange, sync mode, freeze mode, fail safe mode	
Profibus DP ident no.	0x0C4F:	Standard applications with Profibus DP-V0 and DP-V1
	0x0CBD:	Applications with Profibus DP-V2

Commands and signals of the Profibus DP interface	
Process representation output (command signals)	OPEN, STOP, CLOSE, position setpoint, RESET, EMERGENCY operation command, enable local controls, Interlock OPEN/CLOSE OPEN, STOP, CLOSE, speed, position setpoint, RESET, EMERGENCY operation command, enable local controls, Interlock OPEN/CLOSE
Process representation input (feedback signals)	• End positions OPEN, CLOSED • Actual position value • Actual torque value, requires MWG in actuator • Selector switch in position LOCAL/REMOTE • Running indication (directional) • Torque switches OPEN, CLOSED • Limit switches OPEN, CLOSED • Manual operation by handwheel or via local controls • Analogue (2) and digital (4) customer inputs
Process representation input (fault signals)	• Motor protection tripped • Torque switch tripped in mid-travel • Failure of analogue customer inputs
Behaviour on loss of communication	The behaviour of the actuator is programmable: • Stop in current position • Travel to end position OPEN or CLOSED • Travel to any intermediate position • Execute last received operation command

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Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +70 °C –60 °C to +60 °C, extreme low temperature version
		Low temperature versions including heating system. For further options, refer to line "ACV 01.2 heating system (option)".
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	IP68
	Option:	DS terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. Not valid in combination with gearboxes.	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or in case of heavy vibration during service. Cable length between actuator and actuator controls is max. 16 m.
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool)
Torque measurement flange DMF (SAV/SARV .2 only)	Accessory for torque measurement

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU RED Directive 2014/53/EU
Reference documents	Dimensions SAV 07.2 – SAV 16.2/SARV 07.2 – SARV 16.2 with ACV 01.2 – Fieldbus Dimensions SQV 05.2 – SQV 14.2/SQRV 05.2 – SQRV 14.2 with ACV 01.2 – Fieldbus Electrical data SAV 07.2 – SAV 16.2/SARV 07.2 – SARV 16.2 Electrical data SQV 05.2 – SQV 14.2/SQRV 05.2 – SQRV 14.2

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General Information
ACV 01.2 actuator controls for controlling variable speed multi-turn actuators of the SAV/SARV .2 type range with Profinet interface.

Features and functions	
Power supply	Standard voltages AC: **3-phase AC** Voltages/frequencies: Volt 220 – 240 / 380 – 480; Hz 50 / 60 / 50 / 60 **1-phase AC** Voltages/frequencies: Volt 110 – 120 / 220 – 240; Hz 50 / 60 / 50 / 60 Permissible variation of mains frequency: ±5 % Permissible variation of mains voltage: ±10 % –30 % for maximum 10 seconds within a range of 380 V – 480 V with the following restrictions: • If required, the motor speed will be reduced down to nominal speed depending on the load of the actuators used • A low mains voltage increases the mains current consumption; a higher mains voltage reduces the mains current consumption • The torque limits of the actuators used might be decreased for a short time, if applicable
External supply of the electronics (option)	24 V DC: +20 % / –15 % Current consumption: Basic version approx. 250 mA, with options up to 500 mA For external electronics supply, the power supply of integral controls must have an enhanced isolation against mains voltage in compliance with IEC 61010-1 and the output power be limited to 150 VA.
Rated power	Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator
Control voltage/current consumption for control inputs	Standard: 24 V DC, current consumption: approx. 10 mA per input Options: 48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 100 – 125 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input All input signals must be supplied with the same potential.
Local controls	Standard: • Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons: OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated Option: • Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments; supports the SSP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool)

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Features and functions		
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Operation profile with any 8 intermediate positions: Position can be set between 0 and 100 %, reaction and signal behaviour programmable • Velocity profile with up to 10 ranges, velocity can be individually adjusted for positions OPEN and CLOSED for each range • Running indication blinking: can be set • Speed/operating time source can be selected (REMOTE, LOCAL) • 4 internal nominal speeds or operating times can be programmed (and selected in LOCAL) • Nominal speed source can be selected for REMOTE (binary, analogue, fieldbus) • Soft start, soft stop with velocity reduction (adjustable) • Positioner: - Position setpoint via fieldbus interface - Programmable behaviour on loss of signal - Automatic adaptation of dead band (adaptive behaviour selectable) - Change-over between OPEN-CLOSE control and setpoint control via fieldbus - Modulating duty with proportional operation (2 % – 20 %) - Positioning accuracy <0.2 % (SAV/SARV .2 only)
	Options:	• PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value • Multiport valve: Up to 16 positions, signals (pulse or edge) (SAV/SARV .2 only) • Lift Plug Valve: In combination with multiport valve (SAV/SARV. 2 only) • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set • Static and dynamic torque recording for both rotation directions with torque measurement flange as additional accessory
Monitoring function	• Valve overload protection: Adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): Results in switching off and generates fault signal • Monitoring the heater within actuator: Generates warning signal • Monitoring of permissible on-time and number of starts: Adjustable, generates warning signal • Operating time monitoring: Adjustable, generates warning signal • Phase failure monitoring: Results in switching off and generates fault signal	
Diagnostic functions	• Electronic device ID with order and product data • Operating data logging: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings • Time-stamped event report with history for setting, operation and faults: - Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" • Torque characteristics (for version with MWG in actuator): - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately - Torque characteristics stored can be shown on the display.	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Option:	PTC tripping device (TMS module) in combination with PTC thermistors within actuator motor
ACV 01.2 heating system (option)	Temperature version below –30 °C including heating system: • in version with internal power supply at 400 V AC, or • in version with external power supply for 230 V AC or 115 V AC	
	For external power supply of the heating system, the minimum operational temperature may not fall below –40 °C in case of danger of disconnection of the mains voltage.	

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Features and functions		
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	• Terminals or crimp connection • Gold-plated control contacts (pins and sockets)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads

For version with MWG within actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω).
Wiring diagram (basic version)	TPCHN000N1AF-A000 TPA00R100-0I1-000, 3-phase AC current, 380 V – 480 V TPCHN000N1AE-A000 TPA00R100-0I1-000, 1-phase AC current, 110 V – 120 V

Settings/programming the Profinet interface
The Profinet interface is set (assignment of device name as well as assignment of the IP address) using the Profinet engineering tools of the DCS.

General data of the Profinet interface		
Communication protocol	Profinet according to IEC 61158 and IEC 61784	
Network topology	Star topology, point-to-point wiring Due to the switch function integrated within the AC 01.2, both line topology and redundant ring topology (MRP) are available. Unused network ports can be switched off.	
Connection	Ethernet IEEE 802.3 2-pair cabling in compliance with IEC 61784-5-3 Auto Negotiation and Auto Crossover are supported.	
Profinet connection	2 x Ethernet connection terminals with insulation displacement connection, integral screen with strain relief, suitable for all Ethernet cable types or 2 x RJ-45 Connection via connector for field assembly, one RJ-45 connector for Cat.5 (K009.706) is included in the scope of supply of the electrical connection.	
Transmission rate	100 Mbits/s (100BASE-TX), full duplex	
Cable length	Max. 100 m	
Device classes	I/O controller (usually the PLC/DCS) I/O devices (field devices) I/O supervisor (programming device, PC or HMI for diagnostics/commissioning)	
Fieldbus access	Provider - consumer model	
Supported Profinet specification	Version V2.32	
Supported Profinet functions	Cyclic Profinet communication (RT) Acyclic Profinet communication (Read/Write Record)	
Supported Profinet alarms	Status Alarm Update Alarm Port Data Change Notification Alarm Sync Data Change Notification Alarm	
Supported network diagnostic and management protocols	ACD (Address Conflict Detection) ARP (Address Resolution Protocol) DCP (Discovery and Basic Configuration Protocol) SNMP (Simple Network Management Protocol) LLDP (Link Layer Discovery Protocol) in accordance with IEEE 802.1AB These functions allow assignment of the Profinet device name, a graphic representation of the plant topology, port-granular diagnostics as well as neighbourhood detection as the basis for quick commissioning and easy device replacement.	
Profinet redundancy	Standard:	Media Redundancy Protocol in compliance with IEC 62439 (switch function integrated within AC 01.2)
	Option:	System redundancy S2 Single NAP
Vendor ID	319	
Ident Code	1	

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General data of the Profinet interface		
Profinet device type	AUMA-Actuator-AC01-2	
Identification & Maintenance properties	I&M0 Profile ID:	62976
	I&M0 Profile Specification Type:	4
	I&M0 Version:	257
	I&M0 Supported:	30
Profinet Ident Nr.	0x013F; 0x0001	
DAP (Device Access Point)	0x80010000	
Conformance class	CC-B (Conformance Class B) for the Profinet application of the AC actuator controls CC-C (Conformance Class C) for the integral switch function	
Netload Class	III	
Device diagnostics via Ethernet	Via TCP/IP and integral web server possible Via FDI package & software for diagnostics/commissioning (e. g. Siemens PDM, Emerson AMS)	
Device integration	Via GSD (ml) file (available for download at www.auma.com)	

Commands and signals of the Profinet interface	
Process representation output (command signals)	OPEN, STOP, CLOSE, position setpoint, RESET, EMERGENCY operation command, enable local controls, Interlock OPEN/CLOSE, PVST
Process representation input (feedback signals)	End positions OPEN, CLOSED Actual position value Actual torque value, requires MWG in actuator Selector switch in position LOCAL/REMOTE Running indication (directional) Torque switches OPEN, CLOSED Limit switches OPEN, CLOSED Manual operation by handwheel or via local controls Analogue (2) and digital (4) customer inputs
Process representation input (fault signals)	Motor protection tripped Torque switch tripped in mid-travel One phase missing Failure of analogue customer inputs
Behaviour on loss of communication	The behaviour of the actuator is programmable: • Stop in current position • Travel to end position OPEN or CLOSED • Travel to any intermediate position • Execute last received operation command

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +70 °C –60 °C to +60 °C, extreme low temperature version
		Low temperature versions including heating system. For further options, refer to line "ACV 01.2 heating system (option)".
Ambient temperature	Standard:	–25 °C to +70 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	

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Service conditions		
Enclosure protection in accordance with IEC 60529	Standard:	IP68
	Option:	DS terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. Not valid in combination with gearboxes.	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or in case of heavy vibration during service. Cable length between actuator and actuator controls is max. 16 m.
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool)
Torque measurement flange DMF (SAV/SARV .2 only)	Accessory for torque measurement

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU RED Directive 2014/53/EU
Reference documents	Electrical data SAV 07.2 – SAV 16.2/SARV 07.2 – SARV 16.2 Electrical data SQV 05.2 – SQV 14.2/SQRV 05.2 – SQRV 14.2

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General Information
ACV 01.2 actuator controls for controlling variable speed multi-turn actuators of the SAV/SARV .2 type range and part-turn actuators of the SQV/SQRV .2 type range with variable speed and Modbus RTU interface.

Features and functions	
Power supply	Standard voltages AC: **3-phase AC** Voltages/frequencies: Volt 220 – 240 / 380 – 480; Hz 50 / 60 / 50 / 60 **1-phase AC** Voltages/frequencies: Volt 110 – 120 / 220 – 240; Hz 50 / 60 / 50 / 60 Permissible variation of mains frequency: ±5 % Permissible variation of mains voltage: ±10 % –30 % for maximum 10 seconds within a range of 380 V – 480 V with the following restrictions: • If required, the motor speed will be reduced down to nominal speed depending on the load of the actuators used • A low mains voltage increases the mains current consumption; a higher mains voltage reduces the mains current consumption • The torque limits of the actuators used might be decreased for a short time, if applicable
External supply of the electronics (option)	24 V DC: +20 % / –15 % Current consumption: Basic version approx. 250 mA, with options up to 500 mA For external electronics supply, the power supply of integral controls must have an enhanced isolation against mains voltage in compliance with IEC 61010-1 and the output power be limited to 150 VA.
Rated power	Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator
Control and feedback signals	Via Modbus RTU interface
Additional input signals for Fieldbus interface (option)	• 2 free analogue inputs (0/4 – 20 mA), 4 free digital inputs - Signal transmission is made via Fieldbus interface • Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - Control inputs: OPEN, STOP, CLOSE, EMERGENCY - I/O interface: Selection of control type (fieldbus or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for setpoint position or additionally 1 analogue input (0/4 – 20 mA) for setpoint position and 1 analogue input (0/4 – 20 mA) for actual process value
Control voltage/current consumption for control inputs	Standard: 24 V DC, current consumption: approx. 10 mA per input Options: 48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 100 – 125 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input All input signals must be supplied with the same potential.
Status signals	Via Modbus RTU interface

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Features and functions		
Additional output signals for Fieldbus interface (option, only available in combination with additional input signals)	• 6 programmable output contacts: - 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) • 6 programmable output contacts: - 5 potential-free change-over contacts with one common, max. 250 V AC, 1 A (resistive load) - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 6 potential-free change-over contacts without one common, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free NO contact, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), All binary output signals must be supplied with the same potential. • Analogue output signal for position feedback - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)	
Voltage output	Standard:	Auxiliary voltage 24 V DC: max. 100 mA for supply of control inputs, galvanically isolated from internal voltage supply.
	Option:	Auxiliary voltage 115 V AC: max. 30 mA for supply of control inputs, galvanically isolated from internal voltage supply (Not possible in combination with PTC tripping device)
Redundancy (option)	Redundant line topology with universal redundancy behaviour according to AUMA redundancy I or II Redundant loop topology in combination with SIMA Master Station • Max. number of actuators with actuator controls per redundant loop: 247 units • Max. possible cable length between the actuators equipped with controls without external repeater: 1,200 m • Max. possible total length per redundant ring: approx. 290 km • Automatic commissioning of the redundant ring by means of the SIMA Master Station	
FO cable connection (option)	• Connector types: ST or SC connector • FO cables - Multi-mode: 62,5(50)/125 µm, range approx. 2.5 km (max. 2.0 dB/km) - Single-mode: 9/125 µm, range approx. 15 km (max. 0.4 dB/km) • Topologies: Line, star and redundant ring (with single-channel Modbus RTU interface) • Baud rate: up to 115.2 kbit/s • Optical budget: - Multi-mode: 13 dB - Single-mode: 17 dB • Wave length: 1 310 mm • FO coupler by EKS required at DCS, reference addresses: AUMA or www.eks-engel.com	
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons: OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)

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Features and functions		
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments; supports the SSP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool)	
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Operation profile with any 8 intermediate positions: Position can be set between 0 and 100 %, reaction and signal behaviour programmable • Velocity profile with up to 10 ranges, velocity can be individually adjusted for positions OPEN and CLOSED for each range • Running indication blinking: can be set • Speed/operating time source can be selected (REMOTE, LOCAL) • 4 internal nominal speeds or operating times can be programmed (and selected in LOCAL) • Nominal speed source can be selected for REMOTE (binary, analogue, fieldbus) • Soft start, soft stop with velocity reduction (adjustable) • Positioner: - Position setpoint via fieldbus interface - Programmable behaviour on loss of signal - Automatic adaptation of dead band (adaptive behaviour selectable) - Change-over between OPEN-CLOSE control and setpoint control via fieldbus - Modulating duty with proportional operation (2 % – 20 %) - Positioning accuracy <0.2 % (SAV/SARV .2 only)
	Options:	• PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value • Multiport valve: Up to 16 positions, signals (pulse or edge) (SAV/SARV .2 only) • Lift Plug Valve: In combination with multiport valve (SAV/SARV. 2 only) • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set • Static and dynamic torque recording for both rotation directions with torque measurement flange as additional accessory
Safety functions	Standard:	• EMERGENCY operation (programmable behaviour) - Via additional input (option, low active) or via fieldbus interface - Reaction can be selected: STOP, run to end position (OPEN, CLOSED) or intermediate position at defined speed - Torque monitoring can be by-passed during EMERGENCY operation - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	• Enabling local controls via Enable LOCAL digital input: Thus, actuator operation can be are or disabled via push buttons on local controls. • Interlock for main/by-pass valve: Enabling the operation commands OPEN or CLOSE via two digital inputs • EMERGENCY Stop push button (latching): Interrupts electrical operation, irrespective of the selector switch position • PVST (Partial Valve Stroke Test): programmable to check the function of both actuator and actuator controls: Direction, stroke, operation time, reversing time
Monitoring function	• Valve overload protection: Adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): Results in switching off and generates fault signal • Monitoring the heater within actuator: Generates warning signal • Monitoring of permissible on-time and number of starts: Adjustable, generates warning signal • Operating time monitoring: Adjustable, generates warning signal • Phase failure monitoring: Results in switching off and generates fault signal	

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Features and functions		
Diagnostic functions	• Electronic device ID with order and product data • Operating data logging: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings • Time-stamped event report with history for setting, operation and faults: - Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" • Torque characteristics (for version with MWG in actuator): - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately - Torque characteristics stored can be shown on the display.	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Option:	PTC tripping device (TMS module) in combination with PTC thermistors within actuator motor
ACV 01.2 heating system (option)	Temperature version below –30 °C including heating system: • in version with internal power supply at 400 V AC, or • in version with external power supply for 230 V AC or 115 V AC	
	For external power supply of the heating system, the minimum operational temperature may not fall below –40 °C in case of danger of disconnection of the mains voltage.	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	• Terminals or crimp connection • Gold-plated control contacts (pins and sockets)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads

For version with MWG within actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Via fieldbus interface Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω).
Wiring diagram (basic version)	TPCHC0AI-1AF-A000 TPA00R100-0I1-000, 3-phase AC current, 380 V – 480 V TPCHC0AI-1AE-A000 TPA00R100-0I1-000, 1-phase AC current, 220 V – 240 V

Settings/programming the Modbus RTU interface	
Setting the Modbus RTU interface	Baud rate, parity and Modbus address are set via the display of actuator controls

General data of the Modbus RTU interface			
Communication protocol	Modbus RTU according to IEC 61158 and IEC 61784		
Network topology	• Line (fieldbus) structure. When using repeaters, tree structures can also be implemented. • Coupling and uncoupling of devices during operation without affecting other devices is possible.		
Transmission medium	Twisted, screened copper cable according to IEC 61158		
Fieldbus interface	EIA-485 (RS-485)		
Transmission rate/cable length	Redundant line topology:		
	Baud rate (kbit/s)	Max. cable length (segment length) without repeater	Possible cable length with repeater (total network cable length)
	9.6 – 115.2	1,200 m	approx. 10 km
	Redundant ring topology:		
	Baud rate (kbit/s)	Max. cable length between actuators (without repeater)	Max. possible cable length of redundant loop
	9.6 – 115.2	1,200 m	approx. 290 km
Device types	Modbus slave, e.g. devices with digital and/or analogue inputs/outputs such as actuators, sensors		

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General data of the Modbus RTU interface	
Number of devices	32 devices in each segment without repeater, with repeaters expandable to 247
Fieldbus access	Polling between master and slaves (query response)
Supported Modbus functions (services)	01 Read Coil Status 02 Read Input Status 03 Read Holding Registers 04 Read Input Registers 05 Force Single Coil 15 (0FHex) Force Multiple Coils 06 Preset Single Register 16 (10Hex) Preset Multiple Registers 17 (11Hex) Report Slave ID 08 Diagnostics: • 00 00 Loopback • 00 10 (0AHex) Clear Counters and Diagnostic Register • 00 11 (0BHex) Return Bus Message Count • 00 12 (0CHex) Return Bus Communication Error Count • 00 13 (0DHex) Return Bus Exception Error Count • 00 14 (0EHex) Return Slave Message Count • 00 15 (0FHex) Return Slave No Response Count • 00 16 (10Hex) Return Slave NAK Count • 00 17 (11Hex) Return Slave Busy Count • 00 18 (12Hex) Return Character Overrun Count

Commands and signals of the Modbus RTU interface	
Process representation output (command signals)	OPEN, STOP, CLOSE, position setpoint, RESET, EMERGENCY operation command, enable LOCAL, Interlock OPEN/CLOSE
Process representation input (feedback signals)	• End positions OPEN, CLOSED • Actual position value • Actual torque value, requires MWG in actuator • Selector switch in position LOCAL/REMOTE • Running indication (directional) • Torque switches OPEN, CLOSED • Limit switches OPEN, CLOSED • Manual operation by handwheel or via local controls • Analogue (2) and digital (4) customer inputs
Process representation input (fault signals)	• Motor protection tripped • Torque switch tripped in mid-travel • One phase missing • Failure of analogue customer inputs
Behaviour on loss of communication	The behaviour of the actuator is programmable: • Stop in current position • Travel to end position OPEN or CLOSED • Travel to any intermediate position • Execute last received operation command

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +70 °C –60 °C to +60 °C, extreme low temperature version
		Low temperature versions including heating system. For further options, refer to line "ACV 01.2 heating system (option)".
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	

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Service conditions		
Enclosure protection in accordance with IEC 60529	Standard:	IP68
	Option:	DS terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. Not valid in combination with gearboxes.	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or in case of heavy vibration during service. Cable length between actuator and actuator controls is max. 16 m.
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool)
Torque measurement flange DMF (SAV/SARV .2 only)	Accessory for torque measurement

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU RED Directive 2014/53/EU
Reference documents	Dimensions SAV 07.2 – SAV 16.2/SARV 07.2 – SARV 16.2 with ACV 01.2 – Fieldbus Dimensions SQV 05.2 – SQV 14.2/SQRV 05.2 – SQRV 14.2 with ACV 01.2 – Fieldbus Electrical data SAV 07.2 – SAV 16.2/SARV 07.2 – SARV 16.2 Electrical data SQV 05.2 – SQV 14.2/SQRV 05.2 – SQRV 14.2

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General information
ACV 01.2 actuator controls for controlling variable speed multi-turn actuators of the SAV/SARV .2 type range with Modbus TCPI/IP interface.

Features and functions	
Power supply	Standard voltages AC:

3-phase AC Voltages/frequencies					**1-phase AC** Voltages/frequencies				
Volt	220 – 240		380 – 480		Volt	110 – 120		220 – 240	
Hz	50	60	50	60	Hz	50	60	50	60

Permissible variation of mains frequency: ±5 %
Permissible variation of mains voltage: ±10 %
–30 % for maximum 10 seconds within a range of 380 V – 480 V with the following restrictions:
- If required, the motor speed will be reduced down to nominal speed depending on the load of the actuators used
- A low mains voltage increases the mains current consumption; a higher mains voltage reduces the mains current consumption
- The torque limits of the actuators used might be decreased for a short time, if applicable

External supply of the electronics (option)	24 V DC: +20 % / –15 % Current consumption: Basic version approx. 250 mA, with options up to 500 mA For external electronics supply, the power supply of integral controls must have an enhanced isolation against mains voltage in compliance with IEC 61010-1 and the output power be limited to 150 VA.	
Rated power	Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator	
Control and feedback signals	Via Modbus TCP/IP interface	
Additional input signals for Fieldbus interface (option)	• 2 free analogue inputs (0/4 – 20 mA), 4 free digital inputs - Signal transmission is made via Fieldbus interface • Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - Control inputs: OPEN, STOP, CLOSE, EMERGENCY - I/O interface: Selection of control type (fieldbus or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for setpoint position or additionally 1 analogue input (0/4 – 20 mA) for setpoint position and 1 analogue input (0/4 – 20 mA) for actual process value	
Control voltage/current consumption for control inputs	Standard	24 V DC, current consumption: approx. 10 mA per input
	Options:	48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 100 – 125 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input
	All input signals must be supplied with the same potential.	
Status signals	Via Modbus TCP/IP interface	

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Features and functions		
Additional output signals for Fieldbus interface (option, only available in combination with additional input signals)	• 6 programmable output contacts: - 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) • 6 programmable output contacts: - 5 potential-free change-over contacts with one common, max. 250 V AC, 1 A (resistive load) - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 6 potential-free change-over contacts without one common, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free NO contact, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), All binary output signals must be supplied with the same potential. • Analogue output signal for position feedback - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)	
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons: OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments; supports the SSP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool)	

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Features and functions		
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Operation profile with any 8 intermediate positions: Position can be set between 0 and 100 %, reaction and signal behaviour programmable • Velocity profile with up to 10 ranges, velocity can be individually adjusted for positions OPEN and CLOSED for each range • Running indication blinking: can be set • Speed/operating time source can be selected (REMOTE, LOCAL) • 4 internal nominal speeds or operating times can be programmed (and selected in LOCAL) • Nominal speed source can be selected for REMOTE (binary, analogue, fieldbus) • Soft start, soft stop with velocity reduction (adjustable) • Positioner: - Position setpoint via fieldbus interface - Programmable behaviour on loss of signal - Automatic adaptation of dead band (adaptive behaviour selectable) - Change-over between OPEN-CLOSE control and setpoint control via fieldbus - Modulating duty with proportional operation (2 % – 20 %) - Positioning accuracy <0.2 % (SAV/SARV .2 only)
	Options:	• PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value • Multiport valve: Up to 16 positions, signals (pulse or edge) (SAV/SARV .2 only) • Lift Plug Valve: In combination with multiport valve (SAV/SARV. 2 only) • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set • Static and dynamic torque recording for both rotation directions with torque measurement flange as additional accessory
Safety functions	Standard:	• EMERGENCY operation (programmable behaviour) - Via additional input (option, low active) or via fieldbus interface - Reaction can be selected: STOP, run to end position (OPEN, CLOSED) or intermediate position at defined speed - Torque monitoring can be by-passed during EMERGENCY operation - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	• Enabling local controls via Enable LOCAL digital input: Thus, actuator operation can be are or disabled via push buttons on local controls. • Interlock for main/by-pass valve: Enabling the operation commands OPEN or CLOSE via two digital inputs • EMERGENCY Stop push button (latching): Interrupts electrical operation, irrespective of the selector switch position • PVST (Partial Valve Stroke Test): programmable to check the function of both actuator and actuator controls: Direction, stroke, operation time, reversing time
Monitoring function	• Valve overload protection: Adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): Results in switching off and generates fault signal • Monitoring the heater within actuator: Generates warning signal • Monitoring of permissible on-time and number of starts: Adjustable, generates warning signal • Operating time monitoring: Adjustable, generates warning signal • Phase failure monitoring: Results in switching off and generates fault signal	

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Features and functions		
Diagnostic functions	• Electronic device ID with order and product data • Operating data logging: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings • Time-stamped event report with history for setting, operation and faults: - Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" • Torque characteristics (for version with MWG in actuator): - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately - Torque characteristics stored can be shown on the display.	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Option:	PTC tripping device (TMS module) in combination with PTC thermistors within actuator motor
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	• Terminals or crimp connection • Gold-plated control contacts (pins and sockets)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads

For version with MWG within actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Via fieldbus interface Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω).
Wiring diagram (basic version)	TPCHC0AI-1AF-A5E0 TPA00R100-0I1-000, 3-phase AC current, 380 V – 480 V TPCHC0AI-1AE-A5E0 TPA00R100-0I1-000, 1-phase AC current, 220 V – 240 V

Settings/programming the Modbus TCP/IP interface	
Setting the fieldbus address	Baud rate, parity and Modbus address are set via the display of actuator controls
Setting the Modbus gateway	Settings are made via web server Default settings of the IP interface:

IP Address Selection	
Address Type	Static IP
Static IP Address	192.168.255.1
Subnet Mask	255.255.0.0
Default Gateway	192.168.0.1

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General Modbus TCP/IP data	
Communication protocol	Modbus TCP/IP according to IEC 61158 and IEC 61784
Network topology	Star topology/ point-to-point topology
Transmission medium	IEC IEEE 802.3, cable recommendation: Cat. 6_A
Transmission rate/cable length	• Baud rate of 10/100 Mbits/s • Maximum cable length: 100 m
Supported Modbus functions (services)	01 Read Coil Status 02 Read Input Status 03 Read Holding Registers 04 Read Input Registers 05 Force Single Coil 15 (0FHex) Force Multiple Coils 06 Preset Single Register 16 (10Hex) Preset Multiple Registers 17 (11Hex) Report Slave ID 08 Diagnostics: • 00 00 Loopback • 00 10 (0AHex) Clear Counters and Diagnostic Register • 00 11 (0BHex) Return Bus Message Count • 00 12 (0CHex) Return Bus Communication Error Count • 00 13 (0DHex) Return Bus Exception Error Count • 00 14 (0EHex) Return Slave Message Count • 00 15 (0FHex) Return Slave No Response Count • 00 16 (10Hex) Return Slave NAK Count • 00 17 (11Hex) Return Slave Busy Count • 00 18 (12Hex) Return Character Overrun Count

Commands and signals of the Modbus TCP/IP interface	
Process representation output (command signals)	OPEN, STOP, CLOSE, position setpoint, RESET, EMERGENCY operation command, enable LOCAL, Interlock OPEN/CLOSE
Process representation input (feedback signals)	• End positions OPEN, CLOSED • Actual position value • Actual torque value, requires magnetic limit and torque transmitter (MWG) in actuator • Selector switch in position LOCAL/REMOTE • Running indication (directional) • Torque switches OPEN, CLOSED • Limit switches OPEN, CLOSED • Manual operation by handwheel or via local controls • Analogue (2) and digital (4) customer inputs
Process representation input (fault signals)	• Motor protection tripped • Torque switch tripped in mid-travel • One phase missing • Failure of analogue customer inputs
Behaviour on loss of communication	The behaviour of the actuator is programmable: • Stop in current position • Travel to end position OPEN or CLOSED • Travel to any intermediate position • Execute last received operation command

Service conditions	
Use	Indoor and outdoor use permissible
Mounting position	Any position
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level on request
Ambient temperature	Standard: –25 °C to +70 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Service conditions		
Enclosure protection in accordance with IEC 60529	Standard:	IP68
	Option:	DS terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during immersion.	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	Resistance against vibration can be given on request	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or in case of heavy vibration during service. Cable length between actuator and actuator controls is max. 16 m.
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool)
Torque measurement flange DMF (SAV/SARV .2 only)	Accessory for torque measurement

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU RED Directive 2014/53/EU
Reference documents	Electrical data SAV 07.2 – SAV 16.2/SARV 07.2 – SARV 16.2 Electrical data SQV 05.2 – SQV 14.2/SQRV 05.2 – SQRV 14.2

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General information
ACV 01.2 actuator controls for controlling variable speed multi-turn actuators of the SAV/SARV .2 type range with HART interface.

Features and functions	
Power supply	Standard voltages AC:

3-phase AC Voltages/frequencies					**1-phase AC** Voltages/frequencies				
Volt	220 – 240		380 – 480		Volt	110 – 120		220 – 240	
Hz	50	60	50	60	Hz	50	60	50	60

Permissible variation of mains frequency: ±5 %
Permissible variation of mains voltage: ±10 %
–30 % for maximum 10 seconds within a range of 380 V – 480 V with the following restrictions:
- If required, the motor speed will be reduced down to nominal speed depending on the load of the actuators used
- A low mains voltage increases the mains current consumption; a higher mains voltage reduces the mains current consumption
- The torque limits of the actuators used might be decreased for a short time, if applicable

External supply of the electronics (option)	24 V DC: +20 % / –15 % Current consumption: Basic version approx. 250 mA, with options up to 500 mA For external electronics supply, the power supply of integral controls must have an enhanced isolation against mains voltage in compliance with IEC 61010-1 and the output power be limited to 150 VA.	
Rated power	Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator	
Control and feedback signals	Via HART interface Device category: Actuator Analogue 4 – 20 mA setpoint with digital HART communication	
Additional input signals for HART interface (option)	• 2 free analogue inputs (0/4 – 20 mA), 4 free digital inputs - Signal transmission is made via HART interface • Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, (via opto-isolator thereof OPEN, STOP, CLOSE with one common and EMERGENCY, I/O interface respectively without common) - Control inputs: OPEN, STOP, CLOSE, EMERGENCY - I/O interface: Selection of control type (HART or additional input signals)	
Control voltage/current consumption for control inputs	Standard	24 V DC, current consumption: approx. 10 mA per input
	Options:	48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 100 – 125 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input
	All input signals must be supplied with the same potential.	
Status signals	Via HART interface	

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Features and functions		
Additional output signals for HART interface (option, only available in combination with additional input signals)	• 6 programmable output contacts: - 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) • 6 programmable output contacts: - 5 potential-free change-over contacts with one common, max. 250 V AC, 1 A (resistive load) - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 6 potential-free change-over contacts without one common, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free NO contact, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 4 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), All binary output signals must be supplied with the same potential. • Analogue output signal for position feedback - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)	
Voltage output	Standard:	Auxiliary voltage 24 V DC: max. 100 mA for supply of control inputs, galvanically isolated from internal voltage supply.
	Option:	Auxiliary voltage 115 V AC: max. 30 mA for supply of control inputs, galvanically isolated from internal voltage supply (Not possible in combination with PTC tripping device)
Analogue output	Standard:	2 analogue outputs: With position transmitter option: Output of travel, torque or output speed as continuous values between 0/4 and 20 mA
Analogue input	Option:	2 analogue inputs: With positioner/process controller option: Input of actual position value/actual process value as continuous values of 0/4 – 20 mA
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons: OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments; supports the SSP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool)	

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Features and functions		
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Operation profile with any 8 intermediate positions: Position can be set between 0 and 100 %, reaction and signal behaviour programmable • Velocity profile with up to 10 ranges, velocity can be individually adjusted for positions OPEN and CLOSED for each range • Running indication blinking: can be set • Speed/operating time source can be selected (REMOTE, LOCAL) • 4 internal nominal speeds or operating times can be programmed (and selected in LOCAL) • Nominal speed source can be selected for REMOTE (binary, analogue, fieldbus) • Soft start, soft stop with velocity reduction (adjustable) • Positioner: - Position setpoint via fieldbus interface - Programmable behaviour on loss of signal - Automatic adaptation of dead band (adaptive behaviour selectable) - Change-over between OPEN-CLOSE control and setpoint control via fieldbus - Modulating duty with proportional operation (2 % – 20 %) - Positioning accuracy <0.2 % (SAV/SARV .2 only)
	Options:	• PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value • Multiport valve: Up to 16 positions, signals (pulse or edge) (SAV/SARV .2 only) • Lift Plug Valve: In combination with multiport valve (SAV/SARV. 2 only) • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set • Static and dynamic torque recording for both rotation directions with torque measurement flange as additional accessory
Safety functions	Standard:	• EMERGENCY operation (programmable behaviour) - Via additional input (option, low active) or via fieldbus interface - Reaction can be selected: STOP, run to end position (OPEN, CLOSED) or intermediate position at defined speed - Torque monitoring can be by-passed during EMERGENCY operation - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	• Enabling local controls via Enable LOCAL digital input: Thus, actuator operation can be are or disabled via push buttons on local controls. • Interlock for main/by-pass valve: Enabling the operation commands OPEN or CLOSE via two digital inputs • EMERGENCY Stop push button (latching): Interrupts electrical operation, irrespective of the selector switch position • PVST (Partial Valve Stroke Test): programmable to check the function of both actuator and actuator controls: Direction, stroke, operation time, reversing time
Monitoring function	• Valve overload protection: Adjustable, results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring): Results in switching off and generates fault signal • Monitoring the heater within actuator: Generates warning signal • Monitoring of permissible on-time and number of starts: Adjustable, generates warning signal • Operating time monitoring: Adjustable, generates warning signal • Phase failure monitoring: Results in switching off and generates fault signal	

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Features and functions		
Diagnostic functions	• Electronic device ID with order and product data • Operating data logging: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings • Time-stamped event report with history for setting, operation and faults: - Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" • Torque characteristics (for version with MWG in actuator): - 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately - Torque characteristics stored can be shown on the display.	
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Option:	PTC tripping device (TMS module) in combination with PTC thermistors within actuator motor
ACV 01.2 heating system (option)	Temperature version below –30 °C including heating system: • in version with internal power supply at 400 V AC, or • in version with external power supply for 230 V AC or 115 V AC	
	For external power supply of the heating system, the minimum operational temperature may not fall below –40 °C in case of danger of disconnection of the mains voltage.	
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	• Terminals or crimp connection • Gold-plated control contacts (pins and sockets)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads

For version with MWG within actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Via HART interface Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω).
Wiring diagram (basic version)	Device category: “Actuator” TPCHI042-1AF-A000 TPA00R100-0I1-000, 3-phase AC current, 380 V – 480 V Device category: “Current Output”: TPCHJ04E-1AF-A000 TPA00R100-0I1-000, 3-phase AC current, 380 V – 480 V Device category: “Actuator” TPCHI042-1AE-A000 TPA00R100-0I1-000, 1-phase AC current, 220 V – 240 V Device category: “Current Output”: TPCHJ04E-1AE-A000 TPA00R100-0I1-000, 1-phase AC current, 220 V – 240 V

Setting/programming the HART interface	
Setting the HART address	The HART address is set via HART command 6 or alternatively via the actuator controls (default value: 0)

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General HART interface data	
Communication protocol	HART according to IEC 61158 and IEC 61784 (CPF 9)
Network topology	Point-to-point wiring
Communication signal	HART, baud rate 1.2 kbit/s Device class: "Actuator" • FSK (Frequency Shift Key) modulated to 4 – 20 mA setpoint signal • Input impedance: 250 Ω. The impedances of other HART devices connected (parallel or in series) must be within the HART specification • Point-to-point wiring • Signal range: 4 – 20 mA • Working range: 2 – 22 mA • Minimum operation voltage: 7 V (at 22 mA) • Integrated reverse polarity protection Device category: “Current Output”: • FSK (Frequency Shift Key) modulated to 4 – 20 mA position feedback signal • Input impedance: 40 kΩ. The impedances of other HART devices connected (parallel or in series) must be within the HART specification • Point-to-point or multidrop wiring • Current output active, short-circuit proof. No further external power supply permitted
HART cable specification	Refer to HART specification
Power supply	Internal power supply of HART interface via actuator controls (apart from HART supply voltage, no other supply required)
Device identification	Manufacturer name: AUMA Manufacturer ID: 0x607C HART protocol revision: 7.4 Number of device variables: 12 Model name: AUMATIC AC 01.2/ACExC 01.2 Device type code: 0xE1FD
Supported HART commands	• Universal Commands • Common Practice Commands: - Command 33 (Read Device Variables) - Command 40 (Enter/Exit Fixed Current Mode) - Command 42 (Perform Device Reset) - Command 45 (Trim Loop Current Zero) - Command 46 (Trim Loop Current Gain) - Command 50 (Read Dynamic Variable Assignments) - Command 79 (Write Device Variable) - Command 95 (Read Device Communication Statistics) • Device Specific Commands: - Command 128 (Write Operation Command) - Command 131 (Read Software Version) - Command 132 (Reset to Factory Default) - Command 133 (Reset Operational Data) - Command 134 (Reset HART Configuration) - Command 160 (Read Parameter) - Command 161 (Write Parameter) - Command 162 (Read Process Data)

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Commands and signals of the HART interface	
Output data	Device class: "Actuator" Supported control types: • Loop Current Mode activated: Analogue 4 – 20 mA control signal for position setpoint • Loop Current Mode deactivated: Digital HART commands for position setpoint (0 – 100.0 %) or for discrete operation in directions OPEN and CLOSE Device category: “Current Output”: • Loop Current Mode activated: Analogue 4 – 20 mA output signal for position feedback signal (point-to-point wiring) Digital HART commands for position setpoint (0 – 100.0 %) or for discrete operation in directions OPEN and CLOSE • Loop Current Mode deactivated: Analogue output signal for position feedback fixed to 4 mA (multidrop wiring) Digital HART commands for position setpoint (0 – 100.0 %) or for discrete operation in directions OPEN and CLOSE
Feedback signals	End positions OPEN, CLOSED Actual position value Actual torque value, requires magnetic limit and torque transmitter (MWG) in actuator Selector switch in position LOCAL/REMOTE Running indication (directional) Torque switches OPEN, CLOSED Limit switches OPEN, CLOSED Manual operation by handwheel or via local controls Analogue (2) and digital (4) customer inputs Device Status Informationen • Field Device Status • Device Specific Status • Extended Device Status Information • Standardized Status • Analog Channel Saturated • Analog Channel Fixed
Fehlermeldungen	Motor protection tripped Torque switch tripped in mid-travel One phase missing Failure of analogue customer inputs

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +70 °C
	Options:	–40 °C to +70 °C –60 °C to +60 °C, extreme low temperature version
		Low temperature versions including heating system. For further options, refer to line "ACV 01.2 heating system (option)".
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection in accordance with IEC 60529	Standard:	IP68
	Option:	DS terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during immersion.	

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Service conditions		
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. Not valid in combination with gearboxes.	
Corrosion protection	Standard:	KS: Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX: Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request

Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or in case of heavy vibration during service. Cable length between actuator and actuator controls is max. 16 m.
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool)
Torque measurement flange DMF (SAV/SARV .2 only)	Accessory for torque measurement

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU RED Directive 2014/53/EU
Reference documents	Dimensions SAV 07.2 – SAV 16.2/SARV 07.2 – SARV 16.2 with ACV 01.2 Dimensions SQV 05.2 – SQV 14.2/SQRV 05.2 – SQRV 14.2 with ACV 01.2 Electrical data SAV 07.2 – SAV 16.2/SARV 07.2 – SARV 16.2 Electrical data SQV 05.2 – SQV 14.2/SQRV 05.2 – SQRV 14.2

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Technical data Control box

This data applies to:

Multi-turn actuators SA 07.2 – SA 16.2; SAR 07.2 – SAR 16.2 with 3-phase AC motors
SA 07.2 – SA 16.2; SAR 07.2 – SAR 16.2 with DC motors
SA 25.1 – SA 48.1; SAR 25.1 – SAR 30.1 with 3-phase AC motors

Size		G3	G5	G7
Dimensions (w x h x d):		380 x 380 x 210 mm	500 x 500 x 210 mm	760 x 760 x 300 mm
Suitable for utilization category	SA 07.2 - 16.2, 3ph	A4	–	A4 Wide range voltage, A4 with disconnect switch
	SA 07.2 - 16.2, DC	A4 only in 24 V DC version	A5	A2/A4/A5 with R_A [1], A6
	SA 25.1 - 48.1, 3ph	A4	A5	A4/A5 Wide range voltage, A4/A5 with disconnect switch A6

Notes on table	
1) R_A	R_A = Starting resistance

Features and functions		
Mains voltage, mains frequency	Standard voltages:	

3-phase AC current
Voltages/frequencies/voltage tolerance

Volt	380	400	415	440	460	480	500
Hz	50	50	50	60	60	60	50
%	±10	±10	±10	±10	±10	±10	±10

Special voltages:

3-phase AC current
Voltages/frequencies/voltage tolerance

Volt	220	230	240	525	575	600	660	690
Hz	50	50	50	50	60	60	50	50
%	±10	±10	±10	±5	±10	±10	±10	±10

Permissible variation of mains voltage: ±10 %/±5 % (standard), ±20 % (option), wide range voltage
Permissible variation of mains frequency: ±5 %

Standard voltages:

DC current
Voltages

Volt	24	48	60	110	125	220

Permissible variation of mains voltage: ±10 %

Motor protection	3-phase AC: (option)	Thermoswitches with automatic reset Thermal overload relay with manual reset
	DC current: (standard)	Thermal overload relay with manual reset
Special components (option)	Disconnect switch	
Threads for cable entries	M25, 2 x M40 including cable glands	
Terminal plan	SA 07.2 - 16.2, 3ph:	• TPCE00-A--B-10000 TPA91000000000000 (with thermal overload relay for actuator with rated current $I_N \leq 25$ A) • TPCE00-A--B-00000 TPA91000000000000 (with thermal overload relay for actuator with rated current $I_N \leq 25$ A) • TPCE00-B--B-10000 TPA91000000000000 (with thermal overload relay for actuator with rated current I_N within range > 25 A up to max. 30 A) • TPCE00-B--B-00000 TPA91000000000000 (with thermal overload relay and twin wiring for actuator with rated current I_N within range > 25 A up to max. 30 A)

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Technical data Control box

Terminal plan	SA 07.2 - 16.2, DC:	TPCE120-1-B910000 TPA91000000000000 (24 VDC DC shunt motor with thermal overload relays) TPCE130-1-B910000 TPA91000000000000 (24 VDC compound motors with thermal overload relays) TPCE120---B910000 TPA91000000000000 (48 – 60 V DC DC shunt motor with thermal overload relays) TPCE121---B910000 TPA91000000000000 (48 – 60 V DC DC shunt motor with thermal overload relays and starting resistance) TPCE130---B910000 TPA91000000000000 (48 – 60 V DC DC shunt motor with thermal overload relay) TPCE131---B910000 TPA91000000000000 (48 – 60 V DC DC shunt motor with thermal overload relay and starting resistance) TPCE120---BA10000 TPA91000000000000 (90 – 220 V DC DC shunt motor with thermal overload relays) TPCE121---BA10000 TPA91000000000000 (90 – 220 V DC DC shunt motor with thermal overload relays and starting resistance)
	SA 25.1 - 48.1, 3ph:	TPCE00----B-10000 TPA91000000000000 (with thermal overload relay) TPCE00----B-00000 TPA91000000000000 (with thermoswitches)
Connecting cables (option)	• From control box to actuator Cable length from 2 – 28 m, state desired length in the order • From control box to actuator controls Cable length from 2 – 100 m, state desired length in the order	
Overvoltage category for 3-phase AC current	Category III according to IEC 60364-4-443	

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Suspended	
Ambient temperature	–25 °C to +60 °C	
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection according to EN 60529	IP66	
Corrosion protection, housing material, colour, finish coating	Standard:	KS, steel, colour R7035 light grey, powder coating
	Option:	Available colours on request KX, stainless steel
	KS	Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	KX	Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.

Further information	
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU)
Reference documents	Dimensions Control box CB 01.1

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Output drive types
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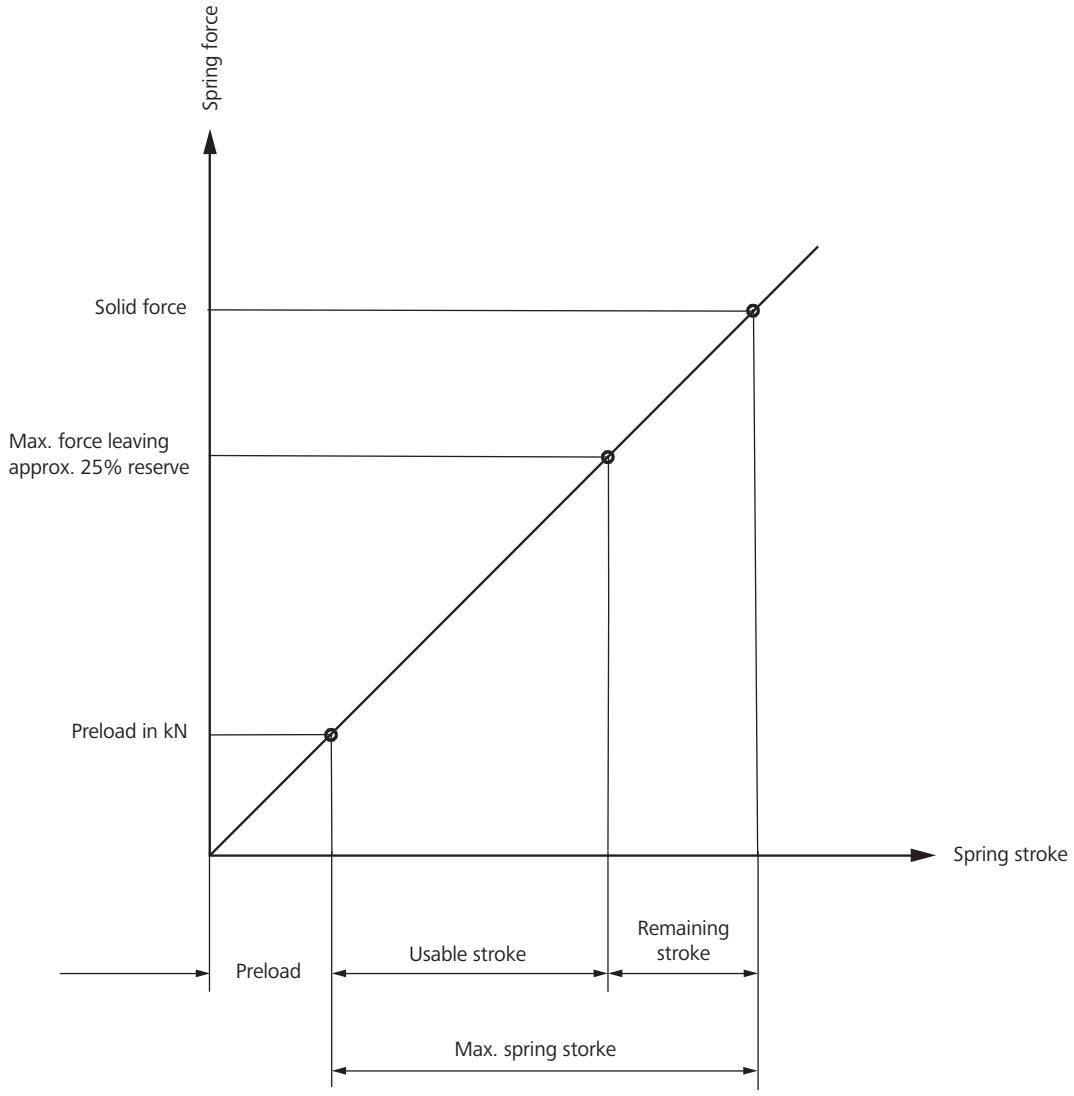
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Technical data Spring loaded stem nut

Type	Spring constant	Spring stroke	Solid force	Preload		Usable stroke	Force usable leaving sufficient reserve	Remaining stroke	Stem diameter ø d6
	[kN/mm]	Max. [mm]	[kN]	[mm]	[kN]	[mm]	Max. [kN]	[mm]	Max. [mm]
AF 07.2	3.1	5.9	20	0.5	1.5	4.7	16	1.2	32
AF 07.6	6.8	5.6	41	0.4	2.7	4.5	33	1.1	32
AF 10.2	10.2	6.0	65	0.4	4.3	4.7	52	1.3	32
AF 14.2	14.2	8.1	125	0.7	9.6	6.3	100	1.8	51
AF 16.2	19.2	9.6	200	0.8	14.9	7.5	160	2.1	65
AF 25.2	23.7	12.3	315	0.9	21.3	10	260	2.3	85
AF 30.2	32.7	14.0	510	1.6	52.0	11	410	3.0	102
AF 35.2	44.8	17.5	860	1.7	76.0	14	700	3.5	150
AF 40.2	43.1	21.4	1,000	1.8	76.5	17	800	4.4	175
AF 48.2	84,2	30,4	3000	2,4	438	24	2630	4,0	180
AF 60.2	84.2	30.4	3,000	2.4	438	24	2,630	4.0	180

Suitable for modulating duty to a limited extent only. Please contact AUMA.



We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical description Spring loaded stem nut

1. Function

The output drive type AF, spring-loaded stem nut, allows for limited axial stem nut offset within the output mounting flange. This helps to prevent valve damage and protects the axial bearings of the output drive against excessive load.

2. Use

The use of spring-loaded stem nuts type AF is recommended for the following applications:

2.1 Globe valves:
- Operating speed ≥ 250 mm/min.
- Output speed of the multi-turn actuator: ≥ 45.1 rpm

2.2 Gate valves: Operating speed ≥ 500 mm/min.

2.3 The mentioned limit values are based on experience. When exceeding these values, please check thoroughly whether and problems or damage may occur when operating the valve without a spring-loaded stem nut.

2.4 The use of a spring-loaded stem nut is also recommended if high temperature fluctuations of the medium in the pipes are to be expected for globe valves and gate valves.

2.5 If extended delay times occur between torque switch tripping and the ensuing motor power cut-out for actuator control, the spring-loaded stem nut can significantly reduce excess torque.

3. Version

3.1 Output drive type AF is available in two versions:
- Spring-loaded version in both directions, e.g. type AF 10.2 (is acknowledged if the valve type is unknown)
- Spring-loaded version in direction CLOSE, e.g. type AF 10.2-Z

3.2 The spring-loaded version for "direction CLOSE only" must be implemented, if it is to be expected that short-term peak torques are required during unseating from the end position CLOSED. These torques will drop immediately after unseating (typical for wedge gate valves).

3.3 In practical use, this means that the spring-loaded version in “direction CLOSE only” must be used for all conventional wedge gate valves.
The spring-loaded version for both directions can be used for back seal valves e.g. globe valves.

4. Special features

If the output drive type AF is requested for special wedge gate valves when back seal control is required, please contact AUMA.

5. Ambient temperature range

–40 °C to +80 °C

6. Documentation

- Technical data AF 07.2 – AF 60.2
- Dimensions Output drive types AF 07.2 – AF 16.2
- Dimensions Output drive types AF 25.2 – AF 60.2

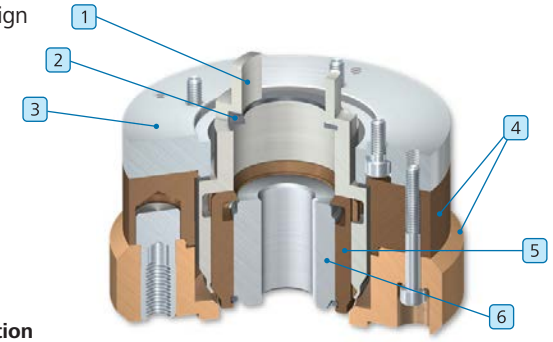
7. Safety instructions

The spring stack is subject to high pre-tension. For this reason, the spring stack may only be disassembled from the output mounting flange by authorised staff using the appropriate tools.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical description Output drive type IB/IE - insulated output drive

Figure 1: Design



1 Coupling sleeve
2 Retaining ring
3 Actuator mounting flange (stainless steel) (only for mounting to actuator sizes SA 07.1/07.2/07.5/07.6)
4 Top and bottom made of cloth reinforced laminate
5 Output drive plug sleeve made of cloth reinforced laminate
6 Output drive sleeve

1. Function

Corrosion is generated by a natural process: Oxidation of metals in combination with water and oxygen.

The insulated output drive IB/IE avoids corrosion by applying cathodic protection (CS):

Cathodic corrosion protection considerably reduces the corrosion rate on metal structures by permanently lowering the electrical potential. This results in a sufficient decrease in the ion mobility between metal and electrolyte. Consequently, the metal to be protected is made virtually resistant against corrosion.

The insulated output drive has an insulation resistance of R iso ≥ 1 M Ω

2. Use/application

2.1 The use of an insulated output drive is recommended for the following applications:

For metal constructions in electro conductive environments such as soil or water, e.g. corrosion protection for buried gas pipes.

2.2 Note:

When used in gas pipelines, a vent hole in the insulated output drive prevents the forming of overpressure created by gas emanating from the valve shaft.

Isolating spark gaps for lightning conditions between multi-turn actuator and pipe are not part of the AUMA delivery. A potential supplier is the company Dehn, with the product TFS (isolating spark gaps - ISG).

3. Sizes/versions/related documents

3.1 Insulated output drives are available in the following sizes and version:

- IB 07.2, IB 10.2, IB 14.2, IB 16.2, IB 25.2: Bore diameter for valve shaft attachment according to DIN 3210
- IB1 07.2, IB1 10.2, IB1 14.2, IB1 16.2, IB1 25.2: Bore diameter for valve shaft attachment according to EN ISO 5210
- IB3 07.2, IB3 10.2, IB3 14.2, IB3 16.2, IB3 25.2: Bore diameter for valve shaft attachment according to EN ISO 5210
- IE 07.2, IE 10.2, IE 14.2, IE 16.2, IE 25.2: Bore diameter for valve shaft attachment according to DIN 3210
- IB4 07.2, IB4 10.2, IB4 14.2, IB4 16.2, IB4 25.2: Bore diameter for valve shaft attachment according to EN ISO 5210

3.2 Documentation:

- Dimensions Output drive types IB1/IB/IB3/IE - Insulated output drive for SA .2 multi-turn actuators (Y006.244)
- Dimensions Output drive types IB1/IB - Insulated output drive for SA .1 multi-turn actuators and GK/GST gearboxes (Y001.230)
- Dimensions Output drive types IB3/IE - Insulated output drive for SA .1 multi-turn actuators and GK/GST gearboxes (Y001.231)
- Assembly instructions Output drive types IBx - Insulated output drive for SA multi-turn actuators and GK/GST gearboxes (Y008.187)
- Mounting position Output drive type IBx - Insulated output drive at multi-turn actuators of SA type range (Y009.483)

4. Mounting options for SA 07.2 – SA 16.2, SA 07.1 – SA 25.1

SA-IB-valve

SA-IB-GK-valve

SA-IB-GST-valve

Note:

To adapt the SA .2 actuators to insulated output drive with flanges F10 and F14 (year of manufacture: 2009 and earlier) available on site, an adapter is required. The adapter can be ordered from AUMA.

For vertical mounting with the actuator pointing downward and the flange pointing upward, please contact AUMA.

5. Ambient temperature

–30°C to +70 °C

–40 °C to +80 °C

–60 °C to +60 °C

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

6. Special features

Test performed according to internal specification KV 1.2.16.2
The high voltage test is performed at 5,000 V (10 seconds). Certified by test stamp.

7. Recomendation to perform maintenance

Annual maintenance interval:

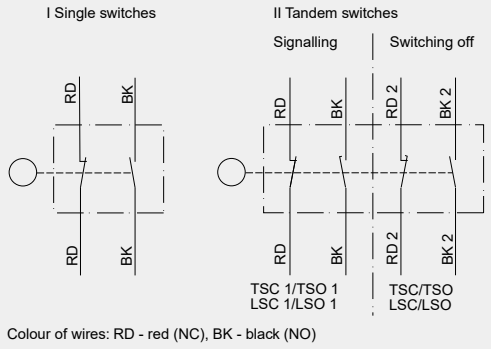
- Clean if required.
- Perform visual inspection for damage or cracks. Replace insulated output drive in case of irregularities.
- Measure insulation resistance. Replace insulated output drive for an insulated resistance of R iso < 1 M Ω.

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Technical data for switches

Limit and torque switches		
Application/description	Standard:	Single switches (1 NC and 1 NO) for each end position, not galvanically isolated
	Options:	Tandem switches (2 NC and 2 NO) for each end position, switches galvanically isolated Switches with forced opening (1 NC contact)
Type designation/order code	Limit switches:	8, 8.2, 8.3, 8-S, 8.2-S
	Torque switches:	6, 6.2, 6-S, 6.2-S
Mechanical lifetime	2 x 10^6 starts	
Enclosure protection according to EN 60529	IP66	
Contact element	Snap-action contact (double break)	
Operation	Via lever	
Ambient temperature[1)]	–60 °C to +120 °C	
Contact material: Silver		
U min.	24 V AC/DC	
U max.	250 V AC/DC	
I min.	20 mA	
I max. AC current	5 A at 250 V (resistive load) 3 A at 250 V (inductive load, cos phi = 0.6)	
I max. DC current	0.4 A at 250 V (resistive load) 0.03 A at 250 V (inductive load, L/R = 3 µs) 5 A at 30 V (resistive load) 5 A at 30 V (inductive load, L/R = 3 µs)	
Contact material: Gold		
U min.	5 V	
U max.	50 V	
I min.	4 mA	
I max.	400 mA	

Wiring diagram



Colour of wires: RD - red (NC), BK - black (NO)

Only the same potential can be switched on the two circuits of each microswitch. If different potentials are to be switched simultaneously, this is only possible when using tandem switches (two galvanically separate microswitches in one housing).

To ensure reliable signalling, the leading contacts (LSC 1/LSO 1 or TSC 1/TSO 1) must be used for this purpose and the lagging contacts (LSC/LSO or TSC/TSO) for switching off.

[LSC = WSR; LSO = WOEL; TSC = DSR; TSO = DOEL]

1) Refer to notes on page 2.

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Technical data for switches

Blinker transmitter for running indication		
Mechanical lifetime	10^7 starts	
Operation	Segment washer	
Contact element	Snap action contact	
Contact material	Standard:	Silver
	Option:	Gold
Type of contact	Change-over contact	
Contact material: Silver		
U min.	10 V AC/DC	
U max.	250 V AC/DC	
I max. AC current	3 A at 250 V (resistive load) 2 A at 250 V (inductive load, cos phi ≈ 0.8)	
I max. DC current	0.25 A at 250 V (resistive load)	
Ambient temperature[1)]	–60 °C to +120 °C	

Handwheel activation switch		
Mechanical lifetime	10^6 starts	
Operation	Lever	
Contact element	Snap action contact	
Contact material	Standard:	Silver
	Option:	Gold
Type of contact	Change-over contact	
Contact material: Silver		
U min.	12 V DC	
U max.	250 V AC	
I max. AC current	3 A at 250 V (inductive load, cos phi = 0.8)	
I max. DC current	3 A at 12 V (resistive load)	
Ambient temperature[1)]	-60 °C to +80 °C	

Notes on tables on pages 1 and 2	
1) Ambient temperature	Ambient temperature range depends on temperature range of the actuator (refer to name plate)

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical data Electronic position transmitters/potentiometer

This data applies to:

Multi-turn actuators:	SA 25.1 – SA 48.1	SAR 25.1 – SAR 30.1	Part-turn actuators:	SQ 05.2 – SQ 14.2	SQR 05.2 – SQR 14.2
	SA 07.2 – SA 16.2	SAR 07.2 – SAR 16.2		SQEx 05.2 – SQEx 14.2	SQREx 05.2 – SQREx 14.2
	SAV 07.2 – SAV 16.2	SARV 07.2 – SARV 16.2			
	SAEx 07.2 – SAEx16.2	SAREx 07.2 – SAREx 16.2			
	SAVEx 07.2 – SAVEx 16.2	SARVEx 07.2 – SARVEx 16.2			
Limit switching:	WSH (limit switching device for manual operation)				

EWG 01.1

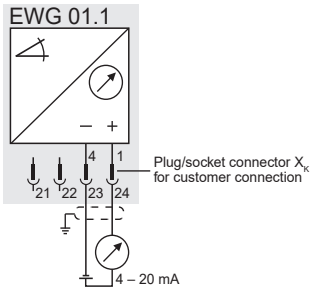
Contactless and wear-free sensing of the valve position by means of Hall sensors for signalling the valve position. This type of position sensing identifies valve position changes even in case of power failure. Battery backup is not required.

Data	3-wire and 4-wire systems	2-wire system
Output current I_A	0 – 20 mA, 4 – 20 mA	4 – 20 mA
Supply voltage U_V [1)]	24 V DC (18 – 32 V)	24 V DC (18 – 32 V)
Max. current consumption	LED off = 26 mA, LED on = 27 mA	20 mA
Max. load R_B	600 Ω	(U_V – 12 V)/20 mA
Impact of power supply	0.1 %	
Load influence	0.1 %	
Temperature impact	< 0.1 ‰/K	
Ambient temperature	– 60 °C[2)]/–40 °C to +80 °C[3)]/+90 °C[3)]	

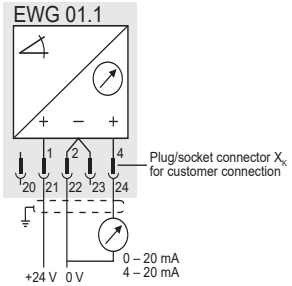
Notes on table	
1) Power supply	Power supply possible via: AC, AM actuator controls or external power supply
2)	–60 °C for heater in switch compartment
3) Ambient temperature	Depending on temperature range of the actuator: Refer to name plate

Wiring

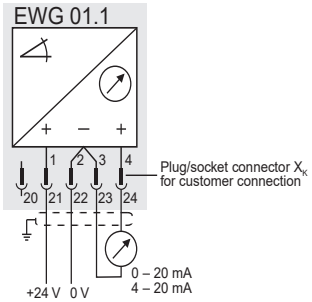
2-wire system



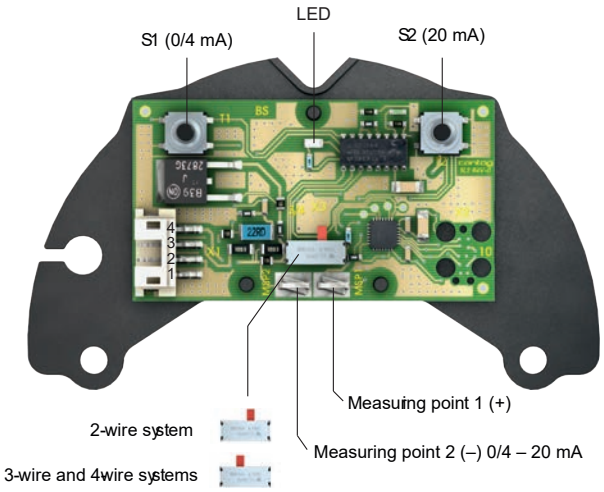
3-wire system



4-wire system



1 – 4 pin contacts on the PCB



Setting: Setting is performed via push buttons S1 (0/4 mA) and S2 (20 mA). Refer to operation instructions relating to actuator.
Inverse operation: Observe inverted assignment of push buttons S1 and S2 during setting.

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Technical data Electronic position transmitters/potentiometer

RWG 4020

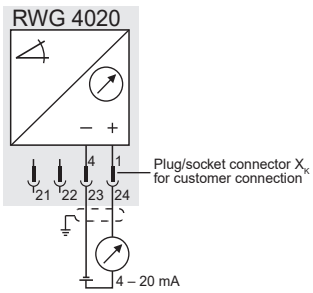
On the basis of the actual potentiometer value, the RWG generates a current signal for signalling the valve position. This type of position sensing identifies valve position changes even in case of power failure. Battery backup is not required.

Data	3-wire and 4-wire systems	2-wire system
Output current I_A	0 – 20 mA, 4 – 20 mA	4 – 20 mA
Supply voltage U_V [1]	24 V DC (18 – 32 V)	14 V DC + (I x R_B), max. 30 V
Max. current consumption	24 mA at 20 mA output current	20 mA
Max. load R_B	600 Ω	(U_V – 14 V)/20 mA
Impact of power supply	0.1 %/V	0.1 %/V
Load influence	0.1 %/(0 – 600 Ω)	0.1 %/100 Ω
Temperature impact	< 0.3 ‰/K	
Ambient temperature	– 60 °C[2]/–40 °C to +80 °C[3]/+90 °C[3]	
Transmitter potentiometer	5 kΩ	

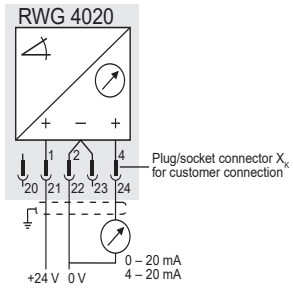
Notes on table	
1) Power supply	Power supply possible via: AC, AM actuator controls or external power supply
2)	–60 °C for heater in switch compartment
3) Ambient temperature	Depending on temperature range of the actuator: Refer to name plate

Wiring

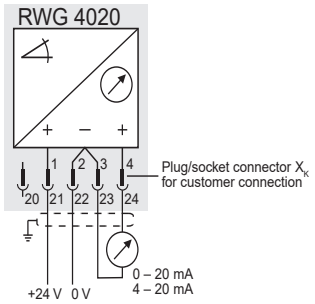
2-wire system



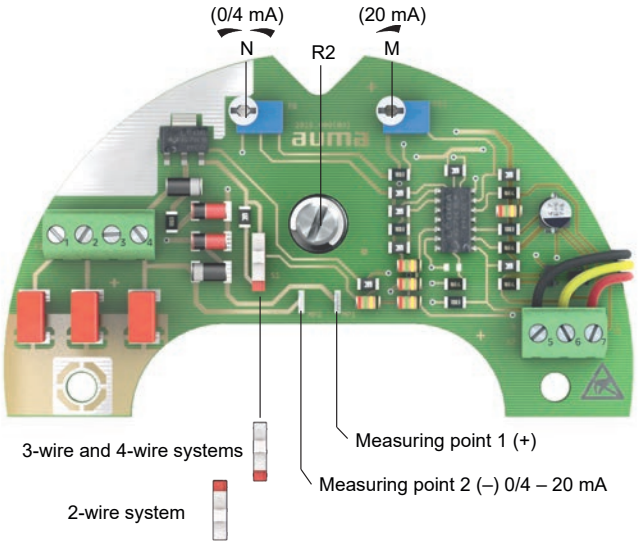
3-wire system



4-wire system



1 – 4 connection terminals on the PCB



Setting: Refer to the operation instructions relating to actuator.

Inverse operation: For inverse operation, exchange terminals 7 (red/RD) and 5 (black/BK) on position transmitter board.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

Technical data Electronic position transmitters/potentiometer

Potentiometer
Travel sensor for recording the valve position.

Data	Wire potentiometer	Film potentiometer	Wire potentiometer in tandem version	Film potentiometer in tandem version
Recommended for	OPEN-CLOSE duty	Modulating duty	OPEN-CLOSE duty	Modulating duty
Independent linearity	≤ 1 %			
Resistance (standard)	0.2 kΩ	5 kΩ	02/0.2 kΩ	1 kΩ/5 kΩ
Resistance (option)[1)]	0.1 kΩ 0.5 kΩ 1.0 kΩ 2.0 kΩ 5.0 kΩ	1 kΩ	0.5/0.5 kΩ 1.0/1.0 kΩ 0.1/5.0 kΩ 0.2/5.0 kΩ 1.0/5.0 kΩ 5.0/5.0 kΩ	1 kΩ/1 kΩ 5 kΩ/5 kΩ
Resistance tolerance	+/– 5 %	+/– 10 %	+/– 5 %	+/– 10 %
Nominal power	1.5 W	0.5 W	1.5 W	0.5 W
Max. wiper current	30 mA	0.1 mA	30 mA	0.1 mA
Lifetime	100,000 cycles	$5 \cdot 10^6$ cycles	100,000 cycles	$5 \cdot 10^6$ cycles
Synchronous operation	–	–	+/– 1.5 %	+/– 2.0 %
Ambient temperature[2)]	– 60 to +120 °C	– 60 °C[3)]/–40 °C to +90 °C	– 60 to +120 °C	– 60 °C[3)]/–40 °C to +90 °C

Notes on table	
1) Resistance (option)	Further variants on request
2) Ambient temperature	Depending on temperature range of the actuator: Refer to name plate
3)	–60 °C for heater in switch compartment

The position of the valve can be transmitted as a continuous signal by a potentiometer. The potentiometer is installed in the control unit of the actuator.

We recommend:
Using the potentiometer as voltage divider. Depending on the supply voltage, suitable series resistors are to be provided. Please observe max. nominal power.

For the tandem version, two signals can be evaluated by two potentiometers, e,g, one signal for external controls or one signal for AUMA AC integral controls.

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SA multi-turn actuators and WSH limit switching device (manual)

Technical data Sizing of reduction gearings for mechanical position indication, potentiometers, EWG, RWG and IWG

This data applies to:

Multi-turn actuators:	SA 25.1 – SA 48.1; SAR 25.1 – SAR 30.1
	SA 07.2 – SA 16.2; SAR 07.2 – SAR 16.2
	SAV 07.2 – SAV 16.2; SARV 07.2 – SARV 16.2
	SAEx 25.1 – SAEx 40.1; SAREx 25.1 – SAREx 30.1
	SAEx 07.2 – SAEx 16.2; SAREx 07.2 – SAREx 16.2
	SAVEx 07.2 – SAVEx 16.2; SARVEx 07.2 – SARVEx 16.2
Limit switching device for manual operation:	WSH
	WSHEx

The sizing must be made to ensure that the max. possible swing angle can be utilised as far as possible with the installed position transmitter. Therefore calculations must be made with the multipliers according to the table below:

Designation		Order code	Electric rotation angle	Multiplier M
Precision wire potentiometer[1]		12.1	310° +20°/–10°	1.55
	Tandem version	12.2		
Precision film potentiometer[1]		12.3	310° +20°/–10°	1.55
	Tandem version	12.4		
Ex precision wire potentiometer[2]		12.1 EMC	250° +20°/–10°	1.85
Ex precision film potentiometer[2]		12.1 PX	310° +20°/–10°	1.55
EWG[1]	2-wire	40.2	310° +20°/–10°	1.55
	3-wire	40.3		
	4-wire	40.4		
RWG (4020)[1]	2-wire	21.2	310° +20°/–10°	1.55
	3-wire	21.3		
	4-wire	21.4		
RGW Ex (5020 Ex)[2]		21.2 Ex	310° +20°/–10°	1.55
IWG (4020)[1]	2-wire	17.2	310° +20°/–10°	1.55
	3-wire	17.3		
	4-wire	17.4		

General information

For potentiometer, RWG or IWG operation, the control unit provides a transmission ratio of 1:1.29.

Determination of the optimum reduction ratio: I_o = turns/stroke x M

Either the reduction gearing with the calculated reduction ratio or the next higher reduction ratio must be used

Reduction gearing 10.1 – xx

Standard reduction ratios (I_s)				
2.0:1	13.5:1	91:1	608:1	4,096:1
2.4:1	16.0:1	108:1	729:1	4,870:1
2.8:1	19.0:1	128:1	867:1	5,833:1
3.4:1	22.5:1	152:1	1024:1	6,937:1
4.0:1	27.0:1	182:1	1,217:1	8,308:1
4.8:1	32.0:1	216:1	1,458:1	9,741:1
5.6:1	38.0:1	256:1	1,734:1	16,384:1
6.7:1	45.0:1	304:1	2,048:1	–
8.0:1	54.0:1	364:1	2,435:1	–
9.5:1	64.0:1	433:1	2,916:1	–
11:1	76.0:1	512:1	3,468:1	–

1) – 2) Refer to notes on page 2.

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Adjustable reduction gearing[3)]

With the table and the positions of the gear wheels, identification of the selected reduction ratio is possible:



Reduction ratio	Position					
	A (turns/stroke)	B (turns/stroke)	C (turns/stroke)	D (turns/stroke)	E (turns/stroke)	SeE (turns/stroke)
1	1.00 (0.5–0.7)	1.26 (0.7-0.8)	1.55 (0.8-1.0)	2.00 (1.0-1.3)	2.50 (1.3-1.6)	3.10 (1.6-2.0)
2	4.00 (2.0-2.6)	5.00 (2.6-3.2)	6.30 (3.2-4.1)	8.00 (4.1-5.2)	10.0 (5.2-6.5)	12.6 (6.5-8.1)
3	16.0 (8.1-10.3)	20.1 (10.3-13.0)	25.3 (13.0-16.3)	31.8 (16.3-20.5)	40.0 (20.5-25.8)	50.4 (25.8-32.5)
4	64.0 (32.5-41.3)	80.5 (41.3-51.9)	101 (51.9-65.2)	127 (65.2-81.9)	160 (81.9-103.2)	201 (103-130)
5	256 (130-165)	322 (165-208)	405 (208-261)	509 (261-328)	641 (328-411)	806 (414-520)

Calculations

Covered angle

$$\text{Mech. position indicator } [\alpha_{pi}] = \frac{\text{Turns/stroke x } 360^\circ}{i_s}$$

$$\text{Potentiometers, RWG, IWG, EWG } [\alpha_p] = \frac{\text{Turns/stroke x } 360^\circ \text{ x } 1.29}{i_s}$$

Covered Ohm value

$$R_E = \frac{R_N \cdot \alpha_P}{\alpha_N}$$

i_S = standard reduction ratio
i_O = optimum reduction ratio (calculated)
α_N = max. perm. electric angle (see above)
α_P = covered angle at potentiometer
α_S = covered angle at mechanical position indicator
R_N = Nominal resistance
R_E = actually covered resistance

Blinker transmitter[4)]

Output speed	50 Hz	4	5.6	8	11	16	22	32	45	63	90	125	180
rpm	60 Hz	4.8	6.7	9.6	13	19	26	38	54	75	108	150	216
Blinker transmitter pulses per revolution		4	4	2	2	2	1	1	1	1	1	1	1

Notes on tables on pages 1 and 2

1)	Not valid for SAEx 25.1 – 40.1, SAREx 25.1 – 30.1, WSHEx
2)	Valid for SAEx 25.1 – 40.1, SAREx 25.1 – 30.1, WSHEx only
3)	Only applicable for multi-turn actuators with mechanical position indication e and temperature –40 °C to +80°C.
4)	For WSH, WSHEx, 4 pulses per handwheel rotation

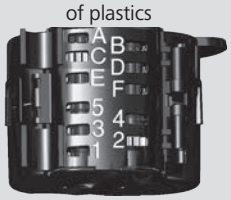
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

This data applies to:

Part-turn actuators: SQ 05.2 – SQ 14.2
SQR 05.2 – SQR 14.2
SQEx 05.2 – SQEx 14.2
SQREx 05.2 – SQREx 14.2

Reduction gearing

With the table and the positions of the gear wheels, identification of the selected reduction ratio is possible:

Type	Preliminary reduction ratio (from the output drive to control unit)	Swing angle	Electromechanical control unit			Electronic control unit	
			Gearing with fixed reduction ratio made of brass	Adjustable reduction gearing made of plastics 		MWG versions made of metal or plastics	
			Standard reduction ratio	Item	Reduction ratio	Step	Reduction ratio
SQ 05.2/ SQ 07.2	20.8	30° ±15°	4.8	2B	5.0	2	5.0
		60° ±15°	6.7	2D	8.0	3	10.5
		90° ±15°	9.5	2E	10	3	10.5
		120° ±15°	13.5	2F	12.6	3	10.5
		150° ±15°	16	3 A	16	4	20
		180° ±15°	19	3B	20.1	4	20
		210° ±15°	22.5	3C	25.3	4	20
SQ 10.2	26.6	30° ±15°	5.6	2C	6.3	2	5.0
		60° ±15°	9.5	2E	10	3	10.5
		90° ±15°	13.5	2F	12.6	3	10.5
		120° ±15°	16	3 A	16	4	20
		150° ±15°	19	3B	20.1	4	20
		180° ±15°	22.5	3C	25.3	4	20
		210° ±15°	27	3C	25.3	5	42
SQ 12.2	53.2	30° ±15°	11	2F	12.6	3	10.5
		60° ±15°	19	3B	20.1	4	20
		90° ±15°	27	3C	25.3	4	20
		120° ±15°	32	3D	31.8	5	42
		150° ±15°	38	3E	40	5	42
		180° ±15°	45	3F	50.4	5	42
		210° ±15°	54	4 A	64	6	80
SQ 14.2	122.5	30° ±15°	27	3C	25.3	4	20
		60° ±15°	45	3E	40	5	42
		90° ±15°	64	4 A	64	6	80
		120° ±15°	76	4B	80.5	6	80
		150° ±15°	91	4C	101	6	80
		180° ±15°	108	4D	127	7	168
		210° ±15°	152	4E	152	7	168

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Blinker transmitter			
Type	Operating time for 90° in seconds		Blinker transmitter pulses per 90°
	50 Hz	60 Hz	
SQ 05.2	4	3	5
	5.6	4.5	5
	8	6	11
	11	9	11
	16	12	11
	22	17	21
	32	25	21
	63	50	21
SQ 07.2	4	3	5
	5.6	4.5	5
	8	6	11
	11	9	11
	16	12	11
	22	17	21
	32	25	21
	63	50	21
SQ 10.2	8	6	14
	11	9	14
	16	12	14
	22	17	14
	32	25	27
	45	35	27
	63	50	27
SQ 12.2	11	9	13
	16	12	13
	22	17	27
	32	25	27
	45	35	27
	63	50	27
	90	75	53
	125	108	53
SQ 14.2	24	20	31
	36	30	31
	48	40	31
	72	60	31
	100	85	31

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical description Types of corrosion protection

This overview accounts for atmospheric ambient conditions, but not for special chemical atmospheres, requiring absence of aluminium or non-ferrous heavy metal, for example.

Corrosivity categories according to ISO 12944-2 Durability ranges according to ISO 12944-1 H (high)	AUMA		
	Corrosion protection	Painting specification (total film thickness)	
		Powder coating	Wet paint
C1 (very low): Heated buildings with clean atmospheres	KN	P1.001 (140 µm)	N1.001 (60 µm)
C2 (low): Unheated buildings and areas with low level of pollution			
C3 (medium): Production rooms with high humidity and some pollution. Urban and industrial atmospheres with moderate pollution	KS		N1.003 (140 µm)
C4 (high): Chemical plants and areas with moderate salinity			
C5/C5-M (very high, marine): Coastal and offshore areas with almost permanent condensation, high salinity and high pollution			N1.008 (220 µm)
C5-VH/C5-I (very high, marine/industrial): Coastal and offshore areas with almost permanent condensation, high salinity and high pollution Industrial areas with almost permanent condensation and aggressive atmosphere	KX		S1.008 (300 µm) depends on product
CX (extreme): Offshore and industrial areas with extreme humidity, high salinity and aggressive atmosphere	KX		on request

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical description Corrosion protection KS with powder coating in accordance with painting specification P1.001

This description applies to AUMA products with powder coating in accordance with painting specification P1.001.

Corrosion protection KS based on painting specification P1.001 is suitable for use in areas with high salinity, almost permanent condensation, and high pollution. Corrosion protection includes the use of suitable material for outer parts and structure of the painting.

1. Materials

1.1 Outside fasteners (e.g. screws) are made of stainless steel with additional metallic surface protection.

1.2 Name plates are made of aluminium.

2. Surface treatment

2.1 After machining, steel parts are covered with metallic surface protection (except SQ/GS coupling and internal GS coupling compartment)

2.2 Aluminium parts such as the handwheel are electrophoretically coated.

3. General information

3.1 Housing parts made of GJL/GJS are blasted: Sa 2 ½ in accordance with EN ISO 12944-4.

3.2 Aluminium housing parts are not blasted.

4. Painting system

4.1 Powder coating
The powder coating is performed in an automated process.

4.1.1 During preliminary treatment, housing parts are chemically cleaned and painted with an Oxsilan® conversion coating.

4.1.2 Housing parts are primer coated with:

Product:	FREOPOX PE 1204A
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	Thermally hardening powder coating based on epoxy resin
Colour:	RAL 7035
Film thickness:	70 µm

4.1.3 Housing parts are finish coated with:

Product:	FREIOTHERM PU 4003M
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	Thermally hardening powder coating based on polyurethane
Colour:	A0001, AUMA silver-grey (similar to RAL 7037 dust grey)
Film thickness:	70 µm

5. Total film thickness (dry)

The average total film thickness (dry) of the powder coated housing is 140 µm.
For reasons of geometry, powder coating thickness varies between 60 µm and 220 µm. Variation of film thickness has no impact on corrosion protection.

6. Notes

6.1 The top coat can be painted with all common 1- or 2-component coating materials (i.e. artificial resin, epoxy resin, PVC, polyurethane, polyamide and acrylic enamels).
We recommend verifying the compatibility of the paints before applying a new wet painting layer.
For this, the surfaces to be painted must be slightly ground and carefully cleaned, i. e. free of foreign substance, grease, oily dirt and dust.

6.2 Mounting surface to the valve is powder coated.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Corrosion protection

Technical description Corrosion protection KS with powder coating in accordance with painting specification P1.002

This description applies to AUMA products with powder coating in accordance with painting specification P1.002.

Corrosion protection KS based on painting specification P1.002 is suitable for use in areas with high salinity, almost permanent condensation, and high pollution. Corrosion protection includes the use of suitable material for outer parts and structure of the painting.

1. Materials

1.1 Outside fasteners (e.g. screws) are made of stainless steel with additional metallic surface protection.

1.2 Name plates are made of aluminium.

2. Surface treatment

2.1 After machining, steel parts are covered with metallic surface protection (except SQ/GS coupling and internal GS coupling compartment)

2.2 Aluminium parts such as the handwheel are electrophoretically coated.

3. General information

3.1 Housing parts made of GJL/GJS are blasted: Sa 2 ½ in accordance with EN ISO 12944-4.

3.2 Aluminium housing parts are not blasted.

4. Painting system

4.1 Powder coating
The powder coating is performed in an automated process.

4.1.1 During preliminary treatment, housing parts are chemically cleaned and painted with an Oxsilan® conversion coating.

4.1.2 Housing parts are primer coated with:

Product:	FREOPOX PE 1204A
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	Thermally hardening powder coating based on epoxy resin
Colour:	RAL 7035
Film thickness:	70 µm

4.1.3 Housing parts are finish coated with:

Product:	FREIOTHERM PU 4003M
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	Thermally hardening powder coating based on polyurethane
Colour:	A0001, AUMA silver-grey (similar to RAL 7037 dust grey)
Film thickness:	70 µm

4.2 Finish painting
The finish painting is applied after device assembly and depends on the desired colour.

4.2.1 Housing parts are finish painted with:

Product:	EFDEDUR UR1946H
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	2-component finish painting based on polyurethane
Colour:	A0001, AUMA silver-grey (similar to RAL 7037 dust grey) or DB colour according to work order
Film thickness:	60 µm (dry)

4.2.2 Housing parts are coated with finish painting for special colours:

Product:	EFDEDUR UR1040
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	2-component finish painting based on polyurethane
Colour:	Special colour according to work order
Film thickness:	60 µm (dry)

5. Total film thickness (dry)

Average total film thickness (dry) of the powder coated housings including finish painting is 200 µm.
For reasons of geometry, powder coating thickness varies between 60 µm and 220 µm. Variation of film thickness has no impact on corrosion protection.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

6. Notes

6.1 The top coat can be painted with all common 1- or 2-component coating materials (i.e. artificial resin, epoxy resin, PVC, polyurethane, polyamide and acrylic enamels).
Subsequent finishing with chlorine rubber paints subject to restrictions.
We recommend verifying the compatibility of the paints before applying a new wet painting layer. For this, the surfaces to be painted must be slightly ground and carefully cleaned, i. e. free of foreign substance, grease, oily dirt and dust.

6.2 Mounting surface to the valve is powder coated.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Corrosion protection

Technical description KX corrosion protection with powder coating in accordance with painting specification P1.001

This description applies to AUMA products with powder coating in accordance with painting specification P1.001.

KX corrosion protection based on painting specification P1.001 is suitable for use in areas with extremely high salinity, permanent condensation, and high pollution. Corrosion protection includes the use of suitable material for outer parts and painting system.

1. Materials

1.1 Outside fasteners (e.g. screws) are made of stainless steel with additional metallic surface protection.

1.2 The name plates are made of aluminium.

2. Surface treatment

2.1 After machining, the parts are coated with a metallic surface protection or are made of stainless steel (except for internal GS coupling compartment).

2.2 Aluminium parts such as the handwheel are electrophoretically coated.

3. General

3.1 Housing parts made of GJL/GJS are blasted: Sa 2 ½ in accordance with EN ISO 12944-4.

3.2 Aluminium housing parts are not blasted.

4. Painting system

4.1 Powder coating
The powder coating is performed in an automated process.

4.1.1 During preliminary treatment, housing parts are chemically cleaned and painted with an Oxsilan® conversion coating.

4.1.2 Housing parts are primer coated with:

Product:	FREOPOX PE 1204A
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	Thermally hardening powder coating based on epoxy resin
Colour:	RAL 7035
Film thickness:	70 µm

4.1.3 Housing parts are finish coated with:

Product:	FREIOTHERM PU 4003M
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	Thermally hardening powder coating based on polyurethane
Colour:	A0001, AUMA silver-grey (similar to RAL 7037 dust grey)
Film thickness:	70 µm

5. Total film thickness (dry)

The average total film thickness (dry) of the powder coated housing is 140 µm.
For reasons of geometry, powder coating thickness varies between 60 µm and 220 µm. Variation of film thickness has no impact on corrosion protection.

6. Notes

6.1 The top coat can be painted with all common 1- or 2-component coating materials (i.e. artificial resin, epoxy resin, PVC, polyurethane, polyamide and acrylic enamels). We recommend verifying the compatibility of the paints before applying a new wet painting layer. For this, the surfaces to be painted must be slightly ground and carefully cleaned, i. e. free of foreign substance, grease, oily dirt and dust.

6.2 Mounting surface to the valve is powder coated.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical description KX corrosion protection with powder coating in accordance with painting specification P1.002

This description applies to AUMA products with powder coating in accordance with painting specification P1.002.

Corrosion protection KX based on painting specification P1.002 is suitable for use in areas with extremely high salinity, permanent condensation, and high pollution. Corrosion protection includes the use of suitable material for outer parts and painting system.

1. Materials

1.1 Outside fasteners (e.g. screws) are made of stainless steel with additional metallic surface protection.

1.2 The name plates are made of aluminium.

2. Surface treatment

2.1 After machining, the parts are coated with a metallic surface protection (except for internal GS coupling compartment) or are made of stainless steel.

2.2 Aluminium parts such as the handwheel are electrophoretically coated.

3. General

3.1 Housing parts made of GJL/GJS are blasted: Sa 2 ½ in accordance with EN ISO 12944-4.

3.2 Aluminium housing parts are not blasted.

4. Painting system

4.1 Powder coating
The powder coating is performed in an automated process.

4.1.1 During preliminary treatment, housing parts are chemically cleaned and painted with an Oxsilan® conversion coating.

4.1.2 Housing parts are primer coated with:

Product:	FREOPOX PE 1204A
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	Thermally hardening powder coating based on epoxy resin
Colour:	RAL 7035
Film thickness:	70 µm

4.1.3 Housing parts are finish coated with:

Product:	FREIOTHERM PU 4003M
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	Thermally hardening powder coating based on polyurethane
Colour:	A0001, AUMA silver-grey (similar to RAL 7037 dust grey)
Film thickness:	70 µm

4.2 Finish painting
The finish painting is applied after device assembly and depends on the desired colour.

4.2.1 Housing parts are finish painted with:

Product:	EFDEDUR UR1946H
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	2-component finish painting based on polyurethane
Colour:	A0001, AUMA silver-grey (similar to RAL 7037 dust grey) or DB colour according to work order
Film thickness:	60 µm (dry)

4.2.2 Housing parts are coated with finish painting for special colours:

Product:	EFDEDUR UR1040
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	2-component finish painting based on polyurethane
Colour:	Special colour according to work order
Film thickness:	60 µm (dry)

5. Total film thickness (dry)

Average total film thickness (dry) of the powder coated housings including finish painting is 200 µm.
For reasons of geometry, powder coating thickness varies between 60 µm and 220 µm. Variation of film thickness has no impact on corrosion protection.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

6. Notes

6.1 The top coat can be painted with all common 1- or 2-component coating materials (i.e. artificial resin, epoxy resin, PVC, polyurethane, polyamide and acrylic enamels). We recommend verifying the compatibility of the paints before applying a new wet painting layer. For this, the surfaces to be painted must be slightly ground and carefully cleaned, i. e. free of foreign substance, grease, oily dirt and dust.

6.2 Mounting surface to the valve is powder coated.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical description KX-G corrosion protection with powder coating in accordance with painting specification P1.004

This description applies to AUMA products with powder coating in accordance with painting specification P1.004.

Corrosion protection KX-G based on painting specification P1.004 is suitable for use in areas with extremly high salinity, permanent condensation, and high pollution. Corrosion protection includes the use of suitable material for outer parts and painting system.

1. Materials

1.1 Outside fasteners (e.g. screws) are made of stainless steel with additional metallic surface protection.

1.2 Name plates are made of stainless steel.

2. Surface treatment

2.1 After machining, the parts are coated with a metallic surface protection or are made of stainless steel.

3. General information

3.1 Housing parts made of GJL/GJS are blasted: Sa 2 ½ in accordance with EN ISO 12944-4.

4. Painting system

4.1 Powder coating
The powder coating is performed in an automated process.

4.1.1 During preliminary treatment, housing parts are chemically cleaned and painted with an Oxsilan® conversion coating.

4.1.2 Housing parts are primer coated with:

Product:	FREOPOX PE 1204A
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	Thermally hardening powder coating based on epoxy resin
Colour:	RAL 7035
Film thickness:	70 µm

4.1.3 Housing parts are finish coated with:

Product:	FREIOTHERM PU 4003M
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	Thermally hardening powder coating based on polyurethane
Colour:	A0001, AUMA silver-grey (similar to RAL 7037 dust grey)
Film thickness:	70 µm

4.2 After product assembly, the first intermediate painting is applied to the housing parts:

Product:	FREOPOX ER1912M
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	2-component painting based on epoxy resin
Colour:	white
Film thickness:	80 µm (dry)

4.3 Finish painting
The finish painting is applied after device assembly and depends on the desired colour.

4.3.1 Housing parts are finish painted with:

Product:	EFDEDUR UR1946H
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	2-component finish painting based on polyurethane
Colour:	A0001, AUMA silver-grey (similar to RAL 7037 dust grey) or DB colour according to work order
Film thickness:	60 µm (dry)

4.3.2 Housing parts are coated with finish painting for special colours:

Product:	EFDEDUR UR1040
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	2-component finish painting based on polyurethane
Colour:	Special colour according to work order
Film thickness:	60 µm (dry)

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

5. Total film thickness (dry)

Average total film thickness (dry) of the powder coated housings including finish painting is 280 µm.
For reasons of geometry, powder coating thickness varies between 60 µm and 220 µm. Variation of film thickness has no impact on corrosion protection.

6. Notes

6.1 The top coat can be painted with all common 1- or 2-component coating materials (i.e. artificial resin, epoxy resin, PVC, polyurethane, polyamide and acrylic enamels). We recommend verifying the compatibility of the paints before applying a new wet painting layer. For this, the surfaces to be painted must be slightly ground and carefully cleaned, i. e. free of foreign substance, grease, oily dirt and dust.

6.2 Mounting surface to the valve is powder coated.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Painting specification P1.003

Technical description Powder coating, primer coating, finish coating and multi-layer wet painting

1. General information

1.1 Housing parts made of GJL/GJS are blasted: Sa 2 ½ in accordance with EN ISO 12944-4.

1.2 Aluminium housing parts are not blasted.

2. Painting system

2.1 Powder coating
The powder coating is performed in an automated process.

2.1.1 During preliminary treatment, housing parts are chemically cleaned and painted with an Oxsilan® conversion coating.

2.1.2 Housing parts are primer coated with:

Product:	FREOPOX PE 1204A
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	Thermally hardening powder coating based on epoxy resin.
Colour:	RAL 7035
Film thickness:	70 µm

2.1.3 Housing parts are finish coated with:

Product:	FREIOTHERM PU 4003M
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	Thermally hardening powder coating based on polyurethane.
Colour:	A0001, AUMA silver-grey (similar to RAL 7037 dust grey)
Film thickness:	70 µm

2.2 After product assembly, the first intermediate painting is applied to the housing parts:

Product:	FREOPOX ER1912M
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	2-component painting based on epoxy resin
Colour:	white
Film thickness:	80 µm (dry)

2.3 The second intermediate painting is applied to the housing parts:

Product:	FREOPOX ER1912M (for data refer to 1st intermediate painting)
Colour:	White
Film thickness:	80 µm (dry)

2.4 Finish painting
The finish painting is applied after device assembly and depends on the desired colour.

2.4.1 Housing parts are finish painted with:

Product:	EFDEDUR UR1946H
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	2-component finish painting based on polyurethane
Colour:	A0001, AUMA silver-grey (similar to RAL 7037 dust grey) or DB colour according to work order
Film thickness:	60 µm (dry)

2.4.2 Housing parts are coated with finish painting for special colours:

Product:	EFDEDUR UR1040
Manufacturer:	Emil Frei GmbH & Co. KG
Structure:	2-component finish painting based on polyurethane
Colour:	Special colour according to work order
Film thickness:	60 µm (dry)

3. Total film thickness (dry)

Total film thickness (dry) of the powder coated housings including wet painting layer is 360 µm.
For reasons of geometry, powder coating thickness varies between 60 µm and 220 µm. Variation of film thickness has no impact on corrosion protection.

4. Notes

4.1 The top coat can be painted with all common 1- or 2-component coating materials (i.e. artificial resin, epoxy resin, PVC, polyurethane, polyamide and acrylic enamels). Subsequent finishing with chlorine rubber paints subject to restrictions.
We recommend verifying the compatibility of the paints before applying a new wet painting layer.
For this, the surfaces to be painted must be slightly ground and carefully cleaned, i. e. free of foreign substance, grease, oily dirt and dust.

4.2 Mounting surface to the valve is powder coated.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical description Electric actuators, actuator controls and gearboxes in K-Mass™ (registered trademark of Thermal Designs Inc.) fireproof version

1. General information

1.1 Fireproof characteristics are achieved by the patented K-MASS™ coating by Thermal Designs Inc. In the event of a fire, the coating will expand and absorb the externally supplied thermal energy of the fire.

2. Characteristics

- Chemically inert
- Fixed passive fire protection
- Segment-moulded coating
- Test in accordance with strict standards
- Protection of electronic elements for 30 minutes at 1,100 °C/2,000 °F

3. Advantages

- Does not fan the fire
- Device remains fully operational
- Full access to any component part, without removal of fire protection
- Local operation not impaired
- Minimum space requirement
- No additional installation cost
- Good heat dissipation characteristics
- Ambient temperature –50 °C to +85.6 °C
- Permanent corrosion protection
- Always ready for use
- Meets the requirements of ANSI/API607 and UL 1709

4. In case of fire

4.1 Actuators, actuator controls and gearboxes remain completely operational during minimum 30 minutes at a temperature up to 1 100 °C/2 000 °F. Within this period of time, the corresponding fireproof valve can be operated.

5. Qualifications

5.1 K-Mass™ is hydrocarbon jet and pool fire tested by:

- Bureau Veritas
- Faverdale Technology Centre
- Sintef of Norway
- Southwest Research Institute

6. Finish painting

The finish painting depends on the desired colour.

6.1 The intermediate painting is applied to the housing parts:

Product:	SikaCor EG 1
Manufacturer:	Sika Deutschland GmbH
Structure:	2-component painting based on epoxy resin with micaceous iron oxide
Colour:	Green (DB 601)
Film thickness:	80 µm (dry)

6.2 Housing parts are finish painted with:

Product:	SikaCor EG 4
Manufacturer:	Sika Deutschland GmbH
Structure:	2-component finish painting based on polyurethane with micaceous iron oxide
Colour:	A0001, AUMA silver-grey (similar to RAL 7037 dust grey) or DB colour according to work order
Film thickness:	60 µm (dry)

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

6.3 Housing parts are coated with finish painting for special colours:

Product:	SikaCor EG 5
Manufacturer:	Sika Deutschland GmbH
Structure:	2-component finish painting based on polyurethane
Colour:	Special colour according to work order
Film thickness:	60 µm (dry)

6.4 Mounting face to the valve is without surface treatment, covered with a metallic surface protection or powder coated.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical data Grease and oil quantities

This data applies to[1]:

Multi-turn actuators	SA 07.1 – SA 48.1; SAR 07.1 – SAR 30.1; SA 07.2 – SA 16.2; SAR 07.2 – SAR 16.2 SA 07.2-UW – SA 16.2-UW; SAR 07.2-UW – SAR 16.2-UW SAV 07.2 – SAV 16.2; SARV 07.2 – SARV 16.2 SAExC 07.1 – SAExC 16.1; SARExC 07.1 – SARExC 16.1; SAEx 25.1 – SAEx 40.1; SAREx 25.1 – SAREx 30.1 SAEx 07.2 – SAEx 16.2; SAREx 07.2 – SAREx 16.2 SAVEx 07.2 – SARVEx 16.2; SARVEx 07.2 – SARVEx 16.2 SAN 07.1 – SAN 25.1; SARN 07.1 – 25.1; SAN 07.2 – SAN 16.2; SARN 07.2 – SARN 16.2 SAI 07.2 – SAI 16.2; SARI 07.2 – SARI 16.2
Part-turn actuators	SQ 05.2 – SQ 14.2; SQR 05.2 – SQR 14.2; SQEx 05.2 – SQEx 14.2; SQREx 05.2 – SQREx 14.2 SG 05 – SG 12; SG 05.1 – SG 12.1; SGR 05.1 – SGR 12.1; SGExC 05.1 – SGExC 12.1 SG 04.2 – SG 10.2; SG 03.3 – SG 05.3 SGM 04.1 – SGM 10.1; SGMR 04.1 – SGMR 10.1; SGC 04.1 – SGC 10.1; SGCR 04.1 – SGCR 10.1
Globe valve actuators	SV 05.1 – SV 07.1; SVM 05.1 – SVM 07.5; SVMR 05.1 – SVMR 07.5; SVC 05.1 – SVC 07.5; SVCR 05.1 – SVCR 07.5
Worm gearboxes	GS 50.3 – GS 250.3; GS 315 – GS 500; GS 630.3
Primary reduction gearing	GZ 16 – GZ 40; GZ 630.3
Coaxial planetary gearing	GP 10.1 – GP 30.1
Spur gearboxes	GST 10.1 – GST 40.1
Bevel gearboxes	GK 10.2 – GK 40.2
Linear thrust units	LE 12.1 – LE 200.1
Multi-turn gearboxes	GHT 320.3 – GHT 1200.3

Multi-turn actuators

SA		**07.1/07.5**		**10.0/10.1**	**14.1/14.5**	**16.1**	**25.1**	**30.1**	**35.1**	**40.1**	**48.1**
Qty	dm^3	0.62 -0.03		0.93 -0.04	2.3 -0.1	4.5 ±0.1	11.0 ±0.2	16.0 ±0.2	29.0 +0.4	36.0 +0.4	56.0 +0.5
Weight	kg[2]	0.56 -0.03		0.84 -0.04	2.1 -0.1	4.1 ±0.1	9.9 ±0.2	14.4 ±0.2	26.1 +0.4	32.4 +0.4	50.4 +0.5
SA		**07.2/07.6**		**10.2**	**14.2/14.6**	**16.2**					
		F07	F10/G0								
Qty	dm^3	0.58 ±0.02	0.525 ±0.02	0.9 ±0.02	1.76 ±0.05	3.1 ±0.05					
Weight	kg[2]	0.52 ±0.02	0,47 ±0,02	0.81 ±0.02	1.58 ±0.05	2.8 ±0.05					

Part-turn actuators

SQ		**05.2**	**07.2**	**10.2**	**12.2**	**14.2**					
Qty	dm^3	0.7 ±0.02	0.7 ±0.02	1.3 ±0.02	1.7 ±0.02	1.8 ±0.05					
Weight	kg[2]	0.63 ±0.02	0.63 ±0.02	1.17 ±0.02	1.53 ±0.02	1.62 ±0.05					
SG		**05**	**07**	**10**	**12**						
Qty	dm^3	0.3	0.3	0.52	0.8						
Weight	kg[2]	0.27	0.27	0.47	0.72						
SG		**05.1**	**07.1**	**10.1**	**12.1**						
Qty	dm^3	0.3	0.3	0.52	0.8						
Weight	kg[2]	0.27	0.27	0.47	0.72						
SG		**04.2**	**05.2**	**07.2**	**10.2**						
Qty	dm^3	0.09	0.14	0.30	0.52						
Weight	kg[3]	0.07	0.12	0.25	0.43						
SG		**03.3**	**04.3**	**05.3**							
Qty	dm^3	0.14	0.14	0.23							
Weight	kg[3]	0.12	0.12	0.19							
SGM/SGC		**04.1**	**05.1**	**07.1**	**10.1**						
Qty	dm^3	0.11	0.11	0.24	0.40						
Weight	kg[3]	0.09	0.09	0.20	0.33						

1) – 2) Refer to notes on page 3.

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Technical data Grease and oil quantities

Globe valve actuators

SV		05.1	07.1								
Qty	dm^3	0.14	0.30								
Weight	kg[3)]	0.12	0.25								
SVM/SVC		**05.1**	**07.1/07.5**								
Qty	dm^3	0.11	0.24								
Weight	kg[3)]	0.09	0.20								

Worm gearboxes

GS		50.3	63.3	80.3	100.3 (52:1)	100.3 (126:1)	100.3 (160:1)	100.3 (208:1)	125.3 (52:1)	125.3 (126:1)	125.3 (160:1)
Qty	dm^3	0.1	0.3	0.4	1	1.35	1.35	1.35	1.3	1.65	1.65
Weight	kg[2)]	0.09	0.27	0.36	0.9	1.22	1.22	1.22	1.17	1.49	1.49
GS		**125.3 (208:1)**	**160.3 (54:1)**	**160.3 (218:1)**	**160.3 (442:1)**	**160.3 (880:1)**	**200.3 (53:1)**	**200.3 (67:1)**	**200.3 (214:1)**	**200.3 (434:1)**	**200.3 (864:1)**
Qty	dm^3	1.65	3.3	4.3	4.3	4.3	6.6	6.6	8.1	8.1	8.6
Weight	kg[2)]	1.49	3	3.9	3.9	3.9	6	6	7.4	7.4	7.8
GS		**200.3 (1 752:1)**	**250.3 (52:1)**	**250.3 (210:1)**	**250.3 (411:1)**	**250.3 (848:1)**	**250.3 (1 718:1)**				
Qty	dm^3	8.6	12.2	14.4	14.4	14.7	14.7				
Weight	kg[2)]	7.8	11	13	13	13.3	13.3				
GS		**315**	**400**	**500**	**630.3**						
Qty	dm^3	27.5	55.0	110.0	216.7						
Weight	kg[2)]	25.0	50.0	100.0	195.0						

Primary reduction gearing

GZ		30	35	40	40/16						
Qty	dm^3	17.6	18.7	57.2	61.9						
Weight	kg[2)]	16.0	17.0	52.0	56.3						
GZ		**630.3 (4:1/8:1)**	**630.3 (16:1/32:1)**	**630.3 (64:1/133:1)**							
Qty	dm^3	11.1	16.7	21.1							
Weight	kg[2)]	10.0	15.0	19.0							

Coaxial planetary gearing

GP		10.1/14.1 (2, 4:1)	10.1/14.1 (3:1)	10.1/14.1 (4:1)	16.1	25.1 (4:1/8:1)	25.1 (16:1)	30.1 (4:1/8:1)	30.1 (16:1)		
Qty	dm^3	0.35	0.35	0.35	1.0	1.5	2.0	2.2	2.5		
Weight	kg[2)]	0.32	0.32	0.32	0.9	1.4	1.8	2.0	2.25		

Spur gearboxes

GST		10.1	14.1/14.5	16.1	25.1	30.1	35.1	40.1			
Qty	dm^3	0.7	1.5	3.0	8.0	12.0	20.0	27.0			
Weight	kg[2)]	0.62	1.3	2.7	7.1	10.7	17.8	24.0			

Bevel gearboxes

GK		10.2	14.2/14.6	16.2	25.2	30.2	35.2	40.2			
Qty	dm^3	0.25	0.6	1.0	4.0	14.0	20.0	22.0			
Weight	kg[2)]	0.22	0.53	0.9	3.6	12.5	17.8	19.6			

Multi-turn gearboxes

GHT		320.3	500.3	800.3	1200.3						
Qty	dm^3	30.0	71.5	93.5	146.5						
Weight	kg[2)]	27	64.4	84.2	131.9						

1) – 2) Refer to notes on page 3.

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Technical data Grease and oil quantities

Linear thrust units

LE		12.1-50 25.1-50	12.1-100 25.1-100	12.1-125 25.1-125	12.1-200 25.1-200	12.1-250 25.1-250	12.1-400 25.1-400	12.1-500 25.1-500	50.1-63	50.1-125	50.1-250
Qty	dm^3	0.10	0.13	0.16	0.28	0.36	0.54	0.65	0.26	0.41	0.65
Weight	kg[2)]	0.09	0.12	0.15	0.26	0.33	0.50	0.60	0.28	0.38	0.70
LE		**50.1-400**	**70.1-80 100.1-80**	**70.1-160 100.1-160**	**70.1-320 100.1-320**	**70.1-400 100.1-400**	**200.1-100**	**200.1-200**	**200.1-400**	**200.1-500**	
Qty	dm^3	1.09	0.52	0.88	1.48	1.79	1.71	2.80	4.92	6.11	
Weight	kg[2)]	1.01	0.48	0.81	1.37	1.65	1.58	2.58	4.53	5.63	

Notes on tables on pages 1 and 2	
1)	This overview is not applicable for products with F21.
2)	For ρ = approx. 0.9 kg/dm^3
3)	For ρ = approx. 0.83 kg/dm^3

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Technical data Ambient temperatures/lubricant in the gear housing

Type / List designation / Actuator		Version	Temperature range: Normal (standard) N °C	Normal (standard) N Grease/oil	Low temperature L °C	Low temperature L Grease	Extreme low temperature EL-60 °C	Extreme low temperature EL-60 Grease	High temperature H °C	High temperature H Grease
SA 07.2 – 16.2		Standard	–40/+80	F15	–	–	–60/+60	F2	0/+120	F3
SA 07.2-UW – 16.2-UW		Standard	–30/+70	F15	–	–	–	–	–	–
SAV 07.2 – 16.2		Standard	–40/+70	F15	–	–	–60/+60	F2	–	–
SA 25.1 – 48.1		Standard	–40/+80	F15	–	–	–60/+60	F2	0/+120	F3
SA 25.1-UW – 30.1-UW		Standard	–30/+70	F15	–	–	–	–	–	–
SA 07.2 – 16.2		With oil[1)]	–25/+80	O9	–	–	–	–	–	–
SAR 07.2 – 16.2		Standard	–40/+70	F15	–	–	–60/+60	F2	0/+100	F3
SAR 07.2-UW – 16.2-UW		Standard	–30/+70	F15	–	–	–	–	–	–
SARV 07.2 – 16.2		Standard	–40/+70	F15	–	–	–60/+60	F2	–	–
SAR 25.1 – 30.1		Standard	–40/+70	F15	–	–	–60/+60	F2	0/+100	F3
SAR 25.1-UW – 30.1-UW		Standard	–30/+70	F15	–	–	–	–	–	–
SAR 07.2 – 16.2		With oil[1)]	–25/+70	O9	–	–	–	–	–	–
SAEx 07.2		Ex	–30/+40 (+60/+80)	F15	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAEx 07.6	4 – 32 rpm	Ex	–30/+40 (+60/+80)	F15	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
	45 – 180 rpm	Ex	–30/+40 (+60/+80)	F11	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAEx 10.2	4 – 11 rpm	Ex	–30/+40 (+60/+80)	F15	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
	16 – 180 rpm	Ex	–30/+40 (+60/+80)	F11	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAEx 14.2	4 – 11 rpm	Ex	–30/+40 (+60/+80)	F15	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
	16 – 180 rpm	Ex	–30/+40 (+60/+80)	F11	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAEx 14.6		Ex	–30/+40 (+60/+80)	F11	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAEx 16.2		Ex	–30/+40 (+60/+80)	F11	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAVEx 07.2 – 16.2		Ex	–30/+40 (+60)	F11	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAEx 25.1 – 48.1		Ex	–30/+40 (+60/+80)	F15	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAEx 07.2 – 16.2		With oil[1)]	–25/+70	O9	–	–	–	–	–	–
SAREx 07.2	4 – 45 rpm	Ex	–30/+40 (+60/+80)	F15	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
	63 – 90 rpm	Ex	–30/+40 (+60/+80)	F11	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAREx 07.6	4 – 45 rpm	Ex	–30/+40 (+60/+80)	F15	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
	63 – 90 rpm	Ex	–30/+40 (+60/+80)	F11	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAREx 10.2	4 – 32 rpm	Ex	–30/+40 (+60/+80)	F15	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
	45 – 90 rpm	Ex	–30/+40 (+60/+80)	F11	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAREx 14.2	4 – 11 rpm	Ex	–30/+40 (+60/+80)	F15	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
	16 – 90 rpm	Ex	–30/+40 (+60/+80)	F11	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAREx 14.6		Ex	–30/+40 (+60/+80)	F11	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAREx 16.2		Ex	–30/+40 (+60/+80)	F11	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SARVEx 07.2 – 16.2		Ex	–30/+40 (+60)	F11	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAREx 25.1 – 30.1		Ex	–30/+40 (+60/+80)	F15	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SAREx 07.2 – 16.2		With oil[1)]	–25/+70	O9	–	–	–	–	–	–
SAN 07.1 – 35.1		Nuclear power plants	–25/+80	F11	–	–	–	–	–	–
SARN 07.1 – SARN 35.1		Nuclear power plants	–25/+80	F11	–	–	–	–	–	–
SAI 6 – 100		Nuclear power plants	–20/+80	F11	–	–	–	–	–	–
SAI 07.2 – 16.2		Nuclear power plants	–30/+80	F11	–	–	–	–	–	–
SARI 07.2 – 16.2		Nuclear power plants	–30/+60	F11	–	–	–	–	–	–
SAN 07.2 – 16.2		Nuclear power plants	–30/+80	F11	–	–	–	–	–	–
SARN 07.2 – SARN 16.2		Nuclear power plants	–30/+60	F11	–	–	–	–	–	–

1) Refer to notes on page 2.

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Technical data Ambient temperatures/lubricant in the gear housing

Type List designation Actuator	Version	Temperature range Normal (standard) N °C	Grease/ oil	Low temperature L °C	Grease	Extreme low temperature EL-60 °C	Grease	High temperature H °C	Grease
SQ 05.2 – 14.2	Standard	–40/+80	F15	–	–	–60/+60	F2	0/+120	F3
SQR 05.2 – 14.2	Standard	–40/+70	F15	–	–	–60/+60	F2	0/+100	F3
SQEx 05.2 – SQEx 14.2	Ex	–30/+60 (+80)	F15	–40/+60	F2	–60/+60	F2	–	–
SQREx 05.2 – 14.2	Ex	–30/+40 (+60/+80)	F15	–40/+40 (+60)	F2	–60/+40 (+60)	F2	–	–
SGC 04.1 – 12.1	Marine	–25/+70	O2	–	–	–	–	–	–
SGCR 04.1 – 12.1	Marine	–25/+70	O2	–	–	–	–	–	–
SGM 04.1 – 12.1	Marine	–25/+70	O2	–	–	–	–	–	–
SGMR 04.1 – 12.1	Marine	–25/+70	O2	–	–	–	–	–	–
SVC 05.1 – 07.5	Marine	–25/+70	O2	–	–	–	–	–	–
SVCR 04.1 – 12.1	Marine	–25/+70	O2	–	–	–	–	–	–
SVM 05.1 – 07.5	Marine	–25/+70	O2	–	–	–	–	–	–
SVMR 04.1 – 12.1	Marine	–25/+70	O2	–	–	–	–	–	–

Notes on table on page 1	
1) With oil	Mounting position: Perpendicular hollow shaft and bearing flange at the bottom stipulated

Lubricants:

F2 = Fuchs Discor R EP 000
F3 = Zepf AR 12 K
F11 = Fuchs Renolit LST
F15 = Shell Alvania 1029
O2 = Fuchs Unisyn SC 32
O9 = Oest SAE 75W-90

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General information
SIMA^2 Master Station for controlling and supervising AUMA actuators and for easier integration into host systems.

Features and functions		
Housing	Standard:	Housing for installation in 19" systems Dimensions: 4 HE/84 TE Integral 7” multi-touchscreen as user interface
	Options:	Housing for installation on control cabinet mounting plate Dimensions (W x H x D): 483 x 177 x 340 mm
		Desktop housing with front handle and knuckle feet
Power supply Mains frequency	Standard:	1-phase AC current: 110 – 240 V AC +/-10 %, 50/60 Hz +/-10 %
	Option:	DC current: 24 V DC, approx. 1 A
Type of connection (customer connections)	Standard:	Connection via IEC device plug (type C14) at the housing rear
	Option:	Lateral arrangement of IEC device plug (type C14) Required for installation on control cabinet mounting plate
Power consumption	Approx. 20 W per SIMA^2 subsystem For redundant version (hot standby system redundancy) approx. 2 x 20 W	
Supported field devices	The following AUMA actuators can be connected to SIMA^2: • Multi-turn actuators (SA .2, SAR .2, SAV .2, SARV .2) or part-turn actuators (SQ .2, SQR .2) in combination with AC 01.2 or ACV 01.2 actuator controls • Multi-turn actuators (SAEx .2, SAREx .2, SAVEx .2, SARVEx .2) or part-turn actuators (SQEx .2, SQREx .2) in combination with ACExC 01.2 bzw. ACVExC 01.2 actuator controls • Multi-turn actuators of TIGRON type range • Multi-turn actuators of the iMatic (DiM(Ex), DiMR(Ex)) type range as well as part-turn actuators of the DPiM(Ex) type range • Multi-turn actuators of type range SEVEN • Globe valve of SVC and SVM type ranges • Part-turn actuators of type ranges SGC and SGM • Actuators of the PROFOX type range Other field devices with Profibus DP interface on request	
Communication to field devices	Communication to the actuators is established via RS-485 with Profibus DP • Use of twisted, screened RS-485 copper cable in compliance with IEC 61158 • RS-485 ports accessible from the front side (hidden by hinged fold-out front doors) Profibus DP: • Connection of the RS-485 communication cables via SUB-D9 Profibus connectors, fieldbus termination can be added • Profibus DP communication parameters: - Supported baud rate: 9,6 – 1 500 kbit/s	
	Options:	SIMA^2 supports up to two different, galvanically and logically separated fieldbus networks to the actuators with the following characteristics: • Two single-channel line topology or one redundant line topology - Cable length without repeater max. 1.2 km, with repeater approx. 10 km - Number of actuators: without repeater max. 32, with repeater max. 126

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Features and functions		
Communication between SIMA^2 and host	Standard:	Without integration into a superordinate automation system (stand-alone mode): SIMA^2 is operated in stand-alone mode; the operation commands for the AUMA actuators are entered manually by the operator via the user interface.
	Options:	Modbus RTU in single-channel or redundant version • Communication to the host is established via RS-485 with Modbus RTU • Fieldbus termination can be activated at the RS-485 communication interfaces • Use of twisted, screened RS-485 copper cable in compliance with IEC 61158 • Connection of the RS-485 communication cables via spring clamp terminals accessible from the front side (hidden by hinged fold-out front doors) Cross section of spring clamp terminals: - Single strand: 0.08 – 2.5 mm² - Fine stranded: 0.25 – 2.5 mm^2, with wire end sleeves up to 1.5 mm^2 Configuration of the Modbus RTU communication parameters (baud rate, transmission format, slave address) is made via the HMI user interface. Supported baud rates: 0.3 – 115.2 kbit/s Supported transmission formats: 8 data bits, 1 or 2 stop bits; parity: Even, Odd or None. Supported Modbus function codes: • 01 Read Coil Status • 02 Read Input Status • 03 Read Holding Registers • 04 Read Input Registers • 05 Force Single Coils • 06 Preset Single Registers • 15 (0x0F) Force Multiple Coils • 16 (0x10) Preset Multiple Registers • 08 Diagnostics - 00 00 Loopback - 00 10 (0AHex) Clear Counters and Diagnostic Register - 00 11 (0BHex) Return Bus Message Count - 00 12 (0CHex) Return Bus Communication Error Count - 00 13 (0DHex) Return Bus Exception Error Count - 00 14 (0EHex) Return Slave Message Count - 00 15 (0FHex) Return Slave No Response Count - 00 16 (10Hex) Return Slave NAK Count - 00 17 (11Hex) Return Slave Busy Count - 00 18 (12Hex) Return Character Overrun Count Modbus TCP/IP in single-channel or redundant version • Communication via host is established via Ethernet, 10 Base-T or 100 Base-T (IEEE 802.3) using Modbus TCP/IP • Up to four simultaneous Modbus TCP/IP connections • 10/100 Mbit/s Configuration of the Modbus TCP/IP communication parameters (IP address and subnet mask, port as well as Unit ID) is made via the HMI user interface. Communication in Modbus data format via TCP/IP protocols For redundant version: Connection to identical or to different subnets possible (option). Supported Modbus function codes: • 01 Read Coil Status • 02 Read Input Status • 03 Read Holding Registers • 04 Read Input Registers • 05 Force Single Coils • 06 Preset Single Registers • 15 (0x0F) Force Multiple Coils • 16 (0x10) Preset Multiple Registers
System interface	The number of available RS-485 and Ethernet interfaces depends on the number of fieldbus networks, the type of communication to the host and the selected redundancy model. At least one Ethernet port (RJ45) is available for diagnostics or for integrating the optional OPC UA server within an automation network, two further USB ports are used for transmitting configuration and diagnostic data.	

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Features and functions		
Operating and monitoring	Display and operation functions of the HMI: • Control and status indication of the connected AUMA actuators • Status indication of the communication to the actuators and to the host • Operation, configuration and diagnostics of SIMA^2 and the respective interfaces	
	Standard:	User interface languages: English and German (can be changed during operation)
	SIMA^2 offers various access facilities to the HMI.	
	Standard:	Operation via the integral 7" multi touchscreen Features: • Resolution: WVGA, 800 x 480 Pixel • Colours: 16.7 million • Brightness: usually 500 cd / m^2 • Contrast: typically 600:1 • Observation angle: usually 60 – 70°
	Option:	Access to the web based HMI user interface using remote stations via Ethernet (network connection: RJ45 port), enabling the connection of the following components: • External work stations, PCs, laptops via LAN connection • External tablets, smartphones via WLAN connection The responsive web design of the HMI is optimised for use in combination with Google Chrome and Mozilla Firefox browser.
Cooling	Passive cooling without fan (maintenance-free)	

Functions of the SIMA^2 software	
Web based user interface for operating and monitoring SIMA^2	Automatic display of the most important status information of SIMA^2 as well as the connected actuators immediately after switching on (once commissioning and definition of the system configuration is complete).
	Password-protected access to settings and entry of manual operation commands for the actuators.
	Control of connected actuators.
	Visualisation of feedback from connected actuators.
Actuator identification via the user interface	Optional specification of the individual designation for each actuator.
Adapting the communication characteristics via the HMI user interface	Setting the communication between SIMA^2 and actuators (e.g. redundancy, baud rate, parity, number of actuators, highest field device address).
	Setting the communication between SIMA^2 and DCS (baud rate, parity, number of stop bits, address, monitoring time, IP address, subnet mask, port, unit ID).
Communication monitoring	Monitoring and visualising the communication status with the host
	For redundant communication to the host: Two communication channels with equal access rights.
Redundancy functions	Support, monitoring and management of redundant communication to the DCS (option), and the redundant communication to the actuators (option). Upon occurrence of a fault, the function is immediately adopted by the redundant communication channel or the redundant system without any interference.
Gateway function	Administration of different communication protocols of the DCS and the actuators (e.g.: or Profibus DP or Modbus TCP/IP or Modbus RTU <> Profibus DP)
	Implementation of various solutions for communication to the DCS and communication to the actuators (e.g. single-channel communication for DCS <> redundant line topology to the actuators)

Data interface to host	
Output data from the DCS to the SIMA^2	Output data (operation commands) to the actuators connected to SIMA^2
Input data from the SIMA^2 to the DCS	Input data (feedback signals) from the connected actuators as well as additional status information of SIMA^2: • Communication status to the actuators • Communication status to the host • Number of currently available actuators • Deviation from the planned number of actuators

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Service conditions	
Enclosure protection according to EN 60529	IP20 (higher enclosure protection on request)
Ambient temperature	–20 °C to +50 °C (higher ambient temperatures on request)
Humidity	5 % to 90 % (non-condensing)

Options and accessories	
RS-485 overvoltage protection	Protection of RS-485 communication interface against overvoltages
Digital inputs	6 or 12 inputs Nominal voltage 24 V DC, type 1 input characteristics (according to EN 61131-2), current consumption approx. 3.75 mA. Suitable for e.g. discrete control signals for activating the ESD function, for control cabinet monitoring functions or enabling the HMI, etc.)
Digital outputs	2 change-over contacts, 240 V AC/5 A, 24 V DC/5 A Suitable for e.g. configurable alarm output
Front handle and knuckle feet	Appropriate for 19" pull out systems and bench housing
Project-specific control cabinet	Customised basic Rittal IT, 19" rack (800 x 800 x 2,200 mm)
Project-specific software programming	On request
Project design	On request

Further information	
Weight	Approx. 9 kg
EU Directives	Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU
Reference documents	Dimensions SIMA^2 Master Station

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General information
SIMA^2 Master Station for controlling and supervising AUMA actuators and for easier integration into host systems.

Features and functions		
Housing	Standard:	Housing for installation in 19" systems Dimensions: 4 HE/84 TE Integral 7” multi-touchscreen as user interface
	Options:	Housing for installation on control cabinet mounting plate Dimensions (W x H x D): 483 x 177 x 340 mm
		Desktop housing with front handle and knuckle feet
Power supply Mains frequency	Standard:	1-phase AC current: 110 – 240 V AC +/-10 %, 50/60 Hz +/-10 %
	Option:	DC current: 24 V DC, approx. 1 A
Type of connection (customer connections)	Standard:	Connection via IEC device plug (type C14) at the housing rear
	Option:	Lateral arrangement of IEC device plug (type C14) Required for installation on control cabinet mounting plate
Power consumption	Approx. 20 W per SIMA^2 subsystem For redundant version (hot standby system redundancy) approx. 2 x 20 W	
Supported field devices	The following AUMA actuators can be connected to SIMA^2: • Multi-turn actuators (SA .2, SAR .2, SAV .2, SARV .2) or part-turn actuators (SQ .2, SQR .2) in combination with AC 01.2 or ACV 01.2 actuator controls • Multi-turn actuators (SAEx .2, SAREx .2, SAVEx .2, SARVEx .2) or part-turn actuators (SQEx .2, SQREx .2) in combination with ACExC 01.2 bzw. ACVExC 01.2 actuator controls • Multi-turn actuators of TIGRON type range • Multi-turn actuators of the iMatic (DiM(Ex), DiMR(Ex)) type range as well as part-turn actuators of the DPiM(Ex) type range • Multi-turn actuators of type range SEVEN • Globe valve of SVC and SVM type ranges • Part-turn actuators of type ranges SGC and SGM • Actuators of the PROFOX type range Other field devices with Modbus RTU interface on request	
Communication to field devices	Communication to the actuators is established via RS-485 with Modbus RTU • Use of twisted, screened RS-485 copper cable in compliance with IEC 61158 • RS-485 ports accessible from the front side (hidden by hinged fold-out front doors) Modbus RTU: • Fieldbus termination can be activated at the RS-485 communication interfaces • Connection of the RS-485 communication cables via spring clamp terminals: Cross section of spring clamp terminals: - Single strand: 0.08 – 2.5 mm^2 - Fine stranded: 0.25 – 2.5 mm^2, with wire end sleeves up to 1.5 mm^2 • Modbus RTU communication parameters: - Supported baud rate: 0.3 – 115.2 kbit/s - Supported transmission formats: 8 data bits, 1 or 2 stop bits; parity: even, odd or none.	
	Options:	SIMA^2 supports up to two different, galvanically and logically separated fieldbus networks to the actuators with the following characteristics: • Two single-channel line topology or one redundant line topology - Cable length without repeater max. 1.2 km, with repeater approx. 10 km - Number of actuators: without repeater max. 32, with repeater max. 126

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Features and functions		
Communication between SIMA^2 and host	Standard:	Without integration into a superordinate automation system (stand-alone mode): SIMA^2 is operated in stand-alone mode; the operation commands for the AUMA actuators are entered manually by the operator via the user interface.
	Options:	Modbus RTU in single-channel or redundant version • Communication to the host is established via RS-485 with Modbus RTU • Fieldbus termination can be activated at the RS-485 communication interfaces • Use of twisted, screened RS-485 copper cable in compliance with IEC 61158 • Connection of the RS-485 communication cables via spring clamp terminals accessible from the front side (hidden by hinged fold-out front doors) Cross section of spring clamp terminals: - Single strand: 0.08 – 2.5 mm² - Fine stranded: 0.25 – 2.5 mm^2, with wire end sleeves up to 1.5 mm^2 Configuration of the Modbus RTU communication parameters (baud rate, transmission format, slave address) is made via the HMI user interface. Supported baud rates: 0.3 – 115.2 kbit/s Supported transmission formats: 8 data bits, 1 or 2 stop bits; parity: Even, Odd or None. Supported Modbus function codes: • 01 Read Coil Status • 02 Read Input Status • 03 Read Holding Registers • 04 Read Input Registers • 05 Force Single Coils • 06 Preset Single Registers • 15 (0x0F) Force Multiple Coils • 16 (0x10) Preset Multiple Registers • 08 Diagnostics - 00 00 Loopback - 00 10 (0AHex) Clear Counters and Diagnostic Register - 00 11 (0BHex) Return Bus Message Count - 00 12 (0CHex) Return Bus Communication Error Count - 00 13 (0DHex) Return Bus Exception Error Count - 00 14 (0EHex) Return Slave Message Count - 00 15 (0FHex) Return Slave No Response Count - 00 16 (10Hex) Return Slave NAK Count - 00 17 (11Hex) Return Slave Busy Count - 00 18 (12Hex) Return Character Overrun Count
		Modbus TCP/IP in single-channel or redundant version • Communication via host is established via Ethernet, 10 Base-T or 100 Base-T (IEEE 802.3) using Modbus TCP/IP • Up to four simultaneous Modbus TCP/IP connections • 10/100 Mbit/s Configuration of the Modbus TCP/IP communication parameters (IP address and subnet mask, port as well as Unit ID) is made via the HMI user interface. Communication in Modbus data format via TCP/IP protocols For redundant version: Connection to identical or to different subnets possible (option). Supported Modbus function codes: • 01 Read Coil Status • 02 Read Input Status • 03 Read Holding Registers • 04 Read Input Registers • 05 Force Single Coils • 06 Preset Single Registers • 15 (0x0F) Force Multiple Coils • 16 (0x10) Preset Multiple Registers

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Features and functions		
Hot standby system redundancy (option)	For redundant applications, SIMA^2 can be implemented as redundant configuration. Two separate SIMA^2 subsystems permanently monitor each other. In case of failure of one SIMA^2 subsystem, the redundant subsystem takes over control (only available in combination with Modbus RTU as communication protocol between SIMA^2 and the actuators). Continuous mutual monitoring of the two SIMA^2 subsystems is established via an Ethernet synchronisation cable	
	Versions:	Hot standby system redundancy of SIMA^2 within a single housing • Compact design (requires mounting space for just one SIMA^2 housing) • Two complete SIMA^2 subsystems, each with a 7" multi-touchscreen are located within the housing • Redundant power supply, separately for each SIMA^2 subsystem • Supports up to two RS-485 Modbus RTU communication interfaces to the actuators, e.g. appropriate for two single-channel line topologies or one redundant line or loop topology.
		Hot standby system redundancy of SIMA^2 in two separate housings • Requires mounting space for two SIMA^2 housings • Each of the two housings is equipped with a complete SIMA^2 subsystem including 7" multi-touchscreen and power supply • Supports up to eight RS-485 Modbus RTU communication interfaces to the actuators which can be used in up to four different communication networks, e.g. suitable for up to four single-channel line topologies or up to four redundant line or ring.
Dual operation (option)	For applications with space constraints inside the control cabinet, two galvanically and logically isolated SIMA^2 subsystems can be located within a joint housing. Version: • Compact design (requires mounting space for just one SIMA^2 housing) • Two complete SIMA^2 subsystems, each with a 7" multi-touchscreen are located within the housing • Separate power supply, separately for each SIMA^2 subsystem • Supports up to two RS-485 Modbus RTU communication interfaces each to the actuators, e.g. appropriate for two single-channel line topologies or one redundant line or loop topology	
System interface	The number of available RS-485 and Ethernet interfaces depends on the number of fieldbus networks, the type of communication to the host and the selected redundancy model. At least one Ethernet port (RJ45) is available for diagnostics or for integrating the optional OPC UA server within an automation network, two further USB ports are used for transmitting configuration and diagnostic data.	
Operating and monitoring	Display and operation functions of the HMI: • Control and status indication of the connected AUMA actuators • Status indication of the communication to the actuators and to the host • Operation, configuration and diagnostics of SIMA^2 and the respective interfaces	
	Standard:	User interface languages: English and German (can be changed during operation)
	SIMA^2 offers various access facilities to the HMI.	
	Standard:	Operation via the integral 7" multi touchscreen Features: • Resolution: WVGA, 800 x 480 Pixel • Colours: 16.7 million • Brightness: usually 500 cd / m^2 • Contrast: typically 600:1 • Observation angle: usually 60 – 70°
	Option:	Access to the web based HMI user interface using remote stations via Ethernet (network connection: RJ45 port), enabling the connection of the following components: • External work stations, PCs, laptops via LAN connection • External tablets, smartphones via WLAN connection The responsive web design of the HMI is optimised for use in combination with Google Chrome and Mozilla Firefox browser.
Cooling	Passive cooling without fan (maintenance-free)	

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Functions of the SIMA² software	
Web based user interface for operating and monitoring SIMA²	Automatic display of the most important status information of SIMA² as well as the connected actuators immediately after switching on (once commissioning and definition of the system configuration is complete).
	Password-protected access to settings and entry of manual operation commands for the actuators.
	Control of connected actuators.
	Visualisation of feedback from connected actuators.
Actuator identification via the user interface	Optional specification of the individual designation for each actuator.
Adapting the communication characteristics via the HMI user interface	Setting the communication between SIMA² and actuators (e.g. redundancy, baud rate, parity, number of actuators, highest field device address).
	Setting the communication between SIMA² and DCS (baud rate, parity, number of stop bits, address, monitoring time, IP address, subnet mask, port, unit ID).
Communication monitoring	Monitoring and visualising the communication status with the host
	For redundant communication to the host: Two communication channels with equal access rights.
Redundancy functions	Support, monitoring and management of redundant communication to the DCS (option), and the redundant communication to the actuators (option). Upon occurrence of a fault, the function is immediately adopted by the redundant communication channel or the redundant system without any interference.
Gateway function	Administration of different communication protocols of the DCS and the actuators (e.g.: Modbus TCP/IP <> Modbus RTU or Profibus DP or)
	Implementation of various solutions for communication to the DCS and communication to the actuators (e.g. single-channel communication for DCS <> redundant line topology to the actuators)

Data interface to host	
Output data from the DCS to the SIMA²	Output data (operation commands) to the actuators connected to SIMA²
Input data from the SIMA² to the DCS	Input data (feedback signals) from the connected actuators as well as additional status information of SIMA²: • Communication status to the actuators • Communication status to the host • Number of currently available actuators • Deviation from the planned number of actuators

Service conditions	
Enclosure protection according to EN 60529	IP20 (higher enclosure protection on request)
Ambient temperature	–20 °C to +50 °C (higher ambient temperatures on request)
Humidity	5 % to 90 % (non-condensing)

Options and accessories	
RS-485 overvoltage protection	Protection of RS-485 communication interface against overvoltages
Digital inputs	6 or 12 inputs Nominal voltage 24 V DC, type 1 input characteristics (according to EN 61131-2), current consumption approx. 3.75 mA. Suitable for e.g. discrete control signals for activating the ESD function, for control cabinet monitoring functions or enabling the HMI, etc.)
Digital outputs	2 change-over contacts, 240 V AC/5 A, 24 V DC/5 A Suitable for e.g. configurable alarm output
Front handle and knuckle feet	Appropriate for 19" pull out systems and bench housing
Project-specific control cabinet	Customised basic Rittal IT, 19" rack (800 x 800 x 2,200 mm)
Project-specific software programming	On request
Project design	On request

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Further information	
Weight	Approx. 9 kg
EU Directives	Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU
Reference documents	Dimensions SIMA^2 Master Station

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Technical data Torque measurement flange

Information relating to the sensor			
	DMF 10.1	DMF 14.5	DMF 16.1
Suitable AUMA multi-turn actuator	SA 07.2/SAR 07.2 SAV 07.2/SARV 07.2 SA 07.6/SAR 07.6 SAV 07.6/SARV 07.6 SA 10.2/SAR 10.2 SAV 10.2/SARV 10.2	SA 14.2/SAR 14.2 SAV 14.2/SARV 14.2 SA 14.6/SAR 14.6 SAV 14.6/SARV 14.6	SA 16.2/SAR 16.2 SAV 16.2/SARV 16.2
Input mounting flange for mounting of multi-turn actuator according to EN ISO 5210	F10	F14	F16
Output drive flange according to EN ISO 5210	F10	F14	F16
Measuring range/nominal torque[1)]	±120 Nm	±500 Nm	±1,000 Nm
Accuracy[2)]	±2 % of the measuring range end value		
Insulation resistance	> 2 G Ω		
Temperature coefficient of rated value	0,2 %/10 °K		
Temperature coefficient of zero point	0,2 %/10 °K		
Reference temperature	20 °C		
Storage temperature	–40 °C to +105 °C		
Ambient temperature	–40 °C to +80 °C		
Maximum active torque[3)]	1-fold nominal torque		
Limit torque[4)]	2-fold nominal torque		
Breaking torque[5)]	4-fold nominal torque		
Version/material	Anodised aluminium		
Corrosion protection	KS		
Enclosure protection according to EN 60529	IP67		
Dimensions	Ø125 x 102 (157 x 125 x 102)	Ø175 x 144 (207 x 175 x 144)	Ø210 x 165 (242 x 210 x 165)
Weight with hollow shaft	1.4 kg	3.3 kg	4.8 kg
Valve attachment – Standard:	B1 according to EN ISO 5210		
Valve attachment – Options:	A, B2, B3, B4, D according to EN ISO 5210 A, B, D, E according to DIN 3210		

Information on integral amplifier	
Power supply (U_B)	10 – 30 V DC Maximum current consumption: 40 mA
Limit frequency[6)] (at –3 dB)	1,000 Hz
Output signal[1)]	12 ±6 mA; 3-wire
Load	(U_B – 6 V)/0.0205 A up to max. 500 Ω
Connection	M12x1 5-pole connector
Assignment	1 = U_B; 3 = Ground; 4 = Current signal

Information on connecting cable		
AUMA article numbers	K008.536	Connecting cable with connecting socket, straight cable output, cable length 3 m
	K011.223	Connecting cable with connecting socket, straight cable output, cable length 5 m
	K011.224	Connecting cable with connecting socket, straight cable output, cable length 10 m
Plug/socket connector	Socket, 5-pole M12	
Contact material	CuZn gold-plated	
Enclosure protection according to EN 60529	IP67 when inserted and locked	
Cable shield	PUR black; free of PVC, silicone and halogen; shielded cable	
Cable diameter	5.6 mm	

1) – 6) Refer to notes on page 2.

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Technical data Torque measurement flange

Wire diameter	5 x 0.34 mm²
Wire	Fine-stranded; approx. 42 x 0.1 mm
Wire insulation	PP, free of halogen
Bending radius, fixed installation	Min. 5 x cable diameter
Wire colour and contact assignment	Brown (1), white (2), blue (3), black (4), grey (5)
Ambient temperature, fixed installation	–40 °C to +90 °C

General information
For torque measurement of multi-turn actuators in both directions.
Static and dynamic torques for both rotating and immobile output shaft are measured.

Further information	
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU)
Reference documents	Dimensions DMF 10.1 – DMF 16.1

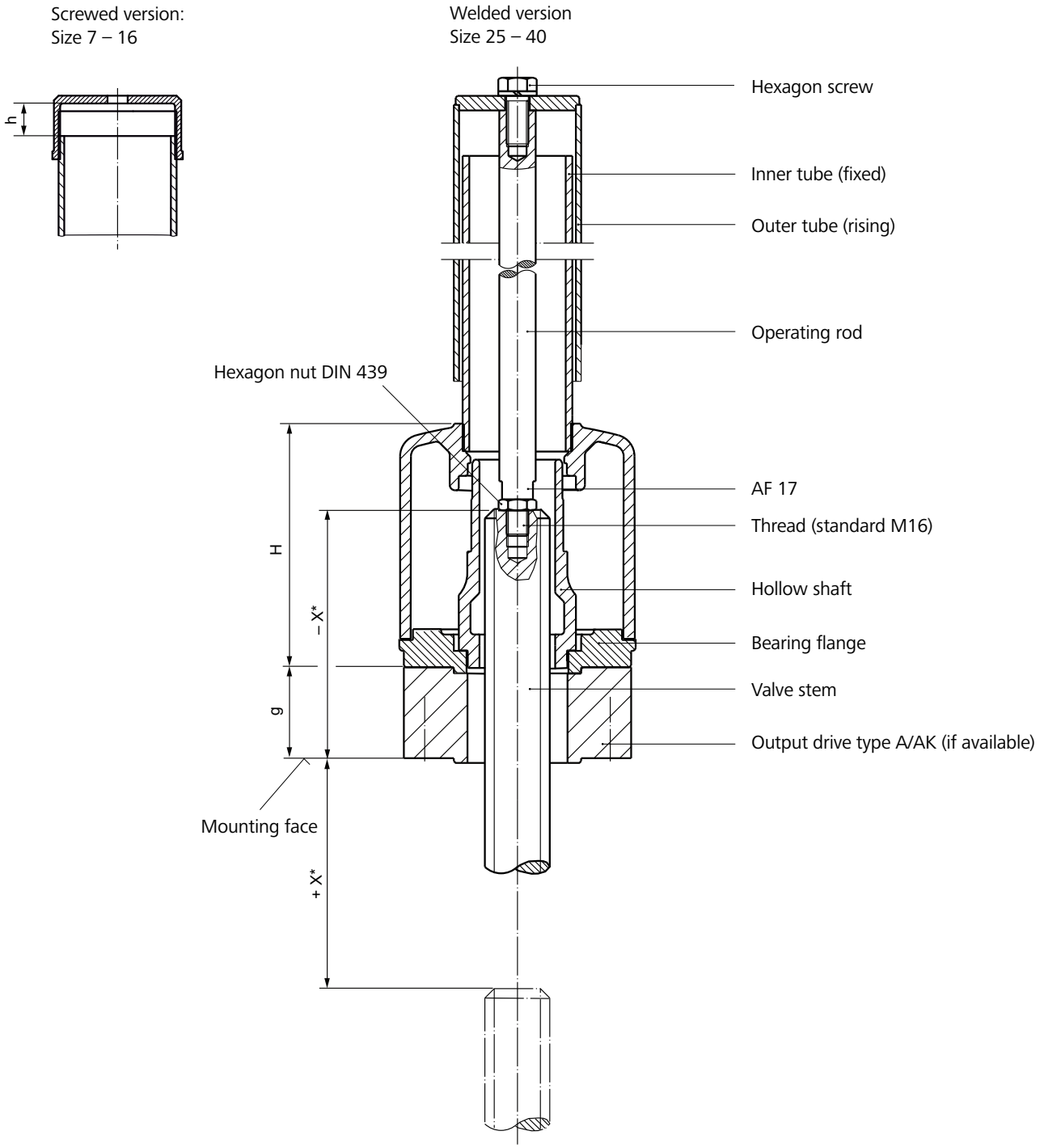
Notes on tables on page 1	
1) Measuring range/ nominal torque	The amplifier integrated in the torque measurement flange supplies an analogue current signal, proportional to the torque within the ranges of 12 ±6 mA (from 6 – 12 mA for clockwise closing -> [- … Nm] and from 12 – 18 mA for counterclockwise closing -> [+ … Nm]). Under no-load conditions, i.e. if no torque is present, 12 mA are provided. Depending on both mounting conditions and temperature, a zero point deviation might occur under no-load condition (deviation of 12 mA) which must be considered for future assessments/measurements.
2) Accuracy	This indication contains non-linearity, measurement deviation at initial and final values and failure of proof test (for reference temperature of 20 °C and identical mounting position); temperature impacts are indicated separately.
3) Maximum active torque	Largest torque for which a defined and repeatable relation exists between torque and output signal.
4) Limit torque	Torque for which significant changes of measurement properties of the torque measurement flange must be accounted for.
5) Breaking torque	Torque for which mechanical destruction must be expected.
6) Limit frequency	The measured value update of the output signal is performed at a frequency of 1,000 Hz.

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Technical description Position indication with telescopic protection tube

The schematic representation applies to:

Multi-turn actuators	SA 07.2 – SA 16.2; SAR 07.2 – SAR 16.2; SAEx 07.2 – SAEx 16.2; SAREx 07.2 – SAREx 16.2
	SA 25.1 – SA 48.1; SAR 25.1 – SAR 30.1; SAEx 25.1 – SAEx 40.1; SAREx 25.1 – SAREx 30.1
Spur gearboxes	GST 10.1 – GST 40.1
Bevel gearboxes	GK 10.2 – GK 40.2



X* = Distance between mounting face and upper edge of stem while valve is closed
–X, if stem protrudes into output drive or hollow shaft
–X, if stem is outside output drive or hollow shaft

Note: Tube length will be adapted to the valve stroke.

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Technical description Position indication with telescopic protection tube

Calculation and sizing of the telescopic protection tube

1. Housing height for different products

Type	Housing of output drive type B H	Protective cap h	Output drive type A g		Output drive type AK g
SA 07.2/SA 07.6	153	25	40 (F07)	50 (F10/G0)	105
SA 10.2	162	25	50		105
SA 14.2/SA 14.6	188	32	65		135
SA 16.2	227	32	80		165
SA 25.1	292	–	130		216
SA 30.1	330	–	160		252
SA 35.1	388	–	185		315
SA 40.1	393	–	225		400
SA 48.1	430	–	270		–
GK 10.2	162	25	50		105
GK 14.2/GK 14.6	180	32	65		135
GK 16.2	194	32	80		165
GK 25.2	218	–	130		216
GK 30.1	258	–	160		252
GK 35.2	310	–	185		315
GK 40.2	325	–	225		400
GST 10.1	111	25	50		105
GST 14.1/GST 14.5	140	32	65		135
GST 16.1	175	32	80		165
GST 25.1	193	–	130		216
GST 30.1	226	–	160		252
GST 35.1	303	–	185		315
GST 40.1	318	–	225		400

2. Calculation of outer tube length and rod length

Determination of inner tube length (identical to outer tube length)

Stroke			mm
Safety factor	+	50	mm
Sum = Inner tube length	=		mm
Inner tube length rounded up to the next full 100 mm	**=**		**mm**

Determining the rod length:

Housing height	H			mm
Height of protective cap	h	+		mm
Height of output drive type A/AK (if output drive type A/AK is ordered)	g	+		mm
Outer tube length (=inner tube length)		+		mm
Safety factor		+	30	mm
Sum 1		=		mm
Stem position according to drawing	+X/–X	+/–		mm
Rod length		=		mm
Rod length rounded to full 10 mm		**=**		**mm**

Determination of the thread:

Unless specified otherwise by the customer, the M16 thread will be used. If desired, an M12 thread can be used.

Purchase requirement:

Outer tube length/thread/rod length (e.g. 200/M16/275)

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Technical description Stem protection tube for rising stem

The schematic representations apply to:

Multi-turn actuators	SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2; SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2
	SA 25.1 – SA 48.1/SAR 25.1 – SAR 30.1; SAEx 25.1 – SAEx 40.1/SAREx 25.1 – SAREx 30.1
Multi-turn gearboxes	GK 10.2 – GK 40.2/GST 10.1 – GST 40.1

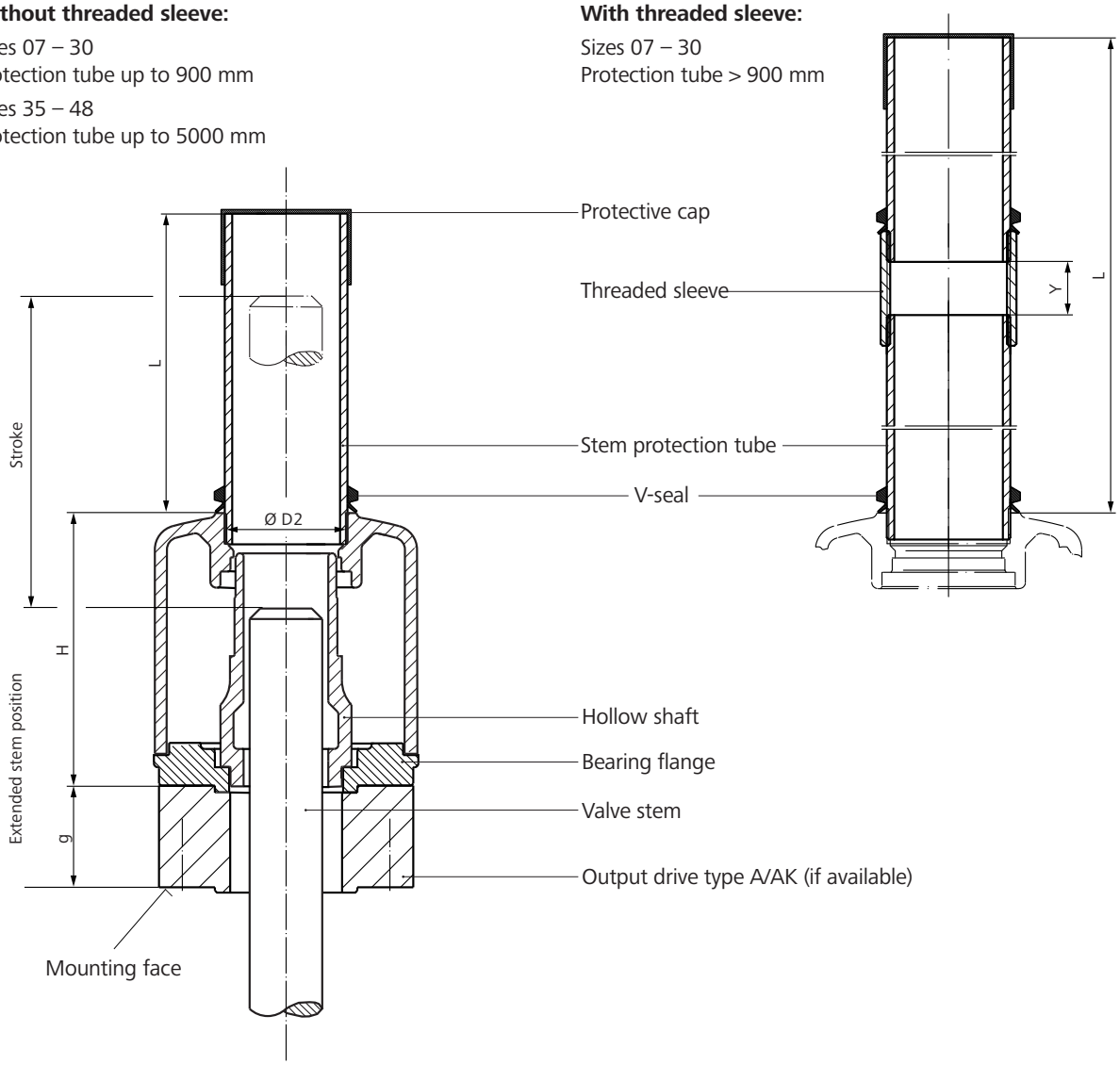
Without threaded sleeve:

Sizes 07 – 30
Protection tube up to 900 mm

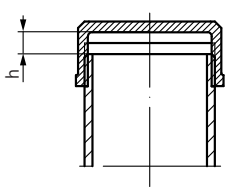
Sizes 35 – 48
Protection tube up to 5000 mm

With threaded sleeve:

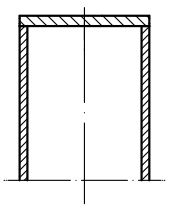
Sizes 07 – 30
Protection tube > 900 mm



Option:
Sizes 07 – 25
screwed version



Option:
Sizes 30 – 48
welded version



Multi-turn actuator	SA 07.2 SA 07.6	SA 10.2	SA 14.2 SA 14.6	SA 16.2	SA 25.1	SA 30.1	SA 35.1	SA 40.1 SA 48.1
Gearbox		**GST 10.1 GK 10.2**	**GST 14.1 GST 14.5 GK 14.2 GK 14.6**	**GST 16.1 GK 16.2**	**GST 25.1 GK 25.2**	**GST 30.1 GK 30.2**	**GST 35.1 GK 35.2**	**GST 40.1 GK 40.2**
Ø D2	G 1¼“	G 2“	G 2½“	G 3“	G 4“	G 5“	M190 x 3	M220 x 3
Y min.	18	26	32	37	49	58	–[1]	–[1]
Y max.	24	32	39	44	56	65	–[1]	–[1]

1) Sizes 35 – 48 are supplied without threaded sleeves

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Technical description Stem protection tube for rising stem

Calculation and sizing of the stem protection tube

1. Dimensions for different products

Type	Housing of output drive type B	Screwed on protective cap	Output drive type A		Output drive type AK
Dimensions	H	h	g		g
SA 07.2/SA 07.6	153	25	40 (F07)	50 (F10/G0)	105
SA 10.2	162	25	50		105
SA 14.2/SA 14.6	188	32	65		135
SA 16.2	227	32	80		165
SA 25.1	292	–	130		216
SA 30.1	330	–	160		252
SA 35.1	388	–	185		315
SA 40.1	393	–	225		400
SA 48.1	430	–	270		–
GK 10.2	162	25	50		105
GK 14.2/GK 14.6	180	32	65		135
GK 16.2	194	32	80		165
GK 25.2	218	–	130		216
GK 30.1	258	–	160		252
GK 35.2	310	–	185		315
GK 40.2	325	–	225		400
GST 10.1	111	25	50		105
GST 14.1/GST 14.5	140	32	65		135
GST 16.1	175	32	80		165
GST 25.1	193	–	130		216
GST 30.1	226	–	160		252
GST 35.1	303	–	185		315
GST 40.1	318	–	225		400

2. Calculation of stem protection tube length

Stroke			mm
Extended stem position	+		mm
Housing height H	–		mm
Output drive height g	–		mm
Stem protection tube length	**=**		**mm**

3. Available stem protection tube versions

Stem protection tube	Number of thread. sleeves	Lower stem prot. tube	Middle stem prot. tube	Middle stem prot. tube	Middle stem prot. tube	Middle stem prot. tube	Upper stem prot. tube
100	0	100	–	–	–	–	–
200	0	200	–	–	–	–	–
300	0	300	–	–	–	–	–
400	0	400	–	–	–	–	–
500	0	500	–	–	–	–	–
600	0	600	–	–	–	–	–
700	0	700	–	–	–	–	–
800	0	800	–	–	–	–	–
900	0	900	–	–	–	–	–
1000	1	900	–	–	–	–	100
1200	1	900	–	–	–	–	300
1400	1	900	–	–	–	–	500
1,600	1	900	–	–	–	–	700
1800	1	900	–	–	–	–	900
2,000	2	900	900	–	–	–	200
2,200	2	900	900	–	–	–	400
2400	2	900	900	–	–	–	600
2,600	2	900	900	–	–	–	800
2800	3	900	900	900	–	–	100
3,000	3	900	900	900	–	–	300
3,500	3	900	900	900	–	–	800
4,000	4	900	900	900	900	–	400
4,500	4	900	900	900	900	–	900
5,000	5	900	900	900	900	900	500

4. Useful stem protection tube length

		Y min.	Y max. [2]	
Available stem protection tube length				mm
Threaded sleeve (number x Y)	+			mm
Screwed on protective cap (option)	+			mm
Useful stem protection tube length L	**=**		[2]	**mm**

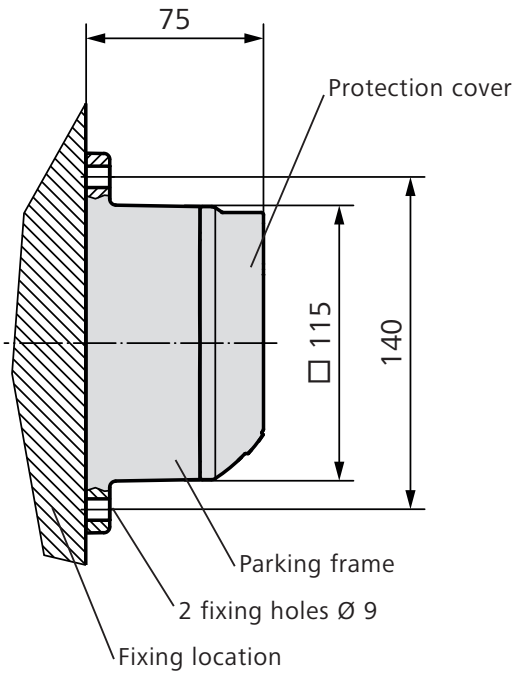
2) For max. space requirement for stem protection tube

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

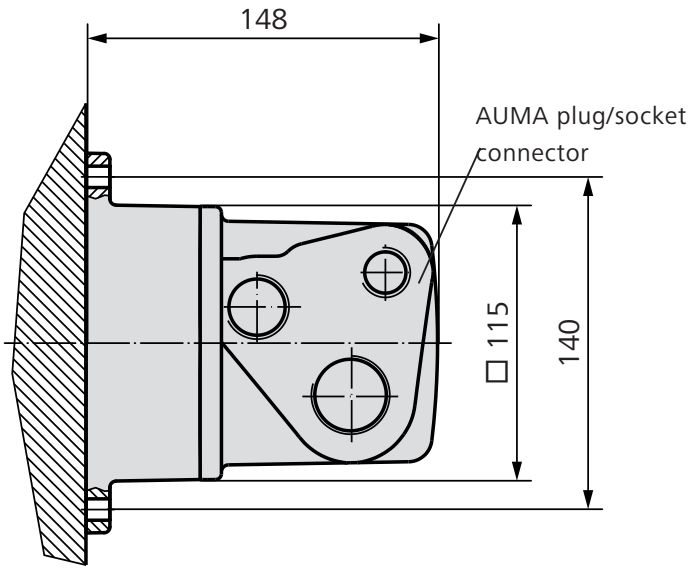
Technical description Parking frame and protection cover (also for Ex version)

SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2
SQ 05.2 – SQ 14.2/SQR 05.2 – SQR 14.2
AM 01.1 – AM 02.1/AC 01.2

AUMA device ready for operation
Parking frame with protection cover

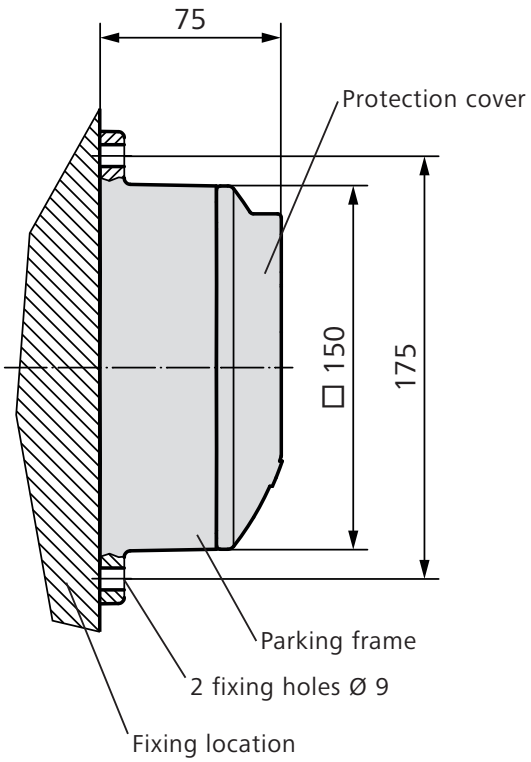


AUMA device out of service
Parking frame with AUMA plug/socket connector

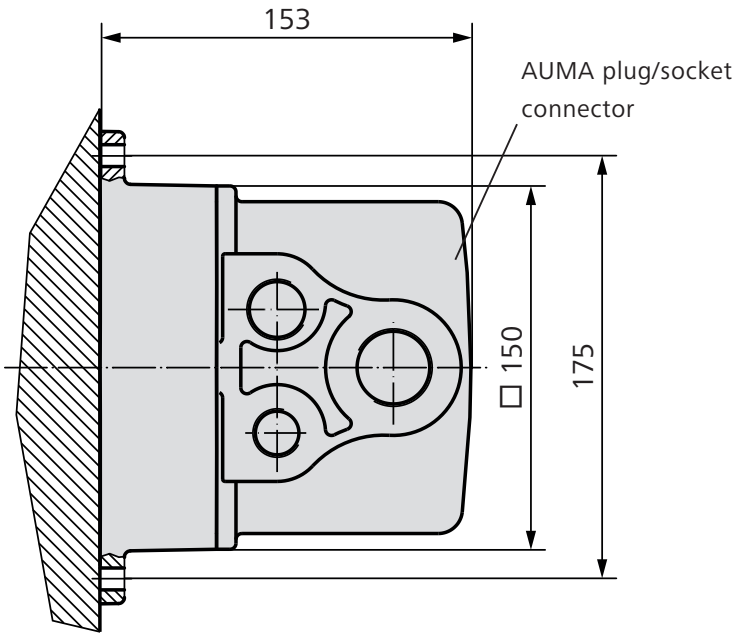


SA 25.1 – SA 48.1/SAR 25.1 – SAR 30.1

Multi-turn actuator ready for operation
Parking frame with protection cover



Multi-turn actuator out of service
Parking frame with AUMA plug/socket connector



We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA / SAR Multi-turn actuators 250

3-phase AC current (standard voltages)

	Notes on electrical data	250
SA 07.2 – SA 16.2, short-time duty S2 - 15 min	220 V/60 Hz	251
	230 V/50 Hz	252
	380 V/50 Hz	253
	380 V/60 Hz	254
	400 V/50 Hz	255
	400 V/60 Hz	256
	415 V/50 Hz	257
	440 V/60 Hz	258
	460 V/60 Hz	259
	480 V/60 Hz	260
	500 V/50 Hz	261
SA 07.2 – SA 16.2, short-time duty S2 - 30 min	220 V/60 Hz	262
	230 V/50 Hz	263
	380 V/50 Hz	264
	380 V/60 Hz	265
	400 V/50 Hz	266
	400 V/60 Hz	267
	415 V/50 Hz	268
	440 V/60 Hz	269
	460 V/60 Hz	270
	480 V/60 Hz	271
	500 V/50 Hz	272
SAR 07.2 – SAR 16.2, intermittent duty S4 - 25%	220 V/60 Hz	273
	230 V/50 Hz	274
	380 V/50 Hz	275
	380 V/60 Hz	276
	400 V/50 Hz	277
	400 V/60 Hz	278
	415 V/50 Hz	279
	440 V/60 Hz	280
	460 V/60 Hz	281
	480 V/60 Hz	282
	500 V/50 Hz	283
SAR 07.2 – SAR 16.2, intermittent duty S4 - 50%	220 V/60 Hz	284
	230 V/50 Hz	285
	380 V/50 Hz	286
	380 V/60 Hz	287
	400 V/50 Hz	288
	400 V/60 Hz	289
	415 V/50 Hz	290
	440 V/60 Hz	291
	460 V/60 Hz	292
	480 V/60 Hz	293
	500 V/50 Hz	294

1-phase AC current (standard voltages) | Notes on electrical data | 295
SA 07.2 – SA 07.6, short-time duty S2 - 15 min | 110 – 120 V/50 Hz VB | 297
| 110 – 120 V/60 Hz VB | 298
| 220 – 240 V/50 Hz VB | 299
| 220 – 240 V/60 Hz VB | 300
SA 07.2 – SA 14.6, short-time duty S2 - 15 min | 110 – 120 V/50 Hz | 301
| 110 – 120 V/60 Hz | 302
| 220 – 240 V/50 Hz | 303
| 220 – 240 V/60 Hz | 304
SAR 07.2 – SAR 07.6, intermittent duty S4 - 25% | 110 – 120 V/50 Hz VB | 305
| 110 – 120 V/60 Hz VB | 306
| 220 – 240 V/50 Hz VB | 307
| 220 – 240 V/60 Hz VB | 308
SAR 07.2 – SAR 14.6, intermittent duty S4 - 25% | 110 – 120 V/60 Hz | 309
| 220 – 240 V/50 Hz | 310
| 220 – 240 V/60 Hz | 311

Direct current (standard voltages) | Notes on electrical data | 312
SA 07.2 – SA 16.2, short-time duty S2 - 15 min | 24 V DC | 313
| 24 V DC VK | 314
| 48 V DC | 315
| 60 V DC | 316
| 110 V DC | 317
| 125 V DC | 318
| 220 V DC | 319
SAR 07.2 – SAR 16.2, intermittent duty S4 - 25% | 24 V DC | 320
| 48 V DC | 321
| 60 V DC | 322
| 110 V DC | 323
| 125 V DC | 324
| 220 V DC | 325

SAV / SARV Multi-turn actuators **326**

3-phase AC current (standard voltages)
SAV 07.2 – SAV 14.6, short-time duty S2 - 15 min | 220 – 240 V/50 – 60 Hz | 326
SAV 07.2 – SAV 16.2 | 380 – 480 V/50 – 60 Hz | 327
SAV 07.2 – SAV 14.6, short-time duty S2 - 30 min | 220 – 240 V/50 – 60 Hz | 328
SAV 07.2 – SAV 16.2 | 380 – 480 V/50 – 60 Hz | 329
SARV 07.2 – SARV 14.6, intermittent duty S4 - 25% | 220 – 240 V/50 – 60 Hz | 330
SARV 07.2 – SARV 16.2 | 380 – 480 V/50 – 60 Hz | 331
SARV 07.2 – SARV 14.6, intermittent duty S4 - 50% | 220 – 240 V/50 – 60 Hz | 332
SARV 07.2 – SARV 16.2 | 380 – 480 V/50 – 60 Hz | 333

1-phase AC current (standard voltages)
SAV 07.2 – SAV 10.2, short-time duty S2 - 15 min | 110 – 120 V/50 – 60 Hz | 334
SAV 07.2 – SAV 14.2 | 220 – 240 V/50 – 60 Hz | 335
SAV 07.2 – SAV 10.2, short-time duty S2 - 30 min | 110 – 120 V/50 – 60 Hz | 336
SAV 07.2 – SAV 14.2 | 220 – 240 V/50 – 60 Hz | 337
SARV 07.2 – SARV 10.2, intermittent duty S4 - 25% | 110 – 120 V/50 – 60 Hz | 338
SARV 07.2 – SARV 14.2 | 220 – 240 V/50 – 60 Hz | 339
SARV 07.2 – SARV 10.2, intermittent duty S4 - 50% | 110 – 120 V/50 – 60 Hz | 340
SARV 07.2 – SARV 14.2 | 220 – 240 V/50 – 60 Hz | 341

SQ / SQR Part-turn actuators **342**

3-phase AC current (standard voltages) Notes on electrical data 342
SQ 05.2 – SQ 14.2, short-time duty S2 - 15 min 220 V/60 Hz 343
230 V/50 Hz 344
380 V/50 Hz 345
380 V/60 Hz 346
400 V/50 Hz 347
400 V/60 Hz 348
415 V/50 Hz 349
440 V/60 Hz 350
460 V/60 Hz 351
480 V/60 Hz 352
500 V/50 Hz 353

SQR 05.2 – SQR 14.2, intermittent duty S4 - 25% 220 V/60 Hz 354
230 V/50 Hz 355
380 V/50 Hz 356
380 V/60 Hz 357
400 V/50 Hz 358
400 V/60 Hz 359
415 V/50 Hz 360
440 V/60 Hz 361
460 V/60 Hz 362
480 V/60 Hz 363
500 V/50 Hz 364

1-phase AC current (standard voltages) Notes on electrical data 365
SQ 05.2 – SQ 14.2, short-time duty S2 - 10 min 110 – 120 V/50 Hz 366
110 – 120 V/60 Hz 367
220 – 240 V/50 Hz 368
220 – 240 V/60 Hz 369

SQR 05.2 – SQR 14.2, intermittent duty S4 - 20% 110 – 120 V/50 Hz 370
110 – 120 V/60 Hz 371
220 – 240 V/50 Hz 372
220 – 240 V/60 Hz 373

Direct current (standard voltages)
SQ 05.2 – SQ 10.2, short-time duty S2 - 15 min 24 V DC 374
SQ 05.2 – SQ 10.2, short-time duty S2 - 15 min 110 V DC 375
SQ 05.2 – SQ 10.2, short-time duty S2 - 15 min 220 V DC 376

SQV / SQRV Part-turn actuators **377**

3-phase AC current (standard voltages)
SQV 05.2 – SQV 14.2, short time duty S2 - 15 min 220 – 240 V/50 – 60 Hz 377
380 – 480 V/50 – 60 Hz 378

SQRV 05.2 – SQRV 14.2, intermittent duty S4 - 25% 220 – 240 V/50 – 60 Hz 379
380 – 480 V/50 – 60 Hz 380

1-phase AC current (standard voltages)
SQV 05.2 – SQV 14.2, short time duty S2 - 15 min 110 – 120 V/50 – 60 Hz 381
220 – 240 V/50 – 60 Hz 382

SQRV 05.2 – SQRV 14.2, intermittent duty S4 - 25% 110 – 120 V/50 – 60 Hz 383
220 – 240 V/50 – 60 Hz 384

Installation and sizing

Motor data

Motor data is approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.

Motor protection

To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings.

Actuators without integral actuator controls (AUMA NORM):

Thermoswitches or PTC thermistors have to be considered within the external controls (refer to terminal plan).

Note: Failure to connect thermoswitches or PTC thermistors shall void the warranty for the motor.

Rating of the thermoswitches

AC current		DC current	
250 V, 50 – 60 Hz		60 V	1.0 A
cos φ = 1	2.5 A	42 V	1.2 A
cos φ = 0.6	1.6 A	24 V	1.5 A

Actuators with AM or AC integral actuator controls:

Thermal motor protection is already integrated.

Mains voltage, mains frequency

Permissible variation of mains voltage: ±10 %

Permissible variation of mains frequency: ±5 %

Switchgear sizing

For motor operation, reversing contactors (mechanically, electrically and electronically locked) or thyristors (electronically locked) can be used.

Actuators without integral actuator controls (AUMA NORM):

Switchgear are supplied by the customer. We recommend specification of switchgear suitable for their rated operating power/motor power in compliance with the assigned AUMA power class.

Switchgear assignment to AUMA power classes:

AUMA power class	Reversing contactor Rated operating power acc. to EN 60947-4-1 Utilization category AC-3	Reversing contactor Motor power according to UL/CSA at	
	400 V AC	480 V AC	600 V AC
A1	4.0 kW	5.0 hp	5.0 hp
A2	7.5 kW	10 hp	10 hp
A3	15 kW	20 hp	25 hp
A4	30 kW	60 hp	60 hp
A5	55 kW	75 hp	100 hp
A6	75 kW	100 hp	125 hp

AUMA power class	Thyristor Rated operating current acc. to EN 60947-4-2 Utilization category AC-53a
	400 V AC
B1	6 A
B2	8.5 A
B3	16 A

Actuators with AM or AC integral actuator controls:

Required switchgear in power classes A1 – A3 or B1 – B3 are already integrated in AM or AC actuator controls. For switchgear of power classes A4 – A6, a control box is additionally required.

For actuators with AM integral actuator controls and installed switchgear in AUMA power class A3, an optional thermal overcurrent protection device cannot be directly integrated within the AM. A control box is additionally required. However, AC actuator controls can be used instead of AM actuator controls. When opting for AC actuator controls, the additional control box can be omitted.

Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

1) Nominal power P_N

Mechanical power output at motor shaft at run torque of multi-turn actuator (corresponds to approx. 35 % of maximum torque).

The consumed electrical power can be calculated using the following formula:

$P = U \times I \times \cos \varphi \times \sqrt{3}$

2) Nominal current I_N

Current at run torque at approx. 35 % of maximum torque

3) Max. current I_{max}

Current at maximum torque

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 220 V/60 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4.8	30	VD00063-4-0,02	0.02	1,680	0.9	0.9	2.2	0.40	0.9	A1	B1
	6.7					0.9	0.9	2.2	0.40	0.9	A1	B1
	9.6		VD00063-4-0,04	0.04	1,680	0.9	0.9	2.2	0.50	0.9	A1	B1
	13					0.9	1.1	2.2	0.50	1.1	A1	B1
	19		VD00063-2-0,06	0.06	3,360	1.3	1.3	4.1	0.42	1.3	A1	B1
	26					1.3	1.4	4.1	0.42	1.4	A1	B1
	38		AD00063-4-0,10	0.10	1,680	2.1	2.1	5.2	0.42	2.1	A1	B1
	54					2.1	2.2	5.2	0.42	2.2	A1	B1
	75		AD00063-2-0,20	0.20	3,360	1.7	2.6	9.6	0.60	2.6	A1	B1
	108					1.7	2.8	9.6	0.60	2.8	A1	B1
	150		AD00063-2-0,30	0.30	3,360	2.0	3.5	9.6	0.70	3.5	A1	B1
	216	25				2.0	3.7	9.6	0.70	3.7	A1	B1
SA 07.6	4.8	60	VD00063-4-0,03	0.03	1,680	0.9	1.1	2.2	0.43	1.1	A1	B1
	6.7					0.9	1.1	2.2	0.43	1.1	A1	B1
	9.6		VD00063-4-0,06	0.06	1,680	1.3	1.4	3.5	0.38	1.4	A1	B1
	13					1.3	1.5	3.5	0.38	1.5	A1	B1
	19		VD00063-2-0,12	0.12	3,360	1.5	2.0	6.5	0.52	2.0	A1	B1
	26					1.5	2.2	6.5	0.52	2.2	A1	B1
	38		AD00063-4-0,20	0.20	1,680	3.5	4.1	10	0.42	4.1	A1	B1
	54					3.5	4.4	10	0.42	4.4	A1	B1
	75		AD00063-2-0,40	0.40	3,360	3.9	5.0	20	0.53	5.0	A1	B2
	108					3.9	5.5	20	0.53	5.5	A1	B2
	150		AD00063-2-0,50	0.50	3,360	4.1	6.5	20	0.62	6.5	A1	B2
	216	50				4.1	7.0	20	0.62	7.0	A1	B2
SA 10.2	4.8	120	VD00071-4-0,06	0.06	1,680	1.1	1.3	4.4	0.40	1.3	A1	B1
	6.7					1.1	1.3	4.4	0.40	1.3	A1	B1
	9.6		VD00071-4-0,12	0.12	1,680	2.2	2.4	6.5	0.40	2.4	A1	B1
	13					2.2	2.6	6.5	0.40	2.6	A1	B1
	19		VD00071-2-0,25	0.25	3,360	2.8	3.3	9.8	0.52	3.3	A1	B1
	26					2.8	3.9	9.8	0.52	3.9	A1	B1
	38		AD00071-4-0,40	0.40	1,680	5.5	5.7	19	0.42	5.7	A1	B2
	54					5.5	6.5	19	0.42	6.5	A1	B2
	75		AD00071-2-0,70	0.70	3,360	6.5	8.7	35	0.54	8.7	A2	B2
	108					6.5	9.8	35	0.54	9.8	A2	B2
	150		AD00071-2-1,00	1.00	3,360	7.6	12	35	0.64	12	A2	B2
	216	100				7.6	13	35	0.64	13	A2	B2
SA 14.2	4.8	250	VD00090-4-0,12	0.12	1,680	1.1	1.7	6.1	0.60	1.7	A1	B1
	6.7					1.1	2.2	6.1	0.60	2.2	A1	B1
	9.6		VD00090-4-0,25	0.25	1,680	2.2	3.5	11	0.60	3.5	A1	B1
	13					2.2	3.7	11	0.60	3.7	A1	B1
	19		VD00090-2-0,45	0.45	3,360	3.3	6.5	20	0.64	6.5	A1	B2
	26					3.3	7.6	20	0.64	7.6	A1	B2
	38		AD00090-4-0,75	0.75	1,680	5.7	9.4	35	0.62	9.4	A2	B2
	54					5.7	11	35	0.62	11	A2	B2
	75		AD00090-2-1,40	1.40	3,360	10	17	83	0.60	17	A2	–
	108					10	20	83	0.60	20	A2	–
	150		AD00090-2-1,80	1.80	3,360	12	26	83	0.65	24	A2	–
	216	200				12	26	83	0.65	24	A2	–
SA 14.6	4.8	500	VD00090-4-0,20	0.20	1,680	2.0	3.3	11	0.54	3.3	A1	B1
	6.7					2.0	3.7	11	0.54	3.7	A1	B1
	9.6		VD00090-4-0,40	0.40	1,680	3.9	6.5	20	0.56	6.5	A1	B2
	13					3.9	7.6	20	0.56	7.6	A1	B2
	19		VD00090-2-0,80	0.80	3,360	7.9	11	39	0.51	11	A2	B2
	26					7.9	12	39	0.51	12	A2	B2
	38		AD00090-4-1,60	1.60	1,680	12	16	83	0.57	16	A2	–
	54					12	20	83	0.57	20	A2	–
	75		AD00090-2-3,00	3.00	3,360	20	31	148	0.60	31	A3	–
	108					20	35	148	0.60	35	A3	–
	150		AD00090-2-3,30	3.30	3,360	21	46	148	0.65	46	A3	–
	216	400				21	48	148	0.65	46	A3	–
SA 16.2	4.8	1,000	VD00112-4-0,40	0.40	1,680	3.1	5.9	22	0.65	5.9	A1	B2
	6.7					3.1	6.3	22	0.65	6.3	A1	B2
	9.6		VD00112-4-0,80	0.80	1,680	6.5	11	48	0.57	11	A2	B3
	13					6.5	12	48	0.57	12	A2	B3
	19		VD00112-2-1,50	1.50	3,360	12	20	87	0.60	20	A2	–
	26					12	23	87	0.60	23	A2	–
	38		AD00112-4-3,00	3.00	1,680	19	33	131	0.71	33	A3	–
	54					19	37	131	0.71	37	A3	–
	75		AD00112-2-5,00	5.00	3,360	26	55	249	0.80	54	A4	–
	108					26	65	249	0.80	54	A4	–
	150	800	AD00112-2-6,00	6.00	3,360	31	76	249	0.83	54	A4	–
	216					31	98	249	0.83	54	A4	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 230 V/50 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4	30	VD00063-4-0,02	0.02	1,400	0.7	0.7	1.7	0.40	0.7	A1	B1
	5.6					0.7	0.7	1.7	0.40	0.7	A1	B1
	8		VD00063-4-0,04	0.04	1,400	0.7	0.7	1.7	0.50	0.7	A1	B1
	11					0.7	0.9	1.7	0.50	0.9	A1	B1
	16		VD00063-2-0,06	0.06	2,800	1.0	1.0	3.3	0.42	1.0	A1	B1
	22					1.0	1.1	3.3	0.42	1.1	A1	B1
	32		AD00063-4-0,10	0.10	1,400	1.7	1.7	4.2	0.42	1.7	A1	B1
	45					1.7	1.7	4.2	0.42	1.7	A1	B1
	63		AD00063-2-0,20	0.20	2,800	1.4	2.1	7.7	0.60	2.1	A1	B1
	90					1.4	2.3	7.7	0.60	2.3	A1	B1
	125		AD00063-2-0,30	0.30	2,800	1.6	2.8	7.7	0.70	2.8	A1	B1
	180	25				1.6	3.0	7.7	0.70	3.0	A1	B1
SA 07.6	4	60	VD00063-4-0,03	0.03	1,400	0.7	0.9	1.7	0.43	0.9	A1	B1
	5.6					0.7	0.9	1.7	0.43	0.9	A1	B1
	8		VD00063-4-0,06	0.06	1,400	1.0	1.1	2.8	0.38	1.1	A1	B1
	11					1.0	1.2	2.8	0.38	1.2	A1	B1
	16		VD00063-2-0,12	0.12	2,800	1.2	1.6	5.2	0.52	1.6	A1	B1
	22					1.2	1.7	5.2	0.52	1.7	A1	B1
	32		AD00063-4-0,20	0.20	1,400	2.8	3.3	8.0	0.42	3.3	A1	B1
	45					2.8	3.5	8.0	0.42	3.5	A1	B1
	63		AD00063-2-0,40	0.40	2,800	3.1	4.0	16	0.53	4.0	A1	B1
	90					3.1	4.3	16	0.53	4.3	A1	B1
	125		AD00063-2-0,50	0.50	2,800	3.3	5.2	16	0.62	5.2	A1	B1
	180	50				3.3	5.6	16	0.62	5.6	A1	B1
SA 10.2	4	120	VD00071-4-0,06	0.06	1,400	0.9	1.0	3.5	0.40	1.0	A1	B1
	5.6					0.9	1.0	3.5	0.40	1.0	A1	B1
	8		VD00071-4-0,12	0.12	1,400	1.7	1.9	5.2	0.40	1.9	A1	B1
	11					1.7	2.1	5.2	0.40	2.1	A1	B1
	16		VD00071-2-0,25	0.25	2,800	2.3	2.6	7.8	0.52	2.6	A1	B1
	22					2.3	3.1	7.8	0.52	3.1	A1	B1
	32		AD00071-4-0,40	0.40	1,400	4.3	4.5	15	0.42	4.5	A1	B1
	45					4.3	5.2	15	0.42	5.2	A1	B1
	63		AD00071-2-0,70	0.70	2,800	5.2	7.0	28	0.54	7.0	A1	B2
	90					5.2	7.8	28	0.54	7.8	A1	B2
	125		AD00071-2-1,00	1.00	2,800	6.1	9.4	28	0.64	9.4	A2	B2
	180	100				6.1	10	28	0.64	10	A2	B2
SA 14.2	4	250	VD00090-4-0,12	0.12	1,400	0.9	1.4	4.9	0.60	1.4	A1	B1
	5.6					0.9	1.7	4.9	0.60	1.7	A1	B1
	8		VD00090-4-0,25	0.25	1,400	1.7	2.8	9.0	0.60	2.8	A1	B1
	11					1.7	3.0	9.0	0.60	3.0	A1	B1
	16		VD00090-2-0,45	0.45	2,800	2.6	5.2	16	0.64	5.2	A1	B1
	22					2.6	6.1	16	0.64	6.1	A1	B1
	32		AD00090-4-0,75	0.75	1,400	4.5	7.5	28	0.62	7.5	A1	B2
	45					4.5	8.7	28	0.62	8.7	A1	B2
	63		AD00090-2-1,40	1.40	2,800	8.2	13	66	0.60	13	A2	B3
	90					8.2	16	66	0.60	16	A2	B3
	125		AD00090-2-1,80	1.80	2,800	9.2	21	66	0.65	19	A2	B3
	180	200				9.2	21	66	0.65	19	A2	B3
SA 14.6	4	500	VD00090-4-0,20	0.20	1,400	1.6	2.6	9.0	0.54	2.6	A1	B1
	5.6					1.6	3.0	9.0	0.54	3.0	A1	B1
	8		VD00090-4-0,40	0.40	1,400	3.1	5.2	16	0.56	5.2	A1	B1
	11					3.1	6.1	16	0.56	6.1	A1	B1
	16		VD00090-2-0,80	0.80	2,800	6.3	8.7	31	0.51	8.7	A2	B2
	22					6.3	9.6	31	0.51	9.6	A2	B2
	32		AD00090-4-1,60	1.60	1,400	9.2	13	66	0.57	13	A2	B3
	45					9.2	16	66	0.57	16	A2	B3
	63		AD00090-2-3,00	3.00	2,800	16	24	118	0.60	24	A2	–
	90					16	28	118	0.60	28	A2	–
	125		AD00090-2-3,30	3.30	2,800	17	37	118	0.65	37	A2	–
	180	400				17	38	118	0.65	37	A2	–
SA 16.2	4	1,000	VD00112-4-0,40	0.40	1,400	2.4	4.7	17	0.65	4.7	A1	B1
	5.6					2.4	5.0	17	0.65	5.0	A1	B1
	8		VD00112-4-0,80	0.80	1,400	5.2	9.0	38	0.57	9.0	A2	B2
	11					5.2	9.6	38	0.57	9.6	A2	B2
	16		VD00112-2-1,50	1.50	2,800	9.7	16	70	0.60	16	A2	B3
	22					9.7	18	70	0.60	18	A2	B3
	32		AD00112-4-3,00	3.00	1,400	15	26	104	0.71	26	A2	–
	45					15	30	104	0.71	29	A2	–
	63		AD00112-2-5,00	5.00	2,800	21	43	198	0.80	43	A4	–
	90					21	52	198	0.80	52	A4	–
	125	800	AD00112-2-6,00	6.00	2,800	24	61	198	0.83	61	A4	–
	180					24	78	198	0.83	78	A4	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 380 V/50 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4	30	VD00063-4-0,02	0.02	1,400	0.4	0.4	1.1	0.40	0.4	A1	B1
	5.6					0.4	0.4	1.1	0.40	0.4	A1	B1
	8		VD00063-4-0,04	0.04	1,400	0.4	0.4	1.1	0.50	0.4	A1	B1
	11					0.4	0.5	1.1	0.50	0.5	A1	B1
	16		VD00063-2-0,06	0.06	2,800	0.6	0.6	2.0	0.42	0.6	A1	B1
	22					0.6	0.7	2.0	0.42	0.7	A1	B1
	32		AD00063-4-0,10	0.10	1,400	1.0	1.0	2.5	0.42	1.0	A1	B1
	45					1.0	1.1	2.5	0.42	1.1	A1	B1
	63		AD00063-2-0,20	0.20	2,800	0.8	1.3	4.6	0.60	1.3	A1	B1
	90					0.8	1.4	4.6	0.60	1.4	A1	B1
	125		AD00063-2-0,30	0.30	2,800	0.9	1.7	4.6	0.70	1.7	A1	B1
	180	25				0.9	1.8	4.6	0.70	1.8	A1	B1
SA 07.6	4	60	VD00063-4-0,03	0.03	1,400	0.4	0.5	1.1	0.43	0.5	A1	B1
	5.6					0.4	0.5	1.1	0.43	0.5	A1	B1
	8		VD00063-4-0,06	0.06	1,400	0.6	0.7	1.7	0.38	0.7	A1	B1
	11					0.6	0.7	1.7	0.38	0.7	A1	B1
	16		VD00063-2-0,12	0.12	2,800	0.7	0.9	3.2	0.52	0.9	A1	B1
	22					0.7	1.1	3.2	0.52	1.1	A1	B1
	32		AD00063-4-0,20	0.20	1,400	1.7	2.0	4.8	0.42	2.0	A1	B1
	45					1.7	2.1	4.8	0.42	2.1	A1	B1
	63		AD00063-2-0,40	0.40	2,800	1.9	2.4	9.5	0.53	2.4	A1	B1
	90					1.9	2.6	9.5	0.53	2.6	A1	B1
	125		AD00063-2-0,50	0.50	2,800	2.0	3.2	9.5	0.62	3.2	A1	B1
	180	50				2.0	3.4	9.5	0.62	3.4	A1	B1
SA 10.2	4	120	VD00071-4-0,06	0.06	1,400	0.5	0.6	2.1	0.40	0.6	A1	B1
	5.6					0.5	0.6	2.1	0.40	0.6	A1	B1
	8		VD00071-4-0,12	0.12	1,400	1.1	1.2	3.2	0.40	1.2	A1	B1
	11					1.1	1.3	3.2	0.40	1.3	A1	B1
	16		VD00071-2-0,25	0.25	2,800	1.4	1.6	4.7	0.52	1.6	A1	B1
	22					1.4	1.9	4.7	0.52	1.9	A1	B1
	32		AD00071-4-0,40	0.40	1,400	2.6	2.7	8.9	0.42	2.7	A1	B1
	45					2.6	3.2	8.9	0.42	3.2	A1	B1
	63		AD00071-2-0,70	0.70	2,800	3.2	4.2	17	0.54	4.2	A1	B1
	90					3.2	4.7	17	0.54	4.7	A1	B1
	125		AD00071-2-1,00	1.00	2,800	3.7	5.7	17	0.64	5.7	A1	B1
	180	100				3.7	6.3	17	0.64	6.3	A1	B1
SA 14.2	4	250	VD00090-4-0,12	0.12	1,400	0.5	0.8	2.9	0.60	0.8	A1	B1
	5.6					0.5	1.1	2.9	0.60	1.1	A1	B1
	8		VD00090-4-0,25	0.25	1,400	1.1	1.7	5.5	0.60	1.7	A1	B1
	11					1.1	1.8	5.5	0.60	1.8	A1	B1
	16		VD00090-2-0,45	0.45	2,800	1.6	3.2	9.5	0.64	3.2	A1	B1
	22					1.6	3.7	9.5	0.64	3.7	A1	B1
	32		AD00090-4-0,75	0.75	1,400	2.7	4.5	17	0.62	4.5	A1	B1
	45					2.7	5.3	17	0.62	5.3	A1	B1
	63		AD00090-2-1,40	1.40	2,800	4.9	8.0	40	0.60	8.0	A2	B2
	90					4.9	9.5	40	0.60	9.5	A2	B2
	125		AD00090-2-1,80	1.80	2,800	5.6	13	40	0.65	12	A2	B2
	180	200				5.6	13	40	0.65	12	A2	B2
SA 14.6	4	500	VD00090-4-0,20	0.20	1,400	0.9	1.6	5.5	0.54	1.6	A1	B1
	5.6					0.9	1.8	5.5	0.54	1.8	A1	B1
	8		VD00090-4-0,40	0.40	1,400	1.9	3.2	9.8	0.56	3.2	A1	B1
	11					1.9	3.7	9.8	0.56	3.7	A1	B1
	16		VD00090-2-0,80	0.80	2,800	3.8	5.3	19	0.51	5.3	A1	B2
	22					3.8	5.8	19	0.51	5.8	A1	B2
	32		AD00090-4-1,60	1.60	1,400	5.6	7.9	40	0.57	7.9	A2	B2
	45					5.6	9.5	40	0.57	9.5	A2	B2
	63		AD00090-2-3,00	3.00	2,800	9.5	15	72	0.60	15	A2	B3
	90					9.5	17	72	0.60	17	A2	B3
	125		AD00090-2-3,30	3.30	2,800	10	22	72	0.65	22	A2	B3
	180	400				10	23	72	0.65	23	A2	B3
SA 16.2	4	1,000	VD00112-4-0,40	0.40	1,400	1.5	2.8	11	0.65	2.8	A1	B1
	5.6					1.5	3.1	11	0.65	3.1	A1	B1
	8		VD00112-4-0,80	0.80	1,400	3.2	5.5	23	0.57	5.5	A1	B2
	11					3.2	5.8	23	0.57	5.8	A1	B2
	16		VD00112-2-1,50	1.50	2,800	5.9	9.5	42	0.60	9.5	A2	B2
	22					5.9	11	42	0.60	11	A2	B2
	32		AD00112-4-3,00	3.00	1,400	8.9	16	63	0.71	16	A2	B3
	45					8.9	18	63	0.71	18	A2	B3
	63		AD00112-2-5,00	5.00	2,800	13	26	120	0.80	26	A2	–
	90					13	32	120	0.80	26	A2	–
	125	800	AD00112-2-6,00	6.00	2,800	15	37	120	0.83	26	A2	–
	180					15	47	120	0.83	26	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 380 V/60 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4.8	30	VD00063-4-0,02	0.02	1,680	0.5	0.5	1.3	0.40	0.5	A1	B1
	6.7					0.5	0.5	1.3	0.40	0.5	A1	B1
	9.6		VD00063-4-0,04	0.04	1,680	0.5	0.5	1.3	0.50	0.5	A1	B1
	13					0.5	0.6	1.3	0.50	0.6	A1	B1
	19		VD00063-2-0,06	0.06	3,360	0.8	0.8	2.4	0.42	0.8	A1	B1
	26					0.8	0.8	2.4	0.42	0.8	A1	B1
	38		AD00063-4-0,10	0.10	1,680	1.2	1.2	3.0	0.42	1.2	A1	B1
	54					1.2	1.3	3.0	0.42	1.3	A1	B1
	75		AD00063-2-0,20	0.20	3,360	1.0	1.5	5.6	0.60	1.5	A1	B1
	108					1.0	1.6	5.6	0.60	1.6	A1	B1
	150		AD00063-2-0,30	0.30	3,360	1.1	2.0	5.6	0.70	2.0	A1	B1
	216	25				1.1	2.1	5.6	0.70	2.1	A1	B1
SA 07.6	4.8	60	VD00063-4-0,03	0.03	1,680	0.5	0.6	1.3	0.43	0.6	A1	B1
	6.7					0.5	0.6	1.3	0.43	0.6	A1	B1
	9.6		VD00063-4-0,06	0.06	1,680	0.8	0.8	2.0	0.38	0.8	A1	B1
	13					0.8	0.9	2.0	0.38	0.9	A1	B1
	19		VD00063-2-0,12	0.12	3,360	0.9	1.1	3.8	0.52	1.1	A1	B1
	26					0.9	1.3	3.8	0.52	1.3	A1	B1
	38		AD00063-4-0,20	0.20	1,680	2.0	2.4	5.8	0.42	2.4	A1	B1
	54					2.0	2.5	5.8	0.42	2.5	A1	B1
	75		AD00063-2-0,40	0.40	3,360	2.3	2.9	11	0.53	2.9	A1	B1
	108					2.3	3.2	11	0.53	3.2	A1	B1
	150		AD00063-2-0,50	0.50	3,360	2.4	3.8	11	0.62	3.8	A1	B1
	216	50				2.4	4.0	11	0.62	4.0	A1	B1
SA 10.2	4.8	120	VD00071-4-0,06	0.06	1,680	0.6	0.8	2.5	0.40	0.8	A1	B1
	6.7					0.6	0.8	2.5	0.40	0.8	A1	B1
	9.6		VD00071-4-0,12	0.12	1,680	1.3	1.4	3.8	0.40	1.4	A1	B1
	13					1.3	1.5	3.8	0.40	1.5	A1	B1
	19		VD00071-2-0,25	0.25	3,360	1.6	1.9	5.7	0.52	1.9	A1	B1
	26					1.6	2.3	5.7	0.52	2.3	A1	B1
	38		AD00071-4-0,40	0.40	1,680	3.2	3.3	11	0.42	3.3	A1	B1
	54					3.2	3.8	11	0.42	3.8	A1	B1
	75		AD00071-2-0,70	0.70	3,360	3.8	5.1	20	0.54	5.1	A1	B2
	108					3.8	5.7	20	0.54	5.7	A1	B2
	150		AD00071-2-1,00	1.00	3,360	4.4	6.8	20	0.64	6.8	A2	B2
	216	100				4.4	7.6	20	0.64	7.6	A2	B2
SA 14.2	4.8	250	VD00090-4-0,12	0.12	1,680	0.6	1.0	3.5	0.60	1.0	A1	B1
	6.7					0.6	1.3	3.5	0.60	1.3	A1	B1
	9.6		VD00090-4-0,25	0.25	1,680	1.3	2.0	6.6	0.60	2.0	A1	B1
	13					1.3	2.1	6.6	0.60	2.1	A1	B1
	19		VD00090-2-0,45	0.45	3,360	1.9	3.8	11	0.64	3.8	A1	B1
	26					1.9	4.4	11	0.64	4.4	A1	B1
	38		AD00090-4-0,75	0.75	1,680	3.3	5.4	20	0.62	5.4	A1	B2
	54					3.3	6.3	20	0.62	6.3	A1	B2
	75		AD00090-2-1,40	1.40	3,360	5.9	9.6	48	0.60	9.6	A2	B3
	108					5.9	11	48	0.60	11	A2	B3
	150		AD00090-2-1,80	1.80	3,360	6.7	15	48	0.65	14	A2	B3
	216	200				6.7	15	48	0.65	14	A2	B3
SA 14.6	4.8	500	VD00090-4-0,20	0.20	1,680	1.1	1.9	6.6	0.54	1.9	A1	B1
	6.7					1.1	2.1	6.6	0.54	2.1	A1	B1
	9.6		VD00090-4-0,40	0.40	1,680	2.3	3.8	12	0.56	3.8	A1	B1
	13					2.3	4.4	12	0.56	4.4	A1	B1
	19		VD00090-2-0,80	0.80	3,360	4.5	6.3	23	0.51	6.3	A2	B2
	26					4.5	6.9	23	0.51	6.9	A2	B2
	38		AD00090-4-1,60	1.60	1,680	6.7	9.5	48	0.57	9.5	A2	B3
	54					6.7	11	48	0.57	11	A2	B3
	75		AD00090-2-3,00	3.00	3,360	11	18	86	0.60	18	A2	–
	108					11	20	86	0.60	20	A2	–
	150		AD00090-2-3,30	3.30	3,360	12	27	86	0.65	27	A2	–
	216	400				12	28	86	0.65	27	A2	–
SA 16.2	4.8	1,000	VD00112-4-0,40	0.40	1,680	1.8	3.4	13	0.65	3.4	A1	B1
	6.7					1.8	3.7	13	0.65	3.7	A1	B1
	9.6		VD00112-4-0,80	0.80	1,680	3.8	6.6	28	0.57	6.6	A2	B2
	13					3.8	6.9	28	0.57	6.9	A2	B2
	19		VD00112-2-1,50	1.50	3,360	7.1	11	51	0.60	11	A2	B3
	26					7.1	13	51	0.60	13	A2	B3
	38		AD00112-4-3,00	3.00	1,680	11	19	76	0.71	19	A2	–
	54					11	21	76	0.71	21	A2	–
	75		AD00112-2-5,00	5.00	3,360	15	32	144	0.80	31	A3	–
	108					15	38	144	0.80	31	A3	–
	150	800	AD00112-2-6,00	6.00	3,360	18	44	144	0.83	31	A3	–
	216					18	57	144	0.83	31	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

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SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 400 V/50 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4	30	VD00063-4-0,02	0.02	1,400	0.4	0.4	1.0	0.40	0.4	A1	B1
	5.6					0.4	0.4	1.0	0.40	0.4	A1	B1
	8		VD00063-4-0,04	0.04	1,400	0.4	0.4	1.0	0.50	0.4	A1	B1
	11					0.4	0.5	1.0	0.50	0.5	A1	B1
	16		VD00063-2-0,06	0.06	2,800	0.6	0.6	1.9	0.42	0.6	A1	B1
	22					0.6	0.7	1.9	0.42	0.7	A1	B1
	32		AD00063-4-0,10	0.10	1,400	1.0	1.0	2.4	0.42	1.0	A1	B1
	45					1.0	1.0	2.4	0.42	1.0	A1	B1
	63		AD00063-2-0,20	0.20	2,800	0.8	1.2	4.4	0.60	1.2	A1	B1
	90					0.8	1.3	4.4	0.60	1.3	A1	B1
	125		AD00063-2-0,30	0.30	2,800	0.9	1.6	4.4	0.70	1.6	A1	B1
	180	25				0.9	1.7	4.4	0.70	1.7	A1	B1
SA 07.6	4	60	VD00063-4-0,03	0.03	1,400	0.4	0.5	1.0	0.43	0.5	A1	B1
	5.6					0.4	0.5	1.0	0.43	0.5	A1	B1
	8		VD00063-4-0,06	0.06	1,400	0.6	0.7	1.6	0.38	0.7	A1	B1
	11					0.6	0.7	1.6	0.38	0.7	A1	B1
	16		VD00063-2-0,12	0.12	2,800	0.7	0.9	3.0	0.52	0.9	A1	B1
	22					0.7	1.0	3.0	0.52	1.0	A1	B1
	32		AD00063-4-0,20	0.20	1,400	1.6	1.9	4.6	0.42	1.9	A1	B1
	45					1.6	2.0	4.6	0.42	2.0	A1	B1
	63		AD00063-2-0,40	0.40	2,800	1.8	2.3	9.0	0.53	2.3	A1	B1
	90					1.8	2.5	9.0	0.53	2.5	A1	B1
	125		AD00063-2-0,50	0.50	2,800	1.9	3.0	9.0	0.62	3.0	A1	B1
	180	50				1.9	3.2	9.0	0.62	3.2	A1	B1
SA 10.2	4	120	VD00071-4-0,06	0.06	1,400	0.5	0.6	2.0	0.40	0.6	A1	B1
	5.6					0.5	0.6	2.0	0.40	0.6	A1	B1
	8		VD00071-4-0,12	0.12	1,400	1.0	1.1	3.0	0.40	1.1	A1	B1
	11					1.0	1.2	3.0	0.40	1.2	A1	B1
	16		VD00071-2-0,25	0.25	2,800	1.3	1.5	4.5	0.52	1.5	A1	B1
	22					1.3	1.8	4.5	0.52	1.8	A1	B1
	32		AD00071-4-0,40	0.40	1,400	2.5	2.6	8.5	0.42	2.6	A1	B1
	45					2.5	3.0	8.5	0.42	3.0	A1	B1
	63		AD00071-2-0,70	0.70	2,800	3.0	4.0	16	0.54	4.0	A1	B1
	90					3.0	4.5	16	0.54	4.5	A1	B1
	125		AD00071-2-1,00	1.00	2,800	3.5	5.4	16	0.64	5.4	A1	B1
	180	100				3.5	6.0	16	0.64	6.0	A1	B1
SA 14.2	4	250	VD00090-4-0,12	0.12	1,400	0.5	0.8	2.8	0.60	0.8	A1	B1
	5.6					0.5	1.0	2.8	0.60	1.0	A1	B1
	8		VD00090-4-0,25	0.25	1,400	1.0	1.6	5.2	0.60	1.6	A1	B1
	11					1.0	1.7	5.2	0.60	1.7	A1	B1
	16		VD00090-2-0,45	0.45	2,800	1.5	3.0	9.0	0.64	3.0	A1	B1
	22					1.5	3.5	9.0	0.64	3.5	A1	B1
	32		AD00090-4-0,75	0.75	1,400	2.6	4.3	16	0.62	4.3	A1	B1
	45					2.6	5.0	16	0.62	5.0	A1	B1
	63		AD00090-2-1,40	1.40	2,800	4.7	7.6	38	0.60	7.6	A2	B2
	90					4.7	9.0	38	0.60	9.0	A2	B2
	125		AD00090-2-1,80	1.80	2,800	5.3	12	38	0.65	11	A2	B2
	180	200				5.3	12	38	0.65	11	A2	B2
SA 14.6	4	500	VD00090-4-0,20	0.20	1,400	0.9	1.5	5.2	0.54	1.5	A1	B1
	5.6					0.9	1.7	5.2	0.54	1.7	A1	B1
	8		VD00090-4-0,40	0.40	1,400	1.8	3.0	9.3	0.56	3.0	A1	B1
	11					1.8	3.5	9.3	0.56	3.5	A1	B1
	16		VD00090-2-0,80	0.80	2,800	3.6	5.0	18	0.51	5.0	A1	B1
	22					3.6	5.5	18	0.51	5.5	A1	B1
	32		AD00090-4-1,60	1.60	1,400	5.3	7.5	38	0.57	7.5	A2	B2
	45					5.3	9.0	38	0.57	9.0	A2	B2
	63		AD00090-2-3,00	3.00	2,800	9.0	14	68	0.60	14	A2	B3
	90					9.0	16	68	0.60	16	A2	B3
	125		AD00090-2-3,30	3.30	2,800	9.5	21	68	0.65	21	A2	B3
	180	400				9.5	22	68	0.65	22	A2	B3
SA 16.2	4	1,000	VD00112-4-0,40	0.40	1,400	1.4	2.7	10	0.65	2.7	A1	B1
	5.6					1.4	2.9	10	0.65	2.9	A1	B1
	8		VD00112-4-0,80	0.80	1,400	3.0	5.2	22	0.57	5.2	A1	B2
	11					3.0	5.5	22	0.57	5.5	A1	B2
	16		VD00112-2-1,50	1.50	2,800	5.6	9.0	40	0.60	9.0	A2	B2
	22					5.6	11	40	0.60	11	A2	B2
	32		AD00112-4-3,00	3.00	1,400	8.5	15	60	0.71	15	A2	B3
	45					8.5	17	60	0.71	17	A2	B3
	63		AD00112-2-5,00	5.00	2,800	12	25	114	0.80	25	A2	–
	90					12	30	114	0.80	25	A2	–
	125	800	AD00112-2-6,00	6.00	2,800	14	35	114	0.83	25	A2	–
	180					14	45	114	0.83	25	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 400 V/60 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4.8	30	VD00063-4-0,02	0.02	1,680	0.5	0.5	1.2	0.40	0.5	A1	B1
	6.7					0.5	0.5	1.2	0.40	0.5	A1	B1
	9.6		VD00063-4-0,04	0.04	1,680	0.5	0.5	1.2	0.50	0.5	A1	B1
	13					0.5	0.6	1.2	0.50	0.6	A1	B1
	19		VD00063-2-0,06	0.06	3,360	0.7	0.7	2.3	0.42	0.7	A1	B1
	26					0.7	0.8	2.3	0.42	0.8	A1	B1
	38		AD00063-4-0,10	0.10	1,680	1.1	1.1	2.9	0.42	1.1	A1	B1
	54					1.1	1.2	2.9	0.42	1.2	A1	B1
	75		AD00063-2-0,20	0.20	3,360	1.0	1.4	5.3	0.60	1.4	A1	B1
	108					1.0	1.6	5.3	0.60	1.6	A1	B1
	150		AD00063-2-0,30	0.30	3,360	1.1	1.9	5.3	0.70	1.9	A1	B1
	216	25				1.1	2.0	5.3	0.70	2.0	A1	B1
SA 07.6	4.8	60	VD00063-4-0,03	0.03	1,680	0.5	0.6	1.2	0.43	0.6	A1	B1
	6.7					0.5	0.6	1.2	0.43	0.6	A1	B1
	9.6		VD00063-4-0,06	0.06	1,680	0.7	0.8	1.9	0.38	0.8	A1	B1
	13					0.7	0.8	1.9	0.38	0.8	A1	B1
	19		VD00063-2-0,12	0.12	3,360	0.8	1.1	3.6	0.52	1.1	A1	B1
	26					0.8	1.2	3.6	0.52	1.2	A1	B1
	38		AD00063-4-0,20	0.20	1,680	1.9	2.3	5.5	0.42	2.3	A1	B1
	54					1.9	2.4	5.5	0.42	2.4	A1	B1
	75		AD00063-2-0,40	0.40	3,360	2.2	2.8	11	0.53	2.8	A1	B1
	108					2.2	3.0	11	0.53	3.0	A1	B1
	150		AD00063-2-0,50	0.50	3,360	2.3	3.6	11	0.62	3.6	A1	B1
	216	50				2.3	3.8	11	0.62	3.8	A1	B1
SA 10.2	4.8	120	VD00071-4-0,06	0.06	1,680	0.6	0.7	2.4	0.40	0.7	A1	B1
	6.7					0.6	0.7	2.4	0.40	0.7	A1	B1
	9.6		VD00071-4-0,12	0.12	1,680	1.2	1.3	3.6	0.40	1.3	A1	B1
	13					1.2	1.4	3.6	0.40	1.4	A1	B1
	19		VD00071-2-0,25	0.25	3,360	1.6	1.8	5.4	0.52	1.8	A1	B1
	26					1.6	2.2	5.4	0.52	2.2	A1	B1
	38		AD00071-4-0,40	0.40	1,680	3.0	3.1	10	0.42	3.1	A1	B1
	54					3.0	3.6	10	0.42	3.6	A1	B1
	75		AD00071-2-0,70	0.70	3,360	3.6	4.8	19	0.54	4.8	A1	B2
	108					3.6	5.4	19	0.54	5.4	A1	B2
	150		AD00071-2-1,00	1.00	3,360	4.2	6.5	19	0.64	6.5	A2	B2
	216	100				4.2	7.2	19	0.64	7.2	A2	B2
SA 14.2	4.8	250	VD00090-4-0,12	0.12	1,680	0.6	1.0	3.4	0.60	1.0	A1	B1
	6.7					0.6	1.2	3.4	0.60	1.2	A1	B1
	9.6		VD00090-4-0,25	0.25	1,680	1.2	1.9	6.2	0.60	1.9	A1	B1
	13					1.2	2.0	6.2	0.60	2.0	A1	B1
	19		VD00090-2-0,45	0.45	3,360	1.8	3.6	11	0.64	3.6	A1	B1
	26					1.8	4.2	11	0.64	4.2	A1	B1
	38		AD00090-4-0,75	0.75	1,680	3.1	5.2	19	0.62	5.2	A1	B2
	54					3.1	6.0	19	0.62	6.0	A1	B2
	75		AD00090-2-1,40	1.40	3,360	5.6	9.1	46	0.60	9.1	A2	B3
	108					5.6	11	46	0.60	11	A2	B3
	150		AD00090-2-1,80	1.80	3,360	6.4	14	46	0.65	14	A2	B3
	216	200				6.4	14	46	0.65	14	A2	B3
SA 14.6	4.8	500	VD00090-4-0,20	0.20	1,680	1.1	1.8	6.2	0.54	1.8	A1	B1
	6.7					1.1	2.0	6.2	0.54	2.0	A1	B1
	9.6		VD00090-4-0,40	0.40	1,680	2.2	3.6	11	0.56	3.6	A1	B1
	13					2.2	4.2	11	0.56	4.2	A1	B1
	19		VD00090-2-0,80	0.80	3,360	4.3	6.0	22	0.51	6.0	A2	B2
	26					4.3	6.6	22	0.51	6.6	A2	B2
	38		AD00090-4-1,60	1.60	1,680	6.4	9.0	46	0.57	9.0	A2	B3
	54					6.4	11	46	0.57	11	A2	B3
	75		AD00090-2-3,00	3.00	3,360	11	17	82	0.60	17	A2	–
	108					11	19	82	0.60	19	A2	–
	150		AD00090-2-3,30	3.30	3,360	11	25	82	0.65	25	A2	–
	216	400				11	26	82	0.65	26	A2	–
SA 16.2	4.8	1,000	VD00112-4-0,40	0.40	1,680	1.7	3.2	12	0.65	3.2	A1	B1
	6.7					1.7	3.5	12	0.65	3.5	A1	B1
	9.6		VD00112-4-0,80	0.80	1,680	3.6	6.2	26	0.57	6.2	A2	B2
	13					3.6	6.6	26	0.57	6.6	A2	B2
	19		VD00112-2-1,50	1.50	3,360	6.7	11	48	0.60	11	A2	B3
	26					6.7	13	48	0.60	13	A2	B3
	38		AD00112-4-3,00	3.00	1,680	10	18	72	0.71	18	A2	B3
	54					10	20	72	0.71	20	A2	B3
	75		AD00112-2-5,00	5.00	3,360	14	30	137	0.80	30	A3	–
	108					14	36	137	0.80	30	A3	–
	150	800	AD00112-2-6,00	6.00	3,360	17	42	137	0.83	30	A3	–
	216					17	54	137	0.83	30	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 415 V/50 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4	30	VD00063-4-0,02	0.02	1,400	0.4	0.4	1.0	0.40	0.4	A1	B1
	5.6					0.4	0.4	1.0	0.40	0.4	A1	B1
	8		VD00063-4-0,04	0.04	1,400	0.4	0.4	1.0	0.50	0.4	A1	B1
	11					0.4	0.5	1.0	0.50	0.5	A1	B1
	16		VD00063-2-0,06	0.06	2,800	0.6	0.6	1.8	0.42	0.6	A1	B1
	22					0.6	0.6	1.8	0.42	0.6	A1	B1
	32		AD00063-4-0,10	0.10	1,400	0.9	0.9	2.3	0.42	0.9	A1	B1
	45					0.9	1.0	2.3	0.42	1.0	A1	B1
	63		AD00063-2-0,20	0.20	2,800	0.8	1.2	4.2	0.60	1.2	A1	B1
	90					0.8	1.3	4.2	0.60	1.3	A1	B1
	125		AD00063-2-0,30	0.30	2,800	0.9	1.5	4.2	0.70	1.5	A1	B1
	180	25				0.9	1.6	4.2	0.70	1.6	A1	B1
SA 07.6	4	60	VD00063-4-0,03	0.03	1,400	0.4	0.5	1.0	0.43	0.5	A1	B1
	5.6					0.4	0.5	1.0	0.43	0.5	A1	B1
	8		VD00063-4-0,06	0.06	1,400	0.6	0.6	1.5	0.38	0.6	A1	B1
	11					0.6	0.7	1.5	0.38	0.7	A1	B1
	16		VD00063-2-0,12	0.12	2,800	0.7	0.9	2.9	0.52	0.9	A1	B1
	22					0.7	1.0	2.9	0.52	1.0	A1	B1
	32		AD00063-4-0,20	0.20	1,400	1.5	1.8	4.4	0.42	1.8	A1	B1
	45					1.5	1.9	4.4	0.42	1.9	A1	B1
	63		AD00063-2-0,40	0.40	2,800	1.7	2.2	8.7	0.53	2.2	A1	B1
	90					1.7	2.4	8.7	0.53	2.4	A1	B1
	125		AD00063-2-0,50	0.50	2,800	1.8	2.9	8.7	0.62	2.9	A1	B1
	180	50				1.8	3.1	8.7	0.62	3.1	A1	B1
SA 10.2	4	120	VD00071-4-0,06	0.06	1,400	0.5	0.6	1.9	0.40	0.6	A1	B1
	5.6					0.5	0.6	1.9	0.40	0.6	A1	B1
	8		VD00071-4-0,12	0.12	1,400	1.0	1.1	2.9	0.40	1.1	A1	B1
	11					1.0	1.2	2.9	0.40	1.2	A1	B1
	16		VD00071-2-0,25	0.25	2,800	1.3	1.4	4.3	0.52	1.4	A1	B1
	22					1.3	1.7	4.3	0.52	1.7	A1	B1
	32		AD00071-4-0,40	0.40	1,400	2.4	2.5	8.2	0.42	2.5	A1	B1
	45					2.4	2.9	8.2	0.42	2.9	A1	B1
	63		AD00071-2-0,70	0.70	2,800	2.9	3.9	15	0.54	3.9	A1	B1
	90					2.9	4.3	15	0.54	4.3	A1	B1
	125		AD00071-2-1,00	1.00	2,800	3.4	5.2	15	0.64	5.2	A1	B1
	180	100				3.4	5.8	15	0.64	5.8	A1	B1
SA 14.2	4	250	VD00090-4-0,12	0.12	1,400	0.5	0.8	2.7	0.60	0.8	A1	B1
	5.6					0.5	1.0	2.7	0.60	1.0	A1	B1
	8		VD00090-4-0,25	0.25	1,400	1.0	1.5	5.0	0.60	1.5	A1	B1
	11					1.0	1.6	5.0	0.60	1.6	A1	B1
	16		VD00090-2-0,45	0.45	2,800	1.4	2.9	8.7	0.64	2.9	A1	B1
	22					1.4	3.4	8.7	0.64	3.4	A1	B1
	32		AD00090-4-0,75	0.75	1,400	2.5	4.1	15	0.62	4.1	A1	B1
	45					2.5	4.8	15	0.62	4.8	A1	B1
	63		AD00090-2-1,40	1.40	2,800	4.5	7.3	37	0.60	7.3	A2	B2
	90					4.5	8.7	37	0.60	8.7	A2	B2
	125		AD00090-2-1,80	1.80	2,800	5.1	12	37	0.65	11	A2	B2
	180	200				5.1	12	37	0.65	11	A2	B2
SA 14.6	4	500	VD00090-4-0,20	0.20	1,400	0.9	1.4	5.0	0.54	1.4	A1	B1
	5.6					0.9	1.6	5.0	0.54	1.6	A1	B1
	8		VD00090-4-0,40	0.40	1,400	1.7	2.9	9.0	0.56	2.9	A1	B1
	11					1.7	3.4	9.0	0.56	3.4	A1	B1
	16		VD00090-2-0,80	0.80	2,800	3.5	4.8	17	0.51	4.8	A1	B1
	22					3.5	5.3	17	0.51	5.3	A1	B1
	32		AD00090-4-1,60	1.60	1,400	5.1	7.2	37	0.57	7.2	A2	B2
	45					5.1	8.7	37	0.57	8.7	A2	B2
	63		AD00090-2-3,00	3.00	2,800	8.7	13	66	0.60	13	A2	B3
	90					8.7	15	66	0.60	15	A2	B3
	125		AD00090-2-3,30	3.30	2,800	9.2	20	66	0.65	20	A2	B3
	180	400				9.2	21	66	0.65	21	A2	B3
SA 16.2	4	1,000	VD00112-4-0,40	0.40	1,400	1.3	2.6	9.6	0.65	2.6	A1	B1
	5.6					1.3	2.8	9.6	0.65	2.8	A1	B1
	8		VD00112-4-0,80	0.80	1,400	2.9	5.0	21	0.57	5.0	A1	B2
	11					2.9	5.3	21	0.57	5.3	A1	B2
	16		VD00112-2-1,50	1.50	2,800	5.4	8.7	39	0.60	8.7	A2	B2
	22					5.4	10	39	0.60	10	A2	B2
	32		AD00112-4-3,00	3.00	1,400	8.2	14	58	0.71	14	A2	B3
	45					8.2	16	58	0.71	16	A2	B3
	63		AD00112-2-5,00	5.00	2,800	12	24	110	0.80	24	A2	–
	90					12	29	110	0.80	24	A2	–
	125	800	AD00112-2-6,00	6.00	2,800	13	34	110	0.83	24	A2	–
	180					13	43	110	0.83	24	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

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SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 440 V/60 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4.8	30	VD00063-4-0,02	0.02	1,680	0.4	0.4	1.1	0.40	0.4	A1	B1
	6.7					0.4	0.4	1.1	0.40	0.4	A1	B1
	9.6		VD00063-4-0,04	0.04	1,680	0.4	0.4	1.1	0.50	0.4	A1	B1
	13					0.4	0.5	1.1	0.50	0.5	A1	B1
	19		VD00063-2-0,06	0.06	3,360	0.7	0.7	2.1	0.42	0.7	A1	B1
	26					0.7	0.7	2.1	0.42	0.7	A1	B1
	38		AD00063-4-0,10	0.10	1,680	1.0	1.0	2.6	0.42	1.0	A1	B1
	54					1.0	1.1	2.6	0.42	1.1	A1	B1
	75		AD00063-2-0,20	0.20	3,360	0.9	1.3	4.8	0.60	1.3	A1	B1
	108					0.9	1.4	4.8	0.60	1.4	A1	B1
	150		AD00063-2-0,30	0.30	3,360	1.0	1.7	4.8	0.70	1.7	A1	B1
	216	25				1.0	1.9	4.8	0.70	1.9	A1	B1
SA 07.6	4.8	60	VD00063-4-0,03	0.03	1,680	0.4	0.5	1.1	0.43	0.5	A1	B1
	6.7					0.4	0.5	1.1	0.43	0.5	A1	B1
	9.6		VD00063-4-0,06	0.06	1,680	0.7	0.7	1.7	0.38	0.7	A1	B1
	13					0.7	0.8	1.7	0.38	0.8	A1	B1
	19		VD00063-2-0,12	0.12	3,360	0.8	1.0	3.3	0.52	1.0	A1	B1
	26					0.8	1.1	3.3	0.52	1.1	A1	B1
	38		AD00063-4-0,20	0.20	1,680	1.7	2.1	5.0	0.42	2.1	A1	B1
	54					1.7	2.2	5.0	0.42	2.2	A1	B1
	75		AD00063-2-0,40	0.40	3,360	2.0	2.5	9.8	0.53	2.5	A1	B1
	108					2.0	2.7	9.8	0.53	2.7	A1	B1
	150		AD00063-2-0,50	0.50	3,360	2.1	3.3	9.8	0.62	3.3	A1	B1
	216	50				2.1	3.5	9.8	0.62	3.5	A1	B1
SA 10.2	4.8	120	VD00071-4-0,06	0.06	1,680	0.5	0.7	2.2	0.40	0.7	A1	B1
	6.7					0.5	0.7	2.2	0.40	0.7	A1	B1
	9.6		VD00071-4-0,12	0.12	1,680	1.1	1.2	3.3	0.40	1.2	A1	B1
	13					1.1	1.3	3.3	0.40	1.3	A1	B1
	19		VD00071-2-0,25	0.25	3,360	1.4	1.6	4.9	0.52	1.6	A1	B1
	26					1.4	2.0	4.9	0.52	2.0	A1	B1
	38		AD00071-4-0,40	0.40	1,680	2.7	2.8	9.3	0.42	2.8	A1	B1
	54					2.7	3.3	9.3	0.42	3.3	A1	B1
	75		AD00071-2-0,70	0.70	3,360	3.3	4.4	17	0.54	4.4	A1	B1
	108					3.3	4.9	17	0.54	4.9	A1	B1
	150		AD00071-2-1,00	1.00	3,360	3.8	5.9	17	0.64	5.9	A1	B1
	216	100				3.8	6.5	17	0.64	6.5	A1	B1
SA 14.2	4.8	250	VD00090-4-0,12	0.12	1,680	0.5	0.9	3.1	0.60	0.9	A1	B1
	6.7					0.5	1.1	3.1	0.60	1.1	A1	B1
	9.6		VD00090-4-0,25	0.25	1,680	1.1	1.7	5.7	0.60	1.7	A1	B1
	13					1.1	1.9	5.7	0.60	1.9	A1	B1
	19		VD00090-2-0,45	0.45	3,360	1.6	3.3	9.8	0.64	3.3	A1	B1
	26					1.6	3.8	9.8	0.64	3.8	A1	B1
	38		AD00090-4-0,75	0.75	1,680	2.8	4.7	17	0.62	4.7	A1	B1
	54					2.8	5.5	17	0.62	5.5	A1	B1
	75		AD00090-2-1,40	1.40	3,360	5.1	8.3	41	0.60	8.3	A2	B2
	108					5.1	9.8	41	0.60	9.8	A2	B2
	150		AD00090-2-1,80	1.80	3,360	5.8	13	41	0.65	12	A2	B2
	216	200				5.8	13	41	0.65	12	A2	B2
SA 14.6	4.8	500	VD00090-4-0,20	0.20	1,680	1.0	1.6	5.7	0.54	1.6	A1	B1
	6.7					1.0	1.9	5.7	0.54	1.9	A1	B1
	9.6		VD00090-4-0,40	0.40	1,680	2.0	3.3	10	0.56	3.3	A1	B1
	13					2.0	3.8	10	0.56	3.8	A1	B1
	19		VD00090-2-0,80	0.80	3,360	3.9	5.5	20	0.51	5.5	A1	B2
	26					3.9	6.0	20	0.51	6.0	A1	B2
	38		AD00090-4-1,60	1.60	1,680	5.8	8.2	41	0.57	8.2	A2	B2
	54					5.8	9.8	41	0.57	9.8	A2	B2
	75		AD00090-2-3,00	3.00	3,360	9.8	15	74	0.60	15	A2	B3
	108					9.8	17	74	0.60	17	A2	B3
	150		AD00090-2-3,30	3.30	3,360	10	23	74	0.65	23	A2	B3
	216	400				10	24	74	0.65	23	A2	–
SA 16.2	4.8	1,000	VD00112-4-0,40	0.40	1,680	1.5	2.9	11	0.65	2.9	A1	B1
	6.7					1.5	3.2	11	0.65	3.2	A1	B1
	9.6		VD00112-4-0,80	0.80	1,680	3.3	5.7	24	0.57	5.7	A1	B2
	13					3.3	6.0	24	0.57	6.0	A1	B2
	19		VD00112-2-1,50	1.50	3,360	6.1	9.8	44	0.60	9.8	A2	B2
	26					6.1	12	44	0.60	12	A2	B2
	38		AD00112-4-3,00	3.00	1,680	9.3	16	65	0.71	16	A2	B3
	54					9.3	19	65	0.71	19	A2	B3
	75		AD00112-2-5,00	5.00	3,360	13	27	124	0.80	27	A3	–
	108					13	33	124	0.80	27	A3	–
	150	800	AD00112-2-6,00	6.00	3,360	15	38	124	0.83	27	A3	–
	216					15	49	124	0.83	27	A3	–

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SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 460 V/60 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4.8	30	VD00063-4-0,02	0.02	1,680	0.4	0.4	1.0	0.40	0.4	A1	B1
	6.7					0.4	0.4	1.0	0.40	0.4	A1	B1
	9.6		VD00063-4-0,04	0.04	1,680	0.4	0.4	1.0	0.50	0.4	A1	B1
	13					0.4	0.5	1.0	0.50	0.5	A1	B1
	19		VD00063-2-0,06	0.06	3,360	0.6	0.6	2.0	0.42	0.6	A1	B1
	26					0.6	0.7	2.0	0.42	0.7	A1	B1
	38		AD00063-4-0,10	0.10	1,680	1.0	1.0	2.5	0.42	1.0	A1	B1
	54					1.0	1.0	2.5	0.42	1.0	A1	B1
	75		AD00063-2-0,20	0.20	3,360	0.8	1.3	4.6	0.60	1.3	A1	B1
	108					0.8	1.4	4.6	0.60	1.4	A1	B1
	150		AD00063-2-0,30	0.30	3,360	0.9	1.7	4.6	0.70	1.7	A1	B1
	216	25				0.9	1.8	4.6	0.70	1.8	A1	B1
SA 07.6	4.8	60	VD00063-4-0,03	0.03	1,680	0.4	0.5	1.0	0.43	0.5	A1	B1
	6.7					0.4	0.5	1.0	0.43	0.5	A1	B1
	9.6		VD00063-4-0,06	0.06	1,680	0.6	0.7	1.7	0.38	0.7	A1	B1
	13					0.6	0.7	1.7	0.38	0.7	A1	B1
	19		VD00063-2-0,12	0.12	3,360	0.7	0.9	3.1	0.52	0.9	A1	B1
	26					0.7	1.0	3.1	0.52	1.0	A1	B1
	38		AD00063-4-0,20	0.20	1,680	1.7	2.0	4.8	0.42	2.0	A1	B1
	54					1.7	2.1	4.8	0.42	2.1	A1	B1
	75		AD00063-2-0,40	0.40	3,360	1.9	2.4	9.4	0.53	2.4	A1	B1
	108					1.9	2.6	9.4	0.53	2.6	A1	B1
	150		AD00063-2-0,50	0.50	3,360	2.0	3.1	9.4	0.62	3.1	A1	B1
	216	50				2.0	3.3	9.4	0.62	3.3	A1	B1
SA 10.2	4.8	120	VD00071-4-0,06	0.06	1,680	0.5	0.6	2.1	0.40	0.6	A1	B1
	6.7					0.5	0.6	2.1	0.40	0.6	A1	B1
	9.6		VD00071-4-0,12	0.12	1,680	1.0	1.1	3.1	0.40	1.1	A1	B1
	13					1.0	1.3	3.1	0.40	1.3	A1	B1
	19		VD00071-2-0,25	0.25	3,360	1.4	1.6	4.7	0.52	1.6	A1	B1
	26					1.4	1.9	4.7	0.52	1.9	A1	B1
	38		AD00071-4-0,40	0.40	1,680	2.6	2.7	8.9	0.42	2.7	A1	B1
	54					2.6	3.1	8.9	0.42	3.1	A1	B1
	75		AD00071-2-0,70	0.70	3,360	3.1	4.2	17	0.54	4.2	A1	B1
	108					3.1	4.7	17	0.54	4.7	A1	B1
	150		AD00071-2-1,00	1.00	3,360	3.7	5.6	17	0.64	5.6	A1	B1
	216	100				3.7	6.3	17	0.64	6.3	A1	B1
SA 14.2	4.8	250	VD00090-4-0,12	0.12	1,680	0.5	0.8	2.9	0.60	0.8	A1	B1
	6.7					0.5	1.0	2.9	0.60	1.0	A1	B1
	9.6		VD00090-4-0,25	0.25	1,680	1.0	1.7	5.4	0.60	1.7	A1	B1
	13					1.0	1.8	5.4	0.60	1.8	A1	B1
	19		VD00090-2-0,45	0.45	3,360	1.6	3.1	9.4	0.64	3.1	A1	B1
	26					1.6	3.7	9.4	0.64	3.7	A1	B1
	38		AD00090-4-0,75	0.75	1,680	2.7	4.5	17	0.62	4.5	A1	B1
	54					2.7	5.2	17	0.62	5.2	A1	B1
	75		AD00090-2-1,40	1.40	3,360	4.9	7.9	40	0.60	7.9	A2	B2
	108					4.9	9.4	40	0.60	9.4	A2	B2
	150		AD00090-2-1,80	1.80	3,360	5.5	13	40	0.65	12	A2	B2
	216	200				5.5	13	40	0.65	12	A2	B2
SA 14.6	4.8	500	VD00090-4-0,20	0.20	1,680	0.9	1.6	5.4	0.54	1.6	A1	B1
	6.7					0.9	1.8	5.4	0.54	1.8	A1	B1
	9.6		VD00090-4-0,40	0.40	1,680	1.9	3.1	9.7	0.56	3.1	A1	B1
	13					1.9	3.7	9.7	0.56	3.7	A1	B1
	19		VD00090-2-0,80	0.80	3,360	3.8	5.2	19	0.51	5.2	A1	B2
	26					3.8	5.7	19	0.51	5.7	A1	B2
	38		AD00090-4-1,60	1.60	1,680	5.5	7.8	40	0.57	7.8	A2	B2
	54					5.5	9.4	40	0.57	9.4	A2	B2
	75		AD00090-2-3,00	3.00	3,360	9.4	15	71	0.60	15	A2	B3
	108					9.4	17	71	0.60	17	A2	B3
	150		AD00090-2-3,30	3.30	3,360	9.9	22	71	0.65	22	A2	B3
	216	400				9.9	23	71	0.65	22	A2	B3
SA 16.2	4.8	1,000	VD00112-4-0,40	0.40	1,680	1.5	2.8	10	0.65	2.8	A1	B1
	6.7					1.5	3.0	10	0.65	3.0	A1	B1
	9.6		VD00112-4-0,80	0.80	1,680	3.1	5.4	23	0.57	5.4	A1	B2
	13					3.1	5.7	23	0.57	5.7	A1	B2
	19		VD00112-2-1,50	1.50	3,360	5.8	9.4	42	0.60	9.4	A2	B2
	26					5.8	11	42	0.60	11	A2	B2
	38		AD00112-4-3,00	3.00	1,680	8.9	16	63	0.71	16	A2	B3
	54					8.9	18	63	0.71	18	A2	B3
	75		AD00112-2-5,00	5.00	3,360	13	26	119	0.80	26	A2	–
	108					13	31	119	0.80	26	A2	–
	150	800	AD00112-2-6,00	6.00	3,360	15	37	119	0.83	26	A2	–
	216					15	47	119	0.83	26	A2	–

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SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 480 V/60 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4.8	30	VD00063-4-0,02	0.02	1,680	0.4	0.4	1.0	0.40	0.4	A1	B1
	6.7					0.4	0.4	1.0	0.40	0.4	A1	B1
	9.6		VD00063-4-0,04	0.04	1,680	0.4	0.4	1.0	0.50	0.4	A1	B1
	13					0.4	0.5	1.0	0.50	0.5	A1	B1
	19		VD00063-2-0,06	0.06	3,360	0.6	0.6	1.9	0.42	0.6	A1	B1
	26					0.6	0.7	1.9	0.42	0.7	A1	B1
	38		AD00063-4-0,10	0.10	1,680	1.0	1.0	2.4	0.42	1.0	A1	B1
	54					1.0	1.0	2.4	0.42	1.0	A1	B1
	75		AD00063-2-0,20	0.20	3,360	0.8	1.2	4.4	0.60	1.2	A1	B1
	108					0.8	1.3	4.4	0.60	1.3	A1	B1
	150		AD00063-2-0,30	0.30	3,360	0.9	1.6	4.4	0.70	1.6	A1	B1
	216	25				0.9	1.7	4.4	0.70	1.7	A1	B1
SA 07.6	4.8	60	VD00063-4-0,03	0.03	1,680	0.4	0.5	1.0	0.43	0.5	A1	B1
	6.7					0.4	0.5	1.0	0.43	0.5	A1	B1
	9.6		VD00063-4-0,06	0.06	1,680	0.6	0.7	1.6	0.38	0.7	A1	B1
	13					0.6	0.7	1.6	0.38	0.7	A1	B1
	19		VD00063-2-0,12	0.12	3,360	0.7	0.9	3.0	0.52	0.9	A1	B1
	26					0.7	1.0	3.0	0.52	1.0	A1	B1
	38		AD00063-4-0,20	0.20	1,680	1.6	1.9	4.6	0.42	1.9	A1	B1
	54					1.6	2.0	4.6	0.42	2.0	A1	B1
	75		AD00063-2-0,40	0.40	3,360	1.8	2.3	9.0	0.53	2.3	A1	B1
	108					1.8	2.5	9.0	0.53	2.5	A1	B1
	150		AD00063-2-0,50	0.50	3,360	1.9	3.0	9.0	0.62	3.0	A1	B1
	216	50				1.9	3.2	9.0	0.62	3.2	A1	B1
SA 10.2	4.8	120	VD00071-4-0,06	0.06	1,680	0.5	0.6	2.0	0.40	0.6	A1	B1
	6.7					0.5	0.6	2.0	0.40	0.6	A1	B1
	9.6		VD00071-4-0,12	0.12	1,680	1.0	1.1	3.0	0.40	1.1	A1	B1
	13					1.0	1.2	3.0	0.40	1.2	A1	B1
	19		VD00071-2-0,25	0.25	3,360	1.3	1.5	4.5	0.52	1.5	A1	B1
	26					1.3	1.8	4.5	0.52	1.8	A1	B1
	38		AD00071-4-0,40	0.40	1,680	2.5	2.6	8.5	0.42	2.6	A1	B1
	54					2.5	3.0	8.5	0.42	3.0	A1	B1
	75		AD00071-2-0,70	0.70	3,360	3.0	4.0	16	0.54	4.0	A1	B1
	108					3.0	4.5	16	0.54	4.5	A1	B1
	150		AD00071-2-1,00	1.00	3,360	3.5	5.4	16	0.64	5.4	A1	B1
	216	100				3.5	6.0	16	0.64	6.0	A1	B1
SA 14.2	4.8	250	VD00090-4-0,12	0.12	1,680	0.5	0.8	2.8	0.60	0.8	A1	B1
	6.7					0.5	1.0	2.8	0.60	1.0	A1	B1
	9.6		VD00090-4-0,25	0.25	1,680	1.0	1.6	5.2	0.60	1.6	A1	B1
	13					1.0	1.7	5.2	0.60	1.7	A1	B1
	19		VD00090-2-0,45	0.45	3,360	1.5	3.0	9.0	0.64	3.0	A1	B1
	26					1.5	3.5	9.0	0.64	3.5	A1	B1
	38		AD00090-4-0,75	0.75	1,680	2.6	4.3	16	0.62	4.3	A1	B1
	54					2.6	5.0	16	0.62	5.0	A1	B1
	75		AD00090-2-1,40	1.40	3,360	4.7	7.6	38	0.60	7.6	A2	B2
	108					4.7	9.0	38	0.60	9.0	A2	B2
	150		AD00090-2-1,80	1.80	3,360	5.3	12	38	0.65	11	A2	B2
	216	200				5.3	12	38	0.65	11	A2	B2
SA 14.6	4.8	500	VD00090-4-0,20	0.20	1,680	0.9	1.5	5.2	0.54	1.5	A1	B1
	6.7					0.9	1.7	5.2	0.54	1.7	A1	B1
	9.6		VD00090-4-0,40	0.40	1,680	1.8	3.0	9.3	0.56	3.0	A1	B1
	13					1.8	3.5	9.3	0.56	3.5	A1	B1
	19		VD00090-2-0,80	0.80	3,360	3.6	5.0	18	0.51	5.0	A1	B1
	26					3.6	5.5	18	0.51	5.5	A1	B1
	38		AD00090-4-1,60	1.60	1,680	5.3	7.5	38	0.57	7.5	A2	B2
	54					5.3	9.0	38	0.57	9.0	A2	B2
	75		AD00090-2-3,00	3.00	3,360	9.0	14	68	0.60	14	A2	B3
	108					9.0	16	68	0.60	16	A2	B3
	150		AD00090-2-3,30	3.30	3,360	9.5	21	68	0.65	21	A2	B3
	216	400				9.5	22	68	0.65	22	A2	B3
SA 16.2	4.8	1,000	VD00112-4-0,40	0.40	1,680	1.4	2.7	10	0.65	2.7	A1	B1
	6.7					1.4	2.9	10	0.65	2.9	A1	B1
	9.6		VD00112-4-0,80	0.80	1,680	3.0	5.2	22	0.57	5.2	A1	B2
	13					3.0	5.5	22	0.57	5.5	A1	B2
	19		VD00112-2-1,50	1.50	3,360	5.6	9.0	40	0.60	9.0	A2	B2
	26					5.6	11	40	0.60	11	A2	B2
	38		AD00112-4-3,00	3.00	1,680	8.5	15	60	0.71	15	A2	B3
	54					8.5	17	60	0.71	17	A2	B3
	75		AD00112-2-5,00	5.00	3,360	12	25	114	0.80	25	A2	–
	108					12	30	114	0.80	25	A2	–
	150	800	AD00112-2-6,00	6.00	3,360	14	35	114	0.83	25	A2	–
	216					14	45	114	0.83	25	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 500 V/50 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	Contactor	Thyristor
SA 07.2	4	30	VD00063-4-0,02	0.02	1,400	0.3	0.3	0.8	0.40	0.3	A1	B1
	5.6					0.3	0.3	0.8	0.40	0.3	A1	B1
	8		VD00063-4-0,04	0.04	1,400	0.3	0.3	0.8	0.50	0.3	A1	B1
	11					0.3	0.4	0.8	0.50	0.4	A1	B1
	16		VD00063-2-0,06	0.06	2,800	0.5	0.5	1.5	0.42	0.5	A1	B1
	22					0.5	0.5	1.5	0.42	0.5	A1	B1
	32		AD00063-4-0,10	0.10	1,400	0.8	0.8	1.9	0.42	0.8	A1	B1
	45					0.8	0.8	1.9	0.42	0.8	A1	B1
	63		AD00063-2-0,20	0.20	2,800	0.6	1.0	3.5	0.60	1.0	A1	B1
	90					0.6	1.0	3.5	0.60	1.0	A1	B1
	125		AD00063-2-0,30	0.30	2,800	0.7	1.3	3.5	0.70	1.3	A1	B1
	180	25				0.7	1.4	3.5	0.70	1.4	A1	B1
SA 07.6	4	60	VD00063-4-0,03	0.03	1,400	0.3	0.4	0.8	0.43	0.4	A1	B1
	5.6					0.3	0.4	0.8	0.43	0.4	A1	B1
	8		VD00063-4-0,06	0.06	1,400	0.5	0.5	1.3	0.38	0.5	A1	B1
	11					0.5	0.6	1.3	0.38	0.6	A1	B1
	16		VD00063-2-0,12	0.12	2,800	0.6	0.7	2.4	0.52	0.7	A1	B1
	22					0.6	0.8	2.4	0.52	0.8	A1	B1
	32		AD00063-4-0,20	0.20	1,400	1.3	1.5	3.7	0.42	1.5	A1	B1
	45					1.3	1.6	3.7	0.42	1.6	A1	B1
	63		AD00063-2-0,40	0.40	2,800	1.4	1.8	7.2	0.53	1.8	A1	B1
	90					1.4	2.0	7.2	0.53	2.0	A1	B1
	125		AD00063-2-0,50	0.50	2,800	1.5	2.4	7.2	0.62	2.4	A1	B1
	180	50				1.5	2.6	7.2	0.62	2.6	A1	B1
SA 10.2	4	120	VD00071-4-0,06	0.06	1,400	0.4	0.5	1.6	0.40	0.5	A1	B1
	5.6					0.4	0.5	1.6	0.40	0.5	A1	B1
	8		VD00071-4-0,12	0.12	1,400	0.8	0.9	2.4	0.40	0.9	A1	B1
	11					0.8	1.0	2.4	0.40	1.0	A1	B1
	16		VD00071-2-0,25	0.25	2,800	1.0	1.2	3.6	0.52	1.2	A1	B1
	22					1.0	1.4	3.6	0.52	1.4	A1	B1
	32		AD00071-4-0,40	0.40	1,400	2.0	2.1	6.8	0.42	2.1	A1	B1
	45					2.0	2.4	6.8	0.42	2.4	A1	B1
	63		AD00071-2-0,70	0.70	2,800	2.4	3.2	13	0.54	3.2	A1	B1
	90					2.4	3.6	13	0.54	3.6	A1	B1
	125		AD00071-2-1,00	1.00	2,800	2.8	4.3	13	0.64	4.3	A1	B1
	180	100				2.8	4.8	13	0.64	4.8	A1	B1
SA 14.2	4	250	VD00090-4-0,12	0.12	1,400	0.4	0.6	2.2	0.60	0.6	A1	B1
	5.6					0.4	0.8	2.2	0.60	0.8	A1	B1
	8		VD00090-4-0,25	0.25	1,400	0.8	1.3	4.2	0.60	1.3	A1	B1
	11					0.8	1.4	4.2	0.60	1.4	A1	B1
	16		VD00090-2-0,45	0.45	2,800	1.2	2.4	7.2	0.64	2.4	A1	B1
	22					1.2	2.8	7.2	0.64	2.8	A1	B1
	32		AD00090-4-0,75	0.75	1,400	2.1	3.4	13	0.62	3.4	A1	B1
	45					2.1	4.0	13	0.62	4.0	A1	B1
	63		AD00090-2-1,40	1.40	2,800	3.8	6.1	30	0.60	6.1	A2	B2
	90					3.8	7.2	30	0.60	7.2	A2	B2
	125		AD00090-2-1,80	1.80	2,800	4.2	9.6	30	0.65	8.6	A2	B2
	180	200				4.2	9.6	30	0.65	8.6	A2	B2
SA 14.6	4	500	VD00090-4-0,20	0.20	1,400	0.7	1.2	4.2	0.54	1.2	A1	B1
	5.6					0.7	1.4	4.2	0.54	1.4	A1	B1
	8		VD00090-4-0,40	0.40	1,400	1.4	2.4	7.4	0.56	2.4	A1	B1
	11					1.4	2.8	7.4	0.56	2.8	A1	B1
	16		VD00090-2-0,80	0.80	2,800	2.9	4.0	14	0.51	4.0	A1	B1
	22					2.9	4.4	14	0.51	4.4	A1	B1
	32		AD00090-4-1,60	1.60	1,400	4.2	6.0	30	0.57	6.0	A2	B2
	45					4.2	7.2	30	0.57	7.2	A2	B2
	63		AD00090-2-3,00	3.00	2,800	7.2	11	54	0.60	11	A2	B3
	90					7.2	13	54	0.60	13	A2	B3
	125		AD00090-2-3,30	3.30	2,800	7.6	17	54	0.65	17	A2	B3
	180	400				7.6	18	54	0.65	17	A2	B3
SA 16.2	4	1,000	VD00112-4-0,40	0.40	1,400	1.1	2.2	8.0	0.65	2.2	A1	B1
	5.6					1.1	2.3	8.0	0.65	2.3	A1	B1
	8		VD00112-4-0,80	0.80	1,400	2.4	4.2	18	0.57	4.2	A1	B1
	11					2.4	4.4	18	0.57	4.4	A1	B1
	16		VD00112-2-1,50	1.50	2,800	4.5	7.2	32	0.60	7.2	A2	B2
	22					4.5	8.4	32	0.60	8.4	A2	B2
	32		AD00112-4-3,00	3.00	1,400	6.8	12	48	0.71	12	A2	B3
	45					6.8	14	48	0.71	14	A2	B3
	63		AD00112-2-5,00	5.00	2,800	9.6	20	91	0.80	20	A3	–
	90					9.6	24	91	0.80	20	A3	–
	125	800	AD00112-2-6,00	6.00	2,800	11	28	91	0.83	20	A3	–
	180					11	36	91	0.83	20	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

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SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 30 min, 220 V/60 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	Contactor	Thyristor
SA 07.2	4.8	20	VD0L063-4-0,01	0.01	1,680	0.8	0.9	2.2	0.40	0.9	A1	B1
	6.7					0.8	0.9	2.2	0.40	0.9	A1	B1
	9.6		VD0L063-4-0,03	0.03	1,680	0.9	0.9	2.0	0.50	0.9	A1	B1
	13					0.9	0.9	2.0	0.50	0.9	A1	B1
	19		VD0L063-2-0,04	0.04	3,360	1.1	1.3	3.7	0.43	1.3	A1	B1
	26					1.1	1.3	3.7	0.43	1.3	A1	B1
	38		AD0L063-4-0,07	0.07	1,680	1.7	2.0	4.4	0.40	2.0	A1	B1
	54					1.7	2.0	4.4	0.40	2.0	A1	B1
	75		AD0L063-2-0,14	0.14	3,360	1.5	2.0	7.9	0.55	2.0	A1	B1
	108					1.5	2.2	7.9	0.55	2.2	A1	B1
	150		AD0L063-2-0,21	0.21	3,360	1.5	2.6	7.9	0.70	2.6	A1	B1
	216					1.5	3.1	7.9	0.70	3.1	A1	B1
SA 07.6	4.8	40	VD0L063-4-0,02	0.02	1,680	0.9	0.9	2.2	0.50	0.9	A1	B1
	6.7					0.9	0.9	2.2	0.50	0.9	A1	B1
	9.6		VD0L063-4-0,04	0.04	1,680	1.1	1.1	3.1	0.45	1.1	A1	B1
	13					1.1	1.1	3.1	0.45	1.1	A1	B1
	19		VD0L063-2-0,08	0.08	3,360	1.1	1.7	5.5	0.52	1.7	A1	B1
	26					1.1	1.7	5.5	0.52	1.7	A1	B1
	38		AD0L063-4-0,14	0.14	1,680	2.6	3.3	7.6	0.40	3.3	A1	B1
	54					2.6	3.3	7.6	0.40	3.3	A1	B1
	75		AD0L063-2-0,28	0.28	3,360	2.4	3.5	12	0.53	3.5	A1	B1
	108					2.4	3.7	12	0.53	3.7	A1	B1
	150		AD0L063-2-0,35	0.35	3,360	2.6	4.4	12	0.60	4.4	A1	B1
	216	30				2.6	4.4	12	0.60	4.4	A1	B1
SA 10.2	4.8	90	VD0L071-4-0,04	0.04	1,680	0.8	1.1	3.3	0.40	1.1	A1	B1
	6.7					0.8	1.1	3.3	0.40	1.1	A1	B1
	9.6		VD0L071-4-0,08	0.08	1,680	1.7	2.0	5.7	0.40	2.0	A1	B1
	13					1.7	2.2	5.7	0.40	2.2	A1	B1
	19		VD0L071-2-0,17	0.17	3,360	2.2	2.4	8.7	0.52	2.4	A1	B1
	26					2.2	2.8	8.7	0.52	2.8	A1	B1
	38		AD0L071-4-0,28	0.28	1,680	3.5	4.4	16	0.43	4.4	A1	B1
	54					3.5	4.8	16	0.43	4.8	A1	B1
	75		AD0L071-2-0,50	0.50	3,360	3.9	5.5	26	0.56	5.5	A1	B2
	108					3.9	7.0	26	0.56	7.0	A1	B2
	150		AD0L071-2-0,70	0.70	3,360	4.4	8.3	26	0.67	8.3	A1	B2
	216	70				4.4	8.7	26	0.67	8.7	A1	B2
SA 14.2	4.8	180	VD0L090-4-0,08	0.08	1,680	0.9	1.3	5.7	0.60	1.3	A1	B1
	6.7					0.9	1.5	5.7	0.60	1.5	A1	B1
	9.6		VD0L090-4-0,18	0.18	1,680	2.0	3.1	9.2	0.60	3.1	A1	B1
	13					2.0	3.3	9.2	0.60	3.3	A1	B1
	19		VD0L090-2-0,30	0.30	3,360	2.0	4.4	16	0.68	4.4	A1	B1
	26					2.0	5.0	16	0.68	5.0	A1	B1
	38		AD0L090-4-0,50	0.50	1,680	4.4	6.5	26	0.56	6.5	A1	B2
	54					4.4	7.6	26	0.56	7.6	A1	B2
	75		AD0L090-2-1,00	1.00	3,360	6.8	12	61	0.65	12	A2	B3
	108					6.8	13	61	0.65	13	A2	B3
	150		AD0L090-2-1,30	1.30	3,360	7.6	18	61	0.73	18	A2	–
	216	140				7.6	18	61	0.73	18	A2	–
SA 14.6	4.8	360	VD0L090-4-0,14	0.14	1,680	1.5	2.4	8.5	0.55	2.4	A1	B1
	6.7					1.5	2.6	8.5	0.55	2.6	A1	B1
	9.6		VD0L090-4-0,30	0.30	1,680	3.5	5.5	19	0.52	5.5	A1	B2
	13					3.5	6.1	19	0.52	6.1	A1	B2
	19		VD0L090-2-0,60	0.60	3,360	5.0	7.9	33	0.61	7.9	A2	B2
	26					5.0	8.3	33	0.61	8.3	A2	B2
	38		AD0L090-4-1,00	1.00	1,680	7.9	13	65	0.60	13	A2	B3
	54					7.9	14	65	0.60	14	A2	B3
	75		AD0L090-2-2,00	2.00	3,360	12	21	120	0.69	21	A2	–
	108					12	24	120	0.69	24	A2	–
	150		AD0L090-2-2,30	2.30	3,360	13	31	120	0.72	31	A2	–
	216	290				13	33	120	0.72	33	A2	–
SA 16.2	4.8	710	VD0L112-4-0,30	0.30	1,680	2.6	5.0	17	0.60	5.0	A1	B1
	6.7					2.6	5.5	17	0.60	5.5	A1	B1
	9.6		VD0L112-4-0,60	0.60	1,680	5.0	8.7	37	0.53	8.7	A2	B2
	13					5.0	9.8	37	0.53	9.8	A2	B2
	19		VD0L112-2-1,00	1.00	3,360	7.0	13	72	0.68	13	A2	B3
	26					7.0	15	72	0.68	15	A2	B3
	38		AD0L112-4-2,00	2.00	1,680	13	22	87	0.65	22	A2	–
	54					13	26	87	0.65	24	A2	–
	75		AD0L112-2-3,50	3.50	3,360	19	39	196	0.78	39	A4	–
	108					19	46	196	0.78	42	A4	–
	150	570	AD0L112-2-4,00	4.00	3,360	20	50	196	0.81	42	A4	–
	216					20	68	196	0.81	42	A4	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

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SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 30 min, 230 V/50 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	Contactor	Thyristor
SA 07.2	4	20	VD0L063-4-0,01	0.01	1,400	0.6	0.7	1.7	0.40	0.7	A1	B1
	5.6					0.6	0.7	1.7	0.40	0.7	A1	B1
	8		VD0L063-4-0,03	0.03	1,400	0.7	0.7	1.6	0.50	0.7	A1	B1
	11					0.7	0.7	1.6	0.50	0.7	A1	B1
	16		VD0L063-2-0,04	0.04	2,800	0.9	1.0	3.0	0.43	1.0	A1	B1
	22					0.9	1.0	3.0	0.43	1.0	A1	B1
	32		AD0L063-4-0,07	0.07	1,400	1.4	1.6	3.5	0.40	1.6	A1	B1
	45					1.4	1.6	3.5	0.40	1.6	A1	B1
	63		AD0L063-2-0,14	0.14	2,800	1.2	1.6	6.3	0.55	1.6	A1	B1
	90					1.2	1.7	6.3	0.55	1.7	A1	B1
	125		AD0L063-2-0,21	0.21	2,800	1.2	2.1	6.3	0.70	2.1	A1	B1
	180					1.2	2.4	6.3	0.70	2.4	A1	B1
SA 07.6	4	40	VD0L063-4-0,02	0.02	1,400	0.7	0.7	1.7	0.50	0.7	A1	B1
	5.6					0.7	0.7	1.7	0.50	0.7	A1	B1
	8		VD0L063-4-0,04	0.04	1,400	0.9	0.9	2.4	0.45	0.9	A1	B1
	11					0.9	0.9	2.4	0.45	0.9	A1	B1
	16		VD0L063-2-0,08	0.08	2,800	0.9	1.4	4.3	0.52	1.4	A1	B1
	22					0.9	1.4	4.3	0.52	1.4	A1	B1
	32		AD0L063-4-0,14	0.14	1,400	2.1	2.6	6.1	0.40	2.6	A1	B1
	45					2.1	2.6	6.1	0.40	2.6	A1	B1
	63		AD0L063-2-0,28	0.28	2,800	1.9	2.8	9.9	0.53	2.8	A1	B1
	90					1.9	3.0	9.9	0.53	3.0	A1	B1
	125		AD0L063-2-0,35	0.35	2,800	2.1	3.5	9.9	0.60	3.5	A1	B1
	180	30				2.1	3.5	9.9	0.60	3.5	A1	B1
SA 10.2	4	90	VD0L071-4-0,04	0.04	1,400	0.6	0.9	2.6	0.40	0.9	A1	B1
	5.6					0.6	0.9	2.6	0.40	0.9	A1	B1
	8		VD0L071-4-0,08	0.08	1,400	1.4	1.6	4.5	0.40	1.6	A1	B1
	11					1.4	1.7	4.5	0.40	1.7	A1	B1
	16		VD0L071-2-0,17	0.17	2,800	1.7	1.9	7.0	0.52	1.9	A1	B1
	22					1.7	2.3	7.0	0.52	2.3	A1	B1
	32		AD0L071-4-0,28	0.28	1,400	2.8	3.5	13	0.43	3.5	A1	B1
	45					2.8	3.8	13	0.43	3.8	A1	B1
	63		AD0L071-2-0,50	0.50	2,800	3.1	4.3	21	0.56	4.3	A1	B2
	90					3.1	5.6	21	0.56	5.6	A1	B2
	125		AD0L071-2-0,70	0.70	2,800	3.5	6.6	21	0.67	6.6	A1	B2
	180	70				3.5	7.0	21	0.67	7.0	A1	B2
SA 14.2	4	180	VD0L090-4-0,08	0.08	1,400	0.7	1.0	4.5	0.60	1.0	A1	B1
	5.6					0.7	1.2	4.5	0.60	1.2	A1	B1
	8		VD0L090-4-0,18	0.18	1,400	1.6	2.4	7.3	0.60	2.4	A1	B1
	11					1.6	2.6	7.3	0.60	2.6	A1	B1
	16		VD0L090-2-0,30	0.30	2,800	1.6	3.5	13	0.68	3.5	A1	B1
	22					1.6	4.0	13	0.68	4.0	A1	B1
	32		AD0L090-4-0,50	0.50	1,400	3.5	5.2	21	0.56	5.2	A1	B2
	45					3.5	6.1	21	0.56	6.1	A1	B2
	63		AD0L090-2-1,00	1.00	2,800	5.4	9.6	49	0.65	9.6	A2	B3
	90					5.4	10	49	0.65	10	A2	B3
	125		AD0L090-2-1,30	1.30	2,800	6.1	14	49	0.73	14	A2	B3
	180	140				6.1	14	49	0.73	14	A2	B3
SA 14.6	4	360	VD0L090-4-0,14	0.14	1,400	1.2	1.9	6.8	0.55	1.9	A1	B1
	5.6					1.2	2.1	6.8	0.55	2.1	A1	B1
	8		VD0L090-4-0,30	0.30	1,400	2.8	4.3	15	0.52	4.3	A1	B1
	11					2.8	4.9	15	0.52	4.9	A1	B1
	16		VD0L090-2-0,60	0.60	2,800	4.0	6.3	26	0.61	6.3	A1	B2
	22					4.0	6.6	26	0.61	6.6	A1	B2
	32		AD0L090-4-1,00	1.00	1,400	6.3	10	52	0.60	10	A2	B3
	45					6.3	11	52	0.60	11	A2	B3
	63		AD0L090-2-2,00	2.00	2,800	9.9	17	96	0.69	17	A2	–
	90					9.9	19	96	0.69	19	A2	–
	125		AD0L090-2-2,30	2.30	2,800	10	24	96	0.72	24	A2	–
	180	290				10	26	96	0.72	26	A2	–
SA 16.2	4	710	VD0L112-4-0,30	0.30	1,400	2.1	4.0	14	0.60	4.0	A1	B1
	5.6					2.1	4.3	14	0.60	4.3	A1	B1
	8		VD0L112-4-0,60	0.60	1,400	4.0	7.0	30	0.53	7.0	A2	B2
	11					4.0	7.8	30	0.53	7.8	A2	B2
	16		VD0L112-2-1,00	1.00	2,800	5.6	11	57	0.68	11	A2	B3
	22					5.6	12	57	0.68	12	A2	B3
	32		AD0L112-4-2,00	2.00	1,400	10	17	70	0.65	17	A2	–
	45					10	21	70	0.65	20	A2	–
	63		AD0L112-2-3,50	3.50	2,800	15	31	157	0.78	31	A3	–
	90					15	37	157	0.78	34	A3	–
	125	570	AD0L112-2-4,00	4.00	2,800	16	40	157	0.81	34	A3	–
	180					16	54	157	0.81	34	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 30 min, 380 V/50 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4	20	VD0L063-4-0,01	0.01	1,400	0.4	0.4	1.1	0.40	0.4	A1	B1
	5.6					0.4	0.4	1.1	0.40	0.4	A1	B1
	8		VD0L063-4-0,03	0.03	1,400	0.4	0.4	0.9	0.50	0.4	A1	B1
	11					0.4	0.4	0.9	0.50	0.4	A1	B1
	16		VD0L063-2-0,04	0.04	2,800	0.5	0.6	1.8	0.43	0.6	A1	B1
	22					0.5	0.6	1.8	0.43	0.6	A1	B1
	32		AD0L063-4-0,07	0.07	1,400	0.8	0.9	2.1	0.40	0.9	A1	B1
	45					0.8	0.9	2.1	0.40	0.9	A1	B1
	63		AD0L063-2-0,14	0.14	2,800	0.7	0.9	3.8	0.55	0.9	A1	B1
	90					0.7	1.1	3.8	0.55	1.1	A1	B1
	125		AD0L063-2-0,21	0.21	2,800	0.7	1.3	3.8	0.70	1.3	A1	B1
	180					0.7	1.5	3.8	0.70	1.5	A1	B1
SA 07.6	4	40	VD0L063-4-0,02	0.02	1,400	0.4	0.4	1.1	0.50	0.4	A1	B1
	5.6					0.4	0.4	1.1	0.50	0.4	A1	B1
	8		VD0L063-4-0,04	0.04	1,400	0.5	0.5	1.5	0.45	0.5	A1	B1
	11					0.5	0.5	1.5	0.45	0.5	A1	B1
	16		VD0L063-2-0,08	0.08	2,800	0.5	0.8	2.6	0.52	0.8	A1	B1
	22					0.5	0.8	2.6	0.52	0.8	A1	B1
	32		AD0L063-4-0,14	0.14	1,400	1.3	1.6	3.7	0.40	1.6	A1	B1
	45					1.3	1.6	3.7	0.40	1.6	A1	B1
	63		AD0L063-2-0,28	0.28	2,800	1.2	1.7	6.0	0.53	1.7	A1	B1
	90					1.2	1.8	6.0	0.53	1.8	A1	B1
	125		AD0L063-2-0,35	0.35	2,800	1.3	2.1	6.0	0.60	2.1	A1	B1
	180	30				1.3	2.1	6.0	0.60	2.1	A1	B1
SA 10.2	4	90	VD0L071-4-0,04	0.04	1,400	0.4	0.5	1.6	0.40	0.5	A1	B1
	5.6					0.4	0.5	1.6	0.40	0.5	A1	B1
	8		VD0L071-4-0,08	0.08	1,400	0.8	0.9	2.7	0.40	0.9	A1	B1
	11					0.8	1.1	2.7	0.40	1.1	A1	B1
	16		VD0L071-2-0,17	0.17	2,800	1.1	1.2	4.2	0.52	1.2	A1	B1
	22					1.1	1.4	4.2	0.52	1.4	A1	B1
	32		AD0L071-4-0,28	0.28	1,400	1.7	2.1	7.6	0.43	2.1	A1	B1
	45					1.7	2.3	7.6	0.43	2.3	A1	B1
	63		AD0L071-2-0,50	0.50	2,800	1.9	2.6	13	0.56	2.6	A1	B1
	90					1.9	3.4	13	0.56	3.4	A1	B1
	125		AD0L071-2-0,70	0.70	2,800	2.1	4.0	13	0.67	4.0	A1	B1
	180	70				2.1	4.2	13	0.67	4.2	A1	B1
SA 14.2	4	180	VD0L090-4-0,08	0.08	1,400	0.4	0.6	2.7	0.60	0.6	A1	B1
	5.6					0.4	0.7	2.7	0.60	0.7	A1	B1
	8		VD0L090-4-0,18	0.18	1,400	0.9	1.5	4.4	0.60	1.5	A1	B1
	11					0.9	1.6	4.4	0.60	1.6	A1	B1
	16		VD0L090-2-0,30	0.30	2,800	0.9	2.1	7.6	0.68	2.1	A1	B1
	22					0.9	2.4	7.6	0.68	2.4	A1	B1
	32		AD0L090-4-0,50	0.50	1,400	2.1	3.2	13	0.56	3.2	A1	B1
	45					2.1	3.7	13	0.56	3.7	A1	B1
	63		AD0L090-2-1,00	1.00	2,800	3.3	5.8	29	0.65	5.8	A2	B2
	90					3.3	6.3	29	0.65	6.3	A2	B2
	125		AD0L090-2-1,30	1.30	2,800	3.7	8.6	29	0.73	8.3	A2	B2
	180	140				3.7	8.6	29	0.73	8.3	A2	B2
SA 14.6	4	360	VD0L090-4-0,14	0.14	1,400	0.7	1.2	4.1	0.55	1.2	A1	B1
	5.6					0.7	1.3	4.1	0.55	1.3	A1	B1
	8		VD0L090-4-0,30	0.30	1,400	1.7	2.6	8.9	0.52	2.6	A1	B1
	11					1.7	2.9	8.9	0.52	2.9	A1	B1
	16		VD0L090-2-0,60	0.60	2,800	2.4	3.8	16	0.61	3.8	A1	B1
	22					2.4	4.0	16	0.61	4.0	A1	B1
	32		AD0L090-4-1,00	1.00	1,400	3.8	6.3	32	0.60	6.3	A2	B2
	45					3.8	6.8	32	0.60	6.8	A2	B2
	63		AD0L090-2-2,00	2.00	2,800	6.0	10	58	0.69	10	A2	B3
	90					6.0	12	58	0.69	12	A2	B3
	125		AD0L090-2-2,30	2.30	2,800	6.3	15	58	0.72	15	A2	B3
	180	290				6.3	16	58	0.72	16	A2	B3
SA 16.2	4	710	VD0L112-4-0,30	0.30	1,400	1.3	2.4	8.4	0.60	2.4	A1	B1
	5.6					1.3	2.6	8.4	0.60	2.6	A1	B1
	8		VD0L112-4-0,60	0.60	1,400	2.4	4.2	18	0.53	4.2	A1	B1
	11					2.4	4.7	18	0.53	4.7	A1	B1
	16		VD0L112-2-1,00	1.00	2,800	3.4	6.4	35	0.68	6.4	A2	B2
	22					3.4	7.2	35	0.68	7.2	A2	B2
	32		AD0L112-4-2,00	2.00	1,400	6.3	11	42	0.65	11	A2	B3
	45					6.3	13	42	0.65	12	A2	B3
	63		AD0L112-2-3,50	3.50	2,800	8.9	19	95	0.78	19	A2	–
	90					8.9	22	95	0.78	21	A2	–
	125	570	AD0L112-2-4,00	4.00	2,800	9.5	24	95	0.81	21	A2	–
	180					9.5	33	95	0.81	21	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

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SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 30 min, 380 V/60 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4.8	20	VD0L063-4-0,01	0.01	1,680	0.4	0.5	1.3	0.40	0.5	A1	B1
	6.7					0.4	0.5	1.3	0.40	0.5	A1	B1
	9.6		VD0L063-4-0,03	0.03	1,680	0.5	0.5	1.1	0.50	0.5	A1	B1
	13					0.5	0.5	1.1	0.50	0.5	A1	B1
	19		VD0L063-2-0,04	0.04	3,360	0.6	0.8	2.1	0.43	0.8	A1	B1
	26					0.6	0.8	2.1	0.43	0.8	A1	B1
	38		AD0L063-4-0,07	0.07	1,680	1.0	1.1	2.5	0.40	1.1	A1	B1
	54					1.0	1.1	2.5	0.40	1.1	A1	B1
	75		AD0L063-2-0,14	0.14	3,360	0.9	1.1	4.5	0.55	1.1	A1	B1
	108					0.9	1.3	4.5	0.55	1.3	A1	B1
	150		AD0L063-2-0,21	0.21	3,360	0.9	1.5	4.5	0.70	1.5	A1	B1
	216					0.9	1.8	4.5	0.70	1.8	A1	B1
SA 07.6	4.8	40	VD0L063-4-0,02	0.02	1,680	0.5	0.5	1.3	0.50	0.5	A1	B1
	6.7					0.5	0.5	1.3	0.50	0.5	A1	B1
	9.6		VD0L063-4-0,04	0.04	1,680	0.6	0.6	1.8	0.45	0.6	A1	B1
	13					0.6	0.6	1.8	0.45	0.6	A1	B1
	19		VD0L063-2-0,08	0.08	3,360	0.6	1.0	3.2	0.52	1.0	A1	B1
	26					0.6	1.0	3.2	0.52	1.0	A1	B1
	38		AD0L063-4-0,14	0.14	1,680	1.5	1.9	4.4	0.40	1.9	A1	B1
	54					1.5	1.9	4.4	0.40	1.9	A1	B1
	75		AD0L063-2-0,28	0.28	3,360	1.4	2.0	7.2	0.53	2.0	A1	B1
	108					1.4	2.1	7.2	0.53	2.1	A1	B1
	150		AD0L063-2-0,35	0.35	3,360	1.5	2.5	7.2	0.60	2.5	A1	B1
	216	30				1.5	2.5	7.2	0.60	2.5	A1	B1
SA 10.2	4.8	90	VD0L071-4-0,04	0.04	1,680	0.4	0.6	1.9	0.40	0.6	A1	B1
	6.7					0.4	0.6	1.9	0.40	0.6	A1	B1
	9.6		VD0L071-4-0,08	0.08	1,680	1.0	1.1	3.3	0.40	1.1	A1	B1
	13					1.0	1.3	3.3	0.40	1.3	A1	B1
	19		VD0L071-2-0,17	0.17	3,360	1.3	1.4	5.1	0.52	1.4	A1	B1
	26					1.3	1.6	5.1	0.52	1.6	A1	B1
	38		AD0L071-4-0,28	0.28	1,680	2.0	2.5	9.1	0.43	2.5	A1	B1
	54					2.0	2.8	9.1	0.43	2.8	A1	B1
	75		AD0L071-2-0,50	0.50	3,360	2.3	3.2	15	0.56	3.2	A1	B1
	108					2.3	4.0	15	0.56	4.0	A1	B1
	150		AD0L071-2-0,70	0.70	3,360	2.5	4.8	15	0.67	4.8	A1	B1
	216	70				2.5	5.1	15	0.67	5.1	A1	B1
SA 14.2	4.8	180	VD0L090-4-0,08	0.08	1,680	0.5	0.8	3.3	0.60	0.8	A1	B1
	6.7					0.5	0.9	3.3	0.60	0.9	A1	B1
	9.6		VD0L090-4-0,18	0.18	1,680	1.1	1.8	5.3	0.60	1.8	A1	B1
	13					1.1	1.9	5.3	0.60	1.9	A1	B1
	19		VD0L090-2-0,30	0.30	3,360	1.1	2.5	9.1	0.68	2.5	A1	B1
	26					1.1	2.9	9.1	0.68	2.9	A1	B1
	38		AD0L090-4-0,50	0.50	1,680	2.5	3.8	15	0.56	3.8	A1	B1
	54					2.5	4.4	15	0.56	4.4	A1	B1
	75		AD0L090-2-1,00	1.00	3,360	3.9	6.9	35	0.65	6.9	A2	B2
	108					3.9	7.6	35	0.65	7.6	A2	B2
	150		AD0L090-2-1,30	1.30	3,360	4.4	10	35	0.73	10	A2	B2
	216	140				4.4	10	35	0.73	10	A2	B2
SA 14.6	4.8	360	VD0L090-4-0,14	0.14	1,680	0.9	1.4	4.9	0.55	1.4	A1	B1
	6.7					0.9	1.5	4.9	0.55	1.5	A1	B1
	9.6		VD0L090-4-0,30	0.30	1,680	2.0	3.2	11	0.52	3.2	A1	B1
	13					2.0	3.5	11	0.52	3.5	A1	B1
	19		VD0L090-2-0,60	0.60	3,360	2.9	4.5	19	0.61	4.5	A1	B2
	26					2.9	4.8	19	0.61	4.8	A1	B2
	38		AD0L090-4-1,00	1.00	1,680	4.5	7.6	38	0.60	7.6	A2	B2
	54					4.5	8.2	38	0.60	8.2	A2	B2
	75		AD0L090-2-2,00	2.00	3,360	7.2	12	69	0.69	12	A2	B3
	108					7.2	14	69	0.69	14	A2	B3
	150		AD0L090-2-2,30	2.30	3,360	7.6	18	69	0.72	18	A2	–
	216	290				7.6	19	69	0.72	19	A2	–
SA 16.2	4.8	710	VD0L112-4-0,30	0.30	1,680	1.5	2.9	10	0.60	2.9	A1	B1
	6.7					1.5	3.2	10	0.60	3.2	A1	B1
	9.6		VD0L112-4-0,60	0.60	1,680	2.9	5.1	21	0.53	5.1	A1	B2
	13					2.9	5.7	21	0.53	5.7	A1	B2
	19		VD0L112-2-1,00	1.00	3,360	4.0	7.7	42	0.68	7.7	A2	B2
	26					4.0	8.6	42	0.68	8.6	A2	B2
	38		AD0L112-4-2,00	2.00	1,680	7.6	13	51	0.65	13	A2	B3
	54					7.6	15	51	0.65	14	A2	B3
	75		AD0L112-2-3,50	3.50	3,360	11	23	114	0.78	23	A2	–
	108					11	27	114	0.78	25	A2	–
	150	570	AD0L112-2-4,00	4.00	3,360	11	29	114	0.81	25	A2	–
	216					11	39	114	0.81	25	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 30 min, 400 V/50 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4	20	VD0L063-4-0,01	0.01	1,400	0.4	0.4	1.0	0.40	0.4	A1	B1
	5.6					0.4	0.4	1.0	0.40	0.4	A1	B1
	8		VD0L063-4-0,03	0.03	1,400	0.4	0.4	0.9	0.50	0.4	A1	B1
	11					0.4	0.4	0.9	0.50	0.4	A1	B1
	16		VD0L063-2-0,04	0.04	2,800	0.5	0.6	1.7	0.43	0.6	A1	B1
	22					0.5	0.6	1.7	0.43	0.6	A1	B1
	32		AD0L063-4-0,07	0.07	1,400	0.8	0.9	2.0	0.40	0.9	A1	B1
	45					0.8	0.9	2.0	0.40	0.9	A1	B1
	63		AD0L063-2-0,14	0.14	2,800	0.7	0.9	3.6	0.55	0.9	A1	B1
	90					0.7	1.0	3.6	0.55	1.0	A1	B1
	125		AD0L063-2-0,21	0.21	2,800	0.7	1.2	3.6	0.70	1.2	A1	B1
	180					0.7	1.4	3.6	0.70	1.4	A1	B1
SA 07.6	4	40	VD0L063-4-0,02	0.02	1,400	0.4	0.4	1.0	0.50	0.4	A1	B1
	5.6					0.4	0.4	1.0	0.50	0.4	A1	B1
	8		VD0L063-4-0,04	0.04	1,400	0.5	0.5	1.4	0.45	0.5	A1	B1
	11					0.5	0.5	1.4	0.45	0.5	A1	B1
	16		VD0L063-2-0,08	0.08	2,800	0.5	0.8	2.5	0.52	0.8	A1	B1
	22					0.5	0.8	2.5	0.52	0.8	A1	B1
	32		AD0L063-4-0,14	0.14	1,400	1.2	1.5	3.5	0.40	1.5	A1	B1
	45					1.2	1.5	3.5	0.40	1.5	A1	B1
	63		AD0L063-2-0,28	0.28	2,800	1.1	1.6	5.7	0.53	1.6	A1	B1
	90					1.1	1.7	5.7	0.53	1.7	A1	B1
	125		AD0L063-2-0,35	0.35	2,800	1.2	2.0	5.7	0.60	2.0	A1	B1
	180	30				1.2	2.0	5.7	0.60	2.0	A1	B1
SA 10.2	4	90	VD0L071-4-0,04	0.04	1,400	0.4	0.5	1.5	0.40	0.5	A1	B1
	5.6					0.4	0.5	1.5	0.40	0.5	A1	B1
	8		VD0L071-4-0,08	0.08	1,400	0.8	0.9	2.6	0.40	0.9	A1	B1
	11					0.8	1.0	2.6	0.40	1.0	A1	B1
	16		VD0L071-2-0,17	0.17	2,800	1.0	1.1	4.0	0.52	1.1	A1	B1
	22					1.0	1.3	4.0	0.52	1.3	A1	B1
	32		AD0L071-4-0,28	0.28	1,400	1.6	2.0	7.2	0.43	2.0	A1	B1
	45					1.6	2.2	7.2	0.43	2.2	A1	B1
	63		AD0L071-2-0,50	0.50	2,800	1.8	2.5	12	0.56	2.5	A1	B1
	90					1.8	3.2	12	0.56	3.2	A1	B1
	125		AD0L071-2-0,70	0.70	2,800	2.0	3.8	12	0.67	3.8	A1	B1
	180	70				2.0	4.0	12	0.67	4.0	A1	B1
SA 14.2	4	180	VD0L090-4-0,08	0.08	1,400	0.4	0.6	2.6	0.60	0.6	A1	B1
	5.6					0.4	0.7	2.6	0.60	0.7	A1	B1
	8		VD0L090-4-0,18	0.18	1,400	0.9	1.4	4.2	0.60	1.4	A1	B1
	11					0.9	1.5	4.2	0.60	1.5	A1	B1
	16		VD0L090-2-0,30	0.30	2,800	0.9	2.0	7.2	0.68	2.0	A1	B1
	22					0.9	2.3	7.2	0.68	2.3	A1	B1
	32		AD0L090-4-0,50	0.50	1,400	2.0	3.0	12	0.56	3.0	A1	B1
	45					2.0	3.5	12	0.56	3.5	A1	B1
	63		AD0L090-2-1,00	1.00	2,800	3.1	5.5	28	0.65	5.5	A2	B2
	90					3.1	6.0	28	0.65	6.0	A2	B2
	125		AD0L090-2-1,30	1.30	2,800	3.5	8.2	28	0.73	8.0	A2	B2
	180	140				3.5	8.2	28	0.73	8.0	A2	B2
SA 14.6	4	360	VD0L090-4-0,14	0.14	1,400	0.7	1.1	3.9	0.55	1.1	A1	B1
	5.6					0.7	1.2	3.9	0.55	1.2	A1	B1
	8		VD0L090-4-0,30	0.30	1,400	1.6	2.5	8.5	0.52	2.5	A1	B1
	11					1.6	2.8	8.5	0.52	2.8	A1	B1
	16		VD0L090-2-0,60	0.60	2,800	2.3	3.6	15	0.61	3.6	A1	B1
	22					2.3	3.8	15	0.61	3.8	A1	B1
	32		AD0L090-4-1,00	1.00	1,400	3.6	6.0	30	0.60	6.0	A2	B2
	45					3.6	6.5	30	0.60	6.5	A2	B2
	63		AD0L090-2-2,00	2.00	2,800	5.7	9.5	55	0.69	9.5	A2	B3
	90					5.7	11	55	0.69	11	A2	B3
	125		AD0L090-2-2,30	2.30	2,800	6.0	14	55	0.72	14	A2	B3
	180	290				6.0	15	55	0.72	15	A2	B3
SA 16.2	4	710	VD0L112-4-0,30	0.30	1,400	1.2	2.3	8.0	0.60	2.3	A1	B1
	5.6					1.2	2.5	8.0	0.60	2.5	A1	B1
	8		VD0L112-4-0,60	0.60	1,400	2.3	4.0	17	0.53	4.0	A1	B1
	11					2.3	4.5	17	0.53	4.5	A1	B1
	16		VD0L112-2-1,00	1.00	2,800	3.2	6.1	33	0.68	6.1	A2	B2
	22					3.2	6.8	33	0.68	6.8	A2	B2
	32		AD0L112-4-2,00	2.00	1,400	6.0	10	40	0.65	10	A2	B3
	45					6.0	12	40	0.65	11	A2	B3
	63		AD0L112-2-3,50	3.50	2,800	8.5	18	90	0.78	18	A2	–
	90					8.5	21	90	0.78	20	A2	–
	125	570	AD0L112-2-4,00	4.00	2,800	9.0	23	90	0.81	20	A2	–
	180					9.0	31	90	0.81	20	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

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SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 30 min, 400 V/60 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4.8	20	VD0L063-4-0,01	0.01	1,680	0.4	0.5	1.2	0.40	0.5	A1	B1
	6.7					0.4	0.5	1.2	0.40	0.5	A1	B1
	9.6		VD0L063-4-0,03	0.03	1,680	0.5	0.5	1.1	0.50	0.5	A1	B1
	13					0.5	0.5	1.1	0.50	0.5	A1	B1
	19		VD0L063-2-0,04	0.04	3,360	0.6	0.7	2.0	0.43	0.7	A1	B1
	26					0.6	0.7	2.0	0.43	0.7	A1	B1
	38		AD0L063-4-0,07	0.07	1,680	1.0	1.1	2.4	0.40	1.1	A1	B1
	54					1.0	1.1	2.4	0.40	1.1	A1	B1
	75		AD0L063-2-0,14	0.14	3,360	0.8	1.1	4.3	0.55	1.1	A1	B1
	108					0.8	1.2	4.3	0.55	1.2	A1	B1
	150		AD0L063-2-0,21	0.21	3,360	0.8	1.4	4.3	0.70	1.4	A1	B1
	216					0.8	1.7	4.3	0.70	1.7	A1	B1
SA 07.6	4.8	40	VD0L063-4-0,02	0.02	1,680	0.5	0.5	1.2	0.50	0.5	A1	B1
	6.7					0.5	0.5	1.2	0.50	0.5	A1	B1
	9.6		VD0L063-4-0,04	0.04	1,680	0.6	0.6	1.7	0.45	0.6	A1	B1
	13					0.6	0.6	1.7	0.45	0.6	A1	B1
	19		VD0L063-2-0,08	0.08	3,360	0.6	1.0	3.0	0.52	1.0	A1	B1
	26					0.6	1.0	3.0	0.52	1.0	A1	B1
	38		AD0L063-4-0,14	0.14	1,680	1.4	1.8	4.2	0.40	1.8	A1	B1
	54					1.4	1.8	4.2	0.40	1.8	A1	B1
	75		AD0L063-2-0,28	0.28	3,360	1.3	1.9	6.8	0.53	1.9	A1	B1
	108					1.3	2.0	6.8	0.53	2.0	A1	B1
	150		AD0L063-2-0,35	0.35	3,360	1.4	2.4	6.8	0.60	2.4	A1	B1
	216	30				1.4	2.4	6.8	0.60	2.4	A1	B1
SA 10.2	4.8	90	VD0L071-4-0,04	0.04	1,680	0.4	0.6	1.8	0.40	0.6	A1	B1
	6.7					0.4	0.6	1.8	0.40	0.6	A1	B1
	9.6		VD0L071-4-0,08	0.08	1,680	1.0	1.1	3.1	0.40	1.1	A1	B1
	13					1.0	1.2	3.1	0.40	1.2	A1	B1
	19		VD0L071-2-0,17	0.17	3,360	1.2	1.3	4.8	0.52	1.3	A1	B1
	26					1.2	1.6	4.8	0.52	1.6	A1	B1
	38		AD0L071-4-0,28	0.28	1,680	1.9	2.4	8.6	0.43	2.4	A1	B1
	54					1.9	2.6	8.6	0.43	2.6	A1	B1
	75		AD0L071-2-0,50	0.50	3,360	2.2	3.0	14	0.56	3.0	A1	B1
	108					2.2	3.8	14	0.56	3.8	A1	B1
	150		AD0L071-2-0,70	0.70	3,360	2.4	4.6	14	0.67	4.6	A1	B1
	216	70				2.4	4.8	14	0.67	4.8	A1	B1
SA 14.2	4.8	180	VD0L090-4-0,08	0.08	1,680	0.5	0.7	3.1	0.60	0.7	A1	B1
	6.7					0.5	0.8	3.1	0.60	0.8	A1	B1
	9.6		VD0L090-4-0,18	0.18	1,680	1.1	1.7	5.0	0.60	1.7	A1	B1
	13					1.1	1.8	5.0	0.60	1.8	A1	B1
	19		VD0L090-2-0,30	0.30	3,360	1.1	2.4	8.6	0.68	2.4	A1	B1
	26					1.1	2.8	8.6	0.68	2.8	A1	B1
	38		AD0L090-4-0,50	0.50	1,680	2.4	3.6	14	0.56	3.6	A1	B1
	54					2.4	4.2	14	0.56	4.2	A1	B1
	75		AD0L090-2-1,00	1.00	3,360	3.7	6.6	34	0.65	6.6	A2	B2
	108					3.7	7.2	34	0.65	7.2	A2	B2
	150		AD0L090-2-1,30	1.30	3,360	4.2	9.8	34	0.73	9.7	A2	B2
	216	140				4.2	9.8	34	0.73	9.7	A2	B2
SA 14.6	4.8	360	VD0L090-4-0,14	0.14	1,680	0.8	1.3	4.7	0.55	1.3	A1	B1
	6.7					0.8	1.4	4.7	0.55	1.4	A1	B1
	9.6		VD0L090-4-0,30	0.30	1,680	1.9	3.0	10	0.52	3.0	A1	B1
	13					1.9	3.4	10	0.52	3.4	A1	B1
	19		VD0L090-2-0,60	0.60	3,360	2.8	4.3	18	0.61	4.3	A1	B1
	26					2.8	4.6	18	0.61	4.6	A1	B1
	38		AD0L090-4-1,00	1.00	1,680	4.3	7.2	36	0.60	7.2	A2	B2
	54					4.3	7.8	36	0.60	7.8	A2	B2
	75		AD0L090-2-2,00	2.00	3,360	6.8	11	66	0.69	11	A2	B3
	108					6.8	13	66	0.69	13	A2	B3
	150		AD0L090-2-2,30	2.30	3,360	7.2	17	66	0.72	17	A2	–
	216	290				7.2	18	66	0.72	18	A2	–
SA 16.2	4.8	710	VD0L112-4-0,30	0.30	1,680	1.4	2.8	9.6	0.60	2.8	A1	B1
	6.7					1.4	3.0	9.6	0.60	3.0	A1	B1
	9.6		VD0L112-4-0,60	0.60	1,680	2.8	4.8	20	0.53	4.8	A1	B2
	13					2.8	5.4	20	0.53	5.4	A1	B2
	19		VD0L112-2-1,00	1.00	3,360	3.8	7.3	40	0.68	7.3	A2	B2
	26					3.8	8.2	40	0.68	8.2	A2	B2
	38		AD0L112-4-2,00	2.00	1,680	7.2	12	48	0.65	12	A2	B3
	54					7.2	14	48	0.65	14	A2	B3
	75		AD0L112-2-3,50	3.50	3,360	10	22	108	0.78	22	A2	–
	108					10	25	108	0.78	24	A2	–
	150	570	AD0L112-2-4,00	4.00	3,360	11	28	108	0.81	24	A2	–
	216					11	37	108	0.81	24	A2	–

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SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 30 min, 415 V/50 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4	20	VD0L063-4-0,01	0.01	1,400	0.3	0.4	1.0	0.40	0.4	A1	B1
	5.6					0.3	0.4	1.0	0.40	0.4	A1	B1
	8		VD0L063-4-0,03	0.03	1,400	0.4	0.4	0.9	0.50	0.4	A1	B1
	11					0.4	0.4	0.9	0.50	0.4	A1	B1
	16		VD0L063-2-0,04	0.04	2,800	0.5	0.6	1.6	0.43	0.6	A1	B1
	22					0.5	0.6	1.6	0.43	0.6	A1	B1
	32		AD0L063-4-0,07	0.07	1,400	0.8	0.9	1.9	0.40	0.9	A1	B1
	45					0.8	0.9	1.9	0.40	0.9	A1	B1
	63		AD0L063-2-0,14	0.14	2,800	0.7	0.9	3.5	0.55	0.9	A1	B1
	90					0.7	1.0	3.5	0.55	1.0	A1	B1
	125		AD0L063-2-0,21	0.21	2,800	0.7	1.2	3.5	0.70	1.2	A1	B1
	180					0.7	1.3	3.5	0.70	1.3	A1	B1
SA 07.6	4	40	VD0L063-4-0,02	0.02	1,400	0.4	0.4	1.0	0.50	0.4	A1	B1
	5.6					0.4	0.4	1.0	0.50	0.4	A1	B1
	8		VD0L063-4-0,04	0.04	1,400	0.5	0.5	1.3	0.45	0.5	A1	B1
	11					0.5	0.5	1.3	0.45	0.5	A1	B1
	16		VD0L063-2-0,08	0.08	2,800	0.5	0.8	2.4	0.52	0.8	A1	B1
	22					0.5	0.8	2.4	0.52	0.8	A1	B1
	32		AD0L063-4-0,14	0.14	1,400	1.2	1.4	3.4	0.40	1.4	A1	B1
	45					1.2	1.4	3.4	0.40	1.4	A1	B1
	63		AD0L063-2-0,28	0.28	2,800	1.1	1.5	5.5	0.53	1.5	A1	B1
	90					1.1	1.6	5.5	0.53	1.6	A1	B1
	125		AD0L063-2-0,35	0.35	2,800	1.2	1.9	5.5	0.60	1.9	A1	B1
	180	30				1.2	1.9	5.5	0.60	1.9	A1	B1
SA 10.2	4	90	VD0L071-4-0,04	0.04	1,400	0.3	0.5	1.4	0.40	0.5	A1	B1
	5.6					0.3	0.5	1.4	0.40	0.5	A1	B1
	8		VD0L071-4-0,08	0.08	1,400	0.8	0.9	2.5	0.40	0.9	A1	B1
	11					0.8	1.0	2.5	0.40	1.0	A1	B1
	16		VD0L071-2-0,17	0.17	2,800	1.0	1.1	3.9	0.52	1.1	A1	B1
	22					1.0	1.3	3.9	0.52	1.3	A1	B1
	32		AD0L071-4-0,28	0.28	1,400	1.5	1.9	6.9	0.43	1.9	A1	B1
	45					1.5	2.1	6.9	0.43	2.1	A1	B1
	63		AD0L071-2-0,50	0.50	2,800	1.7	2.4	12	0.56	2.4	A1	B1
	90					1.7	3.1	12	0.56	3.1	A1	B1
	125		AD0L071-2-0,70	0.70	2,800	1.9	3.7	12	0.67	3.7	A1	B1
	180	70				1.9	3.9	12	0.67	3.9	A1	B1
SA 14.2	4	180	VD0L090-4-0,08	0.08	1,400	0.4	0.6	2.5	0.60	0.6	A1	B1
	5.6					0.4	0.7	2.5	0.60	0.7	A1	B1
	8		VD0L090-4-0,18	0.18	1,400	0.9	1.3	4.0	0.60	1.3	A1	B1
	11					0.9	1.4	4.0	0.60	1.4	A1	B1
	16		VD0L090-2-0,30	0.30	2,800	0.9	1.9	6.9	0.68	1.9	A1	B1
	22					0.9	2.2	6.9	0.68	2.2	A1	B1
	32		AD0L090-4-0,50	0.50	1,400	1.9	2.9	12	0.56	2.9	A1	B1
	45					1.9	3.4	12	0.56	3.4	A1	B1
	63		AD0L090-2-1,00	1.00	2,800	3.0	5.3	27	0.65	5.3	A2	B2
	90					3.0	5.8	27	0.65	5.8	A2	B2
	125		AD0L090-2-1,30	1.30	2,800	3.4	7.9	27	0.73	7.7	A2	B2
	180	140				3.4	7.9	27	0.73	7.7	A2	B2
SA 14.6	4	360	VD0L090-4-0,14	0.14	1,400	0.7	1.1	3.8	0.55	1.1	A1	B1
	5.6					0.7	1.2	3.8	0.55	1.2	A1	B1
	8		VD0L090-4-0,30	0.30	1,400	1.5	2.4	8.2	0.52	2.4	A1	B1
	11					1.5	2.7	8.2	0.52	2.7	A1	B1
	16		VD0L090-2-0,60	0.60	2,800	2.2	3.5	14	0.61	3.5	A1	B1
	22					2.2	3.7	14	0.61	3.7	A1	B1
	32		AD0L090-4-1,00	1.00	1,400	3.5	5.8	29	0.60	5.8	A2	B2
	45					3.5	6.3	29	0.60	6.3	A2	B2
	63		AD0L090-2-2,00	2.00	2,800	5.5	9.2	53	0.69	9.2	A2	B3
	90					5.5	11	53	0.69	11	A2	B3
	125		AD0L090-2-2,30	2.30	2,800	5.8	13	53	0.72	13	A2	B3
	180	290				5.8	14	53	0.72	14	A2	B3
SA 16.2	4	710	VD0L112-4-0,30	0.30	1,400	1.2	2.2	7.7	0.60	2.2	A1	B1
	5.6					1.2	2.4	7.7	0.60	2.4	A1	B1
	8		VD0L112-4-0,60	0.60	1,400	2.2	3.9	16	0.53	3.9	A1	B1
	11					2.2	4.3	16	0.53	4.3	A1	B1
	16		VD0L112-2-1,00	1.00	2,800	3.1	5.9	32	0.68	5.9	A2	B2
	22					3.1	6.6	32	0.68	6.6	A2	B2
	32		AD0L112-4-2,00	2.00	1,400	5.8	9.6	39	0.65	9.6	A2	B3
	45					5.8	12	39	0.65	11	A2	B3
	63		AD0L112-2-3,50	3.50	2,800	8.2	17	87	0.78	17	A2	–
	90					8.2	20	87	0.78	19	A2	–
	125	570	AD0L112-2-4,00	4.00	2,800	8.7	22	87	0.81	19	A2	–
	180					8.7	30	87	0.81	19	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 30 min, 440 V/60 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4.8	20	VD0L063-4-0,01	0.01	1,680	0.4	0.4	1.1	0.40	0.4	A1	B1
	6.7					0.4	0.4	1.1	0.40	0.4	A1	B1
	9.6		VD0L063-4-0,03	0.03	1,680	0.4	0.4	1.0	0.50	0.4	A1	B1
	13					0.4	0.4	1.0	0.50	0.4	A1	B1
	19		VD0L063-2-0,04	0.04	3,360	0.5	0.7	1.9	0.43	0.7	A1	B1
	26					0.5	0.7	1.9	0.43	0.7	A1	B1
	38		AD0L063-4-0,07	0.07	1,680	0.9	1.0	2.2	0.40	1.0	A1	B1
	54					0.9	1.0	2.2	0.40	1.0	A1	B1
	75		AD0L063-2-0,14	0.14	3,360	0.8	1.0	3.9	0.55	1.0	A1	B1
	108					0.8	1.1	3.9	0.55	1.1	A1	B1
	150		AD0L063-2-0,21	0.21	3,360	0.8	1.3	3.9	0.70	1.3	A1	B1
	216					0.8	1.5	3.9	0.70	1.5	A1	B1
SA 07.6	4.8	40	VD0L063-4-0,02	0.02	1,680	0.4	0.4	1.1	0.50	0.4	A1	B1
	6.7					0.4	0.4	1.1	0.50	0.4	A1	B1
	9.6		VD0L063-4-0,04	0.04	1,680	0.5	0.5	1.5	0.45	0.5	A1	B1
	13					0.5	0.5	1.5	0.45	0.5	A1	B1
	19		VD0L063-2-0,08	0.08	3,360	0.5	0.9	2.7	0.52	0.9	A1	B1
	26					0.5	0.9	2.7	0.52	0.9	A1	B1
	38		AD0L063-4-0,14	0.14	1,680	1.3	1.6	3.8	0.40	1.6	A1	B1
	54					1.3	1.6	3.8	0.40	1.6	A1	B1
	75		AD0L063-2-0,28	0.28	3,360	1.2	1.7	6.2	0.53	1.7	A1	B1
	108					1.2	1.9	6.2	0.53	1.9	A1	B1
	150		AD0L063-2-0,35	0.35	3,360	1.3	2.2	6.2	0.60	2.2	A1	B1
	216	30				1.3	2.2	6.2	0.60	2.2	A1	B1
SA 10.2	4.8	90	VD0L071-4-0,04	0.04	1,680	0.4	0.5	1.6	0.40	0.5	A1	B1
	6.7					0.4	0.5	1.6	0.40	0.5	A1	B1
	9.6		VD0L071-4-0,08	0.08	1,680	0.9	1.0	2.8	0.40	1.0	A1	B1
	13					0.9	1.1	2.8	0.40	1.1	A1	B1
	19		VD0L071-2-0,17	0.17	3,360	1.1	1.2	4.4	0.52	1.2	A1	B1
	26					1.1	1.4	4.4	0.52	1.4	A1	B1
	38		AD0L071-4-0,28	0.28	1,680	1.7	2.2	7.9	0.43	2.2	A1	B1
	54					1.7	2.4	7.9	0.43	2.4	A1	B1
	75		AD0L071-2-0,50	0.50	3,360	2.0	2.7	13	0.56	2.7	A1	B1
	108					2.0	3.5	13	0.56	3.5	A1	B1
	150		AD0L071-2-0,70	0.70	3,360	2.2	4.1	13	0.67	4.1	A1	B1
	216	70				2.2	4.4	13	0.67	4.4	A1	B1
SA 14.2	4.8	180	VD0L090-4-0,08	0.08	1,680	0.4	0.7	2.8	0.60	0.7	A1	B1
	6.7					0.4	0.8	2.8	0.60	0.8	A1	B1
	9.6		VD0L090-4-0,18	0.18	1,680	1.0	1.5	4.6	0.60	1.5	A1	B1
	13					1.0	1.6	4.6	0.60	1.6	A1	B1
	19		VD0L090-2-0,30	0.30	3,360	1.0	2.2	7.9	0.68	2.2	A1	B1
	26					1.0	2.5	7.9	0.68	2.5	A1	B1
	38		AD0L090-4-0,50	0.50	1,680	2.2	3.3	13	0.56	3.3	A1	B1
	54					2.2	3.8	13	0.56	3.8	A1	B1
	75		AD0L090-2-1,00	1.00	3,360	3.4	6.0	31	0.65	6.0	A2	B2
	108					3.4	6.5	31	0.65	6.5	A2	B2
	150		AD0L090-2-1,30	1.30	3,360	3.8	8.9	31	0.73	8.8	A2	B2
	216	140				3.8	8.9	31	0.73	8.8	A2	B2
SA 14.6	4.8	360	VD0L090-4-0,14	0.14	1,680	0.8	1.2	4.3	0.55	1.2	A1	B1
	6.7					0.8	1.3	4.3	0.55	1.3	A1	B1
	9.6		VD0L090-4-0,30	0.30	1,680	1.7	2.7	9.3	0.52	2.7	A1	B1
	13					1.7	3.1	9.3	0.52	3.1	A1	B1
	19		VD0L090-2-0,60	0.60	3,360	2.5	3.9	16	0.61	3.9	A1	B1
	26					2.5	4.1	16	0.61	4.1	A1	B1
	38		AD0L090-4-1,00	1.00	1,680	3.9	6.5	33	0.60	6.5	A2	B2
	54					3.9	7.1	33	0.60	7.1	A2	B2
	75		AD0L090-2-2,00	2.00	3,360	6.2	10	60	0.69	10	A2	B3
	108					6.2	12	60	0.69	12	A2	B3
	150		AD0L090-2-2,30	2.30	3,360	6.5	15	60	0.72	15	A2	B3
	216	290				6.5	16	60	0.72	16	A2	B3
SA 16.2	4.8	710	VD0L112-4-0,30	0.30	1,680	1.3	2.5	8.7	0.60	2.5	A1	B1
	6.7					1.3	2.7	8.7	0.60	2.7	A1	B1
	9.6		VD0L112-4-0,60	0.60	1,680	2.5	4.4	19	0.53	4.4	A1	B2
	13					2.5	4.9	19	0.53	4.9	A1	B2
	19		VD0L112-2-1,00	1.00	3,360	3.5	6.7	36	0.68	6.7	A2	B2
	26					3.5	7.4	36	0.68	7.4	A2	B2
	38		AD0L112-4-2,00	2.00	1,680	6.5	11	44	0.65	11	A2	B3
	54					6.5	13	44	0.65	13	A2	B3
	75		AD0L112-2-3,50	3.50	3,360	9.3	20	98	0.78	20	A2	–
	108					9.3	23	98	0.78	21	A2	–
	150	570	AD0L112-2-4,00	4.00	3,360	9.8	25	98	0.81	21	A2	–
	216					9.8	34	98	0.81	21	A2	–

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SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 30 min, 460 V/60 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4.8	20	VD0L063-4-0,01	0.01	1,680	0.4	0.4	1.0	0.40	0.4	A1	B1
	6.7					0.4	0.4	1.0	0.40	0.4	A1	B1
	9.6		VD0L063-4-0,03	0.03	1,680	0.4	0.4	0.9	0.50	0.4	A1	B1
	13					0.4	0.4	0.9	0.50	0.4	A1	B1
	19		VD0L063-2-0,04	0.04	3,360	0.5	0.6	1.8	0.43	0.6	A1	B1
	26					0.5	0.6	1.8	0.43	0.6	A1	B1
	38		AD0L063-4-0,07	0.07	1,680	0.8	0.9	2.1	0.40	0.9	A1	B1
	54					0.8	0.9	2.1	0.40	0.9	A1	B1
	75		AD0L063-2-0,14	0.14	3,360	0.7	0.9	3.8	0.55	0.9	A1	B1
	108					0.7	1.0	3.8	0.55	1.0	A1	B1
	150		AD0L063-2-0,21	0.21	3,360	0.7	1.3	3.8	0.70	1.3	A1	B1
	216					0.7	1.5	3.8	0.70	1.5	A1	B1
SA 07.6	4.8	40	VD0L063-4-0,02	0.02	1,680	0.4	0.4	1.0	0.50	0.4	A1	B1
	6.7					0.4	0.4	1.0	0.50	0.4	A1	B1
	9.6		VD0L063-4-0,04	0.04	1,680	0.5	0.5	1.5	0.45	0.5	A1	B1
	13					0.5	0.5	1.5	0.45	0.5	A1	B1
	19		VD0L063-2-0,08	0.08	3,360	0.5	0.8	2.6	0.52	0.8	A1	B1
	26					0.5	0.8	2.6	0.52	0.8	A1	B1
	38		AD0L063-4-0,14	0.14	1,680	1.3	1.6	3.7	0.40	1.6	A1	B1
	54					1.3	1.6	3.7	0.40	1.6	A1	B1
	75		AD0L063-2-0,28	0.28	3,360	1.1	1.7	5.9	0.53	1.7	A1	B1
	108					1.1	1.8	5.9	0.53	1.8	A1	B1
	150		AD0L063-2-0,35	0.35	3,360	1.3	2.1	5.9	0.60	2.1	A1	B1
	216	30				1.3	2.1	5.9	0.60	2.1	A1	B1
SA 10.2	4.8	90	VD0L071-4-0,04	0.04	1,680	0.4	0.5	1.6	0.40	0.5	A1	B1
	6.7					0.4	0.5	1.6	0.40	0.5	A1	B1
	9.6		VD0L071-4-0,08	0.08	1,680	0.8	0.9	2.7	0.40	0.9	A1	B1
	13					0.8	1.0	2.7	0.40	1.0	A1	B1
	19		VD0L071-2-0,17	0.17	3,360	1.0	1.1	4.2	0.52	1.1	A1	B1
	26					1.0	1.4	4.2	0.52	1.4	A1	B1
	38		AD0L071-4-0,28	0.28	1,680	1.7	2.1	7.5	0.43	2.1	A1	B1
	54					1.7	2.3	7.5	0.43	2.3	A1	B1
	75		AD0L071-2-0,50	0.50	3,360	1.9	2.6	13	0.56	2.6	A1	B1
	108					1.9	3.3	13	0.56	3.3	A1	B1
	150		AD0L071-2-0,70	0.70	3,360	2.1	4.0	13	0.67	4.0	A1	B1
	216	70				2.1	4.2	13	0.67	4.2	A1	B1
SA 14.2	4.8	180	VD0L090-4-0,08	0.08	1,680	0.4	0.6	2.7	0.60	0.6	A1	B1
	6.7					0.4	0.7	2.7	0.60	0.7	A1	B1
	9.6		VD0L090-4-0,18	0.18	1,680	0.9	1.5	4.4	0.60	1.5	A1	B1
	13					0.9	1.6	4.4	0.60	1.6	A1	B1
	19		VD0L090-2-0,30	0.30	3,360	0.9	2.1	7.5	0.68	2.1	A1	B1
	26					0.9	2.4	7.5	0.68	2.4	A1	B1
	38		AD0L090-4-0,50	0.50	1,680	2.1	3.1	13	0.56	3.1	A1	B1
	54					2.1	3.7	13	0.56	3.7	A1	B1
	75		AD0L090-2-1,00	1.00	3,360	3.2	5.7	29	0.65	5.7	A2	B2
	108					3.2	6.3	29	0.65	6.3	A2	B2
	150		AD0L090-2-1,30	1.30	3,360	3.7	8.6	29	0.73	8.3	A2	B2
	216	140				3.7	8.6	29	0.73	8.3	A2	B2
SA 14.6	4.8	360	VD0L090-4-0,14	0.14	1,680	0.7	1.1	4.1	0.55	1.1	A1	B1
	6.7					0.7	1.3	4.1	0.55	1.3	A1	B1
	9.6		VD0L090-4-0,30	0.30	1,680	1.7	2.6	8.9	0.52	2.6	A1	B1
	13					1.7	2.9	8.9	0.52	2.9	A1	B1
	19		VD0L090-2-0,60	0.60	3,360	2.4	3.8	16	0.61	3.8	A1	B1
	26					2.4	4.0	16	0.61	4.0	A1	B1
	38		AD0L090-4-1,00	1.00	1,680	3.8	6.3	31	0.60	6.3	A2	B2
	54					3.8	6.8	31	0.60	6.8	A2	B2
	75		AD0L090-2-2,00	2.00	3,360	5.9	9.9	57	0.69	9.9	A2	B3
	108					5.9	12	57	0.69	12	A2	B3
	150		AD0L090-2-2,30	2.30	3,360	6.3	15	57	0.72	15	A2	B3
	216	290				6.3	16	57	0.72	16	A2	B3
SA 16.2	4.8	710	VD0L112-4-0,30	0.30	1,680	1.3	2.4	8.3	0.60	2.4	A1	B1
	6.7					1.3	2.6	8.3	0.60	2.6	A1	B1
	9.6		VD0L112-4-0,60	0.60	1,680	2.4	4.2	18	0.53	4.2	A1	B1
	13					2.4	4.7	18	0.53	4.7	A1	B1
	19		VD0L112-2-1,00	1.00	3,360	3.3	6.4	34	0.68	6.4	A2	B2
	26					3.3	7.1	34	0.68	7.1	A2	B2
	38		AD0L112-4-2,00	2.00	1,680	6.3	10	42	0.65	10	A2	B3
	54					6.3	13	42	0.65	12	A2	B3
	75		AD0L112-2-3,50	3.50	3,360	8.9	19	94	0.78	19	A2	–
	108					8.9	22	94	0.78	21	A2	–
	150	570	AD0L112-2-4,00	4.00	3,360	9.4	24	94	0.81	21	A2	–
	216					9.4	32	94	0.81	21	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 30 min, 480 V/60 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4.8	20	VD0L063-4-0,01	0.01	1,680	0.4	0.4	1.0	0.40	0.4	A1	B1
	6.7					0.4	0.4	1.0	0.40	0.4	A1	B1
	9.6		VD0L063-4-0,03	0.03	1,680	0.4	0.4	0.9	0.50	0.4	A1	B1
	13					0.4	0.4	0.9	0.50	0.4	A1	B1
	19		VD0L063-2-0,04	0.04	3,360	0.5	0.6	1.7	0.43	0.6	A1	B1
	26					0.5	0.6	1.7	0.43	0.6	A1	B1
	38		AD0L063-4-0,07	0.07	1,680	0.8	0.9	2.0	0.40	0.9	A1	B1
	54					0.8	0.9	2.0	0.40	0.9	A1	B1
	75		AD0L063-2-0,14	0.14	3,360	0.7	0.9	3.6	0.55	0.9	A1	B1
	108					0.7	1.0	3.6	0.55	1.0	A1	B1
	150		AD0L063-2-0,21	0.21	3,360	0.7	1.2	3.6	0.70	1.2	A1	B1
	216					0.7	1.4	3.6	0.70	1.4	A1	B1
SA 07.6	4.8	40	VD0L063-4-0,02	0.02	1,680	0.4	0.4	1.0	0.50	0.4	A1	B1
	6.7					0.4	0.4	1.0	0.50	0.4	A1	B1
	9.6		VD0L063-4-0,04	0.04	1,680	0.5	0.5	1.4	0.45	0.5	A1	B1
	13					0.5	0.5	1.4	0.45	0.5	A1	B1
	19		VD0L063-2-0,08	0.08	3,360	0.5	0.8	2.5	0.52	0.8	A1	B1
	26					0.5	0.8	2.5	0.52	0.8	A1	B1
	38		AD0L063-4-0,14	0.14	1,680	1.2	1.5	3.5	0.40	1.5	A1	B1
	54					1.2	1.5	3.5	0.40	1.5	A1	B1
	75		AD0L063-2-0,28	0.28	3,360	1.1	1.6	5.7	0.53	1.6	A1	B1
	108					1.1	1.7	5.7	0.53	1.7	A1	B1
	150		AD0L063-2-0,35	0.35	3,360	1.2	2.0	5.7	0.60	2.0	A1	B1
	216	30				1.2	2.0	5.7	0.60	2.0	A1	B1
SA 10.2	4.8	90	VD0L071-4-0,04	0.04	1,680	0.4	0.5	1.5	0.40	0.5	A1	B1
	6.7					0.4	0.5	1.5	0.40	0.5	A1	B1
	9.6		VD0L071-4-0,08	0.08	1,680	0.8	0.9	2.6	0.40	0.9	A1	B1
	13					0.8	1.0	2.6	0.40	1.0	A1	B1
	19		VD0L071-2-0,17	0.17	3,360	1.0	1.1	4.0	0.52	1.1	A1	B1
	26					1.0	1.3	4.0	0.52	1.3	A1	B1
	38		AD0L071-4-0,28	0.28	1,680	1.6	2.0	7.2	0.43	2.0	A1	B1
	54					1.6	2.2	7.2	0.43	2.2	A1	B1
	75		AD0L071-2-0,50	0.50	3,360	1.8	2.5	12	0.56	2.5	A1	B1
	108					1.8	3.2	12	0.56	3.2	A1	B1
	150		AD0L071-2-0,70	0.70	3,360	2.0	3.8	12	0.67	3.8	A1	B1
	216	70				2.0	4.0	12	0.67	4.0	A1	B1
SA 14.2	4.8	180	VD0L090-4-0,08	0.08	1,680	0.4	0.6	2.6	0.60	0.6	A1	B1
	6.7					0.4	0.7	2.6	0.60	0.7	A1	B1
	9.6		VD0L090-4-0,18	0.18	1,680	0.9	1.4	4.2	0.60	1.4	A1	B1
	13					0.9	1.5	4.2	0.60	1.5	A1	B1
	19		VD0L090-2-0,30	0.30	3,360	0.9	2.0	7.2	0.68	2.0	A1	B1
	26					0.9	2.3	7.2	0.68	2.3	A1	B1
	38		AD0L090-4-0,50	0.50	1,680	2.0	3.0	12	0.56	3.0	A1	B1
	54					2.0	3.5	12	0.56	3.5	A1	B1
	75		AD0L090-2-1,00	1.00	3,360	3.1	5.5	28	0.65	5.5	A2	B2
	108					3.1	6.0	28	0.65	6.0	A2	B2
	150		AD0L090-2-1,30	1.30	3,360	3.5	8.2	28	0.73	8.0	A2	B2
	216	140				3.5	8.2	28	0.73	8.0	A2	B2
SA 14.6	4.8	360	VD0L090-4-0,14	0.14	1,680	0.7	1.1	3.9	0.55	1.1	A1	B1
	6.7					0.7	1.2	3.9	0.55	1.2	A1	B1
	9.6		VD0L090-4-0,30	0.30	1,680	1.6	2.5	8.5	0.52	2.5	A1	B1
	13					1.6	2.8	8.5	0.52	2.8	A1	B1
	19		VD0L090-2-0,60	0.60	3,360	2.3	3.6	15	0.61	3.6	A1	B1
	26					2.3	3.8	15	0.61	3.8	A1	B1
	38		AD0L090-4-1,00	1.00	1,680	3.6	6.0	30	0.60	6.0	A2	B2
	54					3.6	6.5	30	0.60	6.5	A2	B2
	75		AD0L090-2-2,00	2.00	3,360	5.7	9.5	55	0.69	9.5	A2	B3
	108					5.7	11	55	0.69	11	A2	B3
	150		AD0L090-2-2,30	2.30	3,360	6.0	14	55	0.72	14	A2	B3
	216	290				6.0	15	55	0.72	15	A2	B3
SA 16.2	4.8	710	VD0L112-4-0,30	0.30	1,680	1.2	2.3	8.0	0.60	2.3	A1	B1
	6.7					1.2	2.5	8.0	0.60	2.5	A1	B1
	9.6		VD0L112-4-0,60	0.60	1,680	2.3	4.0	17	0.53	4.0	A1	B1
	13					2.3	4.5	17	0.53	4.5	A1	B1
	19		VD0L112-2-1,00	1.00	3,360	3.2	6.1	33	0.68	6.1	A2	B2
	26					3.2	6.8	33	0.68	6.8	A2	B2
	38		AD0L112-4-2,00	2.00	1,680	6.0	10	40	0.65	10	A2	B3
	54					6.0	12	40	0.65	11	A2	B3
	75		AD0L112-2-3,50	3.50	3,360	8.5	18	90	0.78	18	A2	–
	108					8.5	21	90	0.78	20	A2	–
	150		AD0L112-2-4,00	4.00	3,360	9.0	23	90	0.81	20	A2	–
	216	570				9.0	31	90	0.81	20	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data multi-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 30 min, 500 V/50 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurr. prot. device setting [A]	AUMA power class for switchgear	
											Contactor	Thyristor
SA 07.2	4	20	VD0L063-4-0,01	0.01	1,400	0.3	0.3	0.8	0.40	0.3	A1	B1
	5.6					0.3	0.3	0.8	0.40	0.3	A1	B1
	8		VD0L063-4-0,03	0.03	1,400	0.3	0.3	0.7	0.50	0.3	A1	B1
	11					0.3	0.3	0.7	0.50	0.3	A1	B1
	16		VD0L063-2-0,04	0.04	2,800	0.4	0.5	1.4	0.43	0.5	A1	B1
	22					0.4	0.5	1.4	0.43	0.5	A1	B1
	32		AD0L063-4-0,07	0.07	1,400	0.6	0.7	1.6	0.40	0.7	A1	B1
	45					0.6	0.7	1.6	0.40	0.7	A1	B1
	63		AD0L063-2-0,14	0.14	2,800	0.6	0.7	2.9	0.55	0.7	A1	B1
	90					0.6	0.8	2.9	0.55	0.8	A1	B1
	125		AD0L063-2-0,21	0.21	2,800	0.6	1.0	2.9	0.70	1.0	A1	B1
	180					0.6	1.1	2.9	0.70	1.1	A1	B1
SA 07.6	4	40	VD0L063-4-0,02	0.02	1,400	0.3	0.3	0.8	0.50	0.3	A1	B1
	5.6					0.3	0.3	0.8	0.50	0.3	A1	B1
	8		VD0L063-4-0,04	0.04	1,400	0.4	0.4	1.1	0.45	0.4	A1	B1
	11					0.4	0.4	1.1	0.45	0.4	A1	B1
	16		VD0L063-2-0,08	0.08	2,800	0.4	0.6	2.0	0.52	0.6	A1	B1
	22					0.4	0.6	2.0	0.52	0.6	A1	B1
	32		AD0L063-4-0,14	0.14	1,400	1.0	1.2	2.8	0.40	1.2	A1	B1
	45					1.0	1.2	2.8	0.40	1.2	A1	B1
	63		AD0L063-2-0,28	0.28	2,800	0.9	1.3	4.6	0.53	1.3	A1	B1
	90					0.9	1.4	4.6	0.53	1.4	A1	B1
	125		AD0L063-2-0,35	0.35	2,800	1.0	1.6	4.6	0.60	1.6	A1	B1
	180	30				1.0	1.6	4.6	0.60	1.6	A1	B1
SA 10.2	4	90	VD0L071-4-0,04	0.04	1,400	0.3	0.4	1.2	0.40	0.4	A1	B1
	5.6					0.3	0.4	1.2	0.40	0.4	A1	B1
	8		VD0L071-4-0,08	0.08	1,400	0.6	0.7	2.1	0.40	0.7	A1	B1
	11					0.6	0.8	2.1	0.40	0.8	A1	B1
	16		VD0L071-2-0,17	0.17	2,800	0.8	0.9	3.2	0.52	0.9	A1	B1
	22					0.8	1.0	3.2	0.52	1.0	A1	B1
	32		AD0L071-4-0,28	0.28	1,400	1.3	1.6	5.8	0.43	1.6	A1	B1
	45					1.3	1.8	5.8	0.43	1.8	A1	B1
	63		AD0L071-2-0,50	0.50	2,800	1.4	2.0	9.6	0.56	2.0	A1	B1
	90					1.4	2.6	9.6	0.56	2.6	A1	B1
	125		AD0L071-2-0,70	0.70	2,800	1.6	3.0	9.6	0.67	3.0	A1	B1
	180	70				1.6	3.2	9.6	0.67	3.2	A1	B1
SA 14.2	4	180	VD0L090-4-0,08	0.08	1,400	0.3	0.5	2.1	0.60	0.5	A1	B1
	5.6					0.3	0.6	2.1	0.60	0.6	A1	B1
	8		VD0L090-4-0,18	0.18	1,400	0.7	1.1	3.4	0.60	1.1	A1	B1
	11					0.7	1.2	3.4	0.60	1.2	A1	B1
	16		VD0L090-2-0,30	0.30	2,800	0.7	1.6	5.8	0.68	1.6	A1	B1
	22					0.7	1.8	5.8	0.68	1.8	A1	B1
	32		AD0L090-4-0,50	0.50	1,400	1.6	2.4	9.6	0.56	2.4	A1	B1
	45					1.6	2.8	9.6	0.56	2.8	A1	B1
	63		AD0L090-2-1,00	1.00	2,800	2.5	4.4	22	0.65	4.4	A2	B2
	90					2.5	4.8	22	0.65	4.8	A2	B2
	125		AD0L090-2-1,30	1.30	2,800	2.8	6.6	22	0.73	6.3	A2	B2
	180	140				2.8	6.6	22	0.73	6.3	A2	B2
SA 14.6	4	360	VD0L090-4-0,14	0.14	1,400	0.6	0.9	3.1	0.55	0.9	A1	B1
	5.6					0.6	1.0	3.1	0.55	1.0	A1	B1
	8		VD0L090-4-0,30	0.30	1,400	1.3	2.0	6.8	0.52	2.0	A1	B1
	11					1.3	2.2	6.8	0.52	2.2	A1	B1
	16		VD0L090-2-0,60	0.60	2,800	1.8	2.9	12	0.61	2.9	A1	B1
	22					1.8	3.0	12	0.61	3.0	A1	B1
	32		AD0L090-4-1,00	1.00	1,400	2.9	4.8	24	0.60	4.8	A2	B2
	45					2.9	5.2	24	0.60	5.2	A2	B2
	63		AD0L090-2-2,00	2.00	2,800	4.6	7.6	44	0.69	7.6	A2	B2
	90					4.6	8.8	44	0.69	8.8	A2	B2
	125		AD0L090-2-2,30	2.30	2,800	4.8	11	44	0.72	11	A2	B3
	180	290				4.8	12	44	0.72	12	A2	B3
SA 16.2	4	710	VD0L112-4-0,30	0.30	1,400	1.0	1.8	6.4	0.60	1.8	A1	B1
	5.6					1.0	2.0	6.4	0.60	2.0	A1	B1
	8		VD0L112-4-0,60	0.60	1,400	1.8	3.2	14	0.53	3.2	A1	B1
	11					1.8	3.6	14	0.53	3.6	A1	B1
	16		VD0L112-2-1,00	1.00	2,800	2.6	4.9	26	0.68	4.9	A2	B2
	22					2.6	5.4	26	0.68	5.4	A2	B2
	32		AD0L112-4-2,00	2.00	1,400	4.8	8.0	32	0.65	8.0	A2	B2
	45					4.8	9.6	32	0.65	8.8	A2	B2
	63		AD0L112-2-3,50	3.50	2,800	6.8	14	72	0.78	14	A2	B3
	90					6.8	17	72	0.78	16	A2	–
	125	570	AD0L112-2-4,00	4.00	2,800	7.2	18	72	0.81	16	A2	–
	180					7.2	25	72	0.81	16	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

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SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 220 V/60 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4.8	30	VD0R063-4-0,02	0.02	1 680	0.9	0.9	2.2	0.40	0.9	A1	B1
	6.7					0.9	0.9	2.2	0.40	0.9	A1	B1
	9.6		VD0R063-4-0,04	0.04	1,680	0.9	0.9	2.2	0.50	0.9	A1	B1
	13					0.9	1.1	2.2	0.50	1.1	A1	B1
	19		VD0R063-2-0,06	0.06	3,360	1.3	1.3	4.1	0.42	1.3	A1	B1
	26					1.3	1.4	4.1	0.42	1.4	A1	B1
	38		AD0R063-4-0,10	0.10	1,680	2.1	2.1	5.2	0.42	2.1	A1	B1
	54					2.1	2.2	5.2	0.42	2.2	A1	B1
	75		AD0R063-2-0,20	0.20	3,360	1.7	2.6	9.6	0.60	2.6	A1	B1
	108					1.7	2.8	9.6	0.60	2.8	A1	B1
SAR 07.6	4.8	60	VD0R063-4-0,03	0.03	1,680	0.9	1.1	2.2	0.43	1.1	A1	B1
	6.7					0.9	1.1	2.2	0.43	1.1	A1	B1
	9.6		VD0R063-4-0,06	0.06	1,680	1.3	1.4	3.5	0.38	1.4	A1	B1
	13					1.3	1.5	3.5	0.38	1.5	A1	B1
	19		VD0R063-2-0,12	0.12	3,360	1.5	2.0	6.5	0.52	2.0	A1	B1
	26					1.5	2.2	6.5	0.52	2.2	A1	B1
	38		AD0R063-4-0,20	0.20	1,680	3.5	4.1	10	0.42	4.1	A1	B1
	54					3.5	4.4	10	0.42	4.4	A1	B1
	75		AD0R063-2-0,40	0.40	3,360	3.9	5.0	20	0.53	5.0	A1	B2
	108					3.9	5.5	20	0.53	5.5	A1	B2
SAR 10.2	4.8	120	VD0R071-4-0,06	0.06	1,680	1.1	1.3	4.4	0.40	1.3	A1	B1
	6.7					1.1	1.3	4.4	0.40	1.3	A1	B1
	9.6		VD0R071-4-0,12	0.12	1,680	2.2	2.4	6.5	0.40	2.4	A1	B1
	13					2.2	2.6	6.5	0.40	2.6	A1	B1
	19		VD0R071-2-0,25	0.25	3,360	2.8	3.3	9.8	0.52	3.3	A1	B1
	26					2.8	3.9	9.8	0.52	3.9	A1	B1
	38		AD0R071-4-0,40	0.40	1,680	5.5	5.7	19	0.42	5.7	A1	B2
	54					5.5	6.5	19	0.42	6.5	A1	B2
	75		AD0R071-2-0,70	0.70	3,360	6.5	8.7	35	0.54	8.7	A2	B2
	108					6.5	9.8	35	0.54	9.8	A2	B2
SAR 14.2	4.8	250	VD0R090-4-0,12	0.12	1,680	1.1	1.7	6.1	0.60	1.7	A1	B1
	6.7					1.1	2.2	6.1	0.60	2.2	A1	B1
	9.6		VD0R090-4-0,25	0.25	1,680	2.2	3.5	11	0.60	3.5	A1	B1
	13					2.2	3.7	11	0.60	3.7	A1	B1
	19		VD0R090-2-0,45	0.45	3,360	3.3	6.5	20	0.64	6.5	A1	B2
	26					3.3	7.6	20	0.64	7.6	A1	B2
	38		AD0R090-4-0,75	0.75	1,680	5.7	9.4	35	0.62	9.4	A2	B2
	54					5.7	11	35	0.62	11	A2	B2
	75		AD0R090-2-1,40	1.40	3,360	10	17	83	0.60	17	A2	–
	108					10	20	83	0.60	20	A2	–
SAR 14.6	4.8	500	VD0R090-4-0,20	0.20	1,680	2.0	3.3	11	0.54	3.3	A1	B1
	6.7					2.0	3.7	11	0.54	3.7	A1	B1
	9.6		VD0R090-4-0,40	0.40	1,680	3.9	6.5	20	0.56	6.5	A1	B2
	13					3.9	7.6	20	0.56	7.6	A1	B2
	19		VD0R090-2-0,80	0.80	3,360	7.9	11	39	0.51	11	A2	B2
	26					7.9	12	39	0.51	12	A2	B2
	38		AD0R090-4-1,60	1.60	1,680	12	16	83	0.57	16	A2	–
	54					12	20	83	0.57	20	A2	–
	75		AD0R090-2-3,00	3.00	3,360	20	31	148	0.60	31	A3	–
	108					20	35	148	0.60	35	A3	–
SAR 16.2	4.8	1 000	VD0R112-4-0,40	0.40	1,680	3.1	5.9	22	0.65	5.9	A1	B2
	6.7					3.1	6.3	22	0.65	6.3	A1	B2
	9.6		VD0R112-4-0,80	0.80	1,680	6.5	11	48	0.57	11	A2	B3
	13					6.5	12	48	0.57	12	A2	B3
	19		VD0R112-2-1,50	1.50	3,360	12	20	87	0.60	20	A2	–
	26					12	23	87	0.60	23	A2	–
	38		AD0R112-4-3,00	3.00	1,680	19	33	131	0.71	33	A3	–
	54					19	37	131	0.71	37	A3	–
	75		AD0R112-2-5,00	5.00	3,360	26	55	249	0.80	54	A4	–
	108					26	65	249	0.80	54	A4	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 230 V/50 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4	30	VD0R063-4-0,02	0.02	1,400	0.7	0.7	1.7	0.40	0.7	A1	B1
	5.6					0.7	0.7	1.7	0.40	0.7	A1	B1
	8		VD0R063-4-0,04	0.04	1,400	0.7	0.7	1.7	0.50	0.7	A1	B1
	11					0.7	0.9	1.7	0.50	0.9	A1	B1
	16		VD0R063-2-0,06	0.06	2,800	1.0	1.0	3.3	0.42	1.0	A1	B1
	22					1.0	1.1	3.3	0.42	1.1	A1	B1
	32		AD0R063-4-0,10	0.10	1,400	1.7	1.7	4.2	0.42	1.7	A1	B1
	45					1.7	1.7	4.2	0.42	1.7	A1	B1
	63		AD0R063-2-0,20	0.20	2,800	1.4	2.1	7.7	0.60	2.1	A1	B1
	90					1.4	2.3	7.7	0.60	2.3	A1	B1
SAR 07.6	4	60	VD0R063-4-0,03	0.03	1,400	0.7	0.9	1.7	0.43	0.9	A1	B1
	5.6					0.7	0.9	1.7	0.43	0.9	A1	B1
	8		VD0R063-4-0,06	0.06	1,400	1.0	1.1	2.8	0.38	1.1	A1	B1
	11					1.0	1.2	2.8	0.38	1.2	A1	B1
	16		VD0R063-2-0,12	0.12	2,800	1.2	1.6	5.2	0.52	1.6	A1	B1
	22					1.2	1.7	5.2	0.52	1.7	A1	B1
	32		AD0R063-4-0,20	0.20	1,400	2.8	3.3	8.0	0.42	3.3	A1	B1
	45					2.8	3.5	8.0	0.42	3.5	A1	B1
	63		AD0R063-2-0,40	0.40	2,800	3.1	4.0	16	0.53	4.0	A1	B1
	90					3.1	4.3	16	0.53	4.3	A1	B1
SAR 10.2	4	120	VD0R071-4-0,06	0.06	1,400	0.9	1.0	3.5	0.40	1.0	A1	B1
	5.6					0.9	1.0	3.5	0.40	1.0	A1	B1
	8		VD0R071-4-0,12	0.12	1,400	1.7	1.9	5.2	0.40	1.9	A1	B1
	11					1.7	2.1	5.2	0.40	2.1	A1	B1
	16		VD0R071-2-0,25	0.25	2,800	2.3	2.6	7.8	0.52	2.6	A1	B1
	22					2.3	3.1	7.8	0.52	3.1	A1	B1
	32		AD0R071-4-0,40	0.40	1,400	4.3	4.5	15	0.42	4.5	A1	B1
	45					4.3	5.2	15	0.42	5.2	A1	B1
	63		AD0R071-2-0,70	0.70	2,800	5.2	7.0	28	0.54	7.0	A1	B2
	90					5.2	7.8	28	0.54	7.8	A1	B2
SAR 14.2	4	250	VD0R090-4-0,12	0.12	1,400	0.9	1.4	4.9	0.60	1.4	A1	B1
	5.6					0.9	1.7	4.9	0.60	1.7	A1	B1
	8		VD0R090-4-0,25	0.25	1,400	1.7	2.8	9.0	0.60	2.8	A1	B1
	11					1.7	3.0	9.0	0.60	3.0	A1	B1
	16		VD0R090-2-0,45	0.45	2,800	2.6	5.2	16	0.64	5.2	A1	B1
	22					2.6	6.1	16	0.64	6.1	A1	B1
	32		AD0R090-4-0,75	0.75	1,400	4.5	7.5	28	0.62	7.5	A1	B2
	45					4.5	8.7	28	0.62	8.7	A1	B2
	63		AD0R090-2-1,40	1.40	2,800	8.2	13	66	0.60	13	A2	B3
	90					8.2	16	66	0.60	16	A2	B3
SAR 14.6	4	500	VD0R090-4-0,20	0.20	1,400	1.6	2.6	9.0	0.54	2.6	A1	B1
	5.6					1.6	3.0	9.0	0.54	3.0	A1	B1
	8		VD0R090-4-0,40	0.40	1,400	3.1	5.2	16	0.56	5.2	A1	B1
	11					3.1	6.1	16	0.56	6.1	A1	B1
	16		VD0R090-2-0,80	0.80	2,800	6.3	8.7	31	0.51	8.7	A2	B2
	22					6.3	9.6	31	0.51	9.6	A2	B2
	32		AD0R090-4-1,60	1.60	1,400	9.2	13	66	0.57	13	A2	B3
	45					9.2	16	66	0.57	16	A2	B3
	63		AD0R090-2-3,00	3.00	2,800	16	24	118	0.60	24	A3	–
	90					16	28	118	0.60	28	A3	–
SAR 16.2	4	1 000	VD0R112-4-0,40	0.40	1,400	2.4	4.7	17	0.65	4.7	A1	B1
	5.6					2.4	5.0	17	0.65	5.0	A1	B1
	8		VD0R112-4-0,80	0.80	1,400	5.2	9.0	38	0.57	9.0	A2	B2
	11					5.2	9.6	38	0.57	9.6	A2	B2
	16		VD0R112-2-1,50	1.50	2,800	9.7	16	70	0.60	16	A2	B3
	22					9.7	18	70	0.60	18	A2	B3
	32		AD0R112-4-3,00	3.00	1,400	15	26	104	0.71	26	A3	–
	45					15	30	104	0.71	29	A3	–
	63		AD0R112-2-5,00	5.00	2,800	21	43	198	0.80	43	A4	–
	90					21	52	198	0.80	43	A4	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 380 V/50 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4	30	VD0R063-4-0,02	0.02	1,400	0.4	0.4	1.1	0.40	0.4	A1	B1
	5.6					0.4	0.4	1.1	0.40	0.4	A1	B1
	8		VD0R063-4-0,04	0.04	1,400	0.4	0.4	1.1	0.50	0.4	A1	B1
	11					0.4	0.5	1.1	0.50	0.5	A1	B1
	16		VD0R063-2-0,06	0.06	2,800	0.6	0.6	2.0	0.42	0.6	A1	B1
	22					0.6	0.7	2.0	0.42	0.7	A1	B1
	32		AD0R063-4-0,10	0.10	1,400	1.0	1.0	2.5	0.42	1.0	A1	B1
	45					1.0	1.1	2.5	0.42	1.1	A1	B1
	63		AD0R063-2-0,20	0.20	2,800	0.8	1.3	4.6	0.60	1.3	A1	B1
	90					0.8	1.4	4.6	0.60	1.4	A1	B1
SAR 07.6	4	60	VD0R063-4-0,03	0.03	1,400	0.4	0.5	1.1	0.43	0.5	A1	B1
	5.6					0.4	0.5	1.1	0.43	0.5	A1	B1
	8		VD0R063-4-0,06	0.06	1,400	0.6	0.7	1.7	0.38	0.7	A1	B1
	11					0.6	0.7	1.7	0.38	0.7	A1	B1
	16		VD0R063-2-0,12	0.12	2,800	0.7	0.9	3.2	0.52	0.9	A1	B1
	22					0.7	1.1	3.2	0.52	1.1	A1	B1
	32		AD0R063-4-0,20	0.20	1,400	1.7	2.0	4.8	0.42	2.0	A1	B1
	45					1.7	2.1	4.8	0.42	2.1	A1	B1
	63		AD0R063-2-0,40	0.40	2,800	1.9	2.4	9.5	0.53	2.4	A1	B1
	90					1.9	2.6	9.5	0.53	2.6	A1	B1
SAR 10.2	4	120	VD0R071-4-0,06	0.06	1,400	0.5	0.6	2.1	0.40	0.6	A1	B1
	5.6					0.5	0.6	2.1	0.40	0.6	A1	B1
	8		VD0R071-4-0,12	0.12	1,400	1.1	1.2	3.2	0.40	1.2	A1	B1
	11					1.1	1.3	3.2	0.40	1.3	A1	B1
	16		VD0R071-2-0,25	0.25	2,800	1.4	1.6	4.7	0.52	1.6	A1	B1
	22					1.4	1.9	4.7	0.52	1.9	A1	B1
	32		AD0R071-4-0,40	0.40	1,400	2.6	2.7	8.9	0.42	2.7	A1	B1
	45					2.6	3.2	8.9	0.42	3.2	A1	B1
	63		AD0R071-2-0,70	0.70	2,800	3.2	4.2	17	0.54	4.2	A1	B1
	90					3.2	4.7	17	0.54	4.7	A1	B1
SAR 14.2	4	250	VD0R090-4-0,12	0.12	1,400	0.5	0.8	2.9	0.60	0.8	A1	B1
	5.6					0.5	1.1	2.9	0.60	1.1	A1	B1
	8		VD0R090-4-0,25	0.25	1,400	1.1	1.7	5.5	0.60	1.7	A1	B1
	11					1.1	1.8	5.5	0.60	1.8	A1	B1
	16		VD0R090-2-0,45	0.45	2,800	1.6	3.2	9.5	0.64	3.2	A1	B1
	22					1.6	3.7	9.5	0.64	3.7	A1	B1
	32		AD0R090-4-0,75	0.75	1,400	2.7	4.5	17	0.62	4.5	A1	B1
	45					2.7	5.3	17	0.62	5.3	A1	B1
	63		AD0R090-2-1,40	1.40	2,800	4.9	8.0	40	0.60	8.0	A2	B2
	90					4.9	9.5	40	0.60	9.5	A2	B2
SAR 14.6	4	500	VD0R090-4-0,20	0.20	1,400	0.9	1.6	5.5	0.54	1.6	A1	B1
	5.6					0.9	1.8	5.5	0.54	1.8	A1	B1
	8		VD0R090-4-0,40	0.40	1,400	1.9	3.2	9.8	0.56	3.2	A1	B1
	11					1.9	3.7	9.8	0.56	3.7	A1	B1
	16		VD0R090-2-0,80	0.80	2,800	3.8	5.3	19	0.51	5.3	A1	B2
	22					3.8	5.8	19	0.51	5.8	A1	B2
	32		AD0R090-4-1,60	1.60	1,400	5.6	7.9	40	0.57	7.9	A2	B2
	45					5.6	9.5	40	0.57	9.5	A2	B2
	63		AD0R090-2-3,00	3.00	2,800	9.5	15	72	0.60	15	A2	B3
	90					9.5	17	72	0.60	17	A2	B3
SAR 16.2	4	1 000	VD0R112-4-0,40	0.40	1,400	1.5	2.8	11	0.65	2.8	A1	B1
	5.6					1.5	3.1	11	0.65	3.1	A1	B1
	8		VD0R112-4-0,80	0.80	1,400	3.2	5.5	23	0.57	5.5	A1	B2
	11					3.2	5.8	23	0.57	5.8	A1	B2
	16		VD0R112-2-1,50	1.50	2,800	5.9	9.5	42	0.60	9.5	A2	B2
	22					5.9	11	42	0.60	11	A2	B2
	32		AD0R112-4-3,00	3.00	1,400	8.9	16	63	0.71	16	A2	B3
	45					8.9	18	63	0.71	18	A2	B3
	63		AD0R112-2-5,00	5.00	2,800	13	26	120	0.80	26	A3	–
	90					13	32	120	0.80	26	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 380 V/60 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4.8	30	VD0R063-4-0,02	0.02	1 680	0.5	0.5	1.3	0.40	0.5	A1	B1
	6.7					0.5	0.5	1.3	0.40	0.5	A1	B1
	9.6		VD0R063-4-0,04	0.04	1,680	0.5	0.5	1.3	0.50	0.5	A1	B1
	13					0.5	0.6	1.3	0.50	0.6	A1	B1
	19		VD0R063-2-0,06	0.06	3,360	0.8	0.8	2.4	0.42	0.8	A1	B1
	26					0.8	0.8	2.4	0.42	0.8	A1	B1
	38		AD0R063-4-0,10	0.10	1,680	1.2	1.2	3.0	0.42	1.2	A1	B1
	54					1.2	1.3	3.0	0.42	1.3	A1	B1
	75		AD0R063-2-0,20	0.20	3,360	1.0	1.5	5.6	0.60	1.5	A1	B1
	108					1.0	1.6	5.6	0.60	1.6	A1	B1
SAR 07.6	4.8	60	VD0R063-4-0,03	0.03	1,680	0.5	0.6	1.3	0.43	0.6	A1	B1
	6.7					0.5	0.6	1.3	0.43	0.6	A1	B1
	9.6		VD0R063-4-0,06	0.06	1,680	0.8	0.8	2.0	0.38	0.8	A1	B1
	13					0.8	0.9	2.0	0.38	0.9	A1	B1
	19		VD0R063-2-0,12	0.12	3,360	0.9	1.1	3.8	0.52	1.1	A1	B1
	26					0.9	1.3	3.8	0.52	1.3	A1	B1
	38		AD0R063-4-0,20	0.20	1,680	2.0	2.4	5.8	0.42	2.4	A1	B1
	54					2.0	2.5	5.8	0.42	2.5	A1	B1
	75		AD0R063-2-0,40	0.40	3,360	2.3	2.9	11	0.53	2.9	A1	B1
	108					2.3	3.2	11	0.53	3.2	A1	B1
SAR 10.2	4.8	120	VD0R071-4-0,06	0.06	1,680	0.6	0.8	2.5	0.40	0.8	A1	B1
	6.7					0.6	0.8	2.5	0.40	0.8	A1	B1
	9.6		VD0R071-4-0,12	0.12	1,680	1.3	1.4	3.8	0.40	1.4	A1	B1
	13					1.3	1.5	3.8	0.40	1.5	A1	B1
	19		VD0R071-2-0,25	0.25	3,360	1.6	1.9	5.7	0.52	1.9	A1	B1
	26					1.6	2.3	5.7	0.52	2.3	A1	B1
	38		AD0R071-4-0,40	0.40	1,680	3.2	3.3	11	0.42	3.3	A1	B1
	54					3.2	3.8	11	0.42	3.8	A1	B1
	75		AD0R071-2-0,70	0.70	3,360	3.8	5.1	20	0.54	5.1	A1	B2
	108					3.8	5.7	20	0.54	5.7	A1	B2
SAR 14.2	4.8	250	VD0R090-4-0,12	0.12	1,680	0.6	1.0	3.5	0.60	1.0	A1	B1
	6.7					0.6	1.3	3.5	0.60	1.3	A1	B1
	9.6		VD0R090-4-0,25	0.25	1,680	1.3	2.0	6.6	0.60	2.0	A1	B1
	13					1.3	2.1	6.6	0.60	2.1	A1	B1
	19		VD0R090-2-0,45	0.45	3,360	1.9	3.8	11	0.64	3.8	A1	B1
	26					1.9	4.4	11	0.64	4.4	A1	B1
	38		AD0R090-4-0,75	0.75	1,680	3.3	5.4	20	0.62	5.4	A1	B2
	54					3.3	6.3	20	0.62	6.3	A1	B2
	75		AD0R090-2-1,40	1.40	3,360	5.9	9.6	48	0.60	9.6	A2	B3
	108					5.9	11	48	0.60	11	A2	B3
SAR 14.6	4.8	500	VD0R090-4-0,20	0.20	1,680	1.1	1.9	6.6	0.54	1.9	A1	B1
	6.7					1.1	2.1	6.6	0.54	2.1	A1	B1
	9.6		VD0R090-4-0,40	0.40	1,680	2.3	3.8	12	0.56	3.8	A1	B1
	13					2.3	4.4	12	0.56	4.4	A1	B1
	19		VD0R090-2-0,80	0.80	3,360	4.5	6.3	23	0.51	6.3	A2	B2
	26					4.5	6.9	23	0.51	6.9	A2	B2
	38		AD0R090-4-1,60	1.60	1,680	6.7	9.5	48	0.57	9.5	A2	B3
	54					6.7	11	48	0.57	11	A2	B3
	75		AD0R090-2-3,00	3.00	3,360	11	18	86	0.60	18	A2	–
	108					11	20	86	0.60	20	A2	–
SAR 16.2	4.8	1,000	VD0R112-4-0,40	0.40	1,680	1.8	3.4	13	0.65	3.4	A1	B1
	6.7					1.8	3.7	13	0.65	3.7	A1	B1
	9.6		VD0R112-4-0,80	0.80	1,680	3.8	6.6	28	0.57	6.6	A2	B2
	13					3.8	6.9	28	0.57	6.9	A2	B2
	19		VD0R112-2-1,50	1.50	3,360	7.1	11	51	0.60	11	A2	B3
	26					7.1	13	51	0.60	13	A2	B3
	38		AD0R112-4-3,00	3.00	1,680	11	19	76	0.71	19	A2	–
	54					11	21	76	0.71	21	A2	–
	75		AD0R112-2-5,00	5.00	3,360	15	32	144	0.80	31	A3	–
	108					15	38	144	0.80	31	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 400 V/50 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	AUMA power class for switchgear: Contactor	AUMA power class for switchgear: Thyristor
SAR 07.2	4	30	VD0R063-4-0,02	0.02	1,400	0.4	0.4	1.0	0.40	0.4	A1	B1
	5.6					0.4	0.4	1.0	0.40	0.4	A1	B1
	8		VD0R063-4-0,04	0.04	1,400	0.4	0.4	1.0	0.50	0.4	A1	B1
	11					0.4	0.5	1.0	0.50	0.5	A1	B1
	16		VD0R063-2-0,06	0.06	2,800	0.6	0.6	1.9	0.42	0.6	A1	B1
	22					0.6	0.7	1.9	0.42	0.7	A1	B1
	32		AD0R063-4-0,10	0.10	1,400	1.0	1.0	2.4	0.42	1.0	A1	B1
	45					1.0	1.0	2.4	0.42	1.0	A1	B1
	63		AD0R063-2-0,20	0.20	2,800	0.8	1.2	4.4	0.60	1.2	A1	B1
	90					0.8	1.3	4.4	0.60	1.3	A1	B1
SAR 07.6	4	60	VD0R063-4-0,03	0.03	1,400	0.4	0.5	1.0	0.43	0.5	A1	B1
	5.6					0.4	0.5	1.0	0.43	0.5	A1	B1
	8		VD0R063-4-0,06	0.06	1,400	0.6	0.7	1.6	0.38	0.7	A1	B1
	11					0.6	0.7	1.6	0.38	0.7	A1	B1
	16		VD0R063-2-0,12	0.12	2,800	0.7	0.9	3.0	0.52	0.9	A1	B1
	22					0.7	1.0	3.0	0.52	1.0	A1	B1
	32		AD0R063-4-0,20	0.20	1,400	1.6	1.9	4.6	0.42	1.9	A1	B1
	45					1.6	2.0	4.6	0.42	2.0	A1	B1
	63		AD0R063-2-0,40	0.40	2,800	1.8	2.3	9.0	0.53	2.3	A1	B1
	90					1.8	2.5	9.0	0.53	2.5	A1	B1
SAR 10.2	4	120	VD0R071-4-0,06	0.06	1,400	0.5	0.6	2.0	0.40	0.6	A1	B1
	5.6					0.5	0.6	2.0	0.40	0.6	A1	B1
	8		VD0R071-4-0,12	0.12	1,400	1.0	1.1	3.0	0.40	1.1	A1	B1
	11					1.0	1.2	3.0	0.40	1.2	A1	B1
	16		VD0R071-2-0,25	0.25	2,800	1.3	1.5	4.5	0.52	1.5	A1	B1
	22					1.3	1.8	4.5	0.52	1.8	A1	B1
	32		AD0R071-4-0,40	0.40	1,400	2.5	2.6	8.5	0.42	2.6	A1	B1
	45					2.5	3.0	8.5	0.42	3.0	A1	B1
	63		AD0R071-2-0,70	0.70	2,800	3.0	4.0	16	0.54	4.0	A1	B1
	90					3.0	4.5	16	0.54	4.5	A1	B1
SAR 14.2	4	250	VD0R090-4-0,12	0.12	1,400	0.5	0.8	2.8	0.60	0.8	A1	B1
	5.6					0.5	1.0	2.8	0.60	1.0	A1	B1
	8		VD0R090-4-0,25	0.25	1,400	1.0	1.6	5.2	0.60	1.6	A1	B1
	11					1.0	1.7	5.2	0.60	1.7	A1	B1
	16		VD0R090-2-0,45	0.45	2,800	1.5	3.0	9.0	0.64	3.0	A1	B1
	22					1.5	3.5	9.0	0.64	3.5	A1	B1
	32		AD0R090-4-0,75	0.75	1,400	2.6	4.3	16	0.62	4.3	A1	B1
	45					2.6	5.0	16	0.62	5.0	A1	B1
	63		AD0R090-2-1,40	1.40	2,800	4.7	7.6	38	0.60	7.6	A2	B2
	90					4.7	9.0	38	0.60	9.0	A2	B2
SAR 14.6	4	500	VD0R090-4-0,20	0.20	1,400	0.9	1.5	5.2	0.54	1.5	A1	B1
	5.6					0.9	1.7	5.2	0.54	1.7	A1	B1
	8		VD0R090-4-0,40	0.40	1,400	1.8	3.0	9.3	0.56	3.0	A1	B1
	11					1.8	3.5	9.3	0.56	3.5	A1	B1
	16		VD0R090-2-0,80	0.80	2,800	3.6	5.0	18	0.51	5.0	A1	B1
	22					3.6	5.5	18	0.51	5.5	A1	B1
	32		AD0R090-4-1,60	1.60	1,400	5.3	7.5	38	0.57	7.5	A2	B2
	45					5.3	9.0	38	0.57	9.0	A2	B2
	63		AD0R090-2-3,00	3.00	2,800	9.0	14	68	0.60	14	A2	B3
	90					9.0	16	68	0.60	16	A2	B3
SAR 16.2	4	1 000	VD0R112-4-0,40	0.40	1,400	1.4	2.7	10	0.65	2.7	A1	B1
	5.6					1.4	2.9	10	0.65	2.9	A1	B1
	8		VD0R112-4-0,80	0.80	1,400	3.0	5.2	22	0.57	5.2	A1	B2
	11					3.0	5.5	22	0.57	5.5	A1	B2
	16		VD0R112-2-1,50	1.50	2,800	5.6	9.0	40	0.60	9.0	A2	B2
	22					5.6	11	40	0.60	11	A2	B2
	32		AD0R112-4-3,00	3.00	1,400	8.5	15	60	0.71	15	A2	B3
	45					8.5	17	60	0.71	17	A2	B3
	63		AD0R112-2-5,00	5.00	2,800	12	25	114	0.80	25	A3	–
	90					12	30	114	0.80	25	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

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SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 400 V/60 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4.8	30	VD0R063-4-0,02	0.02	1 680	0.5	0.5	1.2	0.40	0.5	A1	B1
	6.7					0.5	0.5	1.2	0.40	0.5	A1	B1
	9.6		VD0R063-4-0,04	0.04	1,680	0.5	0.5	1.2	0.50	0.5	A1	B1
	13					0.5	0.6	1.2	0.50	0.6	A1	B1
	19		VD0R063-2-0,06	0.06	3,360	0.7	0.7	2.3	0.42	0.7	A1	B1
	26					0.7	0.8	2.3	0.42	0.8	A1	B1
	38		AD0R063-4-0,10	0.10	1,680	1.1	1.1	2.9	0.42	1.1	A1	B1
	54					1.1	1.2	2.9	0.42	1.2	A1	B1
	75		AD0R063-2-0,20	0.20	3,360	1.0	1.4	5.3	0.60	1.4	A1	B1
	108					1.0	1.6	5.3	0.60	1.6	A1	B1
SAR 07.6	4.8	60	VD0R063-4-0,03	0.03	1,680	0.5	0.6	1.2	0.43	0.6	A1	B1
	6.7					0.5	0.6	1.2	0.43	0.6	A1	B1
	9.6		VD0R063-4-0,06	0.06	1,680	0.7	0.8	1.9	0.38	0.8	A1	B1
	13					0.7	0.8	1.9	0.38	0.8	A1	B1
	19		VD0R063-2-0,12	0.12	3,360	0.8	1.1	3.6	0.52	1.1	A1	B1
	26					0.8	1.2	3.6	0.52	1.2	A1	B1
	38		AD0R063-4-0,20	0.20	1,680	1.9	2.3	5.5	0.42	2.3	A1	B1
	54					1.9	2.4	5.5	0.42	2.4	A1	B1
	75		AD0R063-2-0,40	0.40	3,360	2.2	2.8	11	0.53	2.8	A1	B1
	108					2.2	3.0	11	0.53	3.0	A1	B1
SAR 10.2	4.8	120	VD0R071-4-0,06	0.06	1,680	0.6	0.7	2.4	0.40	0.7	A1	B1
	6.7					0.6	0.7	2.4	0.40	0.7	A1	B1
	9.6		VD0R071-4-0,12	0.12	1,680	1.2	1.3	3.6	0.40	1.3	A1	B1
	13					1.2	1.4	3.6	0.40	1.4	A1	B1
	19		VD0R071-2-0,25	0.25	3,360	1.6	1.8	5.4	0.52	1.8	A1	B1
	26					1.6	2.2	5.4	0.52	2.2	A1	B1
	38		AD0R071-4-0,40	0.40	1,680	3.0	3.1	10	0.42	3.1	A1	B1
	54					3.0	3.6	10	0.42	3.6	A1	B1
	75		AD0R071-2-0,70	0.70	3,360	3.6	4.8	19	0.54	4.8	A1	B2
	108					3.6	5.4	19	0.54	5.4	A1	B2
SAR 14.2	4.8	250	VD0R090-4-0,12	0.12	1,680	0.6	1.0	3.4	0.60	1.0	A1	B1
	6.7					0.6	1.2	3.4	0.60	1.2	A1	B1
	9.6		VD0R090-4-0,25	0.25	1,680	1.2	1.9	6.2	0.60	1.9	A1	B1
	13					1.2	2.0	6.2	0.60	2.0	A1	B1
	19		VD0R090-2-0,45	0.45	3,360	1.8	3.6	11	0.64	3.6	A1	B1
	26					1.8	4.2	11	0.64	4.2	A1	B1
	38		AD0R090-4-0,75	0.75	1,680	3.1	5.2	19	0.62	5.2	A1	B2
	54					3.1	6.0	19	0.62	6.0	A1	B2
	75		AD0R090-2-1,40	1.40	3,360	5.6	9.1	46	0.60	9.1	A2	B3
	108					5.6	11	46	0.60	11	A2	B3
SAR 14.6	4.8	500	VD0R090-4-0,20	0.20	1,680	1.1	1.8	6.2	0.54	1.8	A1	B1
	6.7					1.1	2.0	6.2	0.54	2.0	A1	B1
	9.6		VD0R090-4-0,40	0.40	1,680	2.2	3.6	11	0.56	3.6	A1	B1
	13					2.2	4.2	11	0.56	4.2	A1	B1
	19		VD0R090-2-0,80	0.80	3,360	4.3	6.0	22	0.51	6.0	A2	B2
	26					4.3	6.6	22	0.51	6.6	A2	B2
	38		AD0R090-4-1,60	1.60	1,680	6.4	9.0	46	0.57	9.0	A2	B3
	54					6.4	11	46	0.57	11	A2	B3
	75		AD0R090-2-3,00	3.00	3,360	11	17	82	0.60	17	A2	–
	108					11	19	82	0.60	19	A2	–
SAR 16.2	4.8	1,000	VD0R112-4-0,40	0.40	1,680	1.7	3.2	12	0.65	3.2	A1	B1
	6.7					1.7	3.5	12	0.65	3.5	A1	B1
	9.6		VD0R112-4-0,80	0.80	1,680	3.6	6.2	26	0.57	6.2	A2	B2
	13					3.6	6.6	26	0.57	6.6	A2	B2
	19		VD0R112-2-1,50	1.50	3,360	6.7	11	48	0.60	11	A2	B3
	26					6.7	13	48	0.60	13	A2	B3
	38		AD0R112-4-3,00	3.00	1,680	10	18	72	0.71	18	A2	B3
	54					10	20	72	0.71	20	A2	B3
	75		AD0R112-2-5,00	5.00	3,360	14	30	137	0.80	30	A3	–
	108					14	36	137	0.80	30	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 415 V/50 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4	30	VD0R063-4-0,02	0.02	1,400	0.4	0.4	1.0	0.40	0.4	A1	B1
	5.6					0.4	0.4	1.0	0.40	0.4	A1	B1
	8		VD0R063-4-0,04	0.04	1,400	0.4	0.4	1.0	0.50	0.4	A1	B1
	11					0.4	0.5	1.0	0.50	0.5	A1	B1
	16		VD0R063-2-0,06	0.06	2,800	0.6	0.6	1.8	0.42	0.6	A1	B1
	22					0.6	0.6	1.8	0.42	0.6	A1	B1
	32		AD0R063-4-0,10	0.10	1,400	0.9	0.9	2.3	0.42	0.9	A1	B1
	45					0.9	1.0	2.3	0.42	1.0	A1	B1
	63		AD0R063-2-0,20	0.20	2,800	0.8	1.2	4.2	0.60	1.2	A1	B1
	90					0.8	1.3	4.2	0.60	1.3	A1	B1
SAR 07.6	4	60	VD0R063-4-0,03	0.03	1,400	0.4	0.5	1.0	0.43	0.5	A1	B1
	5.6					0.4	0.5	1.0	0.43	0.5	A1	B1
	8		VD0R063-4-0,06	0.06	1,400	0.6	0.6	1.5	0.38	0.6	A1	B1
	11					0.6	0.7	1.5	0.38	0.7	A1	B1
	16		VD0R063-2-0,12	0.12	2,800	0.7	0.9	2.9	0.52	0.9	A1	B1
	22					0.7	1.0	2.9	0.52	1.0	A1	B1
	32		AD0R063-4-0,20	0.20	1,400	1.5	1.8	4.4	0.42	1.8	A1	B1
	45					1.5	1.9	4.4	0.42	1.9	A1	B1
	63		AD0R063-2-0,40	0.40	2,800	1.7	2.2	8.7	0.53	2.2	A1	B1
	90					1.7	2.4	8.7	0.53	2.4	A1	B1
SAR 10.2	4	120	VD0R071-4-0,06	0.06	1,400	0.5	0.6	1.9	0.40	0.6	A1	B1
	5.6					0.5	0.6	1.9	0.40	0.6	A1	B1
	8		VD0R071-4-0,12	0.12	1,400	1.0	1.1	2.9	0.40	1.1	A1	B1
	11					1.0	1.2	2.9	0.40	1.2	A1	B1
	16		VD0R071-2-0,25	0.25	2,800	1.3	1.4	4.3	0.52	1.4	A1	B1
	22					1.3	1.7	4.3	0.52	1.7	A1	B1
	32		AD0R071-4-0,40	0.40	1,400	2.4	2.5	8.2	0.42	2.5	A1	B1
	45					2.4	2.9	8.2	0.42	2.9	A1	B1
	63		AD0R071-2-0,70	0.70	2,800	2.9	3.9	15	0.54	3.9	A1	B1
	90					2.9	4.3	15	0.54	4.3	A1	B1
SAR 14.2	4	250	VD0R090-4-0,12	0.12	1,400	0.5	0.8	2.7	0.60	0.8	A1	B1
	5.6					0.5	1.0	2.7	0.60	1.0	A1	B1
	8		VD0R090-4-0,25	0.25	1,400	1.0	1.5	5.0	0.60	1.5	A1	B1
	11					1.0	1.6	5.0	0.60	1.6	A1	B1
	16		VD0R090-2-0,45	0.45	2,800	1.4	2.9	8.7	0.64	2.9	A1	B1
	22					1.4	3.4	8.7	0.64	3.4	A1	B1
	32		AD0R090-4-0,75	0.75	1,400	2.5	4.1	15	0.62	4.1	A1	B1
	45					2.5	4.8	15	0.62	4.8	A1	B1
	63		AD0R090-2-1,40	1.40	2,800	4.5	7.3	37	0.60	7.3	A2	B2
	90					4.5	8.7	37	0.60	8.7	A2	B2
SAR 14.6	4	500	VD0R090-4-0,20	0.20	1,400	0.9	1.4	5.0	0.54	1.4	A1	B1
	5.6					0.9	1.6	5.0	0.54	1.6	A1	B1
	8		VD0R090-4-0,40	0.40	1,400	1.7	2.9	9.0	0.56	2.9	A1	B1
	11					1.7	3.4	9.0	0.56	3.4	A1	B1
	16		VD0R090-2-0,80	0.80	2,800	3.5	4.8	17	0.51	4.8	A1	B1
	22					3.5	5.3	17	0.51	5.3	A1	B1
	32		AD0R090-4-1,60	1.60	1,400	5.1	7.2	37	0.57	7.2	A2	B2
	45					5.1	8.7	37	0.57	8.7	A2	B2
	63		AD0R090-2-3,00	3.00	2,800	8.7	13	66	0.60	13	A2	B3
	90					8.7	15	66	0.60	15	A2	B3
SAR 16.2	4	1 000	VD0R112-4-0,40	0.40	1,400	1.3	2.6	9.6	0.65	2.6	A1	B1
	5.6					1.3	2.8	9.6	0.65	2.8	A1	B1
	8		VD0R112-4-0,80	0.80	1,400	2.9	5.0	21	0.57	5.0	A1	B2
	11					2.9	5.3	21	0.57	5.3	A1	B2
	16		VD0R112-2-1,50	1.50	2,800	5.4	8.7	39	0.60	8.7	A2	B2
	22					5.4	10	39	0.60	10	A2	B2
	32		AD0R112-4-3,00	3.00	1,400	8.2	14	58	0.71	14	A2	B3
	45					8.2	16	58	0.71	16	A2	B3
	63		AD0R112-2-5,00	5.00	2,800	12	24	110	0.80	24	A3	–
	90					12	29	110	0.80	24	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 440 V/60 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4.8	30	VD0R063-4-0,02	0.02	1 680	0.4	0.4	1.1	0.40	0.4	A1	B1
	6.7					0.4	0.4	1.1	0.40	0.4	A1	B1
	9.6		VD0R063-4-0,04	0.04	1,680	0.4	0.4	1.1	0.50	0.4	A1	B1
	13					0.4	0.5	1.1	0.50	0.5	A1	B1
	19		VD0R063-2-0,06	0.06	3,360	0.7	0.7	2.1	0.42	0.7	A1	B1
	26					0.7	0.7	2.1	0.42	0.7	A1	B1
	38		AD0R063-4-0,10	0.10	1,680	1.0	1.0	2.6	0.42	1.0	A1	B1
	54					1.0	1.1	2.6	0.42	1.1	A1	B1
	75		AD0R063-2-0,20	0.20	3,360	0.9	1.3	4.8	0.60	1.3	A1	B1
	108					0.9	1.4	4.8	0.60	1.4	A1	B1
SAR 07.6	4.8	60	VD0R063-4-0,03	0.03	1,680	0.4	0.5	1.1	0.43	0.5	A1	B1
	6.7					0.4	0.5	1.1	0.43	0.5	A1	B1
	9.6		VD0R063-4-0,06	0.06	1,680	0.7	0.7	1.7	0.38	0.7	A1	B1
	13					0.7	0.8	1.7	0.38	0.8	A1	B1
	19		VD0R063-2-0,12	0.12	3,360	0.8	1.0	3.3	0.52	1.0	A1	B1
	26					0.8	1.1	3.3	0.52	1.1	A1	B1
	38		AD0R063-4-0,20	0.20	1,680	1.7	2.1	5.0	0.42	2.1	A1	B1
	54					1.7	2.2	5.0	0.42	2.2	A1	B1
	75		AD0R063-2-0,40	0.40	3,360	2.0	2.5	9.8	0.53	2.5	A1	B1
	108					2.0	2.7	9.8	0.53	2.7	A1	B1
SAR 10.2	4.8	120	VD0R071-4-0,06	0.06	1,680	0.5	0.7	2.2	0.40	0.7	A1	B1
	6.7					0.5	0.7	2.2	0.40	0.7	A1	B1
	9.6		VD0R071-4-0,12	0.12	1,680	1.1	1.2	3.3	0.40	1.2	A1	B1
	13					1.1	1.3	3.3	0.40	1.3	A1	B1
	19		VD0R071-2-0,25	0.25	3,360	1.4	1.6	4.9	0.52	1.6	A1	B1
	26					1.4	2.0	4.9	0.52	2.0	A1	B1
	38		AD0R071-4-0,40	0.40	1,680	2.7	2.8	9.3	0.42	2.8	A1	B1
	54					2.7	3.3	9.3	0.42	3.3	A1	B1
	75		AD0R071-2-0,70	0.70	3,360	3.3	4.4	17	0.54	4.4	A1	B1
	108					3.3	4.9	17	0.54	4.9	A1	B1
SAR 14.2	4.8	250	VD0R090-4-0,12	0.12	1,680	0.5	0.9	3.1	0.60	0.9	A1	B1
	6.7					0.5	1.1	3.1	0.60	1.1	A1	B1
	9.6		VD0R090-4-0,25	0.25	1,680	1.1	1.7	5.7	0.60	1.7	A1	B1
	13					1.1	1.9	5.7	0.60	1.9	A1	B1
	19		VD0R090-2-0,45	0.45	3,360	1.6	3.3	9.8	0.64	3.3	A1	B1
	26					1.6	3.8	9.8	0.64	3.8	A1	B1
	38		AD0R090-4-0,75	0.75	1,680	2.8	4.7	17	0.62	4.7	A1	B1
	54					2.8	5.5	17	0.62	5.5	A1	B1
	75		AD0R090-2-1,40	1.40	3,360	5.1	8.3	41	0.60	8.3	A2	B2
	108					5.1	9.8	41	0.60	9.8	A2	B2
SAR 14.6	4.8	500	VD0R090-4-0,20	0.20	1,680	1.0	1.6	5.7	0.54	1.6	A1	B1
	6.7					1.0	1.9	5.7	0.54	1.9	A1	B1
	9.6		VD0R090-4-0,40	0.40	1,680	2.0	3.3	10	0.56	3.3	A1	B1
	13					2.0	3.8	10	0.56	3.8	A1	B1
	19		VD0R090-2-0,80	0.80	3,360	3.9	5.5	20	0.51	5.5	A1	B2
	26					3.9	6.0	20	0.51	6.0	A1	B2
	38		AD0R090-4-1,60	1.60	1,680	5.8	8.2	41	0.57	8.2	A2	B2
	54					5.8	9.8	41	0.57	9.8	A2	B2
	75		AD0R090-2-3,00	3.00	3,360	9.8	15	74	0.60	15	A2	B3
	108					9.8	17	74	0.60	17	A2	B3
SAR 16.2	4.8	1,000	VD0R112-4-0,40	0.40	1,680	1.5	2.9	11	0.65	2.9	A1	B1
	6.7					1.5	3.2	11	0.65	3.2	A1	B1
	9.6		VD0R112-4-0,80	0.80	1,680	3.3	5.7	24	0.57	5.7	A1	B2
	13					3.3	6.0	24	0.57	6.0	A1	B2
	19		VD0R112-2-1,50	1.50	3,360	6.1	9.8	44	0.60	9.8	A2	B2
	26					6.1	12	44	0.60	12	A2	B2
	38		AD0R112-4-3,00	3.00	1,680	9.3	16	65	0.71	16	A2	B3
	54					9.3	19	65	0.71	19	A2	B3
	75		AD0R112-2-5,00	5.00	3,360	13	27	124	0.80	27	A3	–
	108					13	33	124	0.80	27	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

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SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 460 V/60 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4.8	30	VD0R063-4-0,02	0.02	1,680	0.4	0.4	1.0	0.40	0.4	A1	B1
	6.7					0.4	0.4	1.0	0.40	0.4	A1	B1
	9.6		VD0R063-4-0,04	0.04	1,680	0.4	0.4	1.0	0.50	0.4	A1	B1
	13					0.4	0.5	1.0	0.50	0.5	A1	B1
	19		VD0R063-2-0,06	0.06	3,360	0.6	0.6	2.0	0.42	0.6	A1	B1
	26					0.6	0.7	2.0	0.42	0.7	A1	B1
	38		AD0R063-4-0,10	0.10	1,680	1.0	1.0	2.5	0.42	1.0	A1	B1
	54					1.0	1.0	2.5	0.42	1.0	A1	B1
	75		AD0R063-2-0,20	0.20	3,360	0.8	1.3	4.6	0.60	1.3	A1	B1
	108					0.8	1.4	4.6	0.60	1.4	A1	B1
SAR 07.6	4.8	60	VD0R063-4-0,03	0.03	1,680	0.4	0.5	1.0	0.43	0.5	A1	B1
	6.7					0.4	0.5	1.0	0.43	0.5	A1	B1
	9.6		VD0R063-4-0,06	0.06	1,680	0.6	0.7	1.7	0.38	0.7	A1	B1
	13					0.6	0.7	1.7	0.38	0.7	A1	B1
	19		VD0R063-2-0,12	0.12	3,360	0.7	0.9	3.1	0.52	0.9	A1	B1
	26					0.7	1.0	3.1	0.52	1.0	A1	B1
	38		AD0R063-4-0,20	0.20	1,680	1.7	2.0	4.8	0.42	2.0	A1	B1
	54					1.7	2.1	4.8	0.42	2.1	A1	B1
	75		AD0R063-2-0,40	0.40	3,360	1.9	2.4	9.4	0.53	2.4	A1	B1
	108					1.9	2.6	9.4	0.53	2.6	A1	B1
SAR 10.2	4.8	120	VD0R071-4-0,06	0.06	1,680	0.5	0.6	2.1	0.40	0.6	A1	B1
	6.7					0.5	0.6	2.1	0.40	0.6	A1	B1
	9.6		VD0R071-4-0,12	0.12	1,680	1.0	1.1	3.1	0.40	1.1	A1	B1
	13					1.0	1.3	3.1	0.40	1.3	A1	B1
	19		VD0R071-2-0,25	0.25	3,360	1.4	1.6	4.7	0.52	1.6	A1	B1
	26					1.4	1.9	4.7	0.52	1.9	A1	B1
	38		AD0R071-4-0,40	0.40	1,680	2.6	2.7	8.9	0.42	2.7	A1	B1
	54					2.6	3.1	8.9	0.42	3.1	A1	B1
	75		AD0R071-2-0,70	0.70	3,360	3.1	4.2	17	0.54	4.2	A1	B1
	108					3.1	4.7	17	0.54	4.7	A1	B1
SAR 14.2	4.8	250	VD0R090-4-0,12	0.12	1,680	0.5	0.8	2.9	0.60	0.8	A1	B1
	6.7					0.5	1.0	2.9	0.60	1.0	A1	B1
	9.6		VD0R090-4-0,25	0.25	1,680	1.0	1.7	5.4	0.60	1.7	A1	B1
	13					1.0	1.8	5.4	0.60	1.8	A1	B1
	19		VD0R090-2-0,45	0.45	3,360	1.6	3.1	9.4	0.64	3.1	A1	B1
	26					1.6	3.7	9.4	0.64	3.7	A1	B1
	38		AD0R090-4-0,75	0.75	1,680	2.7	4.5	17	0.62	4.5	A1	B1
	54					2.7	5.2	17	0.62	5.2	A1	B1
	75		AD0R090-2-1,40	1.40	3,360	4.9	7.9	40	0.60	7.9	A2	B2
	108					4.9	9.4	40	0.60	9.4	A2	B2
SAR 14.6	4.8	500	VD0R090-4-0,20	0.20	1,680	0.9	1.6	5.4	0.54	1.6	A1	B1
	6.7					0.9	1.8	5.4	0.54	1.8	A1	B1
	9.6		VD0R090-4-0,40	0.40	1,680	1.9	3.1	9.7	0.56	3.1	A1	B1
	13					1.9	3.7	9.7	0.56	3.7	A1	B1
	19		VD0R090-2-0,80	0.80	3,360	3.8	5.2	19	0.51	5.2	A1	B2
	26					3.8	5.7	19	0.51	5.7	A1	B2
	38		AD0R090-4-1,60	1.60	1,680	5.5	7.8	40	0.57	7.8	A2	B2
	54					5.5	9.4	40	0.57	9.4	A2	B2
	75		AD0R090-2-3,00	3.00	3,360	9.4	15	71	0.60	15	A2	B3
	108					9.4	17	71	0.60	17	A2	B3
SAR 16.2	4.8	1,000	VD0R112-4-0,40	0.40	1,680	1.5	2.8	10	0.65	2.8	A1	B1
	6.7					1.5	3.0	10	0.65	3.0	A1	B1
	9.6		VD0R112-4-0,80	0.80	1,680	3.1	5.4	23	0.57	5.4	A1	B2
	13					3.1	5.7	23	0.57	5.7	A1	B2
	19		VD0R112-2-1,50	1.50	3,360	5.8	9.4	42	0.60	9.4	A2	B2
	26					5.8	11	42	0.60	11	A2	B2
	38		AD0R112-4-3,00	3.00	1,680	8.9	16	63	0.71	16	A2	B3
	54					8.9	18	63	0.71	18	A2	B3
	75		AD0R112-2-5,00	5.00	3,360	13	26	119	0.80	26	A3	–
	108					13	31	119	0.80	26	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 480 V/60 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4.8	30	VD0R063-4-0,02	0.02	1 680	0.4	0.4	1.0	0.40	0.4	A1	B1
	6.7					0.4	0.4	1.0	0.40	0.4	A1	B1
	9.6		VD0R063-4-0,04	0.04	1,680	0.4	0.4	1.0	0.50	0.4	A1	B1
	13					0.4	0.5	1.0	0.50	0.5	A1	B1
	19		VD0R063-2-0,06	0.06	3,360	0.6	0.6	1.9	0.42	0.6	A1	B1
	26					0.6	0.7	1.9	0.42	0.7	A1	B1
	38		AD0R063-4-0,10	0.10	1,680	1.0	1.0	2.4	0.42	1.0	A1	B1
	54					1.0	1.0	2.4	0.42	1.0	A1	B1
	75		AD0R063-2-0,20	0.20	3,360	0.8	1.2	4.4	0.60	1.2	A1	B1
	108					0.8	1.3	4.4	0.60	1.3	A1	B1
SAR 07.6	4.8	60	VD0R063-4-0,03	0.03	1,680	0.4	0.5	1.0	0.43	0.5	A1	B1
	6.7					0.4	0.5	1.0	0.43	0.5	A1	B1
	9.6		VD0R063-4-0,06	0.06	1,680	0.6	0.7	1.6	0.38	0.7	A1	B1
	13					0.6	0.7	1.6	0.38	0.7	A1	B1
	19		VD0R063-2-0,12	0.12	3,360	0.7	0.9	3.0	0.52	0.9	A1	B1
	26					0.7	1.0	3.0	0.52	1.0	A1	B1
	38		AD0R063-4-0,20	0.20	1,680	1.6	1.9	4.6	0.42	1.9	A1	B1
	54					1.6	2.0	4.6	0.42	2.0	A1	B1
	75		AD0R063-2-0,40	0.40	3,360	1.8	2.3	9.0	0.53	2.3	A1	B1
	108					1.8	2.5	9.0	0.53	2.5	A1	B1
SAR 10.2	4.8	120	VD0R071-4-0,06	0.06	1,680	0.5	0.6	2.0	0.40	0.6	A1	B1
	6.7					0.5	0.6	2.0	0.40	0.6	A1	B1
	9.6		VD0R071-4-0,12	0.12	1,680	1.0	1.1	3.0	0.40	1.1	A1	B1
	13					1.0	1.2	3.0	0.40	1.2	A1	B1
	19		VD0R071-2-0,25	0.25	3,360	1.3	1.5	4.5	0.52	1.5	A1	B1
	26					1.3	1.8	4.5	0.52	1.8	A1	B1
	38		AD0R071-4-0,40	0.40	1,680	2.5	2.6	8.5	0.42	2.6	A1	B1
	54					2.5	3.0	8.5	0.42	3.0	A1	B1
	75		AD0R071-2-0,70	0.70	3,360	3.0	4.0	16	0.54	4.0	A1	B1
	108					3.0	4.5	16	0.54	4.5	A1	B1
SAR 14.2	4.8	250	VD0R090-4-0,12	0.12	1,680	0.5	0.8	2.8	0.60	0.8	A1	B1
	6.7					0.5	1.0	2.8	0.60	1.0	A1	B1
	9.6		VD0R090-4-0,25	0.25	1,680	1.0	1.6	5.2	0.60	1.6	A1	B1
	13					1.0	1.7	5.2	0.60	1.7	A1	B1
	19		VD0R090-2-0,45	0.45	3,360	1.5	3.0	9.0	0.64	3.0	A1	B1
	26					1.5	3.5	9.0	0.64	3.5	A1	B1
	38		AD0R090-4-0,75	0.75	1,680	2.6	4.3	16	0.62	4.3	A1	B1
	54					2.6	5.0	16	0.62	5.0	A1	B1
	75		AD0R090-2-1,40	1.40	3,360	4.7	7.6	38	0.60	7.6	A2	B2
	108					4.7	9.0	38	0.60	9.0	A2	B2
SAR 14.6	4.8	500	VD0R090-4-0,20	0.20	1,680	0.9	1.5	5.2	0.54	1.5	A1	B1
	6.7					0.9	1.7	5.2	0.54	1.7	A1	B1
	9.6		VD0R090-4-0,40	0.40	1,680	1.8	3.0	9.3	0.56	3.0	A1	B1
	13					1.8	3.5	9.3	0.56	3.5	A1	B1
	19		VD0R090-2-0,80	0.80	3,360	3.6	5.0	18	0.51	5.0	A1	B1
	26					3.6	5.5	18	0.51	5.5	A1	B1
	38		AD0R090-4-1,60	1.60	1,680	5.3	7.5	38	0.57	7.5	A2	B2
	54					5.3	9.0	38	0.57	9.0	A2	B2
	75		AD0R090-2-3,00	3.00	3,360	9.0	14	68	0.60	14	A2	B3
	108					9.0	16	68	0.60	16	A2	B3
SAR 16.2	4.8	1,000	VD0R112-4-0,40	0.40	1,680	1.4	2.7	10	0.65	2.7	A1	B1
	6.7					1.4	2.9	10	0.65	2.9	A1	B1
	9.6		VD0R112-4-0,80	0.80	1,680	3.0	5.2	22	0.57	5.2	A1	B2
	13					3.0	5.5	22	0.57	5.5	A1	B2
	19		VD0R112-2-1,50	1.50	3,360	5.6	9.0	40	0.60	9.0	A2	B2
	26					5.6	11	40	0.60	11	A2	B2
	38		AD0R112-4-3,00	3.00	1,680	8.5	15	60	0.71	15	A2	B3
	54					8.5	17	60	0.71	17	A2	B3
	75		AD0R112-2-5,00	5.00	3,360	12	25	114	0.80	25	A3	–
	108					12	30	114	0.80	25	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 500 V/50 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4	30	VD0R063-4-0,02	0.02	1 400	0.3	0.3	0.8	0.40	0.3	A1	B1
	5.6					0.3	0.3	0.8	0.40	0.3	A1	B1
	8		VD0R063-4-0,04	0.04	1,400	0.3	0.3	0.8	0.50	0.3	A1	B1
	11					0.3	0.4	0.8	0.50	0.4	A1	B1
	16		VD0R063-2-0,06	0.06	2,800	0.5	0.5	1.5	0.42	0.5	A1	B1
	22					0.5	0.5	1.5	0.42	0.5	A1	B1
	32		AD0R063-4-0,10	0.10	1,400	0.8	0.8	1.9	0.42	0.8	A1	B1
	45					0.8	0.8	1.9	0.42	0.8	A1	B1
	63		AD0R063-2-0,20	0.20	2,800	0.6	1.0	3.5	0.60	1.0	A1	B1
	90					0.6	1.0	3.5	0.60	1.0	A1	B1
SAR 07.6	4	60	VD0R063-4-0,03	0.03	1,400	0.3	0.4	0.8	0.43	0.4	A1	B1
	5.6					0.3	0.4	0.8	0.43	0.4	A1	B1
	8		VD0R063-4-0,06	0.06	1,400	0.5	0.5	1.3	0.38	0.5	A1	B1
	11					0.5	0.6	1.3	0.38	0.6	A1	B1
	16		VD0R063-2-0,12	0.12	2,800	0.6	0.7	2.4	0.52	0.7	A1	B1
	22					0.6	0.8	2.4	0.52	0.8	A1	B1
	32		AD0R063-4-0,20	0.20	1,400	1.3	1.5	3.7	0.42	1.5	A1	B1
	45					1.3	1.6	3.7	0.42	1.6	A1	B1
	63		AD0R063-2-0,40	0.40	2,800	1.4	1.8	7.2	0.53	1.8	A1	B1
	90					1.4	2.0	7.2	0.53	2.0	A1	B1
SAR 10.2	4	120	VD0R071-4-0,06	0.06	1,400	0.4	0.5	1.6	0.40	0.5	A1	B1
	5.6					0.4	0.5	1.6	0.40	0.5	A1	B1
	8		VD0R071-4-0,12	0.12	1,400	0.8	0.9	2.4	0.40	0.9	A1	B1
	11					0.8	1.0	2.4	0.40	1.0	A1	B1
	16		VD0R071-2-0,25	0.25	2,800	1.0	1.2	3.6	0.52	1.2	A1	B1
	22					1.0	1.4	3.6	0.52	1.4	A1	B1
	32		AD0R071-4-0,40	0.40	1,400	2.0	2.1	6.8	0.42	2.1	A1	B1
	45					2.0	2.4	6.8	0.42	2.4	A1	B1
	63		AD0R071-2-0,70	0.70	2,800	2.4	3.2	13	0.54	3.2	A1	B1
	90					2.4	3.6	13	0.54	3.6	A1	B1
SAR 14.2	4	250	VD0R090-4-0,12	0.12	1,400	0.4	0.6	2.2	0.60	0.6	A1	B1
	5.6					0.4	0.8	2.2	0.60	0.8	A1	B1
	8		VD0R090-4-0,25	0.25	1,400	0.8	1.3	4.2	0.60	1.3	A1	B1
	11					0.8	1.4	4.2	0.60	1.4	A1	B1
	16		VD0R090-2-0,45	0.45	2,800	1.2	2.4	7.2	0.64	2.4	A1	B1
	22					1.2	2.8	7.2	0.64	2.8	A1	B1
	32		AD0R090-4-0,75	0.75	1,400	2.1	3.4	13	0.62	3.4	A1	B1
	45					2.1	4.0	13	0.62	4.0	A1	B1
	63		AD0R090-2-1,40	1.40	2,800	3.8	6.1	30	0.60	6.1	A2	B2
	90					3.8	7.2	30	0.60	7.2	A2	B2
SAR 14.6	4	500	VD0R090-4-0,20	0.20	1,400	0.7	1.2	4.2	0.54	1.2	A1	B1
	5.6					0.7	1.4	4.2	0.54	1.4	A1	B1
	8		VD0R090-4-0,40	0.40	1,400	1.4	2.4	7.4	0.56	2.4	A1	B1
	11					1.4	2.8	7.4	0.56	2.8	A1	B1
	16		VD0R090-2-0,80	0.80	2,800	2.9	4.0	14	0.51	4.0	A1	B1
	22					2.9	4.4	14	0.51	4.4	A1	B1
	32		AD0R090-4-1,60	1.60	1,400	4.2	6.0	30	0.57	6.0	A2	B2
	45					4.2	7.2	30	0.57	7.2	A2	B2
	63		AD0R090-2-3,00	3.00	2,800	7.2	11	54	0.60	11	A2	B3
	90					7.2	13	54	0.60	13	A2	B3
SAR 16.2	4	1,000	VD0R112-4-0,40	0.40	1,400	1.1	2.2	8.0	0.65	2.2	A1	B1
	5.6					1.1	2.3	8.0	0.65	2.3	A1	B1
	8		VD0R112-4-0,80	0.80	1,400	2.4	4.2	18	0.57	4.2	A1	B1
	11					2.4	4.4	18	0.57	4.4	A1	B1
	16		VD0R112-2-1,50	1.50	2,800	4.5	7.2	32	0.60	7.2	A2	B2
	22					4.5	8.4	32	0.60	8.4	A2	B2
	32		AD0R112-4-3,00	3.00	1,400	6.8	12	48	0.71	12	A2	B3
	45					6.8	14	48	0.71	14	A2	B3
	63		AD0R112-2-5,00	5.00	2,800	9.6	20	91	0.80	20	A3	–
	90					9.6	24	91	0.80	20	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

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SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 50 %, 220 V/60 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4.8	20	VD0Q063-4-0,01	0.01	1,680	0.8	0.9	2.2	0.40	0.9	A1	B1
	6.7					0.8	0.9	2.2	0.40	0.9	A1	B1
	9.6		VD0Q063-4-0,03	0.03	1,680	0.9	0.9	2.0	0.50	0.9	A1	B1
	13					0.9	0.9	2.0	0.50	0.9	A1	B1
	19		VD0Q063-2-0,04	0.04	3,360	1.1	1.3	3.7	0.43	1.3	A1	B1
	26					1.1	1.3	3.7	0.43	1.3	A1	B1
	38		AD0Q063-4-0,07	0.07	1,680	1.7	2.0	4.4	0.40	2.0	A1	B1
	54					1.7	2.0	4.4	0.40	2.0	A1	B1
	75		AD0Q063-2-0,14	0.14	3,360	1.5	2.0	7.9	0.55	2.0	A1	B1
	108					1.5	2.2	7.9	0.55	2.2	A1	B1
SAR 07.6	4.8	40	VD0Q063-4-0,02	0.02	1,680	0.9	0.9	2.2	0.50	0.9	A1	B1
	6.7					0.9	0.9	2.2	0.50	0.9	A1	B1
	9.6		VD0Q063-4-0,04	0.04	1,680	1.1	1.1	3.1	0.45	1.1	A1	B1
	13					1.1	1.1	3.1	0.45	1.1	A1	B1
	19		VD0Q063-2-0,08	0.08	3,360	1.1	1.7	5.5	0.52	1.7	A1	B1
	26					1.1	1.7	5.5	0.52	1.7	A1	B1
	38		AD0Q063-4-0,14	0.14	1,680	2.6	3.3	7.6	0.40	3.3	A1	B1
	54					2.6	3.3	7.6	0.40	3.3	A1	B1
	75		AD0Q063-2-0,28	0.28	3,360	2.4	3.5	12	0.53	3.5	A1	B1
	108					2.4	3.7	12	0.53	3.7	A1	B1
SAR 10.2	4.8	90	VD0Q071-4-0,04	0.04	1,680	0.8	1.1	3.3	0.40	1.1	A1	B1
	6.7					0.8	1.1	3.3	0.40	1.1	A1	B1
	9.6		VD0Q071-4-0,08	0.08	1,680	1.7	2.0	5.7	0.40	2.0	A1	B1
	13					1.7	2.2	5.7	0.40	2.2	A1	B1
	19		VD0Q071-2-0,17	0.17	3,360	2.2	2.4	8.7	0.52	2.4	A1	B1
	26					2.2	2.8	8.7	0.52	2.8	A1	B1
	38		AD0Q071-4-0,28	0.28	1,680	3.5	4.4	16	0.43	4.4	A1	B1
	54					3.5	4.8	16	0.43	4.8	A1	B1
	75		AD0Q071-2-0,50	0.50	3,360	3.9	5.5	26	0.56	5.5	A1	B2
	108					3.9	7.0	26	0.56	7.0	A1	B2
SAR 14.2	4.8	180	VD0Q090-4-0,08	0.08	1,680	0.9	1.3	5.7	0.60	1.3	A1	B1
	6.7					0.9	1.5	5.7	0.60	1.5	A1	B1
	9.6		VD0Q090-4-0,18	0.18	1,680	2.0	3.1	9.2	0.60	3.1	A1	B1
	13					2.0	3.3	9.2	0.60	3.3	A1	B1
	19		VD0Q090-2-0,30	0.30	3,360	2.0	4.4	16	0.68	4.4	A1	B1
	26					2.0	5.0	16	0.68	5.0	A1	B1
	38		AD0Q090-4-0,50	0.50	1,680	4.4	6.5	26	0.56	6.5	A1	B2
	54					4.4	7.6	26	0.56	7.6	A1	B2
	75		AD0Q090-2-1,00	1.00	3,360	6.8	12	61	0.65	12	A2	B3
	108					6.8	13	61	0.65	13	A2	B3
SAR 14.6	4.8	360	VD0Q090-4-0,14	0.14	1,680	1.5	2.4	8.5	0.55	2.4	A1	B1
	6.7					1.5	2.6	8.5	0.55	2.6	A1	B1
	9.6		VD0Q090-4-0,30	0.30	1,680	3.5	5.5	19	0.52	5.5	A1	B2
	13					3.5	6.1	19	0.52	6.1	A1	B2
	19		VD0Q090-2-0,60	0.60	3,360	5.0	7.9	33	0.61	7.9	A2	B2
	26					5.0	8.3	33	0.61	8.3	A2	B2
	38		AD0Q090-4-1,00	1.00	1,680	7.9	13	65	0.60	13	A2	B3
	54					7.9	14	65	0.60	14	A2	B3
	75		AD0Q090-2-2,00	2.00	3,360	12	21	120	0.69	21	A3	–
	108					12	24	120	0.69	24	A3	–
SAR 16.2	4.8	710	VD0Q112-4-0,30	0.30	1,680	2.6	5.0	17	0.60	5.0	A1	B1
	6.7					2.6	5.5	17	0.60	5.5	A1	B1
	9.6		VD0Q112-4-0,60	0.60	1,680	5.0	8.7	37	0.53	8.7	A2	B2
	13					5.0	9.8	37	0.53	9.8	A2	B2
	19		VD0Q112-2-1,00	1.00	3,360	7.0	13	72	0.68	13	A2	B3
	26					7.0	15	72	0.68	15	A2	B3
	38		AD0Q112-4-2,00	2.00	1,680	13	22	87	0.65	22	A2	–
	54					13	26	87	0.65	24	A2	–
	75		AD0Q112-2-3,50	3.50	3,360	19	39	196	0.78	39	A4	–
	108					19	46	196	0.78	42	A4	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

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SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 50 %, 230 V/50 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4	20	VD0Q063-4-0,01	0.01	1,400	0.6	0.7	1.7	0.40	0.7	A1	B1
	5.6					0.6	0.7	1.7	0.40	0.7	A1	B1
	8		VD0Q063-4-0,03	0.03	1,400	0.7	0.7	1.6	0.50	0.7	A1	B1
	11					0.7	0.7	1.6	0.50	0.7	A1	B1
	16		VD0Q063-2-0,04	0.04	2,800	0.9	1.0	3.0	0.43	1.0	A1	B1
	22					0.9	1.0	3.0	0.43	1.0	A1	B1
	32		AD0Q063-4-0,07	0.07	1,400	1.4	1.6	3.5	0.40	1.6	A1	B1
	45					1.4	1.6	3.5	0.40	1.6	A1	B1
	63		AD0Q063-2-0,14	0.14	2,800	1.2	1.6	6.3	0.55	1.6	A1	B1
	90					1.2	1.7	6.3	0.55	1.7	A1	B1
SAR 07.6	4	40	VD0Q063-4-0,02	0.02	1,400	0.7	0.7	1.7	0.50	0.7	A1	B1
	5.6					0.7	0.7	1.7	0.50	0.7	A1	B1
	8		VD0Q063-4-0,04	0.04	1,400	0.9	0.9	2.4	0.45	0.9	A1	B1
	11					0.9	0.9	2.4	0.45	0.9	A1	B1
	16		VD0Q063-2-0,08	0.08	2,800	0.9	1.4	4.3	0.52	1.4	A1	B1
	22					0.9	1.4	4.3	0.52	1.4	A1	B1
	32		AD0Q063-4-0,14	0.14	1,400	2.1	2.6	6.1	0.40	2.6	A1	B1
	45					2.1	2.6	6.1	0.40	2.6	A1	B1
	63		AD0Q063-2-0,28	0.28	2,800	1.9	2.8	9.9	0.53	2.8	A1	B1
	90					1.9	3.0	9.9	0.53	3.0	A1	B1
SAR 10.2	4	90	VD0Q071-4-0,04	0.04	1,400	0.6	0.9	2.6	0.40	0.9	A1	B1
	5.6					0.6	0.9	2.6	0.40	0.9	A1	B1
	8		VD0Q071-4-0,08	0.08	1,400	1.4	1.6	4.5	0.40	1.6	A1	B1
	11					1.4	1.7	4.5	0.40	1.7	A1	B1
	16		VD0Q071-2-0,17	0.17	2,800	1.7	1.9	7.0	0.52	1.9	A1	B1
	22					1.7	2.3	7.0	0.52	2.3	A1	B1
	32		AD0Q071-4-0,28	0.28	1,400	2.8	3.5	13	0.43	3.5	A1	B1
	45					2.8	3.8	13	0.43	3.8	A1	B1
	63		AD0Q071-2-0,50	0.50	2,800	3.1	4.3	21	0.56	4.3	A1	B2
	90					3.1	5.6	21	0.56	5.6	A1	B2
SAR 14.2	4	180	VD0Q090-4-0,08	0.08	1,400	0.7	1.0	4.5	0.60	1.0	A1	B1
	5.6					0.7	1.2	4.5	0.60	1.2	A1	B1
	8		VD0Q090-4-0,18	0.18	1,400	1.6	2.4	7.3	0.60	2.4	A1	B1
	11					1.6	2.6	7.3	0.60	2.6	A1	B1
	16		VD0Q090-2-0,30	0.30	2,800	1.6	3.5	13	0.68	3.5	A1	B1
	22					1.6	4.0	13	0.68	4.0	A1	B1
	32		AD0Q090-4-0,50	0.50	1,400	3.5	5.2	21	0.56	5.2	A1	B2
	45					3.5	6.1	21	0.56	6.1	A1	B2
	63		AD0Q090-2-1,00	1.00	2,800	5.4	9.6	49	0.65	9.6	A2	B3
	90					5.4	10	49	0.65	10	A2	B3
SAR 14.6	4	360	VD0Q090-4-0,14	0.14	1,400	1.2	1.9	6.8	0.55	1.9	A1	B1
	5.6					1.2	2.1	6.8	0.55	2.1	A1	B1
	8		VD0Q090-4-0,30	0.30	1,400	2.8	4.3	15	0.52	4.3	A1	B1
	11					2.8	4.9	15	0.52	4.9	A1	B1
	16		VD0Q090-2-0,60	0.60	2,800	4.0	6.3	26	0.61	6.3	A1	B2
	22					4.0	6.6	26	0.61	6.6	A1	B2
	32		AD0Q090-4-1,00	1.00	1,400	6.3	10	52	0.60	10	A2	B3
	45					6.3	11	52	0.60	11	A2	B3
	63		AD0Q090-2-2,00	2.00	2,800	9.9	17	96	0.69	17	A2	–
	90					9.9	19	96	0.69	19	A2	–
SAR 16.2	4	710	VD0Q112-4-0,30	0.30	1,400	2.1	4.0	14	0.60	4.0	A1	B1
	5.6					2.1	4.3	14	0.60	4.3	A1	B1
	8		VD0Q112-4-0,60	0.60	1,400	4.0	7.0	30	0.53	7.0	A2	B2
	11					4.0	7.8	30	0.53	7.8	A2	B2
	16		VD0Q112-2-1,00	1.00	2,800	5.6	11	57	0.68	11	A2	B3
	22					5.6	12	57	0.68	12	A2	B3
	32		AD0Q112-4-2,00	2.00	1,400	10	17	70	0.65	17	A2	–
	45					10	21	70	0.65	20	A2	–
	63		AD0Q112-2-3,50	3.50	2,800	15	31	157	0.78	31	A4	–
	90					15	37	157	0.78	34	A4	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

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SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 50 %, 380 V/50 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4	20	VD0Q063-4-0,01	0.01	1 400	0.4	0.4	1.1	0.40	0.4	A1	B1
	5.6					0.4	0.4	1.1	0.40	0.4	A1	B1
	8		VD0Q063-4-0,03	0.03	1,400	0.4	0.4	0.9	0.50	0.4	A1	B1
	11					0.4	0.4	0.9	0.50	0.4	A1	B1
	16		VD0Q063-2-0,04	0.04	2,800	0.5	0.6	1.8	0.43	0.6	A1	B1
	22					0.5	0.6	1.8	0.43	0.6	A1	B1
	32		AD0Q063-4-0,07	0.07	1,400	0.8	0.9	2.1	0.40	0.9	A1	B1
	45					0.8	0.9	2.1	0.40	0.9	A1	B1
	63		AD0Q063-2-0,14	0.14	2,800	0.7	0.9	3.8	0.55	0.9	A1	B1
	90					0.7	1.1	3.8	0.55	1.1	A1	B1
SAR 07.6	4	40	VD0Q063-4-0,02	0.02	1,400	0.4	0.4	1.1	0.50	0.4	A1	B1
	5.6					0.4	0.4	1.1	0.50	0.4	A1	B1
	8		VD0Q063-4-0,04	0.04	1,400	0.5	0.5	1.5	0.45	0.5	A1	B1
	11					0.5	0.5	1.5	0.45	0.5	A1	B1
	16		VD0Q063-2-0,08	0.08	2,800	0.5	0.8	2.6	0.52	0.8	A1	B1
	22					0.5	0.8	2.6	0.52	0.8	A1	B1
	32		AD0Q063-4-0,14	0.14	1,400	1.3	1.6	3.7	0.40	1.6	A1	B1
	45					1.3	1.6	3.7	0.40	1.6	A1	B1
	63		AD0Q063-2-0,28	0.28	2,800	1.2	1.7	6.0	0.53	1.7	A1	B1
	90					1.2	1.8	6.0	0.53	1.8	A1	B1
SAR 10.2	4	90	VD0Q071-4-0,04	0.04	1,400	0.4	0.5	1.6	0.40	0.5	A1	B1
	5.6					0.4	0.5	1.6	0.40	0.5	A1	B1
	8		VD0Q071-4-0,08	0.08	1,400	0.8	0.9	2.7	0.40	0.9	A1	B1
	11					0.8	1.1	2.7	0.40	1.1	A1	B1
	16		VD0Q071-2-0,17	0.17	2,800	1.1	1.2	4.2	0.52	1.2	A1	B1
	22					1.1	1.4	4.2	0.52	1.4	A1	B1
	32		AD0Q071-4-0,28	0.28	1,400	1.7	2.1	7.6	0.43	2.1	A1	B1
	45					1.7	2.3	7.6	0.43	2.3	A1	B1
	63		AD0Q071-2-0,50	0.50	2,800	1.9	2.6	13	0.56	2.6	A1	B1
	90					1.9	3.4	13	0.56	3.4	A1	B1
SAR 14.2	4	180	VD0Q090-4-0,08	0.08	1,400	0.4	0.6	2.7	0.60	0.6	A1	B1
	5.6					0.4	0.7	2.7	0.60	0.7	A1	B1
	8		VD0Q090-4-0,18	0.18	1,400	0.9	1.5	4.4	0.60	1.5	A1	B1
	11					0.9	1.6	4.4	0.60	1.6	A1	B1
	16		VD0Q090-2-0,30	0.30	2,800	0.9	2.1	7.6	0.68	2.1	A1	B1
	22					0.9	2.4	7.6	0.68	2.4	A1	B1
	32		AD0Q090-4-0,50	0.50	1,400	2.1	3.2	13	0.56	3.2	A1	B1
	45					2.1	3.7	13	0.56	3.7	A1	B1
	63		AD0Q090-2-1,00	1.00	2,800	3.3	5.8	29	0.65	5.8	A2	B2
	90					3.3	6.3	29	0.65	6.3	A2	B2
SAR 14.6	4	360	VD0Q090-4-0,14	0.14	1,400	0.7	1.2	4.1	0.55	1.2	A1	B1
	5.6					0.7	1.3	4.1	0.55	1.3	A1	B1
	8		VD0Q090-4-0,30	0.30	1,400	1.7	2.6	8.9	0.52	2.6	A1	B1
	11					1.7	2.9	8.9	0.52	2.9	A1	B1
	16		VD0Q090-2-0,60	0.60	2,800	2.4	3.8	16	0.61	3.8	A1	B1
	22					2.4	4.0	16	0.61	4.0	A1	B1
	32		AD0Q090-4-1,00	1.00	1,400	3.8	6.3	32	0.60	6.3	A2	B2
	45					3.8	6.8	32	0.60	6.8	A2	B2
	63		AD0Q090-2-2,00	2.00	2,800	6.0	10	58	0.69	10	A2	B3
	90					6.0	12	58	0.69	12	A2	B3
SAR 16.2	4	710	VD0Q112-4-0,30	0.30	1,400	1.3	2.4	8.4	0.60	2.4	A1	B1
	5.6					1.3	2.6	8.4	0.60	2.6	A1	B1
	8		VD0Q112-4-0,60	0.60	1,400	2.4	4.2	18	0.53	4.2	A1	B1
	11					2.4	4.7	18	0.53	4.7	A1	B1
	16		VD0Q112-2-1,00	1.00	2,800	3.4	6.4	35	0.68	6.4	A2	B2
	22					3.4	7.2	35	0.68	7.2	A2	B2
	32		AD0Q112-4-2,00	2.00	1,400	6.3	11	42	0.65	11	A2	B3
	45					6.3	13	42	0.65	12	A2	B3
	63		AD0Q112-2-3,50	3.50	2,800	8.9	19	95	0.78	19	A2	–
	90					8.9	22	95	0.78	21	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 50 %, 380 V/60 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4.8	20	VD0Q063-4-0,01	0.01	1,680	0.4	0.5	1.3	0.40	0.5	A1	B1
	6.7					0.4	0.5	1.3	0.40	0.5	A1	B1
	9.6		VD0Q063-4-0,03	0.03	1,680	0.5	0.5	1.1	0.50	0.5	A1	B1
	13					0.5	0.5	1.1	0.50	0.5	A1	B1
	19		VD0Q063-2-0,04	0.04	3,360	0.6	0.8	2.1	0.43	0.8	A1	B1
	26					0.6	0.8	2.1	0.43	0.8	A1	B1
	38		AD0Q063-4-0,07	0.07	1,680	1.0	1.1	2.5	0.40	1.1	A1	B1
	54					1.0	1.1	2.5	0.40	1.1	A1	B1
	75		AD0Q063-2-0,14	0.14	3,360	0.9	1.1	4.5	0.55	1.1	A1	B1
	108					0.9	1.3	4.5	0.55	1.3	A1	B1
SAR 07.6	4.8	40	VD0Q063-4-0,02	0.02	1,680	0.5	0.5	1.3	0.50	0.5	A1	B1
	6.7					0.5	0.5	1.3	0.50	0.5	A1	B1
	9.6		VD0Q063-4-0,04	0.04	1,680	0.6	0.6	1.8	0.45	0.6	A1	B1
	13					0.6	0.6	1.8	0.45	0.6	A1	B1
	19		VD0Q063-2-0,08	0.08	3,360	0.6	1.0	3.2	0.52	1.0	A1	B1
	26					0.6	1.0	3.2	0.52	1.0	A1	B1
	38		AD0Q063-4-0,14	0.14	1,680	1.5	1.9	4.4	0.40	1.9	A1	B1
	54					1.5	1.9	4.4	0.40	1.9	A1	B1
	75		AD0Q063-2-0,28	0.28	3,360	1.4	2.0	7.2	0.53	2.0	A1	B1
	108					1.4	2.1	7.2	0.53	2.1	A1	B1
SAR 10.2	4.8	90	VD0Q071-4-0,04	0.04	1,680	0.4	0.6	1.9	0.40	0.6	A1	B1
	6.7					0.4	0.6	1.9	0.40	0.6	A1	B1
	9.6		VD0Q071-4-0,08	0.08	1,680	1.0	1.1	3.3	0.40	1.1	A1	B1
	13					1.0	1.3	3.3	0.40	1.3	A1	B1
	19		VD0Q071-2-0,17	0.17	3,360	1.3	1.4	5.1	0.52	1.4	A1	B1
	26					1.3	1.6	5.1	0.52	1.6	A1	B1
	38		AD0Q071-4-0,28	0.28	1,680	2.0	2.5	9.1	0.43	2.5	A1	B1
	54					2.0	2.8	9.1	0.43	2.8	A1	B1
	75		AD0Q071-2-0,50	0.50	3,360	2.3	3.2	15	0.56	3.2	A1	B1
	108					2.3	4.0	15	0.56	4.0	A1	B1
SAR 14.2	4.8	180	VD0Q090-4-0,08	0.08	1,680	0.5	0.8	3.3	0.60	0.8	A1	B1
	6.7					0.5	0.9	3.3	0.60	0.9	A1	B1
	9.6		VD0Q090-4-0,18	0.18	1,680	1.1	1.8	5.3	0.60	1.8	A1	B1
	13					1.1	1.9	5.3	0.60	1.9	A1	B1
	19		VD0Q090-2-0,30	0.30	3,360	1.1	2.5	9.1	0.68	2.5	A1	B1
	26					1.1	2.9	9.1	0.68	2.9	A1	B1
	38		AD0Q090-4-0,50	0.50	1,680	2.5	3.8	15	0.56	3.8	A1	B1
	54					2.5	4.4	15	0.56	4.4	A1	B1
	75		AD0Q090-2-1,00	1.00	3,360	3.9	6.9	35	0.65	6.9	A2	B2
	108					3.9	7.6	35	0.65	7.6	A2	B2
SAR 14.6	4.8	360	VD0Q090-4-0,14	0.14	1,680	0.9	1.4	4.9	0.55	1.4	A1	B1
	6.7					0.9	1.5	4.9	0.55	1.5	A1	B1
	9.6		VD0Q090-4-0,30	0.30	1,680	2.0	3.2	11	0.52	3.2	A1	B1
	13					2.0	3.5	11	0.52	3.5	A1	B1
	19		VD0Q090-2-0,60	0.60	3,360	2.9	4.5	19	0.61	4.5	A1	B2
	26					2.9	4.8	19	0.61	4.8	A1	B2
	38		AD0Q090-4-1,00	1.00	1,680	4.5	7.6	38	0.60	7.6	A2	B2
	54					4.5	8.2	38	0.60	8.2	A2	B2
	75		AD0Q090-2-2,00	2.00	3,360	7.2	12	69	0.69	12	A2	B3
	108					7.2	14	69	0.69	14	A2	B3
SAR 16.2	4.8	710	VD0Q112-4-0,30	0.30	1,680	1.5	2.9	10	0.60	2.9	A1	B1
	6.7					1.5	3.2	10	0.60	3.2	A1	B1
	9.6		VD0Q112-4-0,60	0.60	1,680	2.9	5.1	21	0.53	5.1	A1	B2
	13					2.9	5.7	21	0.53	5.7	A1	B2
	19		VD0Q112-2-1,00	1.00	3,360	4.0	7.7	42	0.68	7.7	A2	B2
	26					4.0	8.6	42	0.68	8.6	A2	B2
	38		AD0Q112-4-2,00	2.00	1,680	7.6	13	51	0.65	13	A2	B3
	54					7.6	15	51	0.65	14	A2	B3
	75		AD0Q112-2-3,50	3.50	3,360	11	23	114	0.78	23	A3	–
	108					11	27	114	0.78	25	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 50 %, 400 V/50 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4	20	VD0Q063-4-0,01	0.01	1 400	0.4	0.4	1.0	0.40	0.4	A1	B1
	5.6					0.4	0.4	1.0	0.40	0.4	A1	B1
	8		VD0Q063-4-0,03	0.03	1,400	0.4	0.4	0.9	0.50	0.4	A1	B1
	11					0.4	0.4	0.9	0.50	0.4	A1	B1
	16		VD0Q063-2-0,04	0.04	2,800	0.5	0.6	1.7	0.43	0.6	A1	B1
	22					0.5	0.6	1.7	0.43	0.6	A1	B1
	32		AD0Q063-4-0,07	0.07	1,400	0.8	0.9	2.0	0.40	0.9	A1	B1
	45					0.8	0.9	2.0	0.40	0.9	A1	B1
	63		AD0Q063-2-0,14	0.14	2,800	0.7	0.9	3.6	0.55	0.9	A1	B1
	90					0.7	1.0	3.6	0.55	1.0	A1	B1
SAR 07.6	4	40	VD0Q063-4-0,02	0.02	1,400	0.4	0.4	1.0	0.50	0.4	A1	B1
	5.6					0.4	0.4	1.0	0.50	0.4	A1	B1
	8		VD0Q063-4-0,04	0.04	1,400	0.5	0.5	1.4	0.45	0.5	A1	B1
	11					0.5	0.5	1.4	0.45	0.5	A1	B1
	16		VD0Q063-2-0,08	0.08	2,800	0.5	0.8	2.5	0.52	0.8	A1	B1
	22					0.5	0.8	2.5	0.52	0.8	A1	B1
	32		AD0Q063-4-0,14	0.14	1,400	1.2	1.5	3.5	0.40	1.5	A1	B1
	45					1.2	1.5	3.5	0.40	1.5	A1	B1
	63		AD0Q063-2-0,28	0.28	2,800	1.1	1.6	5.7	0.53	1.6	A1	B1
	90					1.1	1.7	5.7	0.53	1.7	A1	B1
SAR 10.2	4	90	VD0Q071-4-0,04	0.04	1,400	0.4	0.5	1.5	0.40	0.5	A1	B1
	5.6					0.4	0.5	1.5	0.40	0.5	A1	B1
	8		VD0Q071-4-0,08	0.08	1,400	0.8	0.9	2.6	0.40	0.9	A1	B1
	11					0.8	1.0	2.6	0.40	1.0	A1	B1
	16		VD0Q071-2-0,17	0.17	2,800	1.0	1.1	4.0	0.52	1.1	A1	B1
	22					1.0	1.3	4.0	0.52	1.3	A1	B1
	32		AD0Q071-4-0,28	0.28	1,400	1.6	2.0	7.2	0.43	2.0	A1	B1
	45					1.6	2.2	7.2	0.43	2.2	A1	B1
	63		AD0Q071-2-0,50	0.50	2,800	1.8	2.5	12	0.56	2.5	A1	B1
	90					1.8	3.2	12	0.56	3.2	A1	B1
SAR 14.2	4	180	VD0Q090-4-0,08	0.08	1,400	0.4	0.6	2.6	0.60	0.6	A1	B1
	5.6					0.4	0.7	2.6	0.60	0.7	A1	B1
	8		VD0Q090-4-0,18	0.18	1,400	0.9	1.4	4.2	0.60	1.4	A1	B1
	11					0.9	1.5	4.2	0.60	1.5	A1	B1
	16		VD0Q090-2-0,30	0.30	2,800	0.9	2.0	7.2	0.68	2.0	A1	B1
	22					0.9	2.3	7.2	0.68	2.3	A1	B1
	32		AD0Q090-4-0,50	0.50	1,400	2.0	3.0	12	0.56	3.0	A1	B1
	45					2.0	3.5	12	0.56	3.5	A1	B1
	63		AD0Q090-2-1,00	1.00	2,800	3.1	5.5	28	0.65	5.5	A2	B2
	90					3.1	6.0	28	0.65	6.0	A2	B2
SAR 14.6	4	360	VD0Q090-4-0,14	0.14	1,400	0.7	1.1	3.9	0.55	1.1	A1	B1
	5.6					0.7	1.2	3.9	0.55	1.2	A1	B1
	8		VD0Q090-4-0,30	0.30	1,400	1.6	2.5	8.5	0.52	2.5	A1	B1
	11					1.6	2.8	8.5	0.52	2.8	A1	B1
	16		VD0Q090-2-0,60	0.60	2,800	2.3	3.6	15	0.61	3.6	A1	B1
	22					2.3	3.8	15	0.61	3.8	A1	B1
	32		AD0Q090-4-1,00	1.00	1,400	3.6	6.0	30	0.60	6.0	A2	B2
	45					3.6	6.5	30	0.60	6.5	A2	B2
	63		AD0Q090-2-2,00	2.00	2,800	5.7	9.5	55	0.69	9.5	A2	B3
	90					5.7	11	55	0.69	11	A2	B3
SAR 16.2	4	710	VD0Q112-4-0,30	0.30	1,400	1.2	2.3	8.0	0.60	2.3	A1	B1
	5.6					1.2	2.5	8.0	0.60	2.5	A1	B1
	8		VD0Q112-4-0,60	0.60	1,400	2.3	4.0	17	0.53	4.0	A1	B1
	11					2.3	4.5	17	0.53	4.5	A1	B1
	16		VD0Q112-2-1,00	1.00	2,800	3.2	6.1	33	0.68	6.1	A2	B2
	22					3.2	6.8	33	0.68	6.8	A2	B2
	32		AD0Q112-4-2,00	2.00	1,400	6.0	10	40	0.65	10	A2	B3
	45					6.0	12	40	0.65	11	A2	B3
	63		AD0Q112-2-3,50	3.50	2,800	8.5	18	90	0.78	18	A2	–
	90					8.5	21	90	0.78	20	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

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SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 50 %, 400 V/60 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device set-ting [A]	Contac-tor	Thyristor
SAR 07.2	4.8	20	VD0Q063-4-0,01	0.01	1,680	0.4	0.5	1.2	0.40	0.5	A1	B1
	6.7					0.4	0.5	1.2	0.40	0.5	A1	B1
	9.6		VD0Q063-4-0,03	0.03	1,680	0.5	0.5	1.1	0.50	0.5	A1	B1
	13					0.5	0.5	1.1	0.50	0.5	A1	B1
	19		VD0Q063-2-0,04	0.04	3,360	0.6	0.7	2.0	0.43	0.7	A1	B1
	26					0.6	0.7	2.0	0.43	0.7	A1	B1
	38		AD0Q063-4-0,07	0.07	1,680	1.0	1.1	2.4	0.40	1.1	A1	B1
	54					1.0	1.1	2.4	0.40	1.1	A1	B1
	75		AD0Q063-2-0,14	0.14	3,360	0.8	1.1	4.3	0.55	1.1	A1	B1
	108					0.8	1.2	4.3	0.55	1.2	A1	B1
SAR 07.6	4.8	40	VD0Q063-4-0,02	0.02	1,680	0.5	0.5	1.2	0.50	0.5	A1	B1
	6.7					0.5	0.5	1.2	0.50	0.5	A1	B1
	9.6		VD0Q063-4-0,04	0.04	1,680	0.6	0.6	1.7	0.45	0.6	A1	B1
	13					0.6	0.6	1.7	0.45	0.6	A1	B1
	19		VD0Q063-2-0,08	0.08	3,360	0.6	1.0	3.0	0.52	1.0	A1	B1
	26					0.6	1.0	3.0	0.52	1.0	A1	B1
	38		AD0Q063-4-0,14	0.14	1,680	1.4	1.8	4.2	0.40	1.8	A1	B1
	54					1.4	1.8	4.2	0.40	1.8	A1	B1
	75		AD0Q063-2-0,28	0.28	3,360	1.3	1.9	6.8	0.53	1.9	A1	B1
	108					1.3	2.0	6.8	0.53	2.0	A1	B1
SAR 10.2	4.8	90	VD0Q071-4-0,04	0.04	1,680	0.4	0.6	1.8	0.40	0.6	A1	B1
	6.7					0.4	0.6	1.8	0.40	0.6	A1	B1
	9.6		VD0Q071-4-0,08	0.08	1,680	1.0	1.1	3.1	0.40	1.1	A1	B1
	13					1.0	1.2	3.1	0.40	1.2	A1	B1
	19		VD0Q071-2-0,17	0.17	3,360	1.2	1.3	4.8	0.52	1.3	A1	B1
	26					1.2	1.6	4.8	0.52	1.6	A1	B1
	38		AD0Q071-4-0,28	0.28	1,680	1.9	2.4	8.6	0.43	2.4	A1	B1
	54					1.9	2.6	8.6	0.43	2.6	A1	B1
	75		AD0Q071-2-0,50	0.50	3,360	2.2	3.0	14	0.56	3.0	A1	B1
	108					2.2	3.8	14	0.56	3.8	A1	B1
SAR 14.2	4.8	180	VD0Q090-4-0,08	0.08	1,680	0.5	0.7	3.1	0.60	0.7	A1	B1
	6.7					0.5	0.8	3.1	0.60	0.8	A1	B1
	9.6		VD0Q090-4-0,18	0.18	1,680	1.1	1.7	5.0	0.60	1.7	A1	B1
	13					1.1	1.8	5.0	0.60	1.8	A1	B1
	19		VD0Q090-2-0,30	0.30	3,360	1.1	2.4	8.6	0.68	2.4	A1	B1
	26					1.1	2.8	8.6	0.68	2.8	A1	B1
	38		AD0Q090-4-0,50	0.50	1,680	2.4	3.6	14	0.56	3.6	A1	B1
	54					2.4	4.2	14	0.56	4.2	A1	B1
	75		AD0Q090-2-1,00	1.00	3,360	3.7	6.6	34	0.65	6.6	A2	B2
	108					3.7	7.2	34	0.65	7.2	A2	B2
SAR 14.6	4.8	360	VD0Q090-4-0,14	0.14	1,680	0.8	1.3	4.7	0.55	1.3	A1	B1
	6.7					0.8	1.4	4.7	0.55	1.4	A1	B1
	9.6		VD0Q090-4-0,30	0.30	1,680	1.9	3.0	10	0.52	3.0	A1	B1
	13					1.9	3.4	10	0.52	3.4	A1	B1
	19		VD0Q090-2-0,60	0.60	3,360	2.8	4.3	18	0.61	4.3	A1	B1
	26					2.8	4.6	18	0.61	4.6	A1	B1
	38		AD0Q090-4-1,00	1.00	1,680	4.3	7.2	36	0.60	7.2	A2	B2
	54					4.3	7.8	36	0.60	7.8	A2	B2
	75		AD0Q090-2-2,00	2.00	3,360	6.8	11	66	0.69	11	A2	B3
	108					6.8	13	66	0.69	13	A2	B3
SAR 16.2	4.8	710	VD0Q112-4-0,30	0.30	1,680	1.4	2.8	9.6	0.60	2.8	A1	B1
	6.7					1.4	3.0	9.6	0.60	3.0	A1	B1
	9.6		VD0Q112-4-0,60	0.60	1,680	2.8	4.8	20	0.53	4.8	A1	B2
	13					2.8	5.4	20	0.53	5.4	A1	B2
	19		VD0Q112-2-1,00	1.00	3,360	3.8	7.3	40	0.68	7.3	A2	B2
	26					3.8	8.2	40	0.68	8.2	A2	B2
	38		AD0Q112-4-2,00	2.00	1,680	7.2	12	48	0.65	12	A2	B3
	54					7.2	14	48	0.65	14	A2	B3
	75		AD0Q112-2-3,50	3.50	3,360	10	22	108	0.78	22	A3	–
	108					10	25	108	0.78	24	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 50 %, 415 V/50 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4	20	VD0Q063-4-0,01	0.01	1,400	0.3	0.4	1.0	0.40	0.4	A1	B1
	5.6					0.3	0.4	1.0	0.40	0.4	A1	B1
	8		VD0Q063-4-0,03	0.03	1,400	0.4	0.4	0.9	0.50	0.4	A1	B1
	11					0.4	0.4	0.9	0.50	0.4	A1	B1
	16		VD0Q063-2-0,04	0.04	2,800	0.5	0.6	1.6	0.43	0.6	A1	B1
	22					0.5	0.6	1.6	0.43	0.6	A1	B1
	32		AD0Q063-4-0,07	0.07	1,400	0.8	0.9	1.9	0.40	0.9	A1	B1
	45					0.8	0.9	1.9	0.40	0.9	A1	B1
	63		AD0Q063-2-0,14	0.14	2,800	0.7	0.9	3.5	0.55	0.9	A1	B1
	90					0.7	1.0	3.5	0.55	1.0	A1	B1
SAR 07.6	4	40	VD0Q063-4-0,02	0.02	1,400	0.4	0.4	1.0	0.50	0.4	A1	B1
	5.6					0.4	0.4	1.0	0.50	0.4	A1	B1
	8		VD0Q063-4-0,04	0.04	1,400	0.5	0.5	1.3	0.45	0.5	A1	B1
	11					0.5	0.5	1.3	0.45	0.5	A1	B1
	16		VD0Q063-2-0,08	0.08	2,800	0.5	0.8	2.4	0.52	0.8	A1	B1
	22					0.5	0.8	2.4	0.52	0.8	A1	B1
	32		AD0Q063-4-0,14	0.14	1,400	1.2	1.4	3.4	0.40	1.4	A1	B1
	45					1.2	1.4	3.4	0.40	1.4	A1	B1
	63		AD0Q063-2-0,28	0.28	2,800	1.1	1.5	5.5	0.53	1.5	A1	B1
	90					1.1	1.6	5.5	0.53	1.6	A1	B1
SAR 10.2	4	90	VD0Q071-4-0,04	0.04	1,400	0.3	0.5	1.4	0.40	0.5	A1	B1
	5.6					0.3	0.5	1.4	0.40	0.5	A1	B1
	8		VD0Q071-4-0,08	0.08	1,400	0.8	0.9	2.5	0.40	0.9	A1	B1
	11					0.8	1.0	2.5	0.40	1.0	A1	B1
	16		VD0Q071-2-0,17	0.17	2,800	1.0	1.1	3.9	0.52	1.1	A1	B1
	22					1.0	1.3	3.9	0.52	1.3	A1	B1
	32		AD0Q071-4-0,28	0.28	1,400	1.5	1.9	6.9	0.43	1.9	A1	B1
	45					1.5	2.1	6.9	0.43	2.1	A1	B1
	63		AD0Q071-2-0,50	0.50	2,800	1.7	2.4	12	0.56	2.4	A1	B1
	90					1.7	3.1	12	0.56	3.1	A1	B1
SAR 14.2	4	180	VD0Q090-4-0,08	0.08	1,400	0.4	0.6	2.5	0.60	0.6	A1	B1
	5.6					0.4	0.7	2.5	0.60	0.7	A1	B1
	8		VD0Q090-4-0,18	0.18	1,400	0.9	1.3	4.0	0.60	1.3	A1	B1
	11					0.9	1.4	4.0	0.60	1.4	A1	B1
	16		VD0Q090-2-0,30	0.30	2,800	0.9	1.9	6.9	0.68	1.9	A1	B1
	22					0.9	2.2	6.9	0.68	2.2	A1	B1
	32		AD0Q090-4-0,50	0.50	1,400	1.9	2.9	12	0.56	2.9	A1	B1
	45					1.9	3.4	12	0.56	3.4	A1	B1
	63		AD0Q090-2-1,00	1.00	2,800	3.0	5.3	27	0.65	5.3	A2	B2
	90					3.0	5.8	27	0.65	5.8	A2	B2
SAR 14.6	4	360	VD0Q090-4-0,14	0.14	1,400	0.7	1.1	3.8	0.55	1.1	A1	B1
	5.6					0.7	1.2	3.8	0.55	1.2	A1	B1
	8		VD0Q090-4-0,30	0.30	1,400	1.5	2.4	8.2	0.52	2.4	A1	B1
	11					1.5	2.7	8.2	0.52	2.7	A1	B1
	16		VD0Q090-2-0,60	0.60	2,800	2.2	3.5	14	0.61	3.5	A1	B1
	22					2.2	3.7	14	0.61	3.7	A1	B1
	32		AD0Q090-4-1,00	1.00	1,400	3.5	5.8	29	0.60	5.8	A2	B2
	45					3.5	6.3	29	0.60	6.3	A2	B2
	63		AD0Q090-2-2,00	2.00	2,800	5.5	9.2	53	0.69	9.2	A2	B3
	90					5.5	11	53	0.69	11	A2	B3
SAR 16.2	4	710	VD0Q112-4-0,30	0.30	1,400	1.2	2.2	7.7	0.60	2.2	A1	B1
	5.6					1.2	2.4	7.7	0.60	2.4	A1	B1
	8		VD0Q112-4-0,60	0.60	1,400	2.2	3.9	16	0.53	3.9	A1	B1
	11					2.2	4.3	16	0.53	4.3	A1	B1
	16		VD0Q112-2-1,00	1.00	2,800	3.1	5.9	32	0.68	5.9	A2	B2
	22					3.1	6.6	32	0.68	6.6	A2	B2
	32		AD0Q112-4-2,00	2.00	1,400	5.8	9.6	39	0.65	9.6	A2	B3
	45					5.8	12	39	0.65	11	A2	B3
	63		AD0Q112-2-3,50	3.50	2,800	8.2	17	87	0.78	17	A2	–
	90					8.2	20	87	0.78	19	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 50 %, 440 V/60 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4.8	20	VD0Q063-4-0,01	0.01	1,680	0.4	0.4	1.1	0.40	0.4	A1	B1
	6.7					0.4	0.4	1.1	0.40	0.4	A1	B1
	9.6		VD0Q063-4-0,03	0.03	1,680	0.4	0.4	1.0	0.50	0.4	A1	B1
	13					0.4	0.4	1.0	0.50	0.4	A1	B1
	19		VD0Q063-2-0,04	0.04	3,360	0.5	0.7	1.9	0.43	0.7	A1	B1
	26					0.5	0.7	1.9	0.43	0.7	A1	B1
	38		AD0Q063-4-0,07	0.07	1,680	0.9	1.0	2.2	0.40	1.0	A1	B1
	54					0.9	1.0	2.2	0.40	1.0	A1	B1
	75		AD0Q063-2-0,14	0.14	3,360	0.8	1.0	3.9	0.55	1.0	A1	B1
	108					0.8	1.1	3.9	0.55	1.1	A1	B1
SAR 07.6	4.8	40	VD0Q063-4-0,02	0.02	1,680	0.4	0.4	1.1	0.50	0.4	A1	B1
	6.7					0.4	0.4	1.1	0.50	0.4	A1	B1
	9.6		VD0Q063-4-0,04	0.04	1,680	0.5	0.5	1.5	0.45	0.5	A1	B1
	13					0.5	0.5	1.5	0.45	0.5	A1	B1
	19		VD0Q063-2-0,08	0.08	3,360	0.5	0.9	2.7	0.52	0.9	A1	B1
	26					0.5	0.9	2.7	0.52	0.9	A1	B1
	38		AD0Q063-4-0,14	0.14	1,680	1.3	1.6	3.8	0.40	1.6	A1	B1
	54					1.3	1.6	3.8	0.40	1.6	A1	B1
	75		AD0Q063-2-0,28	0.28	3,360	1.2	1.7	6.2	0.53	1.7	A1	B1
	108					1.2	1.9	6.2	0.53	1.9	A1	B1
SAR 10.2	4.8	90	VD0Q071-4-0,04	0.04	1,680	0.4	0.5	1.6	0.40	0.5	A1	B1
	6.7					0.4	0.5	1.6	0.40	0.5	A1	B1
	9.6		VD0Q071-4-0,08	0.08	1,680	0.9	1.0	2.8	0.40	1.0	A1	B1
	13					0.9	1.1	2.8	0.40	1.1	A1	B1
	19		VD0Q071-2-0,17	0.17	3,360	1.1	1.2	4.4	0.52	1.2	A1	B1
	26					1.1	1.4	4.4	0.52	1.4	A1	B1
	38		AD0Q071-4-0,28	0.28	1,680	1.7	2.2	7.9	0.43	2.2	A1	B1
	54					1.7	2.4	7.9	0.43	2.4	A1	B1
	75		AD0Q071-2-0,50	0.50	3,360	2.0	2.7	13	0.56	2.7	A1	B1
	108					2.0	3.5	13	0.56	3.5	A1	B1
SAR 14.2	4.8	180	VD0Q090-4-0,08	0.08	1,680	0.4	0.7	2.8	0.60	0.7	A1	B1
	6.7					0.4	0.8	2.8	0.60	0.8	A1	B1
	9.6		VD0Q090-4-0,18	0.18	1,680	1.0	1.5	4.6	0.60	1.5	A1	B1
	13					1.0	1.6	4.6	0.60	1.6	A1	B1
	19		VD0Q090-2-0,30	0.30	3,360	1.0	2.2	7.9	0.68	2.2	A1	B1
	26					1.0	2.5	7.9	0.68	2.5	A1	B1
	38		AD0Q090-4-0,50	0.50	1,680	2.2	3.3	13	0.56	3.3	A1	B1
	54					2.2	3.8	13	0.56	3.8	A1	B1
	75		AD0Q090-2-1,00	1.00	3,360	3.4	6.0	31	0.65	6.0	A2	B2
	108					3.4	6.5	31	0.65	6.5	A2	B2
SAR 14.6	4.8	360	VD0Q090-4-0,14	0.14	1,680	0.8	1.2	4.3	0.55	1.2	A1	B1
	6.7					0.8	1.3	4.3	0.55	1.3	A1	B1
	9.6		VD0Q090-4-0,30	0.30	1,680	1.7	2.7	9.3	0.52	2.7	A1	B1
	13					1.7	3.1	9.3	0.52	3.1	A1	B1
	19		VD0Q090-2-0,60	0.60	3,360	2.5	3.9	16	0.61	3.9	A1	B1
	26					2.5	4.1	16	0.61	4.1	A1	B1
	38		AD0Q090-4-1,00	1.00	1,680	3.9	6.5	33	0.60	6.5	A2	B2
	54					3.9	7.1	33	0.60	7.1	A2	B2
	75		AD0Q090-2-2,00	2.00	3,360	6.2	10	60	0.69	10	A2	B3
	108					6.2	12	60	0.69	12	A2	B3
SAR 16.2	4.8	710	VD0Q112-4-0,30	0.30	1,680	1.3	2.5	8.7	0.60	2.5	A1	B1
	6.7					1.3	2.7	8.7	0.60	2.7	A1	B1
	9.6		VD0Q112-4-0,60	0.60	1,680	2.5	4.4	19	0.53	4.4	A1	B2
	13					2.5	4.9	19	0.53	4.9	A1	B2
	19		VD0Q112-2-1,00	1.00	3,360	3.5	6.7	36	0.68	6.7	A2	B2
	26					3.5	7.4	36	0.68	7.4	A2	B2
	38		AD0Q112-4-2,00	2.00	1,680	6.5	11	44	0.65	11	A2	B3
	54					6.5	13	44	0.65	13	A2	B3
	75		AD0Q112-2-3,50	3.50	3,360	9.3	20	98	0.78	20	A2	–
	108					9.3	23	98	0.78	21	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 50 %, 460 V/60 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4.8	20	VD0Q063-4-0,01	0.01	1,680	0.4	0.4	1.0	0.40	0.4	A1	B1
	6.7					0.4	0.4	1.0	0.40	0.4	A1	B1
	9.6		VD0Q063-4-0,03	0.03	1,680	0.4	0.4	0.9	0.50	0.4	A1	B1
	13					0.4	0.4	0.9	0.50	0.4	A1	B1
	19		VD0Q063-2-0,04	0.04	3,360	0.5	0.6	1.8	0.43	0.6	A1	B1
	26					0.5	0.6	1.8	0.43	0.6	A1	B1
	38		AD0Q063-4-0,07	0.07	1,680	0.8	0.9	2.1	0.40	0.9	A1	B1
	54					0.8	0.9	2.1	0.40	0.9	A1	B1
	75		AD0Q063-2-0,14	0.14	3,360	0.7	0.9	3.8	0.55	0.9	A1	B1
	108					0.7	1.0	3.8	0.55	1.0	A1	B1
SAR 07.6	4.8	40	VD0Q063-4-0,02	0.02	1,680	0.4	0.4	1.0	0.50	0.4	A1	B1
	6.7					0.4	0.4	1.0	0.50	0.4	A1	B1
	9.6		VD0Q063-4-0,04	0.04	1,680	0.5	0.5	1.5	0.45	0.5	A1	B1
	13					0.5	0.5	1.5	0.45	0.5	A1	B1
	19		VD0Q063-2-0,08	0.08	3,360	0.5	0.8	2.6	0.52	0.8	A1	B1
	26					0.5	0.8	2.6	0.52	0.8	A1	B1
	38		AD0Q063-4-0,14	0.14	1,680	1.3	1.6	3.7	0.40	1.6	A1	B1
	54					1.3	1.6	3.7	0.40	1.6	A1	B1
	75		AD0Q063-2-0,28	0.28	3,360	1.1	1.7	5.9	0.53	1.7	A1	B1
	108					1.1	1.8	5.9	0.53	1.8	A1	B1
SAR 10.2	4.8	90	VD0Q071-4-0,04	0.04	1,680	0.4	0.5	1.6	0.40	0.5	A1	B1
	6.7					0.4	0.5	1.6	0.40	0.5	A1	B1
	9.6		VD0Q071-4-0,08	0.08	1,680	0.8	0.9	2.7	0.40	0.9	A1	B1
	13					0.8	1.0	2.7	0.40	1.0	A1	B1
	19		VD0Q071-2-0,17	0.17	3,360	1.0	1.1	4.2	0.52	1.1	A1	B1
	26					1.0	1.4	4.2	0.52	1.4	A1	B1
	38		AD0Q071-4-0,28	0.28	1,680	1.7	2.1	7.5	0.43	2.1	A1	B1
	54					1.7	2.3	7.5	0.43	2.3	A1	B1
	75		AD0Q071-2-0,50	0.50	3,360	1.9	2.6	13	0.56	2.6	A1	B1
	108					1.9	3.3	13	0.56	3.3	A1	B1
SAR 14.2	4.8	180	VD0Q090-4-0,08	0.08	1,680	0.4	0.6	2.7	0.60	0.6	A1	B1
	6.7					0.4	0.7	2.7	0.60	0.7	A1	B1
	9.6		VD0Q090-4-0,18	0.18	1,680	0.9	1.5	4.4	0.60	1.5	A1	B1
	13					0.9	1.6	4.4	0.60	1.6	A1	B1
	19		VD0Q090-2-0,30	0.30	3,360	0.9	2.1	7.5	0.68	2.1	A1	B1
	26					0.9	2.4	7.5	0.68	2.4	A1	B1
	38		AD0Q090-4-0,50	0.50	1,680	2.1	3.1	13	0.56	3.1	A1	B1
	54					2.1	3.7	13	0.56	3.7	A1	B1
	75		AD0Q090-2-1,00	1.00	3,360	3.2	5.7	29	0.65	5.7	A2	B2
	108					3.2	6.3	29	0.65	6.3	A2	B2
SAR 14.6	4.8	360	VD0Q090-4-0,14	0.14	1,680	0.7	1.1	4.1	0.55	1.1	A1	B1
	6.7					0.7	1.3	4.1	0.55	1.3	A1	B1
	9.6		VD0Q090-4-0,30	0.30	1,680	1.7	2.6	8.9	0.52	2.6	A1	B1
	13					1.7	2.9	8.9	0.52	2.9	A1	B1
	19		VD0Q090-2-0,60	0.60	3,360	2.4	3.8	16	0.61	3.8	A1	B1
	26					2.4	4.0	16	0.61	4.0	A1	B1
	38		AD0Q090-4-1,00	1.00	1,680	3.8	6.3	31	0.60	6.3	A2	B2
	54					3.8	6.8	31	0.60	6.8	A2	B2
	75		AD0Q090-2-2,00	2.00	3,360	5.9	9.9	57	0.69	9.9	A2	B3
	108					5.9	12	57	0.69	12	A2	B3
SAR 16.2	4.8	710	VD0Q112-4-0,30	0.30	1,680	1.3	2.4	8.3	0.60	2.4	A1	B1
	6.7					1.3	2.6	8.3	0.60	2.6	A1	B1
	9.6		VD0Q112-4-0,60	0.60	1,680	2.4	4.2	18	0.53	4.2	A1	B1
	13					2.4	4.7	18	0.53	4.7	A1	B1
	19		VD0Q112-2-1,00	1.00	3,360	3.3	6.4	34	0.68	6.4	A2	B2
	26					3.3	7.1	34	0.68	7.1	A2	B2
	38		AD0Q112-4-2,00	2.00	1,680	6.3	10	42	0.65	10	A2	B3
	54					6.3	13	42	0.65	12	A2	B3
	75		AD0Q112-2-3,50	3.50	3,360	8.9	19	94	0.78	19	A2	–
	108					8.9	22	94	0.78	21	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 50 %, 480 V/60 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4.8	20	VD0Q063-4-0,01	0.01	1,680	0.4	0.4	1.0	0.40	0.4	A1	B1
	6.7					0.4	0.4	1.0	0.40	0.4	A1	B1
	9.6		VD0Q063-4-0,03	0.03	1,680	0.4	0.4	0.9	0.50	0.4	A1	B1
	13					0.4	0.4	0.9	0.50	0.4	A1	B1
	19		VD0Q063-2-0,04	0.04	3,360	0.5	0.6	1.7	0.43	0.6	A1	B1
	26					0.5	0.6	1.7	0.43	0.6	A1	B1
	38		AD0Q063-4-0,07	0.07	1,680	0.8	0.9	2.0	0.40	0.9	A1	B1
	54					0.8	0.9	2.0	0.40	0.9	A1	B1
	75		AD0Q063-2-0,14	0.14	3,360	0.7	0.9	3.6	0.55	0.9	A1	B1
	108					0.7	1.0	3.6	0.55	1.0	A1	B1
SAR 07.6	4.8	40	VD0Q063-4-0,02	0.02	1,680	0.4	0.4	1.0	0.50	0.4	A1	B1
	6.7					0.4	0.4	1.0	0.50	0.4	A1	B1
	9.6		VD0Q063-4-0,04	0.04	1,680	0.5	0.5	1.4	0.45	0.5	A1	B1
	13					0.5	0.5	1.4	0.45	0.5	A1	B1
	19		VD0Q063-2-0,08	0.08	3,360	0.5	0.8	2.5	0.52	0.8	A1	B1
	26					0.5	0.8	2.5	0.52	0.8	A1	B1
	38		AD0Q063-4-0,14	0.14	1,680	1.2	1.5	3.5	0.40	1.5	A1	B1
	54					1.2	1.5	3.5	0.40	1.5	A1	B1
	75		AD0Q063-2-0,28	0.28	3,360	1.1	1.6	5.7	0.53	1.6	A1	B1
	108					1.1	1.7	5.7	0.53	1.7	A1	B1
SAR 10.2	4.8	90	VD0Q071-4-0,04	0.04	1,680	0.4	0.5	1.5	0.40	0.5	A1	B1
	6.7					0.4	0.5	1.5	0.40	0.5	A1	B1
	9.6		VD0Q071-4-0,08	0.08	1,680	0.8	0.9	2.6	0.40	0.9	A1	B1
	13					0.8	1.0	2.6	0.40	1.0	A1	B1
	19		VD0Q071-2-0,17	0.17	3,360	1.0	1.1	4.0	0.52	1.1	A1	B1
	26					1.0	1.3	4.0	0.52	1.3	A1	B1
	38		AD0Q071-4-0,28	0.28	1,680	1.6	2.0	7.2	0.43	2.0	A1	B1
	54					1.6	2.2	7.2	0.43	2.2	A1	B1
	75		AD0Q071-2-0,50	0.50	3,360	1.8	2.5	12	0.56	2.5	A1	B1
	108					1.8	3.2	12	0.56	3.2	A1	B1
SAR 14.2	4.8	180	VD0Q090-4-0,08	0.08	1,680	0.4	0.6	2.6	0.60	0.6	A1	B1
	6.7					0.4	0.7	2.6	0.60	0.7	A1	B1
	9.6		VD0Q090-4-0,18	0.18	1,680	0.9	1.4	4.2	0.60	1.4	A1	B1
	13					0.9	1.5	4.2	0.60	1.5	A1	B1
	19		VD0Q090-2-0,30	0.30	3,360	0.9	2.0	7.2	0.68	2.0	A1	B1
	26					0.9	2.3	7.2	0.68	2.3	A1	B1
	38		AD0Q090-4-0,50	0.50	1,680	2.0	3.0	12	0.56	3.0	A1	B1
	54					2.0	3.5	12	0.56	3.5	A1	B1
	75		AD0Q090-2-1,00	1.00	3,360	3.1	5.5	28	0.65	5.5	A2	B2
	108					3.1	6.0	28	0.65	6.0	A2	B2
SAR 14.6	4.8	360	VD0Q090-4-0,14	0.14	1,680	0.7	1.1	3.9	0.55	1.1	A1	B1
	6.7					0.7	1.2	3.9	0.55	1.2	A1	B1
	9.6		VD0Q090-4-0,30	0.30	1,680	1.6	2.5	8.5	0.52	2.5	A1	B1
	13					1.6	2.8	8.5	0.52	2.8	A1	B1
	19		VD0Q090-2-0,60	0.60	3,360	2.3	3.6	15	0.61	3.6	A1	B1
	26					2.3	3.8	15	0.61	3.8	A1	B1
	38		AD0Q090-4-1,00	1.00	1,680	3.6	6.0	30	0.60	6.0	A2	B2
	54					3.6	6.5	30	0.60	6.5	A2	B2
	75		AD0Q090-2-2,00	2.00	3,360	5.7	9.5	55	0.69	9.5	A2	B3
	108					5.7	11	55	0.69	11	A2	B3
SAR 16.2	4.8	710	VD0Q112-4-0,30	0.30	1,680	1.2	2.3	8.0	0.60	2.3	A1	B1
	6.7					1.2	2.5	8.0	0.60	2.5	A1	B1
	9.6		VD0Q112-4-0,60	0.60	1,680	2.3	4.0	17	0.53	4.0	A1	B1
	13					2.3	4.5	17	0.53	4.5	A1	B1
	19		VD0Q112-2-1,00	1.00	3,360	3.2	6.1	33	0.68	6.1	A2	B2
	26					3.2	6.8	33	0.68	6.8	A2	B2
	38		AD0Q112-4-2,00	2.00	1,680	6.0	10	40	0.65	10	A2	B3
	54					6.0	12	40	0.65	11	A2	B3
	75		AD0Q112-2-3,50	3.50	3,360	8.5	18	90	0.78	18	A2	–
	108					8.5	21	90	0.78	20	A2	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 50 %, 500 V/50 Hz

Multi-turn actuator			Motor								AUMA power class for switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4	20	VD0Q063-4-0,01	0.01	1,400	0.3	0.3	0.8	0.40	0.3	A1	B1
	5.6					0.3	0.3	0.8	0.40	0.3	A1	B1
	8		VD0Q063-4-0,03	0.03	1,400	0.3	0.3	0.7	0.50	0.3	A1	B1
	11					0.3	0.3	0.7	0.50	0.3	A1	B1
	16		VD0Q063-2-0,04	0.04	2,800	0.4	0.5	1.4	0.43	0.5	A1	B1
	22					0.4	0.5	1.4	0.43	0.5	A1	B1
	32		AD0Q063-4-0,07	0.07	1,400	0.6	0.7	1.6	0.40	0.7	A1	B1
	45					0.6	0.7	1.6	0.40	0.7	A1	B1
	63		AD0Q063-2-0,14	0.14	2,800	0.6	0.7	2.9	0.55	0.7	A1	B1
	90					0.6	0.8	2.9	0.55	0.8	A1	B1
SAR 07.6	4	40	VD0Q063-4-0,02	0.02	1,400	0.3	0.3	0.8	0.50	0.3	A1	B1
	5.6					0.3	0.3	0.8	0.50	0.3	A1	B1
	8		VD0Q063-4-0,04	0.04	1,400	0.4	0.4	1.1	0.45	0.4	A1	B1
	11					0.4	0.4	1.1	0.45	0.4	A1	B1
	16		VD0Q063-2-0,08	0.08	2,800	0.4	0.6	2.0	0.52	0.6	A1	B1
	22					0.4	0.6	2.0	0.52	0.6	A1	B1
	32		AD0Q063-4-0,14	0.14	1,400	1.0	1.2	2.8	0.40	1.2	A1	B1
	45					1.0	1.2	2.8	0.40	1.2	A1	B1
	63		AD0Q063-2-0,28	0.28	2,800	0.9	1.3	4.6	0.53	1.3	A1	B1
	90					0.9	1.4	4.6	0.53	1.4	A1	B1
SAR 10.2	4	90	VD0Q071-4-0,04	0.04	1,400	0.3	0.4	1.2	0.40	0.4	A1	B1
	5.6					0.3	0.4	1.2	0.40	0.4	A1	B1
	8		VD0Q071-4-0,08	0.08	1,400	0.6	0.7	2.1	0.40	0.7	A1	B1
	11					0.6	0.8	2.1	0.40	0.8	A1	B1
	16		VD0Q071-2-0,17	0.17	2,800	0.8	0.9	3.2	0.52	0.9	A1	B1
	22					0.8	1.0	3.2	0.52	1.0	A1	B1
	32		AD0Q071-4-0,28	0.28	1,400	1.3	1.6	5.8	0.43	1.6	A1	B1
	45					1.3	1.8	5.8	0.43	1.8	A1	B1
	63		AD0Q071-2-0,50	0.50	2,800	1.4	2.0	9.6	0.56	2.0	A1	B1
	90					1.4	2.6	9.6	0.56	2.6	A1	B1
SAR 14.2	4	180	VD0Q090-4-0,08	0.08	1,400	0.3	0.5	2.1	0.60	0.5	A1	B1
	5.6					0.3	0.6	2.1	0.60	0.6	A1	B1
	8		VD0Q090-4-0,18	0.18	1,400	0.7	1.1	3.4	0.60	1.1	A1	B1
	11					0.7	1.2	3.4	0.60	1.2	A1	B1
	16		VD0Q090-2-0,30	0.30	2,800	0.7	1.6	5.8	0.68	1.6	A1	B1
	22					0.7	1.8	5.8	0.68	1.8	A1	B1
	32		AD0Q090-4-0,50	0.50	1,400	1.6	2.4	9.6	0.56	2.4	A1	B1
	45					1.6	2.8	9.6	0.56	2.8	A1	B1
	63		AD0Q090-2-1,00	1.00	2,800	2.5	4.4	22	0.65	4.4	A2	B2
	90					2.5	4.8	22	0.65	4.8	A2	B2
SAR 14.6	4	360	VD0Q090-4-0,14	0.14	1,400	0.6	0.9	3.1	0.55	0.9	A1	B1
	5.6					0.6	1.0	3.1	0.55	1.0	A1	B1
	8		VD0Q090-4-0,30	0.30	1,400	1.3	2.0	6.8	0.52	2.0	A1	B1
	11					1.3	2.2	6.8	0.52	2.2	A1	B1
	16		VD0Q090-2-0,60	0.60	2,800	1.8	2.9	12	0.61	2.9	A1	B1
	22					1.8	3.0	12	0.61	3.0	A1	B1
	32		AD0Q090-4-1,00	1.00	1,400	2.9	4.8	24	0.60	4.8	A2	B2
	45					2.9	5.2	24	0.60	5.2	A2	B2
	63		AD0Q090-2-2,00	2.00	2,800	4.6	7.6	44	0.69	7.6	A2	B2
	90					4.6	8.8	44	0.69	8.8	A2	B2
SAR 16.2	4	710	VD0Q112-4-0,30	0.30	1,400	1.0	1.8	6.4	0.60	1.8	A1	B1
	5.6					1.0	2.0	6.4	0.60	2.0	A1	B1
	8		VD0Q112-4-0,60	0.60	1,400	1.8	3.2	14	0.53	3.2	A1	B1
	11					1.8	3.6	14	0.53	3.6	A1	B1
	16		VD0Q112-2-1,00	1.00	2,800	2.6	4.9	26	0.68	4.9	A2	B2
	22					2.6	5.4	26	0.68	5.4	A2	B2
	32		AD0Q112-4-2,00	2.00	1,400	4.8	8.0	32	0.65	8.0	A2	B2
	45					4.8	9.6	32	0.65	8.8	A2	B2
	63		AD0Q112-2-3,50	3.50	2,800	6.8	14	72	0.78	14	A3	B3
	90					6.8	17	72	0.78	16	A3	–

1) – 3) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Installation and sizing

Motor data

Motor data is approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.

Motor protection

To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings.

Actuators without integral actuator controls (AUMA NORM):

Thermoswitches or PTC thermistors have to be considered within the external controls (refer to terminal plan).

Note: Failure to connect thermoswitches or PTC thermistors shall void the warranty for the motor.

Rating of the thermoswitches

AC current		DC current	
250 V, 50 – 60 Hz		60 V	1.0 A
cos φ = 1	2.5 A	42 V	1.2 A
cos φ = 0.6	1.6 A	24 V	1.5 A

Actuators with AM or AC integral actuator controls:

Thermal motor protection is already integrated.

Mains voltage, mains frequency

Permissible variation of mains voltage: ±10 %

Permissible variation of mains frequency: ±5 %

Terminal plan

Multi-turn actuators	Motor (type)	Terminal plan	Mains voltage range
SA 07.2 – SA 14.6	VE.../AE...	TPA01R1AA-101-000	Applies to all variants
SA 07.2 – SA 14.6	VC.../AC...	TPA02R1AA-101-000	100 V – 120 V
SA 07.2 – SA 14.6	VC.../AC...	TPA03R1AA-101-000	200 V – 240 V
SAR 07.2 – SAR 14.6	VE.../AE...	TPA01R1AA-001-000	Applies to all variants

For further information refer to "Technical data Multi-turn actuators SA 07.2 – SA 14.6 / SAR 07.2 – SAR 14.6 with 1-phase AC motors".

Switchgear sizing

For motor operation, reversing contactors (mechanically, electrically and electronically locked) or thyristors (electronically locked) can be used.

Actuators without integral actuator controls (AUMA NORM):

Switchgear are supplied by the customer. We recommend specification of switchgear suitable for their rated operating power/motor power in compliance with the assigned AUMA power class.

Switchgear assignment to AUMA power classes:

AUMA power class	Reversing contactor Rated operating power acc. to EN 60947-4-1 Utilization category AC-3	Reversing contactor Motor power according to UL/CSA at	
	400 V AC	480 V AC	600 V AC
A1	4.0 kW	5.0 hp	5.0 hp
A2	7.5 kW	10 hp	10 hp
A3	15 kW	20 hp	25 hp

AUMA power class	Thyristor Rated operating current acc. to EN 60947-4-2 Utilization category AC-53a
	400 V AC
B1	6 A
B2	8.5 A
B3	16 A

Actuators with AM or AC integral actuator controls:

Required switchgear in power classes A1 – A3 or B1 – B3 are already integrated in AM or AC actuator controls.

For actuators with AM integral actuator controls and installed switchgear in AUMA power class A3, an optional thermal overcurrent protection device cannot be directly integrated within the AM. A control box is additionally required. However, AC actuator controls can be used instead of AM actuator controls. When opting for AC actuator controls, the additional control box can be omitted.

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Notes on Electrical data SA .2/SAR .2 multi-turn actuators with 1-phase AC motors	
1) Nominal power P_N	Mechanical power output at motor shaft at run torque of multi-turn actuator (corresponds to approx. 35 % of maximum torque). The consumed electrical power can be calculated using the following formula: $P = U \times I \times \cos \varphi$
2) Operating/starting capacitor	For VE/AE motors, operating capacitors are integrated within the motor. For VC/AC motors, starting capacitors and starting switchgear are integrated within the motor.
3) Nominal current I_N	current at run torque at approx. 35 % of maximum torque
4) Max. current I_{max}	Current at maximum torque

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Electrical data Multi-turn actuators for open-close duty with 1-phase AC motors of type range VB 63

Short-time duty S2 - 15 min, 110 V – 120 V/50 Hz

Multi-turn actuator			Motor										
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	AUMA power class switchgear	
												Con-tactor	Thyristor
SA 07.2	4	25	VB0063-4-0,02	0.02	1,400	25	1.4	1.5	3.6	0.81	1.5	A1	B1
	5.6						1.4	1.5	3.6	0.81	1.5	A1	B1
	8		VB0063-4-0,04	0.04	1,400	50	2	2.2	4	0.98	2.2	A1	B1
	11						2	2.3	4	0.98	2.3	A1	B1
	16		VB0063-2-0,06	0.06	2,800	70	1.9	2.9	10	0.95	2.9	A1	B1
	22						1.9	3	10	0.95	3	A1	B1
SA 07.6	4	45	VB0063-4-0,03	0.03	1,400	50	2	2.1	4	0.98	2.1	A1	B1
	5.6						2	2.2	4	0.98	2.2	A1	B1
	8		VB0063-4-0,07	0.07	1,400	70	2.8	3.3	6.5	0.92	3.3	A1	B1
	11						2.8	3.4	6.5	0.92	3.4	A1	B1
	16		VB0063-2-0,12	0.12	2,800	100	3	4.8	11	0.98	4.8	A1	B1
	22						3	5.2	11	0.98	5.2	A1	B1

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Electrical data Multi-turn actuators for open-close duty with 1-phase AC motors of type range VB 63

Short-time duty S2 - 15 min, 110 V – 120 V/60 Hz

Multi-turn actuator			Motor									AUMA power class switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Con-tactor	Thyristor
SA 07.2	4,8	25	VB0063-4-0,02	0,02	1 680	25	1.4	1.5	4.2	0.94	1.5	A1	B1
	6,7						1.4	1.5	4.2	0.94	1.5	A1	B1
	9,6		VB0063-4-0,04	0,04	1 680	50	2.6	2.9	4.8	0.95	2.9	A1	B1
	13						2.6	3	4.8	0.95	3	A1	B1
	19		VB0063-2-0,06	0,06	3 360	70	2.5	3.4	12.5	0.94	3.4	A1	B1
	26						2.5	3.6	12.5	0.94	3.6	A1	B1
SA 07.6	4,8	45	VB0063-4-0,03	0,03	1 680	50	2.5	2.8	4.8	0.95	2.8	A1	B1
	6,7						2.5	2.9	4.8	0.95	2.9	A1	B1
	9,6		VB0063-4-0,06	0,07	1 680	70	2.9	3.7	6.8	0.98	3.7	A1	B1
	13						2.9	3.9	6.8	0.98	3.9	A1	B1
	19		VB0063-2-0,12	0,12	3 360	100	4.5	6	13	0.85	6	A1	B1
	26						4.5	6.5	13	0.85	6.5	A1	B1

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Electrical data Multi-turn actuators for open-close duty with 1-phase AC motors of type range VB 63

Short-time duty S2 - 15 min, 220 V – 240 V/50 Hz

Multi-turn actuator			Motor									AUMA power class switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Con-tactor	Thyristor
SA 07.2	4	30	VB0063-4-0,02	0,02	1 400	6	1,0	1,0	2,1	0,65	1,0	A1	B1
	5,6						1,0	1,0	2,1	0,65	1,0	A1	B1
	8		VB0063-4-0,04	0,04	1 400	12	1,1	1,3	2,3	0,97	1,3	A1	B1
	11						1,1	1,3	2,3	0,97	1,3	A1	B1
	16		VB0063-2-0,06	0,06	2 800	16	1,7	1,8	6,3	0,69	1,8	A1	B1
	22						1,7	1,9	6,3	0,69	1,9	A1	B1
SA 07.6	4	60	VB0063-4-0,03	0,03	1 400	12	1,1	1,2	2,3	0,96	1,2	A1	B1
	5,6						1,1	1,3	2,3	0,96	1,3	A1	B1
	8		VB0063-4-0,06	0,06	1 400	20	1,8	2,0	3,6	0,98	2,0	A1	B1
	11						1,8	2,1	3,6	0,98	2,1	A1	B1
	16		VB0063-2-0,12	0,12	2 800	25	1,8	2,5	6,4	0,98	2,5	A1	B1
	22						1,8	2,7	6,4	0,98	2,7	A1	B1

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Electrical data Multi-turn actuators for open-close duty with 1-phase AC motors of type range VB 63

Short-time duty S2 - 15 min, 220 V – 240 V/60 Hz

Multi-turn actuator			Motor									AUMA power class switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Con-tactor	Thyristor
SA 07.2	4,8	25	VB0063-4-0,02	0,02	1 680	6	0.8	0.9	2.2	0.73	0.9	A1	B1
	6,8						0.8	0.9	2.2	0.73	0.9	A1	B1
	9,6		VB0063-4-0,04	0,04	1 680	12	1.3	1.4	2.4	0.95	1.4	A1	B1
	13						1.3	1.5	2.4	0.95	1.5	A1	B1
	19		VB0063-2-0,06	0,06	3 360	16	1.2	1.7	6.5	0.92	1.7	A1	B1
	26						1.2	1.8	6.5	0.92	1.8	A1	B1
SA 07.6	4,8	45	VB0063-4-0,03	0,03	1 680	12	1.2	1.3	2.4	0.95	1.3	A1	B1
	6,8						1.2	1.4	2.4	0.95	1.4	A1	B1
	9,6		VB0063-4-0,07	0,07	1 680	20	1.9	2.2	4	0.95	2.2	A1	B1
	13						1.9	2.3	4	0.95	2.3	A1	B1
	19		VB0063-2-0,12	0,12	3 360	25	2.5	3.3	7	0.87	3.3	A1	B1
	26						2.5	3.6	7	0.87	3.6	A1	B1

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Electrical data Multi-turn actuators for open-close duty with 1-phase AC motors
Short-time duty S2 - 15 min, 110 V – 120 V/50 Hz

Multi-turn actuator			Motor											
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Starting capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Over-current protection device setting [A]	AUMA power class switchgear	
													Contactor	Thyristor
SA 07.2	4	30	VE0048-4-0,02	0.02	1 400	30	–	4.7	4.7	6.7	0.48	4.7	A1	B1
	5.6							4.7	4.7	6.7	0.48	4.7	A1	B1
	8		VE0048-4-0,04	0.04	1,400	50	–	4.7	4.7	7.2	0.60	4.7	A1	B1
	11							4.7	4.7	7.2	0.60	4.7	A1	B1
	16		VE0048-2-0,06	0.06	2,800	90	–	3.0	3.5	16	0.90	3.3	A1	B1
	22							3.0	3.5	16	0.90	3.3	A1	B1
	32		AE0048-4-0,10	0.10	1,400	120	–	8.9	8.9	16	0.64	8.9	A2	B3
	45							8.9	8.9	16	0.64	8.9	A2	B3
	63		AC0048-2-0,20	0.20	2,800	–	285	8.9	11	60	0.40	9.3	A2	–
	90							8.9	11	60	0.40	9.3	A2	–
	125		AC0048-2-0,30	0.30	2,800	–	285	9.3	13	60	0.48	9.3	A2	–
	180	25						9.3	13	60	0.48	9.3	A2	–
SA 07.6	4	60	VE0048-4-0,03	0.03	1,400	30	–	4.7	4.7	6.7	0.48	4.7	A1	B1
	5.6							4.7	4.7	6.7	0.48	4.7	A1	B1
	8		VE0048-4-0,07	0.07	1,400	50	–	4.7	4.7	7.2	0.65	4.7	A1	B1
	11							4.7	4.7	7.2	0.65	4.7	A1	B1
	16		VE0048-2-0,12	0.12	2,800	90	–	3.1	4.4	16	0.93	3.3	A1	B1
	22							3.1	4.4	16	0.93	3.3	A1	B1
	32		AE0048-4-0,20	0.20	1,400	120	–	9.3	9.3	16	0.65	9.3	A2	B3
	45							9.3	9.7	16	0.65	9.3	A2	B3
	63		AC0048-2-0,40	0.40	2,800	–	480	18	20	95	0.39	18	A3	–
	90							18	20	95	0.39	18	A3	–
	125		AC0048-2-0,50	0.50	2,800	–	480	18	23	95	0.44	18	A3	–
	180	50						18	23	95	0.44	18	A3	–
SA 10.2	4	120	VE0048-4-0,06	0.06	1,400	50	–	4.7	4.7	7.2	0.62	4.7	A1	B1
	5.6							4.7	4.7	7.2	0.62	4.7	A1	B1
	8		VE0048-4-0,12	0.12	1,400	120	–	8.9	9.0	16	0.72	8.9	A2	B3
	11							8.9	9.0	16	0.72	8.9	A2	B3
	16		VE0048-2-0,25	0.25	2,800	145	–	5.5	7.3	25	0.89	5.8	A2	B2
	22							5.5	8.5	25	0.89	5.8	A2	B2
	32		AC0056-4-0,40	0.40	1,400	–	440	17	19	80	0.37	18	A3	–
	45							17	21	80	0.37	18	A3	–
	63		AC0056-2-0,70	0.70	2,800	–	780	17	23	125	0.55	20	A3	–
	90							17	28	125	0.55	20	A3	–
	125		AC0056-2-1,00	1.00	2,800	–	780	18	33	125	0.65	20	A3	–
	180	100						18	37	125	0.65	20	A3	–
SA 14.2	4	250	VE0056-4-0,12	0.12	1,400	100	–	3.6	4.9	22	0.78	3.8	A1	B2
	5.6							3.6	4.9	22	0.78	3.8	A1	B2
	8		VE0056-4-0,25	0.25	1,400	180	–	6.4	9.1	23	0.93	6.8	A1	B2
	11							6.4	9.6	23	0.93	6.8	A1	B2
	16		VC0056-2-0,45	0.45	2,800	–	480	13	18	95	0.47	14	A2	–
	22							13	20	95	0.47	14	A2	–
	32		AC0056-4-0,75	0.75	1,400	–	850	26	33	110	0.42	28	–	–
	45							26	37	110	0.42	28	–	–
SA 14.6	4	500	VE0056-4-0,20	0.20	1,400	180	–	5.9	8.6	23	0.93	6.8	A1	B2
	5.6							5.9	9.1	23	0.93	6.8	A1	B2
	8	400	VC0056-4-0,40	0.40	1,400	–	440	17	21	80	0.37	18	A3	–
	11							17	23	80	0.37	18	A3	–
	16		VC0056-2-0,80	0.80	2,800	–	780	17	28	125	0.55	20	A3	–
	22							17	33	125	0.55	20	A3	–

1) – 4) Refer to notes on Electrical data SA .2/SAR .2 multi-turn actuators with 1-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 14.6

Electrical data Multi-turn actuators for open-close duty with 1-phase AC motors

Short-time duty S2 - 15 min, 110 V – 120 V/60Hz

Multi-turn actuator			Motor											
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Starting capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Over-current protection device setting [A]	AUMA power class switchgear	
													Contactor	Thyristor
SA 07.2	4.8	30	VE0048-4-0,02	0.02	1 680	30	–	3.4	3.4	6.0	0.82	3.4	A1	B1
	6.7							3.4	3.4	6.0	0.82	3.4	A1	B1
	9.6		VE0048-4-0,04	0.04	1 680	50	–	3.6	3.8	7.0	0.88	3.6	A1	B1
	13							3.6	3.8	7.0	0.88	3.6	A1	B1
	19		VE0048-2-0,06	0.06	3,360	90	–	4.5	6.0	13	0.90	5.0	A1	B2
	26							4.5	6.0	13	0.90	5.0	A1	B2
	38		AE0048-4-0,10	0.10	1,680	120	–	5.8	7.5	14	0.95	6.5	A1	B2
	54							5.8	7.5	14	0.95	6.5	A1	B2
	75		AC0048-2-0,20	0.20	3,360	–	285	8.5	12	72	0.65	9.2	A2	–
	108							8.5	12	72	0.65	9.2	A2	–
	150		AC0048-2-0,30	0.30	3,360	–	285	9.2	14	72	0.65	9.2	A2	–
	216	25						9.2	15	72	0.65	9.2	A2	–
SA 07.6	4.8	60	VE0048-4-0,03	0.03	1,680	30	–	3.4	3.8	6.0	0.82	3.4	A1	B1
	6.7							3.4	3.8	6.0	0.82	3.4	A1	B1
	9.6		VE0048-4-0,07	0.07	1,680	50	–	3.6	4.6	7.0	0.85	3.6	A1	B1
	13							3.6	4.6	7.0	0.85	3.6	A1	B1
	19		VE0048-2-0,12	0.12	3,360	90	–	4.5	7.0	13	0.93	5.0	A1	B2
	26							4.5	7.0	13	0.93	5.0	A1	B2
	38		AE0048-4-0,20	0.20	1,680	120	–	6.4	9.6	14	0.95	6.5	A1	B2
	54							6.4	9.6	14	0.95	6.5	A1	B2
	75		AC0048-2-0,40	0.40	3,360	–	480	11	20	80	0.75	14	A2	–
	108							11	20	80	0.75	14	A2	–
	150		AC0048-2-0,50	0.50	3,360	–	480	12	24	80	0.75	14	A2	–
	216	50						12	26	80	0.75	14	A2	–
SA 10.2	4.8	120	VE0048-4-0,06	0.06	1,680	50	–	3.6	4.6	7.0	0.85	3.6	A1	B1
	6.7							3.6	4.6	7.0	0.85	3.6	A1	B1
	9.6		VE0048-4-0,12	0.12	1,680	120	–	5.9	7.7	14	0.95	6.5	A1	B2
	13							5.9	7.7	14	0.95	6.5	A1	B2
	19		VE0048-2-0,25	0.25	3,360	100	–	5.8	11	22	0.92	7.0	A2	B2
	26							5.8	11	22	0.92	7.0	A2	B2
	38		AC0056-4-0,40	0.40	1,680	–	440	13	22	73	0.65	14	A2	–
	54							13	22	73	0.65	14	A2	–
	75		AC0056-2-0,70	0.70	3,360	–	780	14	34	110	0.84	22	A3	–
	108							14	34	110	0.84	22	A3	–
	150		AC0056-2-1,00	1.00	3,360	–	780	18	40	110	0.84	22	A3	–
	216	100						18	50	110	0.84	22	A3	–
SA 14.2	4.8	250	VE0056-4-0,12	0.12	1,680	100	–	4.6	6.6	20	0.93	4.8	A1	B2
	6.7							4.6	6.6	20	0.93	4.8	A1	B2
	9.6		VE0056-4-0,25	0.25	1,680	180	–	12	15	20	0.84	12	A2	B3
	13							12	15	20	0.84	12	A2	B3
	19		VC0056-2-0,45	0.45	3,360	–	480	11	23	100	0.81	12	A2	–
	26							11	23	100	0.81	12	A2	–
	38		AC0056-4-0,75	0.75	1,680	–	850	20	55	120	0.73	25	A3	–
	54							20	55	120	0.73	25	A3	–
SA 14.6	4.8	500	VE0056-4-0,20	0.20	1,680	180	–	11	15	20	0.84	12	A2	B3
	6.7							11	15	20	0.84	12	A2	B3
	9.6	400	VC0056-4-0,40	0.40	1,680	–	440	13	25	73	0.65	15	A2	–
	13							13	25	73	0.65	15	A2	–
	19		VC0056-2-0,80	0.80	3,360	–	850	16	48	110	0.80	22	A3	–
	26							16	48	110	0.80	22	A3	–

1) – 4) Refer to notes on Electrical data SA .2/SAR .2 multi-turn actuators with 1-phase AC motors

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Electrical data Multi-turn actuators for open-close duty with 1-phase AC motors
Short-time duty S2 - 15 min, 220 V – 240 V/50 Hz

Multi-turn actuator			Motor											
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Starting capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Over-current protection device setting [A]	AUMA power class switchgear	
													Contactor	Thyristor
SA 07.2	4	30	VE0048-4-0,02	0.02	1,400	10	–	1.9	2.5	3.1	0.55	2.5	A1	B1
	5.6							1.9	2.5	3.1	0.55	2.5	A1	B1
	8		VE0048-4-0,04	0.04	1,400	15	–	1.9	2.5	3.1	0.75	2.5	A1	B1
	11							1.9	2.5	3.1	0.75	2.5	A1	B1
	16		VE0048-2-0,06	0.06	2,800	25	–	1.8	2.2	7.5	0.97	2.0	A1	B1
	22							1.8	2.2	7.5	0.97	2.0	A1	B1
	32		AE0048-4-0,10	0.10	1,400	30	–	4.7	4.7	6.6	0.65	4.7	A1	B1
	45							4.7	4.7	6.6	0.65	4.7	A1	B1
	63		AC0048-2-0,20	0.20	2,800	–	480	4.9	5.6	36	0.52	5.0	A2	–
	90							4.9	5.6	36	0.52	5.0	A2	–
	125		AC0048-2-0,30	0.30	2,800	–	480	4.9	6.3	36	0.52	5.0	A2	–
	180	25						4.9	6.5	36	0.52	5.0	A2	–
SA 07.6	4	60	VE0048-4-0,03	0.03	1,400	10	–	1.9	2.5	3.1	0.55	2.5	A1	B1
	5.6							1.9	2.5	3.1	0.55	2.5	A1	B1
	8		VE0048-4-0,07	0.07	1,400	15	–	1.9	2.5	3.1	0.75	2.5	A1	B1
	11							1.9	2.5	3.1	0.75	2.5	A1	B1
	16		VE0048-2-0,12	0.12	2,800	25	–	1.8	2.7	7.5	0.97	2.0	A1	B1
	22							1.8	2.7	7.5	0.97	2.0	A1	B1
	32		AE0048-4-0,20	0.20	1,400	30	–	4.7	4.7	6.6	0.71	4.7	A1	B1
	45							4.7	4.7	6.6	0.71	4.7	A1	B1
	63		AC0048-2-0,40	0.40	2,800	–	480	9.1	11	55	0.42	10	A2	–
	90							9.1	11	55	0.42	10	A2	–
	125		AC0048-2-0,50	0.50	2,800	–	480	9.1	11	55	0.42	10	A2	–
	180	50						9.1	11	55	0.42	10	A2	–
SA 10.2	4	120	VE0048-4-0,06	0.06	1,400	15	–	1.8	2.5	3.1	0.75	2.5	A1	B1
	5.6							1.8	2.5	3.1	0.75	2.5	A1	B1
	8		VE0048-4-0,12	0.12	1,400	30	–	4.7	4.7	6.6	0.65	4.7	A1	B1
	11							4.7	4.7	6.6	0.65	4.7	A1	B1
	16		VE0048-2-0,25	0.25	2,800	30	–	2.6	4.2	14	0.78	3.0	A1	B1
	22							2.6	4.2	14	0.78	3.0	A1	B1
	32		AC0056-4-0,40	0.40	1,400	–	440	9.8	12	44	0.40	10	A2	–
	45							9.8	12	44	0.40	10	A2	–
	63		AC0056-2-0,70	0.70	2,800	–	850	8.0	14	70	0.80	12	A2	–
	90							8.0	14	70	0.80	12	A2	–
	125		AC0056-2-1,00	1.00	2,800	–	850	9.1	17	70	0.80	12	A2	–
	180	100						9.1	18	70	0.80	12	A2	–
SA 14.2	4	250	VE0056-4-0,12	0.12	1,400	25	–	2.4	2.8	13	0.68	2.5	A1	B1
	5.6							2.4	2.8	13	0.68	2.5	A1	B1
	8		VE0056-4-0,25	0.25	1,400	40	–	2.8	4.8	13	0.99	3.4	A1	B1
	11							2.8	4.8	13	0.99	3.4	A1	B1
	16		VC0056-2-0,45	0.45	2,800	–	480	6.4	10	54	0.65	7.3	A2	–
	22							6.4	10	54	0.65	7.3	A2	–
	32		AC0056-4-0,75	0.75	1,400	–	850	14	20	40	0.60	17	A2	–
	45							14	20	40	0.60	17	A2	–
SA 14.6	4	500	VE0056-4-0,20	0.20	1,400	40	–	2.7	4.8	13	0.99	3.4	A1	B1
	5.6							2.7	4.8	13	0.99	3.4	A1	B1
	8	400	VC0056-4-0,40	0.40	1,400	–	440	9.8	12	44	0.40	10	A2	–
	11							9.8	12	44	0.40	10	A2	–
	16		VC0056-2-0,80	0.80	2,800	–	850	8.3	16	70	0.80	12	A2	–
	22							8.3	16	70	0.80	12	A2	–

1) – 4) Refer to notes on Electrical data SA .2/SAR .2 multi-turn actuators with 1-phase AC motors

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Electrical data Multi-turn actuators for open-close duty with 1-phase AC motors
Short-time duty S2 - 15 min, 220 V – 240 V/60Hz

Multi-turn actuator			Motor											
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Starting capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Over-current protection device setting [A]	AUMA power class switchgear	
													Contactor	Thyristor
SA 07.2	4.8	30	VE0048-4-0,02	0.02	1 680	10	–	1.8	1.9	3.4	0.60	1.8	A1	B1
	6.7							1.8	1.9	3.4	0.60	1.8	A1	B1
	9.6		VE0048-4-0,04	0.04	1,680	15	–	2.0	2.1	3.5	0.75	2.0	A1	B1
	13							2.0	2.1	3.5	0.75	2.0	A1	B1
	19		VE0048-2-0,06	0.06	3,360	25	–	2.7	3.5	6.8	0.75	3.4	A1	B1
	26							2.7	3.5	6.8	0.75	3.4	A1	B1
	38		AE0048-4-0,10	0.10	1,680	30	–	2.9	3.6	7.2	0.96	4.1	A1	B1
	54							2.9	3.6	7.2	0.96	4.1	A1	B1
	75		AC0048-2-0,20	0.20	3,360	–	480	4.4	5.7	40	0.46	5.1	A2	–
	108							4.4	6.2	40	0.46	5.1	A2	–
	150		AC0048-2-0,30	0.30	3,360	–	480	4.8	7.1	40	0.55	5.1	A2	–
	216	25						4.8	7.4	40	0.55	5.1	A2	–
SA 07.6	4.8	60	VE0048-4-0,03	0.03	1,680	10	–	1.8	1.9	3.4	0.85	1.8	A1	B1
	6.7							1.8	1.9	3.4	0.85	1.8	A1	B1
	9.6		VE0048-4-0,07	0.07	1,680	15	–	2.0	2.3	3.5	0.85	2.0	A1	B1
	13							2.0	2.3	3.5	0.85	2.0	A1	B1
	19		VE0048-2-0,12	0.12	3,360	25	–	3.3	4.0	6.8	0.80	3.4	A1	B1
	26							3.3	4.0	6.8	0.80	3.4	A1	B1
	38		AE0048-4-0,20	0.20	1,680	30	–	3.2	4.8	7.2	0.97	4.1	A1	B1
	54							3.2	4.8	7.2	0.97	4.1	A1	B1
	75		AC0048-2-0,40	0.40	3,360	–	480	5.8	8.5	45	0.64	7.8	A2	–
	108							5.8	9.6	45	0.64	7.8	A2	–
	150		AC0048-2-0,50	0.50	3,360	–	480	6.4	12	45	0.68	7.8	A2	–
	216	50						6.4	13	45	0.68	7.8	A2	–
SA 10.2	4.8	120	VE0048-4-0,06	0.06	1,680	15	–	2.0	2.3	3.6	0.85	2.0	A1	B1
	6.7							2.0	2.3	3.6	0.85	2.0	A1	B1
	9.6		VE0048-4-0,12	0.12	1,680	30	–	3.0	3.6	7.2	0.98	3.4	A1	B1
	13							3.0	3.6	7.2	0.98	3.4	A1	B1
	19		VE0048-2-0,25	0.25	3,360	35	–	3.9	5.6	12	0.82	4.3	A1	B1
	26							3.9	5.6	12	0.82	4.3	A1	B1
	38		AC0056-4-0,40	0.40	1,680	–	440	6.0	11	38	0.55	8.1	A2	–
	54							6.0	11	38	0.55	8.1	A2	–
	75		AC0056-2-0,70	0.70	3,360	–	850	6.8	13	72	0.76	13	A2	–
	108							6.8	17	72	0.76	13	A2	–
	150		AC0056-2-1,00	1.00	3,360	–	850	8.7	21	72	0.83	13	A2	–
	216	100						8.7	25	72	0.83	13	A2	–
SA 14.2	4.8	250	VE0056-4-0,12	0.12	1,680	25	–	1.9	2.9	12	0.94	2.1	A1	B1
	6.7							1.9	2.9	12	0.94	2.1	A1	B1
	9.6		VE0056-4-0,25	0.25	1,680	40	–	5.0	6.3	12	0.81	5.2	A1	B1
	13							5.0	6.3	12	0.81	5.2	A1	B1
	19		VC0056-2-0,45	0.45	3,360	–	480	6.0	12	52	0.63	6.7	A2	–
	26							6.0	12	52	0.63	6.7	A2	–
	38		AC0056-4-0,75	0.75	1,680	–	850	11	22	74	0.60	16	A2	–
	54							11	22	74	0.60	16	A2	–
SA 14.6	4.8	500	VE0056-4-0,20	0.20	1,680	45	–	5.5	6.9	12	0.80	5.5	A1	B2
	6.7							5.5	6.9	12	0.80	5.5	A1	B2
	9.6	400	VC0056-4-0,40	0.40	1,680	–	440	6.0	13	35	0.55	8.1	A2	–
	13							6.0	13	35	0.55	8.1	A2	–
	19		VC0056-2-0,80	0.80	3,360	–	850	7.5	21	72	0.80	13	A2	–
	26							7.5	21	72	0.80	13	A2	–

1) – 4) Refer to notes on Electrical data SA .2/SAR .2 multi-turn actuators with 1-phase AC motors

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Electrical data Multi-turn actuators for modulating duty with 1-phase AC motors of type range VB 63

Intermittent duty S4 - 25 %, 110 V – 120 V/50 Hz

Multi-turn actuator			Motor									AUMA power class switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Con-tactor	Thyristor
SAR 07.2	4	30	VB0R63-4-0,02	0,02	1 400	25	1,9	1,9	4,1	0,67	1,9	A1	B1
	5,6						1,9	1,9	4,1	0,67	1,9	A1	B1
	8		VB0R63-4-0,04	0,04	1 400	50	2,3	2,6	4,6	0,97	2,6	A1	B1
	11						2,3	2,7	4,6	0,97	2,7	A1	B1
	16		VB0R63-2-0,06	0,06	2 800	70	2,6	3,2	12	0,85	3,2	A1	B1
	22						2,6	3,4	12	0,85	3,4	A1	B1
SAR 07.6	4	60	VB0R63-4-0,03	0,03	1 400	50	2,3	2,6	4,6	0,96	2,6	A1	B1
	5,6						2,3	2,6	4,6	0,96	2,6	A1	B1
	8		VB0R63-4-0,06	0,06	1 400	70	3,5	4,0	7,0	0,97	4,0	A1	B1
	11						3,5	4,1	7,0	0,97	4,1	A1	B1
	16		VB0R63-2-0,12	0,12	2 800	100	3,7	5,5	12	0,98	5,5	A1	B1
	22						3,7	5,8	12	0,98	5,8	A1	B1

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Electrical data Multi-turn actuators for modulating duty with 1-phase AC motors of type range VB 63

Intermittent duty S4 - 25 %, 110 V – 120 V/60 Hz

Multi-turn actuator			Motor									AUMA power class switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Con-tactor	Thyristor
SAR 07.2	4,8	25	VB0R63-4-0,02	0,02	1 680	25	1.4	1.5	4.2	0.94	1.5	A1	B1
	6,7						1.4	1.5	4.2	0.94	1.5	A1	B1
	9,6		VB0R63-4-0,04	0,04	1 680	50	2.6	2.9	4.8	0.95	2.9	A1	B1
	13						2.6	3	4.8	0.95	3	A1	B1
	19		VB0R63-2-0,06	0,06	3 360	70	2.5	3.4	12.5	0.94	3.4	A1	B1
	26						2.5	3.6	12.5	0.94	3.6	A1	B1
SAR 07.6	4,8	45	VB0R63-4-0,03	0,03	1 680	50	2.5	2.8	4.8	0.95	2.8	A1	B1
	6,7						2.5	2.9	4.8	0.95	2.9	A1	B1
	9,6		VB0R63-4-0,06	0,07	1 680	70	2.9	3.7	6.8	0.98	3.7	A1	B1
	13						2.9	3.9	6.8	0.98	3.9	A1	B1
	19		VB0R63-2-0,12	0,12	3 360	100	4.5	6	13	0.85	6	A1	B1
	26						4.5	6.5	13	0.85	6.5	A1	B1

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Electrical data Multi-turn actuators for modulating duty with 1-phase AC motors of type range VB 63

Intermittent duty S4 - 25 %, 220 V – 240 V/50 Hz

Multi-turn actuator			Motor									AUMA power class switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4	30	VB0R63-4-0,02	0,02	1 400	6	1,0	1,0	2,1	0,65	1,0	A1	B1
	5,6						1,0	1,0	2,1	0,65	1,0	A1	B1
	8		VB0R63-4-0,04	0,04	1 400	12	1,1	1,3	2,3	0,97	1,3	A1	B1
	11						1,1	1,3	2,3	0,97	1,3	A1	B1
	16		VB0R63-2-0,06	0,06	2 800	16	1,7	1,8	6,3	0,69	1,8	A1	B1
	22						1,7	1,9	6,3	0,69	1,9	A1	B1
SAR 07.6	4	60	VB0R63-4-0,03	0,03	1 400	12	1,1	1,2	2,3	0,96	1,2	A1	B1
	5,6						1,1	1,3	2,3	0,96	1,3	A1	B1
	8		VB0R63-4-0,06	0,06	1 400	20	1,8	2,0	3,6	0,98	2,0	A1	B1
	11						1,8	2,1	3,6	0,98	2,1	A1	B1
	16		VB0R63-2-0,12	0,12	2 800	25	1,8	2,5	6,4	0,98	2,5	A1	B1
	22						1,8	2,7	6,4	0,98	2,7	A1	B1

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Electrical data Multi-turn actuators for modulating duty with 1-phase AC motors of type range VB 63

Intermittent duty S4 - 25 %, 220 V – 240 V/60 Hz

Multi-turn actuator			Motor									AUMA power class switchgear	
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SAR 07.2	4,8	30	VB0R63-4-0,02	0,02	1 680	6	0.8	0.9	2.2	0.73	0.9	A1	B1
	6,7						0.8	0.9	2.2	0.73	0.9	A1	B1
	9,6		VB0R63-4-0,04	0,04	1 680	12	1.3	1.4	2.4	0.95	1.4	A1	B1
	13						1.3	1.5	2.4	0.95	1.5	A1	B1
	19		VB0R63-2-0,06	0,06	3 360	16	1.2	1.7	6.5	0.92	1.7	A1	B1
	26						1.2	1.8	6.5	0.92	1.8	A1	B1
SAR 07.6	4,8	60	VB0R63-4-0,03	0,03	1 680	12	1.2	1.4	2.7	0.95	1.3	A1	B1
	6,7						1.2	1.5	2.7	0.95	1.4	A1	B1
	9,6		VB0R63-4-0,07	0,07	1 680	20	1.9	2.3	4.6	0.95	2.2	A1	B1
	13						1.9	2.4	4.6	0.95	2.3	A1	B1
	19		VB0R63-2-0,12	0,12	3 360	25	2.4	3.1	7.6	0.87	3.3	A1	B1
	26						2.4	3.4	7.6	0.87	3.6	A1	B1

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SAR 07.2 – SAR 14.6

Electrical data Multi-turn actuators for modulating duty with 1-phase AC motors

Intermittent duty S4 - 25 %, 110 V – 120 V/60 Hz

Multi-turn actuator			Motor											
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Starting capacitor [µF]	Nennstrom[3] I_N [A]	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	AUMA power class switchgear	
													Contactor	Thyristor
SAR 07.2	4.8	30	VE0R48-4-0,02	0.02	1,680	30	–	3.4	3.4	6.0	0.82	3.4	A1	B1
	6.7							3.4	3.4	6.0	0.82	3.4	A1	B1
	9.6		VE0R48-4-0,04	0.04	1,680	50	–	3.6	3.8	7.0	0.88	3.6	A1	B1
	13							3.6	3.8	7.0	0.88	3.6	A1	B1
	19		VE0R48-2-0,06	0.06	3,360	90	–	4.5	6.0	13	0.90	5.0	A1	B2
	26							4.5	6.0	13	0.90	5.0	A1	B2
	38		AE0R48-4-0,10	0.10	1,680	120	–	5.8	7.5	14	0.95	6.5	A1	B2
	54							5.8	7.5	14	0.95	6.5	A1	B2
SAR 07.6	4.8	60	VE0R48-4-0,03	0.03	1,680	30	–	3.4	3.8	6.0	0.82	3.4	A1	B1
	6.7							3.4	3.8	6.0	0.82	3.4	A1	B1
	9.6		VE0R48-4-0,07	0.07	1,680	50	–	3.6	4.6	7.0	0.85	3.6	A1	B1
	13							3.6	4.6	7.0	0.85	3.6	A1	B1
	19		VE0R48-2-0,12	0.12	3,360	90	–	4.5	7.0	13	0.93	5.0	A1	B2
	26							4.5	7.0	13	0.93	5.0	A1	B2
	38		AE0R48-4-0,20	0.20	1,680	120	–	6.4	9.6	14	0.95	6.5	A1	B2
	54							6.4	9.6	14	0.95	6.5	A1	B2
SAR 10.2	4.8	120	VE0R48-4-0,06	0.06	1,680	50	–	3.6	4.6	7.0	0.85	3.6	A1	B1
	6.7							3.6	4.6	7.0	0.85	3.6	A1	B1
	9.6		VE0R48-4-0,12	0.12	1,680	120	–	5.9	7.7	14	0.95	6.5	A1	B2
	13							5.9	7.7	14	0.95	6.5	A1	B2
	19		VE0R48-2-0,25	0.25	3,360	100	–	5.8	11	22	0.92	7.0	A2	B2
	26							5.8	11	22	0.92	7.0	A2	B2
SAR 14.2	4.8	250	VE0R56-4-0,12	0.12	1,680	100	–	4.6	6.6	20	0.93	4.8	A1	B2
	6.7							4.6	6.6	20	0.93	4.8	A1	B2
	9.6		VE0R56-4-0,25	0.25	1,680	180	–	12	15	20	0.84	12	A2	B3
	13							12	15	20	0.84	12	A2	B3
SAR 14.6	4.8	500	VE0R56-4-0,20	0.20	1,680	180	–	11	15	20	0.84	12	A2	B3
	6.7							11	15	20	0.84	12	A2	B3

1) – 4) Refer to notes on Electrical data SA .2/SAR .2 multi-turn actuators with 1-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAR 07.2 – SAR 14.6

Electrical data Multi-turn actuators for modulating duty with 1-phase AC motors

Intermittent duty S4 - 25 %, 220 V – 240 V/50 Hz

Multi-turn actuator			Motor											
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Starting capacitor [µF]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Over-current protection device setting [A]	AUMA power class switchgear	
													Contactor	Thyristor
SAR 07.2	4	30	VE0R48-4-0,02	0.02	1,400	10	–	1.9	2.5	3.1	0.55	2.5	A1	B1
	5.6							1.9	2.5	3.1	0.55	2.5	A1	B1
	8		VE0R48-4-0,04	0.04	1,400	15	–	1.9	2.5	3.1	0.75	2.5	A1	B1
	11							1.9	2.5	3.1	0.75	2.5	A1	B1
	16		VE0R48-2-0,06	0.06	2,800	25	–	1.8	2.2	7.5	0.97	2.0	A1	B1
	22							1.8	2.2	7.5	0.97	2.0	A1	B1
	32		AE0R48-4-0,10	0.10	1,400	30	–	4.7	4.7	6.6	0.65	4.6	A1	B1
	45							4.7	4.7	6.6	0.65	4.6	A1	B1
SAR 07.6	4	60	VE0R48-4-0,03	0.03	1,400	10	–	1.9	2.5	3.1	0.55	2.5	A1	B1
	5.6							1.9	2.5	3.1	0.55	2.5	A1	B1
	8		VE0R48-4-0,07	0.07	1,400	15	–	1.9	2.5	3.1	0.75	2.5	A1	B1
	11							1.9	2.5	3.1	0.75	2.5	A1	B1
	16		VE0R48-2-0,12	0.12	2,800	25	–	1.8	2.7	7.5	0.97	2.0	A1	B1
	22							1.8	2.7	7.5	0.97	2.0	A1	B1
	32		AE0R48-4-0,20	0.20	1,400	30	–	4.7	4.7	6.6	0.71	4.6	A1	B1
	45							4.7	4.7	6.6	0.71	4.6	A1	B1
SAR 10.2	4	120	VE0R48-4-0,06	0.06	1,400	15	–	1.8	2.5	3.1	0.75	2.5	A1	B1
	5.6							1.8	2.5	3.1	0.75	2.5	A1	B1
	8		VE0R48-4-0,12	0.12	1,400	30	–	4.7	4.7	6.6	0.65	4.6	A1	B1
	11							4.7	4.7	6.6	0.65	4.6	A1	B1
	16		VE0R48-2-0,25	0.25	2,800	30	–	2.6	4.2	14	0.78	3.0	A1	B1
	22							2.6	4.2	14	0.78	3.0	A1	B1
SAR 14.2	4	250	VE0R56-4-0,12	0.12	1,400	25	–	2.4	2.8	13	0.68	2.5	A1	B1
	5.6							2.4	2.8	13	0.68	2.5	A1	B1
	8		VE0R56-4-0,25	0.25	1,400	40	–	2.8	4.8	13	0.99	3.4	A1	B1
	11							2.8	4.8	13	0.99	3.4	A1	B1
SAR 14.6	4	500	VE0R56-4-0,20	0.20	1,400	40	–	2.7	4.8	13	0.99	3.4	A1	B1
	5.6							2.7	4.8	13	0.99	3.4	A1	B1

1) – 4) Refer to notes on Electrical data SA .2/SAR .2 multi-turn actuators with 1-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAR 07.2 – SAR 14.6

Electrical data Multi-turn actuators for modulating duty with 1-phase AC motors

Intermittent duty S4 - 25 %, 220 V – 240 V/60 Hz

Multi-turn actuator			Motor											
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Starting capacitor [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Over-current protection device setting [A]	AUMA power class switchgear	
													Contactor	Thyristor
SAR 07.2	4.8	30	VE0R48-4-0,02	0.02	1,680	10	–	1.8	1.9	3.4	0.60	1.8	A1	B1
	6.7							1.8	1.9	3.4	0.60	1.8	A1	B1
	9.6		VE0R48-4-0,04	0.04	1,680	15	–	2.0	2.1	3.5	0.75	2.0	A1	B1
	13							2.0	2.1	3.5	0.75	2.0	A1	B1
	19		VE0R48-2-0,06	0.06	3,360	25	–	2.7	3.5	6.8	0.75	3.4	A1	B1
	26							2.7	3.5	6.8	0.75	3.4	A1	B1
	38		AE0R48-4-0,10	0.10	1,680	30	–	2.9	3.6	7.2	0.96	4.1	A1	B1
	54							2.9	3.6	7.2	0.96	4.1	A1	B1
SAR 07.6	4.8	60	VE0R48-4-0,03	0.03	1,680	10	–	1.8	1.9	3.4	0.85	1.8	A1	B1
	6.7							1.8	1.9	3.4	0.85	1.8	A1	B1
	9.6		VE0R48-4-0,07	0.07	1,680	15	–	2.0	2.3	3.5	0.85	2.0	A1	B1
	13							2.0	2.3	3.5	0.85	2.0	A1	B1
	19		VE0R48-2-0,12	0.12	3,360	25	–	3.3	4.0	6.8	0.80	3.4	A1	B1
	26							3.3	4.0	6.8	0.80	3.4	A1	B1
	38		AE0R48-4-0,20	0.20	1,680	30	–	3.2	4.8	7.2	0.97	4.1	A1	B1
	54							3.2	4.8	7.2	0.97	4.1	A1	B1
SAR 10.2	4.8	120	VE0R48-4-0,06	0.06	1,680	15	–	2.0	2.3	3.6	0.85	2.0	A1	B1
	6.7							2.0	2.3	3.6	0.85	2.0	A1	B1
	9.6		VE0R48-4-0,12	0.12	1,680	30	–	3.0	3.6	7.2	0.98	3.4	A1	B1
	13							3.0	3.6	7.2	0.98	3.4	A1	B1
	19		VE0R48-2-0,25	0.25	3,360	35	–	3.9	5.6	12	0.82	4.3	A1	B1
	26							3.9	5.6	12	0.82	4.3	A1	B1
SAR 14.2	4.8	250	VE0R56-4-0,12	0.12	1,680	25	–	1.9	2.9	12	0.94	2.1	A1	B1
	6.7							1.9	2.9	12	0.94	2.1	A1	B1
	9.6		VE0R56-4-0,25	0.25	1,680	40	–	5.0	6.3	12	0.81	5.2	A1	B1
	13							5.0	6.3	12	0.81	5.2	A1	B1
SAR 14.6	4.8	500	VE0R56-4-0,20	0.20	1,680	45	–	5.5	6.9	12	0.80	5.2	A1	B2
	6.7							5.5	6.9	12	0.80	5.2	A1	B2

1) – 4) Refer to notes on Electrical data SA .2/SAR .2 multi-turn actuators with 1-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Installation and sizing

Motor data

Motor data is approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.

Motor type

Motor	Version
FN...	Shunt motor
FL...	Compound motor

Motor protection

DC motors are generally designed without motor protection since the motor heats up within the rotor and not within the field windings.

Actuators without integral actuator controls (AUMA NORM):

Motor protection within the external controls must be implemented via an overcurrent protection device. Setting of the overcurrent protection device is based on the value listed in the table.

Actuators with AC integral actuator controls:

Motor protection is ensured by the overcurrent protection device integrated within actuator controls.

Mains voltage

Permissible variation of mains voltage: ±10 %

Cable entry

For notes on the threads of the cable entries as well as other information, refer to "Technical data Multi-turn actuators with DC motors".

Switchgear sizing

For motor operation, reversing contactors (mechanically, electrically and electronically locked) can be used.

Actuators without integral actuator controls (AUMA NORM):

Switchgear are supplied by the customer. We recommend specification of switchgear suitable for their rated operating currents in compliance with the assigned AUMA power class.

Switchgear assignment to AUMA power classes:

DC shunt motor, motor type FN:

AUMA power class	Reversing contactor Rated operating current acc. to EN 60947-4 Utilization category DC-3
A2	30 A
A4	110 A
A5	160 A

DC compound motor, motor type FL:

AUMA power class	Reversing contactor Rated operating current acc. to EN 60947-4 Utilization category DC-5
A2	30 A
A4	110 A
A5	160 A
A6	250 A

Actuators with AC integral actuator controls:

For actuators without starting resistance, the required switchgear in power class A2 are directly integrated into AC actuator actuator controls. For switchgear of power classes A4 to A6 or for actuators with starting resistance, a control box is additionally required.

Notes on Electrical data SA .2/SAR .2 multi-turn actuators with DC motors

1) Nominal power P_N	Mechanical power output at motor shaft at run torque of multi-turn actuator (corresponds to approx. 35 % of maximum torque).
2) Nominal current I_N	current at run torque at approx. 35 % of maximum torque
3) Max. current I_{max}	Current at maximum torque
4) Starting resistance R_A	The recommended protective resistors are not included in the scope of supply of the DC motors.
5)	Actuators with starting resistance and AC integral actuator controls additionally require a control box.

1) – 5) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with DC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data Multi-turn actuators for open-close duty with DC motors

Short-time duty S2 - 15 min 24 V DC

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Field current I_F [A]	Starting resistance[4][5] R_A [Ω]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SA 07.2	4	30	FN00063-4-0,02	0.02	1,400	2.0	3.5	27	2.4	–	3.5	A2
	5.6					2.0	3.8	27	2.4	–	3.8	A2
	8		FN00063-4-0,04	0.04	1,400	3.3	6.0	27	2.4	–	6.0	A2
	11					3.3	6.5	27	2.4	–	6.5	A2
	16		FN00063-2-0,06	0.06	2,800	5.5	12	80	2.4	–	12	A4
	22					5.5	13	80	2.4	–	13	A4
	32		FN00071-4-0,10	0.10	1,400	7.0	16	67	2.6	–	16	A2
	45					7.0	19	67	2.6	–	16	A2
	63		FN00071-2-0,20	0.20	2,800	12	26	170	3.6	–	25	A4
	90					12	30	170	3.6	–	25	A4
	125		FN00071-2-0,30	0.30	2,800	18	38	170	3.6	–	25	A4
	180	25				18	42	170	3.6	–	25	A4
SA 07.6	4	60	FN00063-4-0,03	0.03	1,400	2.8	5.0	27	2.4	–	5.0	A2
	5.6					2.8	5.0	27	2.4	–	5.0	A2
	8		FN00063-4-0,07	0.07	1,400	6.0	10	27	2.4	–	10	A2
	11					6.0	11	27	2.4	–	11	A2
	16		FN00063-2-0,12	0.12	2,800	9.0	19	80	2.4	–	18	A4
	22					9.0	22	80	2.4	–	18	A4
	32		FN00080-4-0,20	0.20	1,400	13	28	150	3.4	–	28	A4
	45					13	35	150	3.4	–	29	A4
	63		FN00080-2-0,40	0.40	2,800	25	50	240	3.4	–	47	A5
	90					25	62	240	3.4	–	47	A5
	125		FN00080-2-0,50	0.50	2,800	30	80	240	3.4	–	47	A5
	180	50				30	90	240	3.4	–	47	A5
SA 10.2	4	120	FN00063-4-0,06	0.06	1,400	4.0	8.0	27	2.4	–	8.0	A2
	5.6					4.0	11	27	2.4	–	11	A2
	8		FN00071-4-0,12	0.12	1,400	8.0	16	67	2.6	–	16	A2
	11					8.0	20	67	2.6	–	16	A2
	16		FN00071-2-0,25	0.25	2,800	15	28	170	3.6	–	25	A4
	22					15	38	170	3.6	–	25	A4
	32		FN00090-4-0,40	0.40	1,400	28	55	210	2.6	–	47	A5
	45					28	70	210	2.6	–	47	A5
	63		FN00090-2-0,70	0.70	2,800	55	92	250	2.6	–	85	A5
	90					55	112	250	2.6	–	85	A5
	125		FN00090-2-1,00	1.00	2,800	68	140	250	2.6	–	85	A5
	180	100				68	145	250	2.6	–	85	A5
SA 14.2	4	250	FN00071-4-0,13	0.13	1,400	8.2	18	67	2.6	–	17	A2
	5.6					8.2	20	67	2.6	–	17	A2
	8		FN00080-4-0,25	0.25	1,400	16	40	150	3.4	–	29	A4
	11					16	48	150	3.4	–	29	A4
	16		FN00080-2-0,45	0.45	2,800	29	70	240	3.4	–	47	A5
	22					29	77	240	3.4	–	47	A5
	32		FL00100-4-0,75	0.75	1,400	44	107	200	13	–	86	A5
	45					44	124	200	13	–	86	A5
	63		FL00100-2-1,40	1.40	2,800	85	201	400	13	–	170	A6
	90					85	234	400	13	–	170	A6
	125		FL00100-2-1,80	1.80	2,800	110	310	400	13	–	170	A6
	180	200				110	308	400	13	–	170	A6
SA 14.6	4	500	FN00080-4-0,22	0.22	1,400	16	34	150	3.4	–	29	A4
	5.6					16	39	150	3.4	–	29	A4
	8		FN00090-4-0,45	0.45	1,400	26	72	210	4.6	–	47	A5
	11					26	81	210	4.6	–	47	A5
	16		FN00090-2-0,80	0.80	2,800	60	120	250	4.6	–	85	A5
	22					60	138	250	4.6	–	85	A5
	32		FL00112-4-1,60	1.60	1,400	100	193	270	10	–	170	A5
	45					100	226	270	10	–	170	A5
SA 16.2	4	1,000	FL00100-4-0,40	0.40	1,400	25	68	200	12	–	48	A5
	5.6					25	72	200	12	–	48	A5
	8		FL00100-4-0,80	0.80	1,400	48	128	200	12	–	86	A5
	11					48	140	200	12	–	86	A5
	16		FL00100-2-1,50	1.50	2,800	80	230	400	13	–	170	A6
	22					80	264	400	13	–	170	A6

1) – 5) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with DC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 07.6

Electrical data Multi-turn actuators for open-close duty with DC motors of type range VK

Short-time duty S2 - 15 min, 24 V DC

Multi-turn actuator			Motor							
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SA 07.2	4 – 5.5	30	VK00063-4-0,02G	0.02	1,800	4.5	5 – 6	25	6	A2
	6 – 7.5					4.5	5 – 7	25	7	A2
	7.5 – 11		VK00063-4-0,04G	0.04	1,600	6.0	9 –12	25	12	A2
	10 – 15.5					6.0	10 – 13	25	13	A2
	12.5 – 17		VK00063-2-0,06G	0.06	2,700	6.0	13 –15	40	15	A2
	17 – 23.5					6.0	14 – 16	40	16	A2
SA 07.6	3.5 – 5.5	60	VK00063-4-0,03G	0.03	1,700	5.0	9 – 12	25	12	A2
	5 – 7.5					5.0	10 – 13	25	13	A2
	6 – 8		VK00063-2-0,07G	0.07	2,700	6.0	10 – 11.5	40	11.5	A2
	8 – 11					6.0	11 – 13	40	13	A2
	12 – 17	40	VK00063-2-0,08G	0.08	2,700	6.5	13 – 15	40	15	A2
	16 – 23.5					6.5	14 – 16	40	16	A2

Hinweise zur Tabelle	
1) Nominal power P_N	Mechanical power output at motor shaft at run torque of multi-turn actuator (corresponds to approx. 35 % of maximum torque).
2) Nominal current I_N	Current at run torque
3) Max. current I_{max}	Current at maximum torque

Notes on installation and sizing

Motor data

Motor data is approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.

Motor type

The DC motors are designed as shunt motors.

Motor protection

To protect against overheating, thermoswitches are embedded in the motor.

Actuators without integral actuator controls (AUMA NORM):

Thermoswitches have to be considered within the external controls (refer to terminal plan).

Note: Failure to connect thermoswitches shall void the warranty for the motor.

Rating of the thermoswitches

AC current		DC current	
250 V, 50 – 60 Hz		60 V	1.0 A
cos φ = 1	2.5 A	42 V	1.2 A
cos φ = 0.6	1.6 A	24 V	1.5 A

Actuators with AC integral actuator controls:

Thermal motor protection is already integrated.

Switchgear sizing

For motor operation, reversing contactors (mechanically, electrically and electronically locked) can be used.

Actuators without integral actuator controls (AUMA NORM):

Switchgear are supplied by the customer. We recommend specification of switchgear suitable for their rated operating currents in compliance with the assigned AUMA power class.

Switchgear assignment to AUMA power classes:

DC shunt motor, motor type VK:

AUMA power class	Reversing contactor Rated operating current acc. to EN 60947-4 Utilization category DC-3
A2	30 A

Actuators with AC integral actuator controls:

Required switchgear in power class A2 are directly integrated in the AC actuator controls.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Electrical data Multi-turn actuators for open-close duty with DC motors

Short-time duty S2 - 15 min, 48 V DC

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Field current I_F [A]	Starting resistance[4][5] R_A [Ω]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SA 07.2	4	30	FN00063-4-0,02	0.02	1,400	1.0	1.8	14	1.2	–	1.8	A2
	5.6					1.0	1.9	14	1.2	–	1.9	A2
	8		FN00063-4-0,04	0.04	1,400	1.7	3.0	14	1.2	–	3.0	A2
	11					1.7	3.3	14	1.2	–	3.3	A2
	16		FN00063-2-0,06	0.06	2,800	2.8	6.0	40	1.2	–	6.0	A2
	22					2.8	6.5	40	1.2	–	6.5	A2
	32		FN00071-4-0,10	0.10	1,400	3.5	8.0	34	1.3	–	7.8	A2
	45					3.5	9.5	34	1.3	–	7.8	A2
	63		FN00071-2-0,20	0.20	2,800	6.0	13	85	1.8	–	13	A4
	90					6.0	15	85	1.8	–	13	A4
	125		FN00071-2-0,30	0.30	2,800	8.8	19	85	1.8	–	13	A4
	180	25				8.8	21	85	1.8	–	13	A4
SA 07.6	4	60	FN00063-4-0,03	0.03	1,400	1.4	2.5	14	1.2	–	2.5	A2
	5.6					1.4	2.5	14	1.2	–	2.5	A2
	8		FN00063-4-0,07	0.07	1,400	3.0	5.0	14	1.2	–	5.0	A2
	11					3.0	5.5	14	1.2	–	5.4	A2
	16		FN00063-2-0,12	0.12	2,800	4.5	9.5	40	1.2	–	8.8	A2
	22					4.5	11	40	1.2	–	8.8	A2
	32		FN00080-4-0,20	0.20	1,400	6.5	14	75	1.7	–	14	A2
	45					6.5	18	75	1.7	–	15	A2
	63		FN00080-2-0,40	0.40	2,800	13	25	120	1.7	–	24	A4
	90					13	31	120	1.7	–	24	A4
	125		FN00080-2-0,50	0.50	2,800	15	40	120	1.7	–	24	A4
	180	50				15	45	120	1.7	–	24	A4
SA 10.2	4	120	FN00063-4-0,06	0.06	1,400	2.0	4.0	14	1.2	–	4.0	A2
	5.6					2.0	5.5	14	1.2	–	4.9	A2
	8		FN00071-4-0,12	0.12	1,400	4.0	8.0	34	1.3	–	7.8	A2
	11					4.0	10	34	1.3	–	7.8	A2
	16		FN00071-2-0,25	0.25	2,800	7.5	14	85	1.8	–	13	A4
	22					7.5	19	85	1.8	–	13	A4
	32		FN00090-4-0,40	0.40	1,400	14	28	105	1.3	–	23	A4
	45					14	35	105	1.3	–	23	A4
	63		FN00090-2-0,70	0.70	2,800	28	46	125	1.3	–	46	A4
	90					28	56	125	1.3	–	47	A4
	125		FN00090-2-1,00	1.00	2,800	34	70	125	1.3	–	47	A4
	180	100				34	73	125	1.3	–	47	A4
SA 14.2	4	250	FN00071-4-0,13	0.13	1,400	4.1	9	34	1.3	–	8.7	A2
	5.6					4.1	10	34	1.3	–	8.7	A2
	8		FN00080-4-0,25	0.25	1,400	8.0	20	75	1.7	–	15	A2
	11					8.0	24	75	1.7	–	15	A2
	16		FN00080-2-0,45	0.45	2,800	15	35	120	1.7	–	24	A4
	22					15	39	120	1.7	–	24	A4
	32		FL00100-4-0,75	0.75	1,400	22	54	100	6.5	–	37	A4
	45					22	62	100	6.5	–	37	A4
	63		FL00100-2-1,40	1.40	2,800	43	101	200	6.5	–	73	A5
	90					43	117	200	6.5	–	73	A5
	125		FL00100-2-1,80	1.80	2,800	55	155	200	6.5	–	73	A5
	180	200				55	154	200	6.5	–	73	A5
SA 14.6	4	500	FN00080-4-0,22	0.22	1,400	8.0	17	75	1.7	–	15	A2
	5.6					8.0	20	75	1.7	–	15	A2
	8		FN00090-4-0,45	0.45	1,400	13	36	105	2.3	–	23	A4
	11					13	41	105	2.3	–	23	A4
	16		FN00090-2-0,80	0.80	2,800	30	60	125	2.3	–	47	A4
	22					30	69	125	2.3	–	47	A4
	32		FL00112-4-1,60	1.60	1,400	50	97	135	5.0	–	73	A4
	45					50	113	135	5.0	–	73	A4
SA 16.2	4	1,000	FL00100-4-0,40	0.40	1,400	13	34	100	6.0	–	21	A4
	5.6					13	36	100	6.0	–	21	A4
	8		FL00100-4-0,80	0.80	1,400	24	64	100	6.0	–	37	A4
	11					24	70	100	6.0	–	37	A4
	16		FL00100-2-1,50	1.50	2,800	40	115	200	6.5	–	73	A5
	22					40	132	200	6.5	–	73	A5

1) – 5) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with DC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data Multi-turn actuators for open-close duty with DC motors

Short-time duty S2 - 15 min, 60 V DC

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Field current I_F [A]	Starting resistance[4][5] R_A [Ω]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SA 07.2	4	30	FN00063-4-0,02	0.02	1,400	0.8	1.4	11	1.0	–	1.4	A2
	5.6					0.8	1.5	11	1.0	–	1.5	A2
	8		FN00063-4-0,04	0.04	1,400	1.3	2.4	11	1.0	–	2.4	A2
	11					1.3	2.6	11	1.0	–	2.6	A2
	16		FN00063-2-0,06	0.06	2,800	2.2	4.8	32	1.0	–	4.8	A2
	22					2.2	5.2	32	1.0	–	5.2	A2
	32		FN00071-4-0,10	0.10	1,400	2.8	6.4	27	1.0	–	6.2	A2
	45					2.8	7.6	27	1.0	–	6.2	A2
	63		FN00071-2-0,20	0.20	2,800	4.8	10	68	1.4	–	10	A2
	90					4.8	12	68	1.4	–	10	A2
	125		FN00071-2-0,30	0.30	2,800	7.0	15	68	1.4	–	10	A2
	180	25				7.0	17	68	1.4	–	10	A2
SA 07.6	4	60	FN00063-4-0,03	0.03	1,400	1.1	2.0	11	1.0	–	2.0	A2
	5.6					1.1	2.0	11	1.0	–	2.0	A2
	8		FN00063-4-0,07	0.07	1,400	2.4	4.0	11	1.0	–	4.0	A2
	11					2.4	4.4	11	1.0	–	4.4	A2
	16		FN00063-2-0,12	0.12	2,800	3.6	7.6	32	1.0	–	7.1	A2
	22					3.6	8.8	32	1.0	–	7.1	A2
	32		FN00080-4-0,20	0.20	1,400	5.2	11	60	1.4	–	11	A2
	45					5.2	14	60	1.4	–	12	A2
	63		FN00080-2-0,40	0.40	2,800	10	20	96	1.4	–	19	A4
	90					10	25	96	1.4	–	19	A4
	125		FN00080-2-0,50	0.50	2,800	12	32	96	1.4	–	19	A4
	180	50				12	36	96	1.4	–	19	A4
SA 10.2	4	120	FN00063-4-0,06	0.06	1,400	1.6	3.2	11	1.0	–	3.2	A2
	5.6					1.6	4.4	11	1.0	–	4.0	A2
	8		FN00071-4-0,12	0.12	1,400	3.2	6.4	27	1.0	–	6.2	A2
	11					3.2	8.0	27	1.0	–	6.2	A2
	16		FN00071-2-0,25	0.25	2,800	6.0	11	68	1.4	–	10	A2
	22					6.0	15	68	1.4	–	10	A2
	32		FN00090-4-0,40	0.40	1,400	11	22	84	1.0	0.7	19	A4
	45					11	28	84	1.0	0.7	19	A4
	63		FN00090-2-0,70	0.70	2,800	22	37	100	1.0	0.5	35	A4
	90					22	45	100	1.0	0.5	35	A4
	125		FN00090-2-1,00	1.00	2,800	27	56	100	1.0	0.5	35	A4
	180	100				27	58	100	1.0	0.5	35	A4
SA 14.2	4	250	FN00071-4-0,13	0.13	1,400	3.3	7.2	27	1.04	–	6.9	A2
	5.6					3.3	8.0	27	1.04	–	6.9	A2
	8		FN00080-4-0,25	0.25	1,400	6.4	16	60	1.4	–	12	A2
	11					6.4	19	60	1.4	–	12	A2
	16		FN00080-2-0,45	0.45	2,800	12	28	96	1.4	–	19	A4
	22					12	31	96	1.4	–	19	A4
	32		FL00100-4-0,75	0.75	1,400	18	43	80	5.2	0.4	30	A4
	45					18	50	80	5.2	0.4	30	A4
	63		FL00100-2-1,40	1.40	2,800	34	80	160	5.2	0.3	58	A5
	90					34	94	160	5.2	0.3	58	A5
	125		FL00100-2-1,80	1.80	2,800	44	124	160	5.2	0.3	58	A5
	180	200				44	123	160	5.2	0.3	58	A5
SA 14.6	4	500	FN00080-4-0,22	0.22	1,400	6.4	14	60	1.36	–	12	A2
	5.6					6.4	16	60	1.36	–	12	A2
	8		FN00090-4-0,45	0.45	1,400	10	29	84	1.8	0.7	19	A4
	11					10	32	84	1.8	0.7	19	A4
	16		FN00090-2-0,80	0.80	2,800	24	48	100	1.8	0.5	35	A4
	22					24	55	100	1.8	0.5	35	A4
	32		FL00112-4-1,60	1.60	1,400	40	77	108	4.0	0.3	59	A4
	45					40	90	108	4.0	0.3	59	A4
SA 16.2	4	1,000	FL00100-4-0,40	0.40	1,400	10	27	80	4.8	0.6	17	A4
	5.6					10	29	80	4.8	0.6	17	A4
	8		FL00100-4-0,80	0.80	1,400	19	51	80	4.8	0.4	30	A4
	11					19	56	80	4.8	0.4	30	A4
	16		FL00100-2-1,50	1.50	2,800	32	92	160	5.2	0.3	59	A5
	22					32	106	160	5.2	0.3	59	A5

1) – 5) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with DC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data Multi-turn actuators for open-close duty with DC motors

Short-time duty S2 - 15 min, 110 V DC

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Field current I_F [A]	Starting resistance[4][5] R_A [Ω]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SA 07.2	4	30	FN00063-4-0,02	0.02	1,400	0.4	0.8	5.9	0.5	–	0.8	A2
	5.6					0.4	0.8	5.9	0.5	–	0.8	A2
	8		FN00063-4-0,04	0.04	1,400	0.7	1.3	5.9	0.5	–	1.3	A2
	11					0.7	1.4	5.9	0.5	–	1.4	A2
	16		FN00063-2-0,06	0.06	2,800	1.2	2.6	17	0.5	–	2.6	A2
	22					1.2	2.8	17	0.5	–	2.8	A2
	32		FN00071-4-0,10	0.10	1,400	1.5	3.5	15	0.6	–	3.4	A2
	45					1.5	4.2	15	0.6	–	3.4	A2
	63		FN00071-2-0,20	0.20	2,800	2.6	5.7	37	0.8	–	5.5	A2
	90					2.6	6.6	37	0.8	–	5.5	A2
	125		FN00071-2-0,30	0.30	2,800	3.8	8.3	37	0.8	–	5.5	A2
	180	25				3.8	9.2	37	0.8	–	5.5	A2
SA 07.6	4	60	FN00063-4-0,03	0.03	1,400	0.6	1.1	5.9	0.5	–	1.1	A2
	5.6					0.6	1.1	5.9	0.5	–	1.1	A2
	8		FN00063-4-0,07	0.07	1,400	1.3	2.2	5.9	0.5	–	2.2	A2
	11					1.3	2.4	5.9	0.5	–	2.4	A2
	16		FN00063-2-0,12	0.12	2,800	2.0	4.2	17	0.5	–	3.9	A2
	22					2.0	4.8	17	0.5	–	3.9	A2
	32		FN00080-4-0,20	0.20	1,400	2.8	6.1	33	0.7	–	6.1	A2
	45					2.8	7.6	33	0.7	–	6.4	A2
	63		FN00080-2-0,40	0.40	2,800	5.5	11	52	0.7	–	10	A2
	90					5.5	14	52	0.7	–	10	A2
	125		FN00080-2-0,50	0.50	2,800	6.6	17	52	0.7	–	10	A2
	180	50				6.6	20	52	0.7	–	10	A2
SA 10.2	4	120	FN00063-4-0,06	0.06	1,400	0.9	1.8	5.9	0.5	–	1.8	A2
	5.6					0.9	2.4	5.9	0.5	–	2.2	A2
	8		FN00071-4-0,12	0.12	1,400	1.8	3.5	15	0.6	–	3.4	A2
	11					1.8	4.4	15	0.6	–	3.4	A2
	16		FN00071-2-0,25	0.25	2,800	3.3	6.1	37	0.8	–	5.5	A2
	22					3.3	8.3	37	0.8	–	5.5	A2
	32		FN00090-4-0,40	0.40	1,400	6.1	12	46	0.6	2.5	10	A2[5]
	45					6.1	15	46	0.6	2.5	10	A2[5]
	63		FN00090-2-0,70	0.70	2,800	12	20	55	0.6	1.7	19	A2[5]
	90					12	24	55	0.6	1.7	19	A2[5]
	125		FN00090-2-1,00	1.00	2,800	15	31	55	0.6	1.7	19	A2[5]
	180	100				15	32	55	0.6	1.7	19	A2[5]
SA 14.2	4	250	FN00071-4-0,13	0.13	1,400	1.8	3.9	15	0.57	–	3.8	A2
	5.6					1.8	4.4	15	0.57	–	3.8	A2
	8		FN00080-4-0,25	0.25	1,400	3.5	8.7	33	0.7	–	6.4	A2
	11					3.5	10	33	0.7	–	6.4	A2
	16		FN00080-2-0,45	0.45	2,800	6.3	15	52	0.7	–	10	A2
	22					6.3	17	52	0.7	–	10	A2
	32		FN00100-4-0,75	0.75	1,400	9.6	23	44	2.8	1.5	17	A2[5]
	45					9.6	27	44	2.8	1.5	17	A2[5]
	63		FN00100-2-1,40	1.40	2,800	19	44	87	2.8	1.0	32	A4
	90					19	51	87	2.8	1.0	32	A4
	125		FN00100-2-1,80	1.80	2,800	24	68	87	2.8	1.0	32	A4
	180	200				24	67	87	2.8	1.0	32	A4
SA 14.6	4	500	FN00080-4-0,22	0.22	1,400	3.5	7.4	33	0.74	–	6.4	A2
	5.6					3.5	8.5	33	0.74	–	6.4	A2
	8		FN00090-4-0,45	0.45	1,400	5.7	16	46	1.0	2.5	10	A2[5]
	11					5.7	18	46	1.0	2.5	10	A2[5]
	16		FN00090-2-0,80	0.80	2,800	13	26	55	1.0	1.7	19	A2[5]
	22					13	30	55	1.0	1.7	19	A2[5]
	32		FN00112-4-1,60	1.60	1,400	22	42	59	2.2	0.7	32	A4
	45					22	49	59	2.2	0.7	32	A4
SA 16.2	4	1000	FN00100-4-0,40	0.40	1,400	5.5	15	44	2.6	2.0	9.2	A2[5]
	5.6					5.5	16	44	2.6	2.0	9.2	A2[5]
	8		FN00100-4-0,80	0.80	1,400	10	28	44	2.6	1.5	17	A2[5]
	11					10	31	44	2.6	1.5	17	A2[5]
	16		FN00100-2-1,50	1.50	2,800	17	50	87	2.8	1.0	32	A4
	22					17	58	87	2.8	1.0	32	A4

1) – 5) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with DC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data Multi-turn actuators for open-close duty with DC motors

Short-time duty S2 - 15 min, 125 V DC

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Field current I_F [A]	Starting resistance[4][5] R_A [Ω]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SA 07.2	4	30	FN00063-4-0,02	0.02	1,400	0.4	0.7	5.2	0.5	–	0.7	A2
	5.6					0.4	0.7	5.2	0.5	–	0.7	A2
	8		FN00063-4-0,04	0.04	1,400	0.6	1.2	5.2	0.5	–	1.2	A2
	11					0.6	1.3	5.2	0.5	–	1.3	A2
	16		FN00063-2-0,06	0.06	2,800	1.1	2.3	15	0.5	–	2.3	A2
	22					1.1	2.5	15	0.5	–	2.5	A2
	32		FN00071-4-0,10	0.10	1,400	1.3	3.1	13	0.5	–	3.1	A2
	45					1.3	3.7	13	0.5	–	3.7	A2
	63		FN00071-2-0,20	0.20	2,800	2.3	5.0	33	0.7	–	5.0	A2
	90					2.3	5.8	33	0.7	–	5.8	A2
	125		FN00071-2-0,30	0.30	2,800	3.4	7.3	33	0.7	–	6.3	A2
	180	25				3.4	8.1	33	0.7	–	6.3	A2
SA 07.6	4	60	FN00063-4-0,03	0.03	1,400	0.5	1.0	5.2	0.5	–	1.0	A2
	5.6					0.5	1.0	5.2	0.5	–	1.0	A2
	8		FN00063-4-0,07	0.07	1,400	1.2	1.9	5.2	0.5	–	1.9	A2
	11					1.2	2.1	5.2	0.5	–	2.1	A2
	16		FN00063-2-0,12	0.12	2,800	1.7	3.7	15	0.5	–	3.7	A2
	22					1.7	4.2	15	0.5	–	4.2	A2
	32		FN00080-4-0,20	0.20	1,400	2.5	5.4	29	0.7	–	5.4	A2
	45					2.5	6.7	29	0.7	–	6.7	A2
	63		FN00080-2-0,40	0.40	2,800	4.8	9.6	46	0.7	–	9.6	A2
	90					4.8	12	46	0.7	–	11	A2
	125		FN00080-2-0,50	0.50	2,800	5.8	15	46	0.7	–	11	A2
	180	50				5.8	17	46	0.7	–	11	A2
SA 10.2	4	120	FN00063-4-0,06	0.06	1,400	0.8	1.5	5.2	0.5	–	1.5	A2
	5.6					0.8	2.1	5.2	0.5	–	2.1	A2
	8		FN00071-4-0,12	0.12	1,400	1.5	3.1	13	0.5	–	3.1	A2
	11					1.5	3.8	13	0.5	–	3.8	A2
	16		FN00071-2-0,25	0.25	2,800	2.9	5.4	33	0.7	–	5.4	A2
	22					2.9	7.3	33	0.7	–	6.3	A2
	32		FN00090-4-0,40	0.40	1,400	5.4	11	40	0.5	2.8	11	A2[5]
	45					5.4	13	40	0.5	2.8	11	A2[5]
	63		FN00090-2-0,70	0.70	2,800	11	18	48	0.5	1.9	18	A2[5]
	90					11	22	48	0.5	1.9	22	A2[5]
	125		FN00090-2-1,00	1.00	2,800	13	27	48	0.5	1.9	22	A2[5]
	180	100				13	28	48	0.5	1.9	22	A2[5]
SA 14.2	4	250	FN00071-4-0,13	0.13	1,400	1.6	3.5	13	0.5	–	4.2	A2
	5.6					1.6	3.8	13	0.5	–	4.3	A2
	8		FN00080-4-0,25	0.25	1,400	3.1	7.7	29	0.7	–	7.3	A2
	11					3.1	9.2	29	0.7	–	7.3	A2
	16		FN00080-2-0,45	0.45	2,800	5.6	13	46	0.7	–	11	A2
	22					5.6	15	46	0.7	–	11	A2
	32		FN00100-4-0,75	0.75	1,400	8.5	21	38	2.5	1.7	19	A2[5]
	45					8.5	24	38	2.5	1.7	19	A2[5]
	63		FN00100-2-1,40	1.40	2,800	16	39	77	2.5	1.1	36	A4
	90					16	45	77	2.5	1.1	36	A4
	125		FN00100-2-1,80	1.80	2,800	21	60	77	2.5	1.1	36	A4
	180	200				21	59	77	2.5	1.1	36	A4
SA 14.6	4	500	FN00080-4-0,22	0.22	1,400	3.1	6.5	29	0.65	–	7.3	A2
	5.6					3.1	7.5	29	0.65	–	7.3	A2
	8		FN00090-4-0,45	0.45	1,400	5.0	14	40	0.9	2.8	11	A2[5]
	11					5.0	16	40	0.9	2.8	11	A2[5]
	16		FN00090-2-0,80	0.80	2,800	12	23	48	0.9	1.9	22	A2[5]
	22					12	26	48	0.9	1.9	22	A2[5]
	32		FN00112-4-1,60	1.60	1,400	19	37	52	1.9	0.8	36	A4
	45					19	43	52	1.9	0.8	36	A4
SA 16.2	4	1 000	FN00100-4-0,40	0.40	1,400	4.8	13	38	2.3	2.3	11	A2[5]
	5.6					4.8	14	38	2.3	2.3	11	A2[5]
	8		FN00100-4-0,80	0.80	1,400	9.2	25	38	2.3	1.7	19	A2[5]
	11					9.2	27	38	2.3	1.7	19	A2[5]
	16		FN00100-2-1,50	1.50	2,800	15	44	77	2.5	1.1	36	A4
	22					15	51	77	2.5	1.1	36	A4

1) – 5) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with DC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2

Electrical data Multi-turn actuators for open-close duty with DC motors

Short-time duty S2 - 15 min, 220 V DC

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Field current I_F [A]	Starting resistance[4][5] R_A [Ω]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SA 07.2	4	30	FN00063-4-0,02	0.02	1,400	0.2	0.4	3.0	0.3	–	0.4	A2
	5.6					0.2	0.4	3.0	0.3	–	0.4	A2
	8		FN00063-4-0,04	0.04	1,400	0.4	0.7	3.0	0.3	–	0.7	A2
	11					0.4	0.7	3.0	0.3	–	0.7	A2
	16		FN00063-2-0,06	0.06	2,800	0.6	1.3	8.7	0.3	–	1.3	A2
	22					0.6	1.4	8.7	0.3	–	1.4	A2
	32		FN00071-4-0,10	0.10	1,400	0.8	1.8	7.3	0.3	–	1.7	A2
	45					0.8	2.1	7.3	0.3	–	1.7	A2
	63		FN00071-2-0,20	0.20	2,800	1.3	2.8	19	0.4	–	2.8	A2
	90					1.3	3.3	19	0.4	–	2.8	A2
	125		FN00071-2-0,30	0.30	2,800	1.9	4.2	19	0.4	–	2.8	A2
	180	25				1.9	4.6	19	0.4	–	2.8	A2
SA 07.6	4	60	FN00063-4-0,03	0.03	1,400	0.3	0.6	3.0	0.3	–	0.6	A2
	5.6					0.3	0.6	3.0	0.3	–	0.6	A2
	8		FN00063-4-0,07	0.07	1,400	0.7	1.1	3.0	0.3	–	1.1	A2
	11					0.7	1.2	3.0	0.3	–	1.2	A2
	16		FN00063-2-0,12	0.12	2,800	1.0	2.1	8.7	0.3	–	1.9	A2
	22					1.0	2.4	8.7	0.3	–	1.9	A2
	32		FN00080-4-0,20	0.20	1,400	1.4	3.1	16	0.4	–	3.1	A2
	45					1.4	3.8	16	0.4	–	3.2	A2
	63		FN00080-2-0,40	0.40	2,800	2.7	5.5	26	0.4	–	5.2	A2
	90					2.7	6.8	26	0.4	–	5.2	A2
	125		FN00080-2-0,50	0.50	2,800	3.3	8.7	26	0.4	–	5.2	A2
	180	50				3.3	9.8	26	0.4	–	5.2	A2
SA 10.2	4	120	FN00063-4-0,06	0.06	1,400	0.4	0.9	3.0	0.3	–	0.9	A2
	5.6					0.4	1.2	3.0	0.3	–	1.1	A2
	8		FN00071-4-0,12	0.12	1,400	0.9	1.8	7.3	0.3	–	1.7	A2
	11					0.9	2.2	7.3	0.3	–	1.7	A2
	16		FN00071-2-0,25	0.25	2,800	1.6	3.1	19	0.4	–	2.8	A2
	22					1.6	4.2	19	0.4	–	2.8	A2
	32		FN00090-4-0,40	0.40	1,400	3.1	6.0	23	0.3	9.8	5.1	A2[5]
	45					3.1	7.6	23	0.3	9.8	5.1	A2[5]
	63		FN00090-2-0,70	0.70	2,800	6.0	10	27	0.3	6.5	9.5	A2[5]
	90					6.0	12	27	0.3	6.5	9.5	A2[5]
	125		FN00090-2-1,00	1.00	2,800	7.4	15	27	0.3	6.5	9.5	A2[5]
	180	100				7.4	16	27	0.3	6.5	9.5	A2[5]
SA 14.2	4	250	FN00071-4-0,13	0.13	1,400	0.9	2.0	7.3	0.28	–	1.9	A2
	5.6					0.9	2.2	7.3	0.28	–	1.9	A2
	8		FN00080-4-0,25	0.25	1,400	1.8	4.4	16	0.4	–	3.2	A2
	11					1.8	5.2	16	0.4	–	3.2	A2
	16		FN00080-2-0,45	0.45	2,800	3.2	7.6	26	0.4	–	5.2	A2
	22					3.2	8.4	26	0.4	–	5.2	A2
	32		FN00100-4-0,75	0.75	1,400	4.8	12	22	1.4	5.9	8.2	A2[5]
	45					4.8	14	22	1.4	5.9	8.2	A2[5]
	63		FN00100-2-1,40	1.40	2,800	9.3	22	44	1.4	4.1	16	A2[5]
	90					9.3	26	44	1.4	4.1	16	A2[5]
	125		FN00100-2-1,80	1.80	2,800	12	34	44	1.4	4.1	16	A2[5]
	180	200				12	34	44	1.4	4.1	16	A2[5]
SA 14.6	4	500	FN00080-4-0,22	0.22	1,400	1.7	3.7	16	0.37	–	3.2	A2
	5.6					1.7	4.3	16	0.37	–	3.2	A2
	8		FN00090-4-0,45	0.45	1,400	2.8	7.9	23	0.5	9.8	5.1	A2[5]
	11					2.8	8.8	23	0.5	9.8	5.1	A2[5]
	16		FN00090-2-0,80	0.80	2,800	6.6	13	27	0.5	6.5	9.5	A2[5]
	22					6.6	15	27	0.5	6.5	9.5	A2[5]
	32		FN00112-4-1,60	1.60	1,400	11	21	29	1.1	2.7	16	A2[5]
	45					11	25	29	1.1	2.7	16	A2[5]
SA 16.2	4	1,000	FN00100-4-0,40	0.40	1,400	2.7	7.4	22	1.3	7.9	4.6	A2[5]
	5.6					2.7	7.9	22	1.3	7.9	4.6	A2[5]
	8		FN00100-4-0,80	0.80	1,400	5.2	14	22	1.3	5.9	8.2	A2[5]
	11					5.2	15	22	1.3	5.9	8.2	A2[5]
	16		FN00100-2-1,50	1.50	2,800	8.7	25	44	1.4	4.1	16	A2[5]
	22					8.7	29	44	1.4	4.1	16	A2[5]

1) – 5) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with DC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Electrical data Multi-turn actuators for modulating duty with DC motors

Intermittent duty S4 - 25 %, 24 V DC

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Field current I_F [A]	Starting resistance[4][5] R_A [Ω]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SAR 07.2	4	30	FN0R063-4-0,02	0.02	1 400	2.0	3.5	27	2.4	–	3.5	A2
	5.6					2.0	3.8	27	2.4	–	3.8	A2
	8		FN0R063-4-0,04	0.04	1,400	3.3	6.0	27	2.4	–	6.0	A2
	11					3.3	6.5	27	2.4	–	6.5	A2
	16		FN0R063-2-0,06	0.06	2 800	5.5	12	80	2.4	–	12	A4
	22					5.5	13	80	2.4	–	13	A4
	32		FN0R071-4-0,10	0.10	1,400	7.0	16	67	2.6	–	16	A2
	45					7.0	19	67	2.6	–	16	A2
SAR 07.6	4	60	FN0R063-4-0,03	0.03	1,400	2.8	5.0	27	2.4	–	5.0	A2
	5.6					2.8	5.0	27	2.4	–	5.0	A2
	8		FN0R063-4-0,07	0.07	1,400	6.0	10	27	2.4	–	10	A2
	11					6.0	11	27	2.4	–	11	A2
	16		FN0R063-2-0,12	0.12	2 800	9.0	19	80	2.4	–	18	A4
	22					9.0	22	80	2.4	–	18	A4
	32		FN0R080-4-0,20	0.20	1,400	13	28	150	3.4	–	28	A4
	45					13	35	150	3.4	–	29	A4
SAR 10.2	4	120	FN0R063-4-0,06	0.06	1,400	4.0	8.0	27	2.4	–	8.0	A2
	5.6					4.0	11	27	2.4	–	11	A2
	8		FN0R071-4-0,12	0.12	1,400	8.0	16	67	2.6	–	16	A2
	11					8.0	20	67	2.6	–	16	A2
	16		FN0R071-2-0,25	0.25	2,800	15	28	170	3.6	–	25	A5
	22					15	38	170	3.6	–	25	A5
	32		FN0R090-4-0,40	0.40	1,400	28	55	210	2.6	–	47	A5
	45					28	70	210	2.6	–	47	A5
SAR 14.2	4	250	FN0R071-4-0,13	0.13	1,400	8.2	18	67	2.6	–	17	A2
	5.6					8.2	20	67	2.6	–	17	A2
	8		FN0R080-4-0,25	0.25	1,400	16	40	150	3.4	–	29	A4
	11					16	48	150	3.4	–	29	A4
	16		FN0R080-2-0,45	0.45	2,800	29	70	240	3.4	–	47	A5
	22					29	77	240	3.4	–	47	A5
	32		FL0R100-4-0,75	0.75	1,400	44	107	200	13	–	86	A5
	45					44	124	200	13	–	86	A5
SAR 14.6	4	500	FN0R080-4-0,22	0.22	1,400	16	34	150	3.4	–	29	A4
	5.6					16	39	150	3.4	–	29	A4
	8		FN0R090-4-0,45	0.45	1,400	26	72	210	4.6	–	47	A5
	11					26	81	210	4.6	–	47	A5
	16		FN0R090-2-0,80	0.80	2,800	60	120	250	4.6	–	85	A5
	22					60	138	250	4.6	–	85	A5
	32		FL0R112-4-1,60	1.60	1,400	100	193	270	10	–	170	A6
	45					100	226	270	10	–	170	A6
SAR 16.2	4	1,000	FL0R100-4-0,40	0.40	1,400	25	68	200	12	–	48	A5
	5.6					25	72	200	12	–	48	A5
	8		FL0R100-4-0,80	0.80	1,400	48	128	200	12	–	86	A5
	11					48	140	200	12	–	86	A5
	16		FL0R100-2-1,50	1.50	2,800	80	230	400	13	–	170	A6
	22					80	264	400	13	–	170	A6

1) – 5) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with DC motors

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SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with DC motors

Intermittent duty S4 - 25 %, 48 V DC

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Field current I_F [A]	Starting resistance[4][5] R_A [Ω]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SAR 07.2	4	30	FN0R063-4-0,02	0.02	1 400	1.0	1.8	14	1.2	–	1.8	A2
	5.6					1.0	1.9	14	1.2	–	1.9	A2
	8		FN0R063-4-0,04	0.04	1,400	1.7	3.0	14	1.2	–	3.0	A2
	11					1.7	3.3	14	1.2	–	3.3	A2
	16		FN0R063-2-0,06	0.06	2,800	2.8	6.0	40	1.2	–	6.0	A2
	22					2.8	6.5	40	1.2	–	6.5	A2
	32		FN0R071-4-0,10	0.10	1,400	3.5	8.0	34	1.3	–	7.8	A2
	45					3.5	9.5	34	1.3	–	7.8	A2
SAR 07.6	4	60	FN0R063-4-0,03	0.03	1,400	1.4	2.5	14	1.2	–	2.5	A2
	5.6					1.4	2.5	14	1.2	–	2.5	A2
	8		FN0R063-4-0,07	0.07	1,400	3.0	5.0	14	1.2	–	5.0	A2
	11					3.0	5.5	14	1.2	–	5.4	A2
	16		FN0R063-2-0,12	0.12	2,800	4.5	9.5	40	1.2	–	8.8	A2
	22					4.5	11	40	1.2	–	8.8	A2
	32		FN0R080-4-0,20	0.20	1,400	6.5	14	75	1.7	–	14	A4
	45					6.5	18	75	1.7	–	15	A4
SAR 10.2	4	120	FN0R063-4-0,06	0.06	1,400	2.0	4.0	14	1.2	–	4.0	A2
	5.6					2.0	5.5	14	1.2	–	4.9	A2
	8		FN0R071-4-0,12	0.12	1,400	4.0	8.0	34	1.3	–	7.8	A2
	11					4.0	10	34	1.3	–	7.8	A2
	16		FN0R071-2-0,25	0.25	2,800	7.5	14	85	1.8	–	13	A4
	22					7.5	19	85	1.8	–	13	A4
	32		FN0R090-4-0,40	0.40	1,400	14	28	105	1.3	–	23	A4
	45					14	35	105	1.3	–	23	A4
SAR 14.2	4	250	FN0R071-4-0,13	0.13	1,400	4.1	9.0	34	1.3	–	8.7	A2
	5.6					4.1	10	34	1.3	–	8.7	A2
	8		FN0R080-4-0,25	0.25	1,400	8.0	20	75	1.7	–	15	A4
	11					8.0	24	75	1.7	–	15	A4
	16		FN0R080-2-0,45	0.45	2,800	15	35	120	1.7	–	24	A4
	22					15	39	120	1.7	–	24	A4
	32		FL0R100-4-0,75	0.75	1,400	22	54	100	6.5	–	37	A4
	45					22	62	100	6.5	–	37	A4
SAR 14.6	4	500	FN0R080-4-0,22	0.22	1,400	8.0	17	75	1.7	–	15	A4
	5.6					8.0	20	75	1.7	–	15	A4
	8		FN0R090-4-0,45	0.45	1,400	13	36	105	2.3	–	23	A4
	11					13	41	105	2.3	–	23	A4
	16		FN0R090-2-0,80	0.80	2,800	30	60	125	2.3	–	47	A4
	22					30	69	125	2.3	–	47	A4
	32		FL0R112-4-1,60	1.60	1,400	50	97	135	5.0	–	73	A5
	45					50	113	135	5.0	–	73	A5
SAR 16.2	4	1,000	FL0R100-4-0,40	0.40	1,400	13	34	100	6.0	–	21	A4
	5.6					13	36	100	6.0	–	21	A4
	8		FL0R100-4-0,80	0.80	1,400	24	64	100	6.0	–	37	A4
	11					24	70	100	6.0	–	37	A4
	16		FL0R100-2-1,50	1.50	2,800	40	115	200	6.5	–	73	A5
	22					40	132	200	6.5	–	73	A5

1) – 5) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with DC motors

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Electrical data Multi-turn actuators for modulating duty with DC motors

Intermittent duty S4 - 25 %, 60 V DC

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Field current I_F [A]	Starting resistance[4][5] R_A [Ω]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SAR 07.2	4	30	FN0R063-4-0,02	0.02	1,400	0.8	1.4	11	1.0	–	1.4	A2
	5.6					0.8	1.5	11	1.0	–	1.5	A2
	8		FN0R063-4-0,04	0.04	1,400	1.3	2.4	11	1.0	–	2.4	A2
	11					1.3	2.6	11	1.0	–	2.6	A2
	16		FN0R063-2-0,06	0.06	2,800	2.2	4.8	32	1.0	–	4.8	A2
	22					2.2	5.2	32	1.0	–	5.2	A2
	32		FN0R071-4-0,10	0.10	1,400	2.8	6.4	27	1.0	–	6.2	A2
	45					2.8	7.6	27	1.0	–	6.2	A2
SAR 07.6	4	60	FN0R063-4-0,03	0.03	1,400	1.1	2.0	11	1.0	–	2.0	A2
	5.6					1.1	2.0	11	1.0	–	2.0	A2
	8		FN0R063-4-0,07	0.07	1,400	2.4	4.0	11	1.0	–	4.0	A2
	11					2.4	4.4	11	1.0	–	4.4	A2
	16		FN0R063-2-0,12	0.12	2,800	3.6	7.6	32	1.0	–	7.1	A2
	22					3.6	8.8	32	1.0	–	7.1	A2
	32		FN0R080-4-0,20	0.20	1,400	5.2	11	60	1.4	–	11	A2
	45					5.2	14	60	1.4	–	12	A2
SAR 10.2	4	120	FN0R063-4-0,06	0.06	1,400	1.6	3.2	11	1.0	–	3.2	A2
	5.6					1.6	4.4	11	1.0	–	4.0	A2
	8		FN0R071-4-0,12	0.12	1,400	3.2	6.4	27	1.0	–	6.2	A2
	11					3.2	8.0	27	1.0	–	6.2	A2
	16		FN0R071-2-0,25	0.25	2,800	6.0	11	68	1.4	–	10	A4
	22					6.0	15	68	1.4	–	10	A4
	32		FN0R090-4-0,40	0.40	1,400	11	22	84	1.0	0.7	19	A4
	45					11	28	84	1.0	0.7	19	A4
SAR 14.2	4	250	FN0R071-4-0,13	0.13	1,400	3.3	7.2	27	1.04	–	6.9	A2
	5.6					3.3	8.0	27	1.04	–	6.9	A2
	8		FN0R080-4-0,25	0.25	1,400	6.4	16	60	1.4	–	12	A2
	11					6.4	19	60	1.4	–	12	A2
	16		FN0R080-2-0,45	0.45	2,800	12	28	96	1.4	–	19	A4
	22					12	31	96	1.4	–	19	A4
	32		FL0R100-4-0,75	0.75	1,400	18	43	80	5.2	0.4	30	A4
	45					18	50	80	5.2	0.4	30	A4
SAR 14.6	4	500	FN0R080-4-0,22	0.22	1,400	6.4	14	60	1.36	–	12	A2
	5.6					6.4	16	60	1.36	–	12	A2
	8		FN0R090-4-0,45	0.45	1,400	10	29	84	1.8	0.7	19	A4
	11					10	32	84	1.8	0.7	19	A4
	16		FN0R090-2-0,80	0.80	2,800	24	48	100	1.8	0.5	35	A4
	22					24	55	100	1.8	0.5	35	A4
	32		FL0R112-4-1,60	1.60	1,400	40	77	108	4.0	0.3	59	A4
	45					40	90	108	4.0	0.3	59	A4
SAR 16.2	4	1,000	FL0R100-4-0,40	0.40	1,400	10	27	80	4.8	0.6	17	A4
	5.6					10	29	80	4.8	0.6	17	A4
	8		FL0R100-4-0,80	0.80	1,400	19	51	80	4.8	0.4	30	A4
	11					19	56	80	4.8	0.4	30	A4
	16		FL0R100-2-1,50	1.50	2,800	32	92	160	5.2	0.3	59	A5
	22					32	106	160	5.2	0.3	59	A5

1) – 5) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with DC motors

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auma®

Electrical data Multi-turn actuators for modulating duty with DC motors

Intermittent duty S4 - 25 %, 110 V DC

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Field current I_F [A]	Starting resistance[4][5] R_A [Ω]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SAR 07.2	4	30	FN0R063-4-0,02	0.02	1,400	0.4	0.8	5.9	0.5	–	0.8	A2
	5.6					0.4	0.8	5.9	0.5	–	0.8	A2
	8		FN0R063-4-0,04	0.04	1,400	0.7	1.3	5.9	0.5	–	1.3	A2
	11					0.7	1.4	5.9	0.5	–	1.4	A2
	16		FN0R063-2-0,06	0.06	2,800	1.2	2.6	17	0.5	–	2.6	A2
	22					1.2	2.8	17	0.5	–	2.8	A2
	32		FN0R071-4-0,10	0.10	1,400	1.5	3.5	15	0.6	–	3.4	A2
	45					1.5	4.2	15	0.6	–	3.4	A2
SAR 07.6	4	60	FN0R063-4-0,03	0.03	1,400	0.6	1.1	5.9	0.5	–	1.1	A2
	5.6					0.6	1.1	5.9	0.5	–	1.1	A2
	8		FN0R063-4-0,07	0.07	1,400	1.3	2.2	5.9	0.5	–	2.2	A2
	11					1.3	2.4	5.9	0.5	–	2.4	A2
	16		FN0R063-2-0,12	0.12	2,800	2.0	4.2	17	0.5	–	3.9	A2
	22					2.0	4.8	17	0.5	–	3.9	A2
	32		FN0R080-4-0,20	0.20	1,400	2.8	6.1	33	0.7	–	6.1	A2
	45					2.8	7.6	33	0.7	–	6.4	A2
SAR 10.2	4	120	FN0R063-4-0,06	0.06	1,400	0.9	1.8	5.9	0.5	–	1.8	A2
	5.6					0.9	2.4	5.9	0.5	–	2.2	A2
	8		FN0R071-4-0,12	0.12	1,400	1.8	3.5	15	0.6	–	3.4	A2
	11					1.8	4.4	15	0.6	–	3.4	A2
	16		FN0R071-2-0,25	0.25	2,800	3.3	6.1	37	0.8	–	5.5	A2
	22					3.3	8.3	37	0.8	–	5.5	A2
	32		FN0R090-4-0,40	0.40	1,400	6.1	12	46	0.6	2.5	10	A2[5]
	45					6.1	15	46	0.6	2.5	10	A2[5]
SAR 14.2	4	250	FN0R071-4-0,13	0.13	1,400	1.8	3.9	15	0.57	–	3.8	A2
	5.6					1.8	4.4	15	0.57	–	3.8	A2
	8		FN0R080-4-0,25	0.25	1,400	3.5	8.7	33	0.7	–	6.4	A2
	11					3.5	10	33	0.7	–	6.4	A2
	16		FN0R080-2-0,45	0.45	2,800	6.3	15	52	0.7	–	10	A2
	22					6.3	17	52	0.7	–	10	A2
	32		FN0R100-4-0,75	0.75	1,400	9.6	23	44	2.8	1.5	17	A4
	45					9.6	27	44	2.8	1.5	17	A4
SAR 14.6	4	500	FN0R080-4-0,22	0.22	1,400	3.5	7.4	33	0.74	–	6.4	A2
	5.6					3.5	8.5	33	0.74	–	6.4	A2
	8		FN0R090-4-0,45	0.45	1,400	5.7	16	46	1.0	2.5	10	A2[5]
	11					5.7	18	46	1.0	2.5	10	A2[5]
	16		FN0R090-2-0,80	0.80	2,800	13	26	55	1.0	1.7	19	A4
	22					13	30	55	1.0	1.7	19	A4
	32		FN0R112-4-1,60	1.60	1,400	22	42	59	2.2	0.7	32	A4
	45					22	49	59	2.2	0.7	32	A4
SAR 16.2	4	1,000	FN0R100-4-0,40	0.40	1,400	5.5	15	44	2.6	2.0	9.2	A2[5]
	5.6					5.5	16	44	2.6	2.0	9.2	A2[5]
	8		FN0R100-4-0,80	0.80	1,400	10	28	44	2.6	1.5	17	A4
	11					10	31	44	2.6	1.5	17	A4
	16		FN0R100-2-1,50	1.50	2,800	17	50	87	2.8	1.0	32	A4
	22					17	58	87	2.8	1.0	32	A4

1) – 5) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with DC motors

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SAR 07.2 – SAR 16.2

Electrical data Multi-turn actuators for modulating duty with DC motors

Intermittent duty S4 - 25 %, 125 V DC

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Field current I_F [A]	Starting resistance[4][5] R_A [Ω]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SAR 07.2	4	30	FN0R063-4-0,02	0.02	1,400	0.4	0.7	5.2	0.5	–	0.7	A2
	5.6					0.4	0.7	5.2	0.5	–	0.7	A2
	8		FN0R063-4-0,04	0.04	1,400	0.6	1.2	5.2	0.5	–	1.2	A2
	11					0.6	1.3	5.2	0.5	–	1.3	A2
	16		FN0R063-2-0,06	0.06	2,800	1.1	2.3	15	0.5	–	2.3	A2
	22					1.1	2.5	15	0.5	–	2.5	A2
	32		FN0R071-4-0,10	0.10	1,400	1.3	3.1	13	0.5	–	3.1	A2
	45					1.3	3.7	13	0.5	–	3.7	A2
SAR 07.6	4	60	FN0R063-4-0,03	0.03	1,400	0.5	1.0	5.2	0.5	–	1.0	A2
	5.6					0.5	1.0	5.2	0.5	–	1.0	A2
	8		FN0R063-4-0,07	0.07	1,400	1.2	1.9	5.2	0.5	–	1.9	A2
	11					1.2	2.1	5.2	0.5	–	2.1	A2
	16		FN0R063-2-0,12	0.12	2,800	1.7	3.7	15	0.5	–	3.7	A2
	22					1.7	4.2	15	0.5	–	4.2	A2
	32		FN0R080-4-0,20	0.20	1,400	2.5	5.4	29	0.7	–	5.4	A2
	45					2.5	6.7	29	0.7	–	6.7	A2
SAR 10.2	4	120	FN0R063-4-0,06	0.06	1,400	0.8	1.5	5.2	0.5	–	1.5	A2
	5.6					0.8	2.1	5.2	0.5	–	2.1	A2
	8		FN0R071-4-0,12	0.12	1,400	1.5	3.1	13	0.5	–	3.1	A2
	11					1.5	3.8	13	0.5	–	3.8	A2
	16		FN0R071-2-0,25	0.25	2,800	2.9	5.4	33	0.7	–	5.4	A2
	22					2.9	7.3	33	0.7	–	6.3	A2
	32		FN0R090-4-0,40	0.40	1,400	5.4	11	40	0.5	2.8	11	A2[5]
	45					5.4	13	40	0.5	2.8	11	A2[5]
SAR 14.2	4	250	FN0R071-4-0,13	0.13	1,400	1.6	3.5	13	0.5	–	4.2	A2
	5.6					1.6	3.8	13	0.5	–	4.3	A2
	8		FN0R080-4-0,25	0.25	1,400	3.1	7.7	29	0.7	–	7.3	A2
	11					3.1	9.2	29	0.7	–	7.3	A2
	16		FN0R080-2-0,45	0.45	2,800	5.6	13	46	0.7	–	11	A2
	22					5.6	15	46	0.7	–	11	A2
	32		FN0R100-4-0,75	0.75	1,400	8.5	21	38	2.5	1.7	19	A4
	45					8.5	24	38	2.5	1.7	19	A4
SAR 14.6	4	500	FN0R080-4-0,22	0.22	1,400	3.1	6.5	29	0.65	–	7.3	A2
	5.6					3.1	7.5	29	0.65	–	7.3	A2
	8		FN0R090-4-0,45	0.45	1,400	5.0	14	40	0.9	2.8	11	A2[5]
	11					5.0	16	40	0.9	2.8	11	A2[5]
	16		FN0R090-2-0,80	0.80	2,800	12	23	48	0.9	1.9	22	A4
	22					12	26	48	0.9	1.9	22	A4
	32		FN0R112-4-1,60	1.60	1,400	19	37	52	1.9	0.8	36	A4
	45					19	43	52	1.9	0.8	36	A4
SAR 16.2	4	1,000	FN0R100-4-0,40	0.40	1,400	4.8	13	38	2.3	2.3	11	A2[5]
	5.6					4.8	14	38	2.3	2.3	11	A2[5]
	8		FN0R100-4-0,80	0.80	1,400	9.2	25	38	2.3	1.7	19	A4
	11					9.2	27	38	2.3	1.7	19	A4
	16		FN0R100-2-1,50	1.50	2,800	15	44	77	2.5	1.1	36	A4
	22					15	51	77	2.5	1.1	36	A4

1) – 5) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with DC motors

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Electrical data Multi-turn actuators for modulating duty with DC motors

Intermittent duty S4 - 25 %, 220 V DC

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Field current I_F [A]	Starting resistance[4][5] R_A [Ω]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SAR 07.2	4	30	FN0R063-4-0,02	0.02	1,400	0.2	0.4	3.0	0.3	–	0.4	A2
	5.6					0.2	0.4	3.0	0.3	–	0.4	A2
	8		FN0R063-4-0,04	0.04	1,400	0.4	0.7	3.0	0.3	–	0.7	A2
	11					0.4	0.7	3.0	0.3	–	0.7	A2
	16		FN0R063-2-0,06	0.06	2,800	0.6	1.3	8.7	0.3	–	1.3	A2
	22					0.6	1.4	8.7	0.3	–	1.4	A2
	32		FN0R071-4-0,10	0.10	1,400	0.8	1.8	7.3	0.3	–	1.7	A2
	45					0.8	2.1	7.3	0.3	–	1.7	A2
SAR 07.6	4	60	FN0R063-4-0,03	0.03	1,400	0.3	0.6	3.0	0.3	–	0.6	A2
	5.6					0.3	0.6	3.0	0.3	–	0.6	A2
	8		FN0R063-4-0,07	0.07	1,400	0.7	1.1	3.0	0.3	–	1.1	A2
	11					0.7	1.2	3.0	0.3	–	1.2	A2
	16		FN0R063-2-0,12	0.12	2,800	1.0	2.1	8.7	0.3	–	1.9	A2
	22					1.0	2.4	8.7	0.3	–	1.9	A2
	32		FN0R080-4-0,20	0.20	1,400	1.4	3.1	16	0.4	–	3.1	A2
	45					1.4	3.8	16	0.4	–	3.2	A2
SAR 10.2	4	120	FN0R063-4-0,06	0.06	1,400	0.4	0.9	3.0	0.3	–	0.9	A2
	5.6					0.4	1.2	3.0	0.3	–	1.1	A2
	8		FN0R071-4-0,12	0.12	1,400	0.9	1.8	7.3	0.3	–	1.7	A2
	11					0.9	2.2	7.3	0.3	–	1.7	A2
	16		FN0R071-2-0,25	0.25	2,800	1.6	3.1	19	0.4	–	2.8	A2
	22					1.6	4.2	19	0.4	–	2.8	A2
	32		FN0R090-4-0,40	0.40	1,400	3.1	6.0	23	0.3	9.8	5.1	A2[5]
	45					3.1	7.6	23	0.3	9.8	5.1	A2[5]
SAR 14.2	4	250	FN0R071-4-0,13	0.13	1,400	0.9	2.0	7.3	0.28	–	1.9	A2
	5.6					0.9	2.2	7.3	0.28	–	1.9	A2
	8		FN0R080-4-0,25	0.25	1,400	1.8	4.4	16	0.4	–	3.2	A2
	11					1.8	5.2	16	0.4	–	3.2	A2
	16		FN0R080-2-0,45	0.45	2,800	3.2	7.6	26	0.4	–	5.2	A2
	22					3.2	8.4	26	0.4	–	5.2	A2
	32		FN0R100-4-0,75	0.75	1,400	4.8	12	22	1.4	5.9	8.2	A2[5]
	45					4.8	14	22	1.4	5.9	8.2	A2[5]
SAR 14.6	4	500	FN0R080-4-0,22	0.22	1,400	1.7	3.7	16	0.37	–	3.2	A2
	5.6					1.7	4.3	16	0.37	–	3.2	A2
	8		FN0R090-4-0,45	0.45	1,400	2.8	7.9	23	0.5	9.8	5.1	A2[5]
	11					2.8	8.8	23	0.5	9.8	5.1	A2[5]
	16		FN0R090-2-0,80	0.80	2,800	6.6	13	27	0.5	6.5	9.5	A2[5]
	22					6.6	15	27	0.5	6.5	9.5	A2[5]
	32		FN0R112-4-1,60	1.60	1,400	11	21	29	1.1	2.7	16	A4
	45					11	25	29	1.1	2.7	16	A4
SAR 16.2	4	1,000	FN0R100-4-0,40	0.40	1,400	2.7	7.4	22	1.3	7.9	4.6	A2[5]
	5.6					2.7	7.9	22	1.3	7.9	4.6	A2[5]
	8		FN0R100-4-0,80	0.80	1,400	5.2	14	22	1.3	5.9	8.2	A2[5]
	11					5.2	15	22	1.3	5.9	8.2	A2[5]
	16		FN0R100-2-1,50	1.50	2,800	8.7	25	44	1.4	4.1	16	A4
	22					8.7	29	44	1.4	4.1	16	A4

1) – 5) Refer to Notes on Electrical data SA .2/SAR .2 multi-turn actuators with DC motors

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SAV 07.2 – SAV 14.6

Electrical data Variable speed multi-turn actuators for open-close duty with actuator controls

Short-time duty S2 - 15 min, 220 V – 240 V/50 Hz – 60 Hz 3-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SAV 07.2	6 – 60	30	ADV0063-4-0,10	0.5	2.0	2.7	6
	12 – 120		ADV0063-2-0,20	0.6	2.3	4.0	6
	24 –240	25	ADV0063-2-0,30	0.7	2.9	5.6	10
SAV 07.6	6 – 60	60	ADV0063-4-0,20	0.7	2.8	4.0	6
	12 – 120		ADV0063-2-0,40	1.0	3.8	6.2	10
	24 –240	50	ADV0063-2-0,50	1.1	4.4	6.8	10
SAV 10.2	6 – 60	120	ADV0071-4-0,40	1.1	4.1	6.9	10
	12 – 120		ADV0071-2-0,70	1.6	6.3	9.8	16
	24 –240	100	ADV0071-2-1,00	2.1	6.7	12	16
SAV 14.2	6 – 60	250	ADV0090-4-0,75	1.5	4.8	7.8	10
	12 – 120		ADV0090-2-1,40	2.8	8.7	14	16
	24 –240	200	ADV0090-2-1,80	3.6	11	19	25
SAV 14.6	6 – 60	500	ADV0090-4-1,60	3.0	9.4	14	16

Notes on table	
1) Protection on site	For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 230 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

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SAV 07.2 – SAV 16.2

Electrical data Variable speed multi-turn actuators for open-close duty with actuator controls

Short-time duty S2 - 15 min, 380 V – 480 V/50 Hz – 60 Hz 3-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SAV 07.2	6 – 60	30	ADV0063-4-0,10	0.6	1.3	1.8	6
	12 – 120		ADV0063-2-0,20	0.6	1.4	2.5	6
	24 –240	25	ADV0063-2-0,30	0.8	1.7	3.5	6
SAV 07.6	6 – 60	60	ADV0063-4-0,20	0.9	2.0	2.8	6
	12 – 120		ADV0063-2-0,40	1.2	2.6	4.3	6
	24 –240	50	ADV0063-2-0,50	1.3	3.0	4.8	6
SAV 10.2	6 – 60	120	ADV0071-4-0,40	1.3	2.8	4.4	6
	12 – 120		ADV0071-2-0,70	1.8	4.0	6.9	10
	24 –240	100	ADV0071-2-1,00	2.0	4.5	7.4	10
SAV 14.2	6 – 60	250	ADV0090-4-0,75	1.7	3.8	6.1	10
	12 – 120		ADV0090-2-1,40	3.1	6.8	11	16
	24 –240	200	ADV0090-2-1,80	3.9	8.7	15	20
SAV 14.6	6 – 60	500	ADV0090-4-1,60	2.9	6.5	9.9	16
	12 – 120		ADV0090-2-3,00	5.0	11	18	20
	24 –240	400	ADV0090-2-3,30	6.2	14	23	25
SAV 16.2	6 – 60	1,000	ADV0112-4-3,00	5.3	11	17	20

Notes on table	
1) Protection on site	For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 400 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 400 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 400 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAV 07.2 – SAV 14.6

Electrical data Variable speed multi-turn actuators for open-close duty with actuator controls

Short-time duty S2 - 30 min, 220 V – 240 V/50 Hz – 60 Hz 3-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SAV 07.2	6 – 60	20	ADVL063-4-0,07	0.4	1.6	2.0	6
	12 – 120		ADVL063-2-0,14	0.5	1.8	3.0	6
	24 –240		ADVL063-2-0,21	0.6	2.3	4.2	6
SAV 07.6	6 – 60	40	ADVL063-4-0,14	0.6	2.4	2.9	6
	12 – 120		ADVL063-2-0,28	0.8	3.2	3.9	6
	24 –240	30	ADVL063-2-0,35	0.9	3.3	4.0	6
SAV 10.2	6 – 60	90	ADVL071-4-0,28	0.8	2.9	5.0	6
	12 – 120		ADVL071-2-0,50	1.2	4.7	8.0	10
	24 –240	70	ADVL071-2-0,70	1.8	5.5	8.2	10
SAV 14.2	6 – 60	180	ADVL090-4-0,50	1.3	4.0	6.4	10
	12 – 120		ADVL090-2-1,00	2.3	7.3	12	16
	24 –240	140	ADVL090-2-1,30	3.0	9.3	16	20
SAV 14.6	6 – 60	360	ADVL090-4-1,00	2.5	7.8	11	16

Notes on table	
1) Protection on site	For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 230 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAV 07.2 – SAV 16.2

Electrical data Variable speed multi-turn actuators for open-close duty with actuator controls

Short-time duty S2 - 30 min, 380 V – 480 V/50 Hz – 60 Hz 3-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SAV 07.2	6 – 60	20	ADVL063-4-0,07	0.5	1.1	1.4	6
	12 – 120		ADVL063-2-0,14	0.5	1.2	2.1	6
	24 –240		ADVL063-2-0,21	0.6	1.4	2.9	6
SAV 07.6	6 – 60	40	ADVL063-4-0,14	0.8	1.7	2.2	6
	12 – 120		ADVL063-2-0,28	1.0	2.2	2.9	6
	24 –240	30	ADVL063-2-0,35	1.0	2.2	2.9	6
SAV 10.2	6 – 60	90	ADVL071-4-0,28	0.9	2.0	3.3	6
	12 – 120		ADVL071-2-0,50	1.3	3.0	5.2	10
	24 –240	70	ADVL071-2-0,70	1.8	4.1	6.0	10
SAV 14.2	6 – 60	180	ADVL090-4-0,50	1.5	3.3	4.9	6
	12 – 120		ADVL090-2-1,00	2.7	6.0	8.8	10
	24 –240	140	ADVL090-2-1,30	3.5	7.7	12	16
SAV 14.6	6 – 60	360	ADVL090-4-1,00	2.2	4.8	7.4	10
	12 – 120		ADVL090-2-2,00	3.7	8.2	13	16
	24 –240	290	ADVL090-2-2,30	4.4	9.8	17	20
SAV 16.2	6 – 60	710	ADVL112-4-2,00	4.1	8.4	13	16

Notes on table	
1) Protection on site	For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 400 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 400 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 400 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

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SARV 07.2 – SARV 14.6

Electrical data Variable speed multi-turn actuators for modulating duty with actuator controls

Intermittent duty S4 - 25 %, 220 V – 240 V/50 Hz – 60 Hz 3-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SARV 07.2	6 – 60	30	ADVR063-4-0,10	0.5	2.0	2.7	6
	12 – 120		ADVR063-2-0,20	0.6	2.3	4.0	6
	24 –240	25	ADVR063-2-0,30	0.7	2.9	5.6	10
SARV 07.6	6 – 60	60	ADVR063-4-0,20	0.7	2.8	4.0	6
	12 – 120		ADVR063-2-0,40	1.0	3.8	6.2	10
	24 –240	50	ADVR063-2-0,50	1.1	4.4	6.8	10
SARV 10.2	6 – 60	120	ADVR071-4-0,40	1.1	4.1	6.9	10
	12 – 120		ADVR071-2-0,70	1.6	6.3	9.8	16
	24 –240	100	ADVR071-2-1,00	2.1	6.7	12	16
SARV 14.2	6 – 60	250	ADVR090-4-0,75	1.5	4.8	7.8	10
	12 – 120		ADVR090-2-1,40	2.8	8.7	14	16
	24 –240	200	ADVR090-2-1,80	3.6	11	19	25
SARV 14.6	6 – 60	500	ADVR090-4-1,60	3.0	9.4	14	16

Notes on table	
1) Protection on site	For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 230 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

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SARV 07.2 – SARV 16.2

Electrical data Variable speed multi-turn actuators for modulating duty with actuator controls

Intermittent duty S4 - 25 %, 380 V – 480 V/50 Hz – 60 Hz 3-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SARV 07.2	6 – 60	30	ADVR063-4-0,10	0.6	1.3	1.8	6
	12 – 120		ADVR063-2-0,20	0.6	1.4	2.5	6
	24 –240	25	ADVR063-2-0,30	0.8	1.7	3.5	6
SARV 07.6	6 – 60	60	ADVR063-4-0,20	0.9	2.0	2.8	6
	12 – 120		ADVR063-2-0,40	1.2	2.6	4.3	6
	24 –240	50	ADVR063-2-0,50	1.3	3.0	4.8	6
SARV 10.2	6 – 60	120	ADVR071-4-0,40	1.3	2.8	4.4	6
	12 – 120		ADVR071-2-0,70	1.8	4.0	6.9	10
	24 –240	100	ADVR071-2-1,00	2.0	4.5	7.4	10
SARV 14.2	6 – 60	250	ADVR090-4-0,75	1.7	3.8	6.1	10
	12 – 120		ADVR090-2-1,40	3.1	6.8	11	16
	24 –240	200	ADVR090-2-1,80	3.9	8.7	15	20
SARV 14.6	6 – 60	500	ADVR090-4-1,60	2.9	6.5	9.9	16
	12 – 120		ADVR090-2-3,00	5.0	11	18	20
	24 –240	400	ADVR090-2-3,30	6.2	14	23	25
SARV 16.2	6 – 60	1 000	ADVR112-4-3,00	5.3	11	17	20

Notes on table	
1) Protection on site	For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 400 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 400 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 400 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SARV 07.2 – SARV 14.6

Electrical data Variable speed multi-turn actuators for modulating duty with actuator controls

Intermittent duty S4 - 50 %, 220 V – 240 V/50 Hz – 60 Hz 3-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SARV 07.2	6 – 60	20	ADVQ063-4-0,07	0.4	1.6	2.0	6
	12 – 120		ADVQ063-2-0,14	0.5	1.8	3.0	6
SARV 07.6	6 – 60	40	ADVQ063-4-0,14	0.6	2.4	2.9	6
	12 – 120		ADVQ063-2-0,28	0.8	3.2	3.9	6
SARV 10.2	6 – 60	90	ADVQ071-4-0,28	0.8	2.9	5.0	6
	12 – 120		ADVQ071-2-0,50	1.2	4.7	8.0	10
SARV 14.2	6 – 60	180	ADVQ090-4-0,50	1.3	4.0	6.4	10
	12 – 120		ADVQ090-2-1,00	2.3	7.3	12	16
SARV 14.6	6 – 60	360	ADVQ090-4-1,00	2.5	7.8	11	16

Notes on table	
1) Protection on site	For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 230 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Electrical data Variable speed multi-turn actuators for modulating duty with actuator controls

Intermittent duty S4 - 50 %, 380 V – 480 V/50 Hz – 60 Hz 3-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SARV 07.2	6 – 60	20	ADVQ063-4-0,07	0.5	1.1	1.4	6
	12 – 120		ADVQ063-2-0,14	0.5	1.2	2.1	6
SARV 07.6	6 – 60	40	ADVQ063-4-0,14	0.8	1.7	2.2	6
	12 – 120		ADVQ063-2-0,28	1.0	2.2	2.9	6
SARV 10.2	6 – 60	90	ADVQ071-4-0,28	0.9	2.0	3.3	6
	12 – 120		ADVQ071-2-0,50	1.3	3.0	5.2	10
SARV 14.2	6 – 60	180	ADVQ090-4-0,50	1.5	3.3	4.9	6
	12 – 120		ADVQ090-2-1,00	2.7	6.0	8.8	10
SARV 14.6	6 – 60	360	ADVQ090-4-1,00	2.2	4.8	7.4	10
	12 – 120		ADVQ090-2-2,00	3.7	8.2	13	16
SARV 16.2	6 – 60	710	ADVQ112-4-2,00	4.1	8.4	13	16

Notes on table	
1) Protection on site	For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 400 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 400 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 400 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

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SAV 07.2 – SAV 10.2

Electrical data Variable speed multi-turn actuators for open-close duty with actuator controls

Short-time duty S2 - 15 min, 110 V – 120 V/50 Hz – 60 Hz 1-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SAV 07.2	6 – 60	30	ASV0063-4-0,10	0,4	5,2	7,2	10
	12 – 120		ASV0063-2-0,20	0,5	6,6	10	16
	24 –240	25	ASV0063-2-0,30	0,6	8,1	15	16
SAV 07.6	6 – 60	60	ASV0063-4-0,20	0,6	7,3	13	16
	12 – 120		ASV0063-2-0,40	0,9	11	18	20
	24 –240	50	ASV0063-2-0,50	1,1	14	22	25
SAV 10.2	6 – 60	120	ASV0071-4-0,40	1,0	13	22	25

Notes on table	
1) Protection on site	For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 115 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 115 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 115 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAV 07.2 – SAV 14.2

Electrical data Variable speed multi-turn actuators for open-close duty with actuator controls

Short-time duty S2 - 15 min, 220 V – 240 V/50 Hz – 60 Hz 1-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SAV 07.2	6 – 60	30	ASV0063-4-0,10	0.6	4.0	5.0	6
	12 – 120		ASV0063-2-0,20	0.6	4.3	7.2	10
	24 –240	25	ASV0063-2-0,30	0.8	5.4	10	16
SAV 07.6	6 – 60	60	ASV0063-4-0,20	0.7	4.6	7.0	10
	12 – 120		ASV0063-2-0,40	1.0	6.5	11	16
	24 –240	50	ASV0063-2-0,50	1.1	7.6	13	16
SAV 10.2	6 – 60	120	ASV0071-4-0,40	1.1	7.6	14	16
	12 – 120		ASV0071-2-0,70	1.8	12	20	25
	24 –240	100	ASV0071-2-1,00	2.2	13	22	25
SAV 14.2	6 – 60	250	ASV0090-4-0,75	1.5	8.9	15	16
	12 – 120		ASV0090-2-1,40	2.8	16	27	32

Notes on table	
1) Protection on site	For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 230 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

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SAV 07.2 – SAV 10.2

Electrical data Variable speed multi-turn actuators for open-close duty with actuator controls

Short-time duty S2 - 30 min, 110 V – 120 V/50 Hz – 60 Hz 1-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SAV 07.2	6 – 60	20	ASVL063-4-0,07	0.4	4.4	5.5	10
	12 – 120		ASVL063-2-0,14	0.4	5.1	8.1	10
	24 –240		ASVL063-2-0,21	0.5	6.3	11	16
SAV 07.6	6 – 60	40	ASVL063-4-0,14	0.5	6.4	9.7	16
	12 – 120		ASVL063-2-0,28	0.8	9.6	13	16
	24 –240	30	ASVL063-2-0,35	0.9	12	14	16
SAV 10.2	6 – 60	90	ASVL071-4-0,28	0.8	9.8	17	20

Notes on table	
1) Protection on site	For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 115 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 115 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 115 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

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SAV 07.2 – SAV 14.2

Electrical data Variable speed multi-turn actuators for open-close duty with actuator controls

Short-time duty S2 - 30 min, 220 V – 240 V/50 Hz – 60 Hz 1-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SAV 07.2	6 – 60	20	ASVL063-4-0,07	0.5	3.1	4.0	6
	12 – 120		ASVL063-2-0,14	0.5	3.4	5.8	10
	24 –240		ASVL063-2-0,21	0.6	4.3	6.7	10
SAV 07.6	6 – 60	40	ASVL063-4-0,14	0.6	4.0	5.3	10
	12 – 120		ASVL063-2-0,28	0.8	5.3	6.9	10
	24 –240	30	ASVL063-2-0,35	0.9	5.8	7.1	10
SAV 10.2	6 – 60	90	ASVL071-4-0,28	0.9	5.8	9.5	16
	12 – 120		ASVL071-2-0,50	1.4	9.1	14	16
	24 –240	70	ASVL071-2-0,70	1.7	10	16	20
SAV 14.2	6 – 60	180	ASVL090-4-0,50	1.3	7.6	12	16
	12 – 120		ASVL090-2-1,00	2.4	14	21	25

Notes on table	
1) Protection on site	For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 230 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

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SARV 07.2 – SARV 10.2

Electrical data Variable speed multi-turn actuators for modulating duty with actuator controls

Intermittent duty S4 - 25 %, 110 V – 120 V/50 Hz – 60 Hz 1-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SARV 07.2	6 – 60	30	ASVR063-4-0.10	0.4	5.2	7.2	10
	12 – 120		ASVR063-2-0.20	0.5	6.6	10	16
	24 –240	25	ASVR063-2-0.30	0.6	8.1	15	16
SARV 07.6	6 – 60	60	ASVR063-4-0.20	0.6	7.3	13	16
	12 – 120		ASVR063-2-0.40	0.9	11	18	20
	24 –240	50	ASVR063-2-0.50	1.1	14	22	25
SARV 10.2	6 – 60	120	ASVR071-4-0.40	1.0	13	22	25

Notes on table	
1) Protection on site	For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 115 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 115 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 115 V rated voltage at maximum torque and approx. 50 % output speed Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

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SARV 07.2 – SARV 14.2

Electrical data Variable speed multi-turn actuators for modulating duty with actuator controls

Intermittent duty S4 - 25 %, 220 V – 240 V/50 Hz – 60 Hz 1-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SARV 07.2	6 – 60	30	ASVR063-4-0,10	0.6	4.0	5.0	6
	12 – 120		ASVR063-2-0,20	0.6	4.3	7.2	10
	24 –240	25	ASVR063-2-0,30	0.8	5.4	10	16
SARV 07.6	6 – 60	60	ASVR063-4-0,20	0.7	4.6	7.0	10
	12 – 120		ASVR063-2-0,40	1.0	6.5	11	16
	24 –240	50	ASVR063-2-0,50	1.1	7.6	13	16
SARV 10.2	6 – 60	120	ASVR071-4-0,40	1.1	7.6	14	16
	12 – 120		ASVR071-2-0,70	1.8	12	20	25
	24 –240	100	ASVR071-2-1,00	2.2	13	22	25
SARV 14.2	6 – 60	250	ASVR090-4-0,75	1.5	8.9	15	16
	12 – 120		ASVR090-2-1,40	2.8	16	27	32

Notes on table	
1) Protection on site	For short-circuit protection of the actuator. fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5.000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5.000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 230 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances. there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage. the frequency converter generates a variable 3-phase AC voltage. adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating. thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage. mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

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SARV 07.2 – SARV 10.2

Electrical data Variable speed multi-turn actuators for modulating duty with actuator controls

Intermittent duty S4 - 50 %, 110 V – 120 V/50 Hz – 60 Hz 1-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SARV 07.2	6 – 60	20	ASVQ063-4-0,07	0.4	4.4	5.5	10
	12 – 120		ASVQ063-2-0,14	0.4	5.1	8.1	10
SARV 07.6	6 – 60	40	ASVQ063-4-0,14	0.5	6.4	9.7	16
	12 – 120		ASVQ063-2-0,28	0.8	9.6	13	16
SARV 10.2	6 – 60	90	ASVQ071-4-0,28	0.8	9.8	17	20

Notes on table	
1) Protection on site	For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 115 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 115 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 115 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

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SARV 07.2 – SARV 14.2

Electrical data Variable speed multi-turn actuators for modulating duty with actuator controls

Intermittent duty S4 - 50 %, 220 V – 240 V/50 Hz – 60 Hz 1-phase AC

Multi-turn actuator			Motor				Fuse[1]
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Consumed nominal power[2] P_{IN} [kW]	Nominal current[3] I_N [A]	Max. current[4] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SARV 07.2	6 – 60	20	ASVQ063-4-0,07	0.5	3.1	4.0	6
	12 – 120		ASVQ063-2-0,14	0.5	3.4	5.8	10
SARV 07.6	6 – 60	40	ASVQ063-4-0,14	0.6	4.0	5.3	10
	12 – 120		ASVQ063-2-0,28	0.8	5.3	6.9	10
SARV 10.2	6 – 60	90	ASVQ071-4-0,28	0.9	5.8	9.5	16
	12 – 120		ASVQ071-2-0,50	1.4	9.1	14	16
SARV 14.2	6 – 60	180	ASVQ090-4-0,50	1.3	7.6	12	16
	12 – 120		ASVQ090-2-1,00	2.4	14	21	25

Notes on table	
1) Protection on site	For short-circuit protection of the actuator. fuses have to be provided by the customer. The actuators are suitable for use in current circuits with a maximum short-circuit 1-phase AC current value of 5.000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5.000 A AC.
2) Consumed nominal power PI_N	Mains power consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
3) Nominal current I_N	Mains current consumption for 230 V rated voltage V at multi-turn actuator run torque (approx. 35 % of the maximum torque) and maximum output speed.
4) Max. current I_{max}	Mains current consumption for 230 V rated voltage at maximum torque and approx. 50 % output speed. Starting current $I_A \leq I_{max}$

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances. there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage. the frequency converter generates a variable 3-phase AC voltage. adjustable in terms of frequency and amplitude. Motor speed and thus actuator speed is internally set via the frequency.
Motor protection	To protect against overheating. thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV controls.
Mains voltage. mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

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Installation and sizing

Motor data

Motor data is approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.

Motor protection

To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings.

Actuators without integral actuator controls (AUMA NORM):

Thermoswitches or PTC thermistors have to be considered within the external controls (refer to terminal plan).

Note: Failure to connect thermoswitches or PTC thermistors shall void the warranty for the motor.

Rating of the thermoswitches

AC current		DC current	
250 V, 50 – 60 Hz		60 V	1.0 A
cos φ = 1	2.5 A	42 V	1.2 A
cos φ = 0.6	1.6 A	24 V	1.5 A

Actuators with AM or AC integral actuator controls:

Thermal motor protection is already integrated.

Mains voltage, mains frequency

Permissible variation of mains voltage: ±10 %

Permissible variation of mains frequency: ±5 %

Switchgear sizing

For motor operation, reversing contactors (mechanically, electrically and electronically locked) or thyristors (electronically locked) can be used.

Actuators without integral actuator controls (AUMA NORM):

Switchgear are supplied by the customer. We recommend specification of switchgear suitable for their rated operating power/motor power in compliance with the assigned AUMA power class.

Switchgear assignment to AUMA power classes:

AUMA power class	Reversing contactor Rated operating power acc. to EN 60947-4-1 Utilization category AC-3	Reversing contactor Motor power according to UL/CSA at	
	400 V AC	480 V AC	600 V AC
A1	4.0 kW	5.0 hp	5.0 hp

AUMA power class	Thyristor Rated operating current acc. to EN 60947-4-2 Utilization category AC-53a
	400 V AC
B1	6 A

Actuators with AM or AC integral actuator controls:

Required switchgear in power classes A1 or B1 are directly integrated in AM or AC actuator controls.

Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

1) Nominal power P_N	Mechanical power output at motor shaft at run torque of part-turn actuator (corresponds to approx. 35 % of maximum torque). The consumed electrical power can be calculated using the following formula: $P = U \times I \times \cos \varphi \times \sqrt{3}$
2) Nominal current I_N	Current at run torque
3) Max. current I_{max}	Current at maximum torque

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SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 220 V/60 Hz

Part-turn actuator			Motor									
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	AUMA power class for switchgear: Contactor	AUMA power class for switchgear: Thyristor
SQ 05.2	3	150	VD00063-2-0,06	0.06	3,360	1.3	1.3	4.1	0.42	1.3	A1	B1
	4.5					1.3	1.3	4.1	0.42	1.3	A1	B1
	6		VD00063-4-0,04	0.04	1,680	0.9	0.9	2.2	0.50	0.9	A1	B1
	9					0.9	0.9	2.2	0.50	0.9	A1	B1
	12		VD00063-4-0,02	0.02	1,680	0.9	0.9	2.2	0.40	0.9	A1	B1
	17					0.9	0.9	2.2	0.40	0.9	A1	B1
	25		SD00063-4-0,01	0.01	1,680	0.7	0.7	1.5	0.38	0.7	A1	B1
	50		SD00063-8-0,01		840	0.9	0.9	1.1	0.61	0.9	A1	B1
SQ 07.2	3	300	VD00063-2-0,12	0.12	3,360	1.5	2.0	6.5	0.52	2.0	A1	B1
	4.5					1.5	2.0	6.5	0.52	2.0	A1	B1
	6		VD00063-4-0,06	0.06	1,680	1.3	1.5	3.5	0.38	1.5	A1	B1
	9					1.3	1.5	3.5	0.38	1.5	A1	B1
	12		VD00063-4-0,03	0.03	1,680	0.9	1.1	2.2	0.43	1.1	A1	B1
	17					0.9	1.1	2.2	0.43	1.1	A1	B1
	25		SD00063-4-0,01	0.01	1,680	0.7	0.7	1.5	0.39	0.7	A1	B1
	50		SD00063-8-0,01		840	0.9	0.9	1.1	0.61	0.9	A1	B1
SQ 10.2	6	450	VD00063-4-0,10	0.10	1,680	1.7	2.2	4.4	0.48	2.2	A1	B1
	9	600				1.7	2.0	4.4	0.48	2.0	A1	B1
	12		SD00063-4-0,06	0.06	1,680	1.3	1.5	3.5	0.38	1.5	A1	B1
	17					1.3	1.5	3.5	0.38	1.5	A1	B1
	25		SD00063-4-0,04	0.04	1,680	1.1	1.1	2.2	0.48	1.1	A1	B1
	35					1.1	1.1	2.2	0.48	1.1	A1	B1
	50		SD00063-4-0,02	0.02	1,680	0.7	0.7	1.5	0.43	0.7	A1	B1
SQ 12.2	9	900	VD00063-2-0,19	0.19	3,360	2.2	2.6	7.6	0.53	2.6	A1	B1
	12		VD00063-4-0,10	0.10	1,680	1.7	2.2	4.4	0.48	2.2	A1	B1
	17	1,200				1.7	2.0	4.4	0.48	2.0	A1	B1
	25		SD00063-4-0,06	0.06	1,680	1.3	1.5	3.5	0.38	1.5	A1	B1
	35					1.3	1.5	3.5	0.38	1.5	A1	B1
	50		SD00063-4-0,04	0.04	1,680	1.1	1.1	2.2	0.48	1.1	A1	B1
	70					1.1	1.1	2.2	0.48	1.1	A1	B1
	108		VD00063-4-0,02	0.02	1,680	0.7	0.7	1.5	0.43	0.7	A1	B1
SQ 14.2	20	1,800	VD00063-2-0,19	0.19	3,360	2.2	2.6	7.6	0.53	2.6	A1	B1
	30		VD00063-4-0,10	0.10	1,680	1.7	2.0	4.4	0.48	2.0	A1	B1
	40	2 400				1.7	2.0	4.4	0.48	2.0	A1	B1
	60		SD00063-4-0,06	0.06	1,680	1.3	1.5	3.5	0.38	1.5	A1	B1
	85					1.3	1.5	3.5	0.38	1.5	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 230 V/50 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device set-ting [A]	Contac-tor	Thyristor
SQ 05.2	4	150	VD00063-2-0,06	0,06	2 800	1.0	1.0	3.3	0.42	1.0	A1	B1
	5.6					1.0	1.0	3.3	0.42	1.0	A1	B1
	8		VD00063-4-0,04	0.04	1,400	0.7	0.7	1.7	0.50	0.7	A1	B1
	11					0.7	0.7	1.7	0.50	0.7	A1	B1
	16		VD00063-4-0,02	0.02	1,400	0.7	0.7	1.7	0.40	0.7	A1	B1
	22					0.7	0.7	1.7	0.40	0.7	A1	B1
	32		SD00063-4-0,01	0.01	1,400	0.5	0.5	1.2	0.38	0.5	A1	B1
	63		SD00063-8-0,01		700	0.7	0.7	0.9	0.61	0.7	A1	B1
SQ 07.2	4	300	VD00063-2-0,12	0.12	2,800	1.2	1.6	5.2	0.52	1.6	A1	B1
	5.6					1.2	1.6	5.2	0.52	1.6	A1	B1
	8		VD00063-4-0,06	0.06	1,400	1.0	1.2	2.8	0.38	1.2	A1	B1
	11					1.0	1.2	2.8	0.38	1.2	A1	B1
	16		VD00063-4-0,03	0.03	1,400	0.7	0.9	1.7	0.43	0.9	A1	B1
	22					0.7	0.9	1.7	0.43	0.9	A1	B1
	32		SD00063-4-0,01	0.01	1,400	0.5	0.5	1.2	0.38	0.5	A1	B1
	63		SD00063-8-0,01		700	0.7	0.7	0.9	0.61	0.7	A1	B1
SQ 10.2	8	450	VD00063-4-0,10	0.10	1,400	1.4	1.7	3.5	0.48	1.7	A1	B1
	11	600				1.4	1.6	3.5	0.48	1.6	A1	B1
	16		SD00063-4-0,06	0.06	1,400	1.0	1.2	2.8	0.38	1.2	A1	B1
	22					1.0	1.2	2.8	0.38	1.2	A1	B1
	32		SD00063-4-0,04	0.04	1,400	0.9	0.9	1.7	0.48	0.9	A1	B1
	42					0.9	0.9	1.7	0.48	0.9	A1	B1
	63		SD00063-4-0,02	0.02	1,400	0.5	0.5	1.2	0.43	0.5	A1	B1
SQ 12.2	11	900	VD00063-2-0,19	0.19	2,800	1.7	2.1	6.1	0.53	2.1	A1	B1
	16		VD00063-4-0,10	0.10	1,400	1.4	1.7	3.5	0.48	1.7	A1	B1
	22	1,200				1.4	1.6	3.5	0.48	1.6	A1	B1
	32		SD00063-4-0,06	0.06	1,400	1.0	1.2	2.8	0.38	1.2	A1	B1
	45					1.0	1.2	2.8	0.38	1.2	A1	B1
	63		SD00063-4-0,04	0.04	1,400	0.9	0.9	1.7	0.48	0.9	A1	B1
	84					0.9	0.9	1.7	0.48	0.9	A1	B1
	125		SD00063-4-0,02	0.02	1,400	0.5	0.5	1.2	0.43	0.5	A1	B1
SQ 14.2	24	1,800	VD00063-2-0,19	0.19	2,800	1.7	2.1	6.1	0.53	2.1	A1	B1
	36		VD00063-4-0,10	0.10	1,400	1.4	1.6	3.5	0.48	1.6	A1	B1
	48	2,400				1.4	1.6	3.5	0.48	1.6	A1	B1
	72		SD00063-4-0,06	0.06	1,400	1.0	1.2	2.8	0.38	1.2	A1	B1
	100					1.0	1.2	2.8	0.38	1.2	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 380 V/50 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device set-ting [A]	Contac-tor	Thyristor
SQ 05.2	4	150	VD00063-2-0,06	0.06	2,800	0.6	0.6	2.0	0.42	0.6	A1	B1
	5.6					0.6	0.6	2.0	0.42	0.6	A1	B1
	8		VD00063-4-0,04	0.04	1,400	0.4	0.4	1.1	0.50	0.4	A1	B1
	11					0.4	0.4	1.1	0.50	0.4	A1	B1
	16		VD00063-4-0,02	0.02	1,400	0.4	0.4	1.1	0.40	0.4	A1	B1
	22					0.4	0.4	1.1	0.40	0.4	A1	B1
	32		SD00063-4-0,01	0.01	1,400	0.3	0.3	0.7	0.38	0.3	A1	B1
	63		SD00063-8-0,01		700	0.4	0.4	0.5	0.61	0.4	A1	B1
SQ 07.2	4	300	VD00063-2-0,12	0.12	2,800	0.7	0.9	3.2	0.52	0.9	A1	B1
	5.6					0.7	0.9	3.2	0.52	0.9	A1	B1
	8		VD00063-4-0,06	0.06	1,400	0.6	0.7	1.7	0.38	0.7	A1	B1
	11					0.6	0.7	1.7	0.38	0.7	A1	B1
	16		VD00063-4-0,03	0.03	1,400	0.4	0.5	1.1	0.43	0.5	A1	B1
	22					0.4	0.5	1.1	0.43	0.5	A1	B1
	32		SD00063-4-0,01	0.01	1,400	0.3	0.3	0.7	0.38	0.3	A1	B1
	63		SD00063-8-0,01		700	0.4	0.4	0.5	0.61	0.4	A1	B1
SQ 10.2	8	450	VD00063-4-0,10	0.10	1,400	0.8	1.1	2.1	0.48	1.1	A1	B1
	11	600				0.8	0.9	2.1	0.48	0.9	A1	B1
	16		SD00063-4-0,06	0.06	1,400	0.6	0.7	1.7	0.38	0.7	A1	B1
	22					0.6	0.7	1.7	0.38	0.7	A1	B1
	32		SD00063-4-0,04	0.04	1,400	0.5	0.5	1.1	0.48	0.5	A1	B1
	42					0.5	0.5	1.1	0.48	0.5	A1	B1
	63		SD00063-4-0,02	0.02	1,400	0.3	0.3	0.7	0.43	0.3	A1	B1
SQ 12.2	11	900	VD00063-2-0,19	0.19	2,800	1.1	1.3	3.7	0.53	1.3	A1	B1
	16		VD00063-4-0,10	0.10	1,400	0.8	1.1	2.1	0.48	1.1	A1	B1
	22	1,200				0.8	0.9	2.1	0.48	0.9	A1	B1
	32		SD00063-4-0,06	0.06	1,400	0.6	0.7	1.7	0.38	0.7	A1	B1
	45					0.6	0.7	1.7	0.38	0.7	A1	B1
	63		SD00063-4-0,04	0.04	1,400	0.5	0.5	1.1	0.48	0.5	A1	B1
	84					0.5	0.5	1.1	0.48	0.5	A1	B1
	125		SD00063-4-0,02	0.02	1,400	0.3	0.3	0.7	0.43	0.3	A1	B1
SQ 14.2	24	1,800	VD00063-2-0,19	0.19	2,800	1.1	1.3	3.7	0.53	1.3	A1	B1
	36		VD00063-4-0,10	0.10	1,400	0.8	0.9	2.1	0.48	0.9	A1	B1
	48	2,400				0.8	0.9	2.1	0.48	0.9	A1	B1
	72		SD00063-4-0,06	0.06	1,400	0.6	0.7	1.7	0.38	0.7	A1	B1
	100					0.6	0.7	1.7	0.38	0.7	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 380 V/60 Hz

Part-turn actuator			Motor									
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	AUMA power class for switchgear: Contactor	AUMA power class for switchgear: Thyristor
SQ 05.2	3	150	VD00063-2-0,06	0.06	3,360	0.8	0.8	2.4	0.42	0.8	A1	B1
	4.5					0.8	0.8	2.4	0.42	0.8	A1	B1
	6		VD00063-4-0,04	0.04	1,680	0.5	0.5	1.3	0.50	0.5	A1	B1
	9					0.5	0.5	1.3	0.50	0.5	A1	B1
	12		VD00063-4-0,02	0.02	1,680	0.5	0.5	1.3	0.40	0.5	A1	B1
	17					0.5	0.5	1.3	0.40	0.5	A1	B1
	25		SD00063-4-0,01	0.01	1,680	0.4	0.4	0.9	0.38	0.4	A1	B1
	50		SD00063-8-0,01		840	0.5	0.5	0.6	0.61	0.5	A1	B1
SQ 07.2	3	300	VD00063-2-0,12	0.12	3,360	0.9	1.1	3.8	0.52	1.1	A1	B1
	4.5					0.9	1.1	3.8	0.52	1.1	A1	B1
	6		VD00063-4-0,06	0.06	1,680	0.8	0.9	2.0	0.38	0.9	A1	B1
	9					0.8	0.9	2.0	0.38	0.9	A1	B1
	12		VD00063-4-0,03	0.03	1,680	0.5	0.6	1.3	0.43	0.6	A1	B1
	17					0.5	0.6	1.3	0.43	0.6	A1	B1
	25		SD00063-4-0,01	0.01	1,680	0.4	0.4	0.9	0.39	0.4	A1	B1
	50		SD00063-8-0,01		840	0.5	0.5	0.6	0.61	0.5	A1	B1
SQ 10.2	6	450	VD00063-4-0,10	0.10	1,680	1.0	1.3	2.5	0.48	1.3	A1	B1
	9	600				1.0	1.1	2.5	0.48	1.1	A1	B1
	12		SD00063-4-0,06	0.06	1,680	0.8	0.9	2.0	0.38	0.9	A1	B1
	17					0.8	0.9	2.0	0.38	0.9	A1	B1
	25		SD00063-4-0,04	0.04	1,680	0.6	0.6	1.3	0.48	0.6	A1	B1
	35					0.6	0.6	1.3	0.48	0.6	A1	B1
	50		SD00063-4-0,02	0.02	1,680	0.4	0.4	0.9	0.43	0.4	A1	B1
SQ 12.2	9	900	VD00063-2-0,19	0.19	3,360	1.3	1.5	4.4	0.53	1.5	A1	B1
	12		VD00063-4-0,10	0.10	1,680	1.0	1.3	2.5	0.48	1.3	A1	B1
	17	1,200				1.0	1.1	2.5	0.48	1.1	A1	B1
	25		SD00063-4-0,06	0.06	1,680	0.8	0.9	2.0	0.38	0.9	A1	B1
	35					0.8	0.9	2.0	0.38	0.9	A1	B1
	50		SD00063-4-0,04	0.04	1,680	0.6	0.6	1.3	0.48	0.6	A1	B1
	70					0.6	0.6	1.3	0.48	0.6	A1	B1
	108		VD00063-4-0,02	0.02	1,680	0.4	0.4	0.9	0.43	0.4	A1	B1
SQ 14.2	20	1,800	VD00063-2-0,19	0.19	3,360	1.3	1.5	4.4	0.53	1.5	A1	B1
	30		VD00063-4-0,10	0.10	1,680	1.0	1.1	2.5	0.48	1.1	A1	B1
	40	2,400				1.0	1.1	2.5	0.48	1.1	A1	B1
	60		SD00063-4-0,06	0.06	1,680	0.8	0.9	2.0	0.38	0.9	A1	B1
	85					0.8	0.9	2.0	0.38	0.9	A1	B1

1) – 3) Siehe Hinweise zu den Elektrischen Daten Schwenkantriebe SQ .2/SQR .2 mit Drehstrommotoren

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 400 V/50 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device set-ting [A]	Contac-tor	Thyristor
SQ 05.2	4	150	VD00063-2-0,06	0.06	2,800	0.6	0.6	1.9	0.42	0.6	A1	B1
	5.6					0.6	0.6	1.9	0.42	0.6	A1	B1
	8		VD00063-4-0,04	0.04	1,400	0.4	0.4	1.0	0.50	0.4	A1	B1
	11					0.4	0.4	1.0	0.50	0.4	A1	B1
	16		VD00063-4-0,02	0.02	1,400	0.4	0.4	1.0	0.40	0.4	A1	B1
	22					0.4	0.4	1.0	0.40	0.4	A1	B1
	32		SD00063-4-0,01	0.01	1,400	0.3	0.3	0.7	0.38	0.3	A1	B1
	63		SD00063-8-0,01		700	0.4	0.4	0.5	0.61	0.4	A1	B1
SQ 07.2	4	300	VD00063-2-0,12	0.12	2,800	0.7	0.9	3.0	0.52	0.9	A1	B1
	5.6					0.7	0.9	3.0	0.52	0.9	A1	B1
	8		VD00063-4-0,06	0.06	1,400	0.6	0.7	1.6	0.38	0.7	A1	B1
	11					0.6	0.7	1.6	0.38	0.7	A1	B1
	16		VD00063-4-0,03	0.03	1,400	0.4	0.5	1.0	0.43	0.5	A1	B1
	22					0.4	0.5	1.0	0.43	0.5	A1	B1
	32		SD00063-4-0,01	0.01	1,400	0.3	0.3	0.7	0.38	0.3	A1	B1
	63		SD00063-8-0,01		700	0.4	0.4	0.5	0.61	0.4	A1	B1
SQ 10.2	8	450	VD00063-4-0,10	0.10	1,400	0.8	1.0	2.0	0.48	1.0	A1	B1
	11	600				0.8	0.9	2.0	0.48	0.9	A1	B1
	16		SD00063-4-0,06	0.06	1,400	0.6	0.7	1.6	0.38	0.7	A1	B1
	22					0.6	0.7	1.6	0.38	0.7	A1	B1
	32		SD00063-4-0,04	0.04	1,400	0.5	0.5	1.0	0.48	0.5	A1	B1
	42					0.5	0.5	1.0	0.48	0.5	A1	B1
	63		SD00063-4-0,02	0.02	1,400	0.3	0.3	0.7	0.43	0.3	A1	B1
SQ 12.2	11	900	VD00063-2-0,19	0.19	2,800	1.0	1.2	3.5	0.53	1.2	A1	B1
	16		VD00063-4-0,10	0.10	1,400	0.8	1.0	2.0	0.48	1.0	A1	B1
	22	1,200				0.8	0.9	2.0	0.48	0.9	A1	B1
	32		SD00063-4-0,06	0.06	1,400	0.6	0.7	1.6	0.38	0.7	A1	B1
	45					0.6	0.7	1.6	0.38	0.7	A1	B1
	63		SD00063-4-0,04	0.04	1,400	0.5	0.5	1.0	0.48	0.5	A1	B1
	84					0.5	0.5	1.0	0.48	0.5	A1	B1
	125		SD00063-4-0,02	0.02	1,400	0.3	0.3	0.7	0.43	0.3	A1	B1
SQ 14.2	24	1,800	VD00063-2-0,19	0.19	2,800	1.0	1.2	3.5	0.53	1.2	A1	B1
	36		VD00063-4-0,10	0.10	1,400	0.8	0.9	2.0	0.48	0.9	A1	B1
	48	2 400				0.8	0.9	2.0	0.48	0.9	A1	B1
	72		SD00063-4-0,06	0.06	1,400	0.6	0.7	1.6	0.38	0.7	A1	B1
	100					0.6	0.7	1.6	0.38	0.7	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 415 V/50 Hz

Part-turn actuator			Motor									
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	AUMA power class for switchgear: Contactor	AUMA power class for switchgear: Thyristor
SQ 05.2	4	150	VD00063-2-0,06	0.06	2,800	0.6	0.6	1.8	0.42	0.6	A1	B1
	5.6					0.6	0.6	1.8	0.42	0.6	A1	B1
	8		VD00063-4-0,04	0.04	1,400	0.4	0.4	1.0	0.50	0.4	A1	B1
	11					0.4	0.4	1.0	0.50	0.4	A1	B1
	16		VD00063-4-0,02	0.02	1,400	0.4	0.4	1.0	0.40	0.4	A1	B1
	22					0.4	0.4	1.0	0.40	0.4	A1	B1
	32		SD00063-4-0,01	0.01	1,400	0.3	0.3	0.7	0.38	0.3	A1	B1
	63		SD00063-8-0,01		700	0.4	0.4	0.5	0.61	0.4	A1	B1
SQ 07.2	4	300	VD00063-2-0,12	0.12	2,800	0.7	0.9	2.9	0.52	0.9	A1	B1
	5.6					0.7	0.9	2.9	0.52	0.9	A1	B1
	8		VD00063-4-0,06	0.06	1,400	0.6	0.7	1.5	0.38	0.7	A1	B1
	11					0.6	0.7	1.5	0.38	0.7	A1	B1
	16		VD00063-4-0,03	0.03	1,400	0.4	0.5	1.0	0.43	0.5	A1	B1
	22					0.4	0.5	1.0	0.43	0.5	A1	B1
	32		SD00063-4-0,01	0.01	1,400	0.3	0.3	0.7	0.38	0.3	A1	B1
	63		SD00063-8-0,01		700	0.4	0.4	0.5	0.61	0.4	A1	B1
SQ 10.2	8	450	VD00063-4-0,10	0.10	1,400	0.8	1.0	1.9	0.48	1.0	A1	B1
	11	600				0.8	0.9	1.9	0.48	0.9	A1	B1
	16		SD00063-4-0,06	0.06	1,400	0.6	0.7	1.5	0.38	0.7	A1	B1
	22					0.6	0.7	1.5	0.38	0.7	A1	B1
	32		SD00063-4-0,04	0.04	1,400	0.5	0.5	1.0	0.48	0.5	A1	B1
	42					0.5	0.5	1.0	0.48	0.5	A1	B1
	63		SD00063-4-0,02	0.02	1,400	0.3	0.3	0.7	0.43	0.3	A1	B1
SQ 12.2	11	900	VD00063-2-0,19	0.19	2,800	1.0	1.2	3.4	0.53	1.2	A1	B1
	16		VD00063-4-0,10	0.10	1,400	0.8	1.0	1.9	0.48	1.0	A1	B1
	22	1,200				0.8	0.9	1.9	0.48	0.9	A1	B1
	32		SD00063-4-0,06	0.06	1,400	0.6	0.7	1.5	0.38	0.7	A1	B1
	45					0.6	0.7	1.5	0.38	0.7	A1	B1
	63		SD00063-4-0,04	0.04	1,400	0.5	0.5	1.0	0.48	0.5	A1	B1
	84					0.5	0.5	1.0	0.48	0.5	A1	B1
	125		SD00063-4-0,02	0.02	1,400	0.3	0.3	0.7	0.43	0.3	A1	B1
SQ 14.2	24	1 800	VD00063-2-0,19	0.19	2,800	1.0	1.2	3.4	0.53	1.2	A1	B1
	36		VD00063-4-0,10	0.10	1,400	0.8	0.9	1.9	0.48	0.9	A1	B1
	48	2 400				0.8	0.9	1.9	0.48	0.9	A1	B1
	72		SD00063-4-0,06	0.06	1,400	0.6	0.7	1.5	0.38	0.7	A1	B1
	100					0.6	0.7	1.5	0.38	0.7	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 415 V/60 Hz

Part-turn actuator			Motor								AUMA power class for switchgear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contac-tor	Thyristor
SQ 05.2	3	150	VD00063-2-0,06	0.06	3,360	0.7	0.7	2.2	0.42	0.7	A1	B1
	4.5					0.7	0.7	2.2	0.42	0.7	A1	B1
	6		VD00063-4-0,04	0.04	1,680	0.5	0.5	1.2	0.50	0.5	A1	B1
	9					0.5	0.5	1.2	0.50	0.5	A1	B1
	12		VD00063-4-0,02	0.02	1,680	0.5	0.5	1.2	0.40	0.5	A1	B1
	17					0.5	0.5	1.2	0.40	0.5	A1	B1
	25		SD00063-4-0,01	0.01	1,680	0.3	0.3	0.8	0.38	0.3	A1	B1
	50		SD00063-8-0,01		840	0.5	0.5	0.6	0.61	0.5	A1	B1
SQ 07.2	3	300	VD00063-2-0,12	0.12	3,360	0.8	1.0	3.5	0.52	1.0	A1	B1
	4,5					0.8	1.0	3.5	0.52	1.0	A1	B1
	6		VD00063-4-0,06	0.06	1,680	0.7	0.8	1.9	0.38	0.8	A1	B1
	9					0.7	0.8	1.9	0.38	0.8	A1	B1
	12		VD00063-4-0,03	0.03	1,680	0.5	0.6	1.2	0.43	0.6	A1	B1
	17					0.5	0.6	1.2	0.43	0.6	A1	B1
	25		SD00063-4-0,01	0.01	1,680	0.3	0.3	0.8	0.39	0.3	A1	B1
	50		SD00063-8-0,01		840	0.5	0.5	0.6	0.61	0.5	A1	B1
SQ 10.2	6	450	VD00063-4-0,10	0.10	1,680	0.9	1.2	2.3	0.48	1.2	A1	B1
	9	600				0.9	1.0	2.3	0.48	1.0	A1	B1
	12		SD00063-4-0,06	0.06	1,680	0.7	0.8	1.9	0.38	0.8	A1	B1
	17					0.7	0.8	1.9	0.38	0.8	A1	B1
	25		SD00063-4-0,04	0.04	1,680	0.6	0.6	1.2	0.48	0.6	A1	B1
	35					0.6	0.6	1.2	0.48	0.6	A1	B1
	50		SD00063-4-0,02	0.02	1,680	0.3	0.3	0.8	0.43	0.3	A1	B1
SQ 12.2	9	900	VD00063-2-0,19	0.19	3,360	1.2	1.4	4.0	0.53	1.4	A1	B1
	12		VD00063-4-0,10	0.10	1,680	0.9	1.2	2.3	0.48	1.2	A1	B1
	17	1,200				0.9	1.0	2.3	0.48	1.0	A1	B1
	25		SD00063-4-0,06	0.06	1,680	0.7	0.8	1.9	0.38	0.8	A1	B1
	35					0.7	0.8	1.9	0.38	0.8	A1	B1
	50		SD00063-4-0,04	0.04	1,680	0.6	0.6	1.2	0.48	0.6	A1	B1
	70					0.6	0.6	1.2	0.48	0.6	A1	B1
	108		VD00063-4-0,02	0.02	1,680	0.3	0.3	0.8	0.43	0.3	A1	B1
SQ 14.2	20	1,800	VD00063-2-0,19	0.19	3,360	1.2	1.4	4.0	0.53	1.4	A1	B1
	30		VD00063-4-0,10	0.10	1,680	0.9	1.0	2.3	0.48	1.0	A1	B1
	40	2,400				0.9	1.0	2.3	0.48	1.0	A1	B1
	60		SD00063-4-0,06	0.06	1,680	0.7	0.8	1.9	0.38	0.8	A1	B1
	85					0.7	0.8	1.9	0.38	0.8	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 440 V/60 Hz

Part-turn actuator			Motor									
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	AUMA power class for switchgear: Contactor	AUMA power class for switchgear: Thyristor
SQ 05.2	3	150	VD00063-2-0,06	0.06	3,360	0.7	0.7	2.1	0.42	0.7	A1	B1
	4.5					0.7	0.7	2.1	0.42	0.7	A1	B1
	6		VD00063-4-0,04	0.04	1,680	0.4	0.4	1.1	0.50	0.4	A1	B1
	9					0.4	0.4	1.1	0.50	0.4	A1	B1
	12		VD00063-4-0,02	0.02	1,680	0.4	0.4	1.1	0.40	0.4	A1	B1
	17					0.4	0.4	1.1	0.40	0.4	A1	B1
	25		SD00063-4-0,01	0.01	1,680	0.3	0.3	0.8	0.38	0.3	A1	B1
	50		SD00063-8-0,01		840	0.4	0.4	0.5	0.61	0.4	A1	B1
SQ 07.2	3	300	VD00063-2-0,12	0.12	3,360	0.8	1.0	3.3	0.52	1.0	A1	B1
	4.5					0.8	1.0	3.3	0.52	1.0	A1	B1
	6		VD00063-4-0,06	0.06	1,680	0.7	0.8	1.7	0.38	0.8	A1	B1
	9					0.7	0.8	1.7	0.38	0.8	A1	B1
	12		VD00063-4-0,03	0.03	1,680	0.4	0.5	1.1	0.43	0.5	A1	B1
	17					0.4	0.5	1.1	0.43	0.5	A1	B1
	25		SD00063-4-0,01	0.01	1,680	0.3	0.3	0.8	0.39	0.3	A1	B1
	50		SD00063-8-0,01		840	0.4	0.4	0.5	0.61	0.4	A1	B1
SQ 10.2	6	450	VD00063-4-0,10	0.10	1,680	0.9	1.1	2.2	0.48	1.1	A1	B1
	9	600				0.9	1.0	2.2	0.48	1.0	A1	B1
	12		SD00063-4-0,06	0.06	1,680	0.7	0.8	1.7	0.38	0.8	A1	B1
	17					0.7	0.8	1.7	0.38	0.8	A1	B1
	25		SD00063-4-0,04	0.04	1,680	0.5	0.5	1.1	0.48	0.5	A1	B1
	35					0.5	0.5	1.1	0.48	0.5	A1	B1
	50		SD00063-4-0,02	0.02	1,680	0.3	0.3	0.8	0.43	0.3	A1	B1
SQ 12.2	9	900	VD00063-2-0,19	0.19	3,360	1.1	1.3	3.8	0.53	1.3	A1	B1
	12		VD00063-4-0,10	0.10	1,680	0.9	1.1	2.2	0.48	1.1	A1	B1
	17	1,200				0.9	1.0	2.2	0.48	1.0	A1	B1
	25		SD00063-4-0,06	0.06	1,680	0.7	0.8	1.7	0.38	0.8	A1	B1
	35					0.7	0.8	1.7	0.38	0.8	A1	B1
	50		SD00063-4-0,04	0.04	1,680	0.5	0.5	1.1	0.48	0.5	A1	B1
	75					0.5	0.5	1.1	0.48	0.5	A1	B1
	70											
	108		VD00063-4-0,02	0.02	1,680	0.3	0.3	0.8	0.43	0.3	A1	B1
SQ 14.2	20	1,800	VD00063-2-0,19	0.19	3,360	1.1	1.3	3.8	0.53	1.3	A1	B1
	30		VD00063-4-0,10	0.10	1,680	0.9	1.0	2.2	0.48	1.0	A1	B1
	40	2,400				0.9	1.0	2.2	0.48	1.0	A1	B1
	60		SD00063-4-0,06	0.06	1,680	0.7	0.8	1.7	0.38	0.8	A1	B1
	85					0.7	0.8	1.7	0.38	0.8	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 460 V/60 Hz

Part-turn actuator			Motor									
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	AUMA power class for switchgear: Contactor	AUMA power class for switchgear: Thyristor
SQ 05.2	3	150	VD00063-2-0,06	0.06	3,360	0.6	0.6	2.0	0.42	0.6	A1	B1
	4.5					0.6	0.6	2.0	0.42	0.6	A1	B1
	6		VD00063-4-0,04	0.04	1,680	0.4	0.4	1.0	0.50	0.4	A1	B1
	9					0.4	0.4	1.0	0.50	0.4	A1	B1
	12		VD00063-4-0,02	0.02	1,680	0.4	0.4	1.0	0.40	0.4	A1	B1
	17					0.4	0.4	1.0	0.40	0.4	A1	B1
	25		SD00063-4-0,01	0.01	1,680	0.3	0.3	0.7	0.38	0.3	A1	B1
	50		SD00063-8-0,01		840	0.4	0.4	0.5	0.61	0.4	A1	B1
SQ 07.2	3	300	VD00063-2-0,12	0.12	3,360	0.7	0.9	3.1	0.52	0.9	A1	B1
	4.5					0.7	0.9	3.1	0.52	0.9	A1	B1
	6		VD00063-4-0,06	0.06	1,680	0.6	0.7	1.7	0.38	0.7	A1	B1
	9					0.6	0.7	1.7	0.38	0.7	A1	B1
	12		VD00063-4-0,03	0.03	1,680	0.4	0.5	1.0	0.43	0.5	A1	B1
	17					0.4	0.5	1.0	0.43	0.5	A1	B1
	25		SD00063-4-0,01	0.01	1,680	0.3	0.3	0.7	0.39	0.3	A1	B1
	50		SD00063-8-0,01		840	0.4	0.4	0.5	0.61	0.4	A1	B1
SQ 10.2	6	450	VD00063-4-0,10	0.10	1,680	0.8	1.0	2.1	0.48	1.0	A1	B1
	9	600				0.8	0.9	2.1	0.48	0.9	A1	B1
	12		SD00063-4-0,06	0.06	1,680	0.6	0.7	1.7	0.38	0.7	A1	B1
	17					0.6	0.7	1.7	0.38	0.7	A1	B1
	25		SD00063-4-0,04	0.04	1,680	0.5	0.5	1.0	0.48	0.5	A1	B1
	35					0.5	0.5	1.0	0.48	0.5	A1	B1
	50		SD00063-4-0,02	0.02	1,680	0.3	0.3	0.7	0.43	0.3	A1	B1
SQ 12.2	9	900	VD00063-2-0,19	0.19	3,360	1.0	1.3	3.7	0.53	1.3	A1	B1
	12		VD00063-4-0,10	0.10	1,680	0.8	1.0	2.1	0.48	1.0	A1	B1
	17	1,200				0.8	0.9	2.1	0.48	0.9	A1	B1
	25		SD00063-4-0,06	0.06	1,680	0.6	0.7	1.7	0.38	0.7	A1	B1
	35					0.6	0.7	1.7	0.38	0.7	A1	B1
	50		SD00063-4-0,04	0.04	1,680	0.5	0.5	1.0	0.48	0.5	A1	B1
	70					0.5	0.5	1.0	0.48	0.5	A1	B1
	108		VD00063-4-0,02	0.02	1,680	0.3	0.3	0.7	0.43	0.3	A1	B1
SQ 14.2	20	1,800	VD00063-2-0,19	0.19	3,360	1.0	1.3	3.7	0.53	1.3	A1	B1
	30		VD00063-4-0,10	0.10	1,680	0.8	0.9	2.1	0.48	0.9	A1	B1
	40	2,400				0.8	0.9	2.1	0.48	0.9	A1	B1
	60		SD00063-4-0,06	0.06	1,680	0.6	0.7	1.7	0.38	0.7	A1	B1
	85					0.6	0.7	1.7	0.38	0.7	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 480 V/60 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device set-ting [A]	Contac-tor	Thyristor
SQ 05.2	3	150	VD00063-2-0,06	0.06	3,360	0.6	0.6	1.9	0.42	0.6	A1	B1
	4.5					0.6	0.6	1.9	0.42	0.6	A1	B1
	6		VD00063-4-0,04	0.04	1,680	0.4	0.4	1.0	0.50	0.4	A1	B1
	9					0.4	0.4	1.0	0.50	0.4	A1	B1
	12		VD00063-4-0,02	0.02	1,680	0.4	0.4	1.0	0.40	0.4	A1	B1
	17					0.4	0.4	1.0	0.40	0.4	A1	B1
	25		SD00063-4-0,01	0.01	1,680	0.3	0.3	0.7	0.38	0.3	A1	B1
	50		SD00063-8-0,01		840	0.4	0.4	0.5	0.61	0.4	A1	B1
SQ 07.2	3	300	VD00063-2-0,12	0.12	3,360	0.7	0.9	3.0	0.52	0.9	A1	B1
	4.5					0.7	0.9	3.0	0.52	0.9	A1	B1
	6		VD00063-4-0,06	0.06	1,680	0.6	0.7	1.6	0.38	0.7	A1	B1
	9					0.6	0.7	1.6	0.38	0.7	A1	B1
	12		VD00063-4-0,03	0.03	1,680	0.4	0.5	1.0	0.43	0.5	A1	B1
	17					0.4	0.5	1.0	0.43	0.5	A1	B1
	25		SD00063-4-0,01	0.01	1,680	0.3	0.3	0.7	0.39	0.3	A1	B1
	50		SD00063-8-0,01		840	0.4	0.4	0.5	0.61	0.4	A1	B1
SQ 10.2	6	450	VD00063-4-0,10	0.10	1,680	0.8	1.0	2.0	0.48	1.0	A1	B1
	9	600				0.8	0.9	2.0	0.48	0.9	A1	B1
	12		SD00063-4-0,06	0.06	1,680	0.6	0.7	1.6	0.38	0.7	A1	B1
	17					0.6	0.7	1.6	0.38	0.7	A1	B1
	25		SD00063-4-0,04	0.04	1,680	0.5	0.5	1.0	0.48	0.5	A1	B1
	35					0.5	0.5	1.0	0.48	0.5	A1	B1
	50		SD00063-4-0,02	0.02	1,680	0.3	0.3	0.7	0.43	0.3	A1	B1
SQ 12.2	9	900	VD00063-2-0,19	0.19	3,360	1.0	1.2	3.5	0.53	1.2	A1	B1
	12		VD00063-4-0,10	0.10	1,680	0.8	1.0	2.0	0.48	1.0	A1	B1
	17	1,200				0.8	0.9	2.0	0.48	0.9	A1	B1
	25		SD00063-4-0,06	0.06	1,680	0.6	0.7	1.6	0.38	0.7	A1	B1
	35					0.6	0.7	1.6	0.38	0.7	A1	B1
	50		SD00063-4-0,04	0.04	1,680	0.5	0.5	1.0	0.48	0.5	A1	B1
	70					0.5	0.5	1.0	0.48	0.5	A1	B1
	108		VD00063-4-0,02	0.02	1,680	0.3	0.3	0.7	0.43	0.3	A1	B1
SQ 14.2	20	1,800	VD00063-2-0,19	0.19	3,360	1.0	1.2	3.5	0.53	1.2	A1	B1
	30		VD00063-4-0,10	0.10	1,680	0.8	0.9	2.0	0.48	0.9	A1	B1
	40	2,400				0.8	0.9	2.0	0.48	0.9	A1	B1
	60		SD00063-4-0,06	0.06	1,680	0.6	0.7	1.6	0.38	0.7	A1	B1
	85					0.6	0.7	1.6	0.38	0.7	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 3-phase AC motors

Short-time duty S2 - 15 min, 500 V/50 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device set-ting [A]	Contac-tor	Thyristor
SQ 05.2	4	150	VD00063-2-0,06	0,06	2,800	0.5	0.5	1.5	0.42	0.5	A1	B1
	5.6					0.5	0.5	1.5	0.42	0.5	A1	B1
	8		VD00063-4-0,04	0.04	1,400	0.3	0.3	0.8	0.50	0.3	A1	B1
	11					0.3	0.3	0.8	0.50	0.3	A1	B1
	16		VD00063-4-0,02	0.02	1,400	0.3	0.3	0.8	0.40	0.3	A1	B1
	22					0.3	0.3	0.8	0.40	0.3	A1	B1
	32		SD00063-4-0,01	0.01	1,400	0.2	0.2	0.6	0.38	0.2	A1	B1
	63		SD00063-8-0,01		700	0.3	0.3	0.4	0.61	0.3	A1	B1
SQ 07.2	4	300	VD00063-2-0,12	0.12	2,800	0.6	0.7	2.4	0.52	0.7	A1	B1
	5.6					0.6	0.7	2.4	0.52	0.7	A1	B1
	8		VD00063-4-0,06	0.06	1,400	0.5	0.6	1.3	0.38	0.6	A1	B1
	11					0.5	0.6	1.3	0.38	0.6	A1	B1
	16		VD00063-4-0,03	0.03	1,400	0.3	0.4	0.8	0.43	0.4	A1	B1
	22					0.3	0.4	0.8	0.43	0.4	A1	B1
	32		SD00063-4-0,01	0.01	1,400	0.2	0.2	0.6	0.38	0.2	A1	B1
	63		SD00063-8-0,01		700	0.3	0.3	0.4	0.61	0.3	A1	B1
SQ 10.2	8	450	VD00063-4-0,10	0.10	1,400	0.6	0.8	1.6	0.48	0.8	A1	B1
	11	600				0.6	0.7	1.6	0.48	0.7	A1	B1
	16		SD00063-4-0,06	0.06	1,400	0.5	0.6	1.3	0.38	0.6	A1	B1
	22					0.5	0.6	1.3	0.38	0.6	A1	B1
	32		SD00063-4-0,04	0.04	1,400	0.4	0.4	0.8	0.48	0.4	A1	B1
	42					0.4	0.4	0.8	0.48	0.4	A1	B1
	63		SD00063-4-0,02	0.02	1,400	0.2	0.2	0.6	0.43	0.2	A1	B1
SQ 12.2	11	900	VD00063-2-0,19	0.19	2,800	0.8	1.0	2.8	0.53	1.0	A1	B1
	16		VD00063-4-0,10	0.10	1,400	0.6	0.8	1.6	0.48	0.8	A1	B1
	22	1,200				0.6	0.7	1.6	0.48	0.7	A1	B1
	32		SD00063-4-0,06	0.06	1,400	0.5	0.6	1.3	0.38	0.6	A1	B1
	45					0.5	0.6	1.3	0.38	0.6	A1	B1
	63		SD00063-4-0,04	0.04	1,400	0.4	0.4	0.8	0.48	0.4	A1	B1
	84					0.4	0.4	0.8	0.48	0.4	A1	B1
	125		SD00063-4-0,02	0.02	1,400	0.2	0.2	0.6	0.43	0.2	A1	B1
SQ 14.2	24	1,800	VD00063-2-0,19	0.19	2,800	0.8	1.0	2.8	0.53	1.0	A1	B1
	36		VD00063-4-0,10	0.10	1,400	0.6	0.7	1.6	0.48	0.7	A1	B1
	48	2,400				0.6	0.7	1.6	0.48	0.7	A1	B1
	72		SD00063-4-0,06	0.06	1,400	0.5	0.6	1.3	0.38	0.6	A1	B1
	100					0.5	0.6	1.3	0.38	0.6	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 220 V/60 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contac-tor	Thyristor
SQR 05.2	6	150	VD0R063-4-0,04	0.04	1,680	0.9	0.9	2.2	0.50	0.9	A1	B1
	9					0.9	0.9	2.2	0.50	0.9	A1	B1
	12		VD0R063-4-0,02	0.02	1,680	0.9	0.9	2.2	0.40	0.9	A1	B1
	17					0.9	0.9	2.2	0.40	0.9	A1	B1
	25		SD0R063-4-0,01	0.01	1,680	0.7	0.7	1.5	0.38	0.7	A1	B1
	50		SD0R063-8-0,01		840	0.9	0.9	1.1	0.61	0.9	A1	B1
SQR 07.2	6	300	VD0R063-4-0,06	0.06	1,680	1.3	1.5	3.5	0.38	1.5	A1	B1
	9					1.3	1.5	3.5	0.38	1.5	A1	B1
	12		VD0R063-4-0,03	0.03	1,680	0.9	1.1	2.2	0.43	1.1	A1	B1
	17					0.9	1.1	2.2	0.43	1.1	A1	B1
	25		SD0R063-4-0,01	0.01	1,680	0.7	0.7	1.5	0.38	0.7	A1	B1
	50		SD0R063-8-0,01		840	0.9	0.9	1.1	0.61	0.9	A1	B1
SQR 10.2	9	600	VD0R063-4-0,10	0.10	1,680	1.7	2.0	4.4	0.48	2.0	A1	B1
	12		SD0R063-4-0,06	0.06	1,680	1.3	1.5	3.5	0.38	1.5	A1	B1
	17					1.3	1.5	3.5	0.38	1.5	A1	B1
	25		SD0R063-4-0,04	0.04	1,680	1.1	1.1	2.2	0.48	1.1	A1	B1
	35					1.1	1.1	2.2	0.48	1.1	A1	B1
	50		SD0R063-4-0,02	0.02	1,680	0.7	0.7	1.5	0.43	0.7	A1	B1
SQR 12.2	12	900	VD0R063-4-0,10	0.10	1,680	1.7	2.2	4.4	0.48	2.2	A1	B1
	17	1,200				1.7	2.0	4.4	0.48	2.0	A1	B1
	25		SD0R063-4-0,06	0.06	1,680	1.3	1.5	3.5	0.38	1.5	A1	B1
	35					1.3	1.5	3.5	0.38	1.5	A1	B1
	50		SD0R063-4-0,04	0.04	1,680	1.1	1.1	2.2	0.48	1.1	A1	B1
	70					1.1	1.1	2.2	0.48	1.1	A1	B1
	108		SD0R063-4-0,02	0.02	1,680	0.7	0.7	1.5	0.43	0.7	A1	B1
SQR 14.2	30	1,800	VD0R063-4-0,10	0.10	1,680	1.7	2.0	4.4	0.48	2.0	A1	B1
	40	2,400				1.7	2.0	4.4	0.48	2.0	A1	B1
	60		SD0R063-4-0,06	0.06	1,680	1.3	1.5	3.5	0.38	1.5	A1	B1
	85					1.3	1.5	3.5	0.38	1.5	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 230 V/50 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contac-tor	Thyristor
SQR 05.2	8	150	VD0R063-4-0,04	0.04	1,400	0.7	0.7	1.7	0.50	0.7	A1	B1
	11					0.7	0.7	1.7	0.50	0.7	A1	B1
	16		VD0R063-4-0,02	0.02	1,400	0.7	0.7	1.7	0.40	0.7	A1	B1
	22					0.7	0.7	1.7	0.40	0.7	A1	B1
	32		SD0R063-4-0,01	0.01	1,400	0.5	0.5	1.2	0.38	0.5	A1	B1
	63		SD0R063-8-0,01		700	0.7	0.7	0.9	0.61	0.7	A1	B1
SQR 07.2	8	300	VD0R063-4-0,06	0.06	1,400	1.0	1.2	2.8	0.38	1.2	A1	B1
	11					1.0	1.2	2.8	0.38	1.2	A1	B1
	16		VD0R063-4-0,03	0.03	1,400	0.7	0.9	1.7	0.43	0.9	A1	B1
	22					0.7	0.9	1.7	0.43	0.9	A1	B1
	32		SD0R063-4-0,01	0.01	1,400	0.5	0.5	1.2	0.38	0.5	A1	B1
	63		SD0R063-8-0,01		700	0.7	0.7	0.9	0.61	0.7	A1	B1
SQR 10.2	11	600	VD0R063-4-0,10	0.10	1,400	1.4	1.6	3.5	0.48	1.6	A1	B1
	16		SD0R063-4-0,06	0.06	1,400	1.0	1.2	2.8	0.38	1.2	A1	B1
	22					1.0	1.2	2.8	0.38	1.2	A1	B1
	32		SD0R063-4-0,04	0.04	1,400	0.9	0.9	1.7	0.48	0.9	A1	B1
	42					0.9	0.9	1.7	0.48	0.9	A1	B1
	63		SD0R063-4-0,02	0.02	1,400	0.5	0.5	1.2	0.43	0.5	A1	B1
SQR 12.2	16	900	VD0R063-4-0,10	0.10	1,400	1.4	1.7	3.5	0.48	1.7	A1	B1
	22	1,200				1.4	1.6	3.5	0.48	1.6	A1	B1
	32		SD0R063-4-0,06	0.06	1,400	1.0	1.2	2.8	0.38	1.2	A1	B1
	45					1.0	1.2	2.8	0.38	1.2	A1	B1
	63		SD0R063-4-0,04	0.04	1,400	0.9	0.9	1.7	0.48	0.9	A1	B1
	84					0.9	0.9	1.7	0.48	0.9	A1	B1
	125		SD0R063-4-0,02	0.02	1,400	0.5	0.5	1.2	0.43	0.5	A1	B1
SQR 14.2	36	1,800	VD0R063-4-0,10	0.10	1,400	1.4	1.6	3.5	0.48	1.6	A1	B1
	48	2,400				1.4	1.6	3.5	0.48	1.6	A1	B1
	72		SD0R063-4-0,06	0.06	1,400	1.0	1.2	2.8	0.38	1.2	A1	B1
	100					1.0	1.2	2.8	0.38	1.2	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

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SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 380 V/50 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contac-tor	Thyristor
SQR 05.2	8	150	VD0R063-4-0,04	0.04	1,400	0.4	0.4	1.1	0.50	0.4	A1	B1
	11					0.4	0.4	1.1	0.50	0.4	A1	B1
	16		VD0R063-4-0,02	0.02	1,400	0.4	0.4	1.1	0.40	0.4	A1	B1
	22					0.4	0.4	1.1	0.40	0.4	A1	B1
	32		SD0R063-4-0,01	0.01	1,400	0.3	0.3	0.7	0.38	0.3	A1	B1
	63		SD0R063-8-0,01		700	0.4	0.4	0.5	0.61	0.4	A1	B1
SQR 07.2	8	300	VD0R063-4-0,06	0.06	1,400	0.6	0.7	1.7	0.38	0.7	A1	B1
	11					0.6	0.7	1.7	0.38	0.7	A1	B1
	16		VD0R063-4-0,03	0.03	1,400	0.4	0.5	1.1	0.43	0.5	A1	B1
	22					0.4	0.5	1.1	0.43	0.5	A1	B1
	32		SD0R063-4-0,01	0.01	1,400	0.3	0.3	0.7	0.38	0.3	A1	B1
	63		SD0R063-8-0,01		700	0.4	0.4	0.5	0.61	0.4	A1	B1
SQR 10.2	11	600	VD0R063-4-0,10	0.10	1,400	0.8	0.9	2.1	0.48	0.9	A1	B1
	16		SD0R063-4-0,06	0.06	1,400	0.6	0.7	1.7	0.38	0.7	A1	B1
	22					0.6	0.7	1.7	0.38	0.7	A1	B1
	32		SD0R063-4-0,04	0.04	1,400	0.5	0.5	1.1	0.48	0.5	A1	B1
	42					0.5	0.5	1.1	0.48	0.5	A1	B1
	63		SD0R063-4-0,02	0.02	1,400	0.3	0.3	0.7	0.43	0.3	A1	B1
SQR 12.2	16	900	VD0R063-4-0,10	0.10	1,400	0.8	1.1	2.1	0.48	1.1	A1	B1
	22	1,200				0.8	0.9	2.1	0.48	0.9	A1	B1
	32		SD0R063-4-0,06	0.06	1,400	0.6	0.7	1.7	0.38	0.7	A1	B1
	45					0.6	0.7	1.7	0.38	0.7	A1	B1
	63		SD0R063-4-0,04	0.04	1,400	0.5	0.5	1.1	0.48	0.5	A1	B1
	84					0.5	0.5	1.1	0.48	0.5	A1	B1
	125		SD0R063-4-0,02	0.02	1,400	0.3	0.3	0.7	0.43	0.3	A1	B1
SQR 14.2	36	1,800	VD0R063-4-0,10	0.10	1,400	0.8	0.9	2.1	0.48	0.9	A1	B1
	48	2,400				0.8	0.9	2.1	0.48	0.9	A1	B1
	72		SD0R063-4-0,06	0.06	1,400	0.6	0.7	1.7	0.38	0.7	A1	B1
	100					0.6	0.7	1.7	0.38	0.7	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 380 V/60 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device set-ting [A]	Contac-tor	Thyristor
SQR 05.2	6	150	VD0R063-4-0,04	0.04	1,680	0.5	0.5	1.3	0.50	0.5	A1	B1
	9					0.5	0.5	1.3	0.50	0.5	A1	B1
	12		VD0R063-4-0,02	0.02	1,680	0.5	0.5	1.3	0.40	0.5	A1	B1
	17					0.5	0.5	1.3	0.40	0.5	A1	B1
	25		SD0R063-4-0,01	0.01	1,680	0.4	0.4	0.9	0.38	0.4	A1	B1
	50		SD0R063-8-0,01		840	0.5	0.5	0.6	0.61	0.5	A1	B1
SQR 07.2	6	300	VD0R063-4-0,06	0.06	1,680	0.8	0.9	2.0	0.38	0.9	A1	B1
	9					0.8	0.9	2.0	0.38	0.9	A1	B1
	12		VD0R063-4-0,03	0.03	1,680	0.5	0.6	1.3	0.43	0.6	A1	B1
	17					0.5	0.6	1.3	0.43	0.6	A1	B1
	25		SD0R063-4-0,01	0.01	1,680	0.4	0.4	0.9	0.38	0.4	A1	B1
	50		SD0R063-8-0,01		840	0.5	0.5	0.6	0.61	0.5	A1	B1
SQR 10.2	9	600	VD0R063-4-0,10	0.10	1,680	1.0	1.1	2.5	0.48	1.1	A1	B1
	12		SD0R063-4-0,06	0.06	1,680	0.8	0.9	2.0	0.38	0.9	A1	B1
	17					0.8	0.9	2.0	0.38	0.9	A1	B1
	25		SD0R063-4-0,04	0.04	1,680	0.6	0.6	1.3	0.48	0.6	A1	B1
	35					0.6	0.6	1.3	0.48	0.6	A1	B1
	50		SD0R063-4-0,02	0.02	1,680	0.4	0.4	0.9	0.43	0.4	A1	B1
SQR 12.2	12	900	VD0R063-4-0,10	0.10	1,680	1.0	1.3	2.5	0.48	1.3	A1	B1
	17	1 200				1.0	1.1	2.5	0.48	1.1	A1	B1
	25		SD0R063-4-0,06	0.06	1,680	0.8	0.9	2.0	0.38	0.9	A1	B1
	35					0.8	0.9	2.0	0.38	0.9	A1	B1
	50		SD0R063-4-0,04	0.04	1,680	0.6	0.6	1.3	0.48	0.6	A1	B1
	70					0.6	0.6	1.3	0.48	0.6	A1	B1
	108		SD0R063-4-0,02	0.02	1,680	0.4	0.4	0.9	0.43	0.4	A1	B1
SQR 14.2	30	1,800	VD0R063-4-0,10	0.10	1,680	1.0	1.1	2.5	0.48	1.1	A1	B1
	40	2,400				1.0	1.1	2.5	0.48	1.1	A1	B1
	60		SD0R063-4-0,06	0.06	1,680	0.8	0.9	2.0	0.38	0.9	A1	B1
	85					0.8	0.9	2.0	0.38	0.9	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 400 V/50 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contac-tor	Thyristor
SQR 05.2	8	150	VD0R063-4-0,04	0.04	1,400	0.4	0.4	1.0	0.50	0.4	A1	B1
	11					0.4	0.4	1.0	0.50	0.4	A1	B1
	16		VD0R063-4-0,02	0.02	1,400	0.4	0.4	1.0	0.40	0.4	A1	B1
	22					0.4	0.4	1.0	0.40	0.4	A1	B1
	32		SD0R063-4-0,01	0.01	1,400	0.3	0.3	0.7	0.38	0.3	A1	B1
	63		SD0R063-8-0,01		700	0.4	0.4	0.5	0.61	0.4	A1	B1
SQR 07.2	8	300	VD0R063-4-0,06	0.06	1,400	0.6	0.7	1.6	0.38	0.7	A1	B1
	11					0.6	0.7	1.6	0.38	0.7	A1	B1
	16		VD0R063-4-0,03	0.03	1,400	0.4	0.5	1.0	0.43	0.5	A1	B1
	22					0.4	0.5	1.0	0.43	0.5	A1	B1
	32		SD0R063-4-0,01	0.01	1,400	0.3	0.3	0.7	0.38	0.3	A1	B1
	63		SD0R063-8-0,01		700	0.4	0.4	0.5	0.61	0.4	A1	B1
SQR 10.2	11	600	VD0R063-4-0,10	0.10	1,400	0.8	0.9	2.0	0.48	0.9	A1	B1
	16		SD0R063-4-0,06	0.06	1,400	0.6	0.7	1.6	0.38	0.7	A1	B1
	22					0.6	0.7	1.6	0.38	0.7	A1	B1
	32		SD0R063-4-0,04	0.04	1,400	0.5	0.5	1.0	0.48	0.5	A1	B1
	42					0.5	0.5	1.0	0.48	0.5	A1	B1
	63		SD0R063-4-0,02	0.02	1,400	0.3	0.3	0.7	0.43	0.3	A1	B1
SQR 12.2	16	900	VD0R063-4-0,10	0.10	1,400	0.8	1.0	2.0	0.48	1.0	A1	B1
	22	1,200				0.8	0.9	2.0	0.48	0.9	A1	B1
	32		SD0R063-4-0,06	0.06	1,400	0.6	0.7	1.6	0.38	0.7	A1	B1
	45					0.6	0.7	1.6	0.38	0.7	A1	B1
	63		SD0R063-4-0,04	0.04	1,400	0.5	0.5	1.0	0.48	0.5	A1	B1
	84					0.5	0.5	1.0	0.48	0.5	A1	B1
	125		SD0R063-4-0,02	0.02	1,400	0.3	0.3	0.7	0.43	0.3	A1	B1
SQR 14.2	36	1,800	VD0R063-4-0,10	0.10	1,400	0.8	0.9	2.0	0.48	0.9	A1	B1
	48	2,400				0.8	0.9	2.0	0.48	0.9	A1	B1
	72		SD0R063-4-0,06	0.06	1,400	0.6	0.7	1.6	0.38	0.7	A1	B1
	100					0.6	0.7	1.6	0.38	0.7	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 400 V/60 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device set-ting [A]	Contac-tor	Thyristor
SQR 05.2	6	150	VD0R063-4-0,04	0.04	1,680	0.5	0.5	1.2	0.50	0.5	A1	B1
	9					0.5	0.5	1.2	0.50	0.5	A1	B1
	12		VD0R063-4-0,02	0.02	1,680	0.5	0.5	1.2	0.40	0.5	A1	B1
	17					0.5	0.5	1.2	0.40	0.5	A1	B1
	25		SD0R063-4-0,01	0.01	1,680	0.4	0.4	0.8	0.38	0.4	A1	B1
	50		SD0R063-8-0,01		840	0.5	0.5	0.6	0.61	0.5	A1	B1
SQR 07.2	6	300	VD0R063-4-0,06	0.06	1,680	0.7	0.8	1.9	0.38	0.8	A1	B1
	9					0.7	0.8	1.9	0.38	0.8	A1	B1
	12		VD0R063-4-0,03	0.03	1,680	0.5	0.6	1.2	0.43	0.6	A1	B1
	17					0.5	0.6	1.2	0.43	0.6	A1	B1
	25		SD0R063-4-0,01	0.01	1,680	0.4	0.4	0.8	0.38	0.4	A1	B1
	50		SD0R063-8-0,01		840	0.5	0.5	0.6	0.61	0.5	A1	B1
SQR 10.2	9	600	VD0R063-4-0,10	0.10	1,680	1.0	1.1	2.4	0.48	1.1	A1	B1
	12		SD0R063-4-0,06	0.06	1,680	0.7	0.8	1.9	0.38	0.8	A1	B1
	17					0.7	0.8	1.9	0.38	0.8	A1	B1
	25		SD0R063-4-0,04	0.04	1,680	0.6	0.6	1.2	0.48	0.6	A1	B1
	35					0.6	0.6	1.2	0.48	0.6	A1	B1
	50		SD0R063-4-0,02	0.02	1,680	0.4	0.4	0.8	0.43	0.4	A1	B1
SQR 12.2	12	900	VD0R063-4-0,10	0.10	1,680	1.0	1.2	2.4	0.48	1.2	A1	B1
	17	1,200				1.0	1.1	2.4	0.48	1.1	A1	B1
	25		SD0R063-4-0,06	0.06	1,680	0.7	0.8	1.9	0.38	0.8	A1	B1
	35					0.7	0.8	1.9	0.38	0.8	A1	B1
	50		SD0R063-4-0,04	0.04	1,680	0.6	0.6	1.2	0.48	0.6	A1	B1
	77					0.6	0.6	1.2	0.48	0.6	A1	B1
	108		SD0R063-4-0,02	0.02	1,680	0.4	0.4	0.8	0.43	0.4	A1	B1
SQR 14.2	30	1,800	VD0R063-4-0,10	0.10	1,680	1.0	1.1	2.4	0.48	1.1	A1	B1
	40	2,400				1.0	1.1	2.4	0.48	1.1	A1	B1
	60		SD0R063-4-0,06	0.06	1,680	0.7	0.8	1.9	0.38	0.8	A1	B1
	85					0.7	0.8	1.9	0.38	0.8	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 415 V/50 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contac-tor	Thyristor
SQR 05.2	8	150	VD0R063-4-0,04	0.04	1,400	0.4	0.4	1.0	0.50	0.4	A1	B1
	11					0.4	0.4	1.0	0.50	0.4	A1	B1
	16		VD0R063-4-0,02	0.02	1,400	0.4	0.4	1.0	0.40	0.4	A1	B1
	22					0.4	0.4	1.0	0.40	0.4	A1	B1
	32		SD0R063-4-0,01	0.01	1,400	0.3	0.3	0.7	0.38	0.3	A1	B1
	63		SD0R063-8-0,01		700	0.4	0.4	0.5	0.61	0.4	A1	B1
SQR 07.2	8	300	VD0R063-4-0,06	0.06	1,400	0.6	0.7	1.5	0.38	0.7	A1	B1
	11					0.6	0.7	1.5	0.38	0.7	A1	B1
	16		VD0R063-4-0,03	0.03	1,400	0.4	0.5	1.0	0.43	0.5	A1	B1
	22					0.4	0.5	1.0	0.43	0.5	A1	B1
	32		SD0R063-4-0,01	0.01	1,400	0.3	0.3	0.7	0.38	0.3	A1	B1
	63		SD0R063-8-0,01		700	0.4	0.4	0.5	0.61	0.4	A1	B1
SQR 10.2	11	600	VD0R063-4-0,10	0.10	1,400	0.8	0.9	1.9	0.48	0.9	A1	B1
	16		SD0R063-4-0,06	0.06	1,400	0.6	0.7	1.5	0.38	0.7	A1	B1
	22					0.6	0.7	1.5	0.38	0.7	A1	B1
	32		SD0R063-4-0,04	0.04	1,400	0.5	0.5	1.0	0.48	0.5	A1	B1
	42					0.5	0.5	1.0	0.48	0.5	A1	B1
	63		SD0R063-4-0,02	0.02	1,400	0.3	0.3	0.7	0.43	0.3	A1	B1
SQR 12.2	16	900	VD0R063-4-0,10	0.10	1,400	0.8	1.0	1.9	0.48	1.0	A1	B1
	22	1,200				0.8	0.9	1.9	0.48	0.9	A1	B1
	32		SD0R063-4-0,06	0.06	1,400	0.6	0.7	1.5	0.38	0.7	A1	B1
	45					0.6	0.7	1.5	0.38	0.7	A1	B1
	63		SD0R063-4-0,04	0.04	1,400	0.5	0.5	1.0	0.48	0.5	A1	B1
	84					0.5	0.5	1.0	0.48	0.5	A1	B1
	125		SD0R063-4-0,02	0.02	1,400	0.3	0.3	0.7	0.43	0.3	A1	B1
SQR 14.2	36	1,800	VD0R063-4-0,10	0.10	1,400	0.8	0.9	1.9	0.48	0.9	A1	B1
	48	2,400				0.8	0.9	1.9	0.48	0.9	A1	B1
	72		SD0R063-4-0,06	0.06	1,400	0.6	0.7	1.5	0.38	0.7	A1	B1
	100					0.6	0.7	1.5	0.38	0.7	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 440 V/60 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contac-tor	Thyristor
SQR 05.2	6	150	VD0R063-4-0,04	0.04	1,680	0.4	0.4	1.1	0.50	0.4	A1	B1
	9					0.4	0.4	1.1	0.50	0.4	A1	B1
	12		VD0R063-4-0,02	0.02	1,680	0.4	0.4	1.1	0.40	0.4	A1	B1
	17					0.4	0.4	1.1	0.40	0.4	A1	B1
	25		SD0R063-4-0,01	0.01	1,680	0.3	0.3	0.8	0.38	0.3	A1	B1
	50		SD0R063-8-0,01		840	0.4	0.4	0.5	0.61	0.4	A1	B1
SQR 07.2	6	300	VD0R063-4-0,06	0.06	1,680	0.7	0.8	1.7	0.38	0.8	A1	B1
	9					0.7	0.8	1.7	0.38	0.8	A1	B1
	12		VD0R063-4-0,03	0.03	1,680	0.4	0.5	1.1	0.43	0.5	A1	B1
	17					0.4	0.5	1.1	0.43	0.5	A1	B1
	25		SD0R063-4-0,01	0.01	1,680	0.3	0.3	0.8	0.38	0.3	A1	B1
	50		SD0R063-8-0,01		840	0.4	0.4	0.5	0.61	0.4	A1	B1
SQR 10.2	9	600	VD0R063-4-0,10	0.10	1,680	0.9	1.0	2.2	0.48	1.0	A1	B1
	12		SD0R063-4-0,06	0.06	1,680	0.7	0.8	1.7	0.38	0.8	A1	B1
	17					0.7	0.8	1.7	0.38	0.8	A1	B1
	25		SD0R063-4-0,04	0.04	1,680	0.5	0.5	1.1	0.48	0.5	A1	B1
	35					0.5	0.5	1.1	0.48	0.5	A1	B1
	50		SD0R063-4-0,02	0.02	1,680	0.3	0.3	0.8	0.43	0.3	A1	B1
SQR 12.2	12	900	VD0R063-4-0,10	0.10	1,680	0.9	1.1	2.2	0.48	1.1	A1	B1
	17	1,200				0.9	1.0	2.2	0.48	1.0	A1	B1
	25		SD0R063-4-0,06	0.06	1,680	0.7	0.8	1.7	0.38	0.8	A1	B1
	35					0.7	0.8	1.7	0.38	0.8	A1	B1
	50		SD0R063-4-0,04	0.04	1,680	0.5	0.5	1.1	0.48	0.5	A1	B1
	70					0.5	0.5	1.1	0.48	0.5	A1	B1
	108		SD0R063-4-0,02	0.02	1,680	0.3	0.3	0.8	0.43	0.3	A1	B1
SQR 14.2	30	1,800	VD0R063-4-0,10	0.10	1,680	0.9	1.0	2.2	0.48	1.0	A1	B1
	40	2,400				0.9	1.0	2.2	0.48	1.0	A1	B1
	60		SD0R063-4-0,06	0.06	1,680	0.7	0.8	1.7	0.38	0.8	A1	B1
	85					0.7	0.8	1.7	0.38	0.8	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 460 V/60 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contac-tor	Thyristor
SQR 05.2	6	150	VD0R063-4-0,04	0.04	1,680	0.4	0.4	1.0	0.50	0.4	A1	B1
	9					0.4	0.4	1.0	0.50	0.4	A1	B1
	12		VD0R063-4-0,02	0.02	1,680	0.4	0.4	1.0	0.40	0.4	A1	B1
	17					0.4	0.4	1.0	0.40	0.4	A1	B1
	25		SD0R063-4-0,01	0.01	1,680	0.3	0.3	0.7	0.38	0.3	A1	B1
	50		SD0R063-8-0,01		840	0.4	0.4	0.5	0.61	0.4	A1	B1
SQR 07.2	6	300	VD0R063-4-0,06	0.06	1,680	0.6	0.7	1.7	0.38	0.7	A1	B1
	9					0.6	0.7	1.7	0.38	0.7	A1	B1
	12		VD0R063-4-0,03	0.03	1,680	0.4	0.5	1.0	0.43	0.5	A1	B1
	17					0.4	0.5	1.0	0.43	0.5	A1	B1
	25		SD0R063-4-0,01	0.01	1,680	0.3	0.3	0.7	0.38	0.3	A1	B1
	50		SD0R063-8-0,01		840	0.4	0.4	0.5	0.61	0.4	A1	B1
SQR 10.2	9	600	VD0R063-4-0,10	0.10	1,680	0.8	0.9	2.1	0.48	0.9	A1	B1
	12		SD0R063-4-0,06	0.06	1,680	0.6	0.7	1.7	0.38	0.7	A1	B1
	17					0.6	0.7	1.7	0.38	0.7	A1	B1
	25		SD0R063-4-0,04	0.04	1,680	0.5	0.5	1.0	0.48	0.5	A1	B1
	35					0.5	0.5	1.0	0.48	0.5	A1	B1
	50		SD0R063-4-0,02	0.02	1,680	0.3	0.3	0.7	0.43	0.3	A1	B1
SQR 12.2	12	900	VD0R063-4-0,10	0.10	1,680	0.8	1.0	2.1	0.48	1.0	A1	B1
	17	1,200				0.8	0.9	2.1	0.48	0.9	A1	B1
	25		SD0R063-4-0,06	0.06	1,680	0.6	0.7	1.7	0.38	0.7	A1	B1
	35					0.6	0.7	1.7	0.38	0.7	A1	B1
	50		SD0R063-4-0,04	0.04	1,680	0.5	0.5	1.0	0.48	0.5	A1	B1
	70					0.5	0.5	1.0	0.48	0.5	A1	B1
	108		SD0R063-4-0,02	0.02	1,680	0.3	0.3	0.7	0.43	0.3	A1	B1
SQR 14.2	30	1,800	VD0R063-4-0,10	0.10	1,680	0.8	0.9	2.1	0.48	0.9	A1	B1
	40	2,400				0.8	0.9	2.1	0.48	0.9	A1	B1
	60		SD0R063-4-0,06	0.06	1,680	0.6	0.7	1.7	0.38	0.7	A1	B1
	85					0.6	0.7	1.7	0.38	0.7	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 480 V/60 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contac-tor	Thyristor
SQR 05.2	6	150	VD0R063-4-0,04	0.04	1 680	0.4	0.4	1.0	0.50	0.4	A1	B1
	9					0.4	0.4	1.0	0.50	0.4	A1	B1
	12		VD0R063-4-0,02	0.02	1,680	0.4	0.4	1.0	0.40	0.4	A1	B1
	17					0.4	0.4	1.0	0.40	0.4	A1	B1
	25		SD0R063-4-0,01	0.01	1,680	0.3	0.3	0.7	0.38	0.3	A1	B1
	50		SD0R063-8-0,01		840	0.4	0.4	0.5	0.61	0.4	A1	B1
SQR 07.2	6	300	VD0R063-4-0,06	0.06	1,680	0.6	0.7	1.6	0.38	0.7	A1	B1
	9					0.6	0.7	1.6	0.38	0.7	A1	B1
	12		VD0R063-4-0,03	0.03	1,680	0.4	0.5	1.0	0.43	0.5	A1	B1
	17					0.4	0.5	1.0	0.43	0.5	A1	B1
	25		SD0R063-4-0,01	0.01	1,680	0.3	0.3	0.7	0.38	0.3	A1	B1
	50		SD0R063-8-0,01		840	0.4	0.4	0.5	0.61	0.4	A1	B1
SQR 10.2	9	600	VD0R063-4-0,10	0.10	1,680	0.8	0.9	2.0	0.48	0.9	A1	B1
	12		SD0R063-4-0,06	0.06	1,680	0.6	0.7	1.6	0.38	0.7	A1	B1
	17					0.6	0.7	1.6	0.38	0.7	A1	B1
	25		SD0R063-4-0,04	0.04	1,680	0.5	0.5	1.0	0.48	0.5	A1	B1
	35					0.5	0.5	1.0	0.48	0.5	A1	B1
	50		SD0R063-4-0,02	0.02	1,680	0.3	0.3	0.7	0.43	0.3	A1	B1
SQR 12.2	12	900	VD0R063-4-0,10	0.10	1,680	0.8	1.0	2.0	0.48	1.0	A1	B1
	17	1,200				0.8	0.9	2.0	0.48	0.9	A1	B1
	25		SD0R063-4-0,06	0.06	1,680	0.6	0.7	1.6	0.38	0.7	A1	B1
	35					0.6	0.7	1.6	0.38	0.7	A1	B1
	50		SD0R063-4-0,04	0.04	1,680	0.5	0.5	1.0	0.48	0.5	A1	B1
	70					0.5	0.5	1.0	0.48	0.5	A1	B1
	108		SD0R063-4-0,02	0.02	1,680	0.3	0.3	0.7	0.43	0.3	A1	B1
SQR 14.2	30	1,800	VD0R063-4-0,10	0.10	1,680	0.8	0.9	2.0	0.48	0.9	A1	B1
	40	2,400				0.8	0.9	2.0	0.48	0.9	A1	B1
	60		SD0R063-4-0,06	0.06	1,680	0.6	0.7	1.6	0.38	0.7	A1	B1
	85					0.6	0.7	1.6	0.38	0.7	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 3-phase AC motors

Intermittent duty S4 - 25 %, 500 V/50 Hz

Part-turn actuator			Motor								AUMA power class for switch-gear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N (A)	Max. current[3] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contac-tor	Thyristor
SQR 05.2	8	150	VD0R063-4-0,04	0.04	1,400	0.3	0.3	0.8	0.50	0.3	A1	B1
	11					0.3	0.3	0.8	0.50	0.3	A1	B1
	16		VD0R063-4-0,02	0.02	1,400	0.3	0.3	0.8	0.40	0.3	A1	B1
	22					0.3	0.3	0.8	0.40	0.3	A1	B1
	32		SD0R063-4-0,01	0.01	1,400	0.2	0.2	0.6	0.38	0.2	A1	B1
	63		SD0R063-8-0,01		700	0.3	0.3	0.4	0.61	0.3	A1	B1
SQR 07.2	8	300	VD0R063-4-0,06	0.06	1,400	0.5	0.6	1.3	0.38	0.6	A1	B1
	11					0.5	0.6	1.3	0.38	0.6	A1	B1
	16		VD0R063-4-0,03	0.03	1,400	0.3	0.4	0.8	0.43	0.4	A1	B1
	22					0.3	0.4	0.8	0.43	0.4	A1	B1
	32		SD0R063-4-0,01	0.01	1,400	0.2	0.2	0.6	0.38	0.2	A1	B1
	63		SD0R063-8-0,01		700	0.3	0.3	0.4	0.61	0.3	A1	B1
SQR 10.2	11	600	VD0R063-4-0,10	0.10	1,400	0.6	0.7	1.6	0.48	0.7	A1	B1
	16		SD0R063-4-0,06	0.06	1,400	0.5	0.6	1.3	0.38	0.6	A1	B1
	22					0.5	0.6	1.3	0.38	0.6	A1	B1
	32		SD0R063-4-0,04	0.04	1,400	0.4	0.4	0.8	0.48	0.4	A1	B1
	42					0.4	0.4	0.8	0.48	0.4	A1	B1
	63		SD0R063-4-0,02	0.02	1,400	0.2	0.2	0.6	0.43	0.2	A1	B1
SQR 12.2	16	900	VD0R063-4-0,10	0.10	1,400	0.6	0.8	1.6	0.48	0.8	A1	B1
	22	1 200				0.6	0.7	1.6	0.48	0.7	A1	B1
	32		SD0R063-4-0,06	0.06	1,400	0.5	0.6	1.3	0.38	0.6	A1	B1
	45					0.5	0.6	1.3	0.38	0.6	A1	B1
	63		SD0R063-4-0,04	0.04	1,400	0.4	0.4	0.8	0.48	0.4	A1	B1
	84					0.4	0.4	0.8	0.48	0.4	A1	B1
	125		SD0R063-4-0,02	0.02	1,400	0.2	0.2	0.6	0.43	0.2	A1	B1
SQR 14.2	36	1,800	VD0R063-4-0,10	0.10	1,400	0.6	0.7	1.6	0.48	0.7	A1	B1
	48	2,400				0.6	0.7	1.6	0.48	0.7	A1	B1
	72		SD0R063-4-0,06	0.06	1,400	0.5	0.6	1.3	0.38	0.6	A1	B1
	100					0.5	0.6	1.3	0.38	0.6	A1	B1

1) – 3) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Installation and sizing

Motor data

Motor data is approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.

Motor protection

To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings.

Actuators without integral actuator controls (AUMA NORM):

Thermoswitches or PTC thermistors have to be considered within the external controls (refer to terminal plan).

Note: Failure to connect thermoswitches or PTC thermistors shall void the warranty for the motor.

Rating of the thermoswitches

AC current		DC current	
250 V, 50 – 60 Hz		60 V	1.0 A
cos φ = 1	2.5 A	42 V	1.2 A
cos φ = 0.6	1.6 A	24 V	1.5 A

Actuators with AM or AC integral actuator controls:

Thermal motor protection is already integrated.

Mains voltage, mains frequency

Permissible variation of mains voltage: ±10 %

Permissible variation of mains frequency: ±5 %

Terminal plan

Part-turn actuators	Motor (type)	Terminal plan
SQ 05.2 – SQ 14.2	VW.../SW...	TPA01R1AA-101-000
SQR 05.2 – SQR 14.2	VW.../SW...	TPA01R1AA-001-000

For further information refer to "Technical data Part-turn actuators SQ 05.2 – SQ 14.2 / SQR 05.2 – SQR 14.2 with 1-phase AC motors"

Switchgear sizing

For motor operation, reversing contactors (mechanically, electrically and electronically locked) or thyristors (electronically locked) can be used.

Actuators without integral actuator controls (AUMA NORM):

Switchgear are supplied by the customer. We recommend specification of switchgear suitable for their rated operating power/motor power in compliance with the assigned AUMA power class.

Switchgear assignment to AUMA power classes:

AUMA power class	Reversing contactor Rated operating power acc. to EN 60947-4-1 Utilization category AC-3	Reversing contactor Motor power according to UL/CSA at	
	400 V AC	480 V AC	600 V AC
A1	4.0 kW	5.0 hp	5.0 hp

AUMA power class	Thyristor Rated operating current acc. to EN 60947-4-2 Utilization category AC-53a
	400 V AC
B1	6 A

Actuators with AM or AC integral actuator controls:

Required switchgear in power classes A1 or B1 are directly integrated in AM or AC actuator controls.

Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 1-phase AC motors

1) Nominal power P_N	Mechanical power output at motor shaft at run torque of part-turn actuator (corresponds to approx. 35 % of maximum torque). The consumed electrical power can be calculated using the following formula: $P = U \times I \times \cos \varphi$
2) Permanent split/starting capacitor	For VW/SW motors, permanent split capacitors are integrated within the motor.
3) Nominal current I_N	Current at run torque
4) Max. current I_{max}	Current at maximum torque

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 1-phase AC motors

Short-time duty S2 - 10 min, 110 V – 120 V/50 Hz

Part-turn actuator			Motor									AUMA power class switchgear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SQ 05.2	4	150	VW00063-2-0,06	0.06	2,800	70	2.6	3.4	12	0.85	3.4	A1	B1
	5.6						2.6	3.2	12	0.85	3.2	A1	B1
	8		VW00063-4-0,04	0.04	1,400	50	2.3	2.7	4.6	0.97	2.7	A1	B1
	11						2.3	2.6	4.6	0.97	2.6	A1	B1
	16		VW00063-4-0,02	0.02	1,400	35	1.8	1.9	4.1	0.84	1.9	A1	B1
	22						1.8	1.8	4.1	0.84	1.8	A1	B1
	32		SW00063-4-0,01	0.01	1,400	35	1.8	1.8	4.1	0.81	1.8	A1	B1
	63		SW00063-8-0,01		700	25	1.5	1.5	1.8	0.99	1.5	A1	B1
SQ 07.2	4	300	VW00063-2-0,12	0.12	2,800	100	3.7	5.4	12	0.98	5.4	A1	B1
	5.6						3.7	5.0	12	0.98	5.0	A1	B1
	8		VW00063-4-0,06	0.06	1,400	70	3.5	4.0	7.0	0.88	4.0	A1	B1
	11						3.5	3.8	7.0	0.88	3.8	A1	B1
	16		VW00063-4-0,03	0.03	1,400	50	2.3	2.6	4.6	0.96	2.6	A1	B1
	22						2.3	2.6	4.6	0.96	2.6	A1	B1
	32		SW00063-4-0,01	0.01	1,400	35	1.8	1.9	4.1	0.81	1.9	A1	B1
	63		SW00063-8-0,01		700	25	1.5	1.6	1.8	0.99	1.6	A1	B1
SQ 10.2	8	450	VW00063-4-0,10	0.10	1,400	80	3.9	4.5	7.4	0.94	4.5	A1	B1
	11	600					3.9	4.6	7.4	0.94	4.6	A1	B1
	16		SW00063-4-0,06	0.06	1,400	60	3.1	3.5	6.8	0.84	3.5	A1	B1
	22						3.1	3.4	6.8	0.84	3.4	A1	B1
	32		SW00063-4-0,04	0.04	1,400	50	2.3	2.7	4.6	0.97	2.7	A1	B1
	42						2.3	2.6	4.6	0.97	2.6	A1	B1
	63		SW00063-4-0,02	0.02	1,400	35	1.8	1.9	4.1	0.84	1.9	A1	B1
SQ 12.2	11	900	VW00063-2-0,19	0.19	2,800	110	4.5	6.0	12	0.98	6.0	A1	B1
	16		VW00063-4-0,10	0.10	1,400	80	3.9	4.5	7.4	0.94	4.5	A1	B1
	22	1 200					3.9	4.3	7.4	0.94	4.3	A1	B1
	32		SW00063-4-0,06	0.06	1,400	60	3.1	3.5	6.8	0.84	3.5	A1	B1
	45						3.1	3.4	6.8	0.84	3.4	A1	B1
	63		SW00063-4-0,04	0.04	1,400	50	2.3	2.7	4.6	0.97	2.7	A1	B1
	84						2.3	2.7	4.6	0.97	2.7	A1	B1
	125		SW00063-4-0,02	0.02	1,400	35	1.8	1.9	4.1	0.84	1.9	A1	B1
SQ 14.2	24	1,800	VW00063-2-0,19	0.19	2,800	110	4.5	6.0	12	0.98	6.0	A1	B1
	36		VW00063-4-0,10	0.10	1,400	80	3.9	4.5	7.4	0.94	4.5	A1	B1
	48	2,400					3.9	4.6	7.4	0.94	4.6	A1	B1
	72		SW00063-4-0,06	0.06	1,400	60	3.1	3.5	6.8	0.84	3.5	A1	B1
	100						3.1	3.4	6.8	0.84	3.4	A1	B1

1) – 4) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 1-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 1-phase AC motors

Short-time duty S2 - 10 min, 110 V – 120 V/60Hz

Part-turn actuator			Motor									AUMA power class switchgear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Over-current protection device setting [A]	Contactor	Thyristor
SQ 05.2	3	150	VW00063-2-0,06	0.06	3,360	70	2.6	4.0	14	0.96	4.0	A1	B1
	4.5						2.6	3.7	14	0.96	3.7	A1	B1
	6		VW00063-4-0,04	0.04	1,680	50	2.7	3.2	5.4	0.98	3.2	A1	B1
	9						2.7	3.1	5.4	0.98	3.1	A1	B1
	12		VW00063-4-0,02	0.02	1,680	35	1.7	1.8	4.9	0.84	1.8	A1	B1
	17						1.7	1.8	4.9	0.84	1.8	A1	B1
	25		SW00063-4-0,01	0.01	1,680	35	1.6	1.7	4.9	0.82	1.7	A1	B1
	50		SW00063-8-0,01		840	25	1.8	1.8	2.1	0.99	1.8	A1	B1
SQ 07.2	3	300	VW00063-2-0,12	0.12	3,360	100	4.7	7.0	14	0.91	7.0	A1	B1
	4.5						4.7	6.5	14	0.91	6.5	A1	B1
	6		VW00063-4-0,06	0.06	1,680	70	3.5	4.4	8.5	0.98	4.4	A1	B1
	9						3.5	4.2	8.5	0.98	4.2	A1	B1
	12		VW00063-4-0,03	0.03	1,680	50	2.6	3.1	5.4	0.98	3.1	A1	B1
	17						2.6	3.0	5.4	0.98	3.0	A1	B1
	25		SW00063-4-0,01	0.01	1,680	35	1.6	1.9	4.9	0.82	1.9	A1	B1
	50		SW00063-8-0,01	0.01	840	25	1.8	1.9	2.1	0.99	1.9	A1	B1
SQ 10.2	6	450	VW00063-4-0,10	0.10	1,680	80	4.3	5.6	8.8	0.98	5.6	A1	B1
	9	600					4.3	5.7	8.8	0.98	5.7	A1	B1
	12		SW00063-4-0,06	0.06	1,680	60	2.9	3.9	7.7	0.96	3.9	A1	B1
	17						2.9	3.5	7.7	0.96	3.5	A1	B1
	25		SW00063-4-0,04	0.04	1,680	50	2.7	3.2	5.4	0.98	3.2	A1	B1
	35						2.7	3.0	5.4	0.98	3.0	A1	B1
	50		SW00063-4-0,02	0.02	1,680	35	1.7	1.8	4.9	0.84	1.8	A1	B1
SQ 12.2	9	900	VW00063-2-0,19	0.19	3,360	110	6.0	7.2	14	0.90	7.2	A1	B1
	12		VW00063-4-0,10	0.10	1,680	80	4.3	5.6	8.8	0.98	5.6	A1	B1
	17	1,200					4.3	5.7	8.8	0.98	5.7	A1	B1
	25		SW00063-4-0,06	0.06	1,680	60	2.9	3.9	7.7	0.96	3.9	A1	B1
	35						2.9	3.5	7.7	0.96	3.5	A1	B1
	50		SW00063-4-0,04	0.04	1,680	50	2.7	3.2	5.4	0.98	3.2	A1	B1
	70						2.7	3.2	5.4	0.98	3.2	A1	B1
	108		SW00063-4-0,02	0.02	1,680	35	1.7	1.8	4.9	0.84	1.8	A1	B1
SQ 14.2	20	1,800	VW00063-2-0,19	0.19	3,360	110	6.0	7.2	14	0.90	7.2	A1	B1
	30		VW00063-4-0,10	0.10	1,680	80	4.3	5.6	8.8	0.98	5.6	A1	B1
	40	2,400					4.3	5.7	8.8	0.98	5.7	A1	B1
	60		SW00063-4-0,06	0.06	1,680	60	2.9	3.9	7.7	0.96	3.9	A1	B1
	85						2.9	3.5	7.7	0.96	3.5	A1	B1

1) – 4) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 1-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 1-phase AC motors

Short-time duty S2 - 10 min, 220 V – 240 V/50 Hz

Part-turn actuator			Motor										
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Over-current protection device setting [A]	AUMA power class switchgear	
												Contactor	Thyristor
SQ 05.2	4	150	VW00063-2-0,06	0.06	2,800	16	1.7	1.9	6.3	0.69	1.9	A1	B1
	5.6						1.7	1.8	6.3	0.69	1.8	A1	B1
	8		VW00063-4-0,04	0.04	1,400	12	1.1	1.3	2.3	0.96	1.3	A1	B1
	11						1.1	1.3	2.3	0.96	1.3	A1	B1
	16		VW00063-4-0,02	0.02	1,400	8.0	1.0	1.0	2.1	0.76	1.0	A1	B1
	22						1.0	1.0	2.1	0.76	1.0	A1	B1
	32		SW00063-4-0,01	0.01	1,400	8.0	1.0	1.0	2.1	0.74	1.0	A1	B1
	63		SW00063-8-0,01	0.01	700	6.3	0.9	0.9	1.0	0.99	0.9	A1	B1
SQ 07.2	4	300	VW00063-2-0,12	0.12	2,800	25	1.8	2.7	6.4	0.98	2.7	A1	B1
	5.6						1.8	2.5	6.4	0.98	2.5	A1	B1
	8		VW00063-4-0,06	0.06	1,400	20	1.8	2.1	3.6	0.98	2.1	A1	B1
	11						1.8	2.0	3.6	0.98	2.0	A1	B1
	16		VW00063-4-0,03	0.03	1,400	12	1.1	1.2	2.3	0.96	1.2	A1	B1
	22						1.1	1.2	2.3	0.96	1.2	A1	B1
	32		SW00063-4-0,01	0.01	1,400	8.0	1.0	1.0	2.1	0.74	1.0	A1	B1
	63		SW00063-8-0,01	0.01	700	6.3	0.9	0.9	1.0	0.99	0.9	A1	B1
SQ 10.2	8	450	VW00063-4-0,10	0.10	1,400	20	1.9	2.2	3.6	0.99	2.2	A1	B1
	11	600					1.9	2.3	3.6	0.99	2.3	A1	B1
	16		SW00063-4-0,06	0.06	1,400	16	1.6	1.8	3.5	0.88	1.8	A1	B1
	22						1.6	1.7	3.5	0.88	1.7	A1	B1
	32		SW00063-4-0,04	0.04	1,400	12	1.1	1.3	2.3	0.96	1.3	A1	B1
	42						1.1	1.3	2.3	0.96	1.3	A1	B1
	63		SW00063-4-0,02	0.02	1,400	8.0	1.0	1.0	2.1	0.76	1.0	A1	B1
SQ 12.2	11	900	VW00063-2-0,19	0.19	2,800	25	2.0	2.6	6.4	0.99	2.6	A1	B1
	16		VW00063-4-0,10	0.10	1,400	20	1.9	2.2	3.6	0.99	2.2	A1	B1
	22	1,200					1.9	2.3	3.6	0.99	2.3	A1	B1
	32		SW00063-4-0,06	0.06	1,400	16	1.6	1.8	3.5	0.88	1.8	A1	B1
	45						1.6	1.7	3.5	0.88	1.7	A1	B1
	63		SW00063-4-0,04	0.04	1,400	12	1.1	1.3	2.3	0.96	1.3	A1	B1
	84						1.1	1.3	2.3	0.96	1.3	A1	B1
	125		SW00063-4-0,02	0.02	1,400	8.0	1.0	1.0	2.1	0.76	1.0	A1	B1
SQ 14.2	24	1,800	VW00063-2-0,19	0.19	2,800	25	2.0	2.6	6.4	0.99	2.6	A1	B1
	36		VW00063-4-0,10	0.10	1,400	20	1.9	2.2	3.6	0.99	2.2	A1	B1
	48	2,400					1.9	2.3	3.6	0.99	2.3	A1	B1
	72		SW00063-4-0,06	0.06	1,400	16	1.6	1.8	3.5	0.88	1.8	A1	B1
	100						1.6	1.7	3.5	0.88	1.7	A1	B1

1) – 4) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 1-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 14.2

Electrical data Part-turn actuators for open-close duty with 1-phase AC motors

Short-time duty S2 - 10 min, 220 V – 240 V/60Hz

Part-turn actuator			Motor										
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Over-current protection device setting [A]	AUMA power class switchgear	
												Contactor	Thyristor
SQ 05.2	3	150	VW00063-2-0,06	0.06	3 360	16	1.3	1.9	7.4	0.94	1.9	A1	B1
	4.5						1.3	1.7	7.4	0.94	1.7	A1	B1
	6		VW00063-4-0,04	0.04	1,680	12	1.3	1.5	2.7	0.98	1.5	A1	B1
	9						1.3	1.5	2.7	0.98	1.5	A1	B1
	12		VW00063-4-0,02	0.02	1,680	8.0	1.0	1.1	2.5	0.80	1.1	A1	B1
	17						1.0	1.1	2.5	0.80	1.1	A1	B1
	25		SW00063-4-0,01	0.01	1,680	8.0	1.0	1.0	2.5	0.76	1.0	A1	B1
	50		SW00063-8-0,01	0.01	840	6.3	1.0	1.0	1.1	0.99	1.0	A1	B1
SQ 07.2	3	300	VW00063-2-0,12	0.12	3,360	25	2.4	3.4	7.6	0.91	3.4	A1	B1
	4.5						2.4	3.0	7.6	0.91	3.0	A1	B1
	6		VW00063-4-0,06	0.06	1,680	20	1.9	2.4	4.6	0.98	2.4	A1	B1
	9						1.9	2.3	4.6	0.98	2.3	A1	B1
	12		VW00063-4-0,03	0.03	1,680	12	1.2	1.4	2.7	0.98	1.4	A1	B1
	17						1.2	1.4	2.7	0.98	1.4	A1	B1
	25		SW00063-4-0,01	0.01	1,680	8.0	1.0	1.1	2.5	0.76	1.1	A1	B1
	50		SW00063-8-0,01		840	6.3	1.0	1.0	1.1	0.99	1.1	A1	B1
SQ 10.2	6	450	VW00063-4-0,10	0.10	1,680	20	2.0	2.7	4.6	0.98	2.7	A1	B1
	9	600					2.0	2.8	4.6	0.98	2.8	A1	B1
	12		SW00063-4-0,06	0.06	1,680	16	1.5	2.0	4.3	0.96	2.0	A1	B1
	17						1.5	1.8	4.3	0.96	1.8	A1	B1
	25		SW00063-4-0,04	0.04	1,680	12	1.3	1.5	2.7	0.98	1.5	A1	B1
	35						1.3	1.5	2.7	0.98	1.5	A1	B1
	50		SW00063-4-0,02	0.02	1,680	8.0	1.0	1.1	2.5	0.80	1.1	A1	B1
SQ 12.2	9	900	VW00063-2-0,19	0.19	3,360	25	2.7	3.6	7.6	0.92	3.6	A1	B1
	12		VW00063-4-0,10	0.10	1,680	20	2.0	2.7	4.6	0.98	2.7	A1	B1
	17	1,200					2.0	2.8	4.6	0.98	2.8	A1	B1
	25		SW00063-4-0,06	0.06	1,680	16	1.5	2.0	4.3	0.96	2.0	A1	B1
	35						1.5	2.0	4.3	0.96	2.0	A1	B1
	50		SW00063-4-0,04	0.04	1,680	12	1.3	1.5	2.7	0.98	1.5	A1	B1
	70						1.3	1.5	2.7	0.98	1.5	A1	B1
	108		SW00063-4-0,02	0.02	1,680	8	1.0	1.1	2.5	0.80	1.1	A1	B1
SQ 14.2	20	1,800	VW00063-2-0,19	0.19	3,360	25	2.7	3.6	7.6	0.92	3.6	A1	B1
	30		VW00063-4-0,10	0.10	1,680	20	2.0	2.7	4.6	0.98	2.7	A1	B1
	40	2,400					2.0	2.8	4.6	0.98	2.8	A1	B1
	60		SW00063-4-0,06	0.06	1,680	16	1.5	2.0	4.3	0.96	2.0	A1	B1
	85						1.5	2.0	4.3	0.96	2.0	A1	B1

1) – 4) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 1-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 1-phase AC motors

Intermittent duty S4 - 20 %, 110 V – 120 V/50 Hz

Part-turn actuator			Motor									AUMA power class switchgear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SQR 05.2	8	150	VW0R063-4-0,04	0.04	1 400	50	2.3	2.7	4.6	0.97	2.7	A1	B1
	11						2.3	2.6	4.6	0.97	2.6	A1	B1
	16		VW0R063-4-0,02	0.02	1,400	35	1.8	1.9	4.1	0.84	1.9	A1	B1
	22						1.8	1.8	4.1	0.84	1.8	A1	B1
	32		SW0R063-4-0,01	0.01	1,400	35	1.8	1.8	4.1	0.81	1.8	A1	B1
	63		SW0R063-8-0,01		700	25	1.5	1.5	1.8	0.99	1.5	A1	B1
SQR 07.2	8	300	VW0R063-4-0,06	0.06	1,400	70	3.5	4.0	7.0	0.88	4.0	A1	B1
	11						3.5	3.8	7.0	0.88	3.8	A1	B1
	16		VW0R063-4-0,03	0.03	1,400	50	2.3	2.6	4.6	0.96	2.6	A1	B1
	22						2.3	2.6	4.6	0.96	2.6	A1	B1
	32		SW0R063-4-0,01	0.01	1,400	35	1.8	1.9	4.1	0.81	1.9	A1	B1
	63		SW0R063-8-0,01		700	25	1.5	1.6	1.8	0.99	1.6	A1	B1
SQR 10.2	11	600	VW0R063-4-0,10	0.10	1,400	80	3.9	4.6	7.4	0.94	4.6	A1	B1
	16		SW0R063-4-0,06	0.06	1,400	60	3.1	3.5	6.8	0.84	3.5	A1	B1
	22						3.1	3.4	6.8	0.84	3.4	A1	B1
	32		SW0R063-4-0,04	0.04	1,400	50	2.3	2.7	4.6	0.97	2.7	A1	B1
	42						2.3	2.6	4.6	0.97	2.6	A1	B1
	63		SW0R063-4-0,02	0.02	1,400	35	1.8	1.9	4.1	0.84	1.9	A1	B1
SQR 12.2	16	900	VW0R063-4-0,10	0.10	1,400	80	3.9	4.5	7.4	0.94	4.5	A1	B1
	22	1,200					3.9	4.6	7.4	0.94	4.6	A1	B1
	32		SW0R063-4-0,06	0.06	1,400	60	3.1	3.5	6.8	0.84	3.5	A1	B1
	45						3.1	3.4	6.8	0.84	3.4	A1	B1
	63		SW0R063-4-0,04	0.04	1,400	50	2.3	2.7	4.6	0.97	2.7	A1	B1
	84						2.3	2.7	4.6	0.97	2.7	A1	B1
	125		SW0R063-4-0,02	0.02	1,400	35	1.8	1.9	4.1	0.84	1.9	A1	B1
SQR 14.2	36	1,800	VW0R063-4-0,10	0.10	1,400	80	3.9	4.5	7.4	0.94	4.5	A1	B1
	48	2,400					3.9	4.6	7.4	0.94	4.6	A1	B1
	72		SW0R063-4-0,06	0.06	1,400	60	3.1	3.5	6.8	0.84	3.5	A1	B1
	100						3.1	3.4	6.8	0.84	3.4	A1	B1

1) – 4) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 1-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 1-phase AC motors

Intermittent duty S4 - 20 %, 110 V – 120 V/60 Hz

Part-turn actuator			Motor									AUMA power class switchgear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SQR 05.2	6	150	VW0R063-4-0,04	0.04	1,680	50	2.7	3.2	5.4	0.98	3.2	A1	B1
	9						2.7	3.1	5.4	0.98	3.1	A1	B1
	12		VW0R063-4-0,02	0.02	1,680	35	1.7	1.8	4.9	0.84	1.8	A1	B1
	17						1.7	1.8	4.9	0.84	1.8	A1	B1
	25		SW0R063-4-0,01	0.01	1,680	35	1.6	1.7	4.9	0.82	1.7	A1	B1
	50		SW0R063-8-0,01		840	25	1.8	1.8	2.1	0.99	1.8	A1	B1
SQR 07.2	6	300	VW0R063-4-0,06	0.06	1,680	90	3.5	4.4	8.5	0.98	4.4	A1	B1
	9						3.5	4.2	8.5	0.98	4.2	A1	B1
	12		VW0R063-4-0,03	0.03	1,680	50	2.6	3.1	5.4	0.98	3.1	A1	B1
	17						2.6	3.0	5.4	0.98	3.0	A1	B1
	25		SW0R063-4-0,01	0.01	1,680	35	1.6	1.9	4.9	0.82	1.9	A1	B1
	50		SW0R063-8-0,01		840	25	1.8	1.9	2.1	0.99	1.9	A1	B1
SQR 10.2	9	600	VW0R063-4-0,10	0.10	1,680	90	4.3	5.7	8.8	0.98	5.7	A1	B1
	12		SW0R063-4-0,06	0.06	1,680	70	2.9	3.9	7.7	0.96	3.9	A1	B1
	17						2.9	3.5	7.7	0.96	3.5	A1	B1
	25		SW0R063-4-0,04	0.04	1,680	50	2.7	3.2	5.4	0.98	3.2	A1	B1
	35						2.7	3.0	5.4	0.98	3.0	A1	B1
	50		SW0R063-4-0,02	0.02	1,680	35	1.7	1.8	4.9	0.84	1.8	A1	B1
SQR 12.2	12	900	VW0R063-4-0,10	0.10	1,680	90	4.3	5.6	8.8	0.98	5.6	A1	B1
	17	1,200					4.3	5.7	8.8	0.98	5.7	A1	B1
	25		SW0R063-4-0,06	0.06	1,680	70	2.9	3.9	7.7	0.96	3.9	A1	B1
	35						2.9	3.5	7.7	0.96	3.5	A1	B1
	50		SW0R063-4-0,04	0.04	1,680	50	2.7	3.2	5.4	0.98	3.2	A1	B1
	70						2.7	3.2	5.4	0.98	3.2	A1	B1
	108		SW0R063-4-0,02	0.02	1,680	35	1.7	1.8	4.9	0.84	1.8	A1	B1
SQR 14.2	30	1,800	VW0R063-4-0,10	0.10	1,680	90	4.3	5.6	8.8	0.98	5.6	A1	B1
	40	2,400					4.3	5.7	8.8	0.98	5.7	A1	B1
	60		SW0R063-4-0,06	0.06	1,680	70	2.9	3.9	7.7	0.96	3.9	A1	B1
	85						2.9	3.5	7.7	0.96	3.5	A1	B1

1) – 4) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 1-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 1-phase AC motors

Intermittent duty S4 - 20 %, 220 V – 240 V/50 Hz

Part-turn actuator			Motor									AUMA power class switchgear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Over-current protection device setting [A]	Contactor	Thyristor
SQR 05.2	8	150	VW0R063-4-0,04	0.04	1,400	12	1.1	1.3	2.3	0.96	1.3	A1	B1
	11						1.1	1.3	2.3	0.96	1.3	A1	B1
	16		VW0R063-4-0,02	0.02	1,400	8.0	1.0	1.0	2.1	0.76	1.0	A1	B1
	22						1.0	1.0	2.1	0.76	1.0	A1	B1
	32		SW0R063-4-0,01	0.01	1,400	8.0	1.0	1.0	2.1	0.74	1.0	A1	B1
	63		SW0R063-8-0,01	0.01	700	6.3	0.9	0.9	1.0	0.99	0.9	A1	B1
SQR 07.2	8	300	VW0R063-4-0,06	0.06	1,400	20	1.8	2.1	3.6	0.98	2.1	A1	B1
	11						1.8	2.0	3.6	0.98	2.0	A1	B1
	16		VW0R063-4-0,03	0.03	1,400	12	1.1	1.2	2.3	0.96	1.2	A1	B1
	22						1.1	1.2	2.3	0.96	1.2	A1	B1
	32		SW0R063-4-0,01	0.01	1,400	8.0	1.0	1.0	2.1	0.74	1.0	A1	B1
	63		SW0R063-8-0,01	0.01	700	6.3	0.9	0.9	1.0	0.99	0.9	A1	B1
SQR 10.2	11	600	SW0R063-4-0,10	0.10	1,400	20	1.9	2.3	3.6	0.99	2.3	A1	B1
	16		SW0R063-4-0,06	0.06	1,400	16	1.6	1.8	3.5	0.88	1.8	A1	B1
	22						1.6	1.7	3.5	0.88	1.7	A1	B1
	32		SW0R063-4-0,04	0.04	1,400	12	1.1	1.3	2.3	0.96	1.3	A1	B1
	42						1.1	1.3	2.3	0.96	1.3	A1	B1
	63		SW0R063-4-0,02	0.02	1,400	8.0	1.0	1.0	2.1	0.76	1.0	A1	B1
SQR 12.2	16	900	VW0R063-4-0,10	0.10	1,400	20	1.9	2.2	3.6	0.99	2.2	A1	B1
	22	1,200					1.9	2.3	3.6	0.99	2.3	A1	B1
	32		SW0R063-4-0,06	0.06	1,400	16	1.6	1.8	3.5	0.88	1.8	A1	B1
	45						1.6	1.7	3.5	0.88	1.7	A1	B1
	63		SW0R063-4-0,04	0.04	1,400	12	1.1	1.3	2.3	0.96	1.3	A1	B1
	84						1.1	1.3	2.3	0.96	1.3	A1	B1
	125		SW0R063-4-0,02	0.02	1,400	8.0	1.0	1.0	2.1	0.76	1.0	A1	B1
SQR 14.2	36	1,800	VW0R063-4-0,10	0.10	1,400	20	1.9	2.2	3.6	0.99	2.2	A1	B1
	48	2,400					1.9	2.3	3.6	0.99	2.3	A1	B1
	72		SW0R063-4-0,06	0.06	1,400	16	1.6	1.8	3.5	0.88	1.8	A1	B1
	100						1.6	1.7	3.5	0.88	1.7	A1	B1

1) – 4) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 1-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQR 05.2 – SQR 14.2

Electrical data Part-turn actuators for modulating duty with 1-phase AC motors

Intermittent duty S4 - 20 %, 220 V – 240 V/60 Hz

Part-turn actuator			Motor									AUMA power class switchgear	
Type	Operating time for 90° in seconds	Max. torque [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Operating capacitor[2] [µF]	Nominal current[3] I_N (A)	Max. current[4] I_{max} [A]	Starting current I_A [A]	cos φ	Overcurrent protection device setting [A]	Contactor	Thyristor
SQR 05.2	6	150	VW0R063-4-0,04	0.04	1,680	12	1.3	1.5	2.7	0.98	1.5	A1	B1
	9						1.3	1.5	2.7	0.98	1.5	A1	B1
	12		VW0R063-4-0,02	0.02	1,680	8.0	1.0	1.1	2.5	0.80	1.1	A1	B1
	17						1.0	1.1	2.5	0.80	1.1	A1	B1
	25		SW0R063-4-0,01	0.01	1,680	8.0	1.0	1.0	2.5	0.76	1.0	A1	B1
	50		SW0R063-8-0,01	0.01	840	6.3	1.0	1.0	1.1	0.99	1.0	A1	B1
SQR 07.2	6	300	VW0R063-4-0,06	0.06	1,680	20	1.9	2.4	4.6	0.98	2.4	A1	B1
	9						1.9	2.3	4.6	0.98	2.3	A1	B1
	12		VW0R063-4-0,03	0.03	1,680	12	1.2	1.4	2.7	0.98	1.4	A1	B1
	17						1.2	1.4	2.7	0.98	1.4	A1	B1
	25		SW0R063-4-0,01	0.01	1,680	8.0	1.0	1.1	2.5	0.76	1.1	A1	B1
	50		SW0R063-8-0,01		840	6.3	1.0	1.0	1.1	0.99	1.1	A1	B1
SQR 10.2	9	600	VW0R063-4-0,10	0.10	1,680	20	2.0	2.8	4.6	0.98	2.8	A1	B1
	12		SW0R063-4-0,06	0.06	1,680	16	1.5	2.0	4.3	0.96	2.0	A1	B1
	17						1.5	1.8	4.3	0.96	1.8	A1	B1
	25		SW0R063-4-0,04	0.04	1,680	12	1.3	1.5	2.7	0.98	1.5	A1	B1
	35						1.3	1.5	2.7	0.98	1.5	A1	B1
	50		SW0R063-4-0,02	0.02	1,680	8.0	1.0	1.1	2.5	0.80	1.1	A1	B1
SQR 12.2	12	900	VW0R063-4-0,10	0.10	1,680	20	2.0	2.7	4.6	0.98	2.7	A1	B1
	17	1 200					2.0	2.8	4.6	0.98	2.8	A1	B1
	25		SW0R063-4-0,06	0.06	1,680	16	1.5	2.0	4.3	0.96	2.0	A1	B1
	35						1.5	2.0	4.3	0.96	2.0	A1	B1
	50		SW0R063-4-0,04	0.04	1,680	12	1.3	1.5	2.7	0.98	1.5	A1	B1
	70						1.3	1.5	2.7	0.98	1.5	A1	B1
	108		SW0R063-4-0,02	0.02	1,680	8.0	1.0	1.1	2.5	0.80	1.1	A1	B1
SQR 14.2	30	1,800	VW0R063-4-0,10	0.10	1,680	20	2.0	2.7	4.6	0.98	2.7	A1	B1
	40	2,400					2.0	2.8	4.6	0.98	2.8	A1	B1
	60		SW0R063-4-0,06	0.06	1,680	16	1.5	2.0	4.3	0.96	2.0	A1	B1
	85						1.5	2.0	4.3	0.96	2.0	A1	B1

1) – 4) Refer to Notes on Electrical data SQ .2/SQR .2 part-turn actuators with 1-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 10.2

Electrical data Part-turn actuators for open-close duty with DC motors
Short-time duty S2 - 15 min, 24 V DC

Part-turn actuator				Motor							
Type	Operating time for 90° [in seconds]	Torque range Min. [Nm]	Torque range Max. [Nm]	Motor type	Nominal power[1] P_N [kW]	Speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SQ 05.2	3.5 – 5	50	150	VK00063-2-0,06	0.06	2,700	6.0	12 – 14	40	12 – 14	A2
	5 – 6.5						6.0	11 – 13	40	11 – 13	A2
	5 – 8			VK00063-4-0,04	0.04	1,700	6.0	10 – 12	25	10 – 12	A2
	7.5 – 10.5						6.0	9.0 – 11	25	9.0 – 11	A2
	11 – 13.5			VK00063-4-0,02	0.02	1,800	4.5	6.0 – 7.0	25	6.0 – 7.0	A2
	16 – 18.5						4.5	5.0 – 6.0	25	5.0 – 6.0	A2
SQ 07.2	11 – 16	100	300	VK00063-4-0,03	0.03	1,700	5.0	9.0 – 11	25	9.0 – 11	A2
	16 – 21						5.0	8.0 – 10	25	8.0 – 10	A2
SQ 10.2	15 – 28	200	450	SK00063-4-0,06	0.06	1,600	6.0	13 – 15	25	13 – 15	A2

Notes on table	
1) Nominal power P_N	Mechanical power output at motor shaft at run torque of multi-turn actuator (corresponds to approx. 35 % of maximum torque).
2) Nominal current I_N	Current at run torque
3) Max. current I_{max}	Current at maximum torque

Notes on installation and sizing

Motor data

Motor data is approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.

Motor type

The DC motors are designed as shunt motors.

Motor protection

To protect against overheating, thermoswitches are embedded in the motor.

Actuators without actuator controls (AUMA NORM):

Thermoswitches have to be considered within the external controls (refer to terminal plan).

Note: Failure to connect thermoswitches shall void the warranty for the motor.

Rating of the thermoswitches

AC current		DC current	
250 V, 50 – 60 Hz		60 V	1.0 A
cos φ = 1	2.5 A	42 V	1.2 A
cos φ = 0.6	1.6 A	24 V	1.5 A

Actuators with AC actuator controls:

Thermal motor protection is already integrated.

Switchgear sizing

For motor operation, reversing contactors (mechanically, electrically and electronically locked) can be used.

Actuators without actuator controls (AUMA NORM):

Switchgear are supplied by the customer. We recommend specification of switchgear suitable for their rated operating currents in compliance with the assigned AUMA power class.

Switchgear assignment to AUMA power classes:

DC shunt motor, motor type VK:

AUMA power class	Reversing contactor Rated operating current acc. to EN 60947-4 Utilization category DC-3
A2	30 A

Actuators with AC actuator controls:

Required switchgear in power class A2 are directly integrated in the AC actuator controls.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 10.2

Electrical data Part-turn actuators for open-close duty with DC motors
Short-time duty S2 - 15 min, 110 V DC

Part-turn actuator				Motor							
Type	Operating time [0] for 90° [in seconds]	Torque range Min. [Nm]	Torque range Max. [Nm]	Motor type	Nominal power[1] P_N [kW]	Output speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SQ 05.2	3.5 – 5	50	150	VK00063-2-0,06	0.06	2,700	1.6	2.8 – 3.4	13	2.8 – 3.4	A2
	5 – 6.5						1.6	2.6 – 3.2	13	2.6 – 3.2	A2
	5 – 8			VK00063-4-0,04	0.04	1,700	1.6	3.0 – 3.8	5.5	3.0 – 3.8	A2
	7.5 – 10.5						1.6	2.8 – 3.6	5.5	2.8 – 3.6	A2
	11 – 13.5			VK00063-4-0,02	0.02	1,800	1.4	2.6 – 3.2	5.5	2.6 – 3.2	A2
	16 – 18.5						1.4	2.4 – 3.0	5.5	2.4 – 3.0	A2
SQ 07.2	11 – 16	100	300	VK00063-4-0,03	0.03	1,700	1.4	3.0 – 3.6	5.5	3.0 – 3.6	A2
	16 – 21						1.4	2.8 – 3.6	5.5	2.8 – 3.6	A2
SQ 10.2	15 – 28	200	450	SK00063-4-0,06	0.06	1,600	1.6	3.4 – 4.0	5.5	3.4 – 4.0	A2

Notes on table	
1) Nominal power P_N	Mechanical power output at motor shaft at run torque of multi-turn actuator (corresponds to approx. 35 % of maximum torque).
2) Nominal current I_N	Current at run torque
3) Max. current I_{max}	Current at maximum torque

Notes on installation and sizing

Motor data

Motor data is approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.

Motor type

The DC motors are designed as shunt motors.

Motor protection

To protect against overheating, thermoswitches are embedded in the motor.

Actuators without actuator controls (AUMA NORM):

Thermoswitches have to be considered within the external controls (refer to terminal plan).

Note: Failure to connect thermoswitches shall void the warranty for the motor.

Rating of the thermoswitches

AC current		DC current	
250 V, 50 – 60 Hz		60 V	1.0 A
cos φ = 1	2.5 A	42 V	1.2 A
cos φ = 0.6	1.6 A	24 V	1.5 A

Actuators with AC actuator controls:

Thermal motor protection is already integrated.

Switchgear sizing

For motor operation, reversing contactors (mechanically, electrically and electronically locked) can be used.

Actuators without actuator controls (AUMA NORM):

Switchgear are supplied by the customer. We recommend specification of switchgear suitable for their rated operating currents in compliance with the assigned AUMA power class.

Switchgear assignment to AUMA power classes:

DC shunt motor, motor type VK:

AUMA power class	Reversing contactor Rated operating current acc. to EN 60947-4 Utilization category DC-3
A2	30 A

Actuators with AC actuator controls:

Required switchgear in power class A2 are directly integrated in the AC actuator controls.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ 05.2 – SQ 10.2

Electrical data Part-turn actuators for open-close duty with DC motors
Short-time duty S2 - 15 min, 220 V DC

Part-turn actuator				Motor							
Type	Operating time [0] for 90° [in seconds]	Torque range Min. [Nm]	Torque range Max. [Nm]	Motor type	Nominal power[1] P_N [kW]	Output speed [rpm]	Nominal current[2] I_N [A]	Max. current[3] I_{max} [A]	Starting current I_A [A]	Overcurrent protection device setting [A]	AUMA power class switchgear Contactor
SQ 05.2	3.5 – 5	50	150	VK00063-2-0,06	0.06	2,700	0.8	1.4 – 1.7	6.5	1.4 – 1.7	A2
	5 – 6.5						0.8	1.3 – 1.6	6.5	1.3 – 1.6	A2
	5 – 8			VK00063-4-0,04	0.04	1,700	0.8	1.5 – 1.9	3.0	1.5 – 1.9	A2
	7.5 – 10.5						0.8	1.4 – 1.8	3.0	1.4 – 1.8	A2
	11 – 13.5			VK00063-4-0,02	0.02	1,800	0.7	1.3 – 1.6	3.0	1.3 – 1.6	A2
	16 – 18.5						0.7	1.2 – 1.5	3.0	1.2 – 1.5	A2
SQ 07.2	11 – 16	100	300	VK00063-4-0,03	0.03	1,700	0.7	1.5 – 1.8	3.0	1.5 – 1.8	A2
	16 – 21						0.7	1.4 – 1.8	3.0	1.4 – 1.8	A2
SQ 10.2	15 – 28	200	450	SK00063-4-0,06	0.06	1,600	0.8	1.7 – 2.0	3.0	1.7 – 2.0	A2

Notes on table

1) Nominal power P_N	Mechanical power output at motor shaft at run torque of multi-turn actuator (corresponds to approx. 35 % of maximum torque).
2) Nominal current I_N	Current at run torque
3) Max. current I_{max}	Current at maximum torque

Notes on installation and sizing

Motor data

Motor data is approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.

Motor type

The DC motors are designed as shunt motors.

Motor protection

To protect against overheating, thermoswitches are embedded in the motor.

Actuators without actuator controls (AUMA NORM):

Thermoswitches have to be considered within the external controls (refer to terminal plan).

Note: Failure to connect thermoswitches shall void the warranty for the motor.

Rating of the thermoswitches

AC current		DC current	
250 V, 50 – 60 Hz		60 V	1.0 A
cos φ = 1	2.5 A	42 V	1.2 A
cos φ = 0.6	1.6 A	24 V	1.5 A

Actuators with AC actuator controls:

Thermal motor protection is already integrated.

Switchgear sizing

For motor operation, reversing contactors (mechanically, electrically and electronically locked) can be used.

Actuators without actuator controls (AUMA NORM):

Switchgear are supplied by the customer. We recommend specification of switchgear suitable for their rated operating currents in compliance with the assigned AUMA power class.

Switchgear assignment to AUMA power classes:

DC shunt motor, motor type VK:

AUMA power class	Reversing contactor Rated operating current acc. to EN 60947-4 Utilization category DC-3
A2	30 A

Actuators with AC actuator controls:

Required switchgear in power class A2 are directly integrated in the AC actuator controls.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQV 05.2 – SQV 14.2

Electrical data Part-turn actuators for open-close duty

Short-time duty S2 - 15 min, Mains voltage 220 – 240 V/50 – 60 Hz 3-phase AC

General information

Part-turn actuators of the SQV .2 type range with variable operating times. AUMA actuator controls of ACV .2 type are required to change the operating time.

Part-turn actuator			Current and power data[1]				Fuse[2]
Type	Operating time for 90° [s]	Max. torque [Nm]	Motor type	Consumed rated power [3] P_{IN} [kW]	Nominal current[4] I_N [A]	Max. current[5] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SQV 05.2	4 – 30	150	VDV0063-2-0,06	0.19	1.0	1.7	6.0
	12 – 120		VDV0063-4-0,02	0.10	0.8	1.2	6.0
SQV 07.2	4 – 30	300	VDV0063-2-0,12	0.27	1.5	2.1	6.0
	12 – 120		SDV0063-4-0,03	0.11	0.9	1.2	6.0
SQV 10.2	12 – 120	600	SDV0063-4-0,06	0.15	1.0	1.9	6.0
SQV 12.2	24 – 240	1,200	SDV0063-4-0,06	0.15	1.0	1.9	6.0
SQV 14.2	42 – 360	2,400	SDV0063-2-0,10	0.13	1.2	2.4	6.0

1) Motor with ACV actuator controls
2) For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuator are suitable for use in current circuits with a maximum short-circuit AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
3) Mains power consumption for 230 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
4) Mains current consumption for 230 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
5) Mains current consumption for 230 V rated voltage at maximum torque and approx. 50 % operating time. Starting current $I_A \leq I_{max}$.

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator operating time is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV actuator controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

SQV 05.2 – SQV 14.2

Electrical data Part-turn actuators for open-close duty

Short-time duty S2 - 15 min, Mains voltage 380 – 480 V/50 – 60 Hz 3-phase AC

General information

Part-turn actuators of the SQV .2 with variable operating times. AUMA actuator controls of ACV .2 type are required to change the operating time.

Part-turn actuator			Current and power data[1]				Fuse[2]
Type	Operating time for 90° [s]	Max. torque [Nm]	Motor type	Consumed rated power [3] P_{IN} [kW]	Nominal current[4] I_N [A]	Max. current[5] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SQV 05.2	4 – 30	150	VDV0063-2-0,06	0.21	0.8	1.3	6.0
	12 – 120		VDV0063-4-0,02	0.17	0.7	1.1	6.0
SQV 07.2	4 – 30	300	VDV0063-2-0,12	0.39	1.3	1.9	6.0
	12 – 120		SDV0063-4-0,03	0.18	0.8	1.0	6.0
SQV 10.2	12 – 120	600	SDV0063-4-0,06	0.21	1.0	1.5	6.0
SQV 12.2	24 – 240	1,200	SDV0063-4-0,06	0.21	1.0	1.5	6.0
SQV 14.2	42 – 360	2,400	SDV0063-2-0,10	0.27	1.1	1.7	6.0

1) Motor with ACV actuator controls
2) For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuator are suitable for use in current circuits with a maximum short-circuit AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
3) Mains power consumption for 400 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
4) Mains current consumption for 400 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
5) Mains current consumption for 400 V rated voltage at maximum torque and approx. 50 % operating time. Starting current $I_A \leq I_{max}$.

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator operating time is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV actuator controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

SQRV 05.2 – SQRV 14.2

Electrical data Part-turn actuators for modulating duty

Intermittent duty S4 - 25 %, Mains voltage 220 – 240 V/50 – 60 Hz 3-phase AC

General information

Part-turn actuators of the SQRV .2 type range with variable operating times. AUMA actuator controls of ACV .2 type are required to change the operating time.

Part-turn actuator			Current and power data[1]				Fuse[2]
Type	Operating time for 90° [s]	Max. torque [Nm]	Motor type	Consumed rated power [3] P_{IN} [kW]	Nominal current[4] I_N [A]	Max. current[5] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SQRV 05.2	4 – 28	150	VDVR063-2-0,06	0.19	1.0	1.7	6.0
	12 – 120		VDVR063-4-0,02	0.10	0.8	1.2	6.0
SQRV 07.2	4 – 28	300	VDVR063-2-0,12	0.27	1.5	2.1	6.0
	12 – 120		SDVR063-4-0,03	0.11	0.9	1.2	6.0
SQRV 10.2	12 – 120	600	SDVR063-4-0,06	0.15	1.0	1.9	6.0
SQRV 12.2	24 – 240	1,200	SDVR063-4-0,06	0.15	1.0	1.9	6.0
SQRV 14.2	40 – 360	2,400	SDVR063-2-0,10	0.13	1.2	2.4	6.0

1) Motor with ACV actuator controls
2) For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuator are suitable for use in current circuits with a maximum short-circuit AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
3) Mains power consumption for 230 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
4) Mains current consumption for 230 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
5) Mains current consumption for 230 V rated voltage at maximum torque and approx. 50 % operating time. Starting current $I_A \leq I_{max}$.

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator operating time is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV actuator controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

SQRV 05.2 – SQRV 14.2

Electrical data Part-turn actuators for modulating duty

Intermittent duty S4 - 25 %, Mains voltage 380 – 480 V/50 – 60 Hz 3-phase AC

General information

Part-turn actuators of the SQRV .2 type range with variable operating times. AUMA actuator controls of ACV .2 type are required to change the operating time.

Part-turn actuator			Current and power data[1]				Fuse[2]
Type	Operating time for 90° [s]	Max. torque [Nm]	Motor type	Consumed rated power [3] P_{IN} [kW]	Nominal current[4] I_N [A]	Max. current[5] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SQRV 05.2	4 – 28	150	VDVR063-2-0,06	0.21	0.8	1.3	6.0
	12 – 120		VDVR063-4-0,02	0.17	0.7	1.1	6.0
SQRV 07.2	4 – 28	300	VDVR063-2-0,12	0.39	1.3	1.9	6.0
	12 – 120		SDVR063-4-0,03	0.18	0.8	1.0	6.0
SQRV 10.2	12 – 120	600	SDVR063-4-0,06	0.21	1.0	1.5	6.0
SQRV 12.2	24 – 240	1,200	SDVR063-4-0,06	0.21	1.0	1.5	6.0
SQRV 14.2	40 – 360	2,400	SDVR063-2-0,10	0.27	1.1	1.7	6.0

1) Motor with ACV actuator controls
2) For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuator are suitable for use in current circuits with a maximum short-circuit AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
3) Mains power consumption for 400 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
4) Mains current consumption for 400 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
5) Mains current consumption for 400 V rated voltage at maximum torque and approx. 50 % operating time. Starting current $I_A \leq I_{max}$.

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator operating time is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV actuator controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

SQV 05.2 – SQV 14.2

Electrical data Part-turn actuators for open-close duty

Short-time duty S2 - 15 min, Mains voltage 110 – 120 V/50 – 60 Hz 1-phase AC current

General information

Part-turn actuators of the SQV .2 type range with variable operating times. AUMA actuator controls of ACV .2 type are required to change the operating time.

Part-turn actuator			Current and power data[1]				Fuse[2]
Type	Operating time for 90° [s]	Max. torque [Nm]	Motor type	Consumed rated power [3] P_{IN} [kW]	Nominal current[4] I_N [A]	Max. current[5] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SQV 05.2	4 – 28	150	VSV0063-2-0,06	0.22	2.9	2.9	6.0
	12 – 120		VSV0063-4-0,02	0.10	1.3	2.0	6.0
SQV 07.2	4 – 28	300	VSV0063-2-0,12	0.32	3.8	6.4	6.0
	12 – 120		SSV0063-4-0,03	0.15	1.9	2.9	6.0
SQV 10.2	12 – 120	600	SSV0063-4-0,06	0.19	2.3	4.3	6.0
SQV 12.2	24 – 240	1,200	SSV0063-4-0,06	0.19	2.3	4.3	6.0
SQV 14.2	40 – 360	2,400	SSV0063-2-0,10	0.20	2.6	4.2	6.0

1) Motor with ACV actuator controls
2) For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuator are suitable for use in current circuits with a maximum short-circuit AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
3) Mains power consumption for 115 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
4) Mains current consumption for 115 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
5) Mains current consumption for 115 V rated voltage at maximum torque and approx. 50 % operating time. Starting current $I_A \leq I_{max}$.

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator operating time is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV actuator controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

SQV 05.2 – SQV 14.2

Electrical data Part-turn actuators for open-close duty

Short-time duty S2 - 15 min, Mains voltage 220 – 240 V/50 – 60 Hz 1-phase AC current

General information

Part-turn actuators of the SQV .2 type range with variable operating times. ACV .2 type actuator controls are required to change the operating time.

Part-turn actuator			Current and power data[1]				Fuse[2]
Type	Operating time for 90° [s]	Max. torque [Nm]	Motor type	Consumed rated power [3] P_{IN} [kW]	Nominal current[4] I_N [A]	Max. current[5] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SQV 05.2	4 – 28	150	VSV0063-2-0,06	0.22	2.0	2.9	6.0
	12 – 120		VSV0063-4-0,02	0.10	1.1	1.7	6.0
SQV 07.2	4 – 28	300	VSV0063-2-0,12	0.26	2.2	3.8	6.0
	12 – 120		SSV0063-4-0,03	0.11	1.1	1.7	6.0
SQV 10.2	12 – 120	600	SSV0063-4-0,06	0.16	1.6	2.7	6.0
SQV 12.2	24 – 240	1,200	SSV0063-4-0,06	0.16	1.6	2.7	6.0
SQV 14.2	40 – 360	2,400	SSV0063-2-0,10	0.20	2.0	3.8	6.0

1) Motor with ACV actuator controls
2) For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuator are suitable for use in current circuits with a maximum short-circuit AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
3) Mains power consumption for 230 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
4) Mains current consumption for 230 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
5) Mains current consumption for 230 V rated voltage at maximum torque and approx. 50 % operating time. Starting current $I_A \leq I_{max}$.

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator operating time is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV actuator controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

SQRV 05.2 – SQRV 14.2

Electrical data Part-turn actuators for modulating duty

Intermittent duty S4 - 25 %, Mains voltage 110 – 120 V/50 – 60 Hz 1-phase AC current

General information

Part-turn actuators of the SQRV .2 type range with variable operating times. AUMA actuator controls of ACV .2 type are required to change the operating time.

Part-turn actuator			Current and power data[1]				Fuse[2]
Type	Operating time for 90° [s]	Max. torque [Nm]	Motor type	Consumed rated power [3] P_{IN} [kW]	Nominal current[4] I_N [A]	Max. current[5] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SQRV 05.2	4 – 28	150	VSVR063-2-0,06	0.22	2.9	2.9	6.0
	12 – 120		VSVR063-4-0,02	0.10	1.3	2.0	6.0
SQRV 07.2	4 – 28	300	VSVR063-2-0,12	0.32	3.8	6.4	6.0
	12 – 120		SSVR063-4-0,03	0.15	1.9	2.9	6.0
SQRV 10.2	12 – 120	600	SSVR063-4-0,06	0.19	2.3	4.3	6.0
SQRV 12.2	24 – 240	1,200	SSVR063-4-0,06	0.19	2.3	4.3	6.0
SQRV 14.2	40 – 360	2,400	SSVR063-2-0,10	0.20	2.6	4.2	6.0

1) Motor with ACV actuator controls
2) For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuator are suitable for use in current circuits with a maximum short-circuit AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
3) Mains power consumption for 115 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
4) Mains current consumption for 115 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
5) Mains current consumption for 115 V rated voltage at maximum torque and approx. 50 % operating time. Starting current $I_A \leq I_{max}$.

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator operating time is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV actuator controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

SQRV 05.2 – SQRV 14.2

Electrical data Part-turn actuators for modulating duty

Intermittent duty S4 - 25 %, Mains voltage 220 – 240 V/50 – 60 Hz 1-phase AC current

General information

Part-turn actuators of the SQRV .2 type range with variable operating times. AUMA actuator controls of ACV .2 type are required to change the operating time.

Part-turn actuator			Current and power data[1]				Fuse[2]
Type	Operating time for 90° [s]	Max. torque [Nm]	Motor type	Consumed rated power [3] P_{IN} [kW]	Nominal current[4] I_N [A]	Max. current[5] I_{max} [A]	Blow characteristics: Time-delay (gG) [A]
SQRV 05.2	4 – 28	150	VSVR063-2-0,06	0.22	2.0	2.9	6.0
	12 – 120		VSVR063-4-0,02	0.10	1.1	1.7	6.0
SQRV 07.2	4 – 28	300	VSVR063-2-0,12	0.26	2.2	3.8	6.0
	12 – 120		SSVR063-4-0,03	0.11	1.1	1.7	6.0
SQRV 10.2	12 – 120	600	SSVR063-4-0,06	0.16	1.6	2.7	6.0
SQRV 12.2	24 – 240	1,200	SSVR063-4-0,06	0.16	1.6	2.7	6.0
SQRV 14.2	40 – 360	2,400	SSVR063-2-0,10	0.20	2.0	3.8	6.0

1) Motor with ACV actuator controls
2) For short-circuit protection of the actuator, fuses have to be provided by the customer. The actuator are suitable for use in current circuits with a maximum short-circuit AC current value of 5,000 A root-mean-square (R.M.S). The output data of the fuses to be provided on site must not exceed the following values: 32 A/600 V at a maximum mains mains short circuit current of 5,000 A AC.
3) Mains power consumption for 230 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
4) Mains current consumption for 230 V rated voltage V at part-turn actuator run torque (approx. 35 % of the maximum torque) and maximum operating time.
5) Mains current consumption for 230 V rated voltage at maximum torque and approx. 50 % operating time. Starting current $I_A \leq I_{max}$.

Notes on installation and sizing	
Electrical data	Current and power data are approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.
Rated voltage	Mains voltage for defining current and power data
Motor operation	On the basis of the supplied 1-phase or 3-phase AC mains voltage, the frequency converter generates a variable 3-phase AC voltage, adjustable in terms of frequency and amplitude. Motor speed and thus actuator operating time is internally set via the frequency.
Motor protection	To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings. Evaluation of thermoswitches or PTC thermistors is integrated in the ACV actuator controls.
Mains voltage, mains frequency	Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

5 Dimensions Actuators/Actuator controls

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SA 07.2 – SA 14.6 / SAR 07.2 – SAR 14.6 with 1-phase AC motor of VE/AE/VC/AC type range 388
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Part-turn actuators with AM / AC actuator controls
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Part-turn actuators with base and lever
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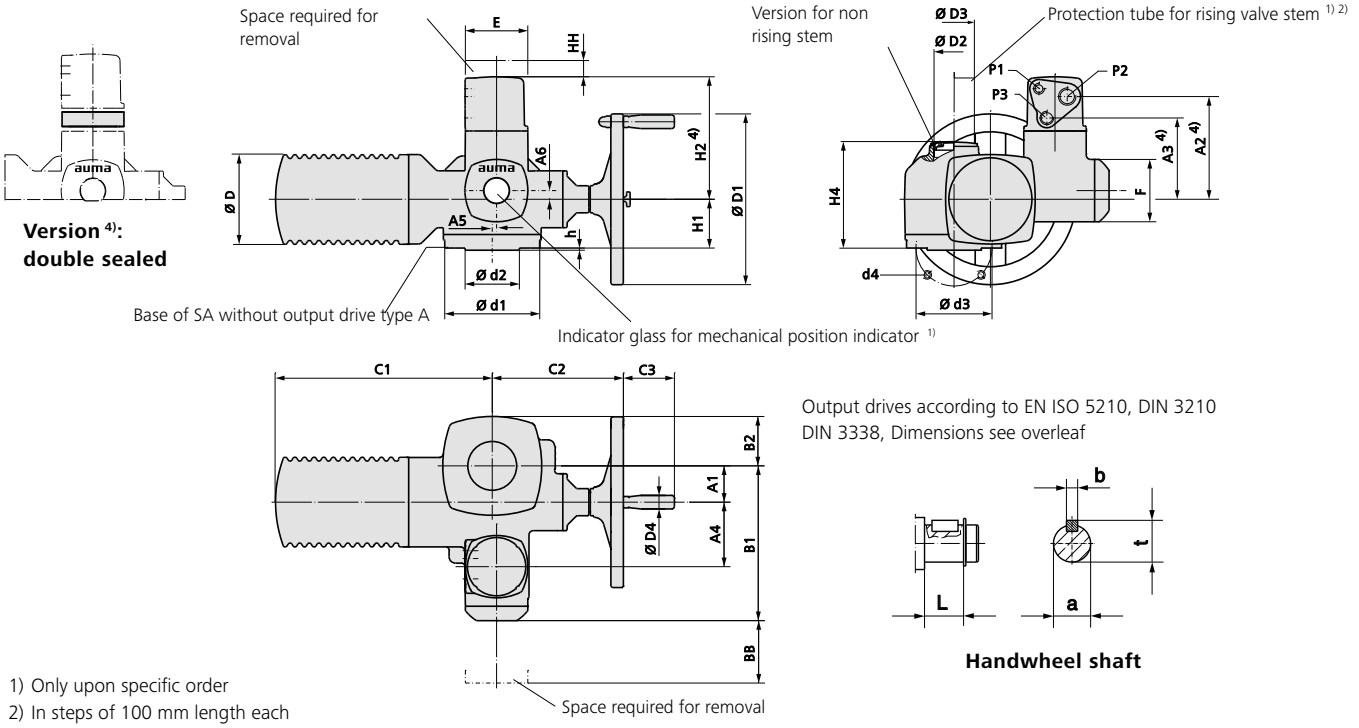
Fail safe unit
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Accessories
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AC 01.2 Wall bracket 410
CB 01.1 Control box 411
Electrical connections 412
Handwheels 418
Floor pedestals 422
DMF 10.1 – DMF 16.1 Torque measurement flange 423

Dimensions Multi-turn actuators with 3-phase AC motors

with AUMA plug/socket connector



1) Only upon specific order
2) In steps of 100 mm length each
3) Standard, other threads on request
4) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame

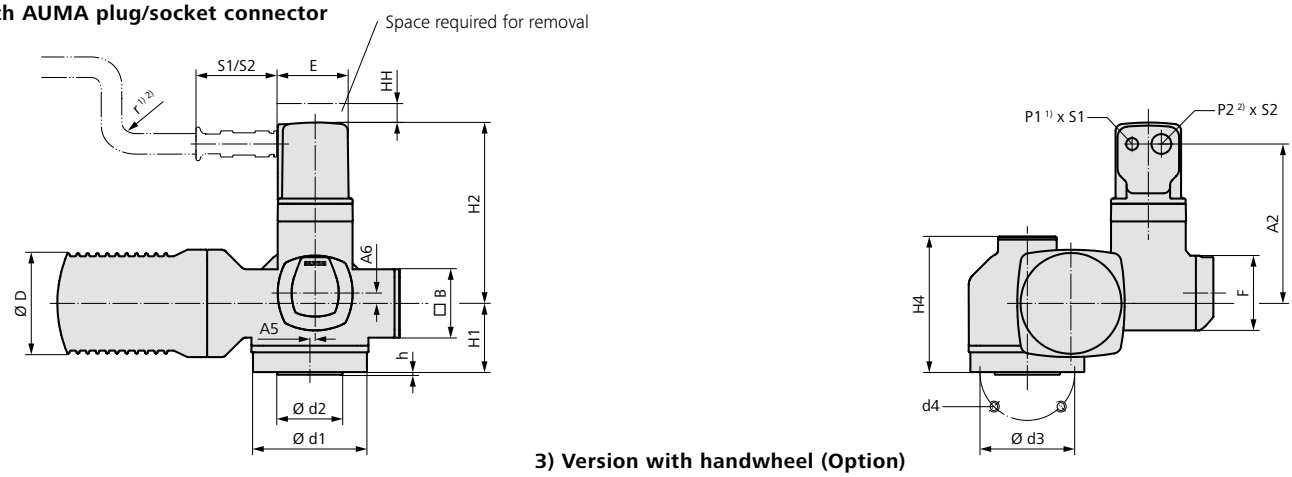
Dimensions	SA 07.2/SAR 07.2		SA 07.6/SAR 07.6		SA 10.2/SAR 10.2	SA14.2/SAR14.2	SA 14.6/SAR14.6	SA 16.2/SAR 16.2
EN ISO 5210 (DIN3210)	F07	F10 (G0)	F07	F10 (G0)	F10 (G0)	F14 (G1/2)	F14 (G1/2)	F16 (G3)
A1	40		40		50	67	67	80
A2 4)	174 (201 4))		174 (201 4))		174 (201 4))	190 (217 4))	190 (217 4))	194 (221 4))
A3 4)	134 (161 4))		134 (161 4))		134 (161 4))	150 (177 4))	150 (177 4))	154 (181 4))
A4	103		103		103	119	119	123.5
A5	–		–		–	8	8	15
A6	–		–		–	16	16	20
B1	238		238		248	286	286	303
B2	62		62		65	90	90	117
C1	265		265		283	389	389	430
C2	186		186		191	242	245	271
C3	63		63		63	94	94	94
Ø D	101		101		121	153	153	190
Ø D1	160		160		200	315	400	500
Ø D2	G 1¼"		G 1¼"		G 2"	G 2½"	G 2½"	G 3"
Ø D3	42 x 3.3		42 x 3.3		60 x 3.7	76 x 3.7	76 x 3.7	89 x 4.1
Ø D4	20		20		20	25	25	25
E	115		115		115	115	115	115
F	115		115		115	115	115	115
H1	78		78		80	90	90	110
H2 4)	210 (237 4))		210 (237 4))		210 (237 4))	226 (253 4))	226 (253 4))	230 (257 4))
H4	160		160		170	196	196	235
L	20		20		24	38.8	45.8	45.8
P1 3)	M20 x 1.5		M20 x 1.5		M20 x 1.5	M20 x 1.5	M20 x 1.5	M20 x 1.5
P2 3)	M32 x 1.5		M32 x 1.5		M32 x 1.5	M32 x 1.5	M32 x 1.5	M32 x 1.5
P3 3)	M25 x 1.5		M25 x 1.5		M25 x 1.5	M25 x 1.5	M25 x 1.5	M25 x 1.5
BB min.	180		180		180	180	180	180
HH min.	30		30		30	30	30	30
Ø a	20 d7		20 d7		20 d7	30 d7	30 d7	30 d7
b	6		6		6	8	8	8
Ø d1	90	125	90	125	125	175	175	210
Ø d2 f12	55	70 (60)	55	70 (60)	70 (60)	100	100	130
Ø d3	70	102	70	102	102	140	140	165
d4	4 x M8	4 x M10	4 x M8	4 x M10	4 x M10	4 x M16	4 x M16	4 x M20
h	3		3		3	4	4	5
t	22.5		22.5		22.5	33	33	33

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

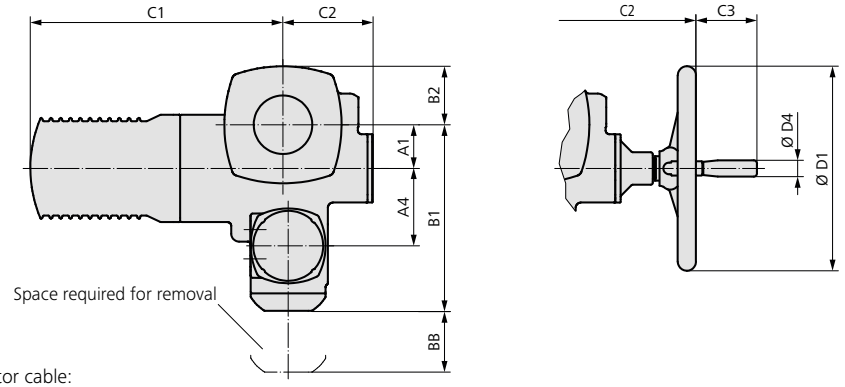
SA 07.2-UW – SA 16.2-UW/SAR 07.2-UW – SAR 16.2-UW
SAV 07.2-UW – SAV 16.2-UW/SARV 07.2-UW – SARV 16.2-UW

Dimensions Multi-turn actuators with 3-phase AC motor for continuous underwater use

with AUMA plug/socket connector



3) Version with handwheel (Option)



1) Motor cable:
Outer diameter approx. 12.1 mm, minimum bending radius r, fixed installation: 90 mm

2) Hybrid cable with control cables and CAN cables:
Outer diameter approx. 17.2 mm, minimum bending radius r, fixed installation: 105 mm

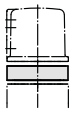
Output drives according to EN ISO 5210, DIN 3210
For dimensions see overleaf

Dimensions	SA 07.2		SA 07.6		SA 10.2	SA14.2	SA 14.6	SA 16.2
EN ISO 5210	F07	F10	F07	F10	F10	F14	F14	F16
A1	40		40		50	67	67	80
A2	229		229		229	245	245	249
A4	103		103		103	119	119	123.5
A5	–		–		–	8	8	15
A6	–		–		–	16	16	20
□ B	70		70		70	105	105	105
B1	238		238		248	286	286	303
B2	62		62		65	90	90	115
C1	268		268		283	389	389	437
C2	112 (196 3))		112 (196 3))		112 (197 3))	138 (254 3))	138 (256 3))	156 (276 3))
C3	63		63		63	94	94	94
Ø D	104		104		124	155	155	192
Ø D1	160		160		200	315	400	500
Ø D4	20		20		20	25	25	25
E	115		115		115	115	115	115
F	115		115		115	115	115	115
H1	96	100	96	100	101	106	106	122
H2	262		262		262	278	278	282
H4	176	180	176	180	188	209	209	244
P1 1)	M20 x 1.5		M20 x 1.5		M20 x 1.5	M20 x 1.5	M20 x 1.5	M20 x 1.5
P2 2)	M32 x 1.5		M32 x 1.5		M32 x 1.5	M32 x 1.5	M32 x 1.5	M32 x 1.5
S1	71		71		71	71	71	71
S2	98		98		98	98	98	98
BB min.	180		180		180	180	180	180
HH min.	30		30		30	30	30	30
Ø d1	90	125	90	125	125	175	175	210
Ø d2 f12	55	70	55	70	70	100	100	130
Ø d3	70	102	70	102	102	140	140	165
d4	4 x M8	4 x M10	4 x M8	4 x M10	4 x M10	4 x M16	4 x M16	4 x M20
h	3		3		3	4	4	5

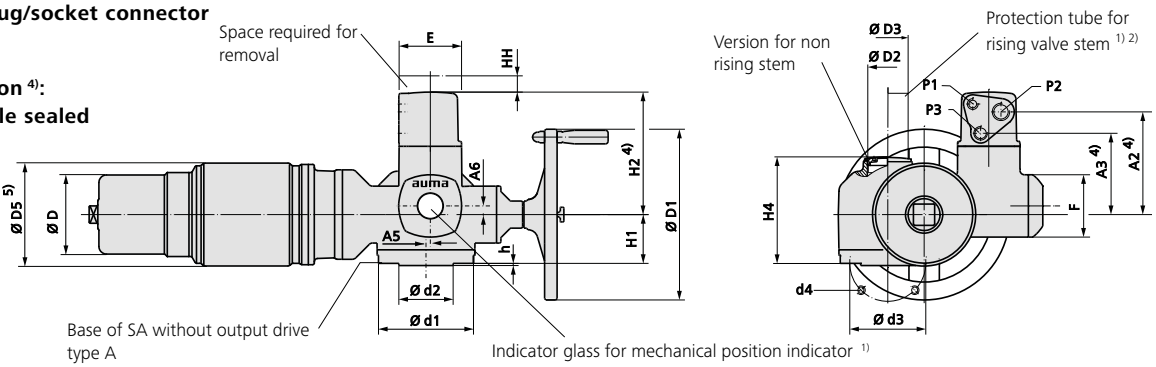
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

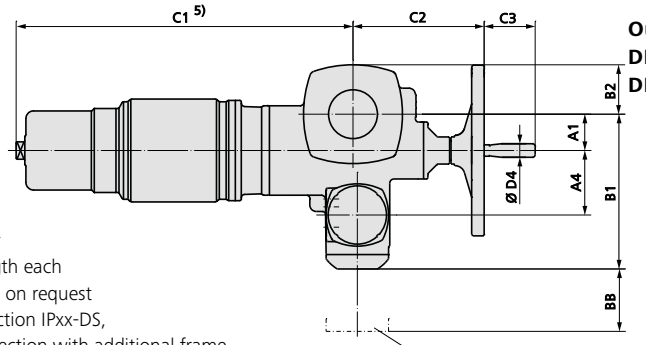
Dimensions Multi-turn actuators with 1-phase AC motor of VE/AE/VC/AC type range

with AUMA plug/socket connector

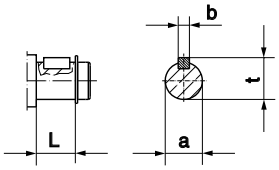


Version [4]: double sealed





Output drives according to EN ISO 5210, DIN 3210
DIN 3338, Dimensions see overleaf



Handwheel shaft

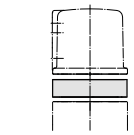
1) Only upon specific order
2) In steps of 100 mm length each
3) Standard, other threads on request
4) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame
5) Exact dimension depending on motor used

Dimensions	SA 07.2/SAR 07.2		SA 07.6/SAR 07.6		SA 10.2/SAR 10.2	SA14.2/SAR14.2	SA 14.6/SAR14.6
Output speed rpm	32 – 216 / 32 – 54		32 – 216 / 32 – 54		4 – 216 / 4 – 26	4 – 54 / 4 – 13	4 – 26 / 4 – 6,7
EN ISO 5210 (DIN3210)	F07	F10 (G0)	F07	F10 (G0)	F10 (G0)	F14 (G1/2)	F14 (G1/2)
A1	40		40		50	67	67
A2 [4]	174 (201 [4])		174 (201 [4])		174 (201 [4])	190 (217 [4])	190 (217 [4])
A3 [4]	134 (161 [4])		134 (161 [4])		134 (161 [4])	150 (177 [4])	150 (177 [4])
A4	103		103		103	119	119
A5	–		–		–	8	8
A6	–		–		–	16	16
B1	238		238		248	286	286
B2	62		62		65	90	90
C1 [5]	565		565		576 (571)	622	622
C2	186		186		191	242	245
C3	63		63		63	94	94
Ø D	146		146		146	146	146
Ø D1	160		160		200	315	400
Ø D2	G 1¼"		G 1¼"		G 2"	G 2½"	G 2½"
Ø D3	42 x 3.3		42 x 3.3		60 x 3.7	76 x 3.7	76 x 3.7
Ø D4	20		20		20	25	25
Ø D5 [5]	170		170		190 (170)	190	190
E	115		115		115	115	115
F	115		115		115	115	115
H1	78		78		80	90	90
H2 [4]	210 (237 [4])		210 (237 [4])		210 (237 [4])	226 (253 [4])	226 (253 [4])
H4	160		160		170	196	196
L	20		20		24	38.8	45.8
P1 [3]	M20 x 1.5		M20 x 1.5		M20 x 1.5	M20 x 1.5	M20 x 1.5
P2 [3]	M32 x 1.5		M32 x 1.5		M32 x 1.5	M32 x 1.5	M32 x 1.5
P3 [3]	M25 x 1.5		M25 x 1.5		M25 x 1.5	M25 x 1.5	M25 x 1.5
BB min.	180		180		180	180	180
HH min.	30		30		30	30	30
Ø a	20 d7		20 d7		20 d7	30 d7	30 d7
b	6		6		6	8	8
Ø d1	90	125	90	125	125	175	175
Ø d2 f12	55	70 (60)	55	70 (60)	70 (60)	100	100
Ø d3	70	102	70	102	102	140	140
d4	4 x M8	4 x M10	4 x M8	4 x M10	4 x M10	4 x M16	4 x M16
h	3		3		3	4	4
t	22.5		22.5		22.5	33	33

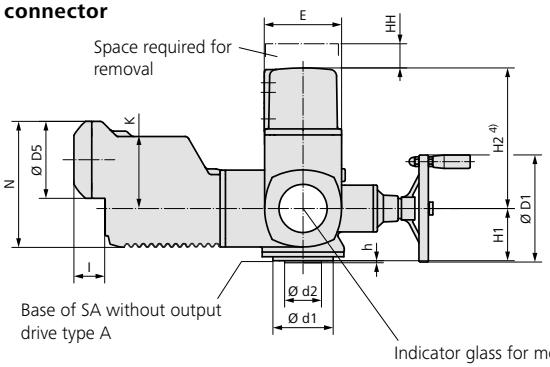
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

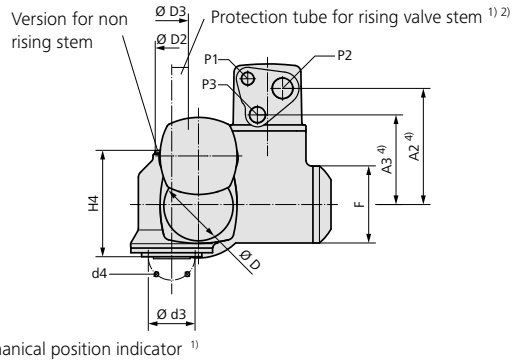
Dimensions Multi-turn actuators with 1-phase AC motor of VB 63 type range

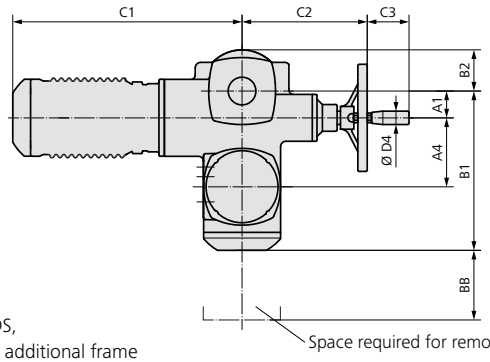
with AUMA plug/socket connector



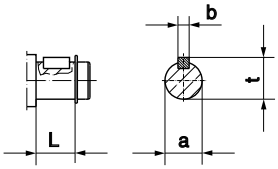
Version [4]: double sealed







Output drives according to EN ISO 5210, DIN 3210 DIN 3338, Dimensions see overleaf



Handwheel shaft

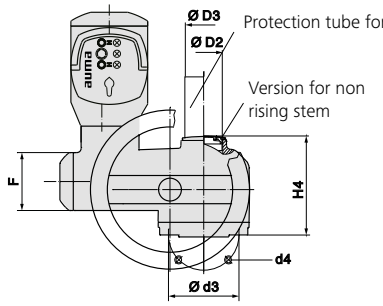
1) Only upon specific order
2) In steps of 100 mm length each
3) Standard, other threads on request
4) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame

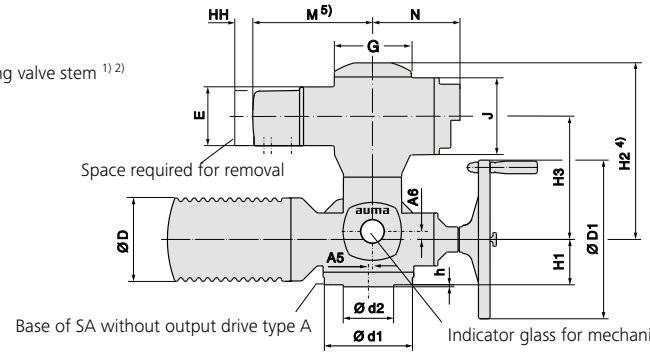
Dimensions	SA 07.2/SAR 07.2		SA 07.6/SAR 07.6	
Output speed rpm	4 – 26		4 – 26	
EN ISO 5210 (DIN3210)	F07	F10 (G0)	F07	F10 (G0)
A1	40		40	
A2 [4]	174 (201 [4])		174 (201 [4])	
A3 [4]	134 (161 [4])		134 (161 [4])	
A4	103		103	
B1	238		238	
B2	62		62	
C1	343		343	
C2	186		186	
C3	63		63	
Ø D	107		107	
Ø D1	160		160	
Ø D2	G 1¼"		G 1¼"	
Ø D3	42 x 3.3		42 x 3.3	
Ø D4	20		20	
Ø D5	115		115	
E	115		115	
F	115		115	
H1	78		78	
H2 [4]	210 (237 [4])		210 (237 [4])	
H4	160		160	
I	46		46	
K	108		108	
L	20		20	
N	188		188	
P1 [3]	M20 x 1.5		M20 x 1.5	
P2 [3]	M32 x 1.5		M32 x 1.5	
P3 [3]	M25 x 1.5		M25 x 1.5	
BB min.	180		180	
HH min.	30		30	
Ø a	20 d7		20 d7	
b	6		6	
Ø d1	90	125	90	125
Ø d2 f12	55	70 (60)	55	70 (60)
Ø d3	70	102	70	102
d4	4 x M8	4 x M10	4 x M8	4 x M10
h	3		3	
t	22.5		22.5	

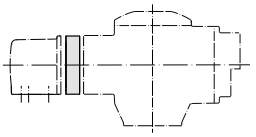
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Multi-turn actuators with 3-phase AC motor and AM integral controls

with AUMA plug/socket connector

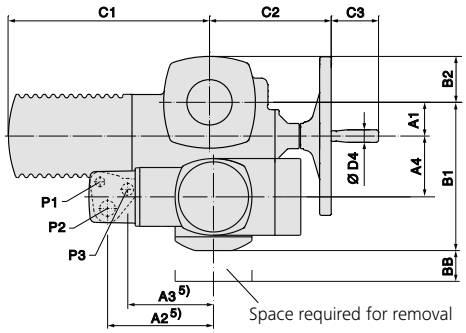




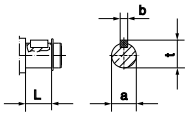


Version 5): double sealed

Valve attachments according to EN ISO 5210, DIN 3210, DIN 3338
For dimensions see overleaf



Handwheel shaft



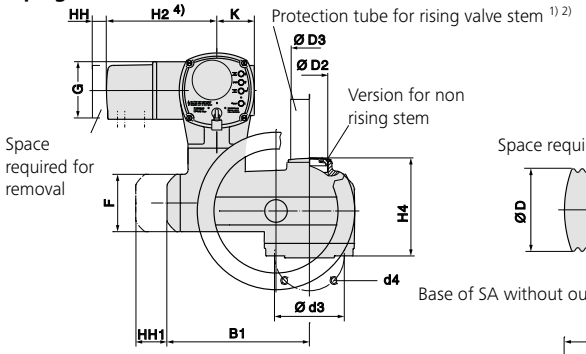
1) Only upon specific order
2) In steps of 100 mm length each
3) Standard, other threads on request
4) Exact dimension depending on AM variant
5) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame

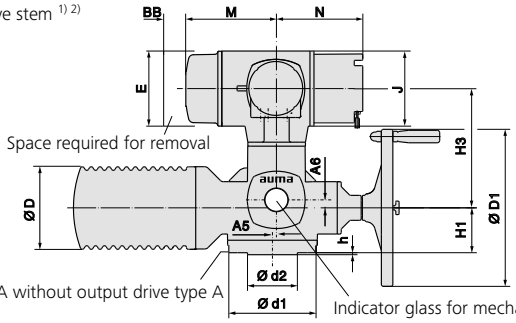
Dimensions	SA 07.2/AM 01.1 SAR 07.2/AM 01.1		SA 07.6/AM 01.1 SAR 07.6/AM 01.1		SA 10.2/AM 01.1 SAR 10.2/AM 01.1	SA 14.2/AM 02.1 SAR 14.2/AM 02.1	SA 14.6/AM 02.1 SAR 14.6/AM 02.1	SA 16.2/AM 02.1 SAR 16.2/AM 02.1
EN ISO 5210 (DIN3210)	F07	F10 (G0)	F07	F10 (G0)	F10 (G0)	F14 (G1/2)	F14 (G1/2)	F16 (G3)
A1	40		40		50	67	67	80
A2 5)	199 (226 5))		199 (226 5))		199 (226 5))	209 (236 5))	209 (236 5))	209 (236 5))
A3 5)	159 (186 5))		159 (186 5))		159 (186 5))	169 (196 5))	169 (196 5))	169 (196 5))
A4	103		103		103	119	119	123.5
A5	–		–		–	8	8	15
A6	–		–		–	16	16	20
B1	238		238		248	286	286	303
B2	62		62		65	90	90	117
C1	265		265		283	389	389	430
C2	186		186		191	242	245	271
C3	63		63		63	94	94	94
Ø D	101		101		121	153	153	190
Ø D1	160		160		200	315	400	500
Ø D2	G 1¼"		G 1¼"		G 2"	G 2½"	G 2½"	G 3"
Ø D3	42 x 3.3		42 x 3.3		60 x 3.7	76 x 3.7	76 x 3.7	89 x 4.1
Ø D4	20		20		20	25	25	25
E	115		115		115	115	115	115
F	115		115		115	115	115	115
G	150		150		150	150	150	150
H1	78		78		80	90	90	110
H2 4)	337		337		337	408	408	412
H3	232		232		232	248	248	252
H4	160		160		170	196	196	235
J	150		150		150	150	150	150
L	20		20		24	38.8	45.8	45.8
M 5)	235 (262 5))		235 (262 5))		235 (262 5))	235 (262 5))	235 (262 5))	235 (262 5))
N	171		171		171	171	171	171
P1 3)	M20 x 1.5		M20 x 1.5		M20 x 1.5	M20 x 1.5	M20 x 1.5	M20 x 1.5
P2 3)	M32 x 1.5		M32 x 1.5		M32 x 1.5	M32 x 1.5	M32 x 1.5	M32 x 1.5
P3 3)	M25 x 1.5		M25 x 1.5		M25 x 1.5	M25 x 1.5	M25 x 1.5	M25 x 1.5
BB min.	180		180		180	180	180	180
HH min.	30		30		30	30	30	30
Ø a	20 d7		20 d7		20 d7	30 d7	30 d7	30 d7
b	6		6		6	8	8	8
Ø d1	90	125	90	125	125	175	175	210
Ø d2 f12	55	70 (60)	55	70 (60)	70 (60)	100	100	130
Ø d3	70	102	70	102	102	140	140	165
d4	4 x M8	4 x M10	4 x M8	4 x M10	4 x M10	4 x M16	4 x M16	4 x M20
h	3		3		3	4	4	5
t	22.5		22.5		22.5	33	33	33

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

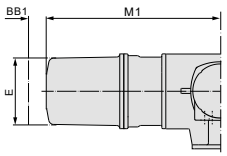
Dimensions Multi-turn actuators with 3-phase AC motor and AC integral controls (also for HART)

with AUMA plug/socket connector

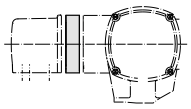




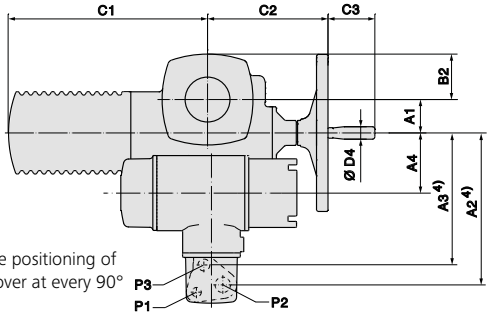
Version with thermal overload relay



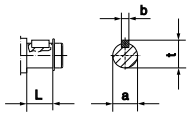
Valve attachments according to EN ISO 5210, DIN 3210, DIN 3338
For dimensions see overleaf



Version[4]: double sealed



Handwheel shaft



1) Only upon specific order
2) In steps of 100 mm length each
3) Standard, other threads on request
4) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame

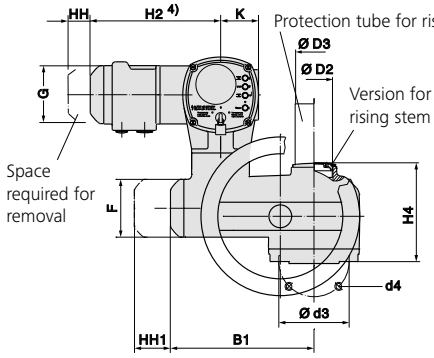
Dimensions	SA 07.2/AC 01.2 SAR 07.2/AC 01.2		SA 07.6/AC 01.2 SAR 07.6/AC 01.2		SA 10.2/AC 01.2 SAR 10.2/AC 01.2	SA 14.2/AC 01.2 SAR 14.2/AC 01.2	SA 14.6/AC 01.2 SAR 14.6/AC 01.2	SA 16.2/AC 01.2 SAR 16.2/AC 01.2
EN ISO 5210 (DIN3210)	F07	F10 (G0)	F07	F10 (G0)	F10 (G0)	F14 (G1/2)	F14 (G1/2)	F16 (G3)
A1	40		40		50	67	67	80
A2 4)	287 (314 4))		287 (314 4))		287 (314 4))	303 (330 4))	303 (330 4))	303 (330 4))
A3 4)	247 (274 4))		247 (274 4))		247 (274 4))	263 (290 4))	263 (290 4))	263 (290 4))
A4	103		103		103	119	119	123.5
A5	–		–		–	8	8	15
A6	–		–		–	16	16	20
B1	238		238		248	286	286	303
B2	62		62		65	90	90	117
C1	265		265		283	389	389	430
C2	186		186		191	242	245	271
C3	63		63		63	94	94	94
Ø D	101		101		121	153	153	190
Ø D1	160		160		200	315	400	500
Ø D2	G 1¼"		G 1¼"		G 2"	G 2½"	G 2½"	G 3"
Ø D3	42 x 3.3		42 x 3.3		60 x 3.7	76 x 3.7	76 x 3.7	89 x 4.1
Ø D4	20		20		20	25	25	25
E	150		150		150	150	150	150
F	115		115		115	115	115	115
G	115		115		115	115	115	115
H1	78		78		80	90	90	110
H2 4)	220 (247 4))		220 (247 4))		220 (247 4))	220 (247 4))	220 (247 4))	220 (247 4))
H3	225		225		225	241	241	245
H4	160		160		170	196	196	235
J	150		150		150	150	150	150
K	75		75		75	75	75	75
L	20		20		24	38.8	45.8	45.8
M max.	265		265		265	265	265	265
M1	349		349		349	349	349	349
N	173		173		173	173	173	173
P1 3)	M20 x 1.5		M20 x 1.5		M20 x 1.5	M20 x 1.5	M20 x 1.5	M20 x 1.5
P2 3)	M32 x 1.5		M32 x 1.5		M32 x 1.5	M32 x 1.5	M32 x 1.5	M32 x 1.5
P3 3)	M25 x 1.5		M25 x 1.5		M25 x 1.5	M25 x 1.5	M25 x 1.5	M25 x 1.5
BB min.	70		70		70	70	70	70
BB1 min.	90		90		90	90	90	90
HH min.	30		30		30	30	30	30
HH1 min.	180		180		180	180	180	180
Ø a	20 d7		20 d7		20 d7	30 d7	30 d7	30 d7
b	6		6		6	8	8	8
Ø d1	90	125	90	125	125	175	175	210
Ø d2 f12	55	70 (60)	55	70 (60)	70 (60)	100	100	130
Ø d3	70	102	70	102	102	140	140	165
d4	4 x M8	4 x M10	4 x M8	4 x M10	4 x M10	4 x M16	4 x M16	4 x M20
h	3		3		3	4	4	5
t	22.5		22.5		22.5	33	33	33

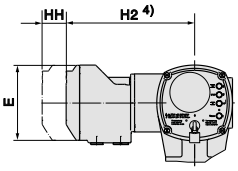
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2 with AC 01.2 – Fieldbus

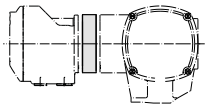
(Profibus DP, Modbus RTU, Foundation Fieldbus)

Dimensions Multi-turn actuators with 3-phase AC motor and AC integral controls

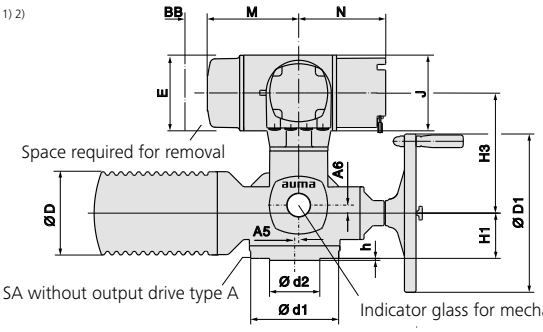




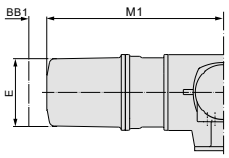
Version for FO cable

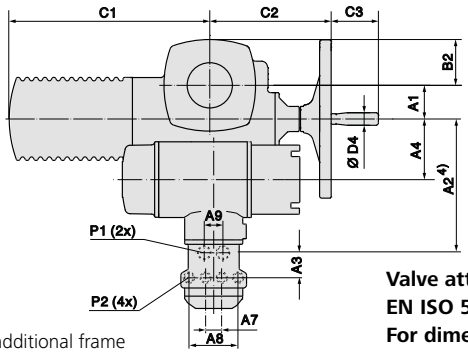


Version4): double sealed

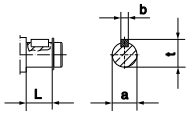


Version with thermal overload relay





Handwheel shaft



1) Only upon specific order
2) In steps of 100 mm length each
3) Standard, other threads on request
4) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame

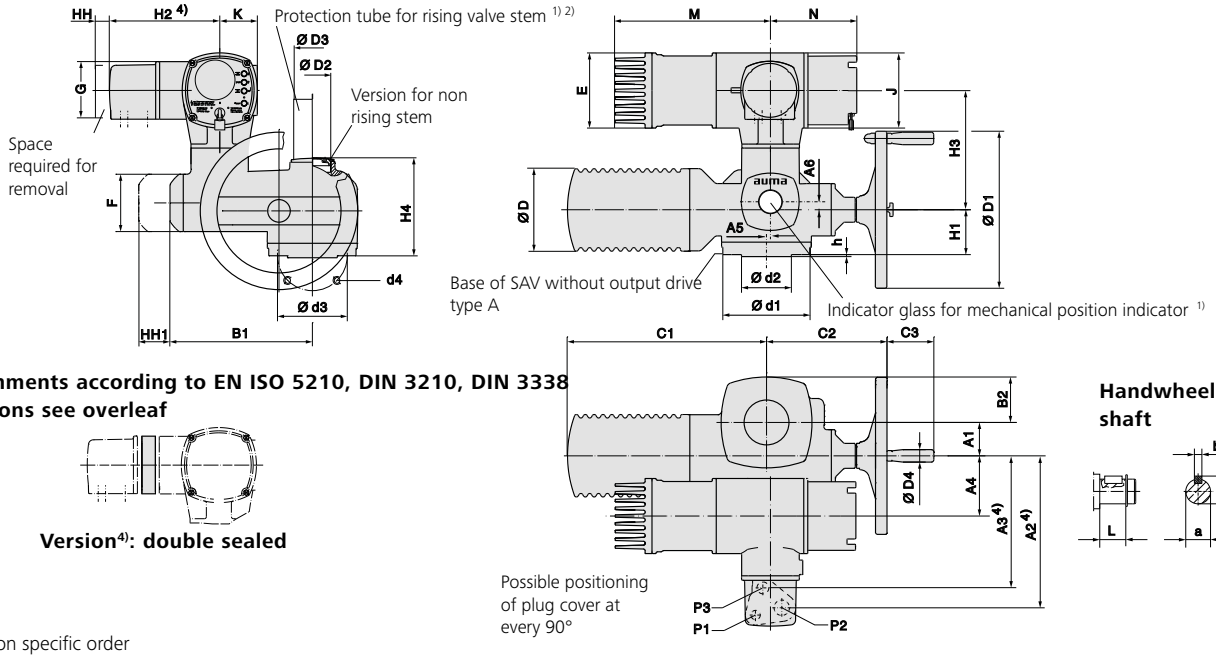
Valve attachments according to EN ISO 5210, DIN 3210, DIN 3338
For dimensions see overleaf

Dimensions	SA 07.2/AC 01.2 SAR 07.2/AC 01.2		SA 07.6/AC 01.2 SAR 07.6/AC 01.2		SA 10.2/AC 01.2 SAR 10.2/AC 01.2	SA 14.2/AC 01.2 SAR 14.2/AC 01.2	SA 14.6/AC 01.2 SAR 14.6/AC 01.2	SA 16.2/AC 01.2 SAR 16.2/AC 01.2
EN ISO 5210 (DIN3210)	F07	F10 (G0)	F07	F10 (G0)	F10 (G0)	F14 (G1/2)	F14 (G1/2)	F16 (G3)
A1	40		40		50	67	67	80
A2 4)	251 (278 4))		251 (278 4))		251 (278 4))	267 (294 4))	267 (294 4))	267 (294 4))
A3	48		48		48	48	48	48
A4	103		103		103	119	119	123.5
A5	–		–		–	8	8	15
A6	–		–		–	16	16	20
A7	32		32		32	32	32	32
A8	96		96		96	96	96	96
A9	35		35		35	35	35	35
B1	238		238		248	286	286	303
B2	62		62		65	90	90	117
C1	265		265		283	389	389	430
C2	186		186		191	242	245	271
C3	63		63		63	94	94	94
Ø D	101		101		121	153	153	190
Ø D1	160		160		200	315	400	500
Ø D2	G 1¼"		G 1¼"		G 2"	G 2½"	G 2½"	G 3"
Ø D3	42 x 3.3		42 x 3.3		60 x 3.7	76 x 3.7	76 x 3.7	89 x 4.1
Ø D4	20		20		20	25	25	25
E	150		150		150	150	150	150
F	115		115		115	115	115	115
G	115		115		115	115	115	115
H1	78		78		80	90	90	110
H2 4)	257 (284 4))		257 (284 4))		257 (284 4))	257 (284 4))	257 (284 4))	257 (284 4))
H3	225		225		225	241	241	245
H4	160		160		170	196	196	235
J	150		150		150	150	150	150
K	75		75		75	75	75	75
L	20		20		24	38.8	45.8	45.8
M max.	265		265		265	265	265	265
M1	349		349		349	349	349	349
N	173		173		173	173	173	173
P1 3)	2x M25 x 1,5		2x M25 x 1,5		2x M25 x 1,5	2x M25 x 1,5	2x M25 x 1,5	2x M25 x 1,5
P2 3)	4x M20 x 1,5		4x M20 x 1,5		4x M20 x 1,5	4x M20 x 1,5	4x M20 x 1,5	4x M20 x 1,5
BB min.	70		70		70	70	70	70
BB1 min.	90		90		90	90	90	90
HH min.	30		30		30	30	30	30
HH1 min.	180		180		180	180	180	180
Ø a	20 d7		20 d7		20 d7	30 d7	30 d7	30 d7
b	6		6		6	8	8	8
Ø d1	90	125	90	125	125	175	175	210
Ø d2 f12	55	70 (60)	55	70 (60)	70 (60)	100	100	130
Ø d3	70	102	70	102	102	140	140	165
d4	4 x M8	4 x M10	4 x M8	4 x M10	4 x M10	4 x M16	4 x M16	4 x M20
h	3		3		3	4	4	5
t	22.5		22.5		22.5	33	33	33

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Variable speed multi-turn actuators with integral actuator controls (also for HART)

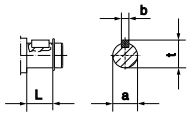
with AUMA plug/socket connector



Valve attachments according to EN ISO 5210, DIN 3210, DIN 3338
For dimensions see overleaf

Version[4]: double sealed

Handwheel shaft



1) Only upon specific order
2) In steps of 100 mm length each
3) Standard, other threads on request
4) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame

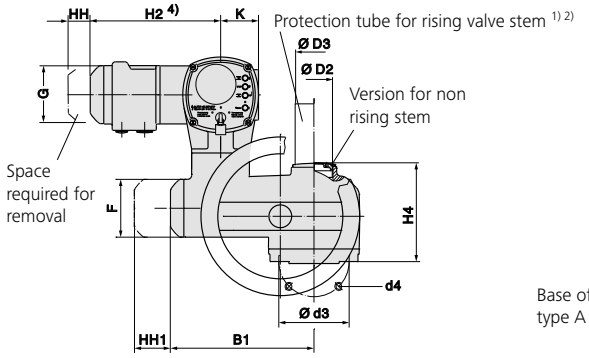
Dimensions	SAV/SARV 07.2 ACV 01.2		SAV/SARV 07.6 ACV 01.2		SAV/SARV 10.2 ACV 01.2	SAV/SARV 14.2 ACV 01.2	SAV/SARV 14.6 ACV 01.2	SAV/SARV 16.2 ACV 01.2
EN ISO 5210 (DIN3210)	F07	F10 (G0)	F07	F10 (G0)	F10 (G0)	F14 (G1/2)	F14 (G1/2)	F16 (G3)
A1	40		40		50	67	67	80
A2 4)	287 (314 4))		287 (314 4))		287 (314 4))	303 (330 4))	303 (330 4))	303 (330 4))
A3 4)	247 (274 4))		247 (274 4))		247 (274 4))	263 (290 4))	263 (290 4))	263 (290 4))
A4	103		103		103	119	119	123.5
A5	–		–		–	8	8	15
A6	–		–		–	16	16	20
B1	238		238		248	286	286	303
B2	62		62		65	90	90	117
C1	265		265		283	389	389	430
C2	186		186		191	242	245	271
C3	63		63		63	94	94	94
Ø D	101		101		121	153	153	190
Ø D1	160		160		200	315	400	500
Ø D2	G 1¼"		G 1¼"		G 2"	G 2½"	G 2½"	G 3"
Ø D3	42 x 3,3		42 x 3.3		60 x 3.7	76 x 3.7	76 x 3.7	89 x 4.1
Ø D4	20		20		20	25	25	25
E	150		150		150	150	150	150
F	115		115		115	115	115	115
G	115		115		115	115	115	115
H1	78		78		80	90	90	110
H2 4)	220 (247 4))		220 (247 4))		220 (247 4))	220 (247 4))	220 (247 4))	220 (247 4))
H3	225		225		225	241	241	245
H4	160		160		170	196	196	235
J	150		150		150	150	150	150
K	75		75		75	75	75	75
L	20		20		24	38.8	45.8	45.8
M	313		313		313	313	313	313
N	173		173		173	173	173	173
P1 3)	M20 x 1.5		M20 x 1.5		M20 x 1.5	M20 x 1.5	M20 x 1.5	M20 x 1.5
P2 3)	M32 x 1.5		M32 x 1.5		M32 x 1.5	M32 x 1.5	M32 x 1.5	M32 x 1.5
P3 3)	M25 x 1.5		M25 x 1.5		M25 x 1.5	M25 x 1.5	M25 x 1.5	M25 x 1.5
HH min.	30		30		30	30	30	30
HH1 min.	180		180		180	180	180	180
Ø a	20 d7		20 d7		20 d7	30 d7	30 d7	30 d7
b	6		6		6	8	8	8
Ø d1	90	125	90	125	125	175	175	210
Ø d2 f12	55	70 (60)	55	70 (60)	70 (60)	100	100	130
Ø d3	70	102	70	102	102	140	140	165
d4	4 x M8	4 x M10	4 x M8	4 x M10	4 x M10	4 x M16	4 x M16	4 x M20
h	3		3		3	4	4	5
t	22.5		22.5		22.5	33	33	33

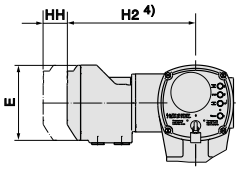
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SAV 07.2 – SAV 16.2/SARV 07.2 – SARV 16.2 with ACV 01.2 – Fieldbus

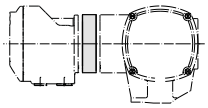
(Profibus DP, Modbus RTU, Foundation Fieldbus)

Dimensions Variable-speed multi-turn actuators with 3-phase AC motor and ACV integral controls

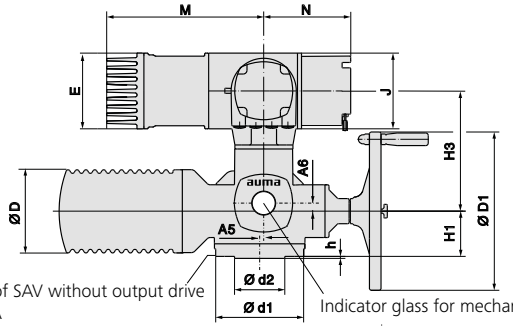


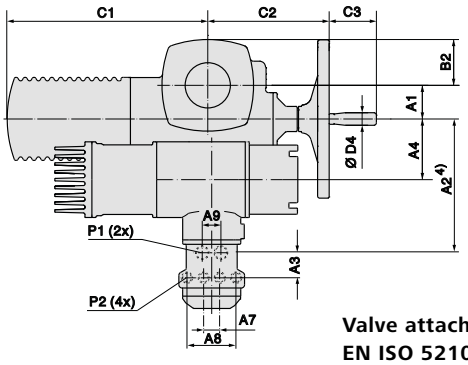


Version for FO cable

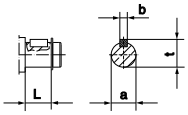


Version[4]: double sealed





Handwheel shaft



1) Only upon specific order
2) In steps of 100 mm length each
3) Standard, other threads on request
4) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame

Valve attachments according to EN ISO 5210, DIN 3210, DIN 3338, for dimensions see overleaf

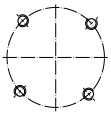
Dimensions	SA 07.2/AC 01.2 SAR 07.2/AC 01.2		SA 07.6/AC 01.2 SAR 07.6/AC 01.2		SA 10.2/AC 01.2 SAR 10.2/AC 01.2	SA 14.2/AC 01.2 SAR 14.2/AC 01.2	SA 14.6/AC 01.2 SAR 14.6/AC 01.2	SA 16.2/AC 01.2 SAR 16.2/AC 01.2
EN ISO 5210 (DIN3210)	F07	F10 (G0)	F07	F10 (G0)	F10 (G0)	F14 (G1/2)	F14 (G1/2)	F16 (G3)
A1	40		40		50	67	67	80
A2 4)	251 (278 4))		251 (278 4))		251 (278 4))	267 (294 4))	267 (294 4))	267 (294 4))
A3	48		48		48	48	48	48
A4	103		103		103	119	119	123.5
A5	–		–		–	8	8	15
A6	–		–		–	16	16	20
A7	32		32		32	32	32	32
A8	96		96		96	96	96	96
A9	35		35		35	35	35	35
B1	238		238		248	286	286	303
B2	62		62		65	90	90	117
C1	265		265		283	389	389	430
C2	186		186		191	242	245	271
C3	63		63		63	94	94	94
Ø D	101		101		121	153	153	190
Ø D1	160		160		200	315	400	500
Ø D2	G 1¼"		G 1¼"		G 2"	G 2½"	G 2½"	G 3"
Ø D3	42 x 3,3		42 x 3.3		60 x 3.7	76 x 3.7	76 x 3.7	89 x 4.1
Ø D4	20		20		20	25	25	25
E	150		150		150	150	150	150
F	115		115		115	115	115	115
G	115		115		115	115	115	115
H1	78		78		80	90	90	110
H2 4)	257 (284 4))		257 (284 4))		257 (284 4))	257 (284 4))	257 (284 4))	257 (284 4))
H3	225		225		225	241	241	245
H4	160		160		170	196	196	235
J	150		150		150	150	150	150
K	75		75		75	75	75	75
L	20		20		24	38.8	45.8	45.8
M	313		313		313	313	313	313
M1	349		349		349	349	349	349
N	173		173		173	173	173	173
P1 3)	2x M25 x 1.5		2x M25 x 1.5		2x M25 x 1.5	2x M25 x 1.5	2x M25 x 1.5	2x M25 x 1.5
P2 3)	4x M20 x 1.5		4x M20 x 1.5		4x M20 x 1.5	4x M20 x 1.5	4x M20 x 1.5	4x M20 x 1.5
HH min.	30		30		30	30	30	30
HH1 min.	180		180		180	180	180	180
Ø a	20 d7		20 d7		20 d7	30 d7	30 d7	30 d7
b	6		6		6	8	8	8
Ø d1	90	125	90	125	125	175	175	210
Ø d2 f12	55	70 (60)	55	70 (60)	70 (60)	100	100	130
Ø d3	70	102	70	102	102	140	140	165
d4	4 x M8	4 x M10	4 x M8	4 x M10	4 x M10	4 x M16	4 x M16	4 x M20
h	3		3		3	4	4	5
t	22.5		22.5		22.5	33	33	33

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

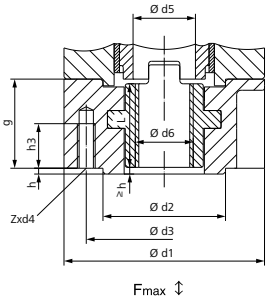
SA/SAR/SAV/SARV 07.2 – 16.2
SAEx/SAREx/SAVEx/SARVEx 07.2 – 16.2
Dimensions Valve attachments according to EN ISO 5210, DIN 3338, DIN 3210

Stem nut

Type
EN ISO 5210 **A**
DIN 3210 **A**



Arrangement of holes d4

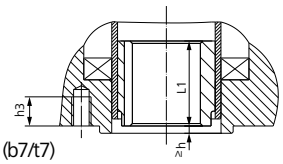


SA.../SAR...	07.2/07.6			10.2		14.2/14.6		16.2	
EN ISO 5210 DIN 3210	F07	F10	G0	F10	G0	F14	G1/2	F16	G3
F max. kN	40	70		70		160		250	
Ø d1	90	125		125		175		210	
Ø d2	55	70	60	70	60	100		130	
Ø d3	70	102		102		140		165	
d4	M8	M10		M10		M16		M20	
Ø d5	36			44		62		80	
Ø d6 max. [5]	Tr 26 ACME 1"	Tr 32 [6] ACME 1¼" [6]		Tr 40 ACME 1½"		Tr 55 ACME 2¼"		Tr 75 ACME 3"	
g	40	50		50		65		80	
h	3			3		4		5	
h3	12	15		15		25		35	
L	37.5	47.5		47.5		61.5		76.5	
Z	4			4		4		4	
Weight kg	1.1	2.8		2.8		6.8		11.7	

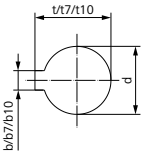
Special bores

Bore with keyway according to DIN 6885-1	Ø d6 H9 max.	22	38		38		57		70
Square	SW max.	20	32		32		42		on request
Hexagon	SW max.	22	32		32		48		on request

Output drive sleeve [3]



Type
EN ISO 5210 **B1** **d** = d7 (b7/t7)
DIN 3210 **B** **d** = d7 (b7/t7)
EN ISO 5210 **B2** [1] d10 max. < **d** < d7
EN ISO 5210 **B3** **d** = d10 (b10/t10)
DIN 3210 **E** **d** = d10 (b10/t10)
EN ISO 5210 **B4** [1] **d** ≤ d10 max.



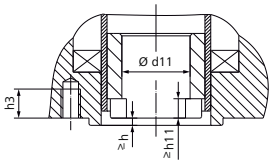
For missing dimensions, refer to type A

SA.../SAR...	07.2/07.6			10.2		14.2/14.6		16.2	
EN ISO 5210 DIN 3210	F07	F10	G0	F10	G0	F14	G1/2	F16	G3
Ø d7 H9	28	42		42		60		80	
b7 JS9	8	12		12		18		22	
t7	31.3	45.3		45.3		64.4		85.4	
Ø d10 H9	16	20		20		30		40	
b10 JS9	5	6		6		8		12	
t10	18.3	22.8		22.8		33.3		43.3	
Ø d10 max.	25	35		35		45		60	
h3	12	13		15		25		30	
L1	35	45		45		65		80	

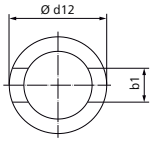
Special bores

Square	SW max.	22	30		30		45		60
Hexagon	SW max.	24	32		32		50		on request

Dog coupling [3]



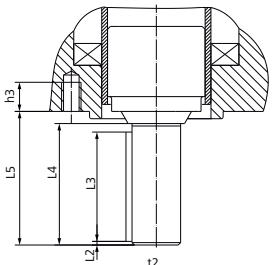
Type
EN ISO 5210 **C** = d11
DIN 3338 **C** = d11



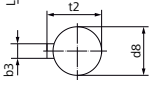
For missing dimensions, refer to type A

SA.../SAR...	07.2/07.6			10.2		14.2/14.6		16.2	
EN ISO 5210 DIN 3210	F07	F10	G0	F10	G0	F14	G1/2	F16	G3
b1 H11	14 [4]	14		14		20		24	
Ø d11 H11	28 [4]	28		28		38		47	
Ø d11 min.	–	20		20		30		40	
Ø d11 max.	–	42 [2] [6]		42		60		80	
Ø d12	36.8	51.8		51.8		73.8		98	
h3	12	13		15		25		30	
h11	7 [4]	7		7		8		10	

Shaft end



Type
EN ISO 5210 **D**
DIN 3210 **D**



For missing dimensions, refer to type A

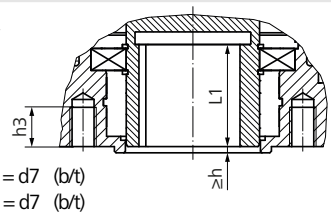
SA.../SAR...	07.2/07.6			10.2		14.2/14.6		16.2	
EN ISO 5210 DIN 3210	F07	F10	G0	F10	G0	F14	G1/2	F16	G3
Ø d8 g6	20			20		30		40	
b3 h9	6			6		8		12	
h3	12	13		15		25		30	
L2	1.5			1.5		2		3	
L3	45			45		63		80	
L4	50			50		70		90	
L5	55			55		76		97	
t2	22.5			22.5		33		43	
Weight kg	0.4			0.7		2		4.3	

1) Dimensions b, t depend on Ø d, refer to DIN 6885-1
2) For rising valve stem Ø d11 max.= Ø d5 of type A
3) Weight included in actuator
4) Dimensions neither complying with EN ISO 5210 nor with DIN 3338
5) Nominal diameter for trapezoidal thread Tr according to DIN 103 or ACME according to ANSI/ASME B 1.5
6) For stem protection tube made of PMMA max. Tr 30 or ACME 1⅛"

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

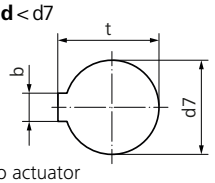
Dimensions Output drives according to EN ISO 5210, DIN 3210

Bore with keyway



Type

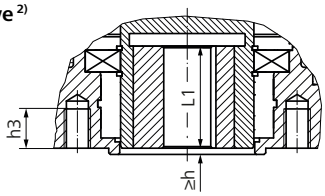
EN ISO 5210 **B1** **d** = d7 (b/t)
DIN 3210 **B** **d** = d7 (b/t)
EN ISO 5210 **B2** [1] d10 max. < **d** < d7



For missing dimensions, refer to actuator

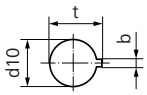
SA.../SAR...	07.2/07.6		10.2	14.2/14.6	16.2
EN ISO 5210	F07	F10	F10	F14	F16
Ø d7 H9	28	42	42	60	80
b JS9	8	12	12	18	22
t	31.3	45.3	45.3	64.4	85.4
Ø d10 max.	20	30	30	45	60
h3	12	15	15	25	30
L1	35	45	45	65	80

Output drive sleeve [2]



Type

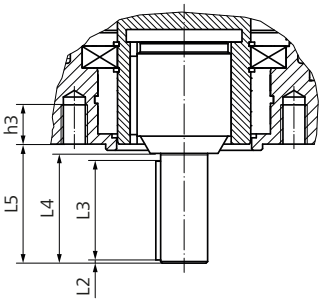
EN ISO 5210 **B3** **d** = d10 (b/t)
DIN 3210 **E** **d** = d10 (b/t)
EN ISO 5210 **B4** [1] **d** ≤ d10 max.



For missing dimensions, refer to actuator

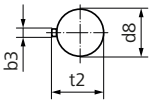
SA.../SAR...	07.2/07.6		10.2	14.2/14.6	16.2
EN ISO 5210	F07	F10	F10	F14	F16
Ø d10 H9	16	20	20	30	40
b JS9	5	6	6	8	12
t	18.3	22.8	22.8	33.3	43.3
Ø d10 max.	20	30	30	45	60
h3	12	15	15	25	30
L1	35	45	45	65	80

Shaft end



Type

EN ISO 5210 **D**
DIN 3210 **D**



For missing dimensions, refer to actuator

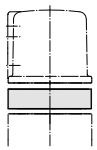
SA.../SAR...	07.2/07.6		10.2	14.2/14.6	16.2
EN ISO 5210	F07	F10	F10	F14	F16
Ø d8 g6	20		20	30	40
b3 h9	6		6	8	12
h3	12	15	15	25	30
L2	1.5		1.5	2	3
L3	45		45	63	80
L4	50		50	70	90
L5	55		55	76	97
t2	22.5		22.5	33	43
Weight kg	0.4		0.7	2	4.3

1) Dimensions b, t depend on Ø dy, refer to DIN 6885-1
2) Weight included in actuator

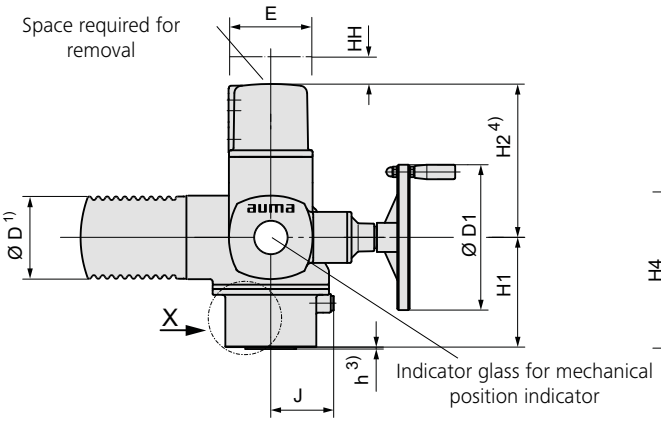
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

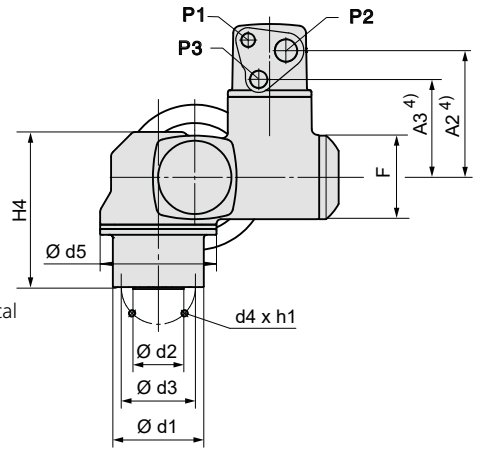
Dimensions Part-turn actuators

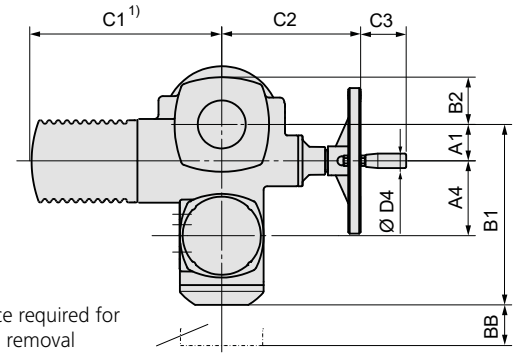
With AUMA plug/socket connector and 3-phase AC motor



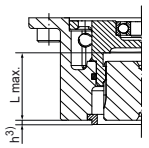
Version [4]: double sealed







Detail X



Output drives according to EN ISO 5211
For dimensions see overleaf

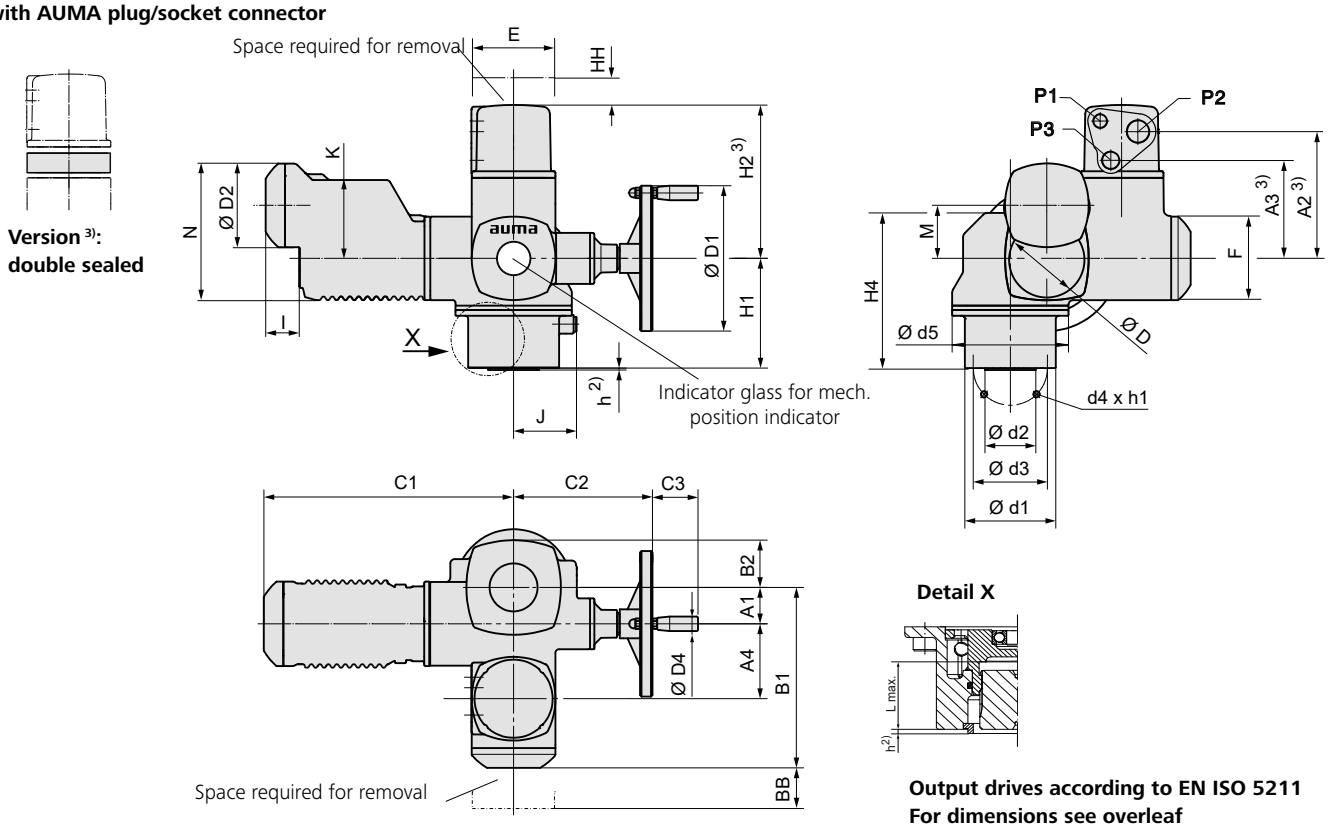
1) Exact dimension depending on motor used
2) Standard, other threads on request
3) Allowance for spigot is not available as standard. The spigot ring is a separate component, available as option.
4) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame
5) Combined flange F05/F07 without spigot (standard). As an alternative an individual flange F07 can be ordered with spigot

Dimensions	SQ 05.2		SQ 07.2			SQ 10.2		SQ 12.2		SQ 14.2	
EN ISO 5211	F05 [5]	F07 [5]	F05 [5]	F07 [5]	F10	F10	F12	F12	F14	F14	F16
A1	40					50		50		50	
A2 [4]	174 (201 [4])					174 (201 [4])		174 (201 [4])		174 (201 [4])	
A3 [4]	134 (161 [4])					134 (161 [4])		134 (161 [4])		134 (161 [4])	
A4	103					103		103		103	
B1	238					248		248		248	
B2	50					65		65		65	
C1 [1]	265					265		265		265	
C2	186					191		191		191	
C3	63					63		63		63	
Ø D [1]	101					101		101		101	
Ø D1	160					200		200		200	
Ø D4	20					20		20		20	
E	115					115		115		115	
F	115					115		115		115	
H1	134		134		160	151	183	175	215	210	260
H2 [4]	210 (237 [4])					210 (237 [4])		210 (237 [4])		210 (237 [4])	
H4	193		193		217	214	246	238	278	273	323
J	69					86		109		128	
L max.	40		40		66	50	82	61	101	75	125
P1 [2]	M20 x 1.5					M20 x 1.5		M20 x 1.5		M20 x 1.5	
P2 [2]	M32 x 1.5					M32 x 1.5		M32 x 1.5		M32 x 1.5	
P3 [2]	M25 x 1.5					M25 x 1.5		M25 x 1.5		M25 x 1.5	
BB min.	180					180		180		180	
HH min.	30					30		30		30	
Ø d1	90		90		125	125	150	150	175	175	210
Ø d2	–		–		70	70	85	85	100	100	130
Ø d3	50	70	50	70	102	102	125	125	140	140	165
d4	4 x M6	4 x M8	4 x M6	4 x M8	4 x M10	4 x M10	4 x M12	4 x M12	4 x M16	4 x M16	4 x M20
Ø d5	125					160		210		225	
h [3]	–		–		2.5	2.5		2.5	3.5	3.5	4.5
h1	12	15	12	15	16	18	19	22	25	29	32

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Part-turn actuators with 1-ph AC motor

with AUMA plug/socket connector



Version 3): double sealed

Output drives according to EN ISO 5211
For dimensions see overleaf

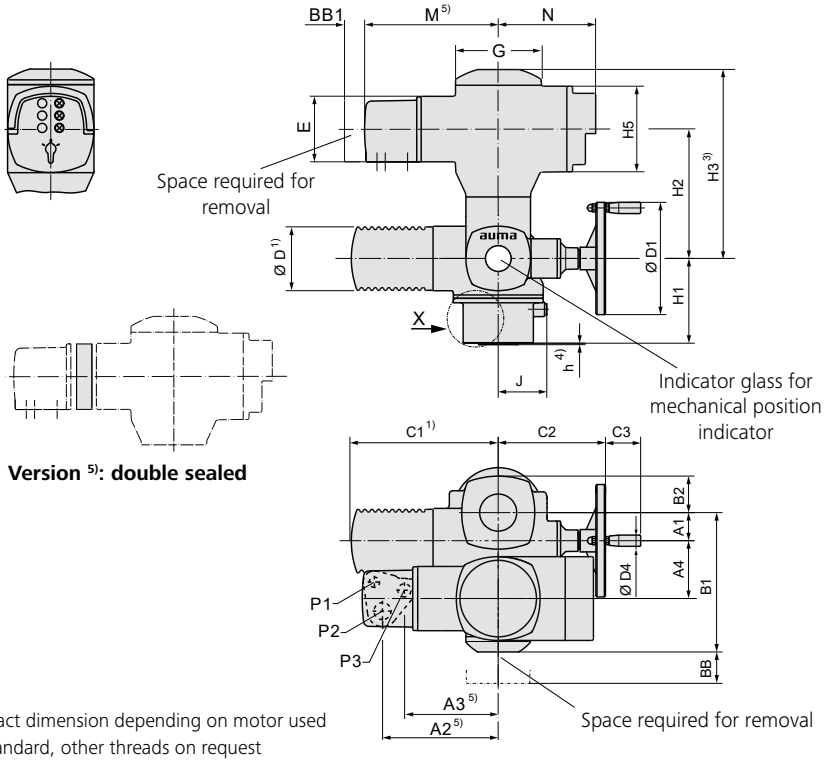
1) Standard, other threads on request
2) Allowance for spigot is not available as standard The spigot ring is a separate component, available as option.
3) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame
4) Combined flange F05/F07 without spigot (standard). As an alternative an individual flange F07 can be ordered with spigot

Dimensions	SQ 05.2		SQ 07.2			SQ 10.2		SQ 12.2		SQ 14.2	
EN ISO 5211	F05 4)	F07 4)	F05 4)	F07 4)	F10	F10	F12	F12	F14	F14	F16
A1	40					50		50		50	
A2 3)	174 (201 3))					174 (201 3))		174 (201 3))		174 (201 3))	
A3 3)	134 (161 3))					134 (161 3))		134 (161 3))		134 (161 3))	
A4	103					103		103		103	
B1	238					248		248		248	
B2	50					65		65		65	
C1	343					343		343		343	
C2	186					191		191		191	
C3	63					63		63		63	
Ø D	107					107		107		107	
Ø D1	160					200		200		200	
Ø D2	115					115		115		115	
Ø D4	20					20		20		20	
E	115					115		115		115	
F	115					115		115		115	
H1	134		134		160	151	183	175	215	210	260
H2 3)	210 (237 3))					210 (237 3))		210 (237 3))		210 (237 3))	
H4	193		193		217	214	246	238	278	273	323
I	46					46		46		46	
J	69					86		109		128	
K	108					108		108		108	
L max.	40		40		66	50	82	61	101	75	125
M	73					73		73		73	
N	188					188		188		188	
P1 1)	M20 x 1.5					M20 x 1.5		M20 x 1.5		M20 x 1.5	
P2 1)	M32 x 1.5					M32 x 1.5		M32 x 1.5		M32 x 1.5	
P3 1)	M25 x 1.5					M25 x 1.5		M25 x 1.5		M25 x 1.5	
BB min.	180					180		180		180	
HH min.	30					30		30		30	
Ø d1	90		90		125	125	150	150	175	175	210
Ø d2	–		–		70	70	85	85	100	100	130
Ø d3	50	70	50	70	102	102	125	125	140	140	165
d4	4 x M6	4 x M8	4 x M6	4 x M8	4 x M10	4 x M10	4 x M12	4 x M12	4 x M16	4 x M16	4 x M20
Ø d5	125					160		210		225	
h 2)	–		–		2.5	2.5		2.5	3.5	3.5	4.5
h1	12	15	12	15	16	18	19	22	25	29	32

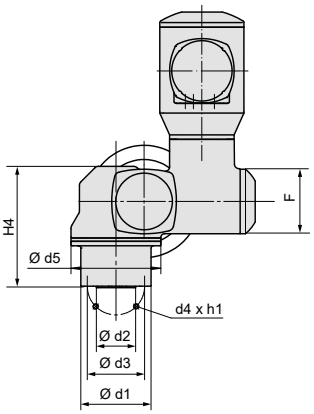
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Part-turn actuators with integral controls AUMA MATIC

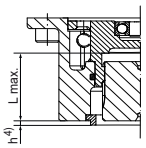
With AUMA plug/socket connector and 3-phase AC motor



Version 5): double sealed



Detail X



1) Exact dimension depending on motor used
2) Standard, other threads on request
3) Exact dimension depending on AM equipment
4) Allowance for spigot is not available as standard
   The spigot ring is a separate component, available as option.
5) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame
6) Combined flange F05/F07 without spigot (standard). As an alternative an individual flange F07 can be ordered with spigot

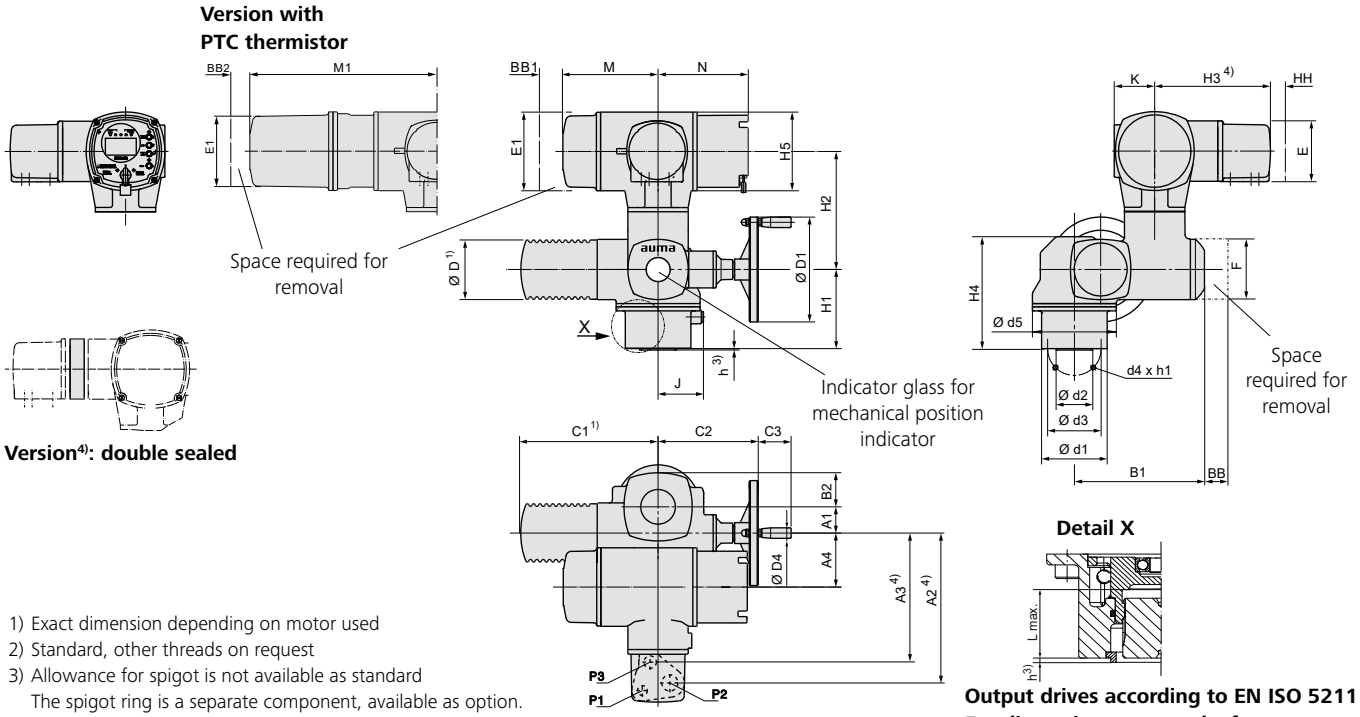
Output drives according to EN ISO 5211
For dimensions see overleaf

Dimensions	SQ 05.2/AM 01.1		SQ 07.2/AM 01.1			SQ 10.2/AM 01.1		SQ 12.2/AM 01.1		SQ 14.2/AM 01.1	
EN ISO 5211	F05 6)	F07 6)	F05 6)	F07 6)	F10	F10	F12	F12	F14	F14	F16
A1	40					50		50		50	
A2 5)	199 (226 5))					199 (226 5))		199 (226 5))		199 (226 5))	
A3 5)	159 (186 5))					159 (186 5))		159 (186 5))		159 (186 5))	
A4	103					103		103		103	
B1	238					248		248		248	
B2	50					65		65		65	
C1 1)	265					265		265		265	
C2	186					191		191		191	
C3	63					63		63		63	
Ø D 1)	101					101		101		101	
Ø D1	160					200		200		200	
Ø D4	20					20		20		20	
E	115					115		115		115	
F	115					115		115		115	
G	150					150		150		150	
H1	134		134		160	151	183	175	215	210	260
H2	232					232		232		232	
H3 3)	337					337		337		337	
H4	193		193		217	214	246	238	278	273	323
H5	150					150		150		150	
J	69					86		109		128	
L max.	40		40		66	50	82	61	101	75	125
M 5)	235 (262 5))					235 (262 5))		235 (262 5))		235 (262 5))	
N	171					171		171		171	
P1 2)	M20 x 1.5					M20 x 1.5		M20 x 1.5		M20 x 1.5	
P2 2)	M32 x 1.5					M32 x 1.5		M32 x 1.5		M32 x 1.5	
P3 2)	M25 x 1.5					M25 x 1.5		M25 x 1.5		M25 x 1.5	
BB min.	180					180		180		180	
BB1 min.	30					30		30		30	
Ø d1	90		90		125	125	150	150	175	175	210
Ø d2	–		–		70	70	85	85	100	100	130
Ø d3	50	70	50	70	102	102	125	125	140	140	165
d4	4 x M6	4 x M8	4 x M6	4 x M8	4 x M10	4 x M10	4 x M12	4 x M12	4 x M16	4 x M16	4 x M20
Ø d5	125					160		210		225	
h 4)	–		–		2.5	2.5		2.5	3.5	3.5	4.5
h1	12	15	15		16	18	19	22	25	29	32

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Part-turn actuators with AC integral controls (also for HART)

With AUMA plug/socket connector and 3-phase AC motor



1) Exact dimension depending on motor used
2) Standard, other threads on request
3) Allowance for spigot is not available as standard
The spigot ring is a separate component, available as option.
4) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame
5) Combined flange F05/F07 without spigot (standard). As an alternative an individual flange F07 can be ordered with spigot

Output drives according to EN ISO 5211
For dimensions see overleaf

Dimensions	SQ 05.2/AC 01.2		SQ 07.2/AC 01.2			SQ 10.2/AC 01.2		SQ 12.2/AC 01.2		SQ 14.2/AC 01.2	
EN ISO 5211	F05 5)	F07 5)	F05 5)	F07 5)	F10	F10	F12	F12	F14	F14	F16
A1	40					50		50		50	
A2 4)	287 (314 4))					287 (314 4))		287 (314 4))		287 (314 4))	
A3 4)	247 (274 4))					247 (274 4))		247 (274 4))		247 (274 4))	
A4	103					103		103		103	
B1	238					248		248		248	
B2	50					65		65		65	
C1 1)	265					265		265		265	
C2	186					191		191		191	
C3	63					63		63		63	
Ø D 1)	101					101		101		101	
Ø D1	160					200		200		200	
Ø D4	20					20		20		20	
E	115					115		115		115	
E1	150					150		150		150	
F	115					115		115		115	
H1	134		134		160	151	183	175	215	210	260
H2	225					225		225		225	
H3 4)	220 (247 4))					220 (247 4))		220 (247 4))		220 (247 4))	
H4	193		193		217	214	246	238	278	273	323
H5	150					150		150		150	
J	69					86		109		128	
K	75					75		75		75	
L max.	40		40		66	50	82	61	101	75	125
M	265					265		265		265	
M1	349					349		349		349	
N	173					173		173		173	
P1 2)	M20 x 1.5					M20 x 1.5		M20 x 1.5		M20 x 1.5	
P2 2)	M32 x 1.5					M32 x 1.5		M32 x 1.5		M32 x 1.5	
P3 2)	M25 x 1.5					M25 x 1.5		M25 x 1.5		M25 x 1.5	
BB min.	180					180		180		180	
BB1 min.	70					70		70		70	
BB2 min.	90					90		90		90	
HH min.	30					30		30		30	
Ø d1	90		90		125	125	150	150	175	175	210
Ø d2	–		–		70	70	85	85	100	100	130
Ø d3	50	70	50	70	102	102	125	125	140	140	165
d4	4 x M6	4 x M8	4 x M6	4 x M8	4 x M10	4 x M10	4 x M12	4 x M12	4 x M16	4 x M16	4 x M20
Ø d5	125					160		210		225	
h 3)	–		–		2.5	2.5		2.5	3.5	3.5	4.5
h1	12	15	15		16	18	19	22	25	29	32

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

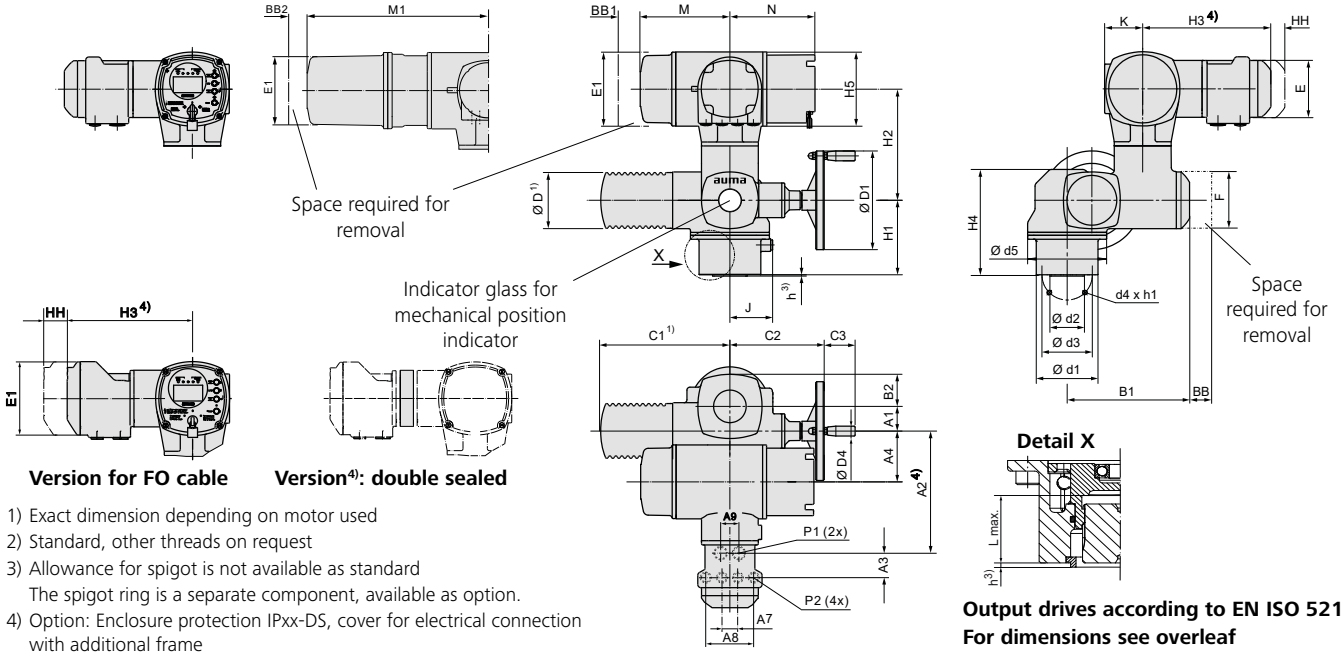
SQ 05.2 – SQ 14.2/SQR 05.2 – SQR 14.2 with AC 01.2 – Fieldbus

(Profibus DP, Modbus RTU, Foundation Fieldbus)

Dimensions Part-turn actuators with AC integral controls

With AUMA plug/socket connector and 3-phase AC motor

Version with PTC thermistor



Version for FO cable

Version[4]: double sealed

Output drives according to EN ISO 5211
For dimensions see overleaf

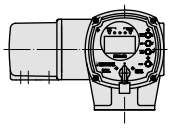
1) Exact dimension depending on motor used
2) Standard, other threads on request
3) Allowance for spigot is not available as standard
   The spigot ring is a separate component, available as option.
4) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame
5) Combined flange F05/F07 without spigot (standard). As an alternative an individual flange F07 can be ordered with spigot

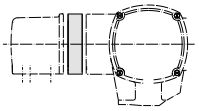
Dimensions	SQ 05.2/AC 01.2		SQ 07.2/AC 01.2			SQ 10.2/AC 01.2		SQ 12.2/AC 01.2		SQ 14.2/AC 01.2	
EN ISO 5211	F05 5)	F07 5)	F05 5)	F07 5)	F10	F10	F12	F12	F14	F14	F16
A1	40					50		50		50	
A2 4)	251 (278 4))					251 (278 4))		251 (278 4))		251 (278 4))	
A3	48					48		48		48	
A4	103					103		103		103	
A7	32					32		32		32	
A8	96					96		96		96	
A9	35					35		35		35	
B1	238					248		248		248	
B2	50					65		65		65	
C1 1)	265					265		265		265	
C2	186					191		191		191	
C3	63					63		63		63	
Ø D 1)	101					101		101		101	
Ø D1	160					200		200		200	
Ø D4	20					20		20		20	
E	115					115		115		115	
E1	150					150		150		150	
F	115					115		115		115	
H1	134		134		160	151	183	175	215	210	260
H2	225					225		225		225	
H3 4)	257 (284 4))					257 (284 4))		257 (284 4))		257 (284 4))	
H4	193		193		217	214	246	238	278	273	323
H5	150					150		150		150	
J	69					86		109		128	
K	75					75		75		75	
L max.	40		40		66	50	82	61	101	75	125
M	265					265		265		265	
M1	349					349		349		349	
N	173					173		173		173	
P1 2)	2x M25 x 1,5					2x M25 x 1,5		2x M25 x 1,5		2x M25 x 1,5	
P2 2)	4x M20 x 1,5					4x M20 x 1,5		4x M20 x 1,5		4x M20 x 1,5	
BB min.	180					180		180		180	
BB1 min.	70					70		70		70	
BB2 min.	90					90		90		90	
HH min.	30					30		30		30	
Ø d1	90		90		125	125	150	150	175	175	210
Ø d2	–		–		70	70	85	85	100	100	130
Ø d3	50	70	50	70	102	102	125	125	140	140	165
d4	4 x M6	4 x M8	4 x M6	4 x M8	4 x M10	4 x M10	4 x M12	4 x M12	4 x M16	4 x M16	4 x M20
Ø d5	125					160		210		225	
h 3)	–		–		2.5	2.5		2.5	3.5	3.5	4.5
h1	12	15	12	15	16	18	19	22	25	29	32

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

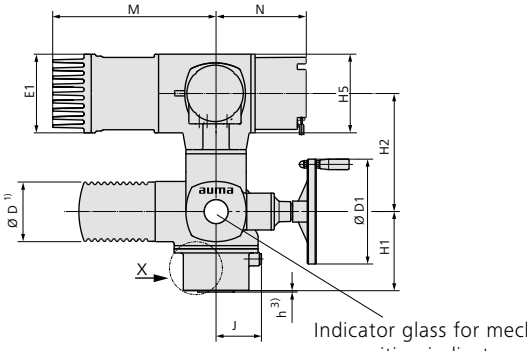
Dimensions Variable operating times part-turn actuators with integral actuator controls (also for HART)

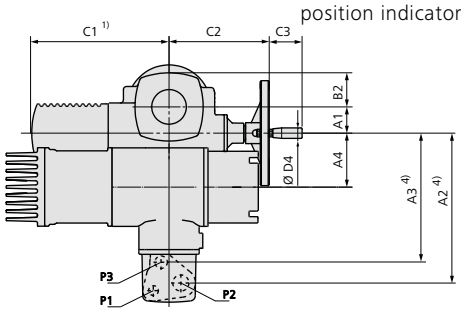
With AUMA plug/socket connector and 3-phase AC motor

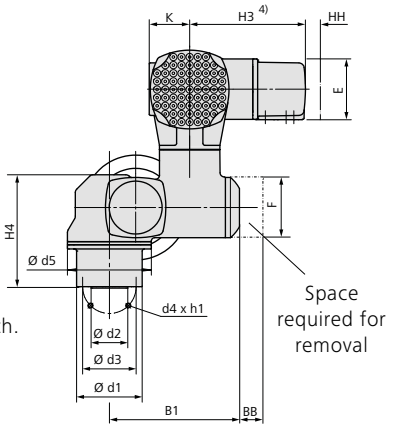




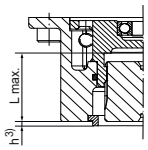
Version[4]: double sealed







Detail X



1) Exact dimension depending on motor used
2) Standard, other threads on request
3) Allowance for spigot is not available as standard
The spigot ring is a separate component, available as option.
4) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame
5) Combined flange F05/F07 without spigot (standard). As an alternative an individual flange F07 can be ordered with/without spigot

Output drives according to EN ISO 5211
For dimensions see overleaf

Dimensions	SQV 05.2/ACV 01.2		SQV 07.2/ACV 01.2			SQV 10.2/ACV 01.2		SQV 12.2/ACV 01.2		SQV 14.2/ACV 01.2	
EN ISO 5211	F05 5)	F07 5)	F05 5)	F07 5)	F10	F10	F12	F12	F14	F14	F16
A1	40					50		50		50	
A2 4)	287 (314 4))					287 (314 4))		287 (314 4))		287 (314 4))	
A3 4)	247 (274 4))					247 (274 4))		247 (274 4))		247 (274 4))	
A4	103					103		103		103	
B1	238					248		248		248	
B2	50					65		65		65	
C1 1)	265					265		265		265	
C2	186					191		191		191	
C3	63					63		63		63	
Ø D 1)	101					101		101		101	
Ø D1	160					200		200		200	
Ø D4	20					20		20		20	
E	115					115		115		115	
E1	150					150		150		150	
F	115					115		115		115	
H1	134		134		160	151	183	175	215	210	260
H2	225					225		225		225	
H3 4)	220 (247 4))					220 (247 4))		220 (247 4))		220 (247 4))	
H4	193		193		217	214	246	238	278	273	323
H5	150					150		150		150	
J	69					86		109		128	
K	75					75		75		75	
L max.	40		40		66	50	82	61	101	75	125
M	313					313		313		313	
N	173					173		173		173	
P1 2)	M20 x 1.5					M20 x 1.5		M20 x 1.5		M20 x 1.5	
P2 2)	M32 x 1.5					M32 x 1.5		M32 x 1.5		M32 x 1.5	
P3 2)	M25 x 1.5					M25 x 1.5		M25 x 1.5		M25 x 1.5	
BB min.	180					180		180		180	
HH min.	30					30		30		30	
Ø d1	90		90		125	125	150	150	175	175	210
Ø d2	–		–		70	70	85	85	100	100	130
Ø d3	50	70	50	70	102	102	125	125	140	140	165
d4	4 x M6	4 x M8	4 x M6	4 x M8	4 x M10	4 x M10	4 x M12	4 x M12	4 x M16	4 x M16	4 x M20
Ø d5	125					160		210		225	
h 3)	–		–		2.5	2.5		2.5	3.5	3.5	4.5
h1	12	15	12	15	16	18	19	22	25	29	32

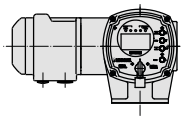
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

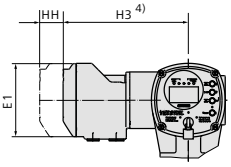
SQV 05.2 – SQV 14.2/SQRV 05.2 – SQRV 14.2 with ACV 01.2 – Fieldbus

(Profibus DP, Modbus RTU, Foundation Fieldbus)

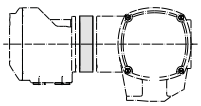
Dimensions Variable operating times part-turn actuators with ACV integral actuator controls

With AUMA plug/socket connector and 3-phase AC motor

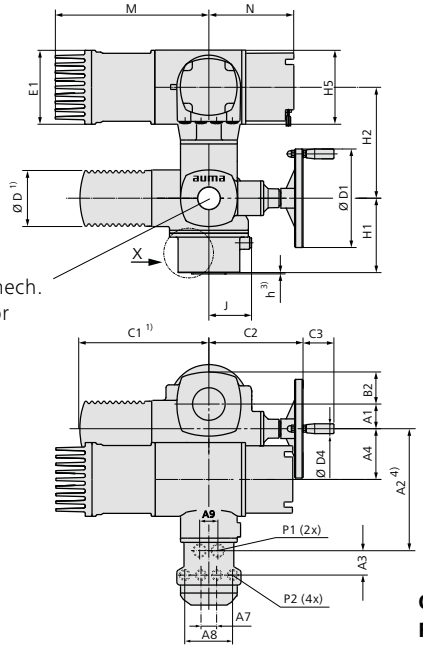


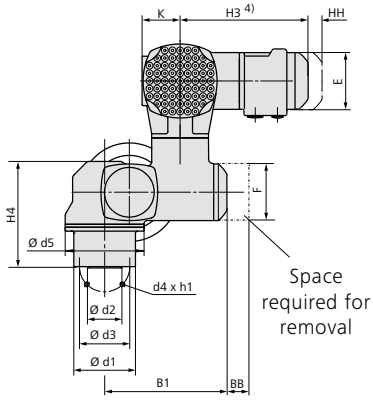


Version for FO cable

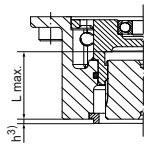


Version 4): double sealed





Detail X



Output drives according to EN ISO 5211
For dimensions see overleaf

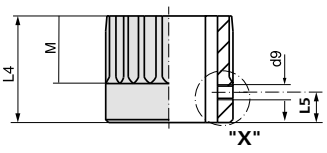
1) Exact dimension depending on motor used
2) Standard, other threads on request
3) Allowance for spigot is not available as standard
The spigot ring is a separate component, available as option.
4) Option: Enclosure protection IPxx-DS, cover for electrical connection with additional frame
5) Combined flange F05/F07 without spigot (standard). As an alternative an individual flange F07 can be ordered with/without spigot

Dimensions	SQV 05.2/ACV 01.2		SQV 07.2/ACV 01.2			SQV 10.2/ACV 01.2		SQV 12.2/ACV 01.2		SQV 14.2/ACV 01.2	
EN ISO 5211	F05 5)	F07 5)	F05 5)	F07 5)	F10	F10	F12	F12	F14	F14	F16
A1	40					50		50		50	
A2 4)	251 (278 4))					251 (278 4))		251 (278 4))		251 (278 4))	
A3	48					48		48		48	
A4	103					103		103		103	
A7	32					32		32		32	
A8	96					96		96		96	
A9	35					35		35		35	
B1	238					248		248		248	
B2	50					65		65		65	
C1 1)	265					265		265		265	
C2	186					191		191		191	
C3	63					63		63		63	
Ø D 1)	101					101		101		101	
Ø D1	160					200		200		200	
Ø D4	20					20		20		20	
E	115					115		115		115	
E1	150					150		150		150	
F	115					115		115		115	
H1	134		134		160	151	183	175	215	210	260
H2	225					225		225		225	
H3 4)	257 (284 4))					257 (284 4))		257 (284 4))		257 (284 4))	
H4	193		193		217	214	246	238	278	273	323
H5	150					150		150		150	
J	69					86		109		128	
K	75					75		75		75	
L max.	40		40		66	50	82	61	101	75	125
M	313					313		313		313	
N	173					173		173		173	
P1 2)	2x M25 x 1.5					2x M25 x 1.5		2x M25 x 1.5		2x M25 x 1.5	
P2 2)	4x M20 x 1.5					4x M20 x 1.5		4x M20 x 1.5		4x M20 x 1.5	
BB min.	180					180		180		180	
HH min.	30					30		30		30	
Ø d1	90		90		125	125	150	150	175	175	210
Ø d2	–		–		70	70	85	85	100	100	130
Ø d3	50	70	50	70	102	102	125	125	140	140	165
d4	4 x M6	4 x M8	4 x M6	4 x M8	4 x M10	4 x M10	4 x M12	4 x M12	4 x M16	4 x M16	4 x M20
Ø d5	125					160		210		225	
h 3)	–		–		2.5	2.5		2.5	3.5	3.5	4.5
h1	12	15	12	15	16	18	19	22	25	29	32

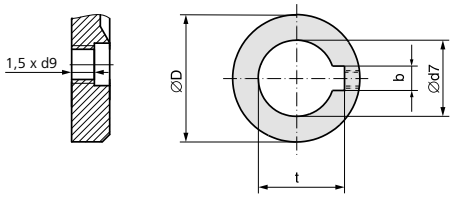
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SQ/SQR/SQV/SQRV 05.2 – 14.2
SQEx/SQREx/SQVEx/SQRVEx 05.2 – 14.2
Dimensions Couplings according to EN ISO 5211

Bore according to EN ISO 5211 with keyway according to DIN 6885-1

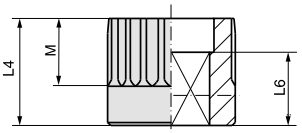


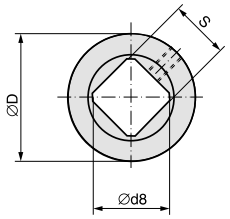
Detail X



SQ../SQR..	05.2		07.2		10.2		12.2		14.2	
EN ISO 5211	F05	F07	F07	F10	F10	F12	F12	F14	F14	F16
Ø D	41.75		41.75		51.75		67.6		81.6	
b JS9 [1]	6		6		8		10		14	
Ø d7 H8 [2]	18		22		28		36		48	
Ø d7 max.	25.4		25.4		38		50		60	
d9 [3]	M5		M5		M6		M6		M6	
L4	35		35	60	45	75	55	95	65	115
L5 [3]	8		8		10		10		10	
M	20		20		30		40		47	40
t [1]	20.8		24.8		31.3		39.3		51.8	

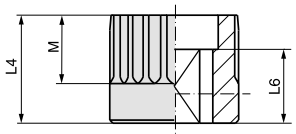
Square bore according to EN ISO 5211

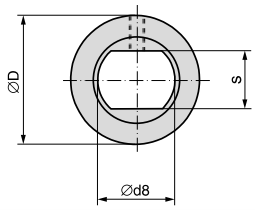




SQ../SQR..	05.2		07.2		10.2		12.2		14.2	
EN ISO 5211	F05	F07	F07	F10	F10	F12	F12	F14	F14	F16
Ø D	41.75		41.75		51.75		67.6		81.6	
Ø d8 min. [2]	18.1		22.2		28.2		36.2		48.2	
Ø d8 max.	28.2		28.2		40.2 [4]		48.2		60.2	
L4	35		35	60	45	75	55	95	65	115
L6 min.	30		30		30		30		40	
M	20		20		30		40		47	40
s H11 [2]	14		17		22		27		36	
s H11 max.	22		22		30 [4]		36		46	

Two-flat according to EN ISO 5211

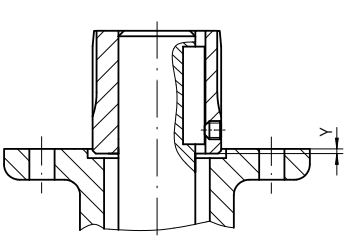


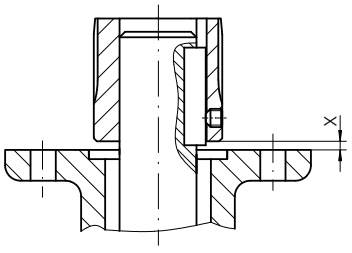


SQ../SQR..	05.2		07.2		10.2		12.2		14.2	
EN ISO 5211	F05	F07	F07	F10	F10	F12	F12	F14	F14	F16
Ø D	41.75		41.75		51.75		67.6		81.6	
Ø d8 min. [2]	18.1		22.2		28.2		36.2		48.2	
Ø d8 max.	28.2		28.2		36.2		48.2 (48 [5])		60.2	
L4	35		35	60	45	75	55	95	65	115
L6 min.	25		25		25		30		40	
M	20		20		30		40		47	40
s H11 [2]	14		17		22		27		36	
s H11 max.	22		22		27		36 (41 [5])		46	

Mounting position of the coupling within fitting dimensions according to AUMA definition

X max.	3	4	5	8
Y max.	2	5	10	10



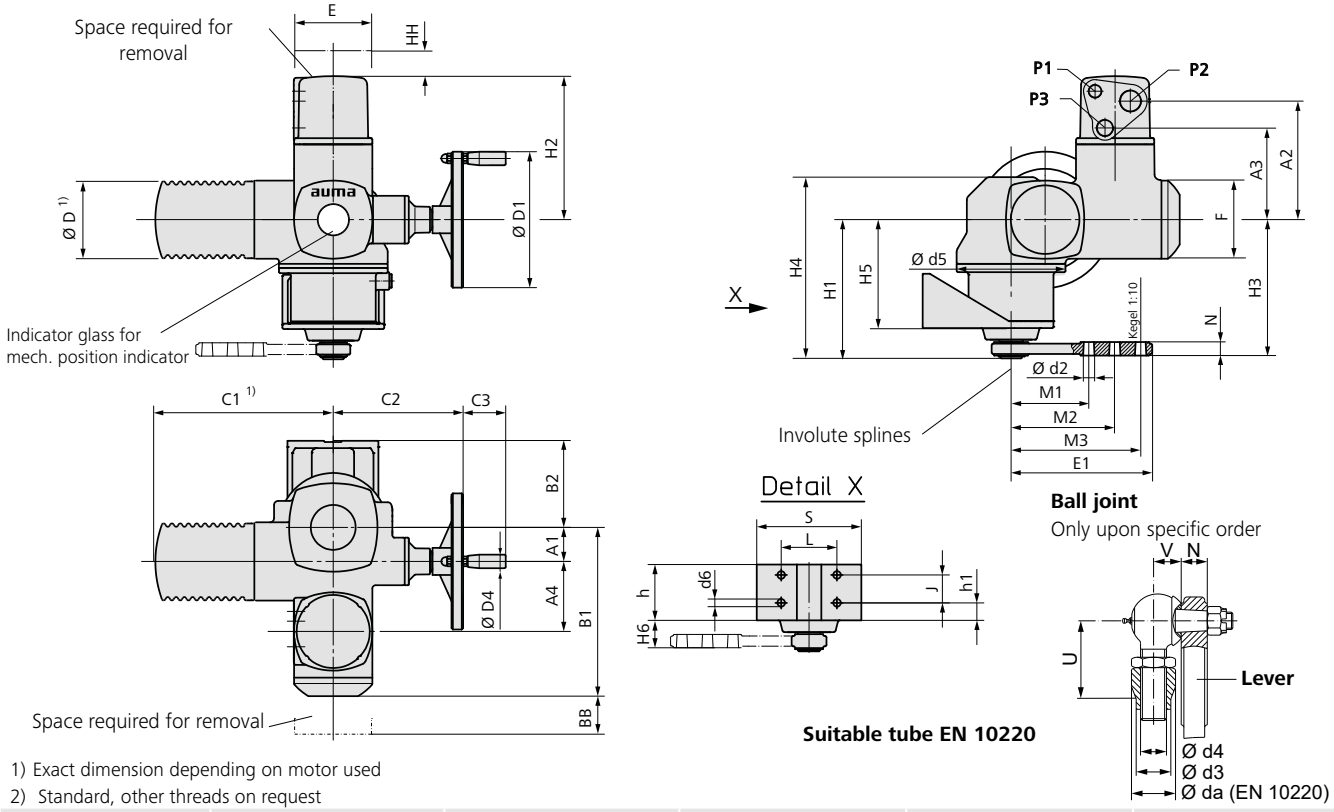


1) Dimensions depend on Ø d7, refer to DIN 6885-1
2) Recommended size according to EN ISO 5211
3) Thread with grub screw
4) According to DIN 79
5) According to DIN 475

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions SQ part-turn actuators with base and lever

With AUMA plug/socket connector and 3-phase AC motor



1) Exact dimension depending on motor used

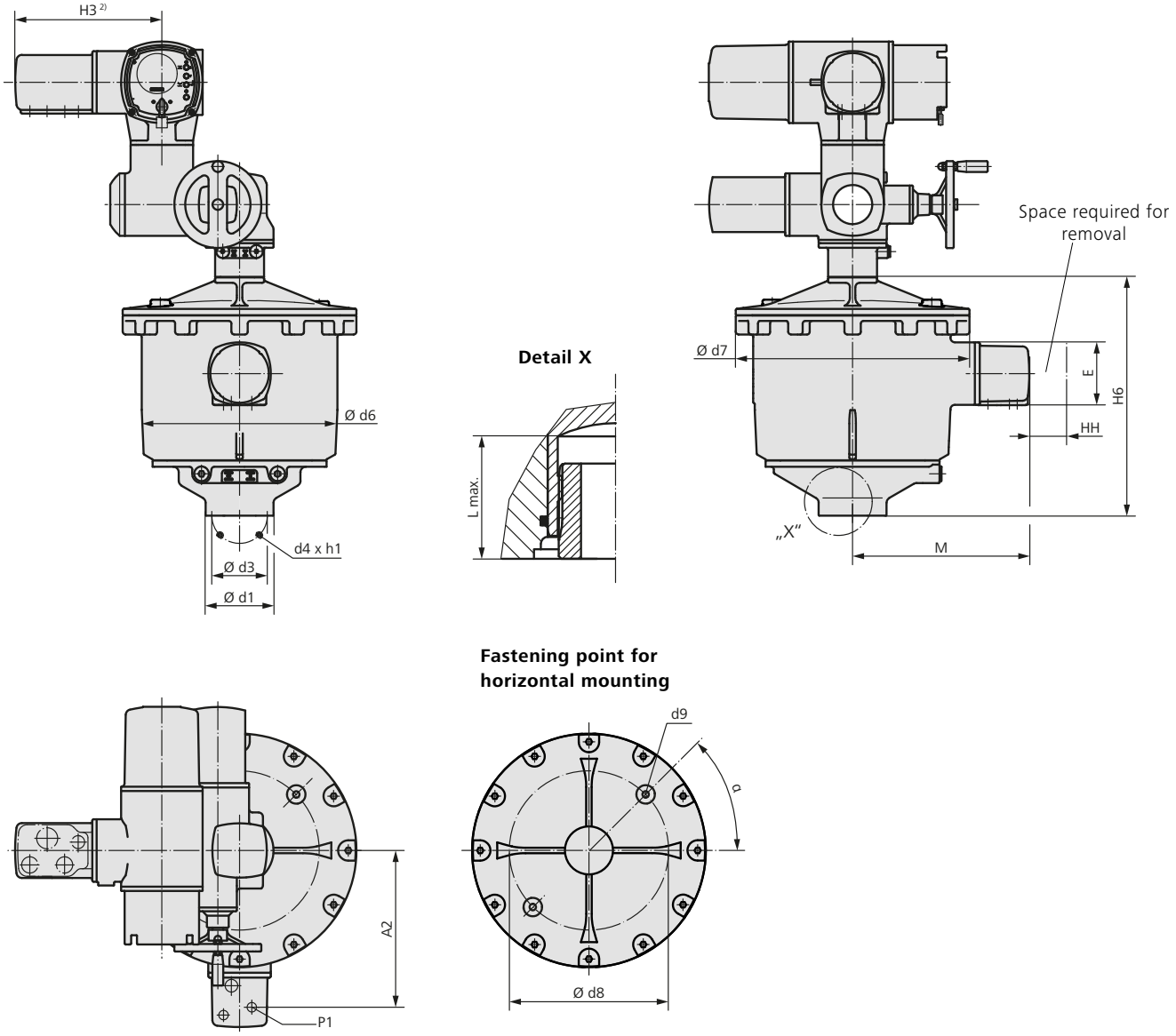
2) Standard, other threads on request

Dimensions	SQ 05.2	SQ 07.2	SQ 10.2	SQ 12.2	SQ 14.2
A1	40		50	50	50
A2	174		174	174	174
A3	134		134	134	134
A4	103		103	103	103
B1	238		248	248	248
B2	110		130	170	180
C1 1)	265		265	265	265
C2	186		191	191	191
C3	63		63	63	63
Ø D 1)	101		101	101	101
Ø D1	160		200	200	200
Ø D4	20		20	20	20
E	115		115	115	115
E1	218		218	273	273
F	115		115	115	115
H1	214		206	239	281
H2	210		210	210	210
H3	210		201	233	275
H4	273		269	302	344
H5	170		161	188	225
H6	40		40	45	50
J	40		40	45	50
M1	150		150	150	150
M2	200		200	200	200
M3	–		–	250	250
N h11	20		20	26	26
P1 2)	M20 x 1.5		M20 x 1.5	M20 x 1.5	M20 x 1.5
P2 2)	M32 x 1.5		M32 x 1.5	M32 x 1.5	M32 x 1.5
P3 2)	M25 x 1.5		M25 x 1.5	M25 x 1.5	M25 x 1.5
S	150		150	190	225
L	80		80	110	110
U	58		58	75	75
V	23		23	28	28
BB min.	180		180	180	180
HH min.	30		30	30	30
Ø d2 H8	16		16	22	22
Ø d3	27		27	34	34
Ø d4	M16 x 1.5		M16 x 1.5	M28 x 1,5	M28 x 1,5
Ø d5	125		160	210	225
Ø d6	11		11	14	18
Ø da	33.7 x 3.2		33.7 x 3.2	42.4 x 4	42.4 x 4
h	80		80	90	100
h1	25		25	30	35

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

FQM 05.1 – FQM 12.1
SQ 05.2 – SQ 12.2 with AC 01.2
Dimensions Fail safe unit

with AUMA plug/socket connector



1) Flange for mounting part-turn actuator
2) Electrical connection with elevated terminal compartment. Exact dimension depending on electrical connection used
3) Combined flange F07/F10
For all other dimensions, please refer to "Dimensions Part-turn actuators"

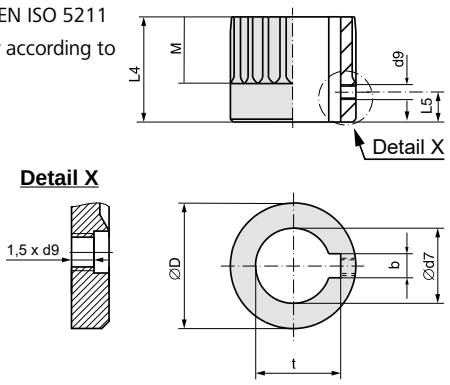
Output drives acc. to EN ISO 5211
For dimensions see overleaf

Dimensions	FQM 05.1/FQM 07.1		FQM 10.1		FQM 12.1		
Part-turn actuator	SQ 05.2/SQ 07.2		SQ 10.2		SQ 12.2		
EN ISO 5211	F07 3)	F10 3)	F10	F12	F12	F14	F16
A2	289		304			304	
E	115		115			115	
H3 2)	270		270			270	
H6	439		606	566	566	606	616
HH min.	30		30			30	
M	325		340			340	
L max.	45		100	60	60	100	110
P1	M20 x 1.5		M20 x 1.5			M20 x 1.5	
Ø d1	125	125	125	150	150	175	210
Ø d3	70	102	102	125	125	140	165
d4	4 x M8	4 x M10	4 x M10	4 x M12	4 x M12	4 x M16	4 x M20
Ø d6	360		474			474	
Ø d7	430		550			550	
Ø d8	260		350			350	
d9	M10		M12			M12	
h1	15	16	18	21	21	25	32
α	45°		45 °			45 °	
EN ISO 5211 1)	F07		F12			F12	

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

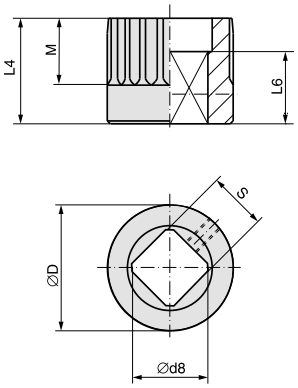
FQM 05.1 – FQM 12.1
SQ 05.2 – SQ 12.2 with AC 01.2
Dimensions Couplings according to EN ISO 5211

Bore acc. to EN ISO 5211
With keyway according to DIN 6885-1



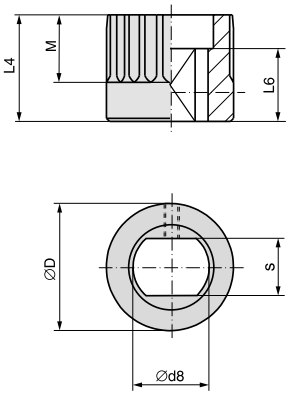
Dimensions	FQM 05.1/FQM 07.1		FQM 10.1		FQM 12.1		
EN ISO 5211	F07	F10	F10	F12	F12	F14	F16
Ø D	41.75		67.6		67.6		
b JS9 [1]	6		10		10		
Ø d7 H8 [2]	22		36		36		
Ø d7 max.	25.4		50		50		
d9 [3]	M5		M6		M6		
L4	35		95	55	55	95	105
L5 [3]	8		10		10		
M	20		40		40		
t [1]	24.8		39.3		39.3		

Square bore
According to EN ISO 5211



Dimensions	FQM 05.1/FQM 07.1		FQM 10.1		FQM 12.1		
EN ISO 5211	F07	F10	F10	F12	F12	F14	F16
Ø D	41.75		67.6		67.6		
Ø d8 min. [2]	22.2		36.2		36.2		
Ø d8 max.	28.2		48.2		48.2		
L4	35		95	55	55	95	105
L6 min.	30		30		30		
M	20		40		40		
s H11 [2]	17		27		27		
s H11 max.	22		36		36		

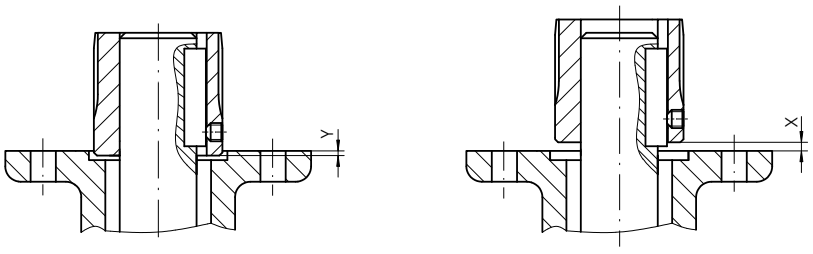
Bore with two-flats
According to EN ISO 5211



Dimensions	FQM 05.1/FQM 07.1		FQM 10.1		FQM 12.1		
EN ISO 5211	F07	F10	F10	F12	F12	F14	F16
Ø D	41.75		67.6		67.6		
Ø d8 min. [2]	22.2		36.2		36.2		
Ø d8 max.	28.2		48.2 (48 [4])		48.2 (48 [4])		
L4	35		95	55	55	95	105
L6 min.	25		30		30		
M	20		40		40		
s H11 [2]	17		27		27		
s H11 max.	22		36 (41 [4])		36 (41 [4])		

Mounting position of coupling

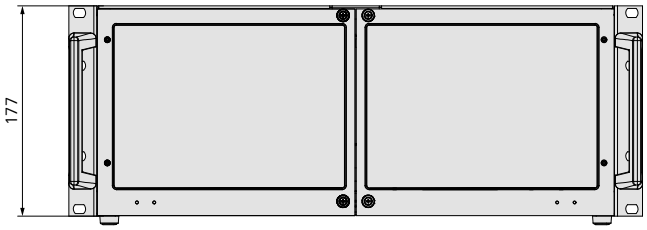
X max.	5	6	6
Y max.	5	10	10



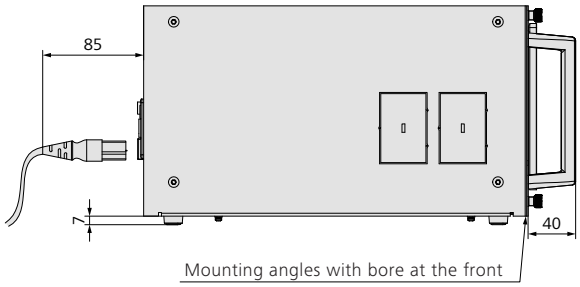
1) Dimensions depend on Ø d7, refer to DIN 6885-1
2) Recommended size according to EN ISO 5211
3) Thread with grub screw
4) According to DIN 475

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

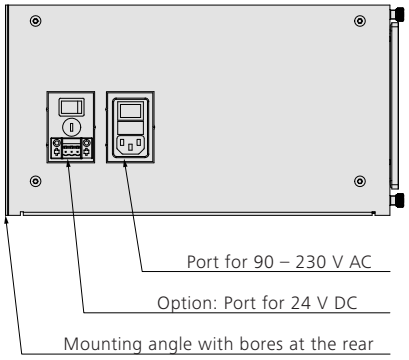
Dimensions SIMA² Master Station

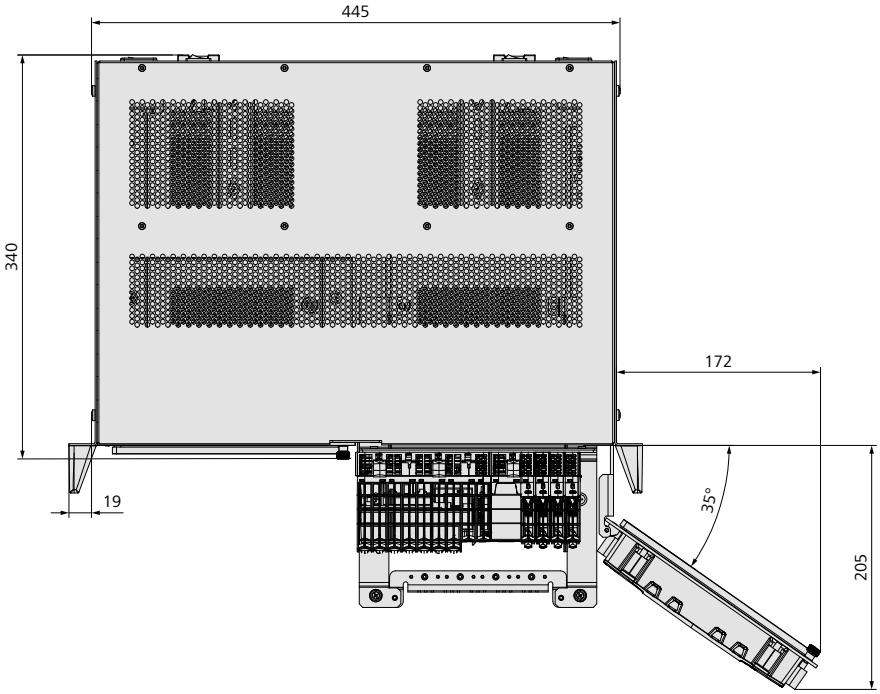


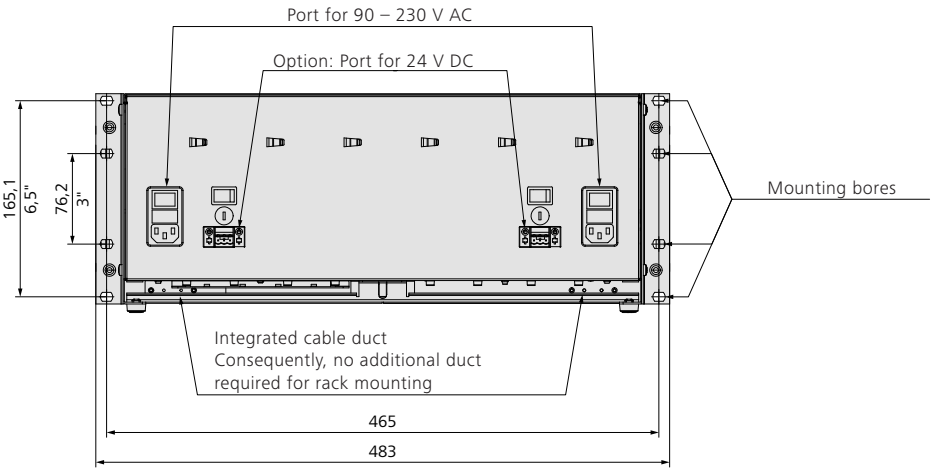
Option: Desktop unit with knuckle feet and handles



Option: For wall mounting with voltage input at left or right side

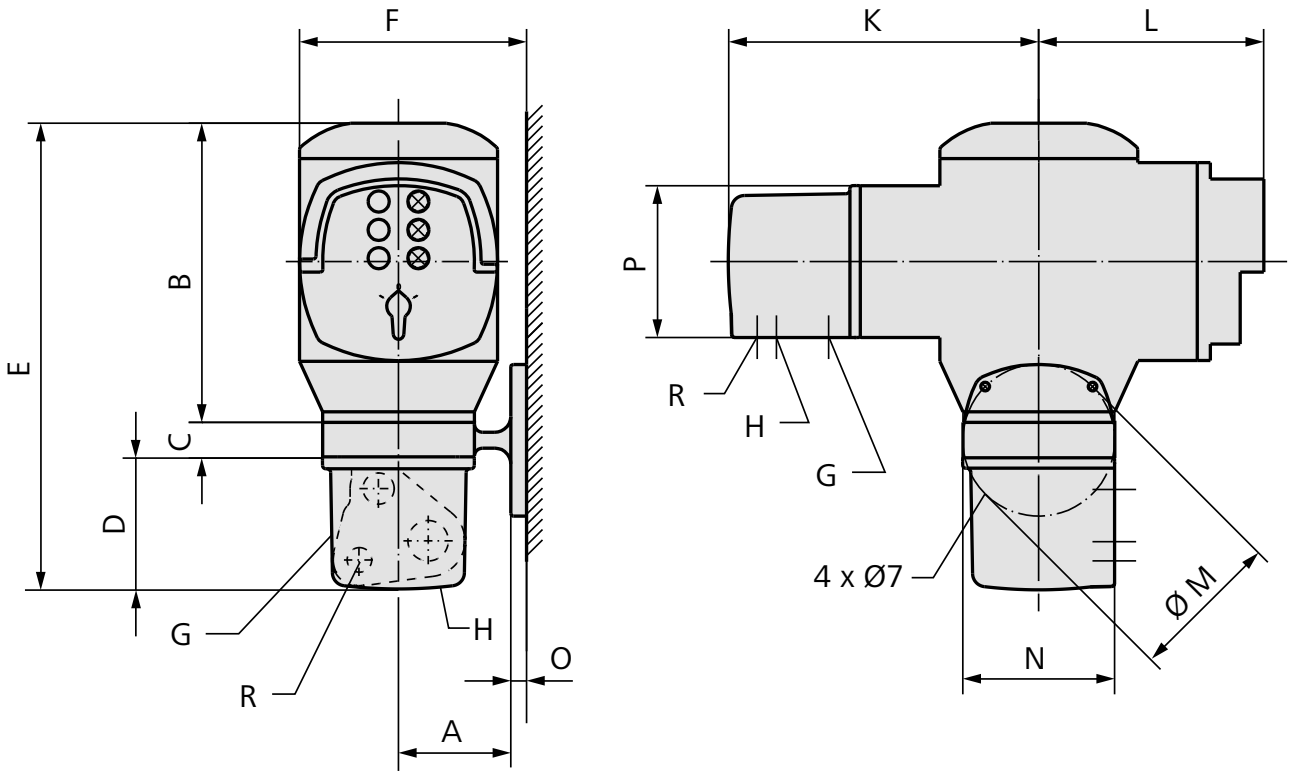






We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

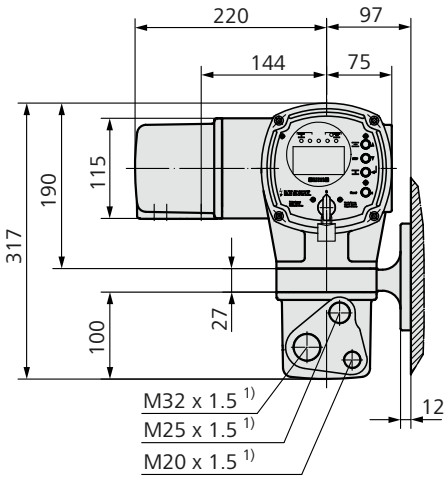
Dimensions AM 01.1/AM 02.1 Wall bracket

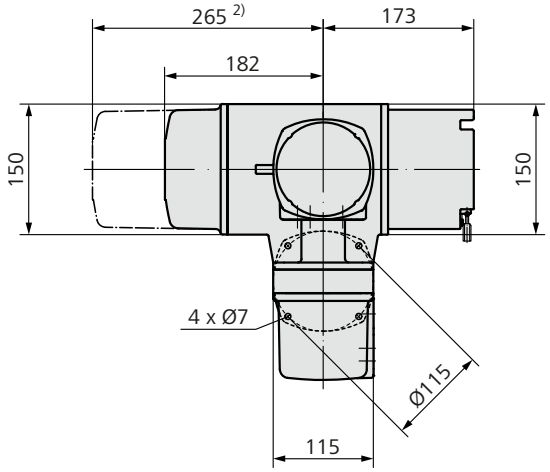


Dimensions	AM 01.1	AM 02.1
A	97	
B	227	282
C	27	
D	100	
E	354	409
F	172	
G	M25 x 1.5	
H	M32 x 1.5	
K	235	
L	171	
M	115	
N	115	
O	12	
P	115	
R	M20 x 1.5	
Weight [kg]	7.5	9

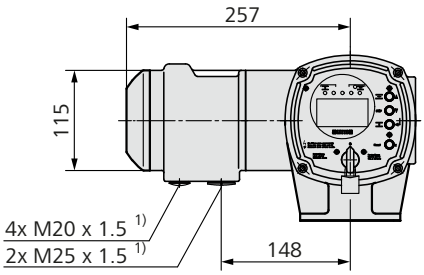
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions AC 01.2 Wall bracket

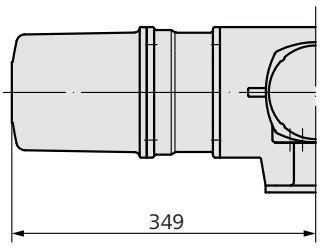




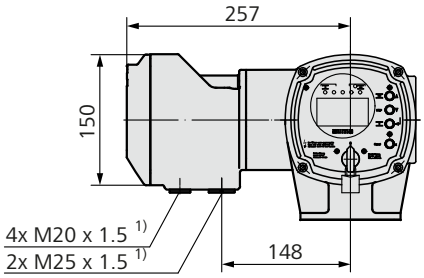
Version with fieldbus



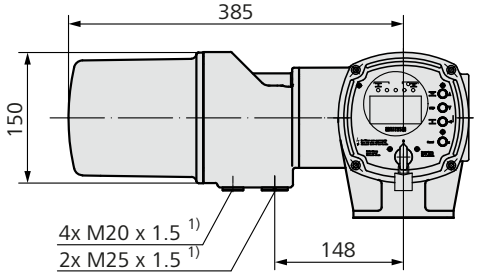
Version with thermal overload relay



Version with fieldbus FOC



Version with Modbus TCP/IP

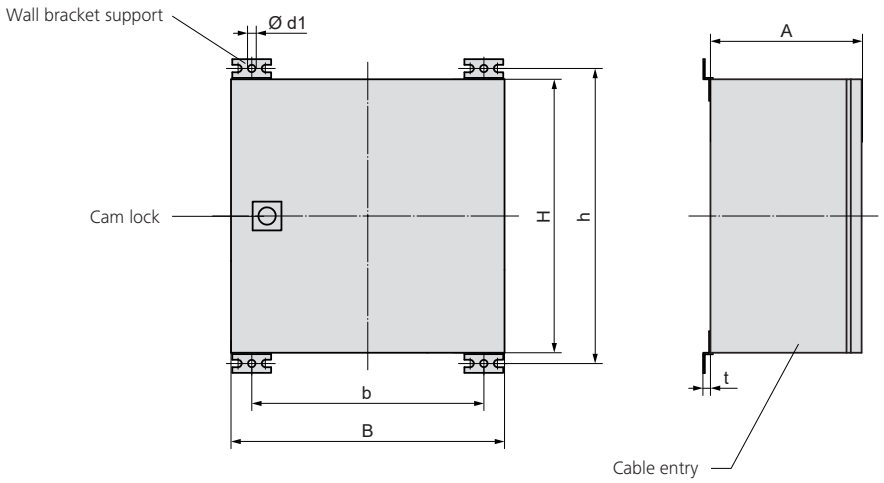


1) Thread for steel conduit subject to explicit order.
2) High housing cover only in combination with the options:
   - Switch gear A3
   - Low temperature version with heating system
   - DC versions 24 V DC to 220 V DC
   - Mains voltage tolerance –30 %
   - Auxiliary voltage output 115 V AC

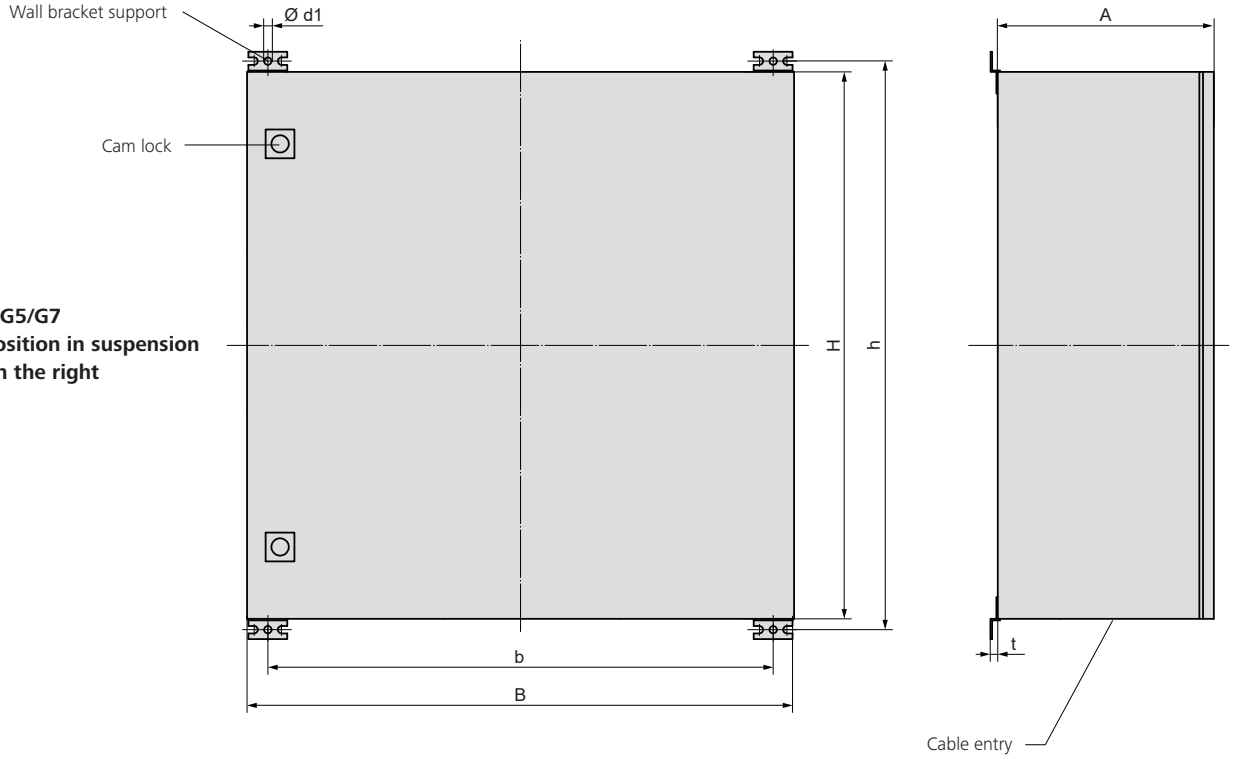
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Control box

Control box G3
Mounting position in suspension
Door stop on the right



Control box G5/G7
Mounting position in suspension
Door stop on the right

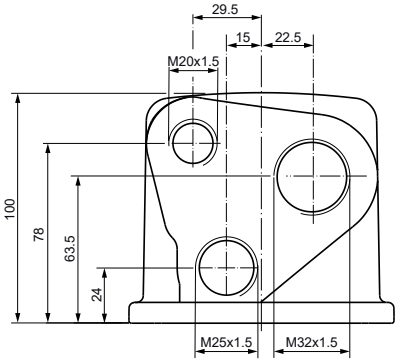


Dimensions	G3	G5	G7
A	210	210	300
B	380	500	760
H	380	500	760
b	322	442	702
Ø d1	4 x 10.2	4 x 10.2	4 x 10.2
h	410	530	790
t	10	10	10

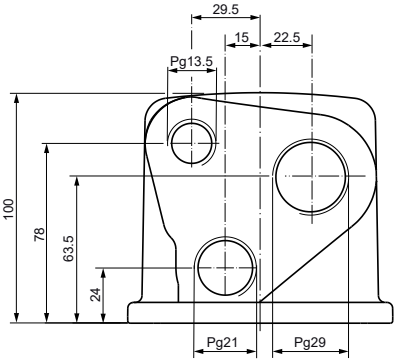
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Electrical connection Standard S and elevated terminal compartment SH

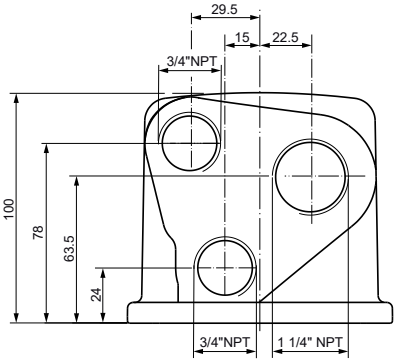
SA 07.2 – SA16.2/SAR 07.2 – SAR 16.2
SQ 05.2 – SQ 14.2/SQR 05.2 – SQR 14.2
SA 07.1 – SA 16.1/SAR 07.1 – SAR 16.1
SG 05.1 – SG 12.1/SGR 05.1 – SGR 12.1
AC 01.2
AC 01.1
AM 01.1 – AM 02.1



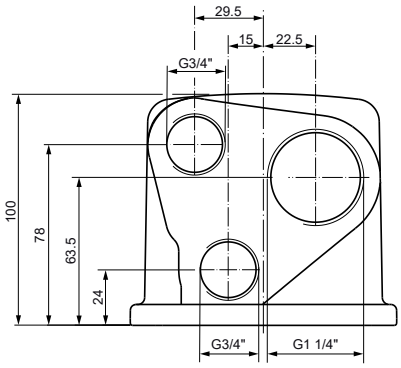
S0-105



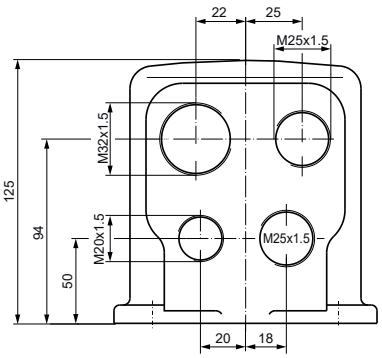
S0-003



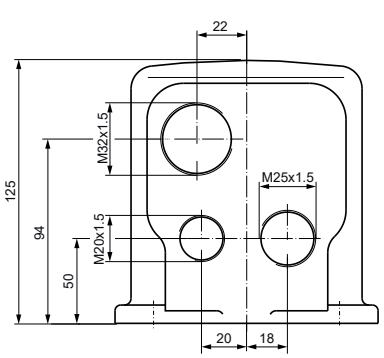
S0-080



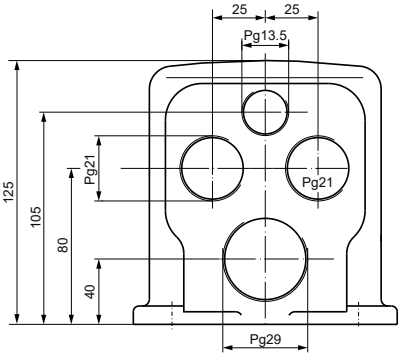
S0-179



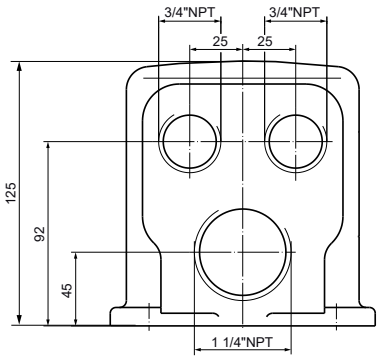
SH-148



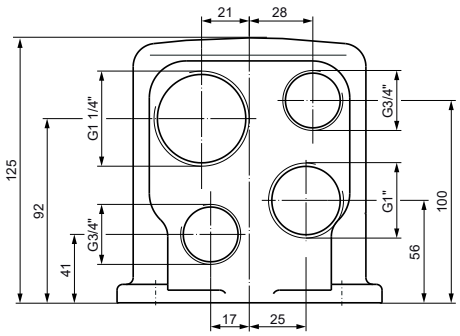
SH-105



SH-026



SH-080



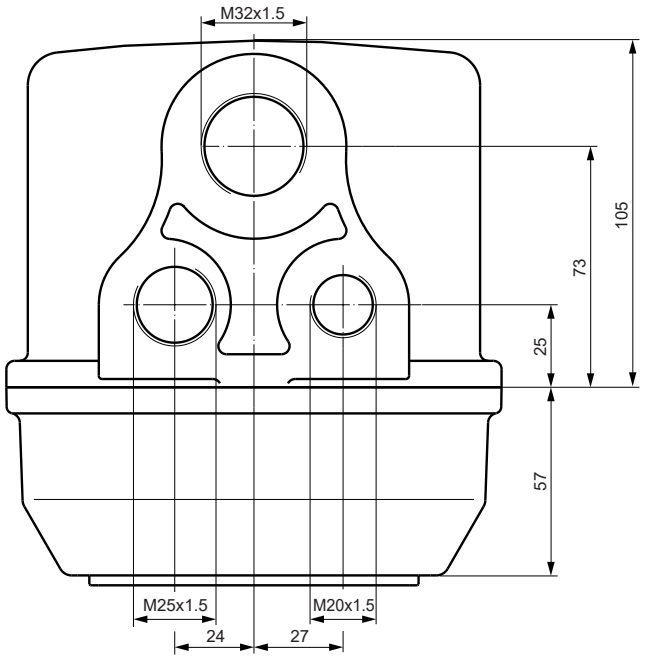
SH-178

Note: AUMA order codes S0 and SH

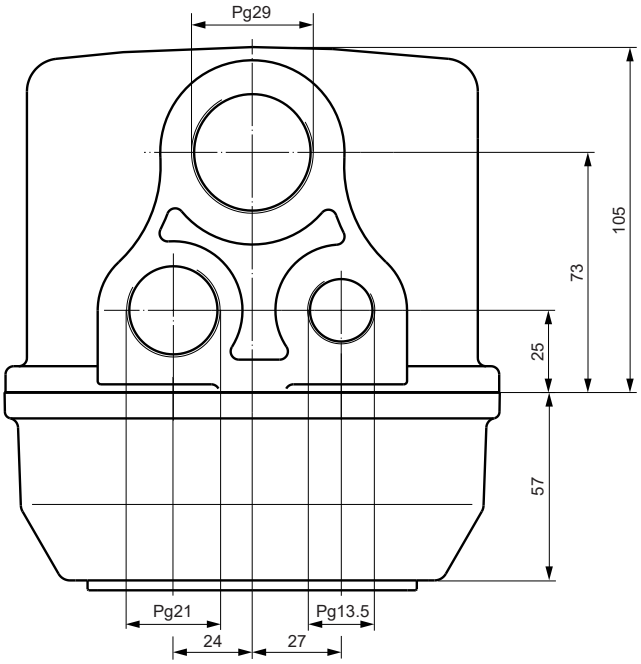
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Electrical connection with enlarged terminal compartment

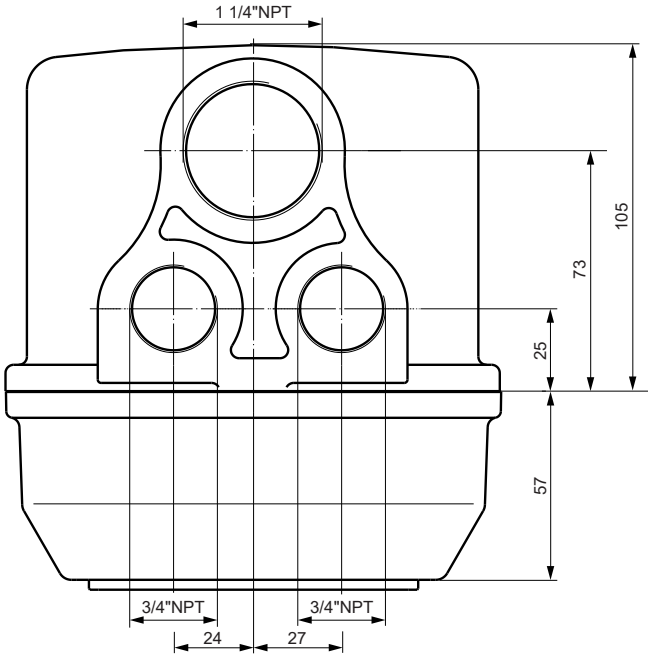
SA 07.2 – SA16.2/SAR 07.2 – SAR 16.2
SQ 05.2 – SQ 14.2/SQR 05.2 – SQR 14.2
SA 07.1 – SA 16.1/SAR 07.1 – SAR 16.1
SG 05.1 – SG 12.1/SGR 05.1 – SGR 12.1
AC 01.2
AC 01.1
AM 01.1 – AM 02.1



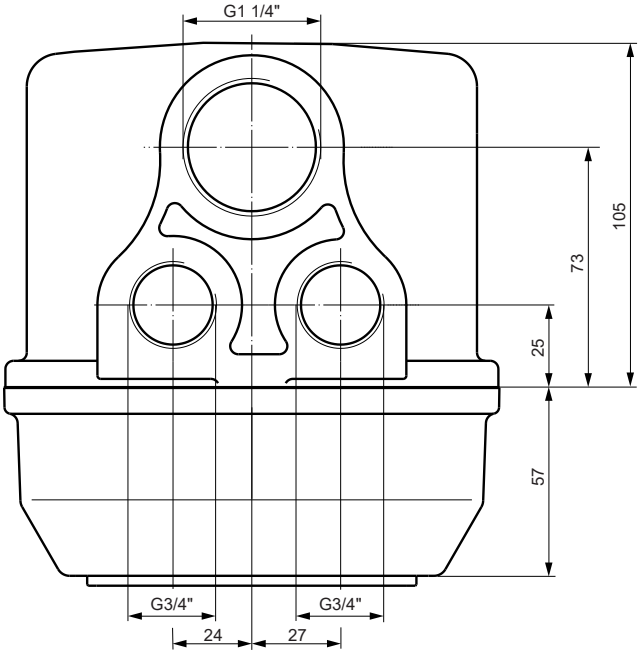
SE-105



SE-003



SE-080



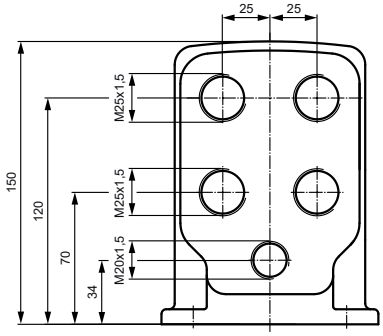
SE-179

Note: AUMA order code SE, further drilling templates on request

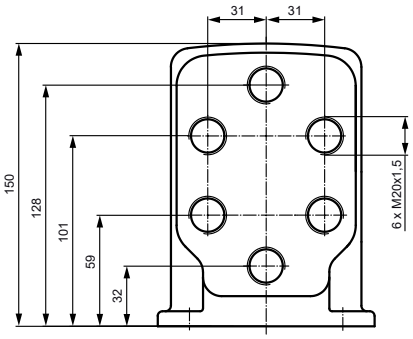
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Electrical connection with elevated terminal compartment SB/KB

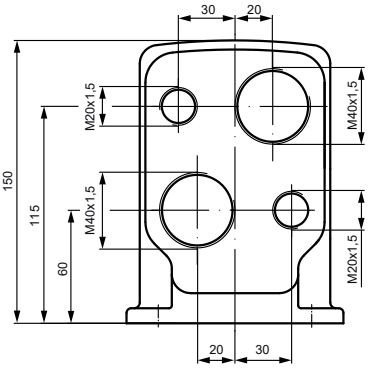
SA 07.2 – SA16.2/SAR 07.2 – SAR 16.2
SQ 05.2 – SQ 14.2/SQR 05.2 – SQR 14.2
SA 07.1 – SA 16.1/SAR 07.1 – SAR 16.1
SG 05.1 – SG 12.1/SGR 05.1 – SGR 12.1
AC 01.2
AC 01.1
AM 01.1 – AM 02.1



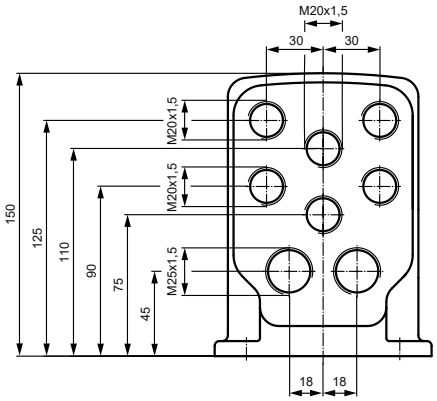
SB-188
KB-188



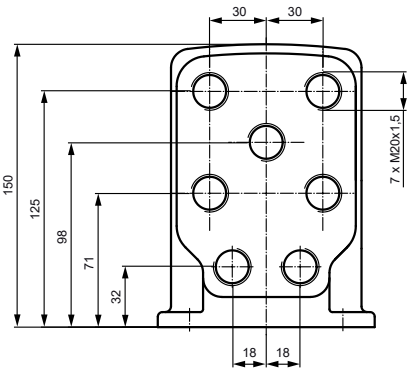
SB-209
KB-209



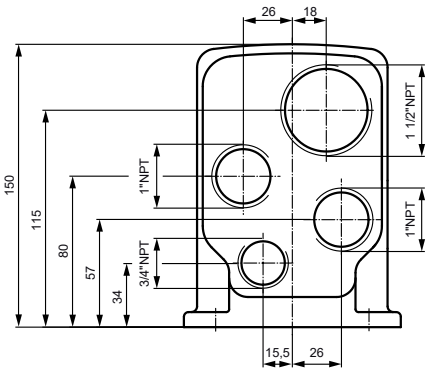
SB-237
KB-237



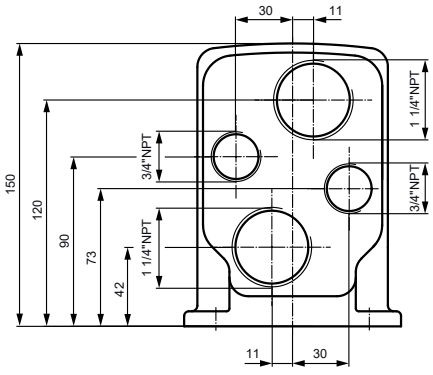
SB-247
KB-247



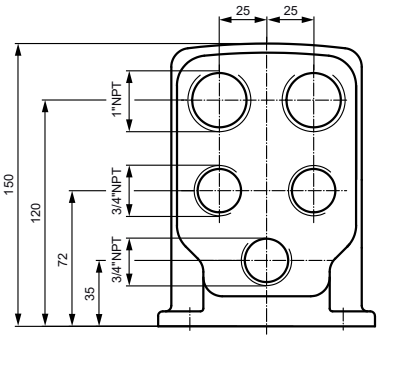
SB-253
KB-253



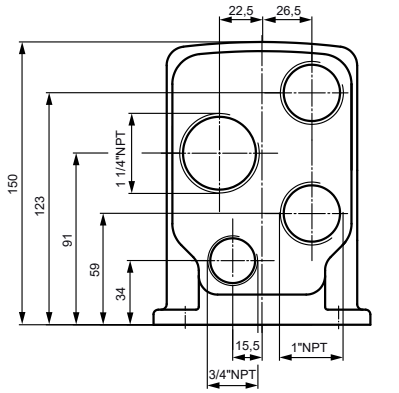
SB-113
KB-113



SB-138
KB-138



SB-224
KB-224



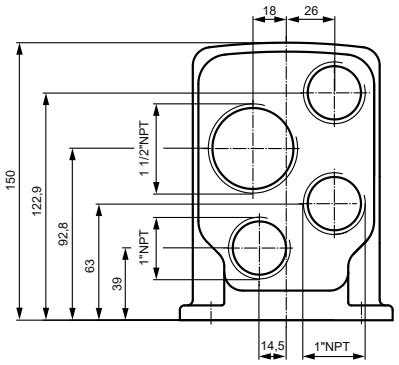
SB-227
KB-227

Note: AUMA order code SB/KB

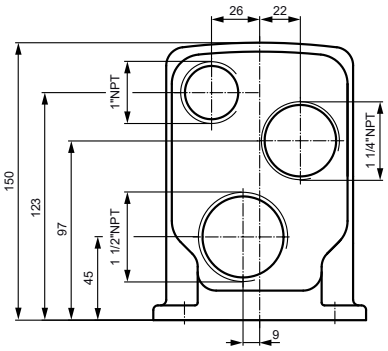
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Electrical connection with elevated terminal compartment SB/KB

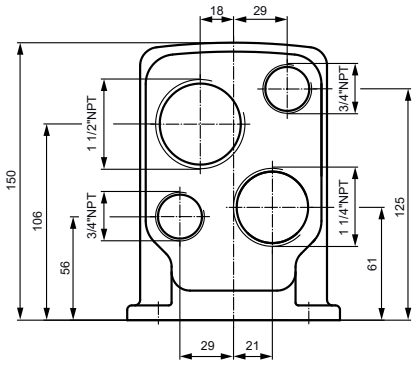
SA 07.2 – SA16.2/SAR 07.2 – SAR 16.2
SQ 05.2 – SQ 14.2/SQR 05.2 – SQR 14.2
SA 07.1 – SA 16.1/SAR 07.1 – SAR 16.1
SG 05.1 – SG 12.1/SGR 05.1 – SGR 12.1
AC 01.2
AC 01.1
AM 01.1 – AM 02.1



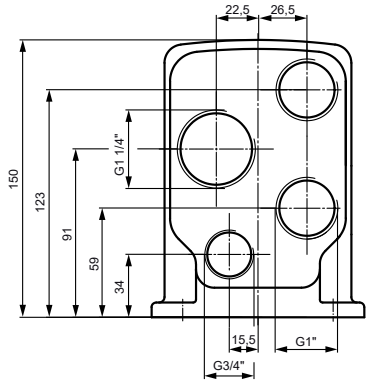
SB-248
KB-248



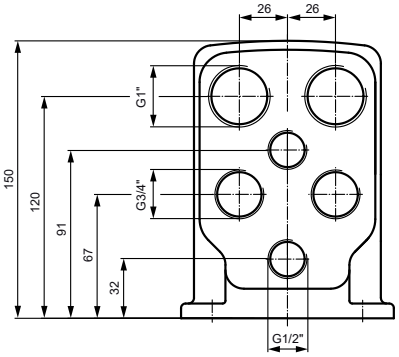
SB-262
KB-262



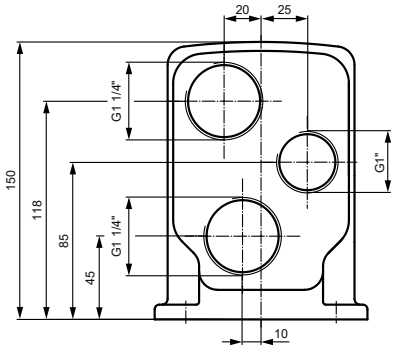
SB-279
KB-279



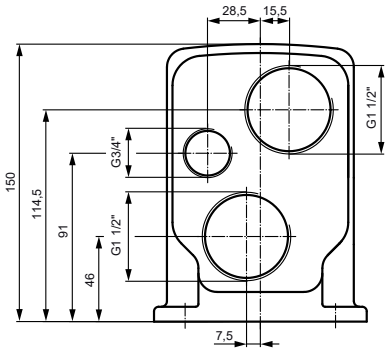
SB-228
KB-228



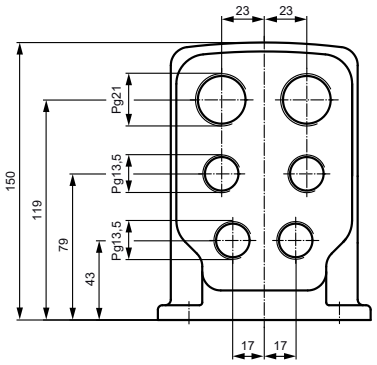
SB-254
KB-254



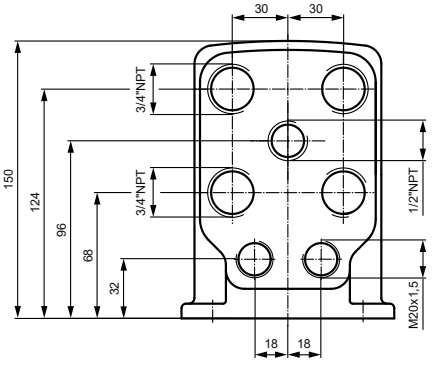
SB-261
KB-261



SB-281
KB-281



SB-102
KB-102



SB-249
KB-249

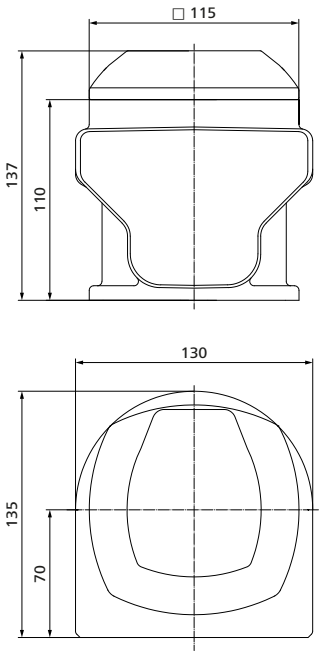
Note: AUMA order code SB/KB

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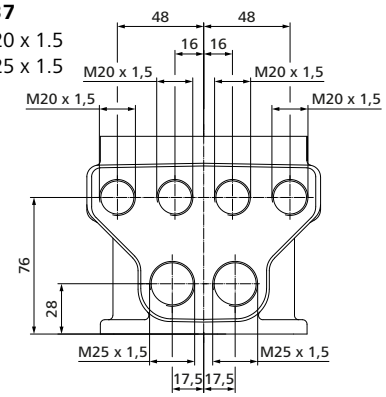
Dimensions SD electrical connection

Electrical connection with removable plug cover

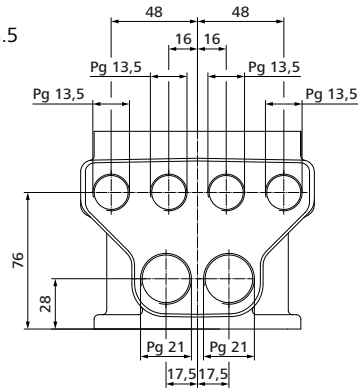
SD electrical connection



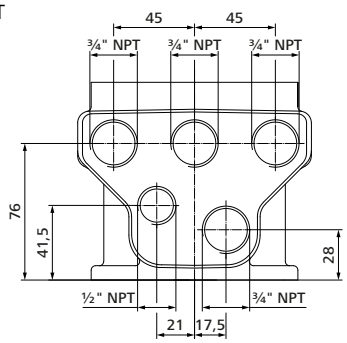
SD-137
4 x M20 x 1.5
2 x M25 x 1.5



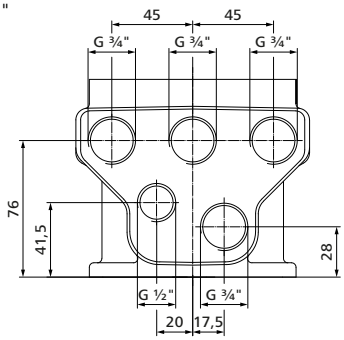
SD-102
4 x Pg 13.5
2 x Pg 21



SD-181
4 x ¾" NPT
1 x ½" NPT



SD-182
4 x G ¾"
1 x G ½"

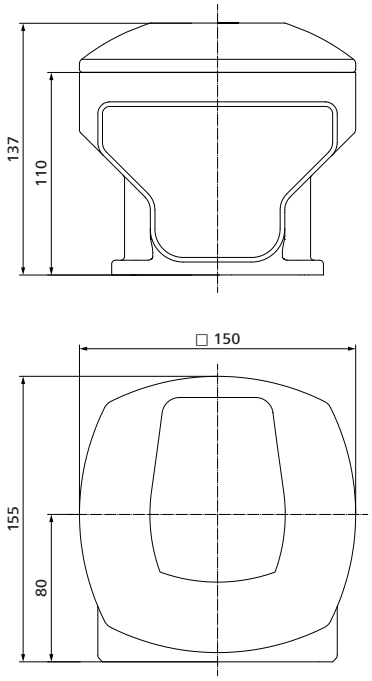


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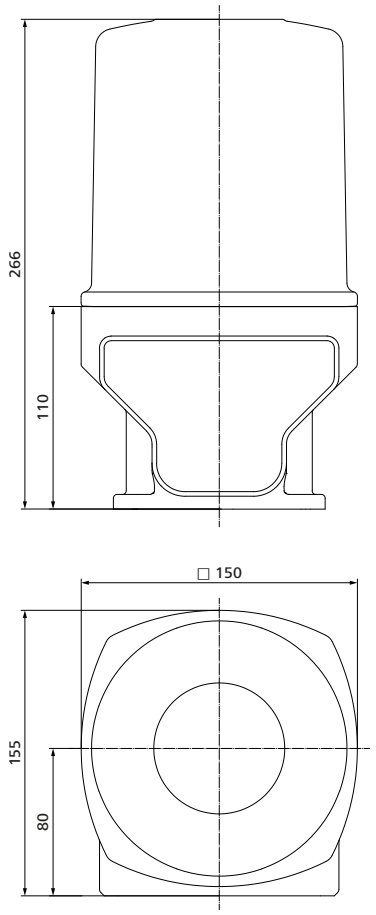
Dimensions SF/SJ electrical connection

Electrical connection with removable plug cover and enlarged terminal compartment

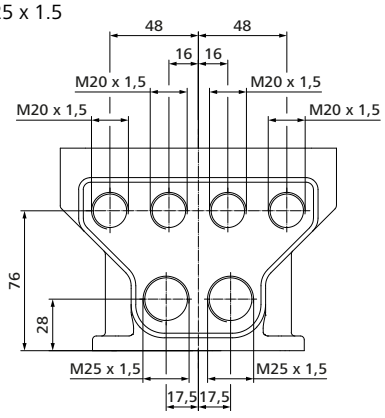
SF electrical connection



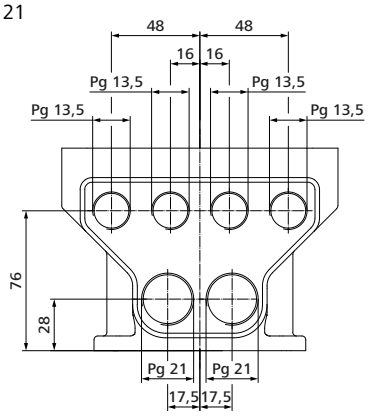
SJ electrical connection



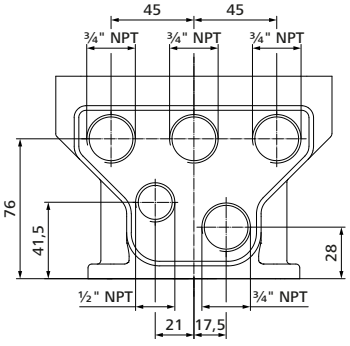
SF/SJ-137
4 x M20 x 1.5
2 x M25 x 1.5



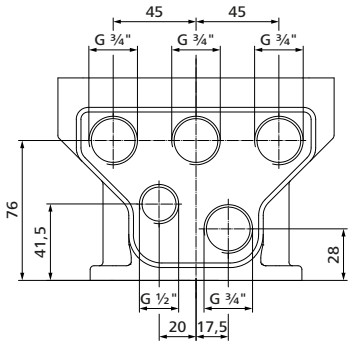
SF/SJ-102
4 x Pg 13.5
2 x Pg 21



SF/SJ-181
4 x ¾" NPT
1 x ½" NPT

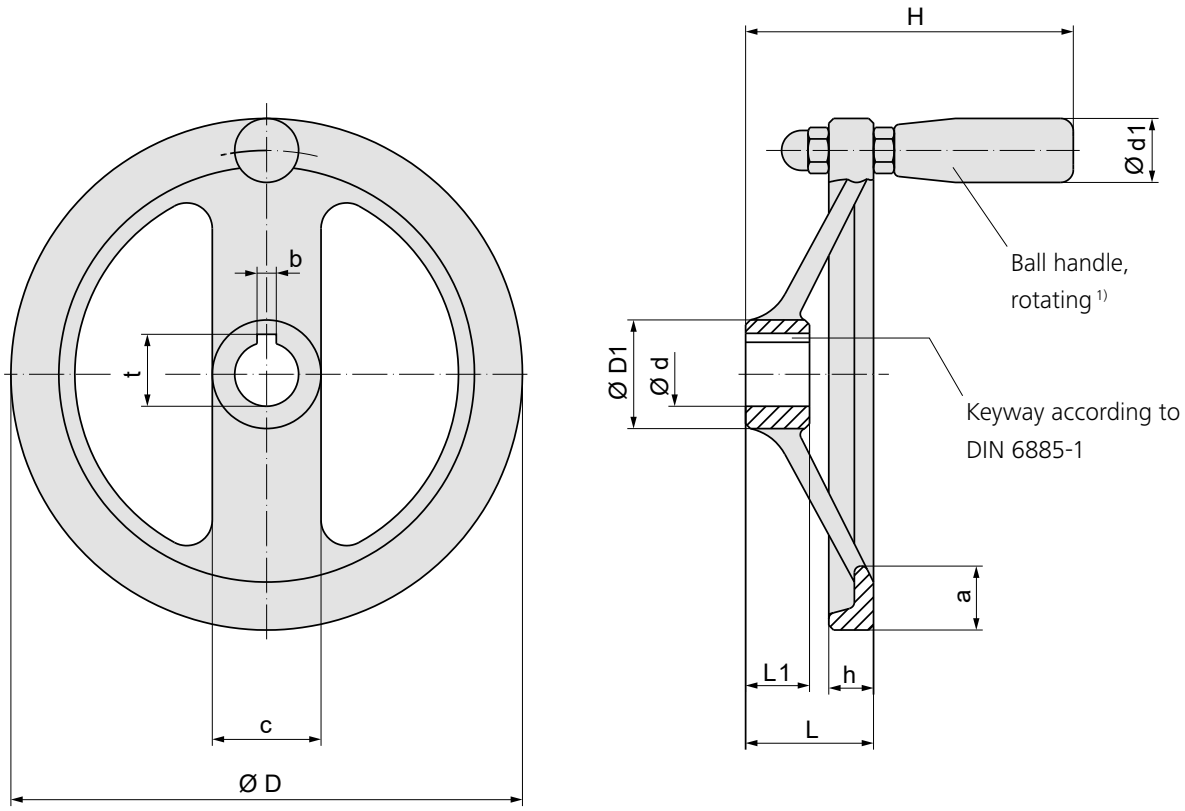


SF/SJ-182
4 x G ¾"
1 x G ½"



We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Handwheels



AHR types made of cast aluminium alloy; colour: black

1) Ball handle
Material: Polyamide
Bearing pin and mounting fixtures made of stainless steel

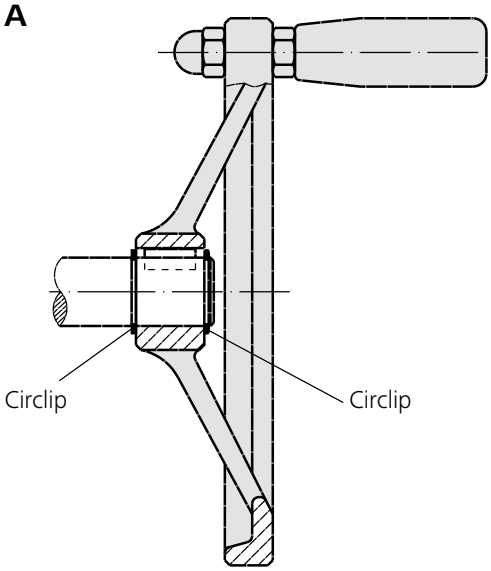
Dimensions (in mm)													Weight
Ø D													
mm	inch	Ø d H9	Ø D1	H	L	L1	a	b	C	Ø d1	h	t	kg
125	5	12	34	83	36	18	19	4	34	15	13	13.8	0.25
125	5	16	34	83	36	18	19	5	34	15	13	18.3	0.25
160	6	12	34	103	40	20	20	4	34	20	14	13.8	0.40
160	6 ½	16	34	103	40	20	20	5	34	20	14	18.3	0.40
160	6 ½	20	34	103	40	20	20	6	34	20	14	22.8	0.40
200	8	16	40	108	45	24	25	5	40	20	17	18.3	1.1
200	8	20	40	108	45	24	25	6	40	20	17	22.8	1.1
250	10	16	48	113	50	28	30	5	48	20	21	18.3	1.4
250	10	20	48	113	50	28	30	6	48	20	21	22.8	1.4
315	12 ½	20	56	150	56	33	33	6	56	25	23	22.8	1.8
315	12 ½	30	56	150	56	33	33	8	56	25	23	33.3	1.7
400	16	20	70	157	63	38	37	6	70	25	26	22.8	2.9
400	16	30	70	157	63	38	37	8	70	25	26	33.3	2.8
500	20	30	82	166	72	45	40	8	82	25	28	33.3	4.5
500	20	40	82	166	72	45	40	12	82	25	28	43.3	4.5
630	25	30	98	169	75	45	45	8	98	25	31	33.3	7.7
630	25	40	98	169	75	45	45	12	98	25	31	43.3	7.5
800	31 ½	30	98	185	90	55	45	8	130	25	31	33.3	10.5
800	31 ½	40	98	185	90	55	45	12	130	25	31	43.3	10.5

Please state handwheel type and Ø D/d in mm when ordering (e.g. AHR 160-20).

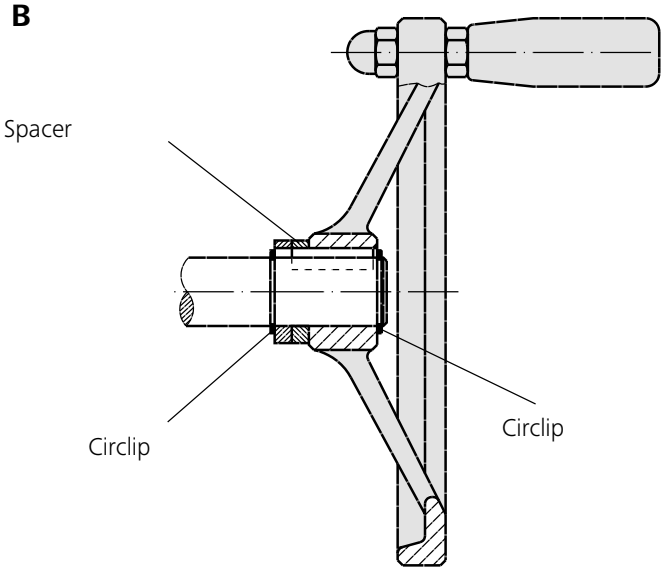
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Mounting proposals

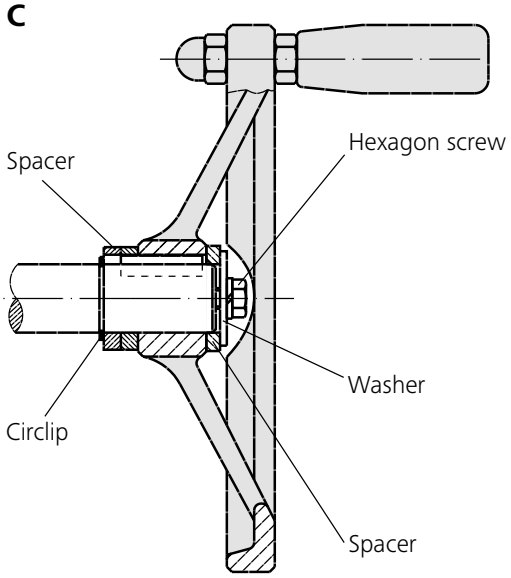
A



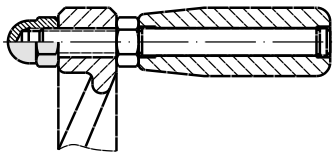
B

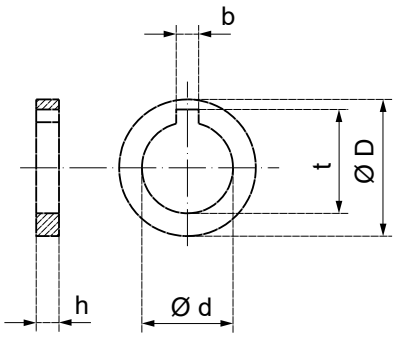


C



Ball handle, rotating





Material: Polyamide Colour: black

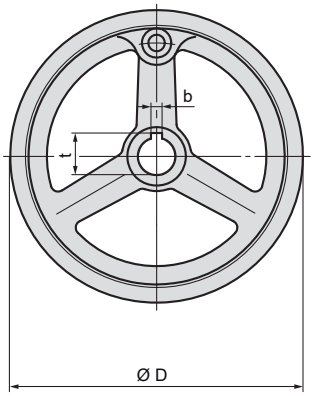
Spacer dimensions (in mm)					
Type	Ø D	b	Ø d	h	t
DS	20	4	12	3	13.8
DS	20	4	12	4	13.8
DS	30	5	16	2	18.3
DS	30	5	16	4	18.3
DS	30	6	20	2	22.8
DS	30	6	20	4	22.8
DS	30	6	20	5	22.8
DS	50	8	30	2	33.3
DS	50	8	30	5	33.3
DS	60	12	40	10	43.3

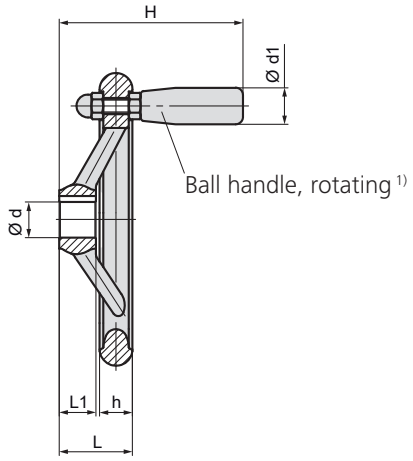
Please state spacer type, Ø d and height h in mm when ordering (e.g. DS 20x5).

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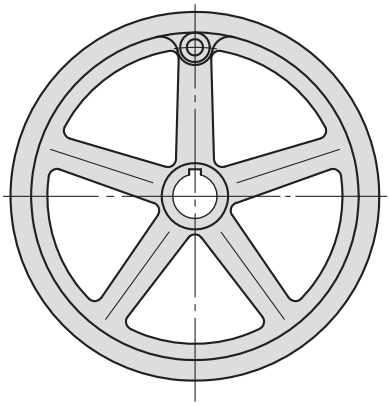
Dimensions Handwheels according to DIN 950

GHR 160 – GHR 200

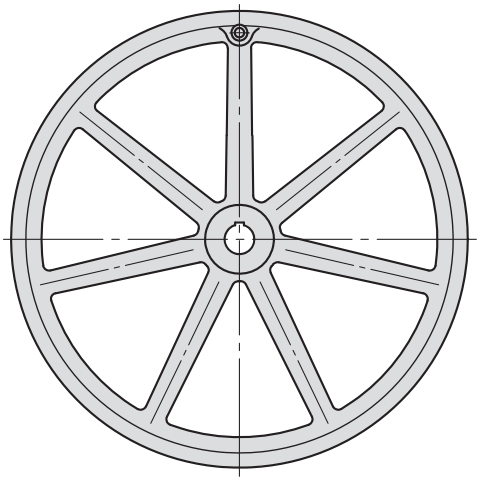




GHR 250 – GHR 500



GHR 630 – GHR 800



GHR types made of cast iron; colour: black

1) Ball handle
Material: Polyamide
Bearing pin and mounting fixtures made of stainless steel

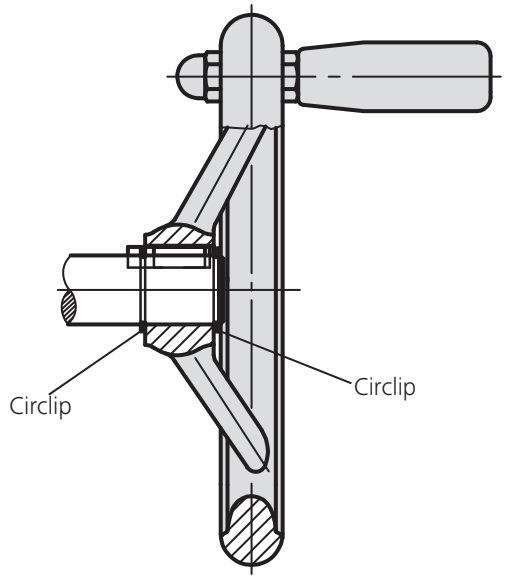
Dimensions (in mm)										
Ø D										Weight
mm	inch	Ø d D9	H	L	L1	b	Ø d1	h	t	[kg]
160	6 ½	16	100	40	20	5	20	18	18.3	1.35
160	6 ½	20	100	40	20	6	20	18	22.8	1.35
200	8	20	101	41	20	6	20	22	22.8	2.5
250	10	20	102	42	20	6	20	26	22.8	3.9
250	10	30	110	50	28	8	20	26	33.3	3.9
315	12 ½	20	148	56	33	6	25	28	22.8	6.3
315	12 ½	30	148	56	33	8	25	28	33.3	6.2
400	16	30	154	63	38	8	25	32	33.3	9.7
400	16	40	154	63	38	12	25	32	43.3	9.6
500	20	30	156	65	38	8	25	34	33.3	15.6
500	20	40	156	65	38	12	25	34	43.3	15.5
630	25	30	161	70	38	8	25	36	33.3	21.7
630	25	40	161	70	38	12	25	36	43.3	21.6
800	31 ½	30	183	92	55	8	25	36	33.3	29.4

Please state handwheel type and diameters Ø D/d in mm when ordering (e.g. GHR 160-20).

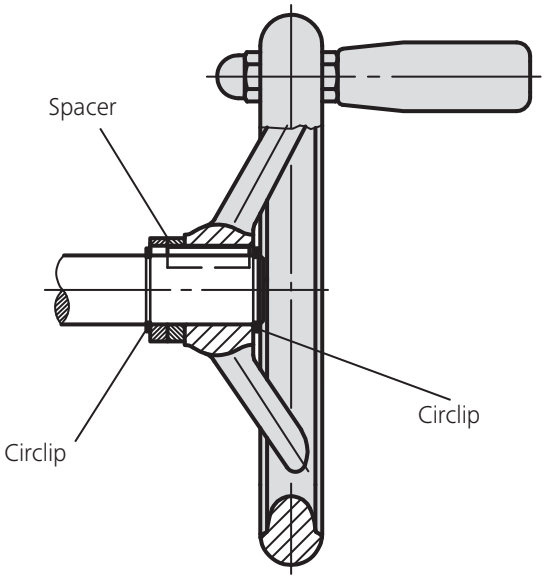
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Mounting proposals

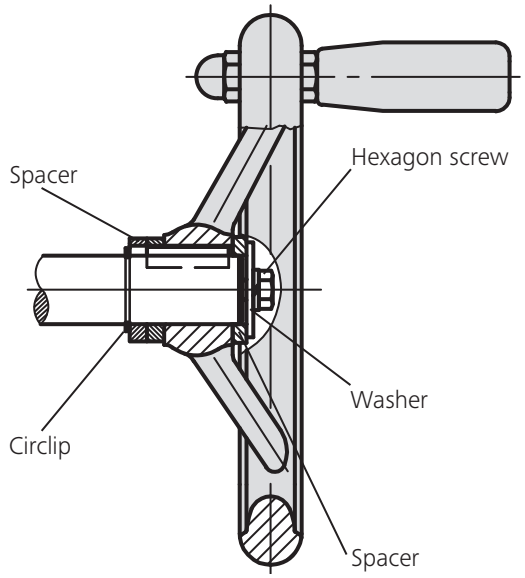
A



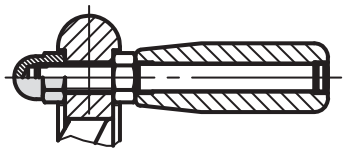
B

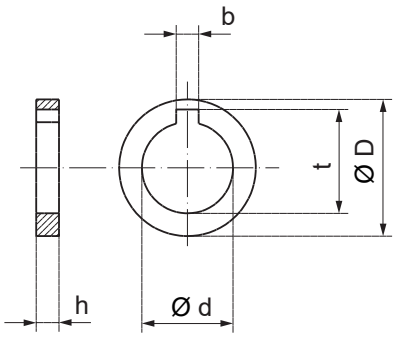


C



Ball handle, rotating





Material: Polyamide Colour: black

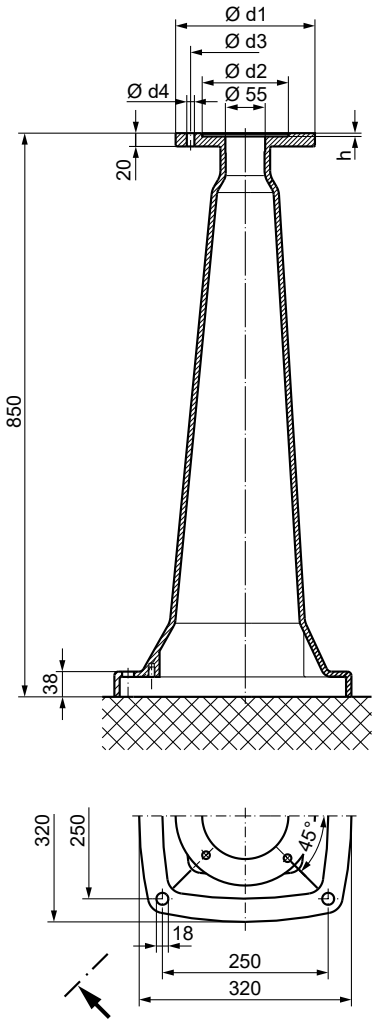
Spacer dimensions (in mm)					
Type	Ø D	b	Ø d	h	t
DS	20	4	12	3	13.8
DS	20	4	12	4	13.8
DS	30	5	16	2	18.3
DS	30	5	16	4	18.3
DS	30	6	20	2	22.8
DS	30	6	20	4	22.8
DS	30	6	20	5	22.8
DS	50	8	30	2	33.3
DS	50	8	30	5	33.3
DS	60	12	40	10	43.3

Please state spacer type, Ø d and height h in mm when ordering (e.g. DS 20x5).

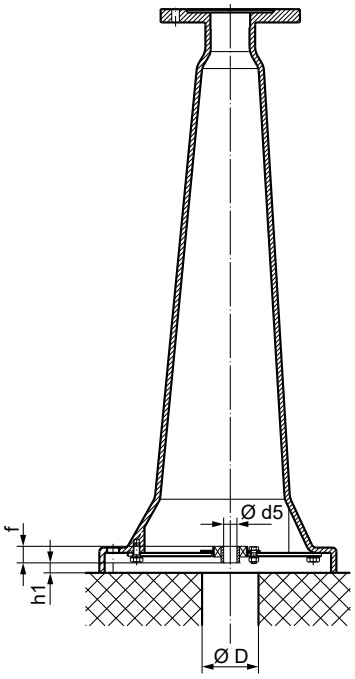
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Dimensions Floor pedestals

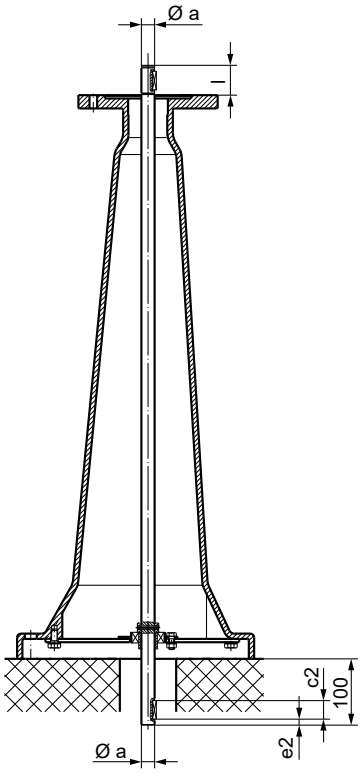
Basic version



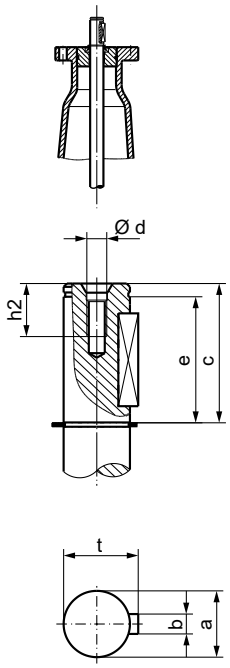
with bearing



with bearing and drive shaft



with bearing, drive shaft and bearing for handwheel



Material:

Pedestal	cast iron GJL-250 EN 1561
Drive shaft	stainless steel X14CrMoS 17 EN 10088-3

The bearings are sealed and lubricated for life

Dimensions	SF 10.2		SF 14.2		SF 16.2	
EN ISO 5210/DIN 3210	F10	G0	F14	G1/2	F16	G3
Ø a h9	20		30		40	
b	6		8		12	
c	41.9		59.9		72.75	
c2	28		45		63	
d	M6		M8		M16	
Ø d1	125		175		210	
Ø d2 H9	70	60	100		130	
Ø d3	102		140		165	
Ø d4	11.5		18		22	
Ø d5	20		30		40	
e	38		55		65	
e2	9		7		9	
Ø f	31		36		44	
Ø h	5		5		5	
Ø h1	8		6		1	
Ø h2	16		16.5		32	
l	45		64		80	
t	22.5		33		43	
Ø D min.	85		100		120	
Weight kg	28 [1)]		30 [1)]		32 [1)]	

1) Basic version

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Dimensions Torque measurement flange

Output drive type

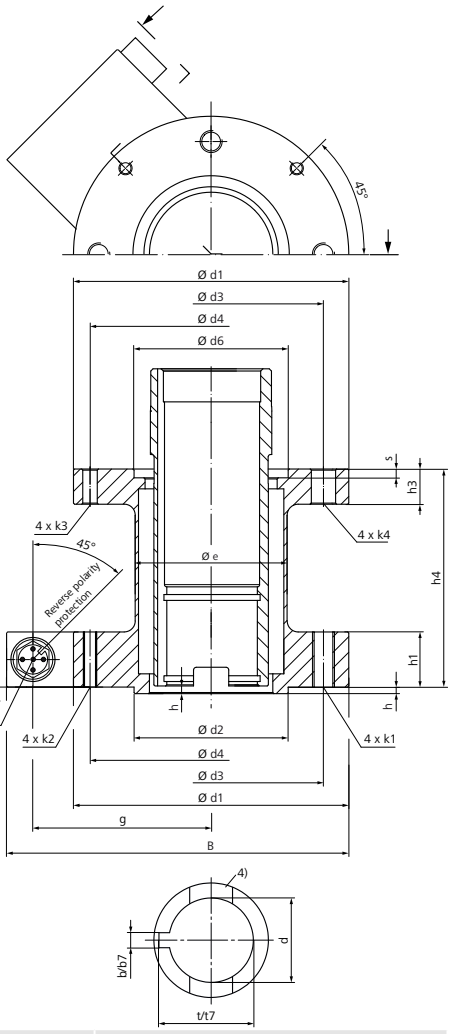
EN ISO 5210 B1 d = d7 (b7/t7)
DIN 3210 B d = d7 (b7/t7)

EN ISO 5210 B2 [2] d10 max. < d < d7

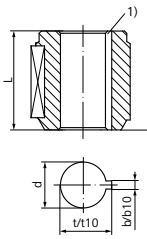
EN ISO 5210 B3 d = d10 (b10/t10)
DIN 3210 E d = d10 (b10/t10)

EN ISO 5210 B4 [2] d ≤ d10 max.

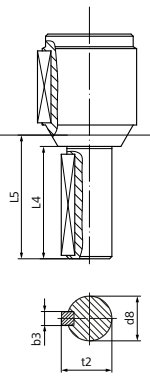
EN ISO 5210 D
DIN 3210 D



Output drive sleeve B3/E/B4



Output drive shaft D



1) Bore with keyway according to DIN 6885-1, output drive types B3 and B4 according to EN ISO 5210 with output drive sleeve
2) Dimensions b, t depend on Ø d, refer to DIN 6885-1
3) Dimensions not complying with DIN 6885-1
4) Prepared for fitting output drive types A, AG, AK; for rising stem valve, refer to Technical data Multi-turn actuators for max. diameter

Dimensions	DMF 10.1		DMF 14.5	DMF 16.1
Actuator	SA 07.2/SA 07.6	SA 10.2	SA 14.2/SA 14.6	SA 16.2
EN ISO 5210	F10		F14	F16
Torque max. Nm	120		500	1000
B	157		207	242
Ø d1	125		175	210
Ø d2 f8	70		100	130
Ø d3	102		140	165
Ø d4	110		155	185
Ø d6 H8	70		100	130
Ø d7 H9 [1]	42		60	80
b7 JS9	12		18	22
t7	45.3		62.7 [3]	85.4
Ø d8 g6	20		30	40
b3 h9	6		8	12
t2	22.5		33	43
Ø d10 H9 [1]	20		30	40
b10 JS9	6		8	12
t10	22.8		33.3	43.3
Ø d10 max. [1]	30		45	60
Ø e	69		100	122
g	88		107.5	125
h	3		4	5
h1	25		25	30
h3	16		25	30
h4	99		140	160
k1	M10		M16	M20
k2	M6		M10	M12
Ø k3	6.6		11	13.5
Ø k4	11		17.5	22
L	44		65	80
L4	50		70	90
L5	55		76	97
s	4		5	6

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Valve attachments for actuators and gearboxes 426

SA 07.2 – SA 16.2 / SAR 07.2 – SAR 16.2 Multi-turn actuators
Output drive type B1 plug sleeve 428
Output drive type B1/B with extension flange 429
Output drive type B1/B with reduction flange 430
Output drive type B3D/ED bore with keyway bottom, shaft end top 431
Output drive type IB/IE insulated output drive 432

Output drive type A stem nut standard version 433
Output drive type A stem nut stem lubrication 434
Output drive type A stem nut with extension flange 435
Output drive type A stem nut with reduction flange 436

Output drive type D shaft end 437
Output drive type DD shaft end bottom and top 438

Output drive type AF 07.2 – AF 16.2, spring-loaded stem nut 439
Output drive type AF 07.2 – AF 16.2, extended spring-loaded stem nut 440
Output drive type AG 07.2 – AG 16.2, stem nut for oxygen application 441
Output drive type AK 10.2 – AK 16.2 442

SQ 05.2 – SQ 14.2 / SQR 05.2 – SQR 14.2 Part-turn actuators
Part-turn actuators with special output mounting flanges 443

Couplings for SG/SV/SQ/PF/GS/GHE/FQM
Couplings (standard), bore with keyway according to DIN 6885-1 444
Couplings (standard), two-flat bore according to EN ISO 5211 446
Couplings (standard), square bore according to EN ISO 5211 448

Dimensions Valve attachments for actuators and gearboxes

EN ISO 5210/EN ISO 5211/DIN 3210/DIN 3338

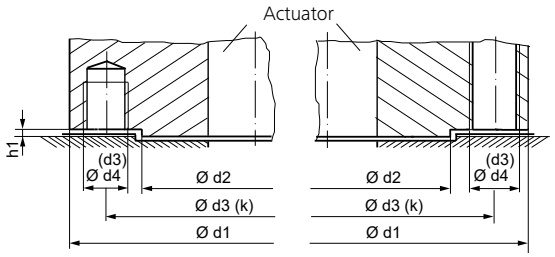
Comparison between EN ISO 5210/EN ISO 5211 and DIN 3210/DIN 3338

EN ISO 5210 Multi-turn valve actuator attachments

EN ISO 5211 Part-turn actuator attachments

DIN 3210 Output drives of electric actuators for valves (withdrawn)

DIN 3338 Multi-turn actuator attachments, type C

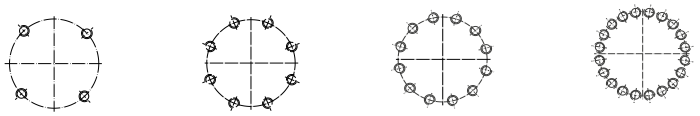


Designations deviating from EN ISO are indicated in brackets

Flange abbreviation			Dimensions (in mm)										Quantity of screws and bolts	
EN ISO 5210 DIN 3338	EN ISO 5211	DIN 3210	EN ISO 5210 5211 DIN 3338 Ø d1	DIN 3210 Ø d1	EN ISO 5210 5211 DIN 3338 Ø d2	DIN 3210 Ø d2	EN ISO 5210 5211 DIN 3338 Ø d3	DIN 3210 (k)	EN ISO 5210 5211 DIN 3338 Ø d4	DIN 3210 (d3)	ENI ISO 5210 5211 DIN 3338 h1 max.	DIN 3210 h1 max.	EN ISO 5210 5211 DIN 3338	DIN 3210
–	F03	–	46	–	25	–	36	–	M5	–	3	–	4	–
–	F04	–	54	–	30	–	42	–	M5	–	3	–	4	–
F05	F05	–	65	–	35	–	50	–	M6	–	3	–	4	–
F07	F07	–	90	–	55	–	70	–	M8	–	3	–	4	–
F10	F10	G0	125	125	70 [1]	60 [1]	102	102	M10	M10	3	3	4	4
F12	F12	–	150	–	85	–	125	–	M12	–	3	–	4	–
F14	F14	G1/2	175	175	100	100	140	140	M16	M16	4	4	4	4
F16	F16	G3	210	210	130	130	165	165	M20	M20	5	5	4	4
F25	F25	G4	300	300	200 [1]	160 [1]	254	254	M16	M16	5	5	8	8
F30	F30	G5	350	350	230 [1]	180 [1]	298 [1]	300 [1]	M20	M20	5	5	8	8
F35	F35	G6	415 [1]	410 [1]	260 [1]	220 [1]	356	356	M30	M30	5	5	8	8
F40	F40	G7	475	475	300 [1]	230 [1]	406	406	M36	M36	8	8	8	8
F48	F48	–	560	–	370	–	483	–	M36	–	8	–	12	–
F60	F60	–	686	–	470	–	603	–	M36	–	8	–	20	–

1) Deviating dimensions between EN ISO 5210/EN ISO 5211/DIN 3338 and DIN 3210

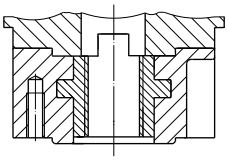
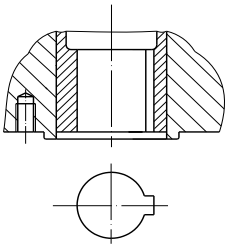
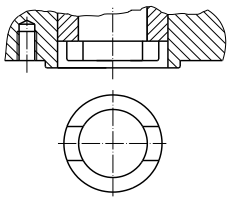
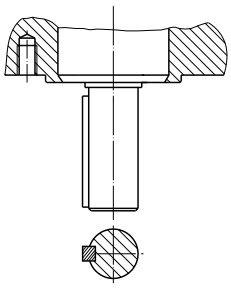
Arrangement of bores for screws ø d4 (d3)



EN ISO 5210	F05 – F16	F25 – F40	F48	F60
EN ISO 5211	F03 – F16	F25 – F40	F48	F60
DIN 3210	G0 – G3	G4 – G7	–	–
DIN 3338	F07 – F16	F25 – F40	–	–

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

EN ISO 5210/DIN 3210/DIN3338

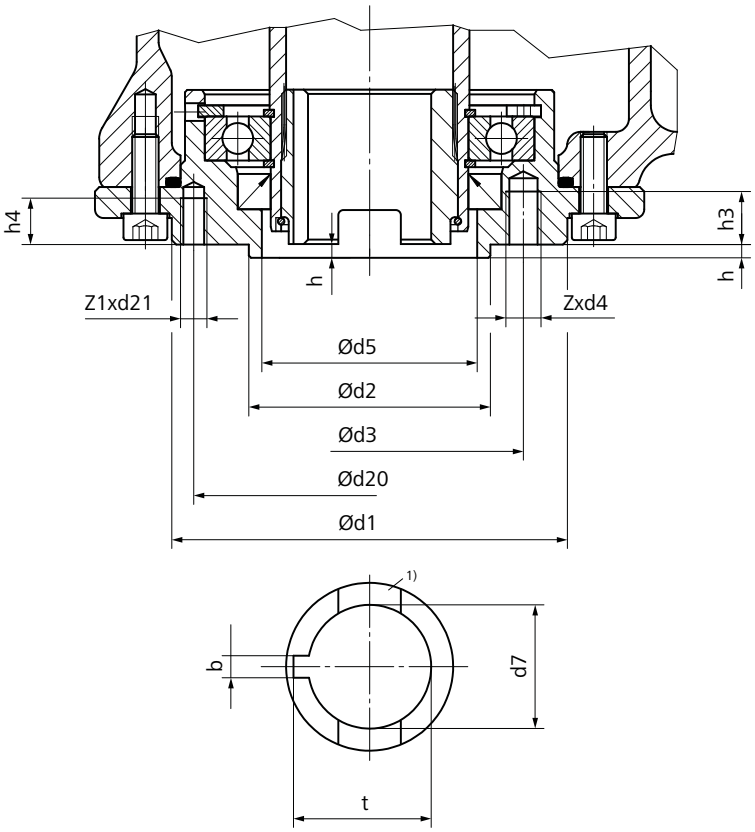
	Designation			Transmission of a torque	Transmission of a thrust	Application
	EN ISO 5210	DIN 3210	DIN 3338			
Stem nut 	A	A	–	X	X	Threads For rising, non-rotating valve stem
						Bore with keyway Square bore Hexagon bore For rotating, non-rising valve stem
Bore with keyway 	B1	B	–	X	–	Driving of valve shaft gearbox shaft
	B2	–				
	B3	E				
	B4	–				
Dog coupling 	C	C	C	X	–	Driving of valve shaft gearbox shaft
Shaft end 	D	D	–	X	–	Driving of valve shaft gearbox shaft

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimension Output drive plug sleeve type B1

for SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2
SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2

Output drive type
EN ISO 5210 B1
DIN 3210 B



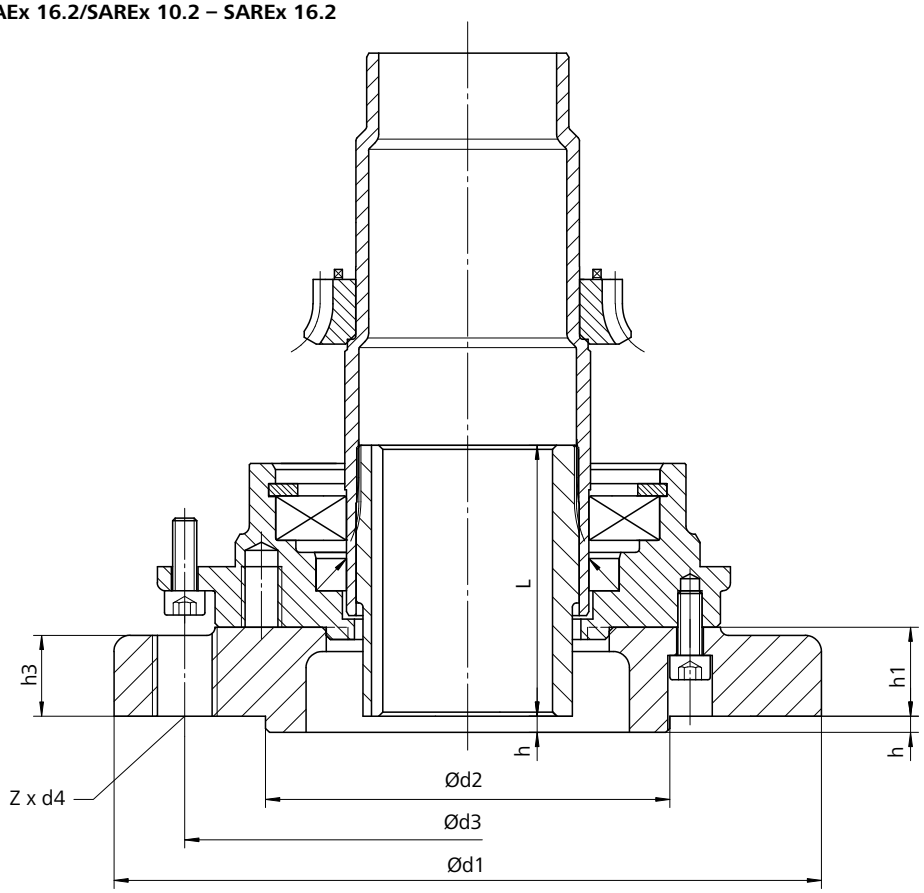
1) Prepared for fitting output drive type A

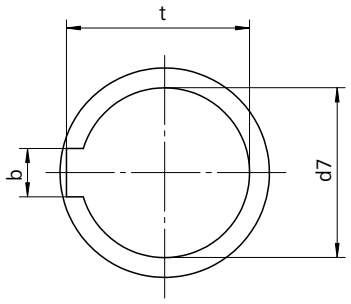
Dimensions	B1 07.2			B1 10.2		B1 14.2		B1 16.2	
EN ISO 5210/DIN 3210	F07	F10	G0	F10	G0	F14	G1/2	F16	G3
b JS9	8	12		12		18		22	
Ø d1	90	125		125		175		210	
Ø d2 f12	55	70	60	70	60	100		130	
Ø d3	70	102		102		140		165	
d4	M8	M10		M10		M16		M20	
Ø d5	49	64	57	64	57	90		115	
Ø d7 H9 max	28	42		42		60		80	
Ø d20	80	110		110		155		185	
d21	M6			M6		M10		M12	
h	3			3		4		5	
h3	12	13		15		25		30	
h4	10	13		9		16		20	
t	31.3	45.3		45.3		64.4		85.4	
Z	4			4		4		4	
Z1	4			4		4		4	

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Output drive type B1/B with extension flange

for SA 10.2 – SA 16.2/SAR 10.2 – SAR 16.2
SAEx 10.2 – SAEx 16.2/SAREx 10.2 – SAREx 16.2





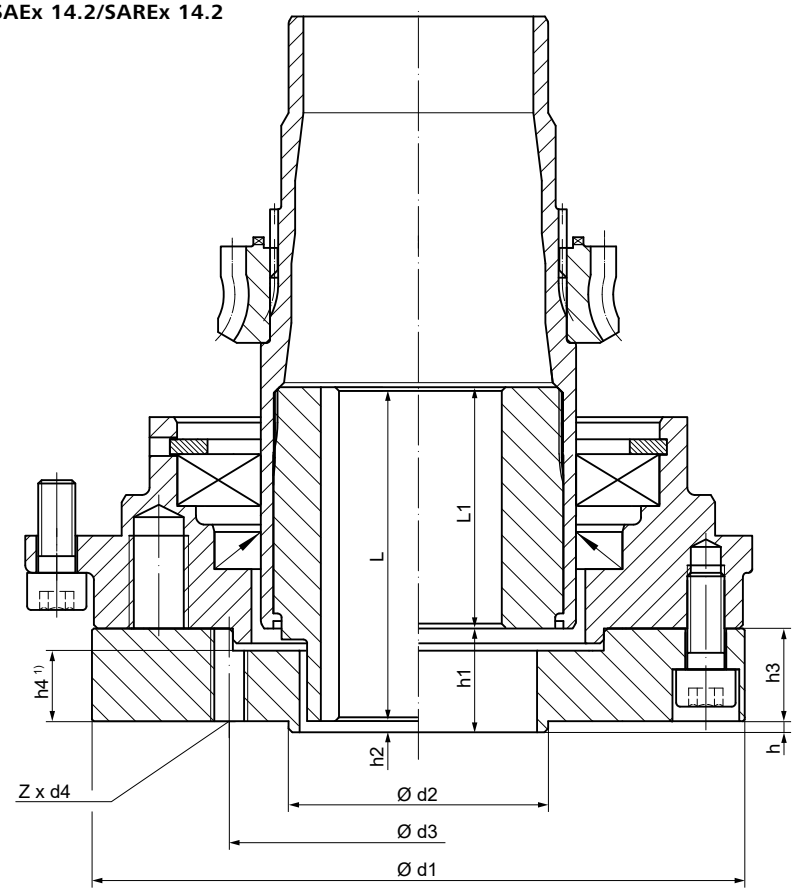
Dimensions	B1 10.2	B1 14.2	B1 16.2
Extension flange EN ISO 5210/DIN 3210	F14 / G1/2	F16 / G3	F25 / G4
b	12	18	22
Ø d1	175	210	300
Ø d2 f12	100	130	200 / 160
Ø d3	140	165	254
d4	M 16	M 20	M 16
Ø d7 max.	42	60	80
h	4	5	5
h1	22	25	28
h3	20	23	20
t	45.3	64.4	85.4
L	67	90	108
Z	4	4	8

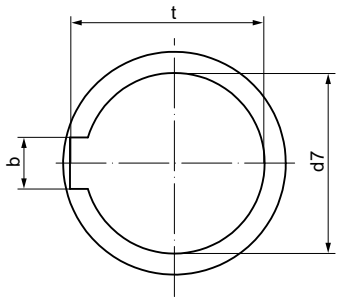
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Output drive type B1/B with reduction flange

for SA 14.2/SAR 14.2/SAEx 14.2/SAREx 14.2

Output drive type
EN ISO 5210 B1
DIN 3210 B





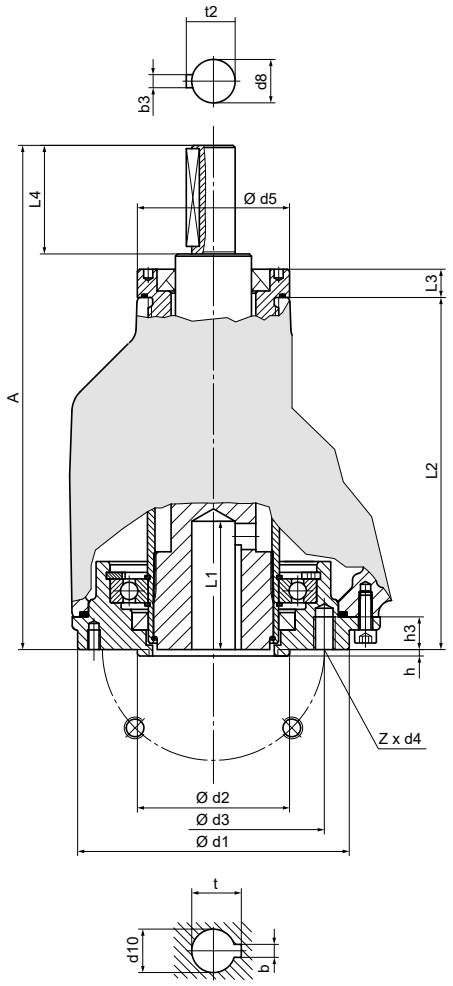
1) Usable thread length

Dimensions	B1 14.2	
Reduction flange EN ISO 5210/DIN 3210	F10	G0
b	14	14
Ø d1	176	
Ø d2 f12	70	60
Ø d3	102	
d4	M10	
Ø d7 max.	45	50
h	3	
h1	–	28
h2	3	–
h3	25	
h4 1)	19	
t	48.8	53.8
L	90	–
L1	–	65
Z	4	

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2
SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2
Dimensions Output drive types B3D/ED, bore with keyway bottom, shaft end top

Output drive type
EN ISO 5210 **B3D**
DIN 3210 **ED**



1) Dimensions depend on Ø d10, refer to DIN 6885-1

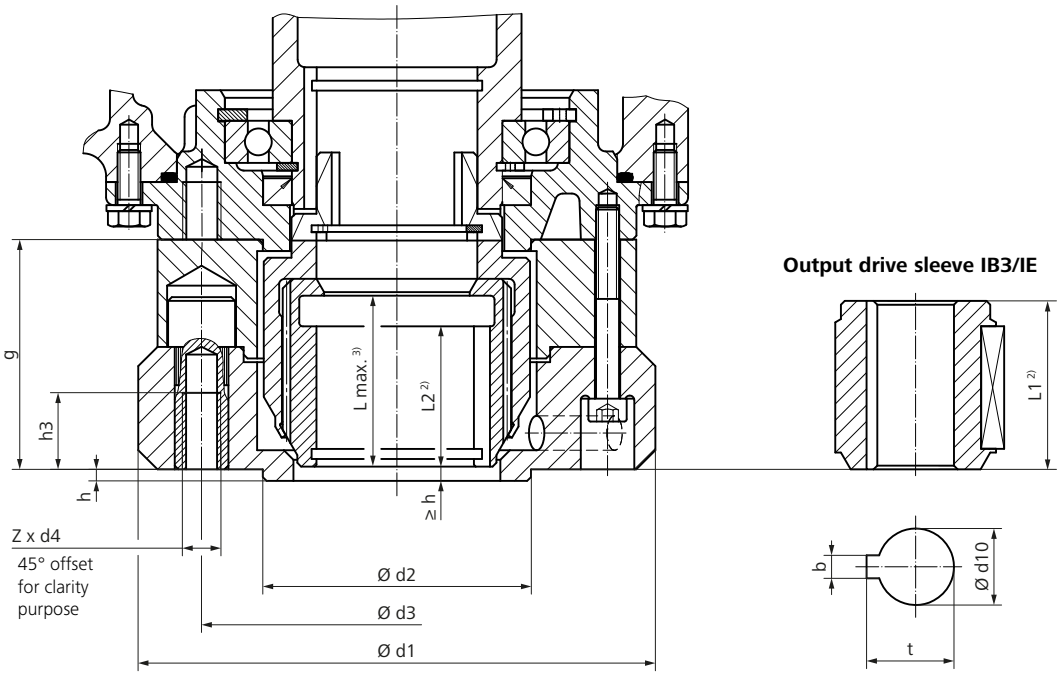
Dimensions	SA 07.2/SA 07.6			SA 10.2			SA 14.2/SA 14.6				SA 16.2			
EN ISO 5210/DIN 3210	F07		F10/G0	F10/G0			F14/G1/2				F16/G3			
A	210	220	220	232		252	275	295		298	335		355	
b JS9 [1]	6		8	8			14				18			
b3	5	6	6	6		8	6	8		12	8		12	
Ø d1	90		125	125			175				210			
Ø d2 f12	55		70/60	70/60			100				130			
Ø d3	70		102	102			140				165			
d4	M8		M10	M10			M16				M20			
Ø d5	55			70			90				105			
Ø d8 g6	16	20	20	20		30	20	30		40	30		40	
Ø d10 H9 max.	20		30	30			45				60			
h	3			3			4				5			
h3	12		13	15			25				30			
L1	49		58	59			84				105			
L2	153			162			188				227			
L3	13			13			13				15			
L4	40	50	50	50		70	50	70		90	70		90	
t [1]	22.8		33.3	33.3			48.8				64.4			
t2	18.0	22.5	22.5	22.5		33	22.5	33		43	33		43	
Z	4			4			4				4			

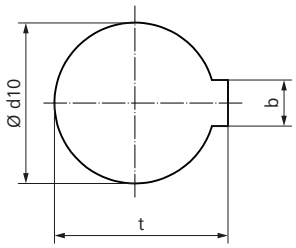
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

IB1 07.2 – IB1 16.2/IB 10.2 – IB 16.2
IB3 07.2 – IB3 16.2/IE 10.2 – IE 16.2
Dimensions Output drive type IB/IE - insulated output drive

for SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2
SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2

Output drive type
ISO 5210 IB3/IB1
DIN 3210 IE/IB





1) with intermediate flange for actuator mounting
2) Engagement for bore with keyway
3) Max. fitting dimension

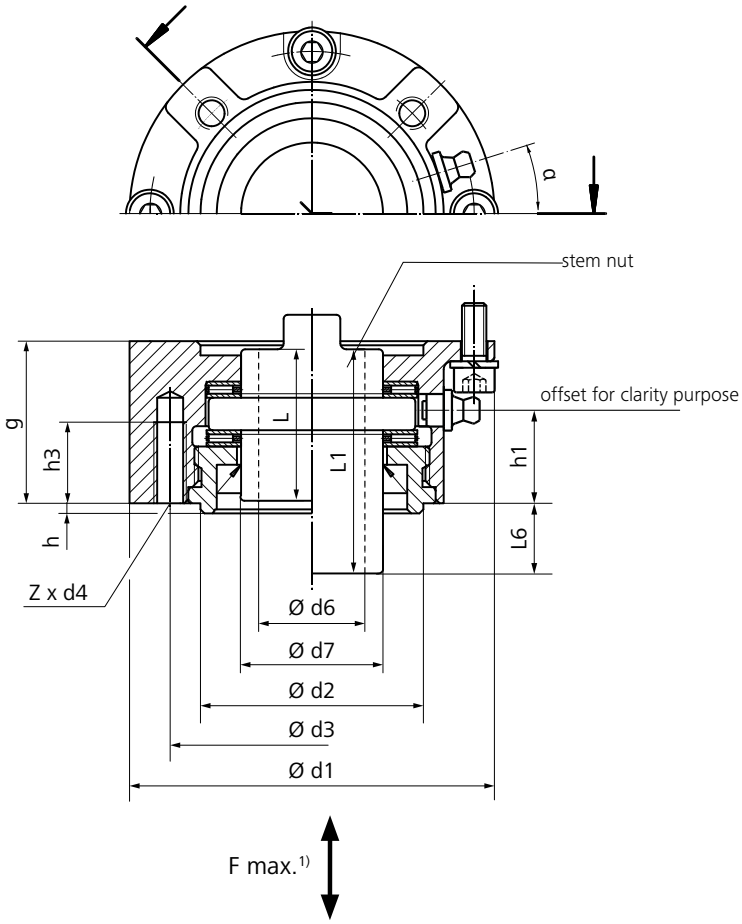
Dimensions	IB3 07.2	IB3 10.2	IE 10.2	IB3 14.2	IE 14.2	IB3 16.2	IE 16.2
ISO 5210/DIN 3210	F07 1)	F10	G0	F14	G1/2	F16	G3
b JS9	5	6		8		12	
Ø d1	90	135		195		226	
Ø d2 f8	55	70	60	100		130	
Ø d3	70	102		140		165	
d4	M8	M10		M16		M20	
Ø d10 H9	16	20		30		40	
g	60	60		90		110	
h	3	3		4		5	
h3	16	20		30		35	
L1 2)	35	44		65		80	
t	18.3	22.8		33.3		43.3	
Z	4	4		4		4	
Deviating dimensions IB1/IB	**IB1 07.2**	**IB1 10.2**	**IB 10.2**	**IB1 14.2**	**IB 14.2**	**IB1 16.2**	**IB 16.2**
ISO 5210/DIN 3210	F07 1)	F10	G0	F14	G1/2	F16	G3
b JS9	8	12		18		22	
Ø d10 H9	28	42		60		80	
L2 2)	28	36		55		65	
L max. 3)	35	44		65		80	
t	31.3	45.3		64.4		85.4	

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Output drive stem nut type A

for SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2
SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2
GK 10.2 – GK 16.2/GST 10.1 – GST 16.1

Output drive type
EN ISO 5210 A
DIN 3210 A



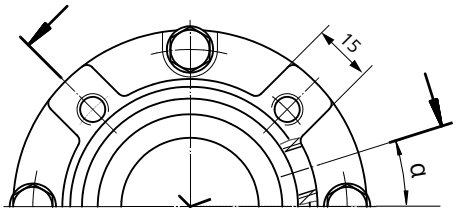
1) permissible axial load
2) nominal diameter for trapezoidal thread Tr according to DIN 103 or ACME according to ANSI/ASME B 1.5
3) when mounting to multi-turn actuator sizes 07.2/07.6, refer to Dimensions Multi-turn actuators for max. nominal diameter

Dimensions	A 07.2	A 10.2		A 14.2		A 16.2	
EN ISO 5210/DIN 3210	F07	F10	G0	F14	G1/2	F16	G3
F max. [kN] 1)	40	70		160		250	
Ø d1	90	125		175		210	
Ø d2 f8	55	70	60	100		130	
Ø d3	70	102		140		165	
d4	M8	M10		M16		M20	
Ø d6 max. 2)	Tr 26 ACME 1“	Tr 40 3) ACME 1½“ 3)		Tr 55 ACME 2¼“		Tr 75 ACME 3“	
Ø d7	35	50		75		99	
g	40	50		65		80	
h	3	3		4		5	
h1	23	30		38		45	
h3	12	15		25		35	
L	37.5	47.5		61.5		76.5	
L1	55.5	70.5		90		112.5	
L6	18	23		28.5		36	
Z	4	4		4		4	
α	17.5°	17.5°		22.5°		22.5°	
Weight: Standard Version [kg]	1.1	2.8		6.8		11.7	
Weight: Extended Version [kg]	1.3	3.2		7.8		14.2	

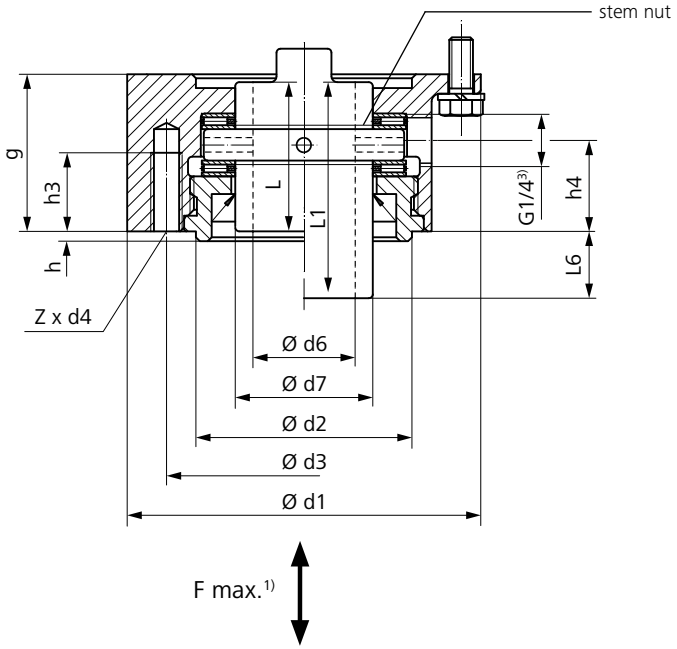
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Output drive stem nut type A for stem lubrication

for SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2
SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2
GK 10.2 – GK 16.2/GST 10.1 – GST 16.1



Output drive type
EN ISO 5210 A
DIN 3210 A



1) permissible axial load
2) nominal diameter for trapezoidal thread Tr according to DIN 103 or ACME according to ANSI/ASME B 1.5
3) G ¼ internal thread for the connection of grease nipple or permanent lubricator.
AUMA recommend: Simalube single point lubricator SL01 (distributed by: Grützner GmbH; www.simalube.de)
4) when mounting to multi-turn actuator sizes 07.2/07.6, refer to Dimensions Multi-turn actuators for max. nominal diameter

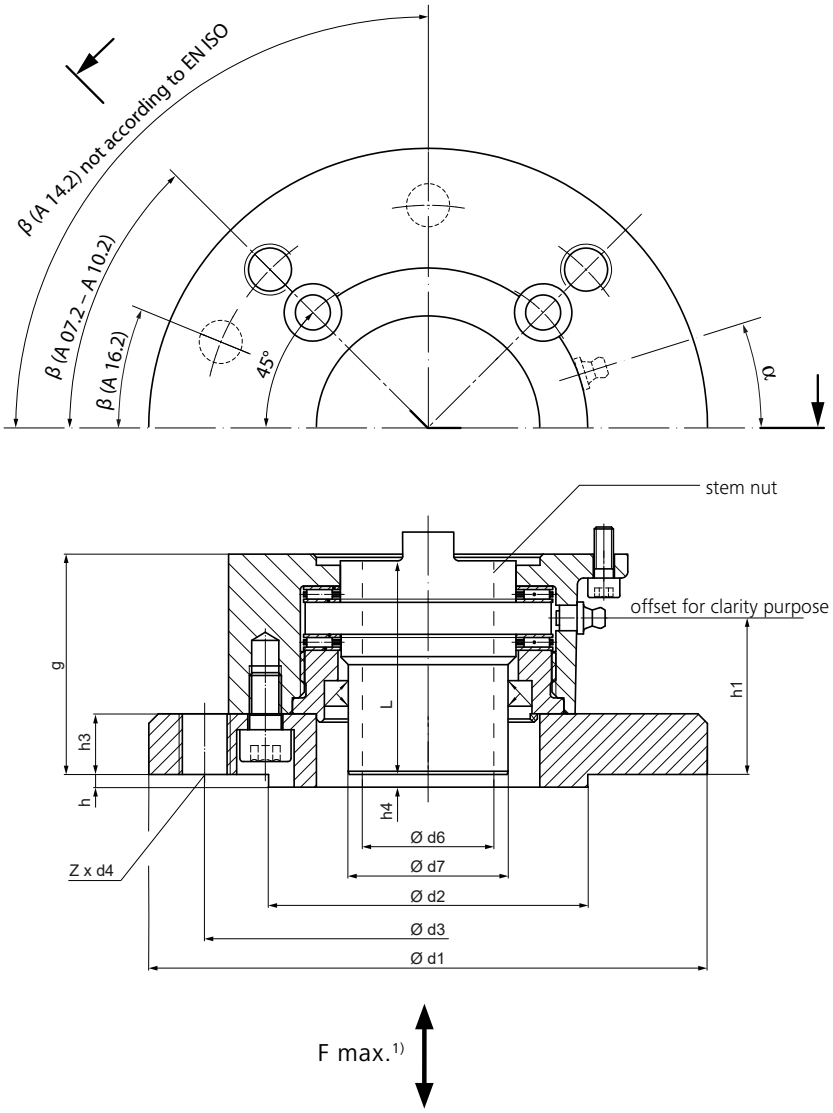
Dimensions	A 07.2	A 10.2		A14.2		A 16.2	
EN ISO 5210/DIN 3210	F07	F10	G0	F14	G1/2	F16	G3
F max. [kN] 1)	40	70		160		250	
Ø d1	90	125		175		210	
Ø d2 f8	55	70	60	100		130	
Ø d3	70	102		140		165	
d4	M8	M10		M16		M20	
Ø d6 max. 2)	Tr 26 ACME 1“	Tr 40 4) ACME 1½“ 4)		Tr 55 ACME 2¼“		Tr 75 ACME 3“	
Ø d7	35	50		75		99	
g	40	50		65		80	
h	3	3		4		5	
h3	12	15		25		35	
h4	23	30		38		45	
L	37.5	47.5		61.5		76.5	
L1	55.5	70.5		90		112.5	
L6	18	23		28.5		36	
Z	4	4		4		4	
α	17.5°	17.5°		22.5°		22.5°	
Weight: Standard version [kg]	1.1	2.8		6.8		11.7	
Weight: Extended version [kg]	1.3	3.2		7.8		14.2	

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Output drive stem nut type A with extension flange

for SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2
SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2

Output drive type
EN ISO 5210 A
DIN 3210 A



1) permissible axial load
2) nominal diameter for trapezoidal thread Tr according to DIN 103 or ACME according to ANSI/ASME B 1.5
3) when mounting to multi-turn actuator sizes 07.2/07.6, refer to Dimensions Multi-turn actuators for max. nominal diameter

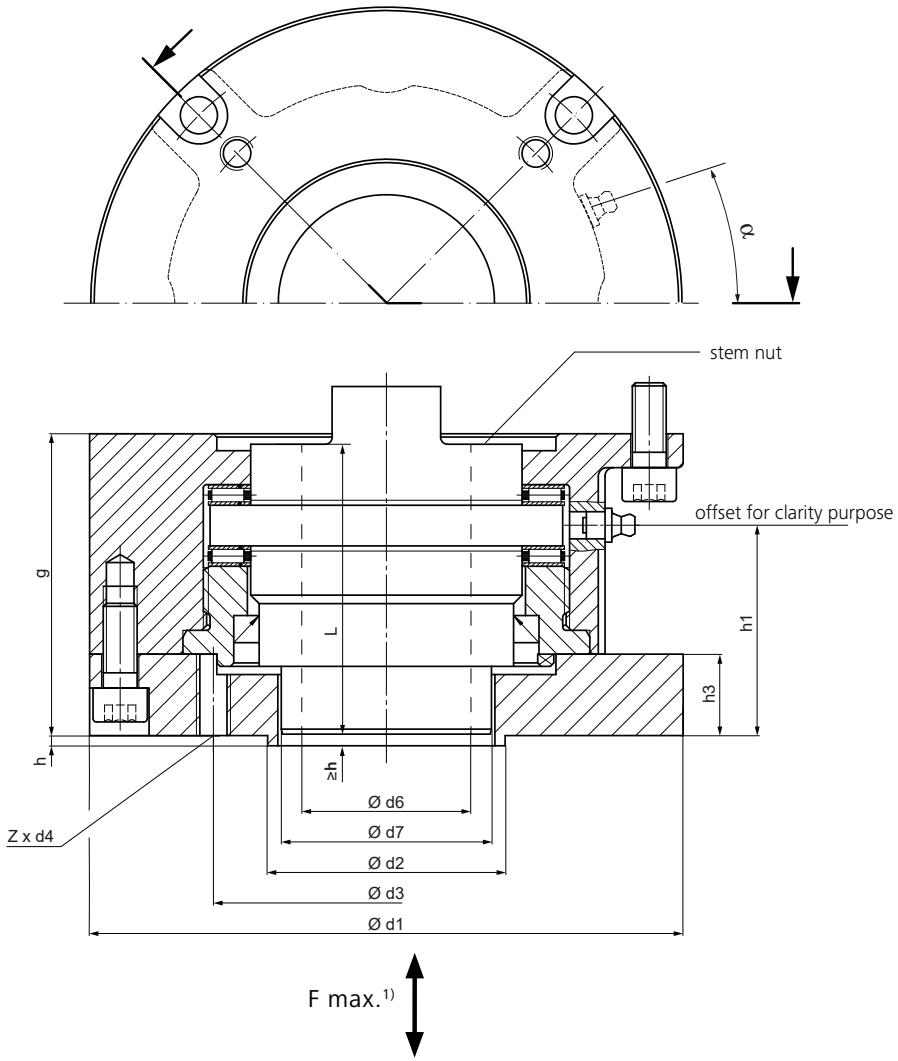
Dimensions	A 10.2		A 14.2		A 16.2	
EN ISO 5210/DIN 3210	F14	G1/2	F16	G3	F25	G4
F max. [kN] 1)	70		160		250	
Ø d1	175		210		300	
Ø d2 f12	100		130		200	
Ø d3	140		165		254	
d4	M16		M20		M16	
Ø d6 max. 2)	Tr 40 3) ACME 1½" 3)		Tr 55 ACME 2¼"		Tr 75 ACME 3"	
Ø d7	50		75		99	
g	69		92.5		118	
h	4		5		5	
h1	49		65.5		83	
h3	19		27.5		36	
h4	0		4		7	
L	70.5		90		112.5	
Z	4		4		8	
α	17.5°		22.5°		22.5°	
β	45°		90°		22.5°	
Weight [kg]	8.7		13.5		31.5	

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Output drive stem nut type A with reduction flange

for SA 14.2 – SA 16.2/SAR 14.2 – SAR 16.2
SAEx 14.2 – SAEx 16.2/SAREx 14.2 – SAREx 16.2

Output drive type
EN ISO 5210 A
DIN 3210 A



1) permissible axial load
2) nominal diameter for trapezoidal thread Tr according to DIN 103 or ACME according to ANSI/ASME B 1.5

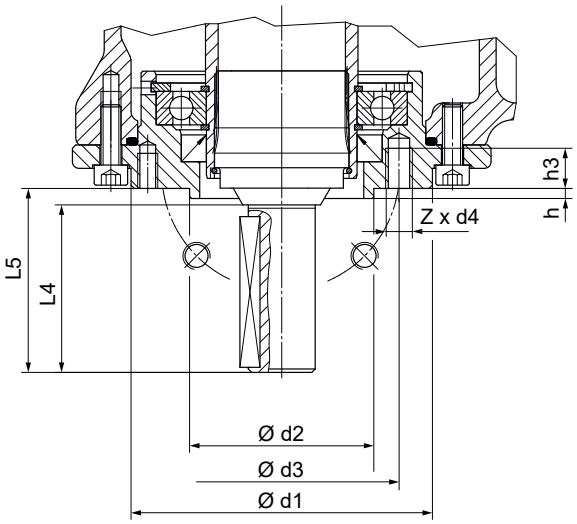
Dimensions	A 14.2			A 16.2
EN ISO 5210/DIN 3210	F10	G0	F12	F14
F max. [kN] 1)	160			250
Ø d1	175			210
Ø d2 f12	70	60	85	100
Ø d3	102		125	140
d4	M10		M12	M16
Ø d6 max. 2)	Tr 48 ACME 1¾	Tr 40 ACME 1½“	Tr 48 ACME 1¾“	Tr 65 ACME 2½“
Ø d7	62	52	62	88
g	89			111
h	3			4
h1	62			76
h3	24			31
L	85.5			108
Z	4			4
α	22.5°			22.5°
Weight [kg]	12.2	12.2	12.4	14.5

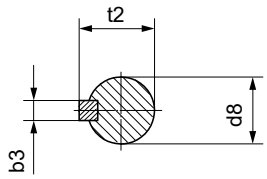
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Output drive type shaft end D

for SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2
SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2

Output drive type
EN ISO 5210 D
DIN 3210 D



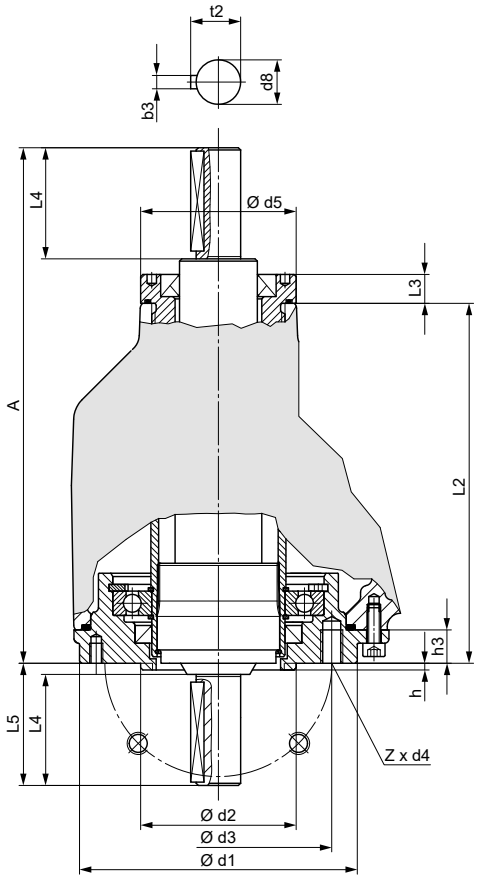


Dimensions	D 07.2			D 10.2		D 14.2		D 16.2	
EN ISO 5210/DIN 3210	F07	F10	G0	F10	G0	F14	G1/2	F16	G3
b3	6			6		8		12	
Ø d1	90	125		125		175		210	
Ø d2 f12	55	70	60	70	60	100		130	
Ø d3	70	102		102		140		165	
d4	M8	M10		M10		M16		M20	
d8 g6	20			20		30		40	
h	3			3		4		5	
h3	12	13		15		25		30	
L4	50			50		70		90	
L5	55			55		76		97	
t2	22.5			22.5		33		43	
Z	4			4		4		4	

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SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2
SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2
Dimensions Output drive type DD, shaft end bottom and top

Output drive type
EN ISO 5210 DD
DIN 3210 DD

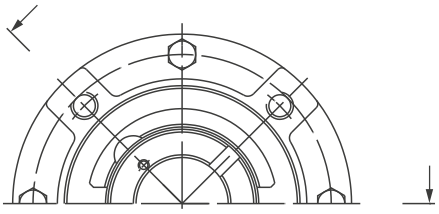


Dimensions	SA 07.2/SA 07.6			SA 10.2		SA 14.2/SA 14.6		SA 16.2	
EN ISO 5210/DIN 3210	F07	F10	G0	F10	G0	F14	G1/2	F16	G3
A	220			232		295		335/355	
b3	6			6		8		8/12	
Ø d1	90	125		125		175		210	
Ø d2 f12	55	70	60	70	60	100		130	
Ø d3	70	102		102		140		165	
d4	M8	M10		M10		M16		M20	
Ø d5	55			70		90		105	
d8 g6	20			20		30		30/40	
h	3			3		4		5	
h3	12	13		15		25		30	
L2	153			162		188		227	
L3	13			13		13		15	
L4	50			50		70		70/90	
L5	55			55		76		77/97	
t2	22.5			22.5		33		33/43	
Z	4			4		4		4	

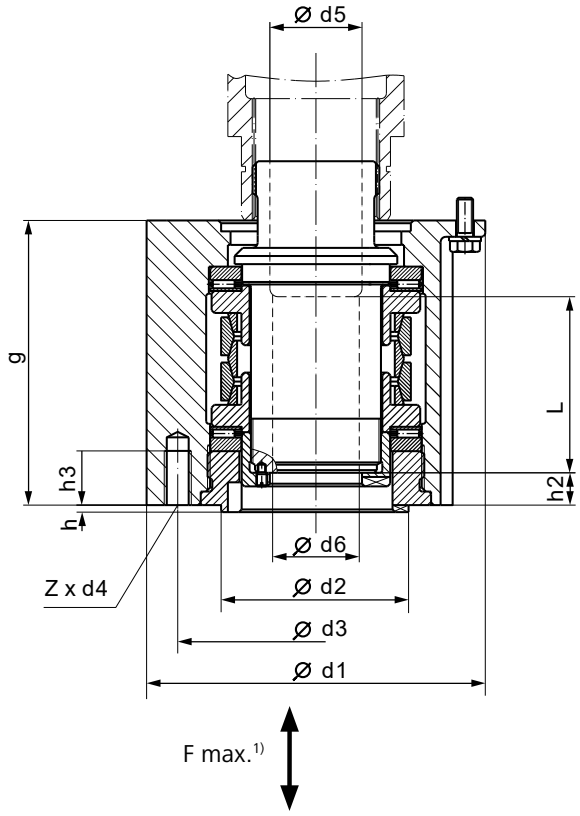
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Output drive type AF - with spring-loaded stem nut

for SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2
SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2
GK 10.2 – GK 16.2
GST 10.1 – GST 16.1



Output drive type
ISO 5210 AF
DIN 3210 AF



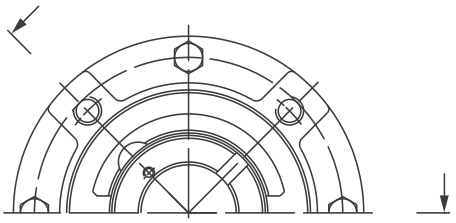
1) permissible axial load
2) Only for SA/SAR 07.2, 07.6
3) nominal diameter for trapezoidal thread Tr according to DIN 103 or ACME according to ANSI/ASME B 1.5
4) For stem protection tube made of PMMA max. Tr 30 or ACME 1⅛"

Dimensions	AF 07.2 2)		AF 07.6 2)		AF 10.2		AF 14.2		AF 16.2	
ISO 5210/DIN 3210	F10	G0	F10	G0	F10	G0	F14	G1/2	F16	G3
F max. [kN] 1)	16		33		52		100		160	
Ø d1	125				125		175		210	
Ø d2 f8	70	60	70	60	70	60	100		130	
Ø d3	102				102		140		165	
d4	M10				M10		M16		M20	
Ø d5	34				34		53		67	
Ø d6 max. 3)	Tr 32 4) ACME 1¼" 4)				Tr 32 ACME 1¼"		Tr 50 ACME 2"		Tr 65 ACME 2½"	
g	105				105		135		165	
h	3				3		4		4	
h2	12				12		13		15	
h3	20				20		25		35	
L	65				65		90		110	
Z	4				4		4		4	
Weight [kg]	5.2				5.5		13.7		23	

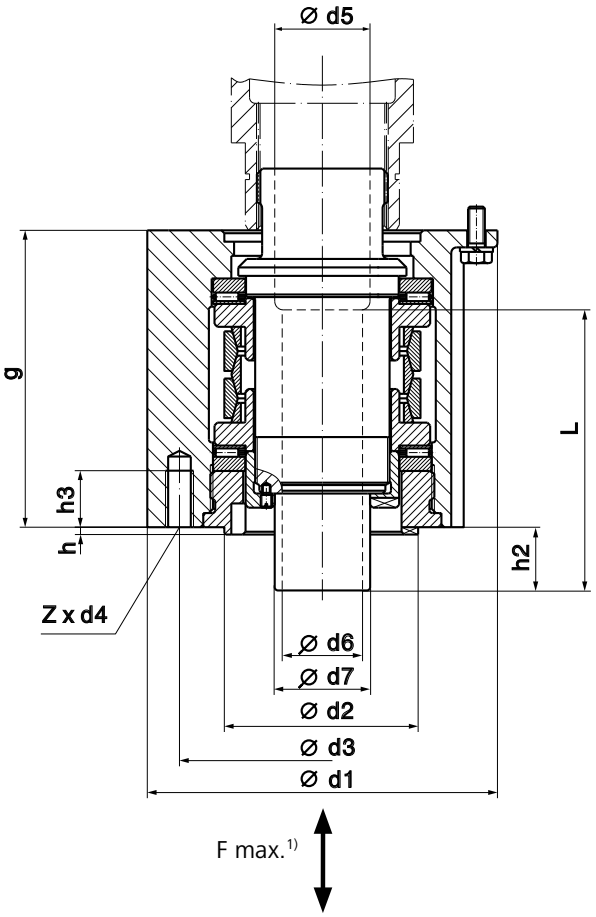
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Output drive type AF - with extended spring loaded stem nut

for SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2
SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2



Output drive type
EN ISO 5210 AF
DIN 3210 AF



1) permissible axial load
2) nominal diameter for trapezoidal thread Tr according to DIN 103 or ACME according to ANSI/ASME B 1.5

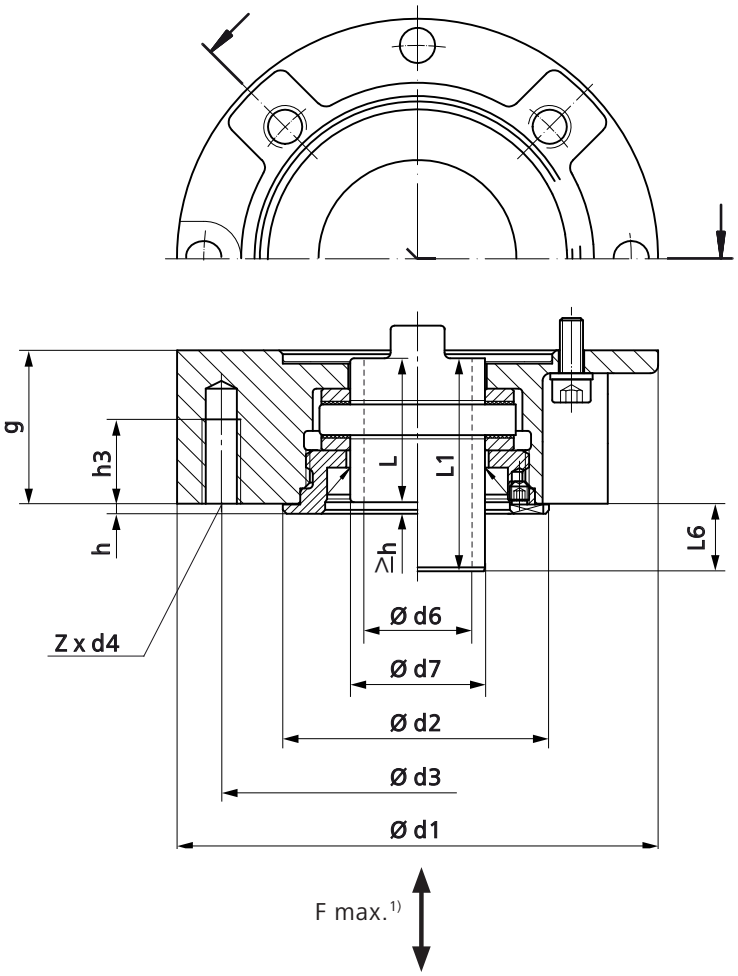
Dimensions	AF 07.2		AF 07.6		AF 10.2		AF 16.2	
EN ISO 5210/DIN 3210	F10	G0	F10	G0	F10	G0	F16	G3
F max. [kN] 1)	16		33		52		160	
Ø d1	125				125		210	
Ø d2 f8	70	60	70	60	70	60	130	
Ø d3	102				102		165	
d4	M10				M10		M20	
Ø d5	34				34		67	
Ø d6 max. 2)	Tr 26 ACME 1“				Tr 26 ACME 1“		Tr 52 ACME 2“	
Ø d7	33				33		65	
g	105				105		165	
h	3				3		4	
h2	23.5				23.5		49	
h3	20				20		35	
L	100				100		110	
Z	4				4		4	
Weight [kg]	5.4				5.7		25.5	

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Output drive AG stem nut for oxygen application

for SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2
SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2
GK 10.2 – GK 16.2
GST 10.1 – GST 16.1

Output drive
EN ISO 5210 AG



1) permissible axial load
2) nominal diameter for trapezoidal thread Tr according to DIN 103 or ACME according to ANSI/ASME B 1.5
3) when mounting to multi-turn actuator sizes 07.2/07.6, refer to Dimensions Multi-turn actuators for max. nominal diameter

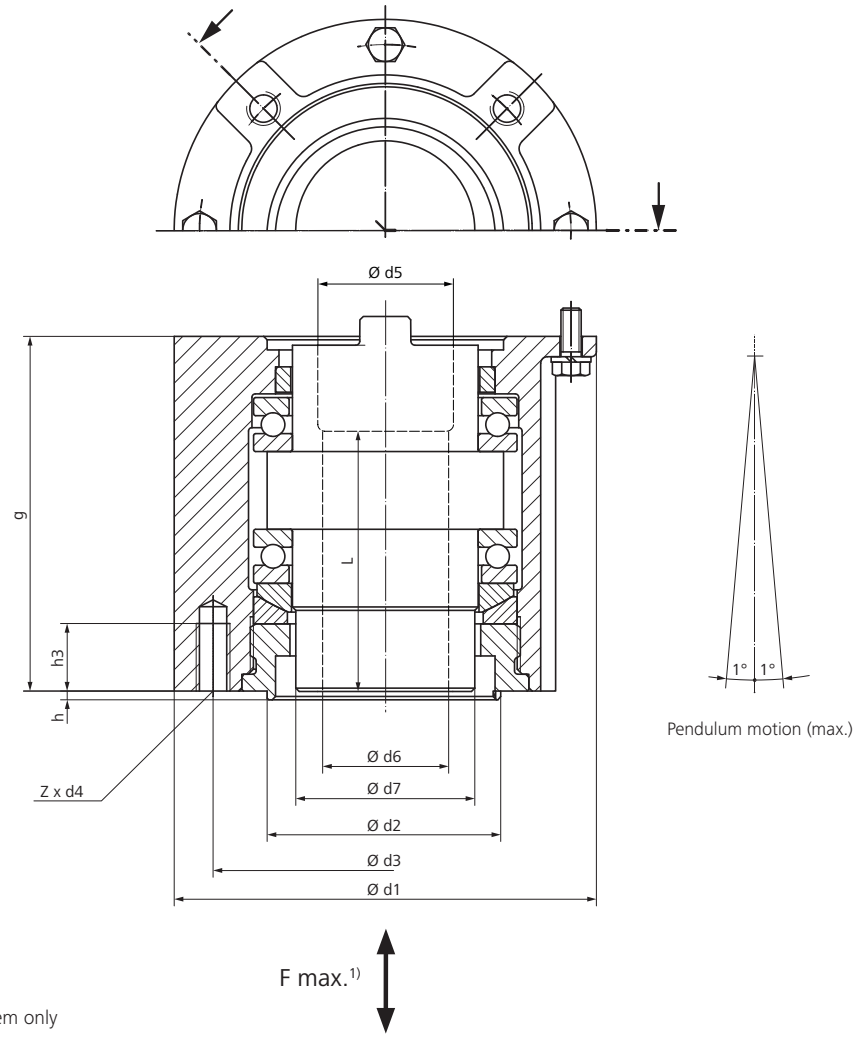
Dimensions	AG 10.2	AG 14.2	AG 16.2
EN ISO 5210	F10	F14	F16
F max. [kN] 1)	70	160	250
Ø d1	125	175	210
Ø d2 f8	70	100	130
Ø d3	102	140	165
d4	M10	M16	M20
Ø d6 max. 2)	Tr 40 3) ACME 1½" 3)	Tr 55 ACME 2¼"	Tr 75 ACME 3"
Ø d7	50	75	99
g	50	65	80
h	3	4	5
h3	22	25	35
L	47.5	61.5	76.5
L1	70.5	90	112.5
L6	23	28.5	36
Z	4	4	4
Weight: Standard Version [kg]	2.8	6.8	11.7
Weight: Extended Version [kg]	3.2	7.8	14.2

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Dimensions Output drive type AK

for SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2
SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2
GK 10.2 – GK 16.2
GST 10.1 – GST 16.1

Output drive type
EN ISO 5210 AK



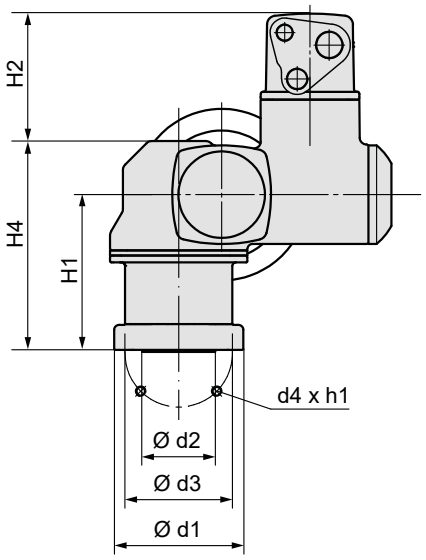
Pendulum motion (max.)

Note: Suitable for vertical stem only
1) permissible axial load
2) nominal diameter for trapezoidal thread Tr according to DIN 103 or ACME according to ANSI/ASME B 1.5
3) when mounting to multi-turn actuator sizes 07.2/07.6, refer to Dimensions Multi-turn actuators for max. nominal diameter

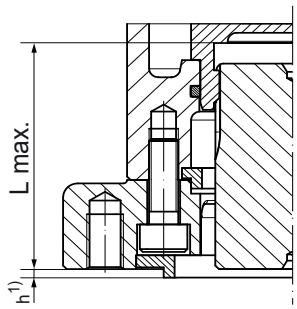
Dimensions	AK 10.2		AK 14.2		AK 16.2	
EN ISO 5210/DIN 3210	F10	G0	F14	G1/2	F16	G3
F max. [kN] 1)	70		160		250	
Ø d1	125		175		210	
Ø d2 f8	70	60	100		130	
Ø d3	102		140		165	
d4	M10		M16		M20	
Ø d5	41		58		76	
Ø d6 max. 2)	Tr 40 3) ACME 1½“ 3)		Tr 55 ACME 2¼“		Tr 75 ACME 2¾“	
Ø d7	53		78		97	
g	105		135		165	
h	3		4		4	
h3	20		25		35	
L	65		90		110	
Z	4		4		4	
Weight kg	5.5		13.7		23	

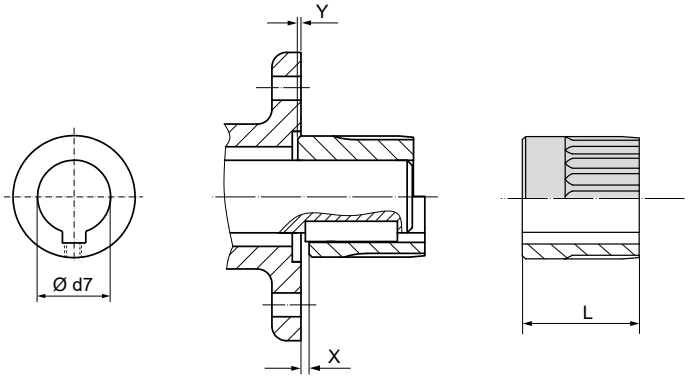
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SQ 05.2 – SQ 14.2/SQR 05.2 – SQR 14.2
SQEx 05.2 – SQEx 14.2/SQREx 05.2 – SQREx 14.2
Dimensions Part-turn actuators with special output mounting flanges



Output drive cross section





Mounting position of the coupling within fitting dimensions according to AUMA definition

1) Allowance for spigot is not available as standard. Spigot can be ordered as option

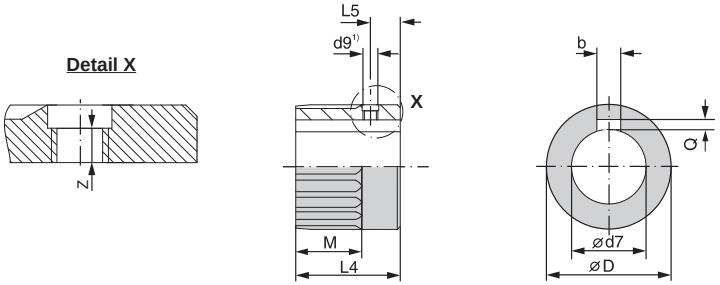
For all other dimensions, refer to standard dimension sheet.

Output drives according to EN ISO 5211

Dimensions	EN ISO 5211	H1	H2	H4	L	L max.	X max.	Y max.	Ø d1	Ø d2 1)	Ø d3	d4	Ø d7 max.	h	h1 1)
SQ 05.2	F04	154	210	213	55	60	3	2	54	30	42	4 x M5	15	2.5	10
	F07	134	210	193	35	40	3	2	90	55	70	4 x M8	25.4	2.5	15
	F10	160	210	217	60	66	3	2	125	70	102	4 x M10	25.4	2.5	16
SQ 07.2	F07	134	210	193	35	40	3	2	90	55	70	4 x M8	25.4	2.5	15
	F10	160	210	217	60	66	3	2	125	70	102	4 x M10	25.4	2.5	16
	F12	154	210	211	55	60	3	2	150	85	125	4 x M12	25.4	3	19
SQ 10.2	F07	171	210	234	65	70	6	3	125	55	70	4 x M8	38	3	13
	F12	183	210	246	75	82	6	3	150	85	125	4 x M12	38	2.5	19
SQ 12.2	F10	215	210	278	95	101	5	10	125	–	102	4 x M10	50	–	18
	F14	215	210	278	95	101	5	10	175	100	140	4 x M16	50	3.5	25
	F16	225	210	288	105	111	5	10	210	130	165	4 x M20	50	4.5	32
SQ 14.2	F12	240	210	303	95	105	8	10	175	85	125	4 x M12	60	3	19
	F16	260	210	323	115	125	8	10	210	130	165	4 x M20	60	4.5	32

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Dimensions Couplings (standard), bore with keyway according to DIN 6885-1



1) Thread with grub screw made of A2
2) Article number refers to unbored version, KN, KS
3) Combined flange F05/F07 without spigot (standard). As an alternative an individual flange F07 can be ordered with spigot

Type	Article no. 2)	Ø D	L4	M	Splined coupling DIN 5480	Ø d7 max.	Ø d7 H8 over	Ø d7 H8 to	b JS 9	Q	Parallel key DIN 6885-1	Ø d9 1)	L5 1)	Grub screw 1) ISO 4029	Z
SG 03.3/SG 04.3 ED 25 – ED 50	Z009.977	24.8	25	17	25x1x24	15	12	15	5	2.3 + 0.1	5 x 5 x ..	M4	5	M4 x 4	6
							10	12	4	1.8 + 0.1	4 x 4 x ..				
							8	10	3	1.4 + 0.1	3 x 3 x ..				
SG 04.2	Z009.992	24.8	35	17	25x1x24	15	12	15	5	2.3 + 0.1	5 x 5 x ..	M4	8	M4 x 4	6
							10	12	4	1.8 + 0.1	4 x 4 x ..				
							8	10	3	1.4 + 0.1	3 x 3 x ..				
SGC/SGM 04.1/05.1 SVC/SVM 05.1 SG 05.2 SG 05.3 EQ 40 – EQ 150 GS 50.3 F05 GHE 05.1 PF-Q80/150 PF-M25/50	Z010.132	31.75	35	20	32x1.25x24	20	17	20	6	2.8 + 0.1	6 x 6 x ..	M4	8	M4 x 4	6
							12	17	5	2.3 + 0.1	5 x 5 x ..				
							10	12	4	1.8 + 0.1	4 x 4 x ..				
SGC/SGM 07.1 SQ 05.2 – F05/F07 3) SQ 07.2 – F05/F07 3) SG 07.2 EQ 40 – EQ 150 (IP68) GHE 07.1 SVC/SVM 07.1/5 FQM 05.1/07.1	Z010.369 Z021.449	41.75	35	20	42x1.25x32	25.4	22	25.4	8	3.3 + 0.2	8 x 7 x ..	M5	8	M5 x 5	7.5
							17	22	6	2.8 + 0.2	6 x 6 x ..				
							12	17	5	2.3 + 0.1	5 x 5 x ..				
SG 05.1/SG 07.1	Z010.169	41.75	40	20	42x1.25x32	25.4	22	25.4	8	3.3 + 0.2	8 x 7 x ..	M5	8	M5 x 5	7.5
							17	22	6	2.8 + 0.1	6 x 6 x ..				
							12	17	5	2.3 + 0.1	5 x 5 x ..				
SQ 07.2 – F10	Z010.658	41.75	60	20	42x1.25x32	25.4	22	25.4	8	3.3 + 0.2	8 x 7 x ..	M5	8	M5 x 5	7.5
							17	22	6	2.8 + 0.1	6 x 6 x ..				
							12	17	5	2.3 + 0.1	5 x 5 x ..				
SGC/SGM 10.1 SQ 10.2 – F10 GS 50.3 GHE 10.1 SG 10.2 EQ 300/EQ 600 PF-Q300/600 PF-M100	Z010.302	51.75	45	30	52x1.25x40	38	30	38	10	3.3 + 0.2	10 x 8 x ..	M6	10	M6 x 6	9
							22	30	8	3.3 + 0.2	8 x 7 x ..				
							17	22	6	2.8 + 0.1	6 x 6 x ..				
SG 10.1	Z010.328	51.75	65	35	52x1.25x40	38	30	38	10	3.3 + 0.2	10 x 8 x ..	M6	10	M6 x 6	9
							22	30	8	3.3 + 0.2	8 x 7 x ..				
							17	22	6	2.8 + 0.1	6 x 6 x ..				
SQ 10.2 – F12	Z044.911	51.75	75	30	52x1.25x40	38	30	38	10	3.3 + 0.2	10 x 8 x ..	M6	10	M6 x 6	9
							22	30	8	3.3 + 0.2	8 x 7 x ..				
							17	22	6	2.8 + 0.1	6 x 6 x ..				
SGC/SGM 12.1 – F12 SQ 12.2 – F12 GS 63.3 GHE 12.1 FQM 10.1/12.1	Z010.368 Z021.415	67.6	55	40	68x2x32	50	44	50	14	3.8 + 0.2	14 x 9 x ..	M6	10	M6 x 6	9
							38	44	12	3.3 + 0.2	12 x 8 x ..				
							30	38	10	3.3 + 0.2	10 x 8 x ..				

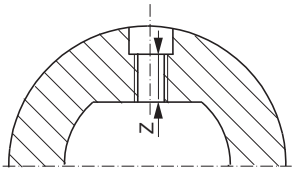
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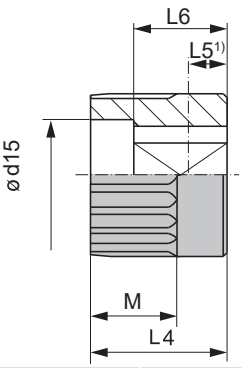
Dimensions Couplings (standard), bore with keyway according to DIN 6885-1

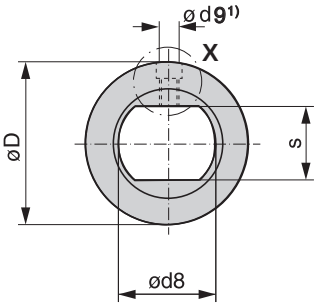
Type	Article no. [2]	Ø D	L4	M	Splined coupling DIN 5480	Ø d7 max.	Ø d7 H8 over	Ø d7 H8 to	b JS 9	Q	Parallel key DIN 6885-1	Ø d9 [1]	L5 [1]	Grub screw [1] ISO 4029	Z
SG 12.1	Z010.184	67.6	75	40	68x2x32	50	44	50	14	3.8 + 0.2	14 x 9 x ..	M6	10	M6 x 6	9
							38	44	12	3.3 + 0.2	12 x 8 x ..				
							30	38	10	3.3 + 0.2	10 x 8 x ..				
SGC/SGM 12.1 – F14 SQ 12.2 – F14	Z006.070	67.6	95	40	68x2x32	50	44	50	14	3.8 + 0.2	14 x 9 x ..	M6	10	M6 x 6	9
							38	44	12	3.3 + 0.2	12 x 8 x ..				
							30	38	10	3.3 + 0.2	10 x 8 x ..				
SGC/SGM 12.1 – F16 SQ 12.2 – F16	Z006.071	67.6	105	40	68x2x32	50	44	50	14	3.8 + 0.2	14 x 9 x ..	M6	10	M6 x 6	9
							38	44	12	3.3 + 0.2	12 x 8 x ..				
							30	38	10	3.3 + 0.2	10 x 8 x ..				
SGM 14.1 – F14 SQ 14.2 – F14 GS 80.3	Z010.394	81.6	65	47	82x2x40	60	58	60	18	4.4 + 0.2	18 x 11 x ..	M6	10	M6 x 6	9
							50	58	16	4.3 + 0.2	16 x 10 x ..				
							44	50	14	3.8 + 0.2	14 x 9 x ..				
SGM 14.1 – F16 SQ 14.2 – F16	Z111.676	81.6	115	40	82x2x40	60	58	60	18	4.4 + 0.2	18 x 11 x ..	M6	10	M6 x 6	9
							50	58	16	4.3 + 0.2	16 x 10 x ..				
							44	50	14	3.8 + 0.2	14 x 9 x ..				
GS 100.3	Z015.955	105.8	80	50	106x2x52	80	75	80	22	5.4 + 0.2	22 x 14 x ..	M8	18	M8 x 8	12
							65	75	20	4.9 + 0.2	20 x 12 x ..				
							58	65	18	4.4 + 0.2	18 x 11 x ..				
GS 125.3	Z017.441	119.6	110	70	120x2x60	90	85	90	25	5.4 + 0.2	25 x 14 x ..	M8	18	M8 x 8	12
							75	85	22	5.4 + 0.2	22 x 14 x ..				
							65	75	20	4.9 + 0.2	20 x 12 x ..				

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Dimensions Couplings (standard), two-flat bore according to ISO 5211







1) Thread with grub screw made of A2
2) Article number refers to unbored version, KN, KS
3) DIN 475
4) Combined flange F05/F07 without spigot (standard).
As an alternative an individual flange F07 can be ordered with spigot

Type	Article no. 2)	Ø D	L4	M	Splined coupling DIN 5480	S H11 over	S H11 to	Ø d8 max.	L6	Ø d9 1)	Ø d15	L5 1)	Grub screw 1) ISO 4029	Z
SG 03.3/SG 04.3 ED 25 – ED 50	Z009.977	24.8	25	17	25x1x24		11	14.1	25	M4	16	5	M4 x 4	6
						11	14	18.1						
SG 04.2	Z009.992	24.8	35	17	25x1x24		11	14.1	25	M4	16	8	M4 x 4	6
						11	14	18.1						
SGC/SGM 04.1/05.1 SVC/SVM 05.1 SG 05.2 SG 05.3 EQ 40 – EQ 150 GS 50.3 F05 GHE 05.1 PF-Q80/150 PF-M25/50	Z010.132	31.75	35	20	32x1.25x24		11	14.1	25	M4	16	8	M4 x 4	6
						11	16 3)	18 3)	25		22.5			
						16 3)	17	22.2	30		25			
SGC/SGM 07.1 SQ 05.2 – F05/F07 4) SQ 07.2 – F05/F07 4) SG 07.2 EQ 40 – EQ 150 (IP68) GHE 07.1 SVC/SVM 07.1/5 FQM 05.1/07.1	Z010.369 Z021.449	41.75	35	20	42x1.25x32	11	16 3)	18 3)	25	M5	22.5	8	M5 x 5	7.5
						16 3)	22	28.2	30		31			
SG 05.1/SG 07.1	Z010.169	41.75	40	20	42x1.25x32	11	16 3)	18 3)	25	M5	22.5	8	M5 x 5	7.5
						16 3)	22	28.2	30		31			
SQ 07.2 – F10	Z010.658	41.75	60	20	42x1.25x32	11	16 3)	18 3)	25	M5	22.5	8	M5 x 5	7.5
						16 3)	22	28.2	30		31			
SGC/SGM 10.1 SQ 10.2 – F10 GS 50.3 GHE 10.1 SG 10.2 EQ 300/EQ 600 PF-Q300/600 PF-M100	Z010.302	51.75	45	30	52x1.25x40	11	16 3)	18 3)	25	M6	22.5	10	M6 x 6	9
						16 3)	22	28.2	30		31			
						22	27	36.2	40		41			
SG 10.1	Z010.328	51.75	65	35	52x1.25x40	11	16 3)	18 3)	25	M6	22.5	10	M6 x 6	9
						16 3)	22	28.2	30		31			
						22	27	36.2	40		41			
SQ 10.2 – F12	Z044.911	51.75	75	30	52x1.25x40	11	16 3)	18 3)	25	M6	22.5	10	M6 x 6	9
						16 3)	22	28.2	30		31			
						22	27	36.2	40		41			
SGC/SGM 12.1 – F12 SQ 12.2 – F12 GS 63.3 GHE 12.1 FQM 10.1/12.1	Z010.368 Z021.415	67.6	55	40	68x2x32	16 3)	22	28.2	30	M6	31	10	M6 x 6	9
						22	27	36.2	40		41			
						27	36 (41 3))	48.2 (48 3))	45		53			
SG 12.1	Z010.184	67.6	75	40	68x2x32	16 3)	22	28.2	30	M6	31	10	M6 x 6	9
						22	27	36.2	40		41			
						27	36 (41 3))	48.2 (48 3))	45		53			

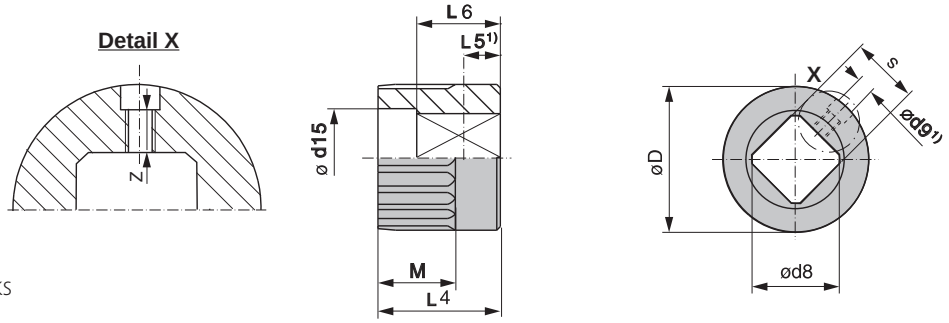
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Dimensions Couplings (standard), two-flat bore according to ISO 5211

Type	Article no. [2]	Ø D	L4	M	Splined coupling DIN 5480	S H11 over	S H11 to	Ø d8 max.	L6	Ø d9 [1]	Ø d15	L5 [1]	Grub screw [1] ISO 4029	Z
SGC/SGM 12.1 – F14 SQ 12.2 – F14	Z006.070	67.6	95	40	68x2x32	16 [3]	22	28.2	30	M6	31	10	M6 x 6	9
						22	27	36.2	40		41			
						27	36 (41 [3])	48.2 (48 [3])	45		53			
SGC/SGM 12.1 – F16 SQ 12.2 – F16	Z006.071	67.6	105	40	68x2x32	16 [3]	22	28.2	30	M6	31	10	M6 x 6	9
						22	27	36.2	40		41			
						27	36 (41 [3])	48.2 (48 [3])	45		53			
SGM 14.1 – F14 SQ 14.2 – F14 GS 80.3	Z010.394	81.6	65	47	82x2x40	22	27	36.2	40	M6	41	10	M6 x 6	9
						27	36 (41 [3])	48.2 (48 [3])	45		53			
						36 (41 [3])	46	60.2	59		64			
SGM 14.1 – F16 SQ 14.2 – F16	Z111.676	81.6	115	40	82x2x40	22	27	36.2	40	M6	41	10	M6 x 6	9
						27	36 (41 [3])	48.2 (48 [3])	45		53			
						36 (41 [3])	46	60.2	59		64			
GS 100.3	Z015.955	105.8	80	50	106x2x52	27	36 (41 [3])	48.2 (48 [3])	45	M8	53	18	M8 x 8	12
						36 (41 [3])	46	60.2	59		64			
						46	55	72.2	77		85			
GS 125.3	Z017.441	119.6	110	70	120x2x60	36 (41 [3])	46	60.2	59	M8	64	18	M8 x 8	12
						46	55	72.2	77		85			
						55	75	98.2	94		95			

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Dimensions Couplings (standard), square bore according to ISO 5211



1) Thread with grub screw made of A2
2) Article number refers to unbored version, KN, KS
3) DIN 79
4) Combined flange F05/F07 without spigot (standard).
As an alternative an individual flange F07 can be ordered with spigot

Type	Article no. 2)	Ø D	L4	M	Splined coupling DIN 5480	S H11 over	S H11 to	Ø d8 max.	L6	Ø d9 1)	Ø d15	L5 1)	Grub screw 1) ISO 4029	Z
SG 03.3/SG 04.3 ED 25 – ED 50	Z009.977	24.8	25	17	25x1x24		11	14.1	25	M4	16	5	M4 x 4	6
						11	14	18.1						
SG 04.2	Z009.992	24.8	35	17	25x1x24		11	14.1	30	M4	16	8	M4 x 4	6
						11	14	18.1						
SGC/SGM 04.1/05.1 SVC/SVM 05.1 SG 05.2 SG 05.3 EQ 40 – EQ 150 GS 50.3 F05 GHE 05.1 PF-Q80/150 PF-M25/50	Z010.132	31.75	35	20	32x1.25x24		11	14.1	30	M4	16	8	M4 x 4	6
						11	14	18.1			20			
						14	17	22.2			24			
SGC/SGM 07.1 SQ 05.2 – F05/F07 4) SQ 07.2 – F05/F07 4) SG 07.2 EQ 40 – EQ 150 (IP68) GHE 07.1 SVC/SVM 07.1/5 FQM 05.1/07.1	Z010.369 Z021.449	41.75	35	20	42x1.25x32	11	14	18.1	30	M5	20	8	M5 x 5	7.5
						14	17	22.2			24			
						17	22	28.2			31.5			
SG 05.1/SG 07.1	Z010.169	41.75	40	20	42x1.25x32	11	14	18.1	30	M5	20	8	M5 x 5	7.5
						14	17	22.2			24			
						17	22	28.2			31.5			
SQ 07.2 – F10	Z010.658	41.75	60	20	42x1.25x32	11	14	18.1	30	M5	20	8	M5 x 5	7.5
						14	17	22.2			24			
						17	22	28.2			31.5			
SGC/SGM 10.1 SQ 10.2 – F10 GS 50.3 GHE 10.1 SG 10.2 EQ 300/EQ 600 PF-Q300/600 PF-M100	Z010.302	51.75	45	30	52x1.25x40	14	17	22.2	30	M6	24	10	M6 x 6	9
						17	22	28.2	30		31.5			
						22	30 3)	40.2 3)	40		41.5			
SG 10.1	Z010.328	51.75	65	35	52x1.25x40	14	17	22.2	30	M6	24	10	M6 x 6	9
						17	22	28.2	30		31.5			
						22	30 3)	40.2 3)	40		41.5			
SQ 10.2 – F12	Z044.911	51.75	75	30	52x1.25x40	14	17	22.2	30	M6	24	10	M6 x 6	9
						17	22	28.2	30		31.5			
						22	30 3)	40.2 3)	40		41.5			
SGC/SGM 12.1 – F12 SQ 12.2 – F12 GS 63.3 GHE 12.1 FQM 10.1/12.1	Z010.368 Z021.415	67.6	55	40	68x2x32	17	22	28.2	30	M6	31.5	10	M6 x 6	9
						22	30 3)	40.2 3)	40		41.5			
						30 3)	36	48.2	50		50			

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Dimensions Couplings (standard), square bore according to ISO 5211

Type	Article no. [2]	Ø D	L4	M	Splined coupling DIN 5480	S H11 over	S H11 to	Ø d8 max.	L6	Ø d9 [1]	Ø d15	L5 [1]	Grub screw [1] ISO 4029	Z
SG 12.1	Z010.184	67.6	75	40	68x2x32	17	22	28.2	30	M6	31.5	10	M6 x 6	9
						22	30 [3]	40.2 [3]	40		41.5			
						30 [3]	36	48.2	50		50			
SGC/SGM 12.1 – F14 SQ 12.2 – F14	Z006.070	67.6	95	40	68x2x32	17	22	28.2	30	M6	31.5	10	M6 x 6	9
						22	30 [3]	40.2 [3]	40		41.5			
						30 [3]	36	48.2	50		50			
SGC/SGM 12.1 – F16 SQ 12.2 – F16	Z006.071	67.6	105	40	68x2x32	17	22	28.2	30	M6	31.5	10	M6 x 6	9
						22	30 [3]	40.2 [3]	40		41.5			
						30 [3]	36	48.2	50		50			
SGM 14.1 – F14 SQ 14.2 – F14 GS 80.3	Z010.394	81.6	65	47	82x2x40	22	30 [3]	40.2 [3]	40	M6	41.5	10	M6 x 6	9
						30 [3]	36	48.2	50		50			
						36	46	60.2	50		64			
SGM 14.1 – F16 SQ 14.2 – F16	Z111.676	81.6	115	40	82x2x40	22	30 [3]	40.2 [3]	40	M6	41.5	10	M6 x 6	9
						30 [3]	36	48.2	50		50			
						36	46	60.2	50		64			
GS 100.3	Z015.955	105.8	80	50	106x2x52	30 [3]	36	48.2	50	M8	50	18	M8 x 8	12
						36	46	60.2	50		64			
						46	55	72.2	60		82			
GS 125.3	Z017.441	119.6	110	70	120x2x60	36	46	60.2	50	M8	64	18	M8 x 8	12
						46	55	72.2	60		82			
						55	75	98.2	80		95			

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7 Spare parts lists

Multi-turn actuators
SA 07.2 – SA 16.2 S 452
SAV 07.2 – SAV 16.2 S 454
SA 07.2-UW – SA 16.2-UW 456
SAV 07.2-UW – SAV 16.2-UW 458

Part-turn actuators
SQ 05.2 – SQ 14.2 S 460
SQV 05.2 – SQV 14.2 S 462
SQ 05.2 – SQ 14.2 S with base and lever 464

Actuator controls
AM 01.1 – AM 02.1 S 466

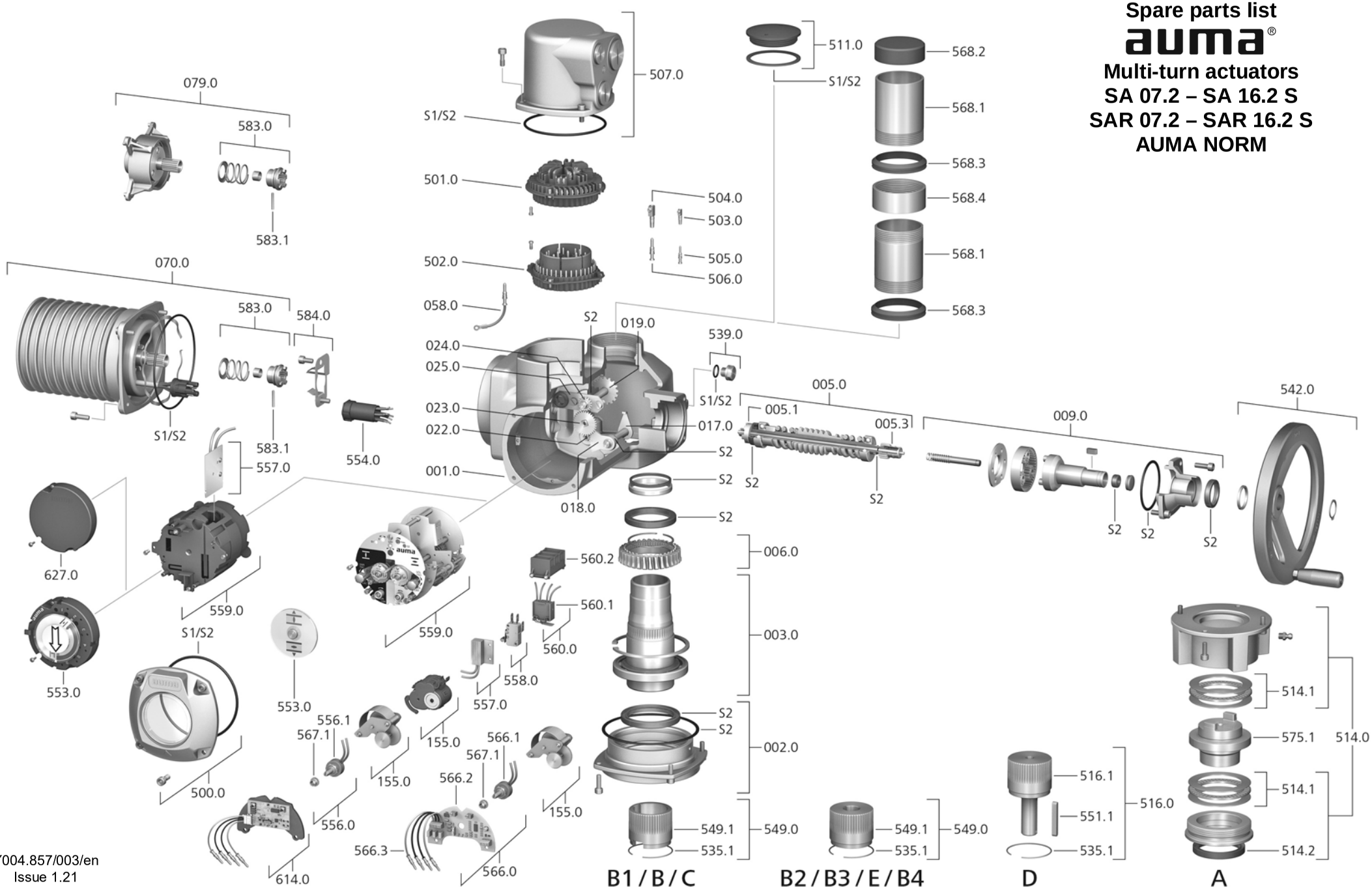
AC 01.2 S 468
AC 01.2 SD Fieldbus 470
AC 01.2-SIL 472
ACV 01.2 S 474
ACV 01.2 SD Fieldbus 476

Accessories
Fail safe unit FQM 478
SA 07.2 – SA 16.2 Handwheel extension 480
SA 07.2 – SA 16.2 Power tool emergency operation 482
SA 07.2 – SA 16.2 Power tool emergency operation for pit application 484

Spare parts list

auma®

Multi-turn actuators
SA 07.2 – SA 16.2 S
SAR 07.2 – SAR 16.2 S
AUMA NORM



SA 07.2 – SA 16.2 S
SAR 07.2 – SAR 16.2 S
Spare parts list Multi-turn actuators AUMA NORM

Please state device type and our order number (see name plate) when ordering spare parts. Only original AUMA spare parts should be used. Failure to use original spare parts voids the warranty and exempts AUMA from any liability. Representation of spare parts may slightly vary from actual delivery.

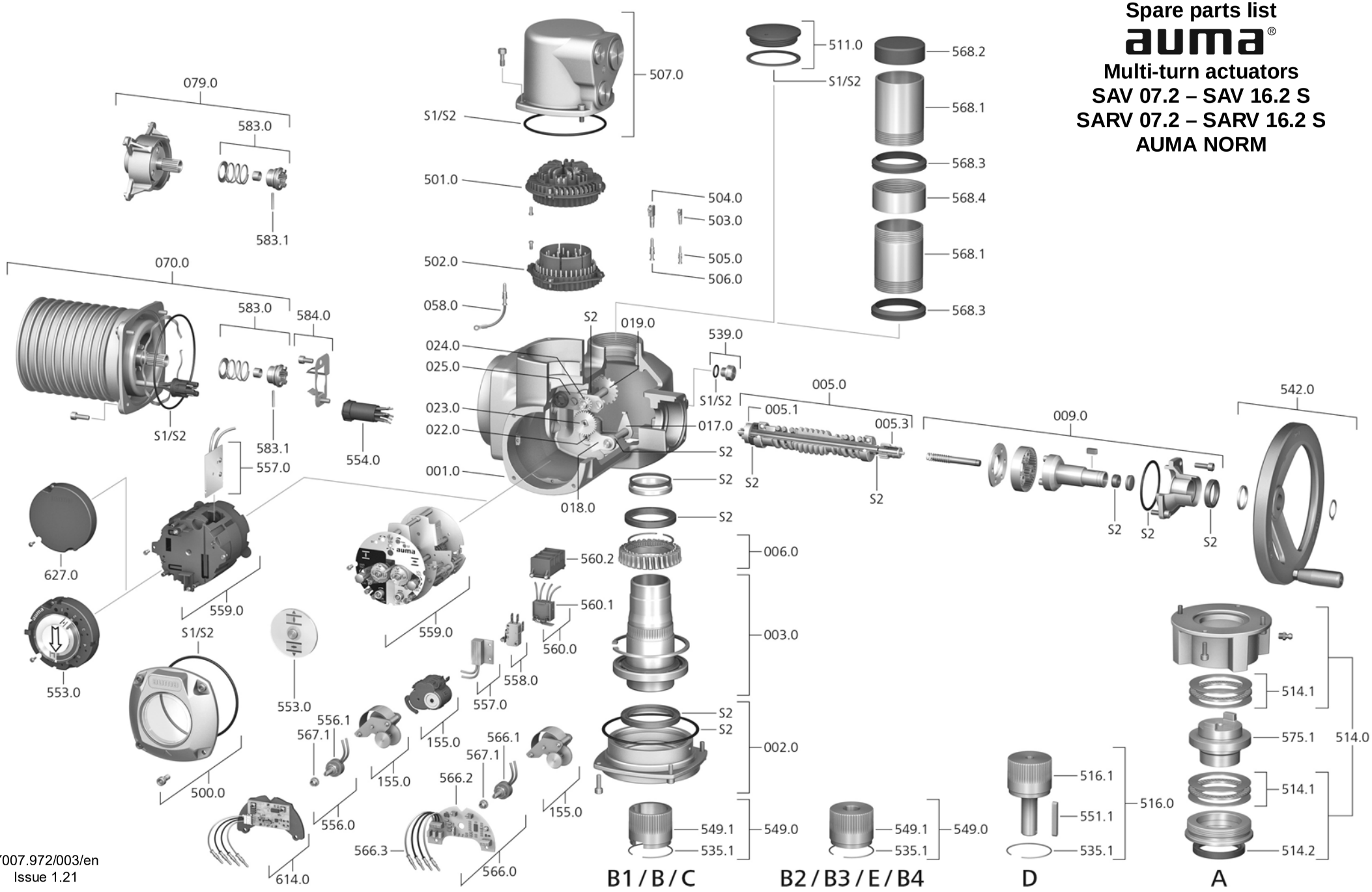
Ref. no.	Designation	Type	Ref. no.	Designation	Type
001.0	Housing	Sub-assembly	542.0	Handwheel with ball handle	Sub-assembly
002.0	Bearing flange	Sub-assembly	549.0	Output drive types B/B1/B2/B3/B4/C/E	Sub-assembly
003.0	Hollow shaft	Sub-assembly	549.1	Output drive sleeve B/B1/B2/B3/B4/C/E	Sub-assembly
005.0	Drive shaft	Sub-assembly	551.1	Parallel key	
005.1	Motor coupling		553.0	Mechanical position indicator	Sub-assembly
005.3	Manual drive coupling		554.0	Socket carrier for motor plug/socket connector with cable harness	Sub-assembly
006.0	Worm wheel		556.0	Potentiometer as position transmitter	Sub-assembly
009.0	Manual gearing	Sub-assembly	556.1	Potentiometer without slip clutch	Sub-assembly
017.0	Torque lever	Sub-assembly	557.0	Heater	
018.0	Gear segment		558.0	Blinker transmitter including pins at wires (without impulse disc and insulation plate)	Sub-assembly
019.0	Crown wheel		559.0–1	Electromechanical control unit with switches, including torque switching heads	Sub-assembly
022.0	Drive pinion II for torque switching	Sub-assembly	559.0–2	Electronic control unit with magnetic limit and torque transmitter (MWG)	Sub-assembly
023.0	Output drive wheel for limit switching	Sub-assembly	560.0–1	Switch stack for direction OPEN	Sub-assembly
024.0	Drive wheel for limit switching	Sub-assembly	560.0–2	Switch stack for direction CLOSE	Sub-assembly
025.0	Locking plate	Sub-assembly	560.1	Switch for limit/torque	Sub-assembly
058.0	Cable for protective earth	Sub-assembly	560.2–1	Switch case for direction OPEN	
070.0	Motor (only for V... motors incl. ref. no. 079.0)	Sub-assembly	560.2–2	Switch case for direction CLOSE	
079.0	Planetary gearing for motor drive (only for V... motors)	Sub-assembly	566.0	RWG position transmitter	Sub-assembly
155.0	Reduction gearing	Sub-assembly	566.1	Potentiometer for RWG without slip clutch	Sub-assembly
500.0	Cover	Sub-assembly	566.2	Position transmitter board for RWG	Sub-assembly
501.0	Socket carrier (complete with sockets)	Sub-assembly	566.3	Cable set for RWG	Sub-assembly
502.0	Pin carrier without pins	Sub-assembly	567.1	Slip clutch for potentiometer	Sub-assembly
503.0	Socket for controls	Sub-assembly	568.1	Stem protection tube (without cap)	
504.0	Socket for motor	Sub-assembly	568.2	Protective cap for stem protection tube	
505.0	Pin for controls	Sub-assembly	568.3	V-seal	
506.0	Pin for motor	Sub-assembly	568.4	Threaded sleeve	
507.0	Cover for electrical connection	Sub-assembly	575.1	Stem nut for output drive type A	
511.0	Threaded plug	Sub-assembly	583.0	Motor coupling on motor shaft	Sub-assembly
514.0	Output drive type A (without stem nut)	Sub-assembly	583.1	Pin for motor coupling	
514.1	Axial needle roller bearing	Sub-assembly	584.0	Retaining spring for motor coupling	Sub-assembly
514.2	Radial seal for output drive type A		614.0	EWG position transmitter	Sub-assembly
516.0	Output drive type D	Sub-assembly	627.0	MWG 05.03 cover	
516.1	Output drive shaft D		S1	Seal kit, small	Set
535.1	Snap ring		S2	Seal kit, large	Set
539.0	Screw plug	Sub-assembly			

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Spare parts list

auma®

Multi-turn actuators
SAV 07.2 – SAV 16.2 S
SARV 07.2 – SARV 16.2 S
AUMA NORM



SAV 07.2 – SAV 16.2 S
SARV 07.2 – SARV 16.2 S
Spare parts list Multi-turn actuators AUMA NORM

Please state device type and our order number (see name plate) when ordering spare parts. Only original AUMA spare parts should be used. Failure to use original spare parts voids the warranty and exempts AUMA from any liability. Representation of spare parts may slightly vary from actual delivery.

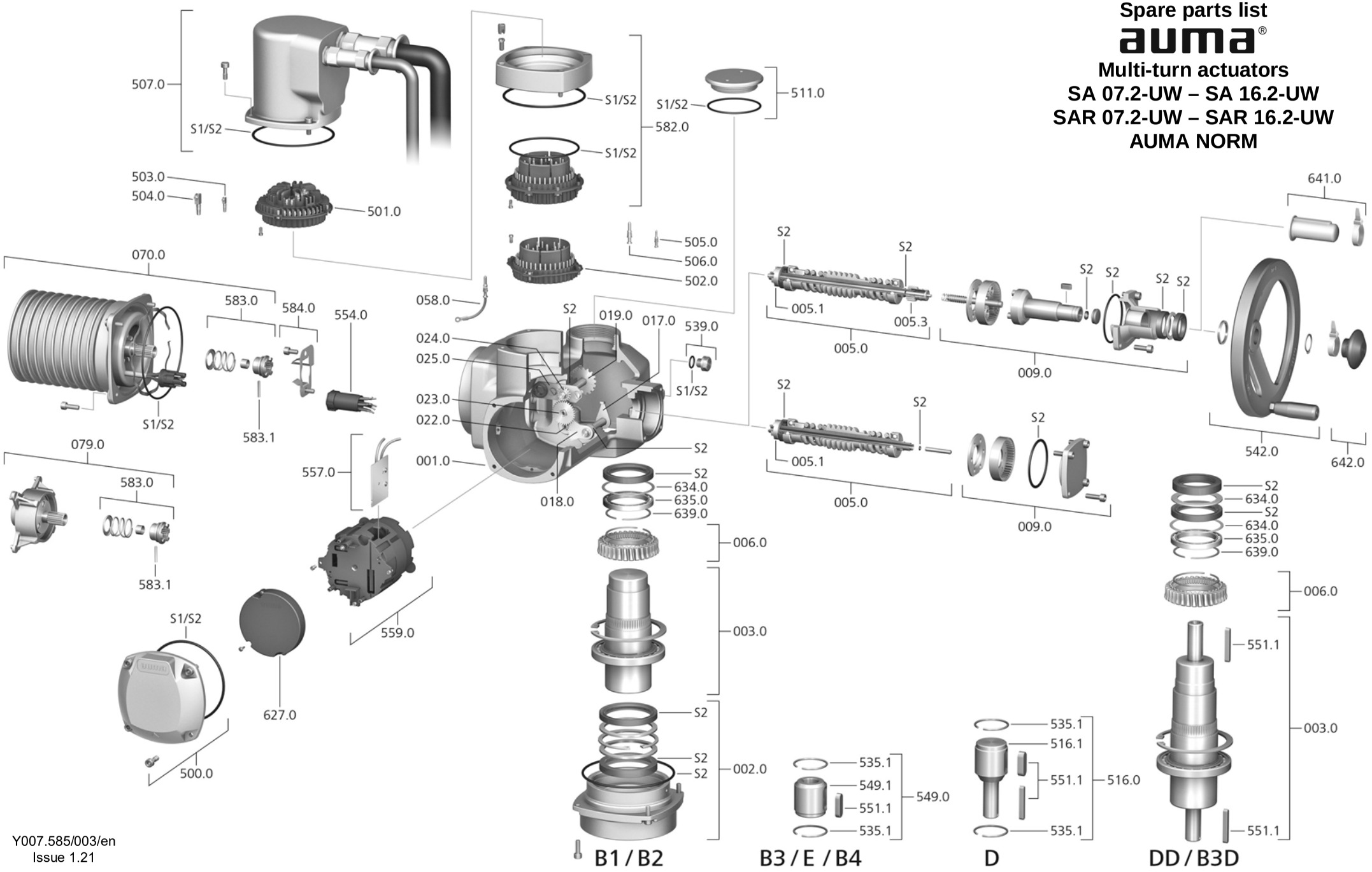
Ref. no.	Designation	Type	Ref. no.	Designation	Type
001.0	Housing	Sub-assembly	542.0	Handwheel with ball handle	Sub-assembly
002.0	Bearing flange	Sub-assembly	549.0	Output drive types B/B1/B2/B3/B4/C/E	Sub-assembly
003.0	Hollow shaft	Sub-assembly	549.1	Output drive sleeve B/B1/B2/B3/B4/C/E	Sub-assembly
005.0	Drive shaft	Sub-assembly	551.1	Parallel key	
005.1	Motor coupling		553.0	Mechanical position indicator	Sub-assembly
005.3	Manual drive coupling		554.0	Socket carrier for motor plug/socket connector with cable harness	Sub-assembly
006.0	Worm wheel		556.0	Potentiometer as position transmitter	Sub-assembly
009.0	Manual gearing	Sub-assembly	556.1	Potentiometer without slip clutch	Sub-assembly
017.0	Torque lever	Sub-assembly	557.0	Heater	
018.0	Gear segment		558.0	Blinker transmitter including pins at wires (without impulse disc and insulation plate)	Sub-assembly
019.0	Crown wheel		559.0–1	Electromechanical control unit with switches, including torque switching heads	Sub-assembly
022.0	Drive pinion II for torque switching	Sub-assembly	559.0–2	Electronic control unit with magnetic limit and torque transmitter (MWG)	Sub-assembly
023.0	Output drive wheel for limit switching	Sub-assembly	560.0–1	Switch stack for direction OPEN	Sub-assembly
024.0	Drive wheel for limit switching	Sub-assembly	560.0–2	Switch stack for direction CLOSE	Sub-assembly
025.0	Locking plate	Sub-assembly	560.1	Switch for limit/torque	Sub-assembly
058.0	Cable for protective earth	Sub-assembly	560.2–1	Switch case for direction OPEN	
070.0	Motor (only for V... motors incl. ref. no. 079.0)	Sub-assembly	560.2–2	Switch case for direction CLOSE	
079.0	Planetary gearing for motor drive (only for V... motors)	Sub-assembly	566.0	RWG position transmitter	Sub-assembly
155.0	Reduction gearing	Sub-assembly	566.1	Potentiometer for RWG without slip clutch	Sub-assembly
500.0	Cover	Sub-assembly	566.2	Position transmitter board for RWG	Sub-assembly
501.0	Socket carrier (complete with sockets)	Sub-assembly	566.3	Cable set for RWG	Sub-assembly
502.0	Pin carrier without pins	Sub-assembly	567.1	Slip clutch for potentiometer	Sub-assembly
503.0	Socket for controls	Sub-assembly	568.1	Stem protection tube (without cap)	
504.0	Socket for motor	Sub-assembly	568.2	Protective cap for stem protection tube	
505.0	Pin for controls	Sub-assembly	568.3	V-seal	
506.0	Pin for motor	Sub-assembly	568.4	Threaded sleeve	
507.0	Cover for electrical connection	Sub-assembly	575.1	Stem nut for output drive type A	
511.0	Threaded plug	Sub-assembly	583.0	Motor coupling on motor shaft	Sub-assembly
514.0	Output drive type A (without stem nut)	Sub-assembly	583.1	Pin for motor coupling	
514.1	Axial needle roller bearing	Sub-assembly	584.0	Retaining spring for motor coupling	Sub-assembly
514.2	Radial seal for output drive type A		614.0	EWG position transmitter	Sub-assembly
516.0	Output drive type D	Sub-assembly	627.0	MWG 05.03 cover	
516.1	Output drive shaft D		S1	Seal kit, small	Set
535.1	Snap ring		S2	Seal kit, large	Set
539.0	Screw plug	Sub-assembly			

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Spare parts list

auma®

Multi-turn actuators
SA 07.2-UW – SA 16.2-UW
SAR 07.2-UW – SAR 16.2-UW
AUMA NORM



SA 07.2-UW – SA 16.2-UW
SAR 07.2-UW – SAR 16.2-UW
Spare parts list Multi-turn actuators AUMA NORM

Please state device type and our order number (see name plate) when ordering spare parts. Only original AUMA spare parts should be used. Failure to use original spare parts voids the warranty and exempts AUMA from any liability. Representation of spare parts may slightly vary from actual delivery.

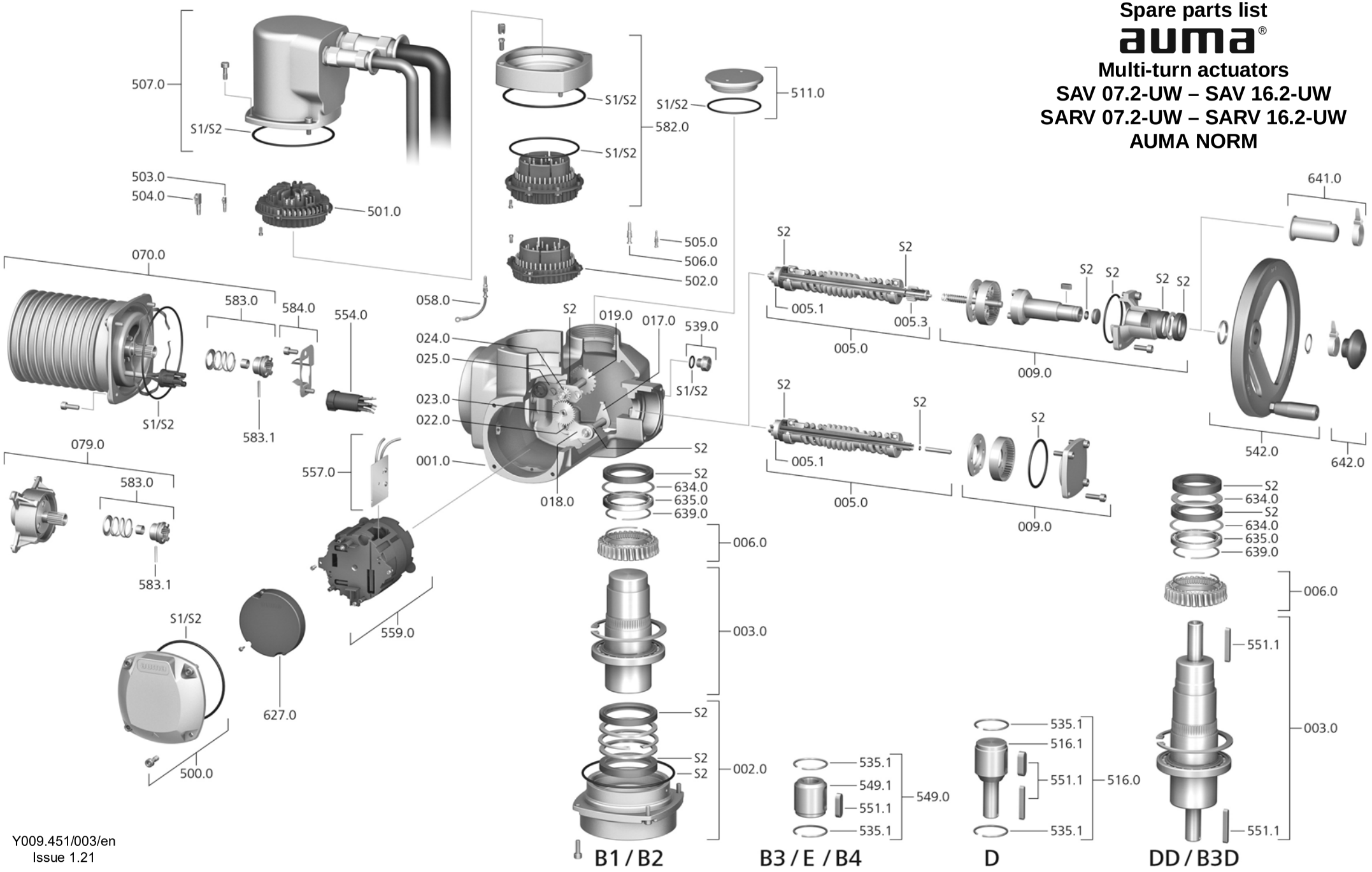
Ref. no.	Designation	Type	Ref. no.	Designation	Type
001.0	Housing	Sub-assembly	507.0	Cover for electrical connection	Sub-assembly
002.0	Bearing flange	Sub-assembly	511.0	Threaded plug	Sub-assembly
003.0	Solid shaft B1/B2/DD/B3D	Sub-assembly	516.0	Output drive type D	Sub-assembly
005.0	Drive shaft	Sub-assembly	516.1	Output drive shaft D	
005.1	Motor coupling		535.1	Snap ring	
005.3	Manual drive coupling		539.0	Screw plug	Sub-assembly
006.0	Worm wheel		542.0	Handwheel with ball handle	Sub-assembly
009.0	Manual gearing	Sub-assembly	549.0	Output drive type B3/E/B4	Sub-assembly
017.0	Torque lever	Sub-assembly	549.1	Output drive sleeve B3/E/B4	Sub-assembly
018.0	Gear segment		551.1	Parallel key	
019.0	Crown wheel		554.0	Socket carrier for motor plug/socket connector with cable harness	Sub-assembly
022.0	Drive pinion II for torque switching	Sub-assembly	557.0	Heater	
023.0	Output drive wheel for limit switching	Sub-assembly	559.0	Electronic control unit with magnetic limit and torque transmitter (MWG)	Sub-assembly
024.0	Drive wheel for limit switching	Sub-assembly	582.0	Double sealed frame	Sub-assembly
025.0	Locking plate	Sub-assembly	583.0	Motor coupling on motor shaft	Sub-assembly
058.0	Cable for protective earth	Sub-assembly	583.1	Pin for motor coupling	
070.0	Motor (only for V... motors incl. ref. no. 079.0)	Sub-assembly	584.0	Retaining spring for motor coupling	Sub-assembly
079.0	Planetary gearing for motor drive (only for V... motors)	Sub-assembly	627.0	MWG cover 05.3	
500.0	Cover	Sub-assembly	634.0	Shim washer (size 16.2 only)	
501.0	Socket carrier (complete with sockets)	Sub-assembly	635.0	Ball bearing	
502.0	Pin carrier without pins	Sub-assembly	639.0	Retaining ring (size 16.2 only)	
503.0	Socket for controls	Sub-assembly	641.0	Shaft protection assy	
504.0	Socket for motor	Sub-assembly	642.0	Bellows assy	
505.0	Pin for controls	Sub-assembly	S1	Seal kit, small	Set
506.0	Pin for motor	Sub-assembly	S2	Seal kit, large	Set

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Spare parts list

auma®

Multi-turn actuators
SAV 07.2-UW – SAV 16.2-UW
SARV 07.2-UW – SARV 16.2-UW
AUMA NORM



SAV 07.2-UW – SAV 16.2-UW
SARV 07.2-UW – SARV 16.2-UW
Spare parts list Multi-turn actuators AUMA NORM

Please state device type and our order number (see name plate) when ordering spare parts. Only original AUMA spare parts should be used. Failure to use original spare parts voids the warranty and exempts AUMA from any liability. Representation of spare parts may slightly vary from actual delivery.

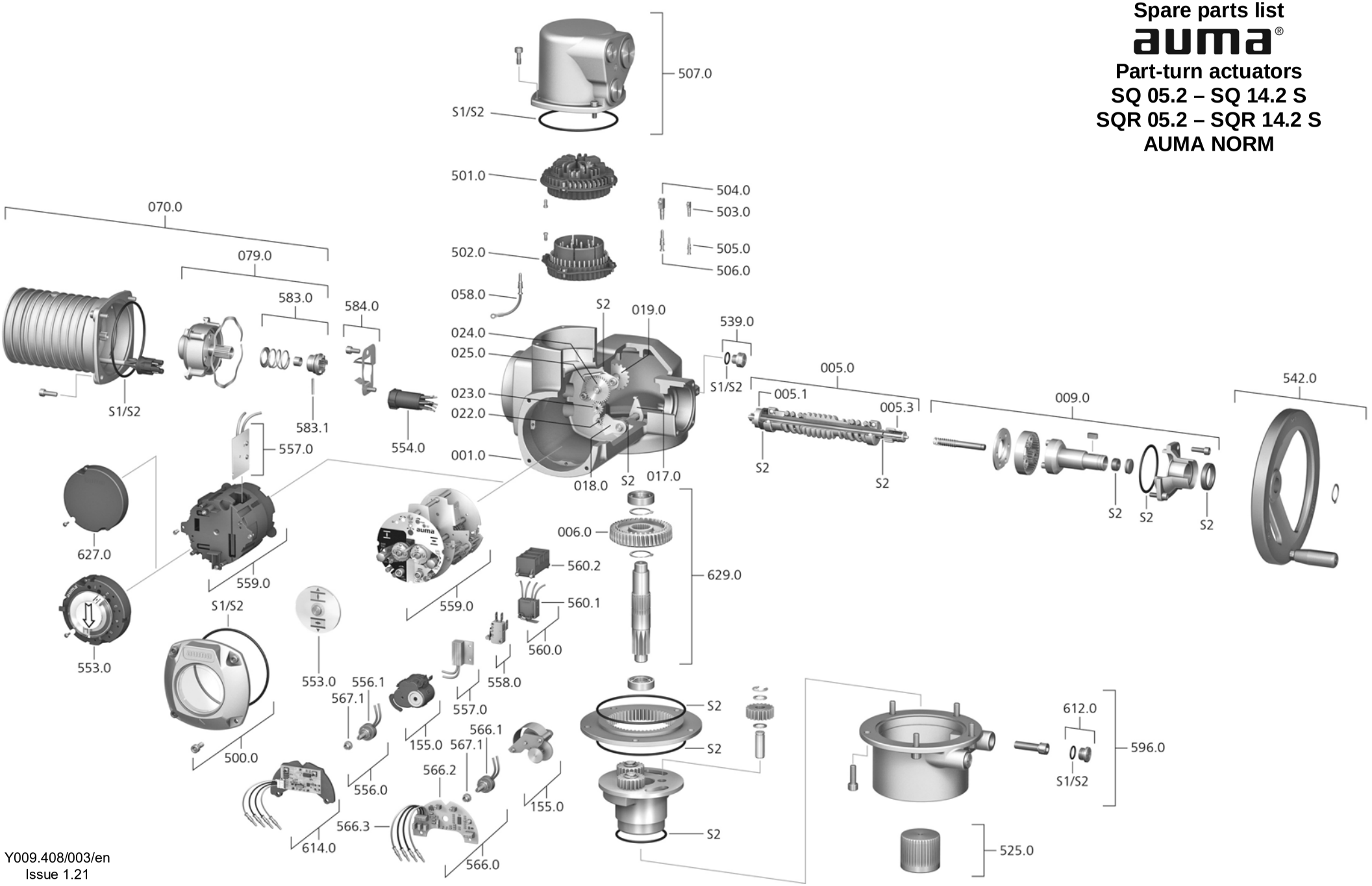
Ref. no.	Designation	Type	Ref. no.	Designation	Type
001.0	Housing	Sub-assembly	507.0	Cover for electrical connection	Sub-assembly
002.0	Bearing flange	Sub-assembly	511.0	Threaded plug	Sub-assembly
003.0	Solid shaft B1/B2/DD/B3D	Sub-assembly	516.0	Output drive type D	Sub-assembly
005.0	Drive shaft	Sub-assembly	516.1	Output drive shaft D	
005.1	Motor coupling		535.1	Snap ring	
005.3	Manual drive coupling		539.0	Screw plug	Sub-assembly
006.0	Worm wheel		542.0	Handwheel with ball handle	Sub-assembly
009.0	Manual gearing	Sub-assembly	549.0	Output drive type B3/E/B4	Sub-assembly
017.0	Torque lever	Sub-assembly	549.1	Output drive sleeve B3/E/B4	Sub-assembly
018.0	Gear segment		551.1	Parallel key	
019.0	Crown wheel		554.0	Socket carrier for motor plug/socket connector with cable harness	Sub-assembly
022.0	Drive pinion II for torque switching	Sub-assembly	557.0	Heater	
023.0	Output drive wheel for limit switching	Sub-assembly	559.0	Electronic control unit with magnetic limit and torque transmitter (MWG)	Sub-assembly
024.0	Drive wheel for limit switching	Sub-assembly	582.0	Double sealed frame	Sub-assembly
025.0	Locking plate	Sub-assembly	583.0	Motor coupling on motor shaft	Sub-assembly
058.0	Cable for protective earth	Sub-assembly	583.1	Pin for motor coupling	
070.0	Motor (only for V... motors incl. ref. no. 079.0)	Sub-assembly	584.0	Retaining spring for motor coupling	Sub-assembly
079.0	Planetary gearing for motor drive (only for V... motors)	Sub-assembly	627.0	MWG cover 05.3	
500.0	Cover	Sub-assembly	634.0	Shim washer (size 16.2 only)	
501.0	Socket carrier (complete with sockets)	Sub-assembly	635.0	Ball bearing	
502.0	Pin carrier without pins	Sub-assembly	639.0	Retaining ring (size 16.2 only)	
503.0	Socket for controls	Sub-assembly	641.0	Shaft protection assy	
504.0	Socket for motor	Sub-assembly	642.0	Bellows assy	
505.0	Pin for controls	Sub-assembly	S1	Seal kit, small	Set
506.0	Pin for motor	Sub-assembly	S2	Seal kit, large	Set

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Spare parts list

auma®

Part-turn actuators
SQ 05.2 – SQ 14.2 S
SQR 05.2 – SQR 14.2 S
AUMA NORM



SQ 05.2 – SQ 14.2 S
SQR 05.2 – SQR 14.2 S
Spare parts list Part-turn actuators AUMA NORM

Please state device type and our order number (see name plate) when ordering spare parts. Only original AUMA spare parts should be used. Failure to use original spare parts voids the warranty and exempts AUMA from any liability. Representation of spare parts may slightly vary from actual delivery.

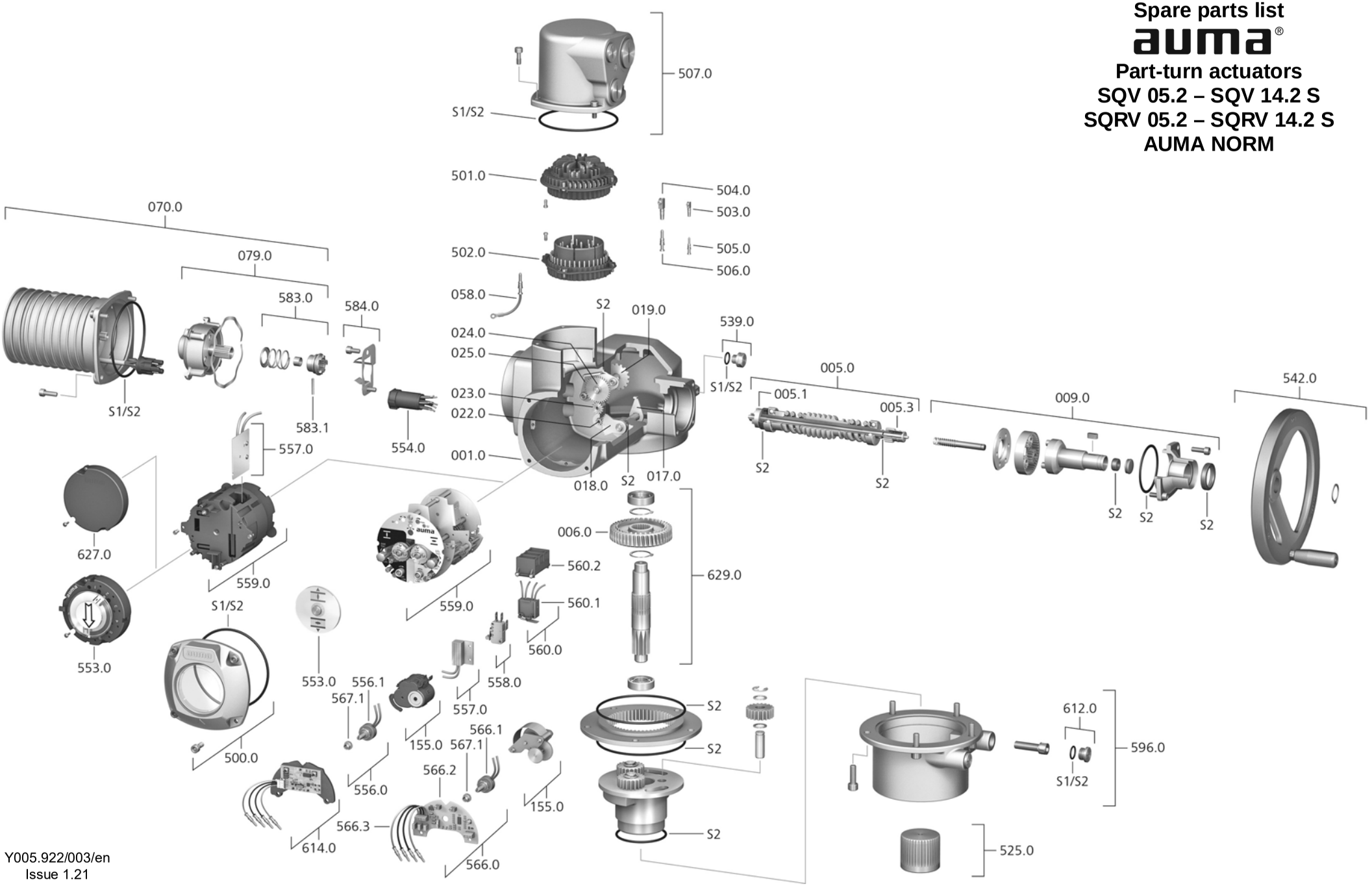
Ref. no.	Designation	Type	Ref. no.	Designation	Type
001.0	Housing	Sub-assembly	553.0	Mechanical position indicator	Sub-assembly
005.0	Drive shaft	Sub-assembly	554.0	Socket carrier for motor plug/socket connector with cable harness	Sub-assembly
005.1	Motor coupling	Sub-assembly	556.0	Potentiometer as position transmitter	Sub-assembly
005.3	Manual drive coupling		556.1	Potentiometer without slip clutch	Sub-assembly
006.0	Worm wheel	Sub-assembly	557.0	Heater	Sub-assembly
009.0	Manual gearing	Sub-assembly	558.0	Blinker transmitter including pins at wires (without impulse disc and insulation plate)	Sub-assembly
017.0	Torque lever		559.0–1	Electromechanical control unit with switches, including torque switching heads	Sub-assembly
018.0	Gear segment	Sub-assembly	559.0–2	Electronic control unit with magnetic limit and torque transmitter (MWG)	Sub-assembly
019.0	Crown wheel		560.0–1	Switch stack for direction OPEN	Sub-assembly
022.0	Drive pinion II for torque switching	Sub-assembly	560.0–2	Switch stack for direction CLOSE	Sub-assembly
023.0	Output drive wheel for limit switching	Sub-assembly	560.1	Switch for limit/torque	Sub-assembly
024.0	Drive wheel for limit switching	Sub-assembly	560.2–1	Switch case for direction OPEN	
025.0	Locking plate	Sub-assembly	560.2–2	Switch case for direction CLOSE	
058.0	Cable for protective earth	Sub-assembly	566.0	RWG position transmitter	Sub-assembly
070.0	Motor (incl. ref. no. 079.0)	Sub-assembly	566.1	Potentiometer for RWG without slip clutch	Sub-assembly
079.0	Planetary gearing for motor drive	Sub-assembly	566.2	Position transmitter board for RWG	Sub-assembly
155.0	Reduction gearing	Sub-assembly	566.3	Cable set for RWG	Sub-assembly
500.0	Cover	Sub-assembly	567.1	Slip clutch for potentiometer	Sub-assembly
501.0	Socket carrier (complete with sockets)	Sub-assembly	583.0	Motor coupling on motor shaft	Sub-assembly
502.0	Pin carrier without pins	Sub-assembly	583.1	Pin for motor coupling	Sub-assembly
503.0	Socket for controls	Sub-assembly	584.0	Retaining spring for motor coupling	
504.0	Socket for motor		596.0	Output drive flange with end stop	Sub-assembly
505.0	Pin for controls	Sub-assembly	612.0	Screw plug for end stop	Sub-assembly
506.0	Pin for motor	Sub-assembly	614.0	EWG position transmitter	Sub-assembly
507.0	Cover for electrical connection	Sub-assembly	627.0	MWG 05.03 cover	
525.0	Coupling	Sub-assembly	629.0	Pinion shaft	Sub-assembly
539.0	Screw plug	Sub-assembly	S1	Seal kit, small	Set
542.0	Handwheel with ball handle		S2	Seal kit, large	Set

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Spare parts list

auma®

Part-turn actuators
SQV 05.2 – SQV 14.2 S
SQRV 05.2 – SQRV 14.2 S
AUMA NORM



SQV 05.2 – SQV 14.2 S
SQRV 05.2 – SQRV 14.2 S
Spare parts list Part-turn actuators AUMA NORM

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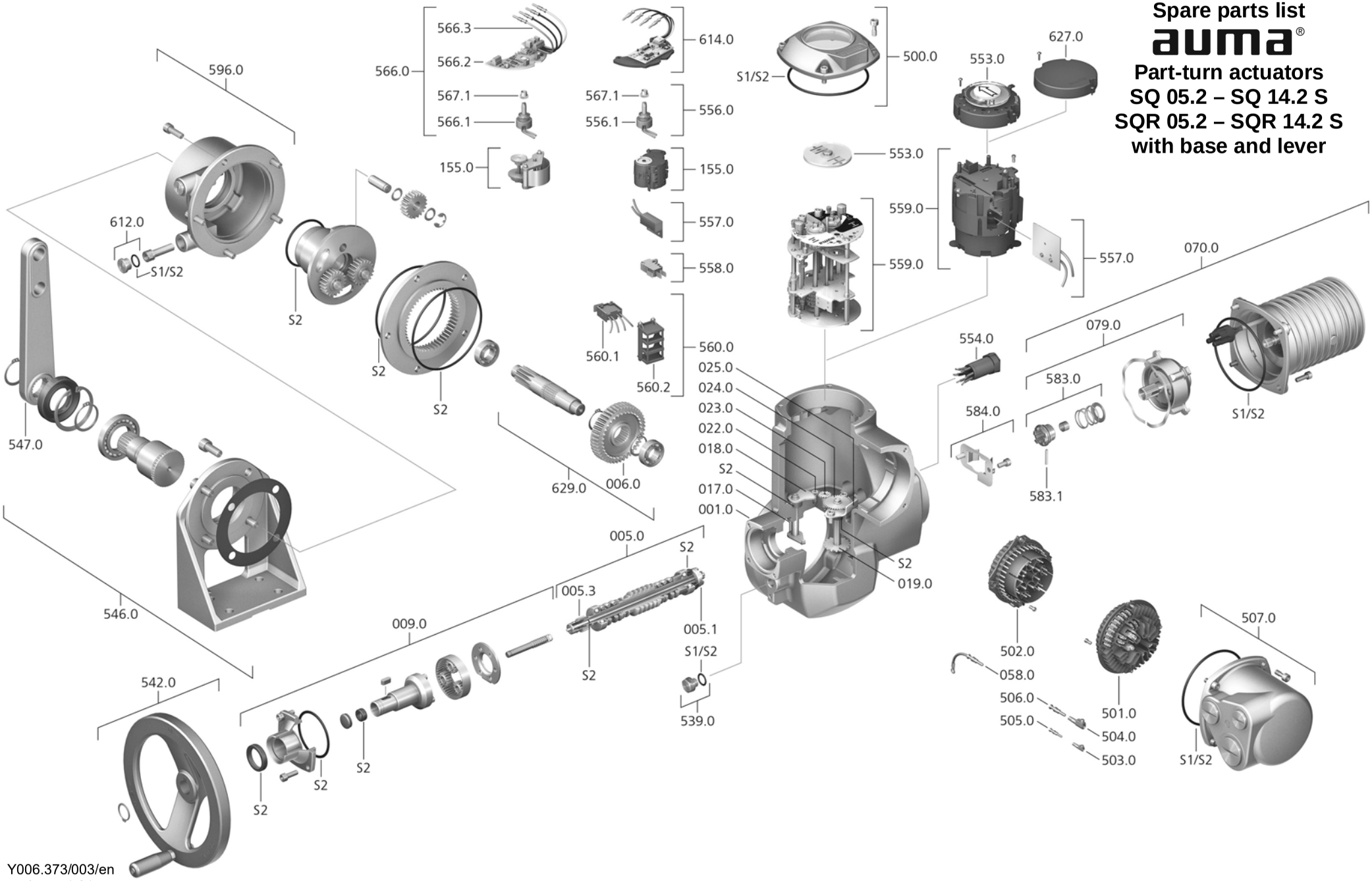
Ref. no.	Designation	Type	Ref. no.	Designation	Type
001.0	Housing	Sub-assembly	553.0	Mechanical position indicator	Sub-assembly
005.0	Drive shaft	Sub-assembly	554.0	Socket carrier for motor plug/socket connector with cable harness	Sub-assembly
005.1	Motor coupling	Sub-assembly	556.0	Potentiometer as position transmitter	Sub-assembly
005.3	Manual drive coupling		556.1	Potentiometer without slip clutch	Sub-assembly
006.0	Worm wheel	Sub-assembly	557.0	Heater	Sub-assembly
009.0	Manual gearing	Sub-assembly	558.0	Blinker transmitter including pins at wires (without impulse disc and insulation plate)	Sub-assembly
017.0	Torque lever		559.0–1	Electromechanical control unit with switches, including torque switching heads	Sub-assembly
018.0	Gear segment	Sub-assembly	559.0–2	Electronic control unit with magnetic limit and torque transmitter (MWG)	Sub-assembly
019.0	Crown wheel		560.0–1	Switch stack for direction OPEN	Sub-assembly
022.0	Drive pinion II for torque switching	Sub-assembly	560.0–2	Switch stack for direction CLOSE	Sub-assembly
023.0	Output drive wheel for limit switching	Sub-assembly	560.1	Switch for limit/torque	Sub-assembly
024.0	Drive wheel for limit switching	Sub-assembly	560.2–1	Switch case for direction OPEN	
025.0	Locking plate	Sub-assembly	560.2–2	Switch case for direction CLOSE	
058.0	Cable for protective earth	Sub-assembly	566.0	RWG position transmitter	Sub-assembly
070.0	Motor (incl. ref. no. 079.0)	Sub-assembly	566.1	Potentiometer for RWG without slip clutch	Sub-assembly
079.0	Planetary gearing for motor drive	Sub-assembly	566.2	Position transmitter board for RWG	Sub-assembly
155.0	Reduction gearing	Sub-assembly	566.3	Cable set for RWG	Sub-assembly
500.0	Cover	Sub-assembly	567.1	Slip clutch for potentiometer	Sub-assembly
501.0	Socket carrier (complete with sockets)	Sub-assembly	583.0	Motor coupling on motor shaft	Sub-assembly
502.0	Pin carrier without pins	Sub-assembly	583.1	Pin for motor coupling	Sub-assembly
503.0	Socket for controls	Sub-assembly	584.0	Retaining spring for motor coupling	
504.0	Socket for motor		596.0	Output drive flange with end stop	Sub-assembly
505.0	Pin for controls	Sub-assembly	612.0	Screw plug for end stop	Sub-assembly
506.0	Pin for motor	Sub-assembly	614.0	EWG position transmitter	Sub-assembly
507.0	Cover for electrical connection	Sub-assembly	627.0	MWG 05.03 cover	
525.0	Coupling	Sub-assembly	629.0	Pinion shaft	Sub-assembly
539.0	Screw plug	Sub-assembly	S1	Seal kit, small	Set
542.0	Handwheel with ball handle		S2	Seal kit, large	Set

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Spare parts list

auma®

Part-turn actuators
SQ 05.2 – SQ 14.2 S
SQR 05.2 – SQR 14.2 S
with base and lever



SQ 05.2 – SQ 14.2 S
SQR 05.2 – SQR 14.2 S
Spare parts list Part-turn actuators with base and lever

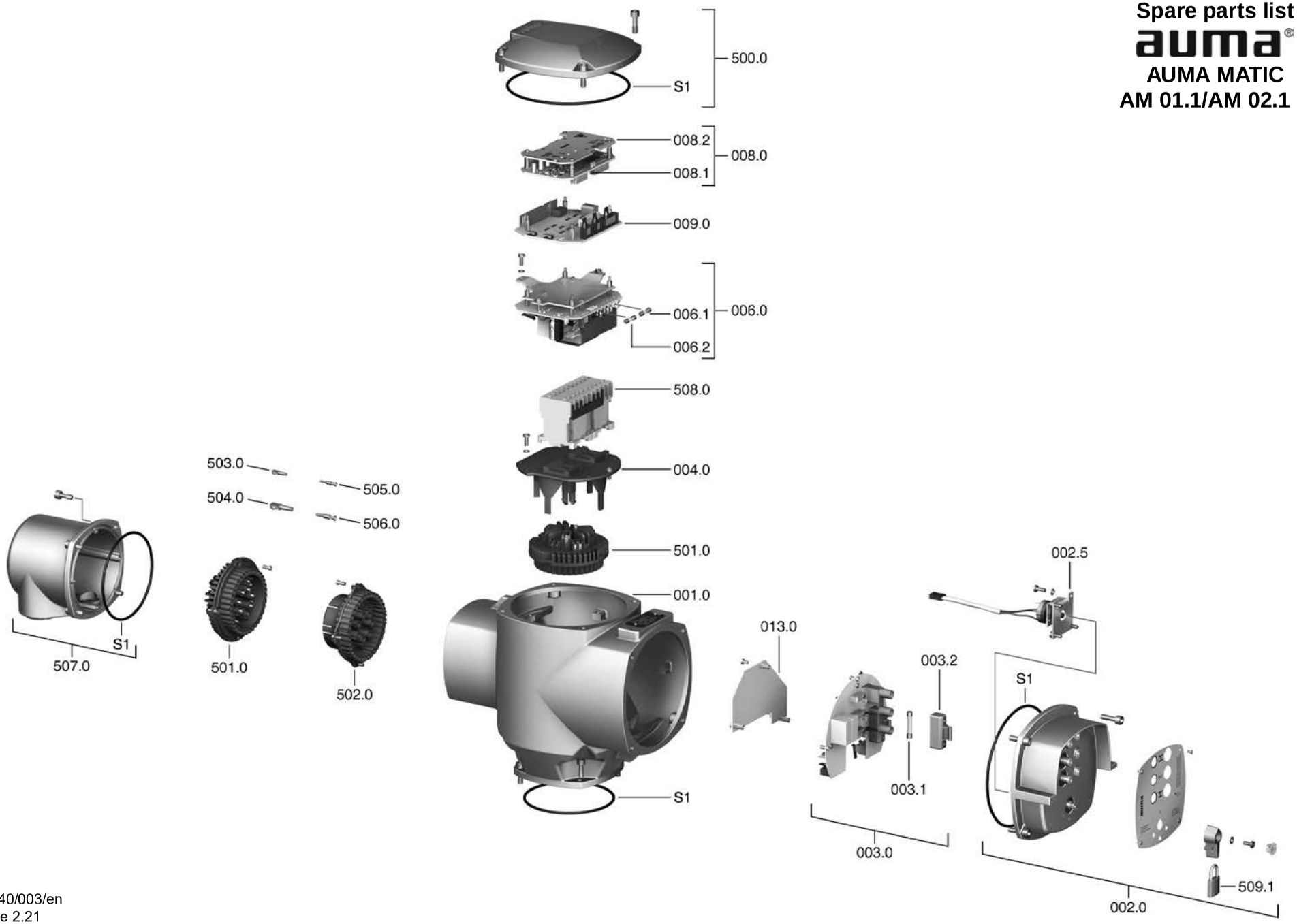
Please state device type and our order number (see name plate) when ordering spare parts. Only original AUMA spare parts should be used. Failure to use original spare parts voids the warranty and exempts AUMA from any liability. Representation of spare parts may slightly vary from actual delivery.

No.	Designation	Type	No.	Designation	Type
001.0	Housing	Sub-assembly	547.0	Swing lever	Sub-assembly
005.0	Drive shaft	Sub-assembly	553.0	Mechanical position indicator	Sub-assembly
005.1	Motor coupling	Sub-assembly	554.0	Socket carrier and motor plug/socket connector with cable harness	Sub-assembly
005.3	Manual drive coupling		556.0	Potentiometer as position transmitter	Sub-assembly
006.0	Worm wheel	Sub-assembly	556.1	Potentiometer without slip clutch	Sub-assembly
009.0	Manual gearing	Sub-assembly	557.0	Heater	Sub-assembly
017.0	Torque lever		558.0	Blinker transmitter including pins at wires (without impulse disc and insulation plate)	Sub-assembly
018.0	Gear segment	Sub-assembly	559.0–1	Electromechanical control unit with switches, including torque switching heads	Sub-assembly
019.0	Crown wheel		559.0–2	Electronic control unit with magnetic limit and torque transmitter (MWG)	Sub-assembly
022.0	Drive pinion II for torque switching	Sub-assembly	560.0–1	Switch stack for direction OPEN	Sub-assembly
023.0	Output drive wheel for limit switching	Sub-assembly	560.0–2	Switch stack for direction CLOSE	Sub-assembly
024.0	Drive wheel for limit switching	Sub-assembly	560.1	Switch for limit/torque	Sub-assembly
025.0	Locking plate	Sub-assembly	560.2–1	Switch case for direction OPEN	
058.0	Cable for protective earth	Sub-assembly	560.2–2	Switch case for direction CLOSE	
070.0	Motor (incl. ref. no. 079.0)	Sub-assembly	566.0	RWG position transmitter	Sub-assembly
079.0	Planetary gearing for motor drive	Sub-assembly	566.1	Potentiometer for RWG without slip clutch	Sub-assembly
155.0	Reduction gearing	Sub-assembly	566.2	Position transmitter board for RWG	Sub-assembly
500.0	Cover	Sub-assembly	566.3	Cable set for RWG	Sub-assembly
501.0	Socket carrier (complete with sockets)	Sub-assembly	567.1	Slip clutch for potentiometer	Sub-assembly
502.0	Pin carrier without pins	Sub-assembly	583.0	Motor coupling on motor shaft	Sub-assembly
503.0	Socket for controls	Sub-assembly	583.1	Pin for motor coupling	
504.0	Socket for motor	Sub-assembly	584.0	Retaining spring for motor coupling	Sub-assembly
505.0	Pin for controls	Sub-assembly	596.0	Output drive flange with end stop	Sub-assembly
506.0	Pin for motor	Sub-assembly	627.0	MWG 05.03 cover	
507.0	Cover for electrical connection	Sub-assembly	629.0	Pinion shaft	Sub-assembly
539.0	Screw plug	Sub-assembly	S1	Seal kit, small	Set
542.0	Handwheel with ball handle		S2	Seal kit, large	Set
546.0	Base flange	Sub-assembly			

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Spare parts list

AUMA MATIC
AM 01.1/AM 02.1 S



Spare parts list AUMA MATIC

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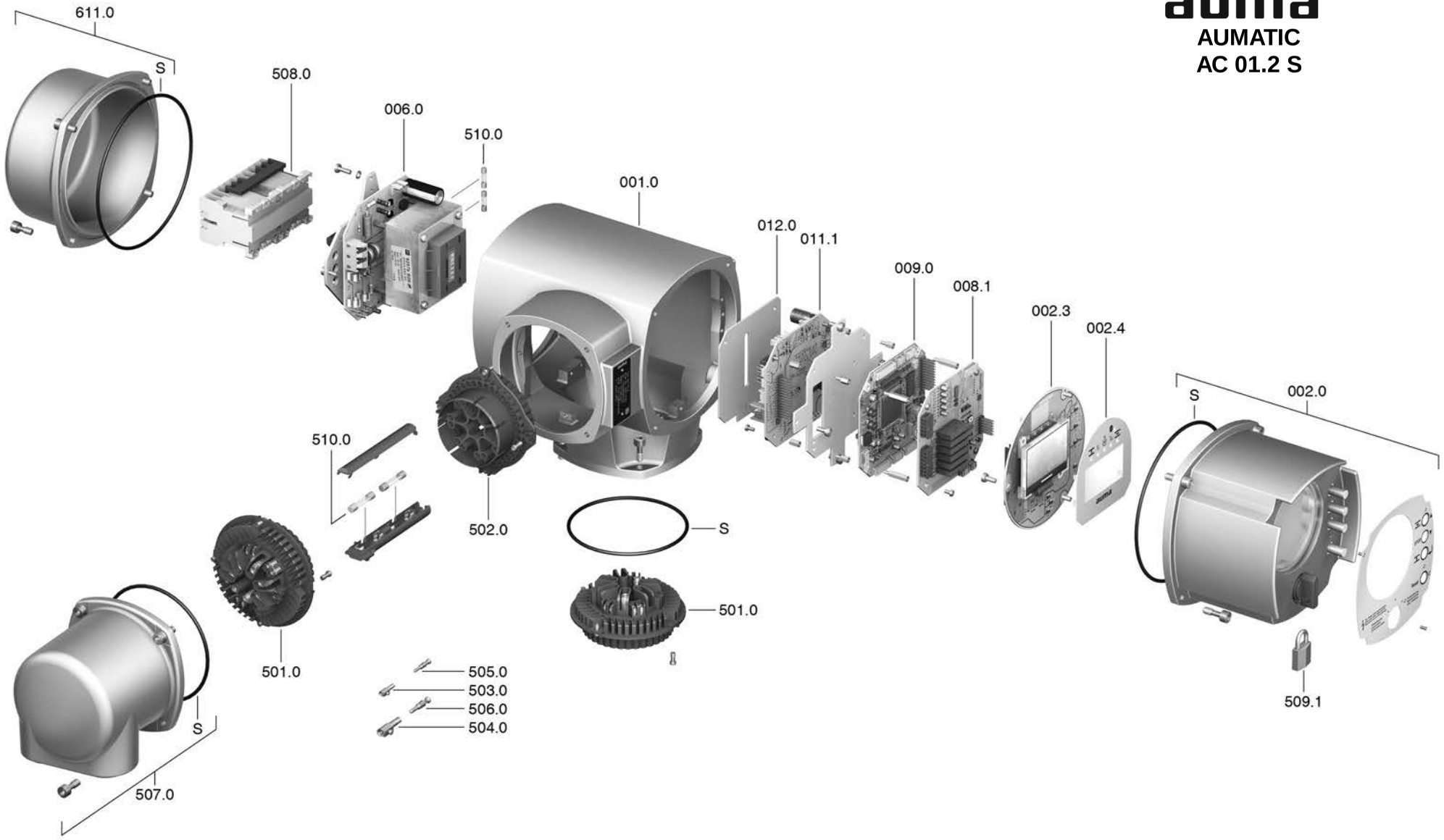
Ref. no.	Designation	Type
001.0	Housing	
002.0	Local controls	Sub-assembly
002.5	Selector switch	Sub-assembly
003.0	Signal and control board	Sub-assembly
003.1	Primary fuse F1/F2	
003.2	Fuse cover	
004.0	Carrier for contactors	
006.0	Power supply unit	Sub-assembly
006.1	Secondary fuse F3	
006.2	Secondary fuse F4	
008.0	Interface board	Sub-assembly
008.1	Interface board	
008.2	Cover plate for interface board	
009.0	Logic board	Sub-assembly
013.0	Adapter board	Sub-assembly
500.0	Cover	Sub-assembly
501.0	Socket carrier (complete with sockets)	Sub-assembly
502.0	Pin carrier without pins	Sub-assembly
503.0	Socket for controls	Sub-assembly
504.0	Socket for motor	Sub-assembly
505.0	Pin for controls	Sub-assembly
506.0	Pin for motor	Sub-assembly
507.0	Cover for electrical connection	Sub-assembly
508.0	Switchgear	Sub-assembly
509.1	Padlock	
S	Seal kit	Set

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Spare parts list

auma®

AUMATIC
AC 01.2 S



Spare parts list AUMATIC

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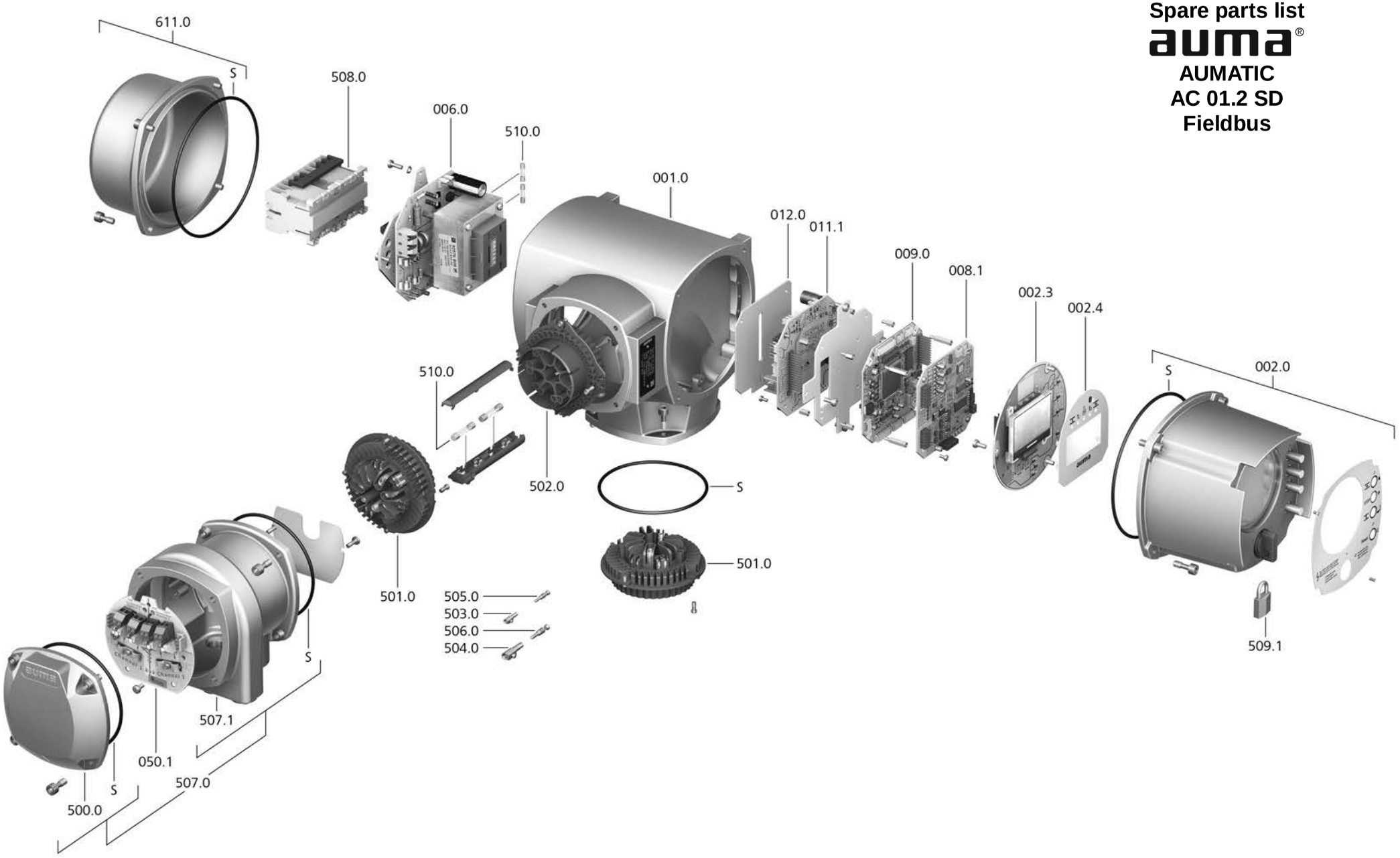
Ref. no.	Designation	Type
001.0	Housing	Sub-assembly
002.0	Local controls	Sub-assembly
002.3	Local controls board	Sub-assembly
002.4	Face plate for display	
006.0	Power supply unit	Sub-assembly
008.1	Fieldbus board	
009.0	Logic board	Sub-assembly
011.1	Relay board	Sub-assembly
012.0	Option board	
050.1	Fieldbus connection board	Sub-assembly
500.0	Cover	Sub-assembly
501.0	Socket carrier (complete with sockets)	Sub-assembly
502.0	Pin carrier without pins	Sub-assembly
503.0	Socket for controls	Sub-assembly
504.0	Socket for motor	Sub-assembly
505.0	Pin for controls	Sub-assembly
506.0	Pin for motor	Sub-assembly
507.0	Electrical connection for fieldbus without connection board (050.1)	Sub-assembly
507.1	Frame for electrical connection	Sub-assembly
508.0	Switchgear	Sub-assembly
509.1	Padlock	Sub-assembly
510.0	Fuse kit	Kit
611.0	Cover	Sub-assembly
S	Seal kit	Set

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Spare parts list

auma®

AUMATIC
AC 01.2 SD
Fieldbus



Spare parts list AUMATIC Fieldbus

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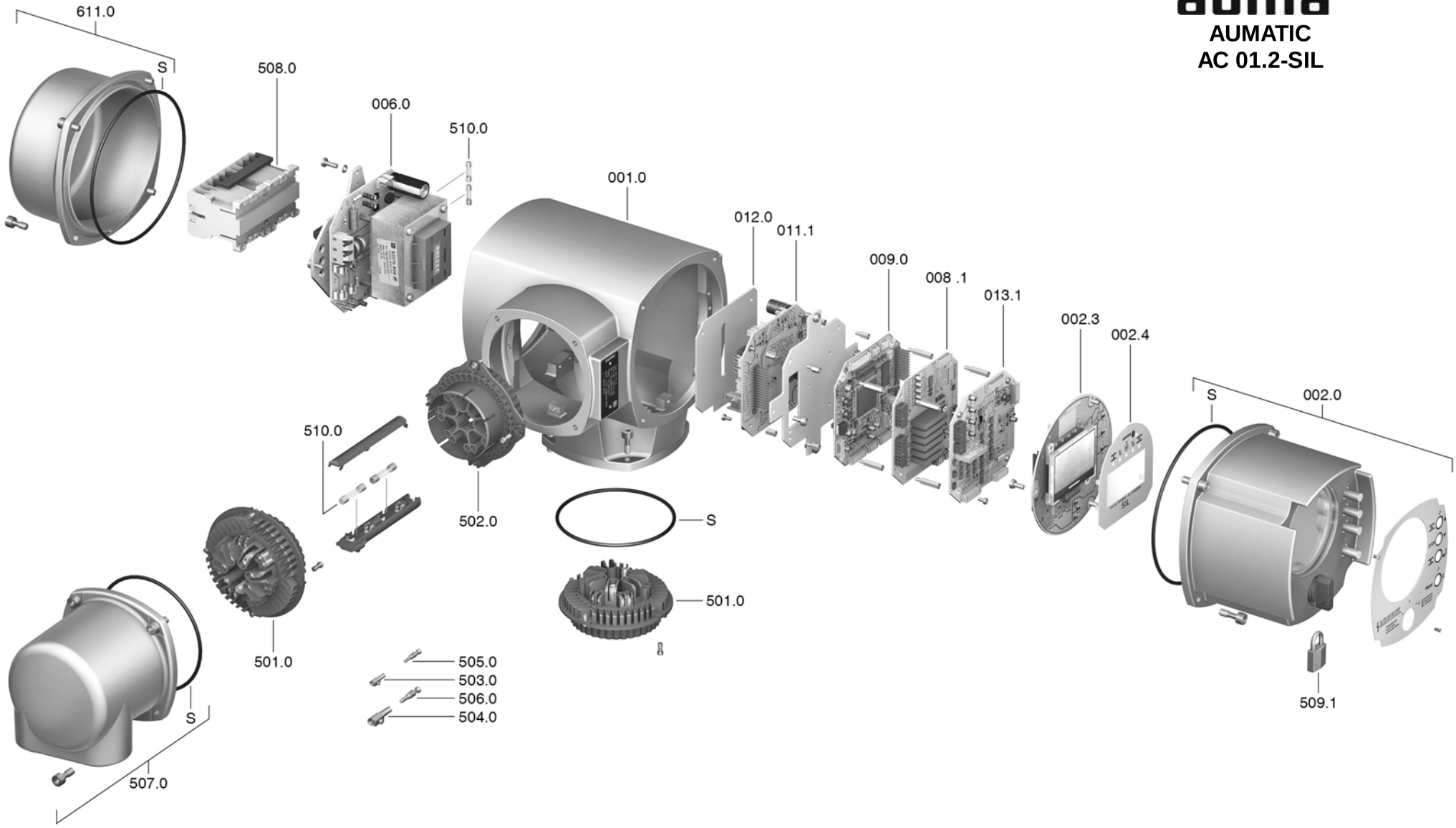
Ref. no.	Designation	Type
001.0	Housing	Sub-assembly
002.0	Local controls	Sub-assembly
002.3	Local controls board	Sub-assembly
002.4	Face plate for display	
006.0	Power supply unit	Sub-assembly
008.1	Fieldbus board	
009.0	Logic board	Sub-assembly
011.1	Relay board	Sub-assembly
012.0	Option board	
050.1	Fieldbus connection board	Sub-assembly
500.0	Cover	Sub-assembly
501.0	Socket carrier (complete with sockets)	Sub-assembly
502.0	Pin carrier without pins	Sub-assembly
503.0	Socket for controls	Sub-assembly
504.0	Socket for motor	Sub-assembly
505.0	Pin for controls	Sub-assembly
506.0	Pin for motor	Sub-assembly
507.0	Electrical connection for fieldbus without connection board (050.1)	Sub-assembly
507.1	Frame for electrical connection	Sub-assembly
508.0	Switchgear	Sub-assembly
509.1	Padlock	Sub-assembly
510.0	Fuse kit	Kit
611.0	Cover	Sub-assembly
S	Seal kit	Set

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Spare parts list

auma

AUMATIC
AC 01.2-SIL



Spare parts list AUMATIC

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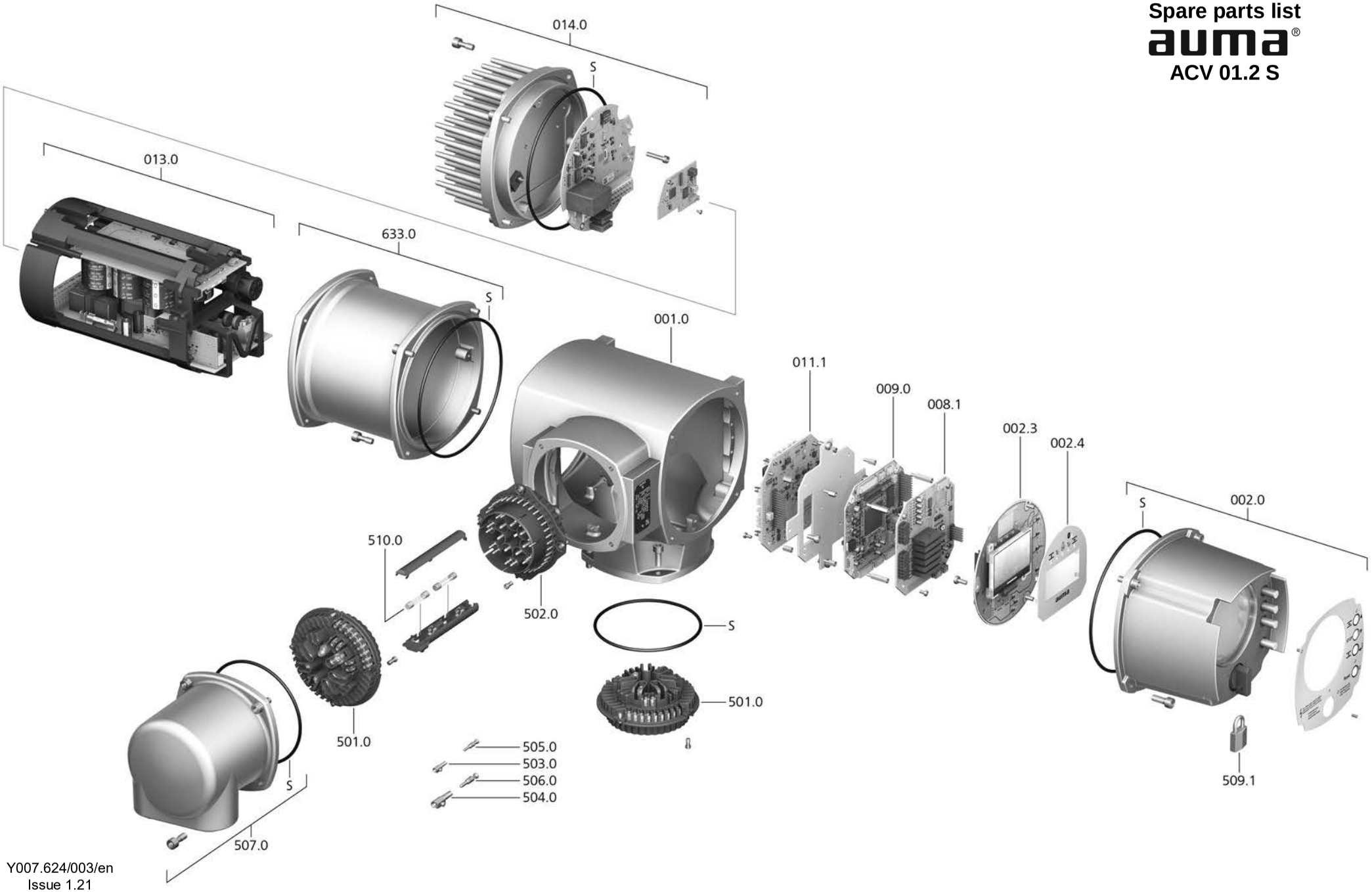
Ref. no.	Designation	Type
001.0	Housing	Sub-assembly
002.0	Local controls	Sub-assembly
002.3	Local controls board	Sub-assembly
002.4	Face plate for display	Sub-assembly
006.0	Power supply unit	
008.1	I/O board	Sub-assembly
009.0	Logic board	
011.1	Relay board	Sub-assembly
012.0	Option board	Sub-assembly
013.1	I/O board SIL module	
501.0	Socket carrier (complete with sockets)	Sub-assembly
502.0	Pin carrier without pins	
503.0	Socket for controls	Sub-assembly
504.0	Socket for motor	Sub-assembly
505.0	Pin for controls	Sub-assembly
506.0	Pin for motor	Sub-assembly
507.0	Cover for electrical connection	Sub-assembly
508.0	Switchgear	Sub-assembly
509.1	Padlock	Sub-assembly
510.0	Fuse kit	Set
611.0	Cover	Sub-assembly
S	Seal kit	Set

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Spare parts list

auma®

ACV 01.2 S



Spare parts list

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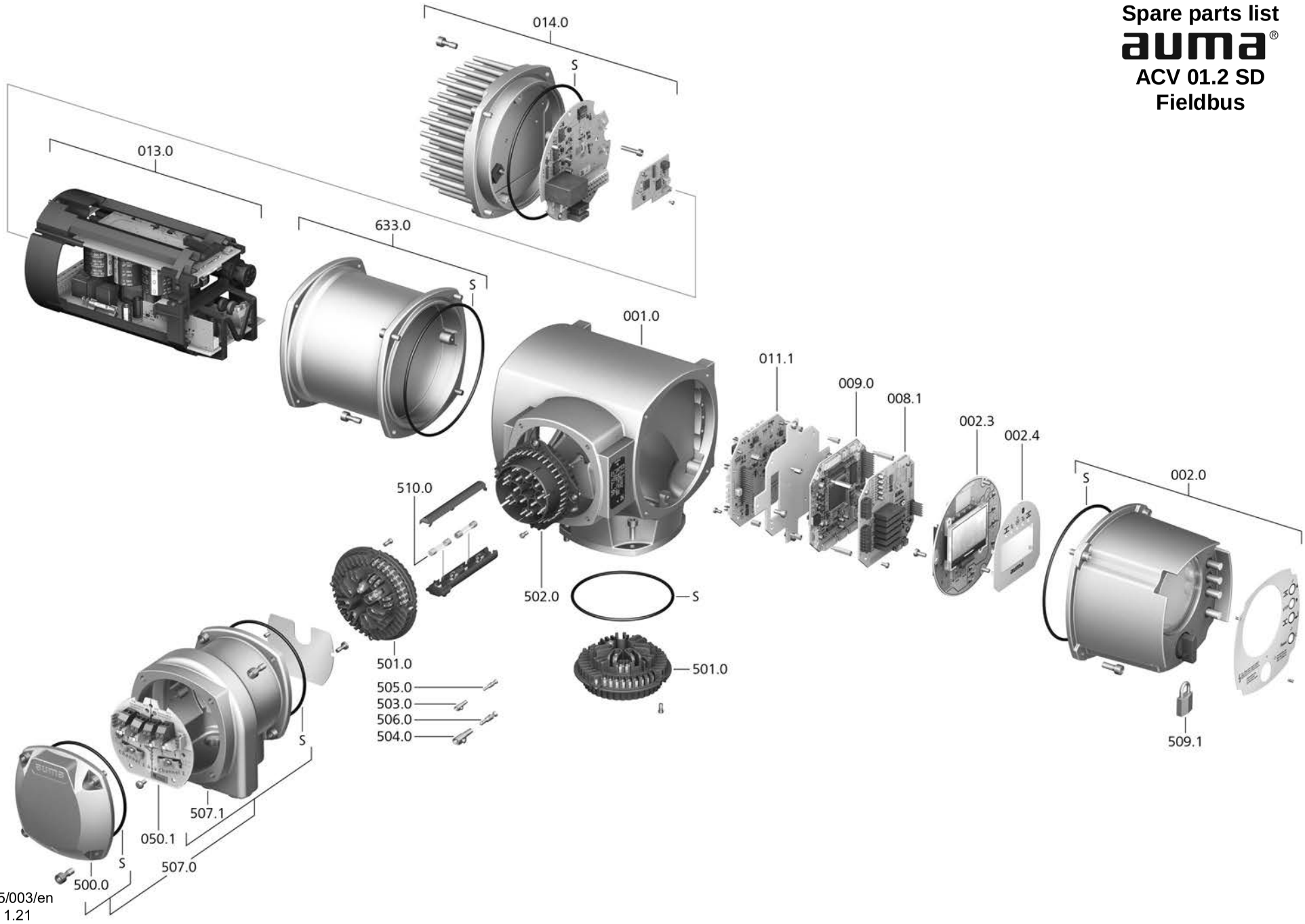
Ref. no.	Designation	Type
001.0	Housing	Sub-assembly
002.0	Local controls	Sub-assembly
002.3	Local controls board	Sub-assembly
002.4	Face plate for display	
008.1	Fieldbus board	
009.0	Logic board	Sub-assembly
011.1	ACV control board	Sub-assembly
013.0	Switchgear/DC link	
014.0	Motor controller	Sub-assembly
501.0	Socket carrier (complete with sockets)	Sub-assembly
502.0	Pin carrier without pins	Sub-assembly
503.0	Socket for controls	Sub-assembly
504.0	Socket for motor	Sub-assembly
505.0	Pin for controls	Sub-assembly
506.0	Pin for motor	Sub-assembly
507.0	Cover for electrical connection	Sub-assembly
509.1	Padlock	Sub-assembly
510.0	Fuse kit	Set
633.0	Switchgear housing	Sub-assembly
S	Seal kit	Set

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Spare parts list

auma®

ACV 01.2 SD
Fieldbus

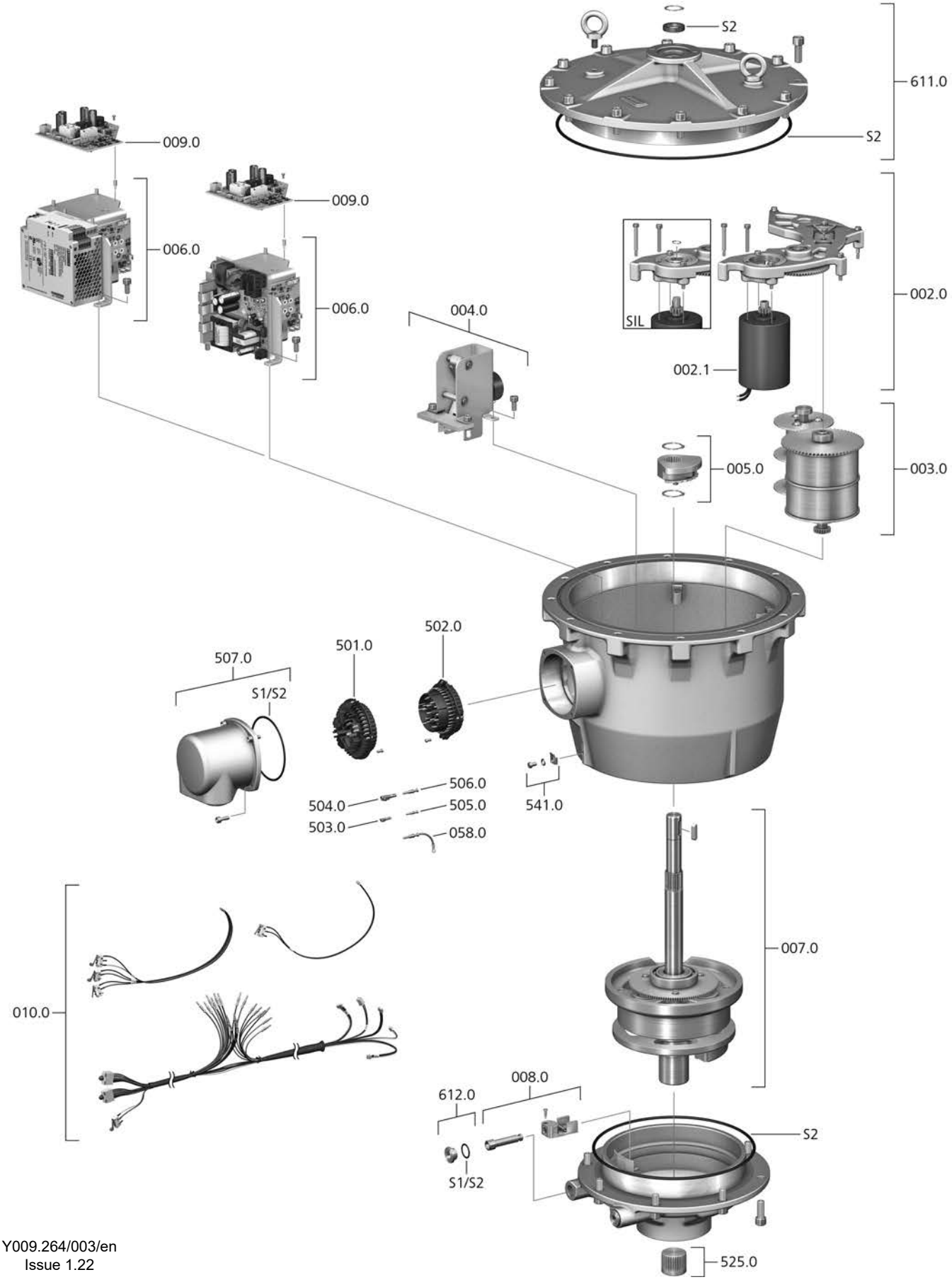


Spare parts list Fieldbus

Please state device type and our order number (see name plate) when ordering spare parts. Only original AUMA spare parts should be used. Failure to use original spare parts voids the warranty and exempts AUMA from any liability. Representation of spare parts may slightly vary from actual delivery.

Ref. no.	Designation	Type
001.0	Housing	Sub-assembly
002.0	Local controls	Sub-assembly
002.3	Local controls board	Sub-assembly
002.4	Face plate for display	
008.1	Fieldbus board	
009.0	Logic board	Sub-assembly
011.1	ACV control board	Sub-assembly
013.0	Switchgear/DC link	
014.0	Motor controller	Sub-assembly
050.1	Fieldbus connection board	Sub-assembly
500.0	Cover	Sub-assembly
501.0	Socket carrier (complete with sockets)	Sub-assembly
502.0	Pin carrier without pins	Sub-assembly
503.0	Socket for controls	Sub-assembly
504.0	Socket for motor	Sub-assembly
505.0	Pin for controls	Sub-assembly
506.0	Pin for motor	Sub-assembly
507.0	Electrical connection for fieldbus without connection board (050.1)	Sub-assembly
507.1	Frame for electrical connection	Sub-assembly
509.1	Padlock	Sub-assembly
510.0	Fuse kit	Set
633.0	Switchgear housing	Sub-assembly
S	Seal kit	Set

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.


S2
611.0
S2
009.0
009.0
006.0
006.0
004.0
SIL
002.0
002.1
005.0
003.0
507.0
S1/S2
501.0
502.0
506.0
504.0
505.0
503.0
058.0
541.0
007.0
010.0
008.0
612.0
S2
S1/S2
525.0

Spare parts list Fail safe unit

Please state device type and our order number (see name plate) when ordering spare parts. Only original AUMA spare parts should be used. Failure to use original spare parts voids the warranty and exempts AUMA from any liability. Representation of spare parts may slightly vary from actual delivery.

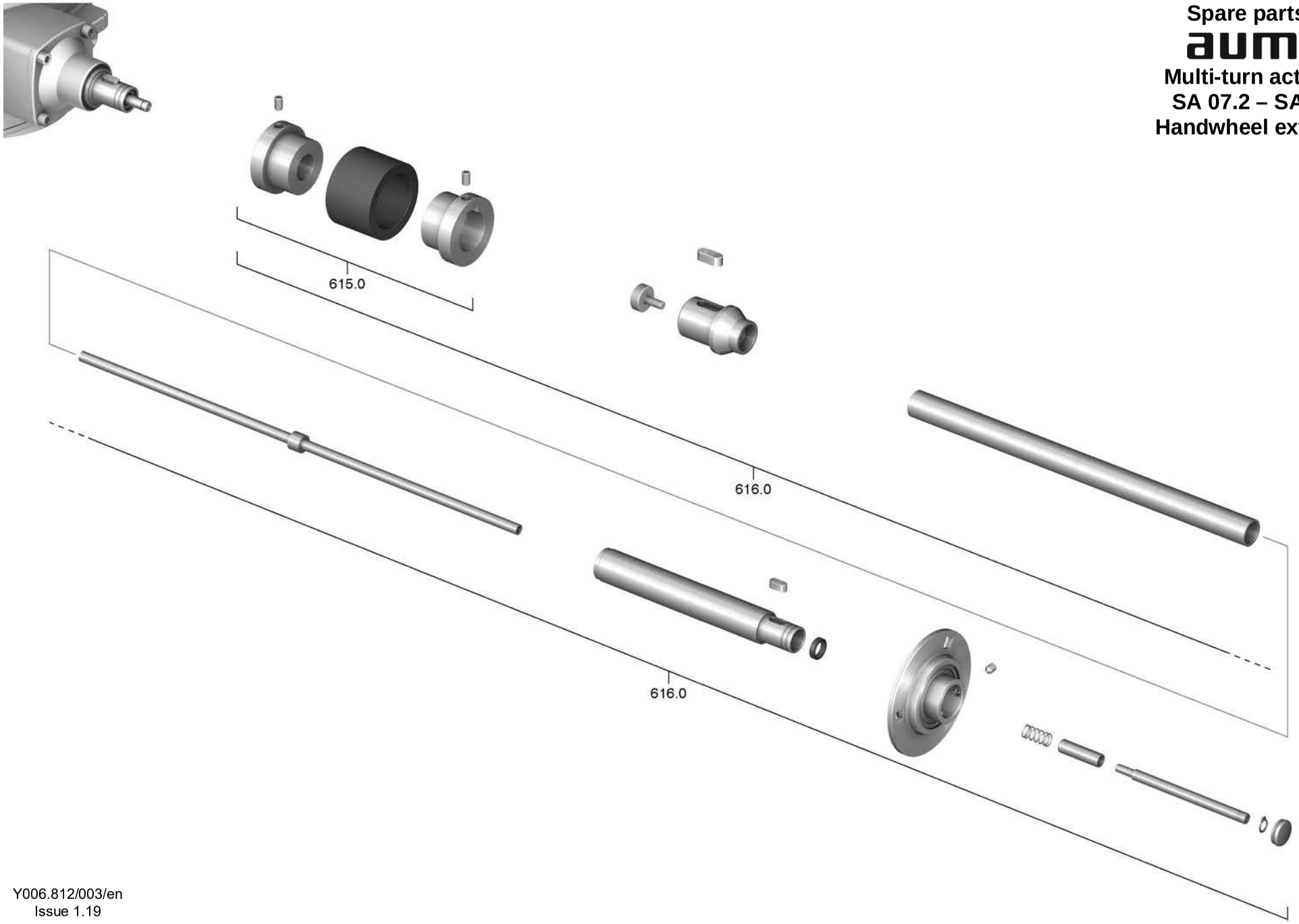
Ref. no.	Designation	Type
002.0	Winding gear	Sub-assembly
002.1	Electric motor	Sub-assembly
003.0	Constant force spring motor	Sub-assembly
004.0	Solenoid/locking mechanism	Sub-assembly
005.0	End stop adjustment plate	Sub-assembly
006.0	Electronics with power supply unit	Sub-assembly
007.0	Overriding gear	Sub-assembly
008.0	End stop sliding frame	Sub-assembly
009.0	Logic board	
010.0	Cable harnesses with switches	Sub-assembly
058.0	Cable for protective earth	Sub-assembly
501.0	Socket carrier (complete with sockets)	Sub-assembly
502.0	Pin carrier without pins	Sub-assembly
503.0	Socket for controls	Sub-assembly
504.0	Socket for motor	Sub-assembly
505.0	Pin for controls	Sub-assembly
506.0	Pin for motor	Sub-assembly
507.0	Cover for electrical connection	Sub-assembly
525.0	Coupling	Sub-assembly
541.0	Earth connection	Sub-assembly
611.0	Cover	Sub-assembly
612.0	Screw plug for end stop	Sub-assembly
S1	Seal kit, small	Set
S2	Seal kit, large	Set

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

Spare parts list

auma®

Multi-turn actuators
SA 07.2 – SA 16.2
Handwheel extension



SA 07.2 – SA 16.2
Handwheel extension
Spare parts list Multi-turn actuators

Please state device type and our order number (see name plate) when ordering spare parts. Only original AUMA spare parts should be used. Failure to use original spare parts voids the warranty and exempts AUMA from any liability. Representation of spare parts may slightly vary from actual delivery.

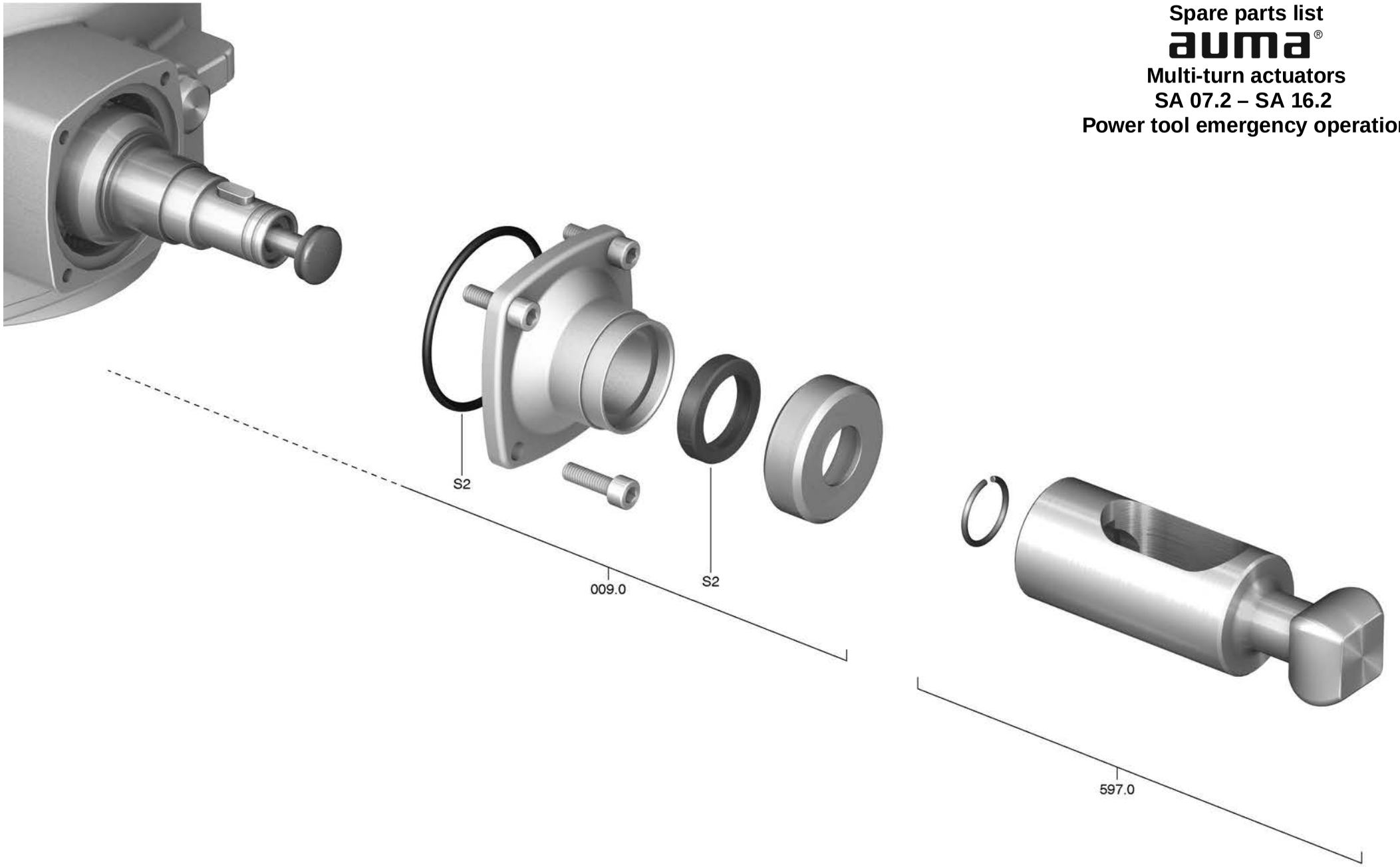
Ref. no.	Designation	Type
615.0	Coupling assy	Sub-assembly
616.0	Stem extension	Sub-assembly

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Spare parts list

auma®

Multi-turn actuators
SA 07.2 – SA 16.2
Power tool emergency operation



Y005.567/003/en
Issue 1.19

SA 07.2 – SA 16.2
Power tool emergency operation
Spare parts list Multi-turn actuators

Please state device type and our order number (see name plate) when ordering spare parts. Only original AUMA spare parts should be used. Failure to use original spare parts voids the warranty and exempts AUMA from any liability. Representation of spare parts may slightly vary from actual delivery.

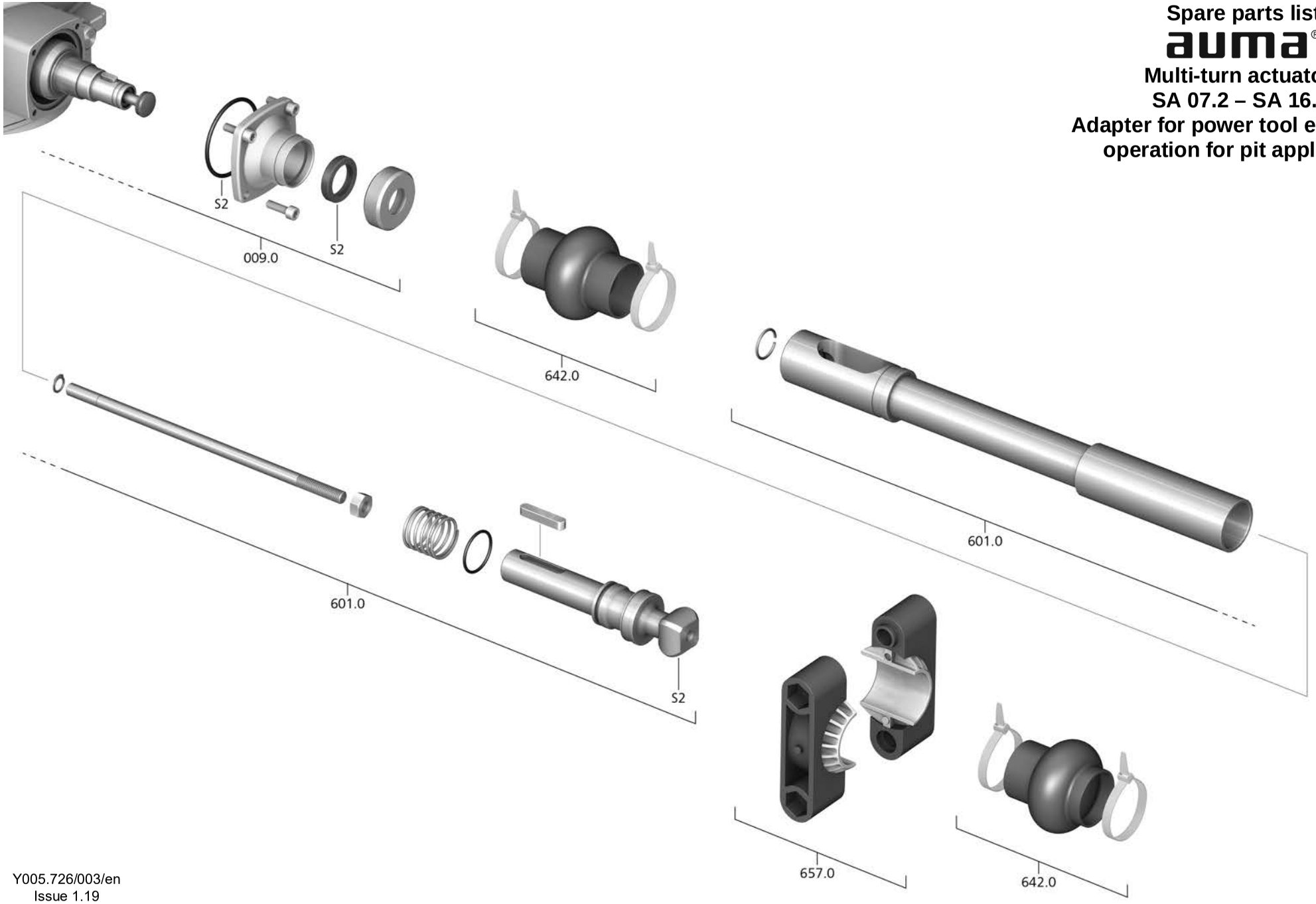
Ref. no.	Designation	Type
009.0	Manual gearing for power tool emergency operation	Sub-assembly
597.0	Adapter for power tool emergency operation	Sub-assembly
S2	Seal kit, large	Set

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Spare parts list

auma®

Multi-turn actuators
SA 07.2 – SA 16.2
Adapter for power tool emergency operation for pit application



Y005.726/003/en
Issue 1.19

SA 07.2 – SA 16.2
Adapter for power tool emergency operation for pit application
Spare parts list Multi-turn actuators

Please state device type and our order number (see name plate) when ordering spare parts. Only original AUMA spare parts should be used. Failure to use original spare parts voids the warranty and exempts AUMA from any liability. Representation of spare parts may slightly vary from actual delivery.

Ref. no.	Designation	Type
009.0	Manual gearing for power tool emergency operation	Sub-assembly
601.0	Square head for pit application assy	Sub-assembly
642.0	Bellows assy	Sub-assembly
657.0	Pillow block bearing	Sub-assembly
S2	Seal kit, large	Set

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

8 Mounting positions

AM Actuator controls
SA 07.2 – SA 16.2 / SQ 05.2 – SQ 14.2 – AM 01.1 **488**

AC / ACV Actuator controls
SA 07.2 – SA 16.2 / SQ 05.2 – SQ 14.2 – AC 01.2 **491**
SAV 07.2 – SAV 16.2 – ACV 01.2 **496**

Output drive type Insulated output drive IBx **501**

SA 07.2 – SA 16.2/SQ 05.2 – SQ 14.2
AM 01.1
Mounting positions Actuator controls on SA and SQ actuators

1. Mounting positions Actuator controls on actuator[1)]

Mounting position A



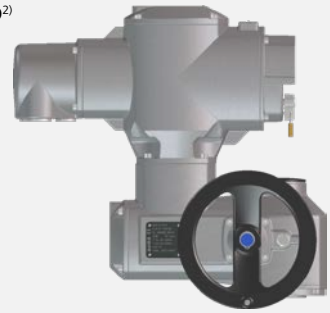

Mounting position B[2)]




Mounting position C




Mounting position D[2)]




Please consider possible space constraints on site when selecting the mounting position.
Mounting positions may easily be changed at a later date.

1) Mounting positions apply for the following actuators:
Multi-turn actuators in all sizes: SA, SAR, SAEx, SAREx
Part-turn actuators in all sizes: SQ, SQR, SQEx, SQREx
Actuator controls in all versions: AM, AMEx

2) **Attention:** For SA multi-turn actuators with rising valve stems, mounting positions B and D are not possible.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

2. Mounting positions Local controls

Mounting position A-1 (standard)

Selector switch pointing in actuator direction



Actuator

Mounting position B-1

Selector switch pointing lateral left



Actuator

Mounting position C-1

Selector switch opposite the actuator



Actuator

Mounting position D-1

Selector switch pointing lateral right



Actuator

Please consider possible space constraints on site when selecting the mounting position.
Mounting positions may easily be changed at a later date.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

3. Mounting positions Electrical connection

Mounting position A-1 (standard)

Cable entries in actuator direction



Actuator

Mounting position B-1

Cable entries located lateral left



Actuator

Mounting position C-1

Cable entries located opposite the actuator



Actuator

Mounting position D-1

Cable entries located lateral right



Actuator

Mounting positions may easily be changed at a later date.
The mounting positions shown apply for all types of electrical connections.

Attention: For outdoor installation, make sure that the cable entries are located in downward or later position to prevent ingress of water.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2 with AC 01.2
SQ 05.2 – SQ 14.2/SQR 05.2 – SQR 14.2 with AC 01.2
Mounting positions AC actuator controls on SA and SQ actuators

1. Mounting positions AC on actuators[1)]

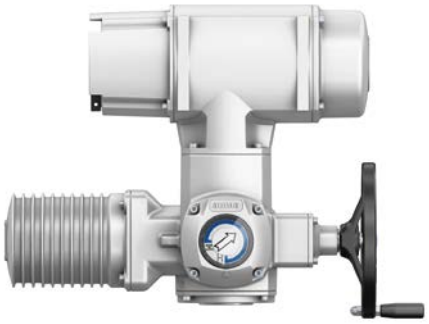
Mounting position A



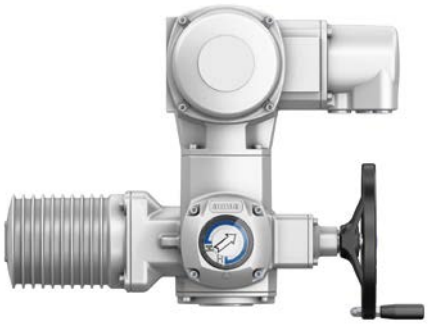

Mounting position B[2)]




Mounting position C[2)]

Mounting position D[2)]

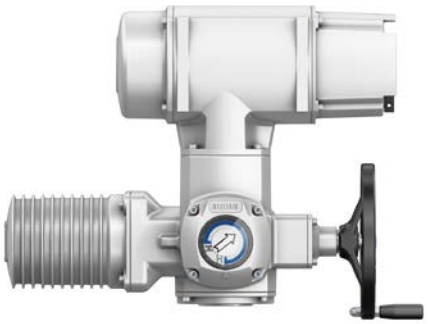
Please consider possible space confinements on site when selecting the mounting position.
Mounting positions may easily be changed at a later date.

1) Mounting positions apply for the following actuators:
Multi-turn actuators in all sizes: SA, SAR, SAEx, SAREx
Part-turn actuators in all sizes: SQ, SQR, SQEx, SQREx
Actuator controls AC, ACEx
2) **Attention:** For SA multi-turn actuators with rising valve stems, mounting positions B, C and D are not possible.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

2. Mounting positions AC on actuators[1] with electrical connection on the right

Mounting position E[2]

Mounting position F




Mounting position G




Mounting position H[2]




Please consider possible space confinements on site when selecting the mounting position.
Mounting positions may easily be changed at a later date.

1) Mounting positions apply for the following actuators:
Multi-turn actuators in all sizes: SA, SAR, SAEx, SAREx
Part-turn actuators in all sizes: SQ, SQR, SQEx, SQREx
Actuator controls AC, ACEx
2) **Attention:** For SA multi-turn actuators with rising valve stems, mounting positions E and H are not possible.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

3. Mounting positions Local controls

Mounting position A-1 (standard)

Selector switch pointing in actuator direction



Actuator

Mounting position B-1

Selector switch pointing lateral left



Actuator

Mounting position C-1

Selector switch opposite the actuator



Actuator

Mounting position D-1

Selector switch pointing lateral right



Actuator

Mounting positions are also valid for actuator controls with electrical connection on the right.
Please consider possible space confinements on site when selecting the mounting position.
Mounting positions may easily be changed at a later date.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

4. Mounting positions Electrical connection

Mounting position A-1 (standard)

Cable entries in actuator direction



Actuator

Mounting position B-1

Cable entries located lateral left



Actuator

Mounting position C-1

Cable entries located opposite the actuator



Actuator

Mounting position D-1

Cable entries located lateral right



Actuator

Mounting positions are also valid for actuator controls with electrical connection on the right.
Mounting positions may easily be changed at a later date.
The mounting positions shown apply for all types of electrical connections (except KT).

Caution: For outdoor installation, make sure that the cable entries are located in downward or lateral position to prevent ingress of water.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

5. Mounting positions for KT electrical connection (for explosion-proof applications)

When using one mounting base

Mounting position A-1 (standard)

Cable entries in actuator direction



Actuator

Mounting position B-1

Cable entries located lateral left



Actuator

Mounting position C-1

Cable entries located opposite the actuator



Actuator

Mounting position D-1

Cable entries located lateral right



Actuator

When using both mounting bases

Mounting position E-1

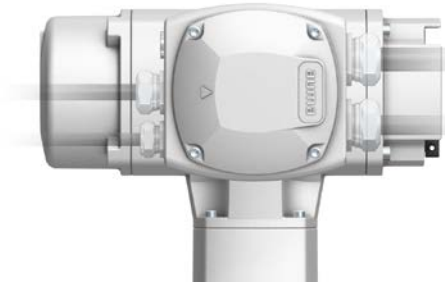
Cables entries in direction of and opposite the actuator



Actuator

Mounting position F-1 (standard)

Cable entries located lateral right and left



Actuator

Mounting positions are also valid for actuator controls with electrical connection on the right.
Mounting positions may easily be changed at a later date.
The mounting positions shown apply for KT electrical connection.
When using both mounting bases, the mounting position is possibly shifted in the factory: A-1 becomes F-1, C-1 becomes E-1 and D-1 becomes F-1.

Caution: For outdoor installation, make sure that the cable entries are located in downward or lateral position to prevent ingress of water.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

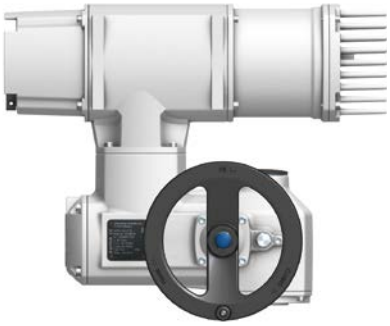
Mounting positions ACV Actuator controls on SAV actuators

1. Mounting positions ACV on SAV[1)]

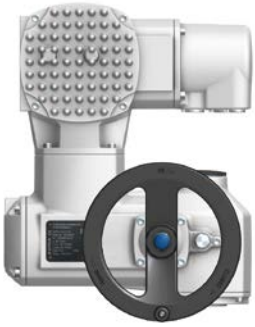
Mounting position A



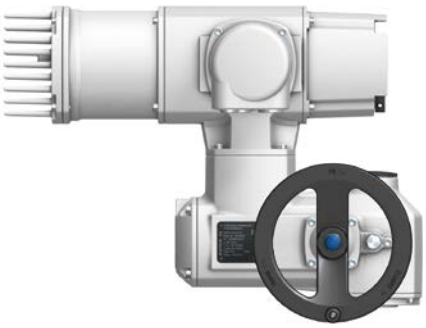
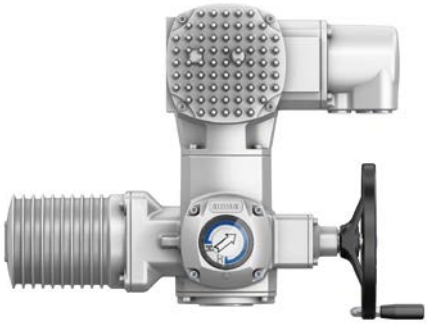

Mounting position B[2)]




Mounting position C[2)]




Mounting position D[2)]

Please consider possible space confinements on site when selecting the mounting position.
Mounting positions may easily be changed at a later date.

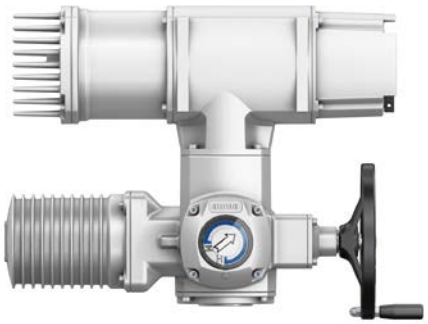
1) Mounting positions apply for the following actuators:
SAV, SARV, SAVEx, SARVEx multi-turn actuators in all sizes
ACV, ACVExC actuator controls
2) **Attention:** For SAV multi-turn actuators with rising valve stems, mounting positions B, C and D are not possible.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Mounting positions ACV Actuator controls on SAV actuators

2. Mounting positions ACV on SAV[1] with electrical connection on the right

Mounting position E[2]

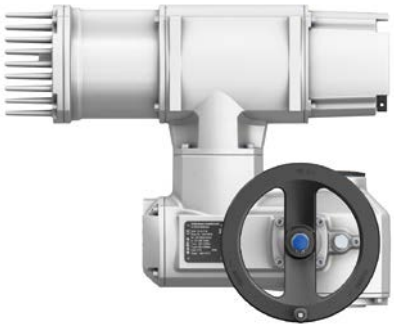
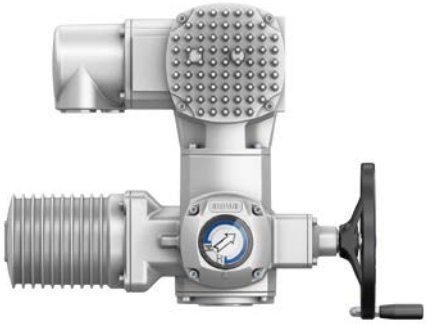
Mounting position F[2]




Mounting position G




Mounting position H[2]

Please consider possible space confinements on site when selecting the mounting position.
Mounting positions may easily be changed at a later date.

1) Mounting positions apply for the following actuators:
SAV, SARV, SAVEx, SARVEx multi-turn actuators in all sizes
ACV, ACVExC actuator controls
2) **Attention:** For SAV multi-turn actuators with rising valve stems, mounting positions E, F and H are not possible.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Mounting positions ACV Actuator controls on SAV actuators

3. Mounting positions Local controls

Mounting position A-1 (standard)

Selector switch pointing in actuator direction



Actuator

Mounting position B-1

Selector switch pointing lateral left



Actuator

Mounting position C-1

Selector switch opposite the actuator



Actuator

Mounting position D-1

Selector switch pointing lateral right



Actuator

Mounting positions are also valid for actuator controls with electrical connection on the right.
Please consider possible space confinements on site when selecting the mounting position.
Mounting positions may easily be changed at a later date.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Mounting positions ACV Actuator controls on SAV actuators

4. Mounting positions Electrical connection

Mounting position A-1 (standard)

Cable entries in actuator direction



Actuator

Mounting position B-1

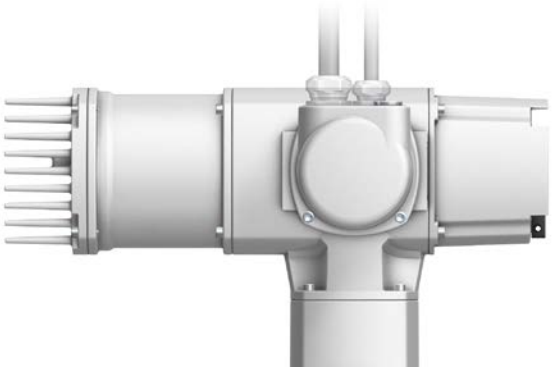
Cable entries located lateral left



Actuator

Mounting position C-1

Cable entries located opposite the actuator



Actuator

Mounting position D-1

Cable entries located lateral right



Actuator

Mounting positions are also valid for actuator controls with electrical connection on the right.
Mounting positions may easily be changed at a later date.
The mounting positions shown apply for all types of electrical connections (except KT).

Caution: For outdoor installation, make sure that the cable entries are located in downward or lateral position to prevent ingress of water.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Mounting positions ACV Actuator controls on SAV actuators

5. Mounting positions for KT electrical connection (for explosion-proof applications)

When using one mounting base

Mounting position A-1 (standard)

Cable entries in actuator direction



Actuator

Mounting position B-1

Cable entries located lateral left



Actuator

Mounting position C-1

Cable entries located opposite the actuator



Actuator

Mounting position D-1

Cable entries located lateral right



Actuator

When using both mounting bases

Mounting position E-1

Cables entries in direction of and opposite the actuator



Actuator

Mounting position F-1 (standard)

Cable entries located lateral right and left



Actuator

Mounting positions are also valid for actuator controls with electrical connection on the right.
Mounting positions may easily be changed at a later date.
The mounting positions shown apply for KT electrical connection.
When using both mounting bases, the mounting position is possibly shifted in the factory: A-1 becomes F-1, C-1 becomes E-1 and D-1 becomes F-1.

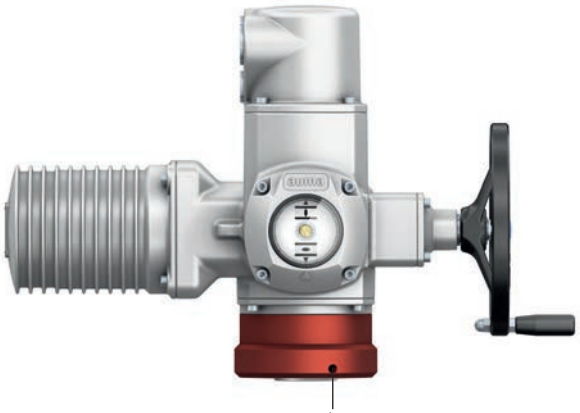
Caution: For outdoor installation, make sure that the cable entries are located in downward or lateral position to prevent ingress of water.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Mounting position Output drive type IBx at multi-turn actuators of SA range

Mounting positions A – D for insulated output drive at multi-turn actuator[1)]

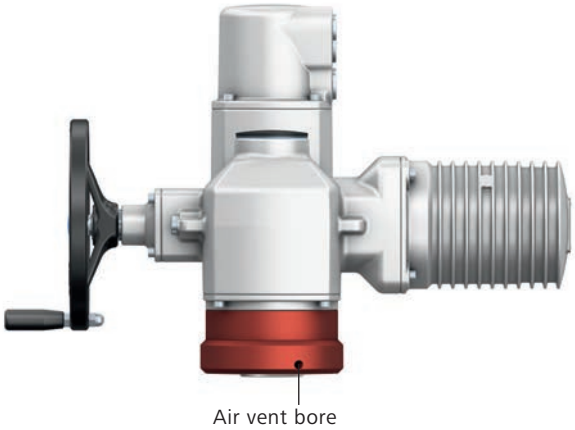
Mounting position A



Mounting position B



Mounting position C[2)]



Mounting position D



Note:

For horizontal mounting position with lateral flange (actuator hanging laterally), make sure that the air vent bore points downward.

For vertical mounting with the actuator pointing downward and the flange pointing upward, please contact AUMA.

1) Mounting positions apply for the following actuators:
SA 07.2 – SA 16.2/SAR 07.2 – SAR 16.2/SAEx 07.2 – SAEx 16.2/SAREx 07.2 – SAREx 16.2
SA 25.1/SAR 25.1/SAEx 25.1/SAREx 25.1

2) **Attention:** Mounting position when leaving the factory. Other mounting positions only available upon specific order.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

9 Wiring diagrams

Actuators

Selection of terminal plans TPA 504
Wiring diagram code TPA 508
Proposed wiring diagram for SA.2/SQ.2 with 3-phase AC motor 509
Proposed wiring diagram for SA.2/SQ.2 with 1-phase AC motor 511

AM Actuator controls

Wiring diagram selection for AM 01.1/AM 02.1 513
Legend for wiring diagrams AM 01.1/AM 02.1 517
Wiring diagram code MSP for AM 01.1/AM 02.1 520

AC/ACV Actuator controls

Wiring diagram selection for AC 01.2 521
Legend for actuator controls AC 01.2/ACExC 01.2, AC 01.2-SIL/ACExC 01.2-SIL 547

Wiring diagram selection for ACV 01.2 549
Legend for wiring diagrams ACV 01.2/ACVExC 01.2 584

Wiring diagram code TPC for AC 01.2/ACExC 01.2/ACV 01.2/ACVExC 01.2 586

TPA

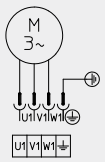
Motor connections

Separate terminal plans are available for DC, brake and two-speed motors.

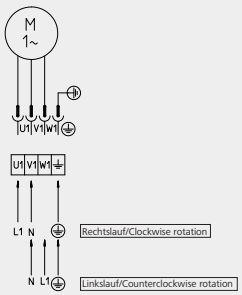
ATTENTION!

Complete protection of AUMA pot-type motors is only achieved when correctly wiring the thermoswitches, embedded in the winding

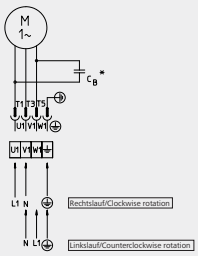
3-phase AC motor
TPA00R... (TP.../...)



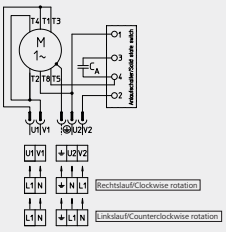
1-phase AC motor
for SG 05.1 – SG 12.1
TPA16R... (1TP.../...)



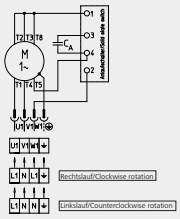
1-phase AC motor with
integral operating capacitor
TPA01R... (60TP.../...)



1-phase AC motor 115 V AC with integral
start-up capacitor and start-up contact
TPA02R... (61TP.../...)



1-phase AC motor 230 V AC with integral
start-up capacitor and start-up contact
TPA03R... (62TP.../...)

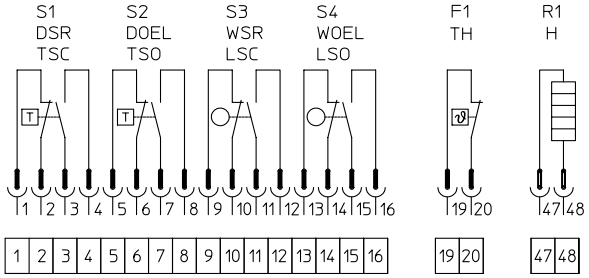


S1 S2	DSR DOEL	Torque switch, closing, clockwise rotation Torque switch, opening, counterclockwise rotation
S1/2 S2/2	DSR1 DOEL1	Torque switch in tandem arrangement with DSR/DOEL (TSC/TSO)
S3 S4	WSR WOEL	Limit switch, closing, clockwise rotation Limit switch, opening, counterclockwise rotation
S3/2 S4/2	WSR1 WOEL1	Limit switch in tandem arrangement with WSR/WOEL (LSC/LSO)
S6 S7	WDR WDL	Limit switch, DUO, for 2 intermediate positions, adjustable
S6/2 S7/2	WDR1 WDL1	Limit switch, DUO, for 2 intermediate positions in tandem arrangement with WDR/WDL (LSA/LSB), adjustable
S5 S17	BI HA	Blinker transmitter Handwheel activation switch
F1	TH	Thermoswitch (motor protection); thermoswitch as standard for 1-phase and 3-phase motors only. Contacts open at 140 °C and close automatically once they have cooled down.
B1 B2	IWG EWG/RWG	Inductive position transmitter 3-wire or 4-wire system Electronic position transmitter 3-wire or 4-wire system
B3 B4	IWG EWG/RWG	Inductive position transmitter 2-wire system Electronic position transmitter 2-wire system
R1	H	Heater in switch compartment
R2 R2/2	f1 f2	Potentiometer Potentiometer in tandem arrangement with R2
R3-	PTC1	PTC thermistor (motor protection)
R4	H	Motor heater

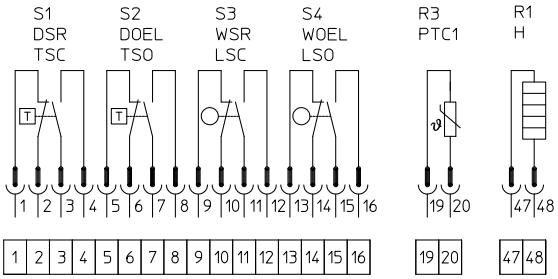
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

TPA

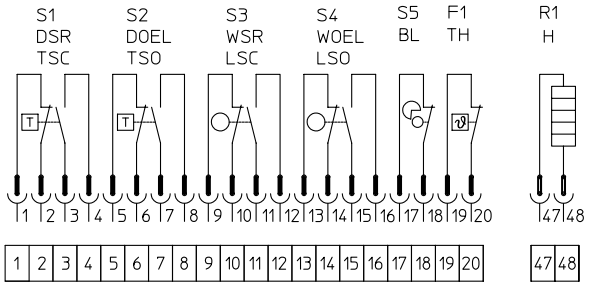
TPA00R1AA-001-000 (KMS TP100/001)



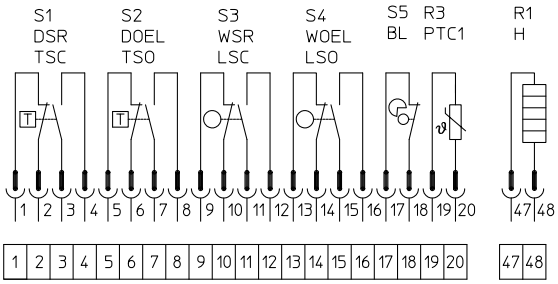
TPA00R2AA-001-000 (KMS TP200/001)



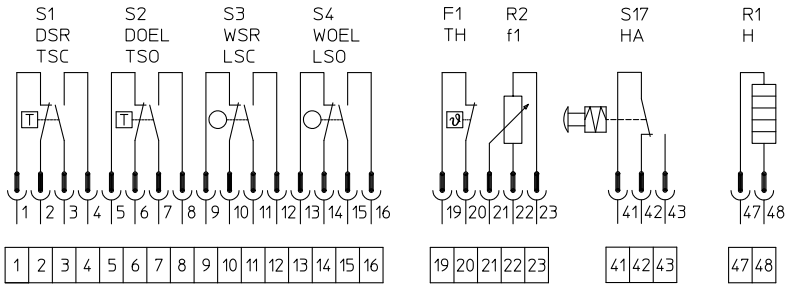
TPA00R1AA-101-000 (KMS TP110/001)



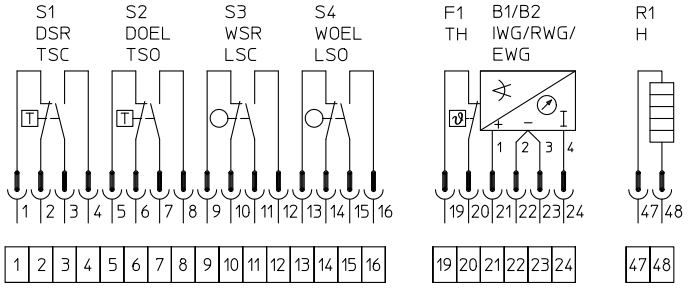
TPA00R2AA-101-000 (KMS TP210/001)



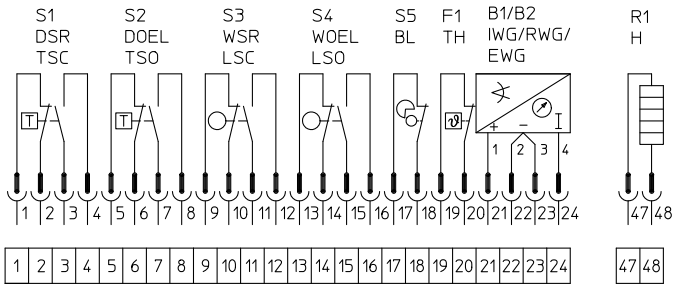
TPA00R1AA-3A1-000



TPA00R1AA-0E1-000 (KMS TP104/001)



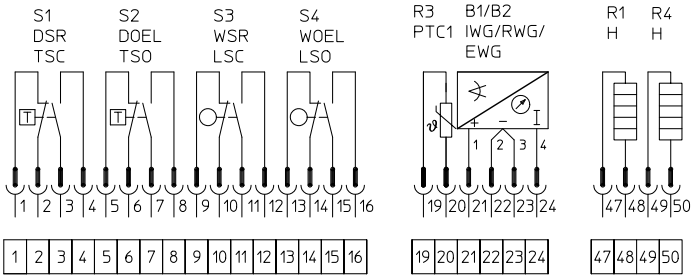
TPA00R1AA-1E1-000 (KMS TP114/001)



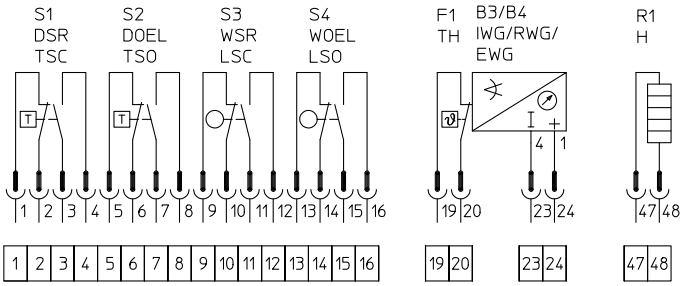
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TPA

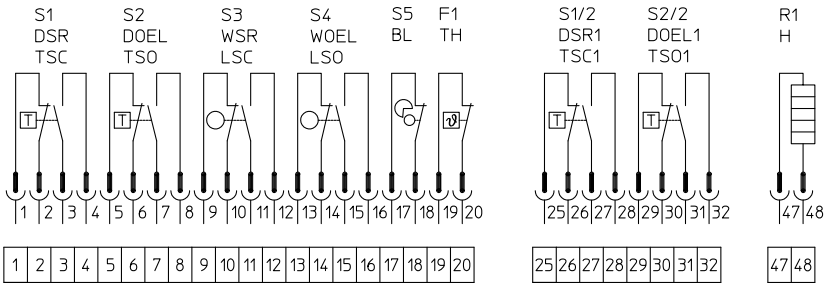
TPA00R2AA-0EA-000 (KMS TP204/009)



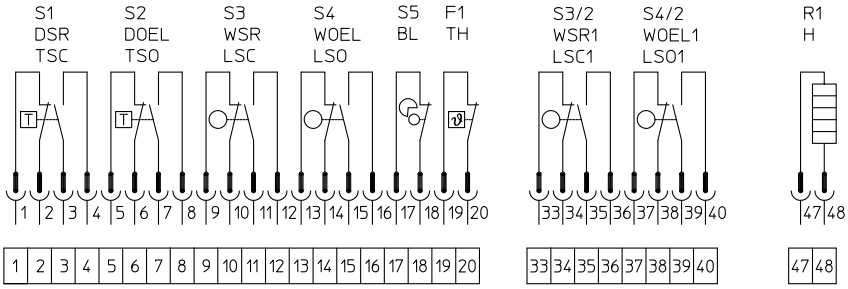
TPA00R1AA-0C1-000 (KMS TP140/001)



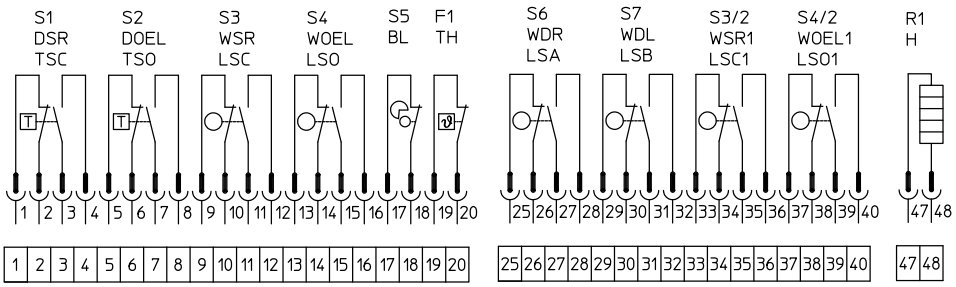
TPA00R1BA-101-000 (KMS TP110/101)



TPA00R1AB-101-000 (KMS TP110/201)



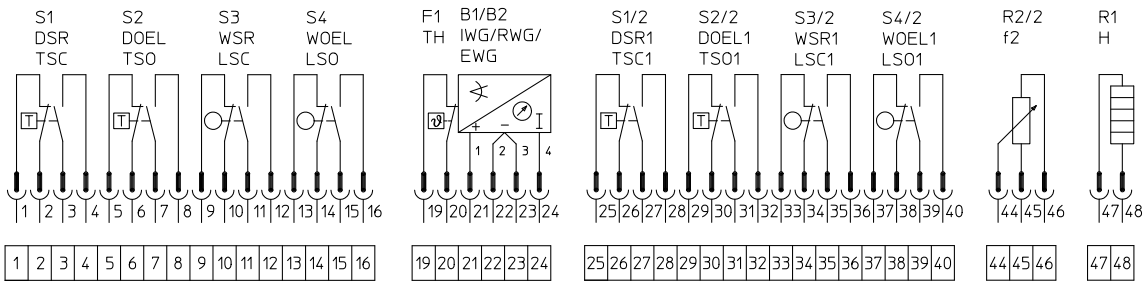
TPA00R1AF-101-000 (KMS TP110/211)



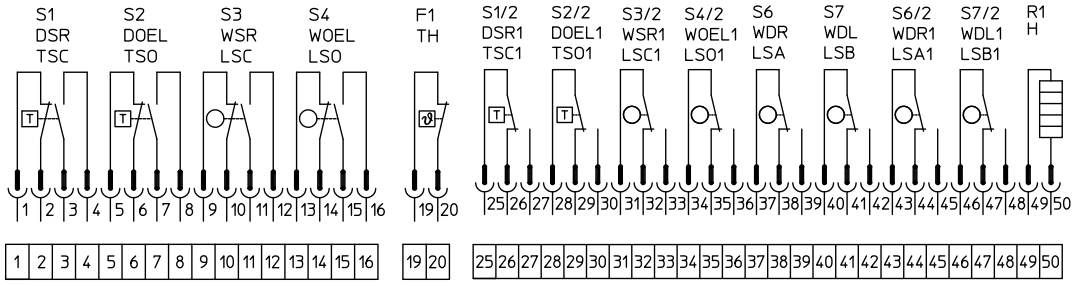
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

TPA

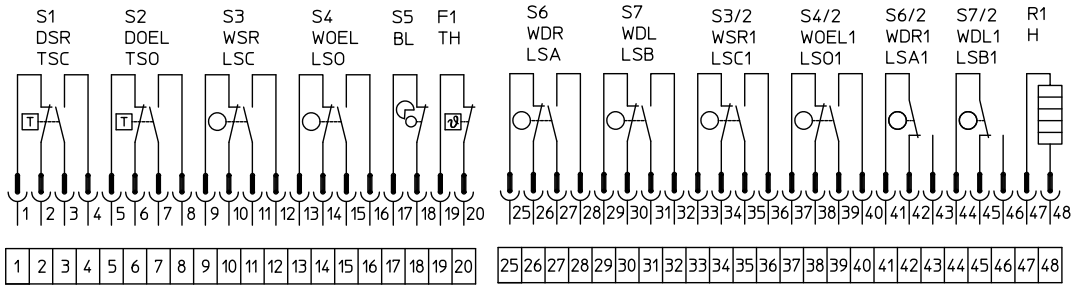
TPA00R1BB-0H1-000 (KMS TP104/341)



TPA00R1BH-001-A30 (KMS 9TP100/331)



TPA00R1AH-101-A30 (KMS 9TP110/231)



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Wiring diagram code

TPA

This data applies to:

Multi-turn actuators
SA 07.2 – SA 16.2; SAR 07.2 – SAR 16.2
SA 07.2-UW – SA 16.2-UW; SAR 07.2-UW – SAR 16.2-UW
SAV 07.2 – SAV 16.2; SARV 07.2 – SARV 16.2
SA 25.1 – SA 48.1; SAR 25.1 – SAR 30.1
SAEx 07.2 – SAEx 16.2; SAREx 07.2 – SAREx 16.2
SAVEx 07.2 – SAVEx 16.2; SARVEx 07.2 – SARVEx 16.2
SAEx 25.1 – SAEx 40.1; SAREx 25.1 – SAREx 30.1

Part-turn actuators
SQ 05.2 – SQ 14.2; SQR 05.2 – SQR 14.2
SQEx 05.2 – SQEx 14.2; SQREx 05.2 – SQREx 14.2
SG 05.1 – SG 12.1; SGR 05.1 – SGR 12.1
SGExC 05.1 – SGExC 12.1

			Extract of wiring diagram code													
			Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Position			**TPA**	**0**	**0**	**R**	**1**	**A**	**A**	**-**	**1**	**0**	**1**	**-**	**0**	**0**	**0**
1 + 2	**00**	AUMA 3-ph AC motor															
	01	AUMA 1-ph AC motor for SA .2/SQ .2															
	16	1-ph AC motor for SG .1															
3	**R**	Clockwise closing															
	L	Counterclockwise closing															
4	**1**	1 thermoswitch 140 ° C (NC)															
	2	1 Kaltleiter															
5	**0**	Without torque switches (MWG)															
	A	2 single switches (standard)															
	B	2 tandem switches															
6	**0**	Without limit/intermediate switches (MWG)															
	A	2 single switches (standard) for end positions															
	B	2 tandem switches for end positions															
7	**-**	Reserve															
8	**0**	Without signalling															
	1	With blinker transmitter															
	2	Manual operation switch with blinker transmitter															
	3	Manual operation switch without blinker transmitter															
9	**0**	Without position transmitter															
	A	Precision potentiometer															
	C[1)]	Electronic position transmitter 2-wire system (EWG/RWG)															
	E[1)]	Electronic position transmitter 3-wire or 4-wire system (EWG/RWG)															
	I[2)]	Absolute encode for limit and torque sensing (MWG)															
10	**0**	Without heater															
	1	110 V – 250 V (without controls) 24 V (with controls)															
11	**-**	Reserve															
12 – 14	**000**	Without special units															

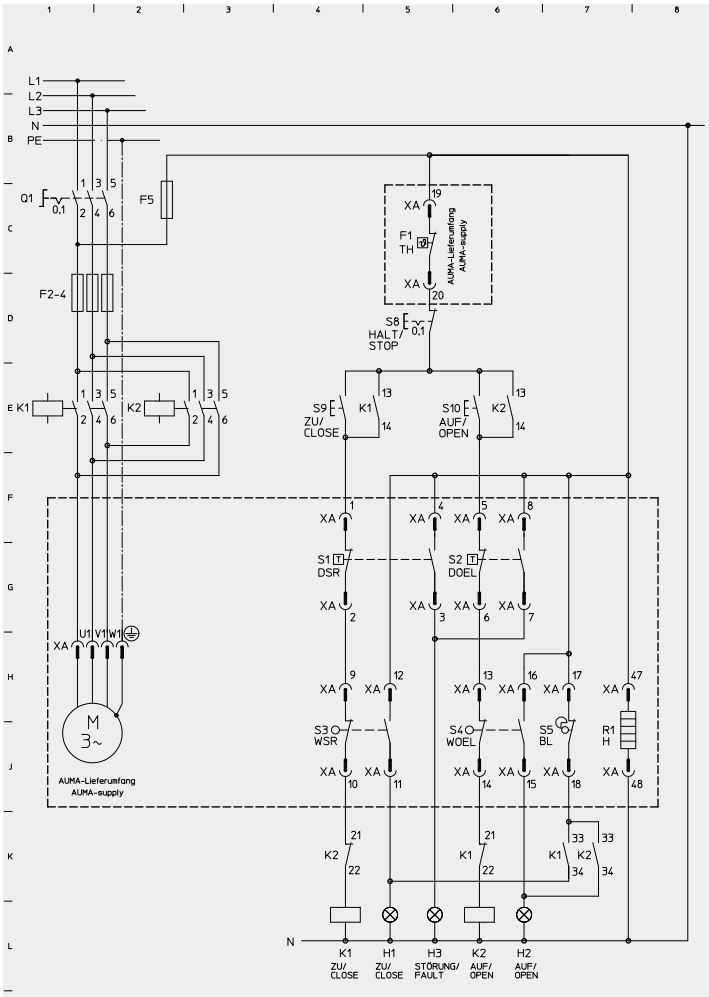
Notes on table	
1) C, E	When combined with SAEx 25.1 – SAEx 40.1; SAREx 25.1 – SAREx 30.1, valid for 2-wire RWG 5020 (Ex i) only
2) I	Only possible for SAEx 25.1 – SAEx 40.1/SAREx 25.1 – SAREx 30.1 in FM (US) version

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

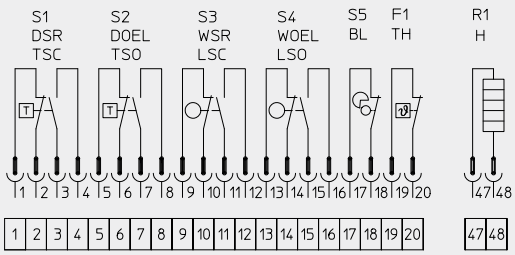
Proposed wiring diagram for SA .2 and SQ .2 with 3-phase AC motor

CLOSED Limit seating

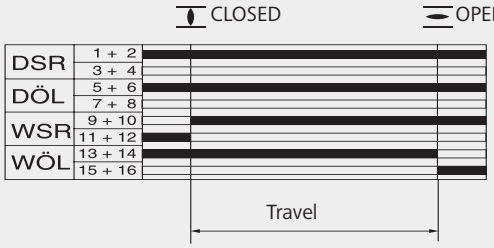
OPEN Limit seating



TPA00R1AA-101-000 (basic version)



Limit switch tripping



Contacts closed Contacts open

DSR and DOEL act as overload protection for the whole travel; they are only tripped when exceeding the set torque.

Wiring diagram for standard version, multi-turn actuator closes valve clockwise. The wiring diagram shows the non-rotating multi-turn actuator in intermediate position.

Limit and torque switches can be provided as single, tandem, or triple switches. Only the same potential can be switched on the two circuits (NC/NO contact) of each single switch. If different potentials are to be switched simultaneously, tandem switches or triple switches are required. When using tandem/triple switches:

- For signalling use the leading contacts TSC1, TSO1, LSC1, LSO1.
- For switching off use the lagging contacts TSC, TSO, LSC, LSO.

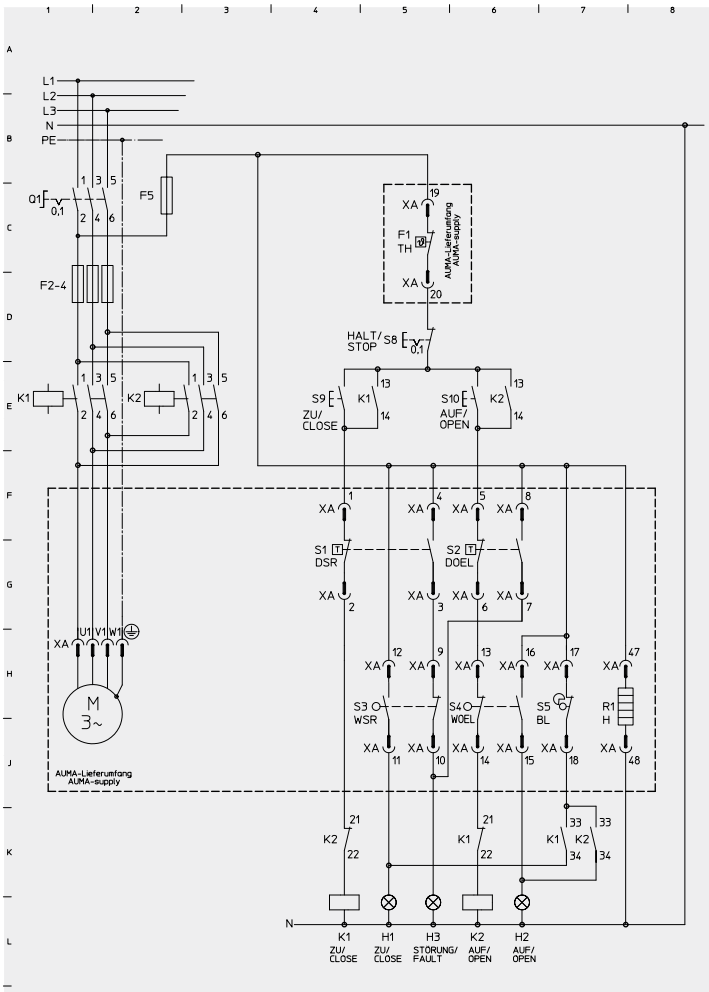
M		Motor (3-phase AC)
S1	TSC	Torque switch, closing, clockwise rotation
S2	TSO (DOEL)	Torque switch, opening, counterclockwise rotation
S3	LSC (WSR)	Limit switch, closing, clockwise rotation
S4	LSO (WOEL)	Limit switch, opening, counterclockwise rotation
S5	BL	Blinker transmitter
F1	TH	Thermoswitch
Q1		Main switch
S8		Push button STOP
S9		Push button CLOSE
S10		Push button OPEN
K1, K2		Reversing contactors
F2 – F5		Fuses
H1		Indication light End position CLOSED
H2		Indication light End position OPEN
H3		Indication light FAULT
R1	H	Heater

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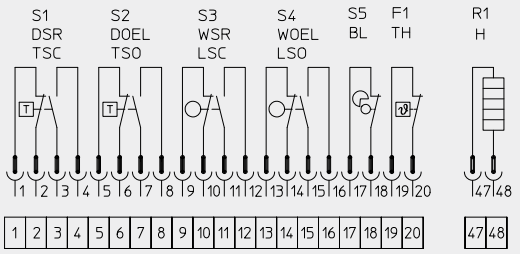
Proposed wiring diagram for SA .2 and SQ .2 with 3-phase AC motor

CLOSED Torque seating

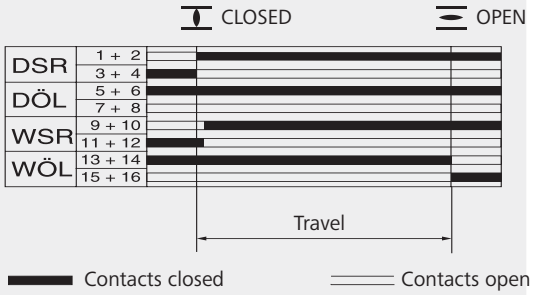
OPEN Limit seating



TPA00R1AA-101-000 (basic version)



Limit switch tripping



TSC (DSR) and TSO (DOEL) act as overload protection for the whole travel. TSC (DSR) interrupts the control circuit when reaching the set torque, the actuator is tripped. Set LSC (WSR)as to ensure that it is tripped shortly before reaching the end position CLOSED.

Wiring diagram for standard version, multi-turn actuator closes valve clockwise. The wiring diagram shows the non-rotating multi-turn actuator in intermediate position.

Limit and torque switches can be provided as single, tandem, or triple switches. Only the same potential can be switched on the two circuits (NC/NO contact) of each single switch. If different potentials are to be switched simultaneously, tandem switches or triple switches are required. When using tandem/triple switches:

- For signalling use the leading contacts TSC1, TSO1, LSC1, LSO1.
- For switching off use the lagging contacts TSC, TSO, LSC, LSO.

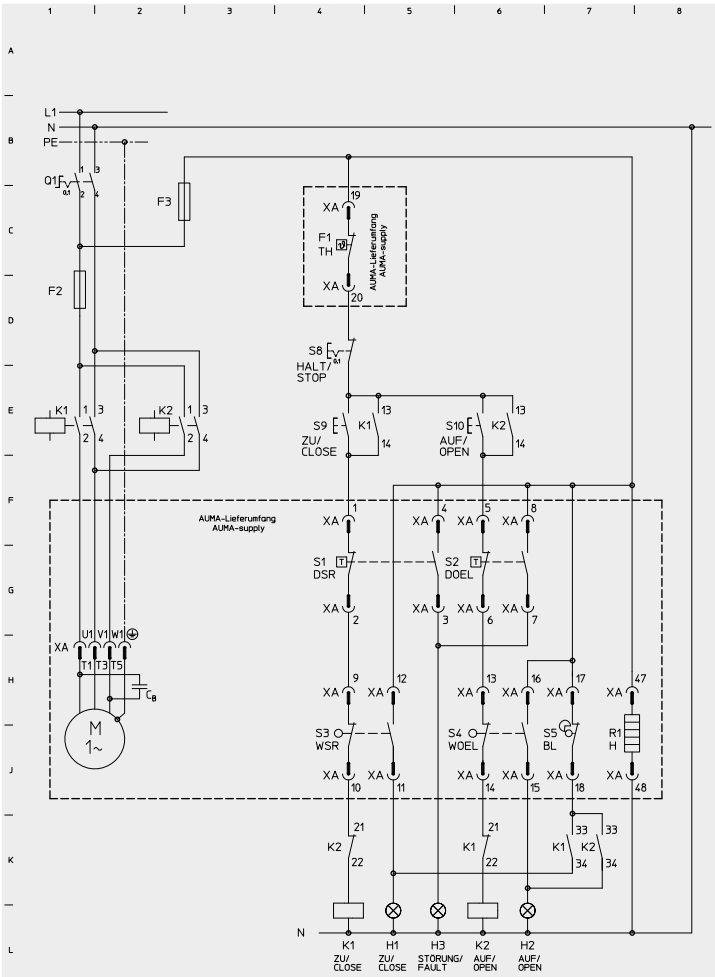
M		Motor (3-phase AC)
S1	TSC	Torque switch, closing, clockwise rotation
S2	TSO (DOEL)	Torque switch, opening, counterclockwise rotation
S3	LSC (WSR)	Limit switch, closing, clockwise rotation
S4	LSO (WOEL)	Limit switch, opening, counterclockwise rotation
S5	BL	Blinker transmitter
F1	TH	Thermoswitch
Q1		Main switch
S8		Push button STOP
S9		Push button CLOSE
S10		Push button OPEN
K1, K2		Reversing contactors
F2 – F5		Fuses
H1		Indication light End position CLOSED
H2		Indication light End position OPEN
H3		Indication light FAULT
R1	H	Heater

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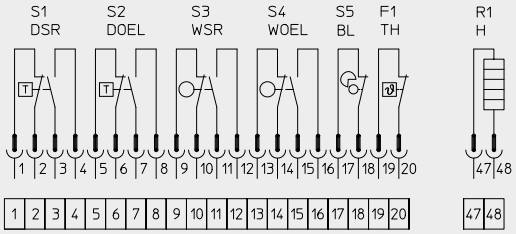
Proposed wiring diagram for SA .2 and SQ .2 with 1-phase AC motor

CLOSED Limit seating

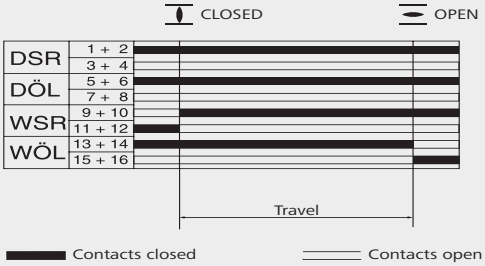
OPEN Limit seating



TPA01R1AA-101-000 (basic version)



Limit switch tripping



DSR and DOEL act as overload protection for the whole travel; they are only tripped when exceeding the set torque.

Wiring diagram for standard version, actuator closes valve clockwise. The wiring diagram shows the actuator at standstill in intermediate position.

Limit and torque switches can be provided as single, tandem, or triple switches. Only the same potential can be switched on the two circuits (NC/NO contact) of each single switch. If different potentials are to be switched simultaneously, tandem switches or triple switches are required. When using tandem/triple switches:

- For signalling use the leading contacts TSC1, TSO1, LSC1, LSO1.
- For switching off use the lagging contacts TSC, TSO, LSC, LSO.

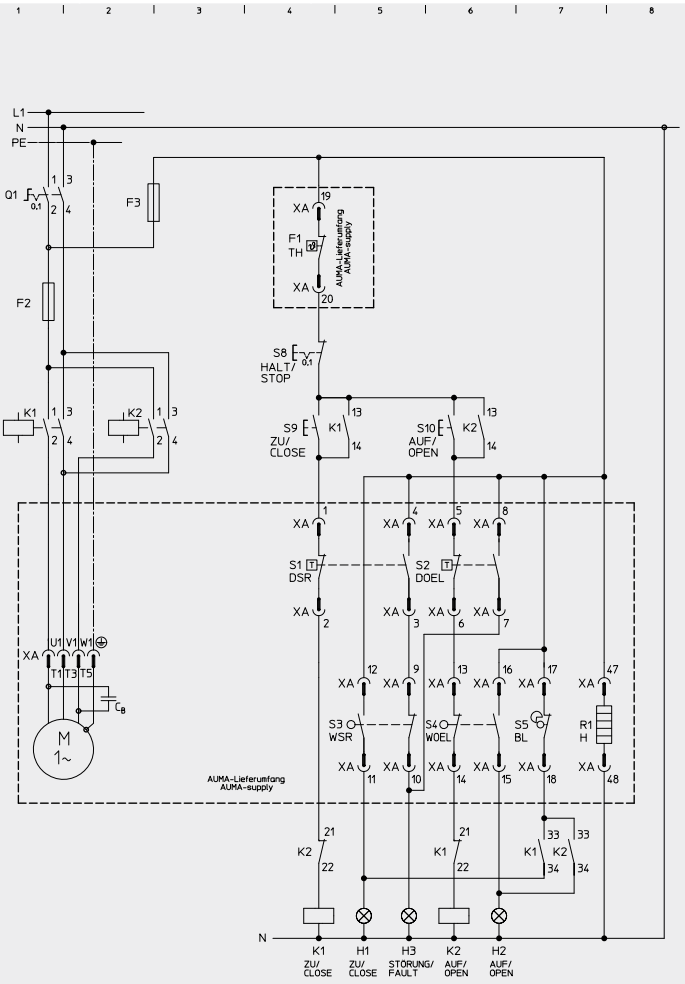
M		Motor (1-phase AC)
S1	TSC (DSR)	Torque switch, closing, clockwise rotation
S2	TSO (DOEL)	Torque switch, opening, counterclockwise rotation
S3	LSC (WSR)	Limit switch, closing, clockwise rotation
S4	LSO (WOEL)	Limit switch, opening, counterclockwise rotation
S5	BL	Blinker transmitter
F1	TH	Thermoswitch
Q1		Main switch
S8		Push button STOP
S9		Push button CLOSE
S10		Push button OPEN
K1, K2		Reversing contactors
F2 – F5		Fuses
H1		Indication light End position CLOSED
H2		Indication light End position OPEN
H3		Indication light FAULT
R1	H	Heater

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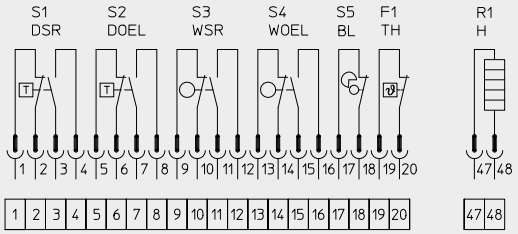
Proposed wiring diagram for SA .2 and SQ .2 with 1-phase AC motor

CLOSED Torque seating

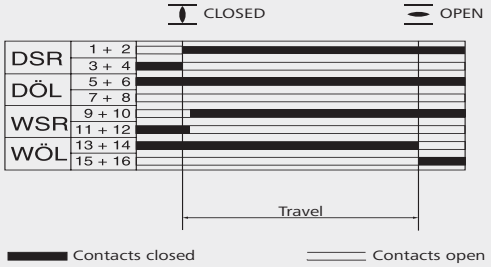
OPEN Limit seating



TPA01R1AA-101-000 (basic version)



Limit switch tripping



TSC (DSR) and TSO (DOEL) act as overload protection for the whole travel. TSC (DSR) interrupts the control circuit when reaching the set torque, the actuator is tripped. Set LSC (WSR)as to ensure that it is tripped shortly before reaching the end position CLOSED.

Wiring diagram for standard version, actuator closes valve clockwise. The wiring diagram shows the actuator at standstill in intermediate position.

Limit and torque switches can be provided as single, tandem, or triple switches. Only the same potential can be switched on the two circuits (NC/NO contact) of each single switch. If different potentials are to be switched simultaneously, tandem switches or triple switches are required. When using tandem/triple switches:

- For signalling use the leading contacts TSC1, TSO1, LSC1, LSO1.
- For switching off use the lagging contacts TSC, TSO, LSC, LSO.

M		Motor (1-phase AC)
S1	TSC	Torque switch, closing, clockwise rotation
S2	TSO (DOEL)	Torque switch, opening, counterclockwise rotation
S3	LSC (WSR)	Limit switch, closing, clockwise rotation
S4	WOEL	Limit switch, opening, counterclockwise rotation
S5	BL	Blinker transmitter
F1	TH	Thermoswitch
Q1		Main switch
S8		Push button STOP
S9		Push button CLOSE
S10		Push button OPEN
K1, K2		Reversing contactors
F2 – F5		Fuses
H1		Indication light End position CLOSED
H2		Indication light End position OPEN
H3		Indication light FAULT
R1	H	Heater

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AM 01.1/AM 02.1

Information on wiring diagram selection

General information

This data sheet is used as supplement to wiring diagram selection for AM 01.1/AM 02.1 (Y002.905)

Notes

The wiring diagrams listed in the wiring diagram selection can be downloaded from our website (www.auma.com). This manual includes examples of wiring diagrams for all control types in their basic versions.

Wiring diagram selection

The short designations (AM1 . . .etc.) are descriptive numberings.

AM1: **Basic version**

Reversing contactors, OPEN - STOP - CLOSE (24 V DC)
MSP1110KC3--F18E1 TPA00R1AA-101-000

AM3: **With position feedback signal (0/4 – 20mA) internally supplied (EWG/RWG within actuator)**

Reversing contactors, OPEN - STOP - CLOSE (24 V DC)
MSP1110KC3--F18E1 TPA00R1AA-1E1-000

AM4: **With position feedback signal (0/4 – 20mA) internally supplied (EWG/RWG within actuator)**

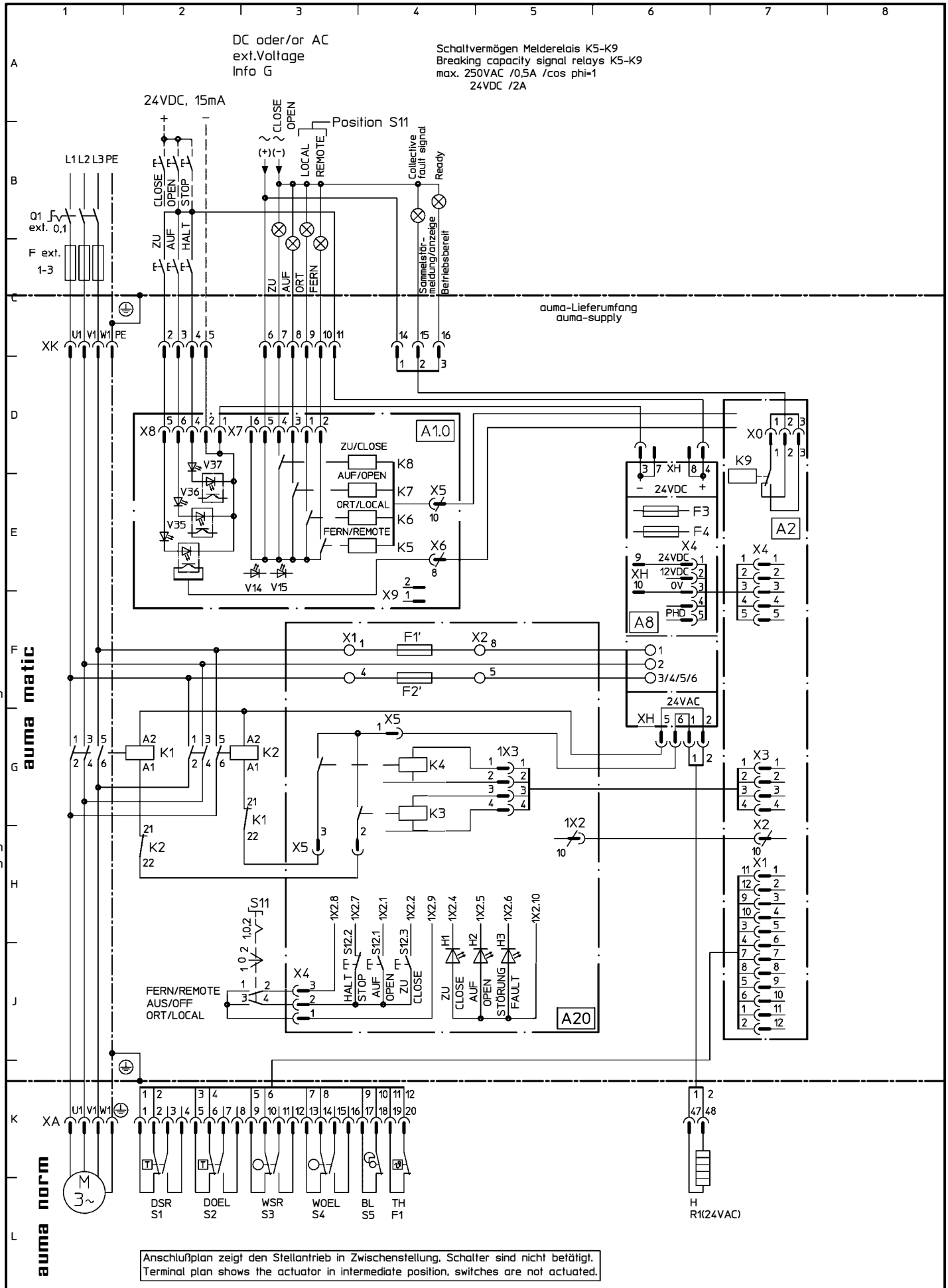
Thyristors, OPEN - STOP - CLOSE (24 V DC)
MSP1110KC3--A18E1 TPA00R1AA-1E1-000

AM1W: **Basic version on wall bracket**

Reversing contactors, OPEN - STOP - CLOSE (24 V DC)
MSP5110KC3--F18E1 TPA00R1AA-101-000

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.



Anschlußplan zeigt den Stellantrieb in Zwischenstellung, Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Code: AM1

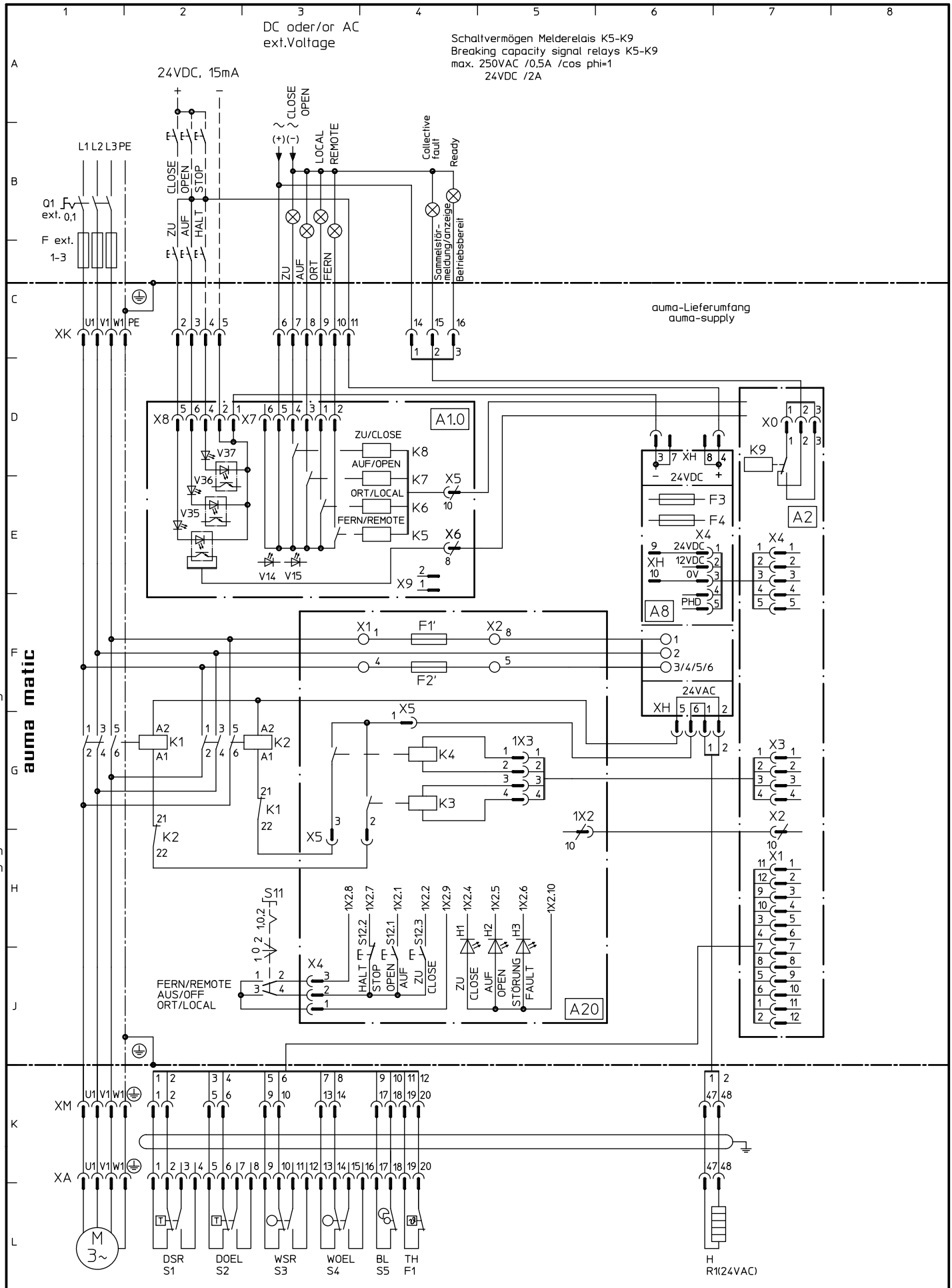
				Datum	2011-07-18
02	733/09	2011-07-18	Mon	Bearb.	Montaire
01	800/09	2009-12-07	Mon	Gepr.	Montaire
Zust.	Änderung	Datum	Name	Norm	Montaire

AUMA Riester GmbH & Co. KG

MSP1110KC3--F18E1 TPA00R1AA-101-000

Legende	Auftragsnummer	Bestellnummer

Projekt



Anschlußplan zeigt den Stellantrieb in Zwischenstellung, Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Code: AM1W

auma matic

Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.

				Datum	2013-05-07
02	733/09	2013-05-07	Mon	Bearb.	Montoire
01	733/09	2010-07-08	Mon	Gepr.	Montoire
Zust.	Änderung	Datum	Name	Norm	Montoire

AUMA Riester GmbH & Co. KG

MSP5110KC3--F18E1 TPA00R1AA-101-000

Legende	Auftragsnummer	Bestellnummer
		Projekt

Legend for AUMA MATIC

Legend for actuator		
S1	TSC	Torque switch, closing, clockwise rotation
S2	TSO (DOEL)	Torque switch, opening, counterclockwise rotation
S3	LSC (WSR)	Limit switch, closing, clockwise rotation
S4	LSO (WOEL)	Limit switch, opening, counterclockwise rotation
S1/2 S2/2	DSR 1 DOEL 1	Torque switches, in tandem arrangement with DSR/DOEL (TSC/TSO)
S3/2 S4/2	WSR 1 WOEL 1	Limit switches, in tandem arrangement with WSR/WOEL (LSC/LSO)
S3/3 S4/3	WSR 2 WOEL 2	Limit switches, in triple arrangement with WSR/WOEL (LSC/LSO)
S3/4 S4/4	WSR 3 WOEL 3	Limit switches, in quadruple arrangement with WSR/WOEL (LSC/LSO)
S5	BL	Blinker transmitter
S6 S7	WDR WDL	Limit switches, DUO, for 2 intermediate positions, adjustable
S6/2 S7/2	WDR 1 WDL 1	Limit switches, DUO, for 2 intermediate positions in tandem arrangement with WDR/WDL (LSA/LSB)
B1/B2	EWG/RWG IWG	3-wire or 4-wire system/electronic position transmitter 3-wire or 4-wire system/inductive position transmitter
B3/B4	EWG/RWG IWG	2-wire system/electronic position transmitter 2-wire system/inductive position transmitter
F1	TH	Thermoswitch
F1/2	TH	Thermoswitches (signalisation)
R1	H	Heater in switch compartment
R2	f1	Potentiometer
R2/2	f2	Potentiometer in tandem arrangement with R 2
R2/3	f3	Potentiometer in triple arrangement with R 2
R3	PTC 1	PTC thermistor
R3/2	PTC 2	PTC thermistor (indication)
R4	H	Motor heater

Legend for AUMA MATIC	
A1.0	Interface board
K5 - 8	Output contact; running indication via output contacts (opening and closing) in combination with blinker (S5) and signal board for running indication (A91)
A1.1	Special interface board
A1.6	Timer board
R10	Direction OPEN, pause time
R11	Direction OPEN, running time
R12	Direction CLOSE, pause time
R13	Direction CLOSE, running time
A1.8	Profibus board, Modbus board
A2	Logic board
K9	Output contact/collect
A4	Overvoltage protection thyristors
A5	Thyristor board
A7	Positioner board
A8	Power supply board
F3, F4	Secondary fuses
A9	REMOTE change-over MANUAL - AUTOMATIC
A9.1	External release of local operation

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Legend for AUMA MATIC

A11	PTC tripping board
A13	Fieldbus connection board
A13.1	Profibus DP and PTC tripping device
A13.2	Profibus DP and PTC tripping device and reset contact
A17	Galvanic isolator
A20/A21	Signal and control board
S11/S11/2	Selector switch LOCAL - OFF - REMOTE
S11/3	Selector switch LOCAL - OFF - REMOTE 3rd level with spring return for test/reset/PTC tripping device
S12.1	Push button OPEN
S12.2	Push button STOP
S12.3	Push button CLOSE
S12.5	Push button EMERGENCY - STOP
H1	Indication light CLOSE
H2	Indication light OPEN
H3	Indication light FAULT
K3, K4	Control relay for reversing contactors:
F1, F2	FF fuse for semiconductors
A22	Galvanic isolator and REMOTE change-over MANUAL - AUTOMATIC
A24	Board for storing the collective fault signal 3 s
A25	Signal and control board with EMERGENCY - STOP
A32	Overvoltage board for Profibus/Modbus
A33	External change-over LOCAL - REMOTE, without selector switch
A35	Heater monitoring
A66	REMOTE change-over for MANUAL - FIELDBUS
A67	Profibus with electronic blinker transmitter
A88	Heater system board
A91 K10, K11	Signal board for running indication Signal board for running indication (opening and closing) in combination with blinker transmitter (S5)
B5	Adjustment board for position transmitter
C_B	Permanent split capacitor (1 to 3 units)
F1', F2'	Primary fuses for power supply
F7	Thermal overload relay
K1, K2	Reversing contactors
Q1	Disconnect switch
Q2	Motor protection switch
R5	Heater in AUMA MATIC
U1 - U4	Semiconductors (thyristors)
V14	LED, (phase sequence), phase failure, motor protection tripped
V15	LED, torque switch operated in mid-travel
V21	Stepping mode active in direction CLOSE
V22	Stepping mode active in direction OPEN
V35	LED, command CLOSE available from control room
V36	LED, command OPEN available from control room
V37	LED, STOP command available from control room
V38	LED, command EMERGENCY available from control room
XK	Customer connection
XA	Actuator connection
XM	Connection for AUMA MATIC (wall bracket)

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Legend for AUMA MATIC

Supplementary information	
Information A	Running indication is possible for installed blinker transmitter (S5) (opening and closing) Running direction CLOSE: Sockets X_K 6 - X_K 7 Running direction OPEN: Sockets X_K 6 - X_K 8 Contacts remain closed in end position. For switching off/on the running indication (blinker transmitter), refer to operation instructions.
Information B	The valve manufacturer specifies the type of seating in the end positions. Setting is performed using programming switches S1-2 and S3-2 (refer to operation instructions). Tripping of a torque switch in mid-travel leads to switching off and generates a fault signal. For torque seating, the limit switches are used for signalliing. They have to be set as to ensure that the respective switch trips shortly before reaching the end position. If the torque switch trips before the limit switch, the actuator is switched off and a fault signal generated.
Information D	The following fault signals are recorded and can be sent as potential-free collective fault signal to the control room. • Mains failure • Phase failure • Motor protection tripped • Torque switch tripped in mid-travel (on/off switch refer to operation instructions).
Information E	Input signals according to DIN 19240. Nominal operating current of inputs X_K 2; X_K 3 and X_K 4 amounts to 10 – 15 mA. Should the internal 24 VDC power supply be used for remote control, switching is only possible via potential-free contacts.
Information F	In case of wrong phase sequence, the running direction is adjusted by automatic phase inversion. During phase failure, the multi-turn actuator is at standstill. The failure is indicated at LED V14 of the interface board.
Information G	Potential-free contacts can be used for signals. The internal control voltage (X_K 11/+24 V or X_K 5/–24V) must not be used for external lights, relays etc.

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Wiring diagram code

Position		Extract of wiring diagram code													
		Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		MSP	**1**	**1**	**1**	**0**	**K**	**C**	**3**	**-**	**-**	**F**	**1**	**8**	**E**	**1**
1.	**Housing**															
	1 Basic version															
	5 AM on wall bracket															
2.	**Connector type, connector version**															
	1 Plug/socket connector (basic version)															
	B In combination with fieldbus															
3.	**Motor type**															
	1 3-phase AC motor															
	D 1-phase AC motor															
4	**Control version**															
	0 Interface board in basic version															
	7 In combination with positioner															
	- Fieldbus															
5.	**Input signals of interface board**															
	K Alternatively remote commands OPEN - STOP - CLOSE/OPEN - CLOSE															
	0 In combination with positioner or fieldbus															
6	**Output signals of interface board**															
	C Potential-free end position signal OPEN - CLOSE and signal LOCAL - REMOTE - COLLECTIVE FAULT SIGNAL															
	0 In combination with positioner or fieldbus															
7.	**Input level at interface board**															
	3 Alternatively internal/external control voltage 24 V DC															
	- Input level in combination with positioner or fieldbus															
8	**Programming of control logic and blinker transmitter**															
	- Standard															
	1 Profibus DP															
	7 Modbus RTU															
9.	**Power supply unit**															
	- Standard															
10.	**Switchgear**															
	F Reversing contactors															
	A Thyristor unit for 3-phase AC motors															
	Z Thyristor unit for 1-phase AC motors															
11.	**Selector switch**															
	1 Single selector switch															
	2 Selector switch 2nd level level Signalisation LOCAL/AUTOMATIC (required for positioner)															
12	**Control elements**															
	8 Push-buttons OPEN – STOP – CLOSE and indication lights OPEN – FAULT – CLOSED															
13	**Heater and blinker transmitter**															
	E Basic version heater															
14.	**Motor protection**															
	1 Basic version (thermoswitches)															

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AC 01.2

Information on wiring diagram selection

General information

This data sheet is used as supplement to wiring diagram selection for AC 01.2 (Y004.868)

Notes

The wiring diagrams listed in the wiring diagram selection can be downloaded from our website (www.auma.com). This manual includes examples of wiring diagrams for all control types in their basic versions.

Wiring diagram selection

The short designations (A1 etc.) are descriptive numberings.

I/O interface	
A1:	**With position feedback signal 0/4 – 20 mA (potentiometer in actuator), basic version**
	Reversing contactors CLOSE, OPEN, STOP, EMERGENCY (24 V DC), 6 programmable output contacts[1)] TPCA-0A1-1C1-A000 TPA00R1AA-0A1-000, AUMA power classes A1 – A3[3)]
A2:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer in actuator)**
	Reversing contactors CLOSE, OPEN, STOP, EMERGENCY (24 V DC), 6 programmable output contacts[1)] TPCA-1B1-1C1-A000 TPA00R1AA-0A1-000, AUMA power classes A1 – A3[3)]
A3:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer in actuator)**
	Thyristors[2)] MODE, CLOSE, OPEN, STOP, EMERGENCY (24 V DC), setpoint (0/4 – 20 mA), 6 programmable output contacts[1)] TPCA-1B1-1C2-A000 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3)] TPCA-1B1-1C3-A000 TPA00R1AA-0A1-000, AUMA power class B3[3)]
A1N:	**With position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Reversing contactors CLOSE, OPEN, STOP, EMERGENCY (24 V DC), 6 programmable output contacts[1)] TPCA-0A1-1C1-A000 TPA00R100-0I1-000, AUMA power classes A1 – A3[3)]
A2N:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY (24 V DC), setpoint (0/4 – 20 mA), 6 programmable output contacts[1)] TPCA-1B1-1C1-A000 TPA00R100-0I1-000, AUMA power classes A1 – A3[3)]
A3N:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Thyristors[2)] MODE, CLOSE, OPEN, STOP, EMERGENCY (24 V DC), setpoint (0/4 – 20 mA), 6 programmable output contacts[1)] TPCA-1B1-1C2-A000 TPA00R100-0I1-000, AUMA power class B1/B2[3)] TPCA-1B1-1C3-A000 TPA00R100-0I1-000, AUMA power class B3[3)]
A4N:	**With PID process controller and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Thyristors[2)] MODE, CLOSE, OPEN, STOP, EMERGENCY (24 V DC), setpoint (0/4 – 20 mA), actual value (0/4 – 20 mA),6 programmable output contacts[1)] TPCA-2B1-1C2-A000 TPA00R100-0I1-000, AUMA power classes B1/B2[3)]
A5N:	**With position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Reversing contactors CLOSE, OPEN, STOP, EMERGENCY, INTERLOCK CLOSE, INTERLOCK OPEN, 6 programmable output contacts[1)] TPCA-0D1-1C1-A000 TPA00R100-0I1-000, AUMA power classes A1 – A3[3)]

Profibus DP	
A2DP:	**With position feedback (potentiometer in actuator), basic version**
	Reversing contactors, Profibus TPCAA000-1A1-A000 TPA00R1AA-0A1-000, AUMA power classes A1 – A3[3)]
A3DP:	**With position feedback (potentiometer in actuator)**
	Thyristors[2)], Profibus TPCAA000-1A2-A000 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3)] TPCAA000-1A3-A000 TPA00R1AA-0A1-000, AUMA power class B3[3)]
A2NDP:	**With position/torque feedback (MWG in actuator)**
	Reversing contactors, Profibus TPCAA000-1A1-A000 TPA00R100-0I1-000, AUMA power classes A1 – A3[3)]

1) – 3) Refer to notes on page 5.

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Wiring diagram selection

A3NDP:	**With position/torque feedback (MWG in actuator)**
	Thyristors[2], Profibus TPCAA000-1A2-A000 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAA000-1A3-A000 TPA00R100-0I1-000, AUMA power class B3[3]
Profibus DP combined with I/O interface	
A4DP:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer within actuator), basic version**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAA121-1C1-A000 TPA00R1AA-0A1-000, AUMA power classes A1 – A3[3]
A5DP:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer in actuator)**
	Thyristors[2] MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAA121-1C2-A000 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAA121-1C3-A000 TPA00R1AA-0A1-000, AUMA power class B3[3]
A4NDP:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAA121-1C1-A000 TPA00R100-0I1-000, AUMA power class A1 – A3[3]
A5NDP:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Thyristors[2] MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAA121-1C2-A000 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAA121-1C3-A000 TPA00R100-0I1-000, AUMA power class B3[3]
Profinet PN	
A3PN:	**With position feedback (potentiometer in actuator)**
	Thyristors[2], Profinet TPCAN000K1A2-A000 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAN000K1A3-A000 TPA00R1AA-0A1-000, AUMA power class B3[3]
A3NPN:	**With position/torque feedback (MWG in actuator)**
	Thyristors[2], Profinet TPCAN000K1A2-A000 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAN000K1A3-A000 TPA00R100-0I1-000, AUMA power class B3[3]
Only possible in combination with thyristors	
Profinet PN combined with I/O interface	
A5PN:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer in actuator)**
	Thyristors[2], Profinet TPCAN121K1C2-A000 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAN121K1C3-A000 TPA00R1AA-0A1-000, AUMA power class B3[3]
A5NPN:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Thyristors[2], Profinet TPCAN121K1C2-A000 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAN121K1C3-A000 TPA00R100-0I1-000, AUMA power class B3[3]
Only possible in combination with thyristors	
Modbus RTU	
A2MB:	**With position feedback (potentiometer in actuator), basic version**
	Reversing contactors, Modbus TPCAC000-1A1-A000 TPA00R1AA-0A1-000, AUMA power classes A1 – A3[3]
A3MB:	**With position feedback (potentiometer in actuator)**
	Thyristors[2], Modbus TPCAC000-1A2-A000 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAC000-1A3-A000 TPA00R1AA-0A1-000, AUMA power class B3[3]
A2NMB:	**With position/torque feedback (MWG in actuator)**
	Reversing contactors, Modbus TPCAC000-1A1-A000 TPA00R100-0I1-000, AUMA power classes A1 – A3[3]

1) – 3) Refer to notes on page 6.

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Wiring diagram selection

A3NMB:	**With position/torque feedback (MWG in actuator)**
	Thyristors[2], Modbus TPCAC000-1A2-A000 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAC000-1A3-A000 TPA00R100-0I1-000, AUMA power class B3[3]

Modbus RTU combined with I/O interface	
A4MB:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer within actuator), basic version**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAC121-1C1-A000 TPA00R1AA-0A1-000, AUMA power classes A1 – A3[3]
A5MB:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer in actuator)**
	Thyristors[2] MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAC121-1C2-A000 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAC121-1C3-A000 TPA00R1AA-0A1-000, AUMA power class B3[3]
A4NMB:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAC121-1C1-A000 TPA00R100-0I1-000, AUMA power classes A1 – A3[3]
A5NMB:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Thyristors[2] MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAC121-1C2-A000 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAC121-1C3-A000 TPA00R100-0I1-000, AUMA power class B3[3]

Modbus TCP/IP	
A2MBTCP:	**With position feedback (potentiometer in actuator), basic version**
	Reversing contactors, Modbus TCP/IP TPCAC000-1A1-A5E0 TPA00R1AA-0A1-000, AUMA power classesA1 – A3[3]
A3MBTCP:	**With position feedback (potentiometer in actuator)**
	Thyristors[2], Modbus TCP/IP TPCAC000-1A2-A5E0 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAC000-1A3-A5E0 TPA00R1AA-0A1-000, AUMA power class B3[3]
A2NMBTCP:	**With position/torque feedback (MWG in actuator)**
	Reversing contactors, Modbus TCP/IP TPCAC000-1A1-A5E0 TPA00R100-0I1-000, AUMA power classes A1 – A3[3]
A3NMBTCP:	**With position/torque feedback (MWG in actuator)**
	Thyristors[2], Modbus TCP/IP TPCAC000-1A2-A5E0 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAC000-1A3-A5E0 TPA00R100-0I1-000, AUMA power class B3[3]

Modbus TCP/IP combined with I/O interface	
A4MBTCP:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer within actuator), basic version**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAC121-1A1-A5E0 TPA00R1AA-0A1-000, AUMA power classes A1 – A3[3]
A5MBTCP:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer in actuator)**
	Thyristors[2] MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAC121-1A2-A5E0 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAC121-1A3-A5E0 TPA00R1AA-0A1-000, AUMA power class B3[3]
A4NMBTCP:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAC121-1A1-A5E0 TPA00R100-0I1-000, AUMA power classes A1 – A3[3]

1) – 3) Refer to notes on page 6.

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Wiring diagram selection

A5NMBTCP:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Thyristors[2] MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAC121-1A2-A5E0 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAC121-1A3-A5E0 TPA00R100-0I1-000, AUMA power class B3[3]
Foundation Fieldbus FF	
A2FF:	**With position feedback (potentiometer in actuator), basic version**
	Reversing contactors, Foundation Fieldbus FF TPCAF000-1A1-A000 TPA00R1AA-0A1-000, AUMA power class A1 – A3[3]
A3FF:	**With position feedback (potentiometer in actuator)**
	Thyristors[2], Foundation Fieldbus FF TPCAF000-1A2-A000 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAF000-1A3-A000 TPA00R1AA-0A1-000, AUMA power class B3[3]
A2NFF:	**With position/torque feedback (MWG in actuator)**
	Reversing contactors, Foundation Fieldbus FF TPCAF000-1A1-A000 TPA00R100-0I1-000, AUMA power classes A1 – A3[3]
A3NFF:	**With position/torque feedback (MWG in actuator)**
	Thyristors[2], Foundation Fieldbus FF TPCAF000-1A2-A000 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAF000-1A3-A000 TPA00R100-0I1-000, AUMA power class B3[3]
Foundation Fieldbus FF combined with I/O interface	
A4FF:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer within actuator), basic version**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAF121-1C1-A000 TPA00R1AA-0A1-000, AUMA power classes A1 – A3[3]
A5FF:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer in actuator)**
	Thyristors[2] MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAF121-1C2-A000 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAF121-1C3-A000 TPA00R1AA-0A1-000, AUMA power class B3[3]
A4NFF:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAF121-1C1-A000 TPA00R100-0I1-000, AUMA power classes A1 – A3[3]
A5NFF:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Thyristors[2] MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAF121-1C2-A000 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAF121-1C3-A000 TPA00R100-0I1-000, AUMA power class B3[3]
HART Actuator	
A2HRT:	**With position feedback (potentiometer in actuator), basic version**
	Reversing contactors, HART actuator TPCAI000-1A1-A000 TPA00R1AA-0A1-000, AUMA power classes A1 – A3[3]
A3HRT:	**With position feedback (potentiometer in actuator)**
	Thyristors[2], HART actuator TPCAI000-1A2-A000 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAI000-1A3-A000 TPA00R1AA-0A1-000, AUMA power class B3[3]
A2NHRT:	**With position/torque feedback (MWG in actuator)**
	Reversing contactors, HART actuator TPCAI000-1A1-A000 TPA00R100-0I1-000, AUMA power classes A1 – A3[3]

1) – 3) Refer to notes on page 6.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Wiring diagram selection

A3NHRT:	**With position/torque feedback (MWG in actuator)**
	Thyristors[2], HART actuator TPCAI000-1A2-A000 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAI000-1A3-A000 TPA00R100-0I1-000, AUMA power class B3[3]
HART Actuator combined with I/O interface	
A4HRT:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer within actuator), basic version**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAI041-1C1-A000 TPA00R1AA-0A1-000, AUMA power classes A1 – A3[3]
A5HRT:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer in actuator)**
	Thyristors[2] MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAI041-1C2-A000 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAI041-1C3-A000 TPA00R1AA-0A1-000, AUMA power class B3[3]
A4NHRT:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAI041-1C1-A000 TPA00R100-0I1-000, AUMA power classes A1 – A3[3]
A5NHRT:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Thyristors[2] MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAI041-1C2-A000 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAI041-1C3-A000 TPA00R100-0I1-000, AUMA power class B3[3]
HART Current Output	
A2HRTCO:	**With position feedback (potentiometer in actuator), basic version**
	Reversing contactors, HART Current Output TPCAJ000-1A1-A000 TPA00R1AA-0A1-000, AUMA power classes A1 – A3[3]
A3HRTCO:	**With position feedback (potentiometer in actuator)**
	Thyristors[2], HART Current Output TPCAJ000-1A2-A000 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAJ000-1A3-A000 TPA00R1AA-0A1-000, AUMA power class B3[3]
A2NHRTCO:	**With position/torque feedback (MWG in actuator)**
	Reversing contactors, HART Current Output TPCAJ000-1A1-A000 TPA00R100-0I1-000, AUMA power classes A1 – A3[3]
A3NHRTCO:	**With position/torque feedback (MWG in actuator)**
	Thyristors[2], HART actuator TPCAJ000-1A2-A000 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAJ000-1A3-A000 TPA00R100-0I1-000, AUMA power class B3[3]
HART Current Output with I/O interface	
A4HRTCO:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer within actuator), basic version**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAJ14D-1C1-A000 TPA00R1AA-0A1-000, AUMA power classes A1 – A3[3]
A5HRTCO:	**With position feedback (potentiometer in actuator)**
	Thyristors[2] MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAJ14D-1C2-A000 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAJ14D-1C3-A000 TPA00R1AA-0A1-000, AUMA power class B3[3]
A4NHRTCO:	**With position/torque feedback (MWG in actuator)**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAJ14D-1C1-A000 TPA00R100-0I1-000, AUMA power classes A1 – A3[3]

1) – 3) Refer to notes on page 6.

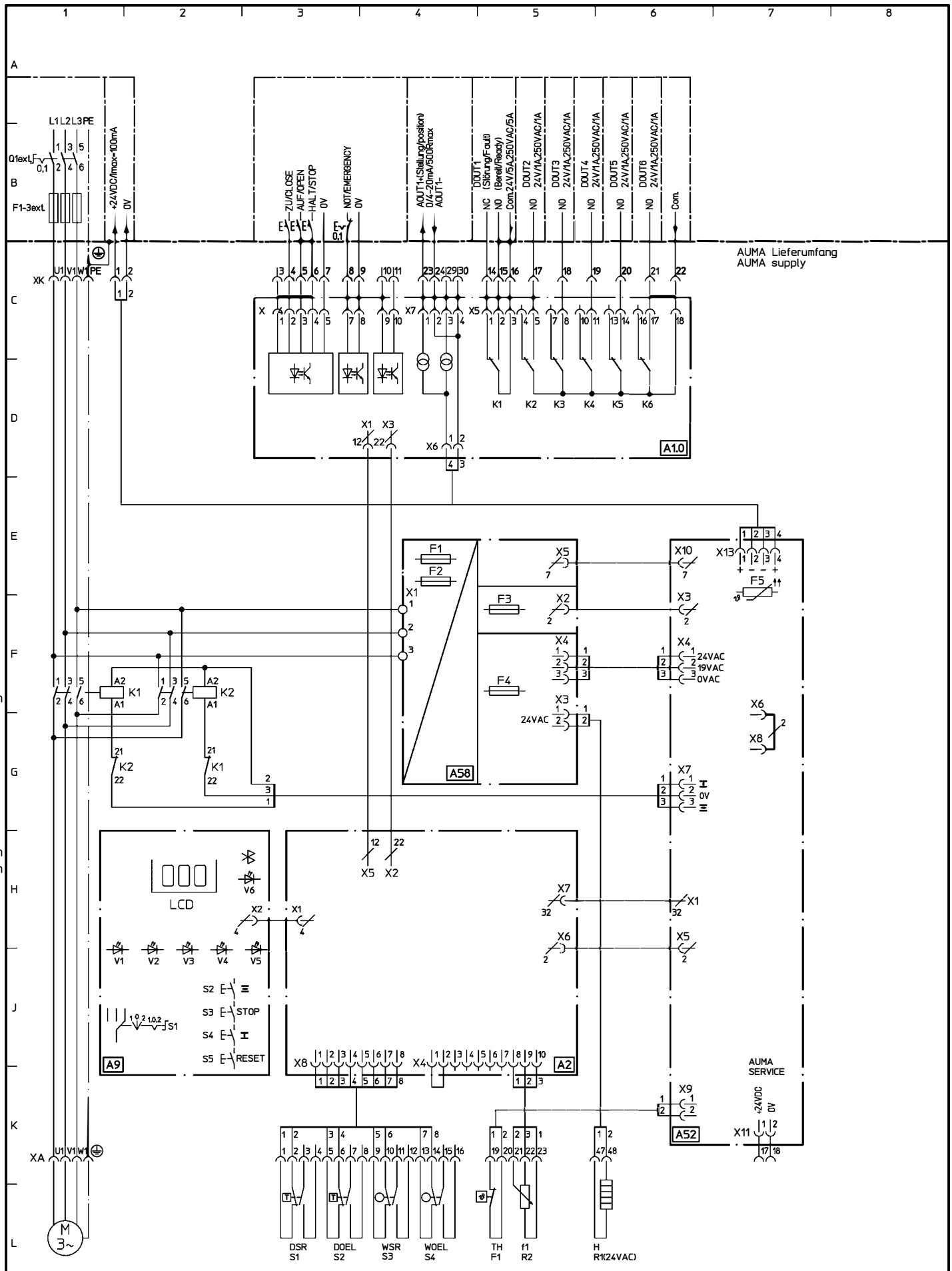
We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Wiring diagram selection

A5NHRTCO:	**With position/torque feedback (MWG in actuator)**
	Thyristors[2] MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAJ14D-1C2-A000 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAJ14D-1C3-A000 TPA00R100-0I1-000, AUMA power class B3[3]
Ethernet/IP	
A2ENIP:	**With position feedback (potentiometer in actuator), basic version**
	Reversing contactors, Ethernet/IP TPCAP000-1A1-A5E0 TPA00R1AA-0A1-000, AUMA power classes A1 – A3[3]
A3ENIP:	**With position feedback (potentiometer in actuator)**
	Thyristors[2], EtherNet/IP TPCAP000-1A2-A5E0 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAP000-1A3-A5E0 TPA00R1AA-0A1-000, AUMA power class B3[3]
A2NENIP:	**With position/torque feedback (MWG in actuator)**
	Reversing contactors, EtherNet/IP TPCAP000-1A1-A5E0 TPA00R100-0I1-000, AUMA power classes A1 – A3[3]
A3NENIP:	**With position/torque feedback (MWG in actuator)**
	Thyristors[2], Ethernet/IP TPCAP000-1A2-A5E0 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAP000-1A3-A5E0 TPA00R100-0I1-000, AUMA power class B3[3]
EtherNet/IP combined with I/O interface	
A4ENIP:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer within actuator), basic version**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAP121-1A1-A5E0 TPA00R1AA-0A1-000, AUMA power classes A1 – A3[3]
A5ENIP:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer in actuator)**
	Thyristors[2] MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAP121-1A2-A5E0 TPA00R1AA-0A1-000, AUMA power classes B1/B2[3] TPCAP121-1A3-A5E0 TPA00R1AA-0A1-000, AUMA power class B3[3]
A4NENIP:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Reversing contactors MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAP121-1A1-A5E0 TPA00R100-0I1-000, AUMA power classes A1 – A3[3]
A5NENIP:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Thyristors[2] MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1] TPCAP121-1A2-A5E0 TPA00R100-0I1-000, AUMA power classes B1/B2[3] TPCAP121-1A3-A5E0 TPA00R100-0I1-000, AUMA power class B3[3]

1) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN
2) Thyristor unit (recommended for modulating actuators)
3) Refer to Electrical data SA .2/SAR .2 and SQ .2/SQR .2 with 3-phase AC motors

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.



Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.

Anschlussplan zeigt den Stellantrieb in Zwischenstellung, Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

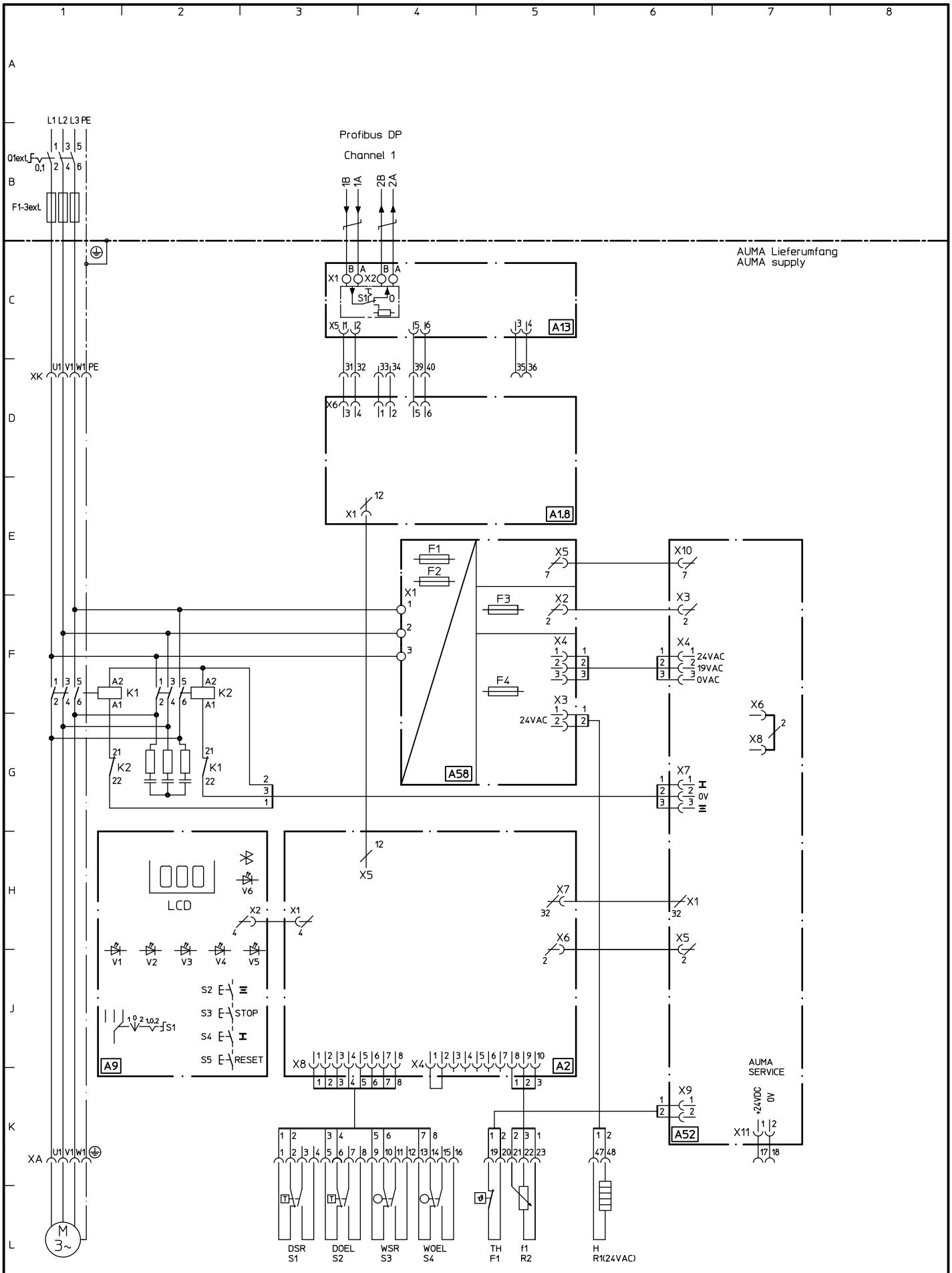
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Zust.	Änderung	Datum	Name	Norm	Montoire

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TPCA-0A1-1C1-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt



Anschlussplan zeigt den Stellantrieb in Zwischenstellung. Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A2DP

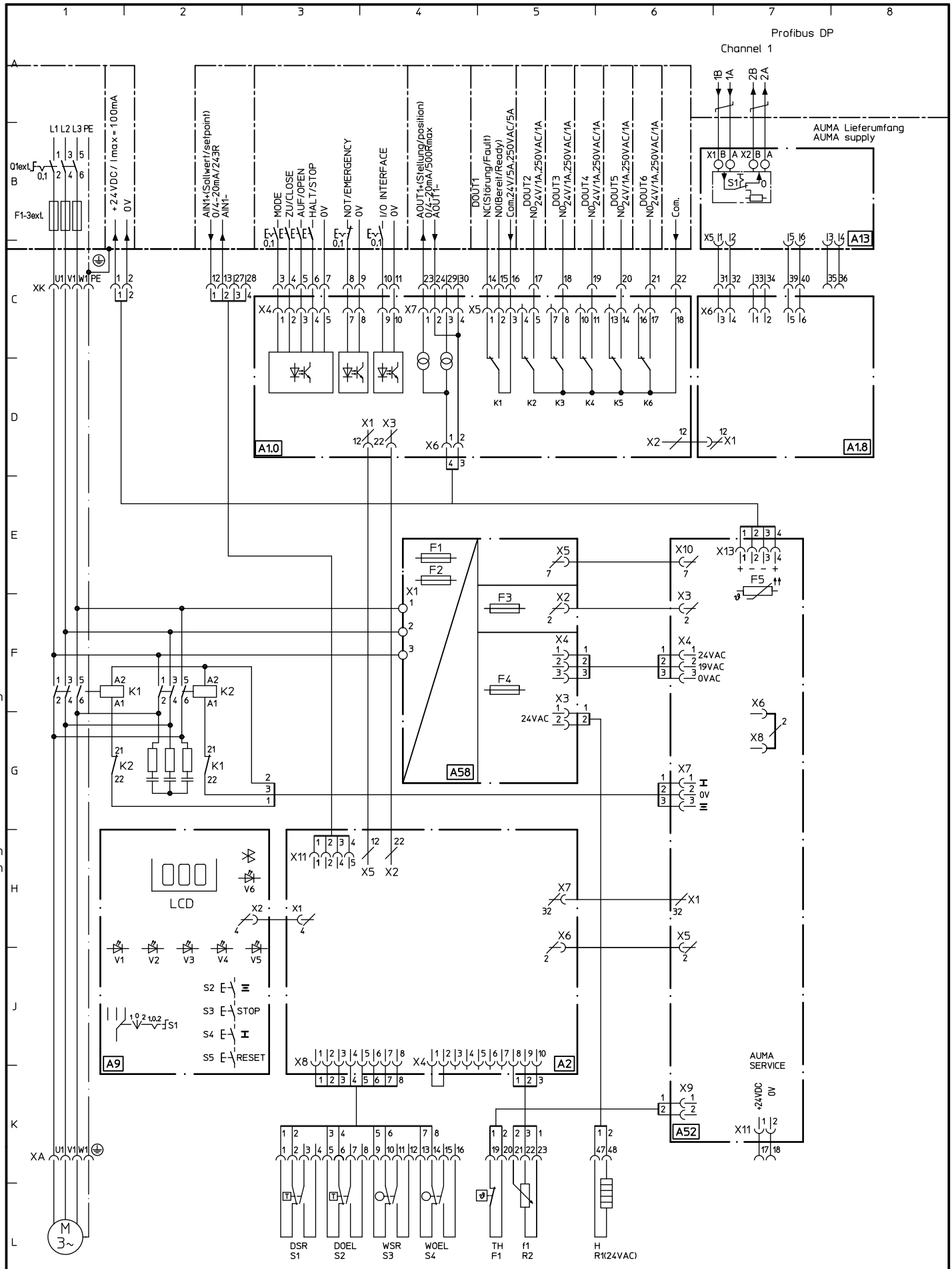
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TPCAA000-1A1-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt

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Anschlussplan zeigt den Stellantrieb in Zwischenstellung. Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A4DP

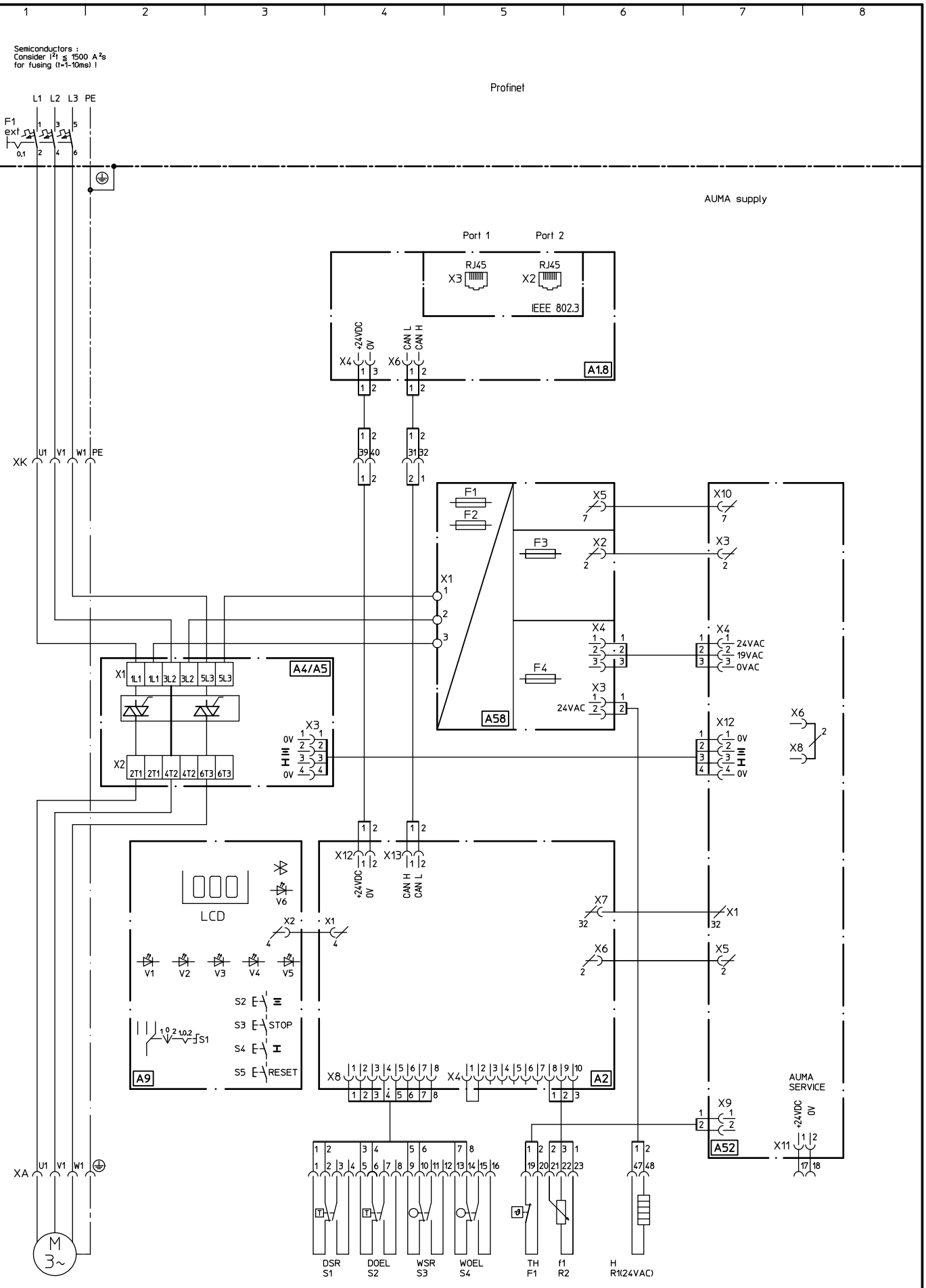
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Zust.	Änderung	Datum	Name	Norm	Montoire

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TPCAA121-1C1-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer

Projekt



Anschlussplan zeigt den Stellantrieb in Zwischenstellung, Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A3PN

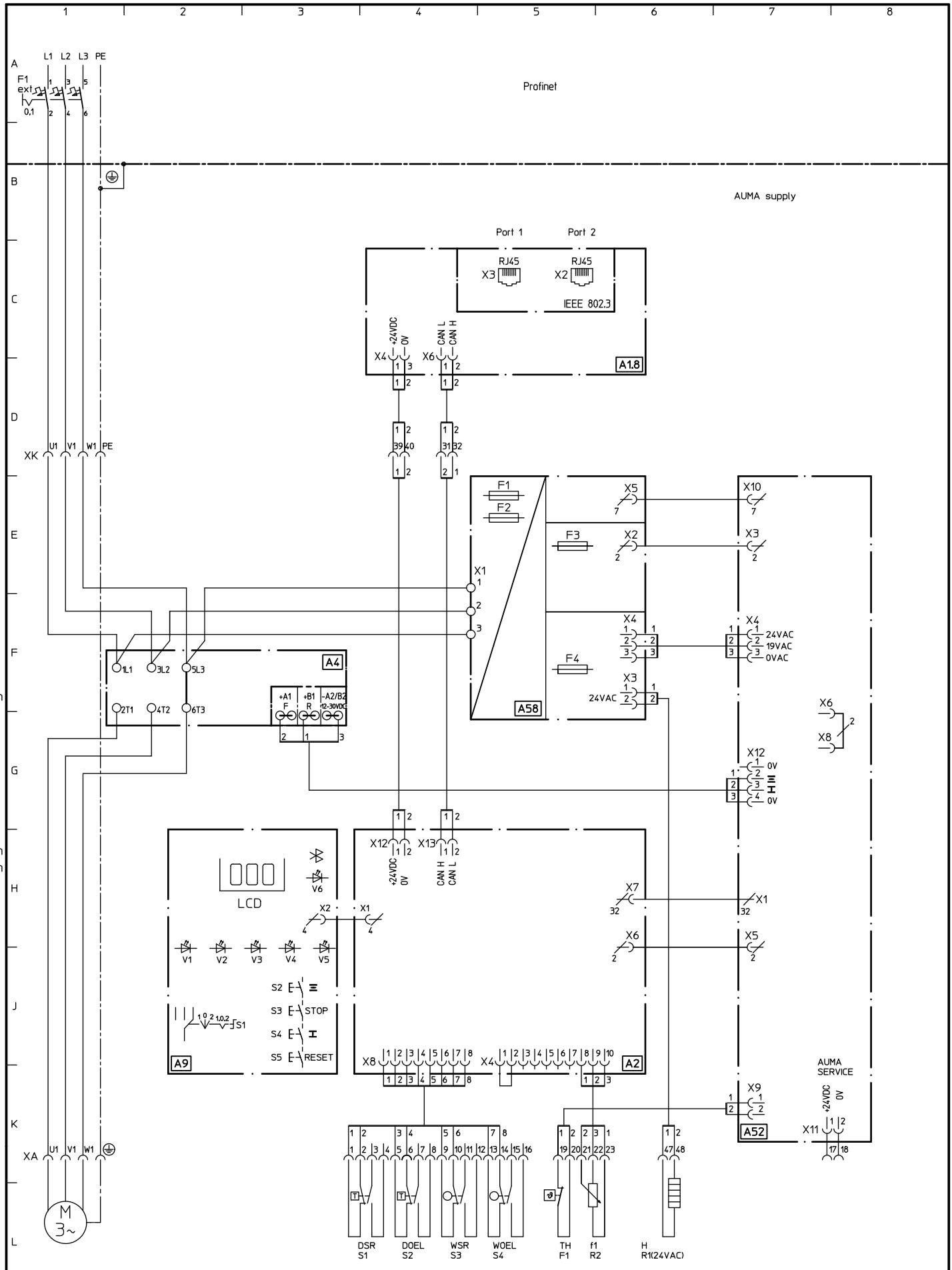
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TPCAN000K1A2-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt

Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.



Anschlussplan zeigt den Stellantrieb in Zwischenstellung. Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A3PN

Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.

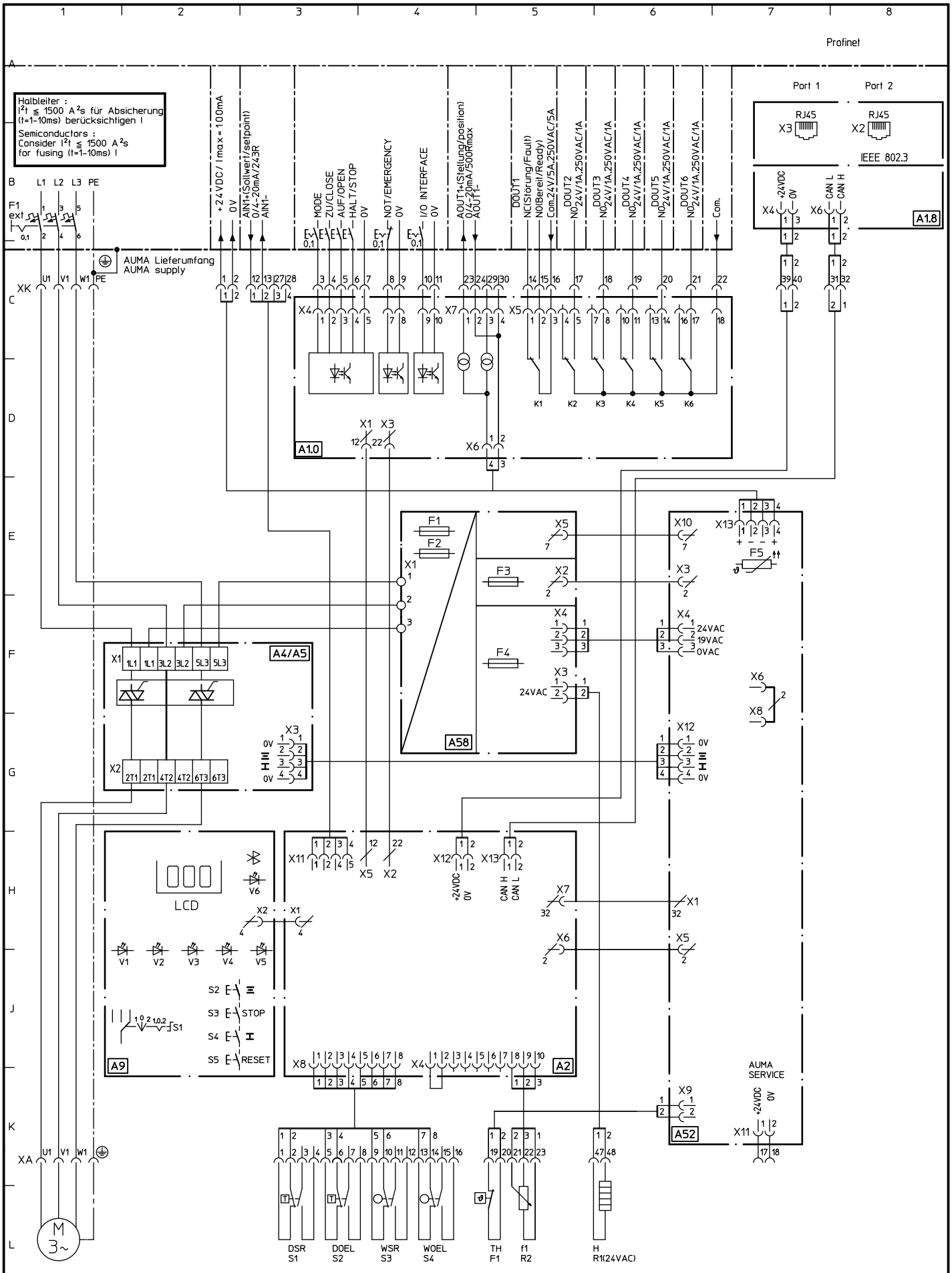
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				Norm	Roemer

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TPCAN000K1A3-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer

Projekt



Anschlussplan zeigt den Stellantrieb in Zwischenstellung. Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A5PN

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Zust.	Änderung	Datum	Name	Norm	Roemer

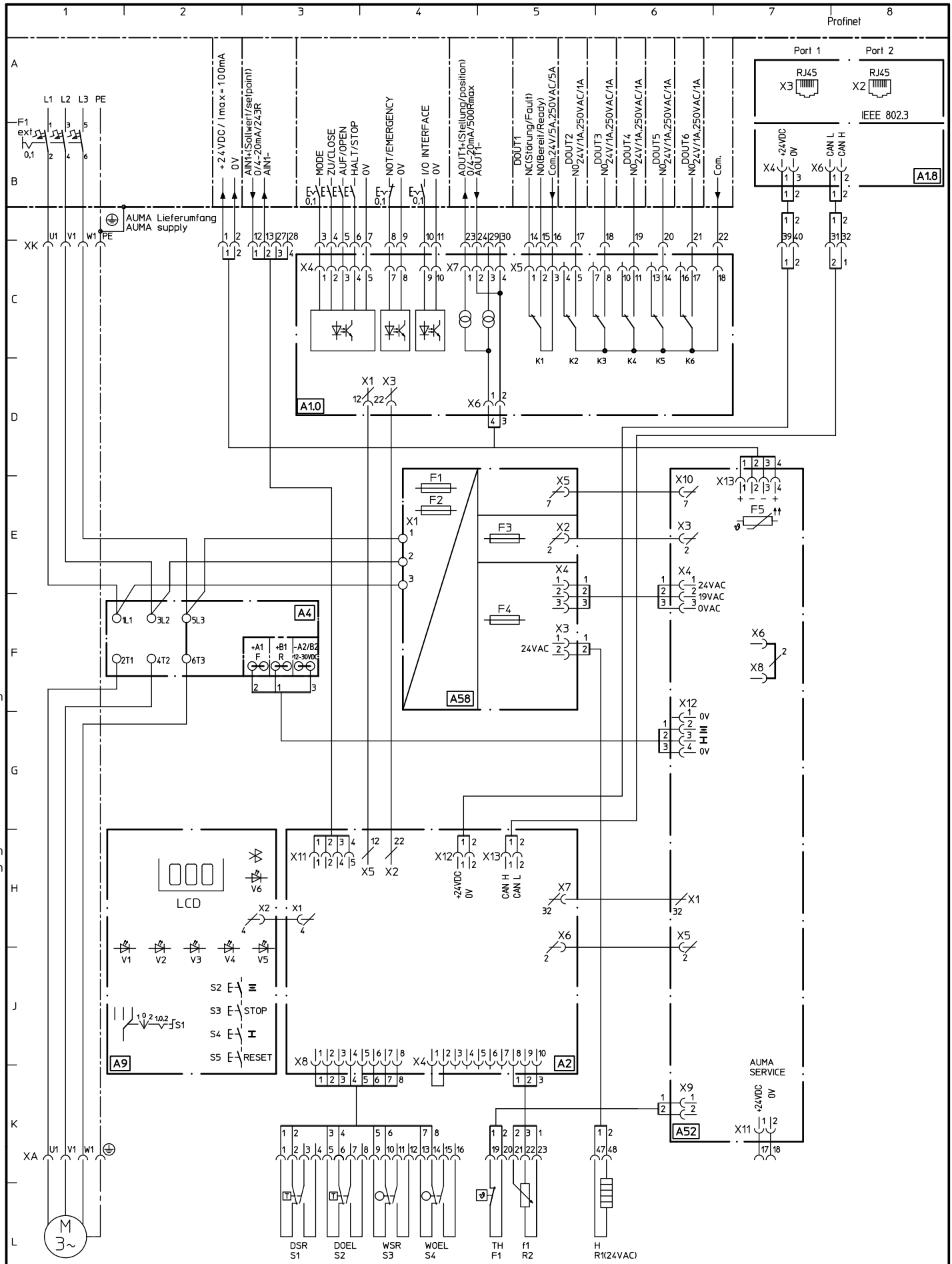
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TPCAN121K1C2-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer

Projekt

Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.



Anschlussplan zeigt den Stellantrieb in Zwischenstellung. Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A5PN

				Datum	2016-11-22
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Zust.	Änderung	Datum	Name	Norm	Roemer

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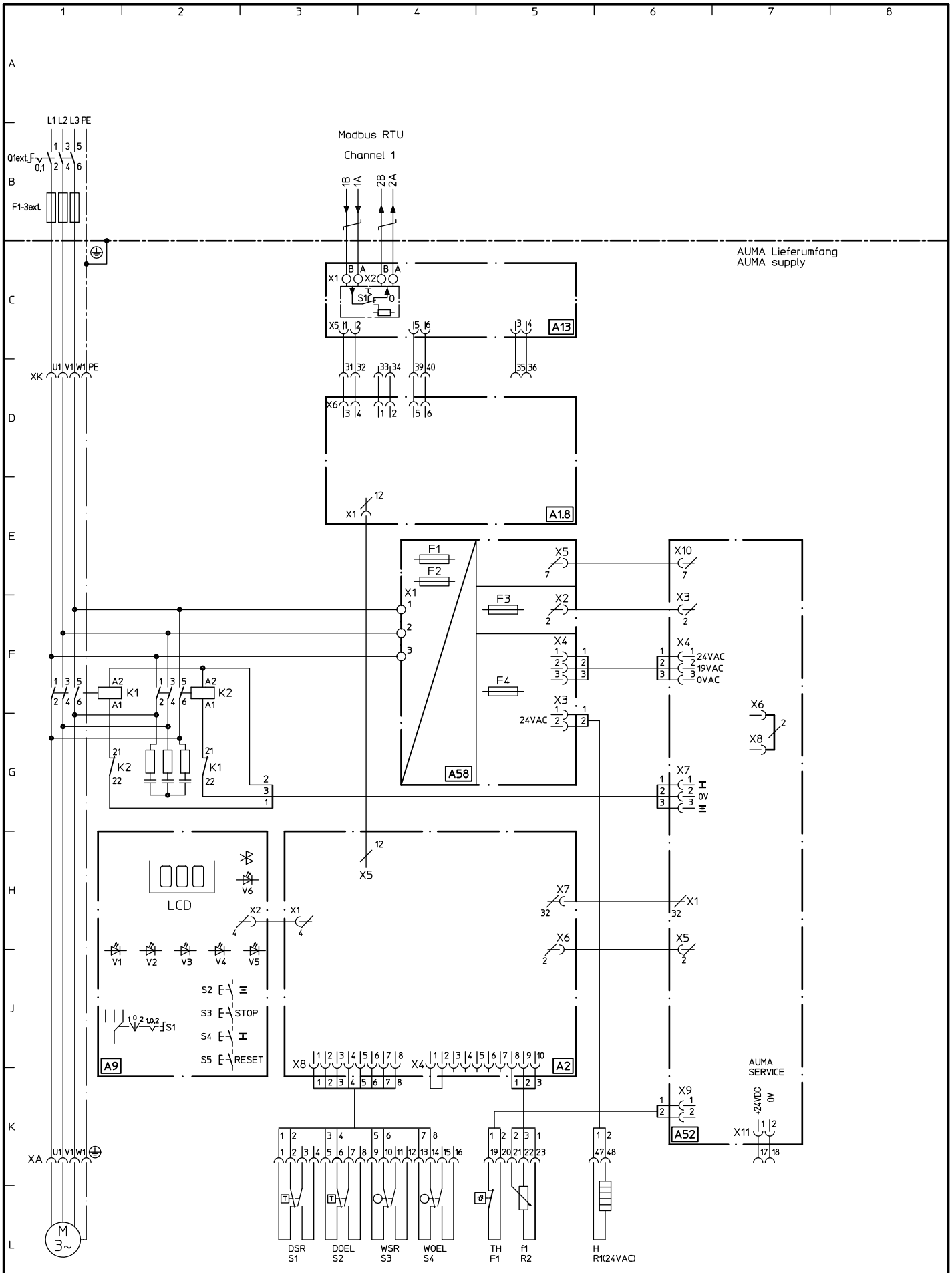
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Legende	Auftragsnummer	Bestellnummer

Projekt

Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.

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Anschlussplan zeigt den Stellantrieb in Zwischenstellung. Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A2MB

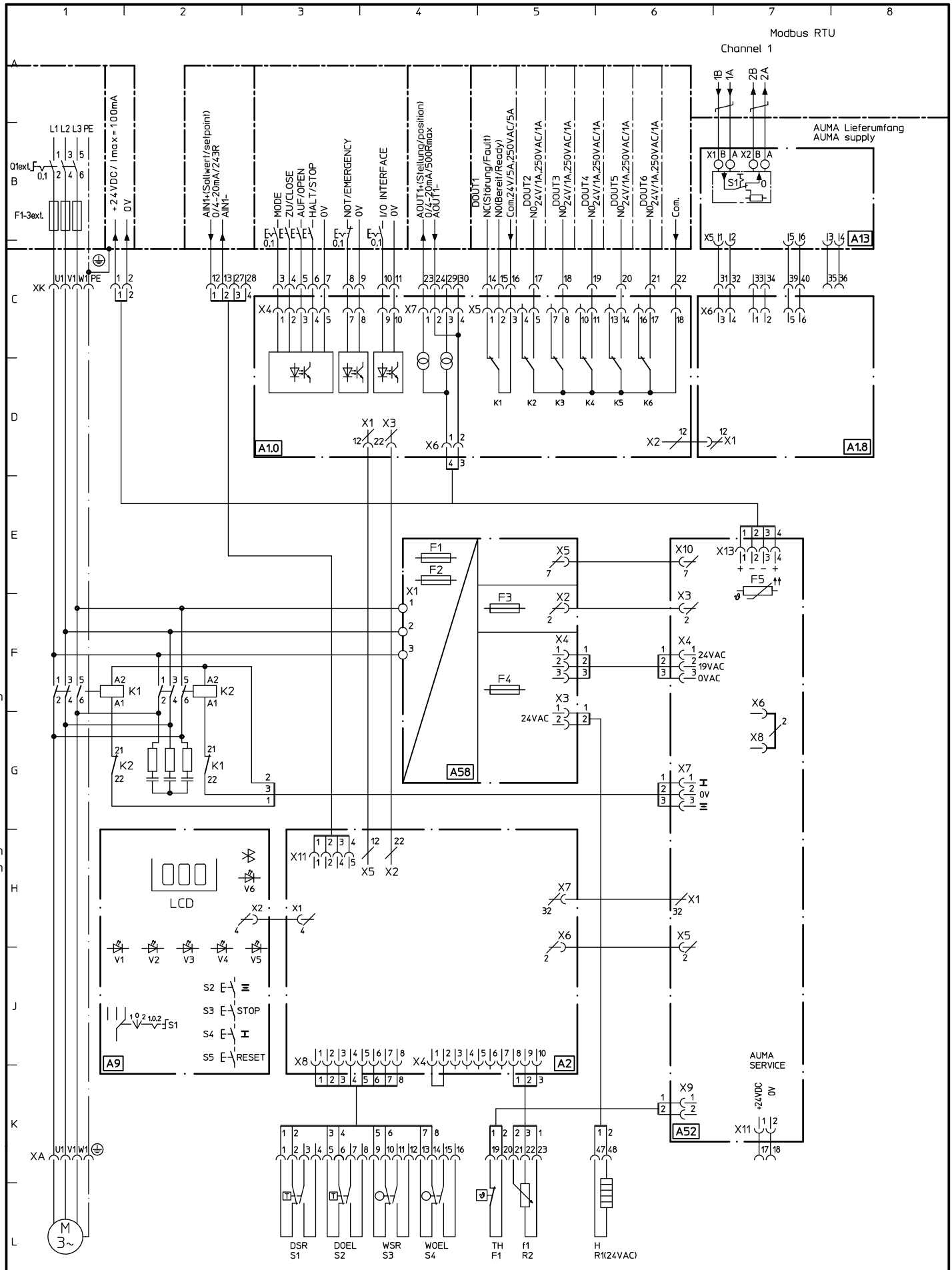
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Zust.	Änderung	Datum	Name	Norm	Montoire

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Legende	Auftragsnummer	Bestellnummer

Projekt



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Anschlussplan zeigt den Stellantrieb in Zwischenstellung. Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A4MB

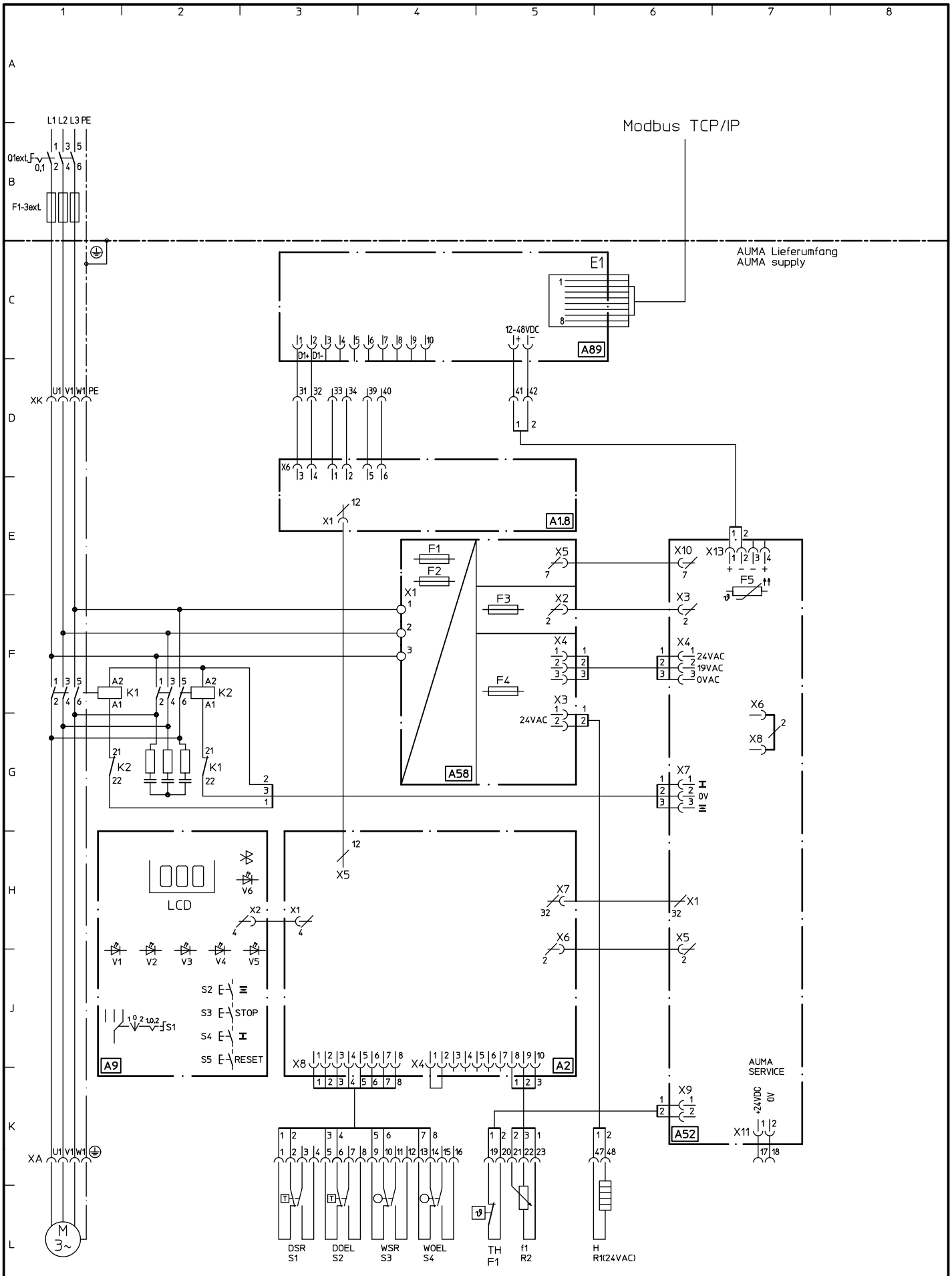
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Legende	Auftragsnummer	Bestellnummer

Projekt



Anschlussplan zeigt den Stellantrieb in Zwischenstellung, Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A2MBTCP

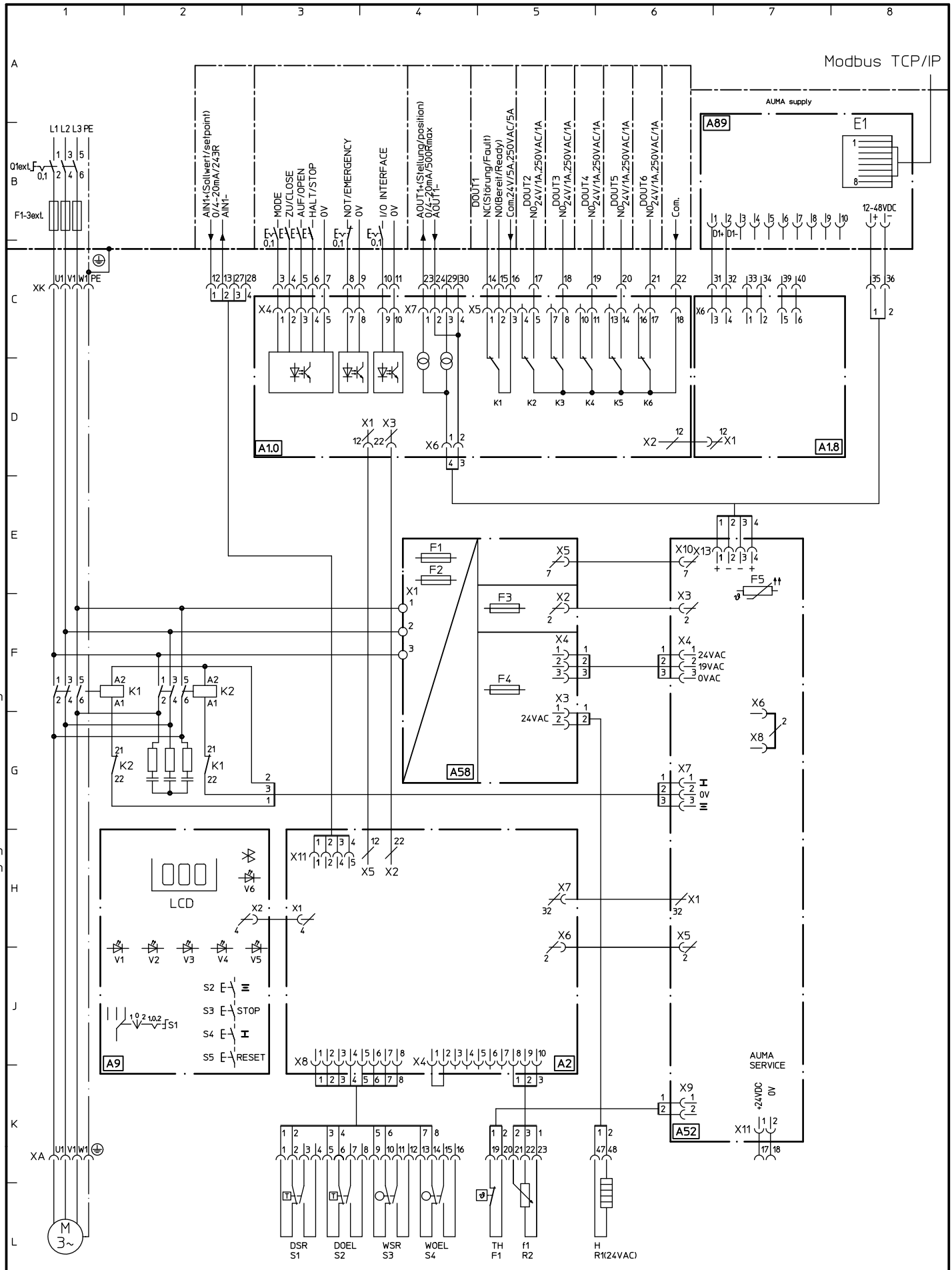
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AUMA Riester GmbH & Co. KG

TPCAC000-1A1-A5E0 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt

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Anschlussplan zeigt den Stellantrieb in Zwischenstellung. Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A4MBTCP

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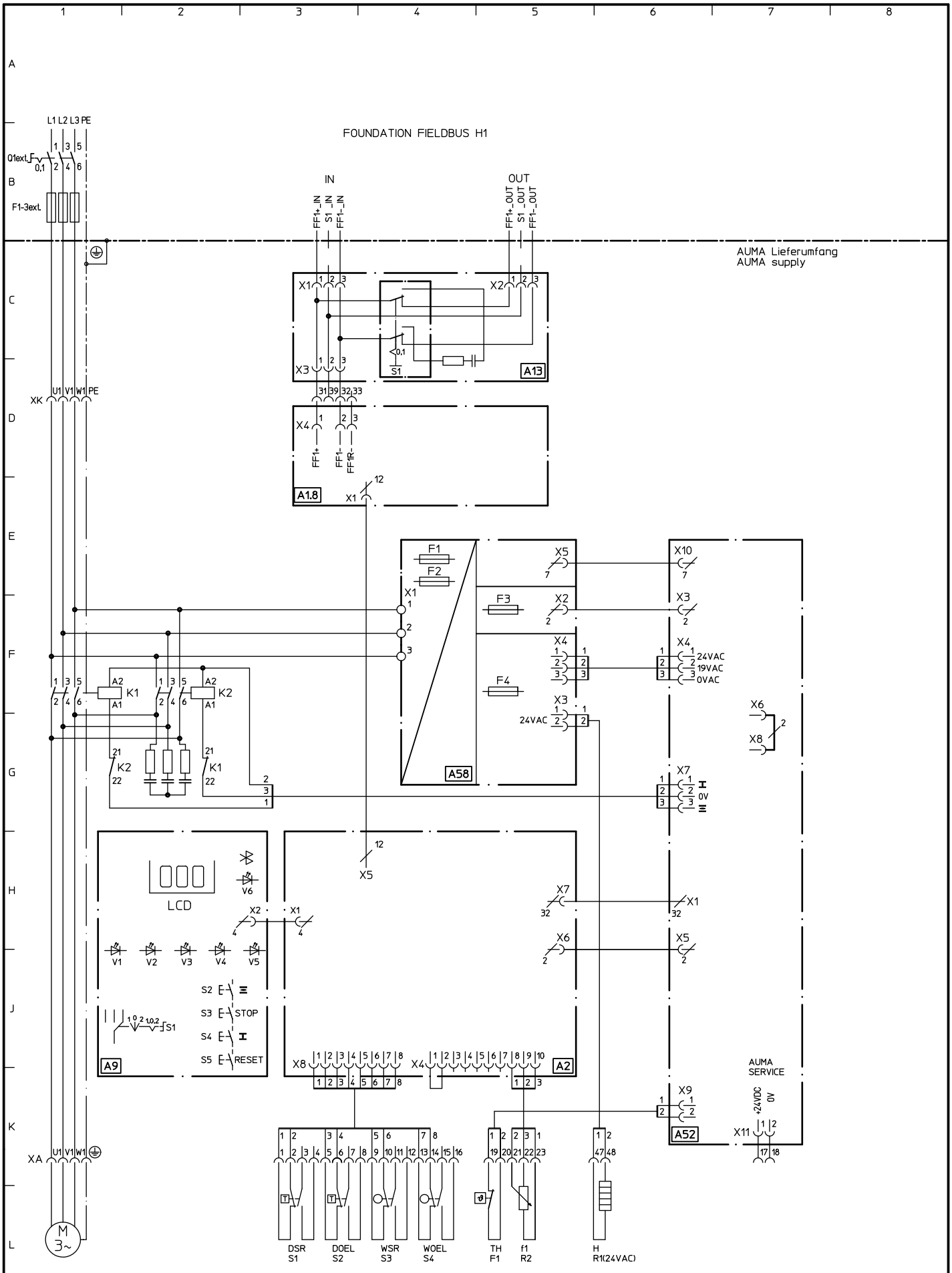
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TPCAC121-1A1-A5E0 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer

Projekt

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Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

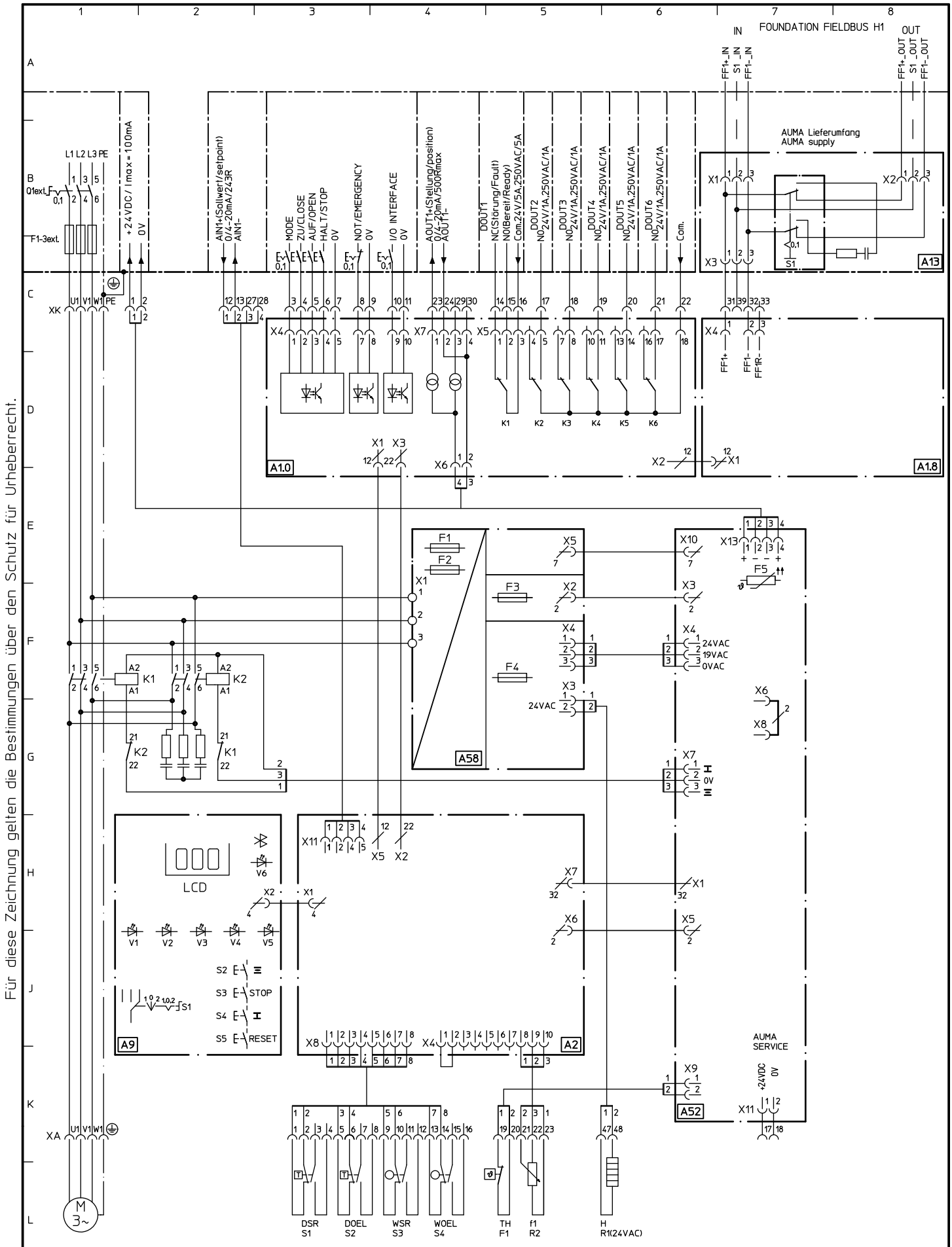
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				Datum	2013-04-02
02	733/09	2013-04-02	Mon	Bearb.	Montaire
01	733/09	2012-06-26	Mon	Gepr.	Montaire
Zust.	Änderung	Datum	Name	Norm	Montaire

auma®
AUMA Riester GmbH & Co. KG

TPCAF000-1A1-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt



Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.

Anschlussplan zeigt den Stellantrieb in Zwischenstellung, Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

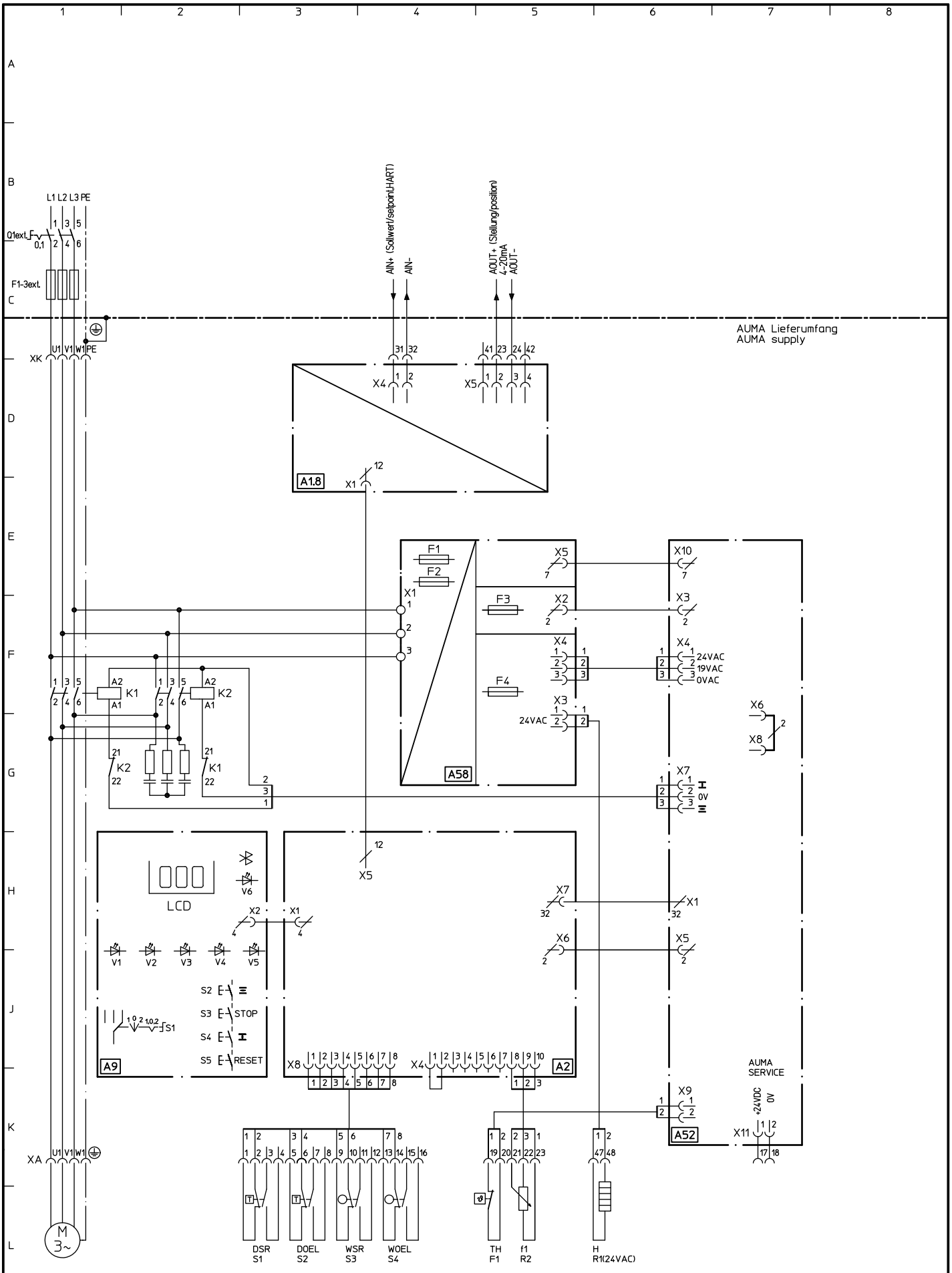
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				Datum	2015-11-30
				Bearb.	Meyer
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Zust.	Änderung	Datum	Name	Norm	Roemer

AUMA Riester GmbH & Co. KG

TPCAF121-1C1-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt



Anschlussplan zeigt den Stellantrieb in Zwischenstellung, Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A2HRT

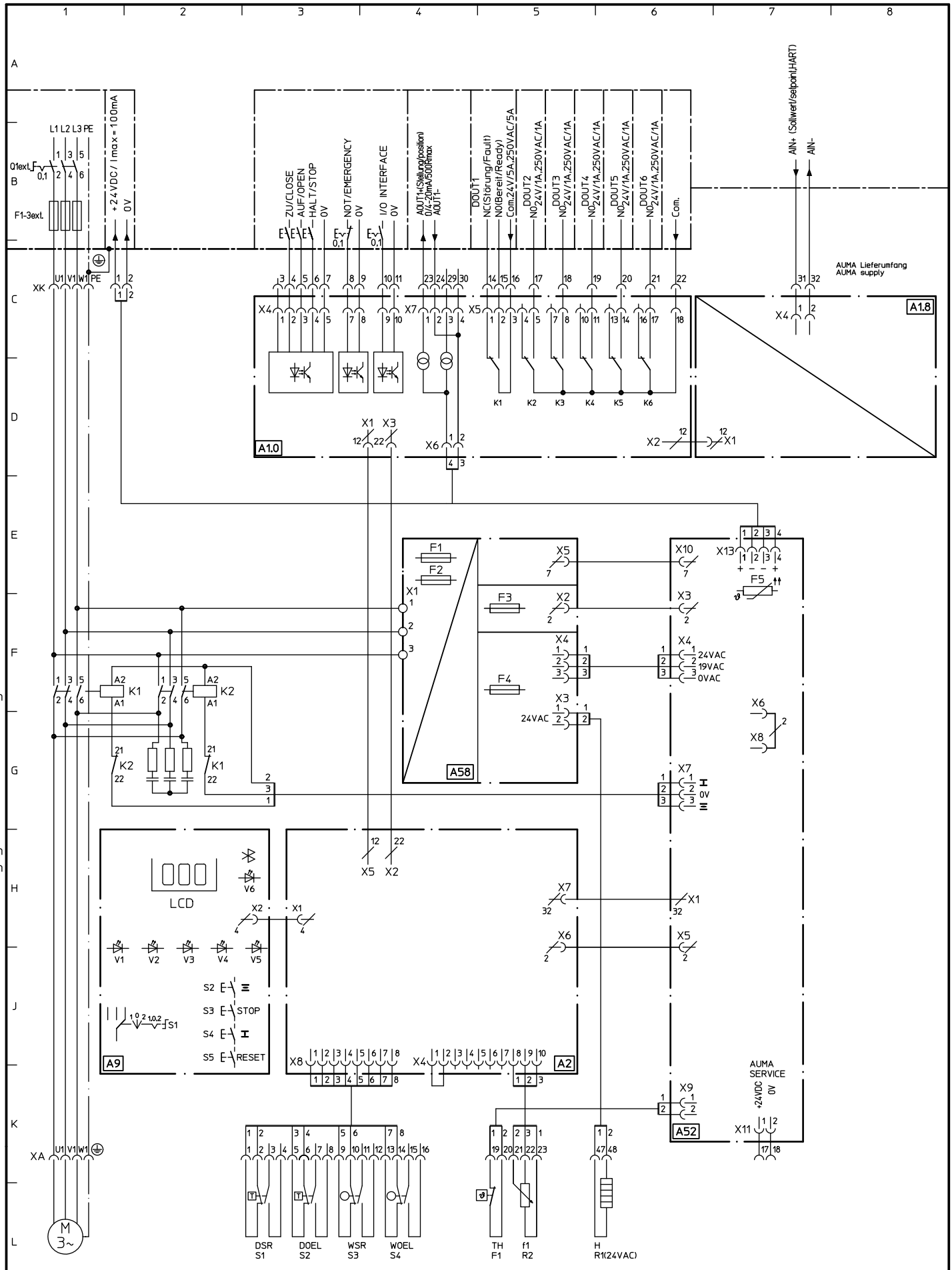
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03	2014-270	2014-11-07	Mon	Gepr.	Montoire
Zust.	Änderung	Datum	Name	Norm	Montoire

AUMA Riester GmbH & Co. KG

TPCAI000-1A1-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt

Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.



Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A4HRT

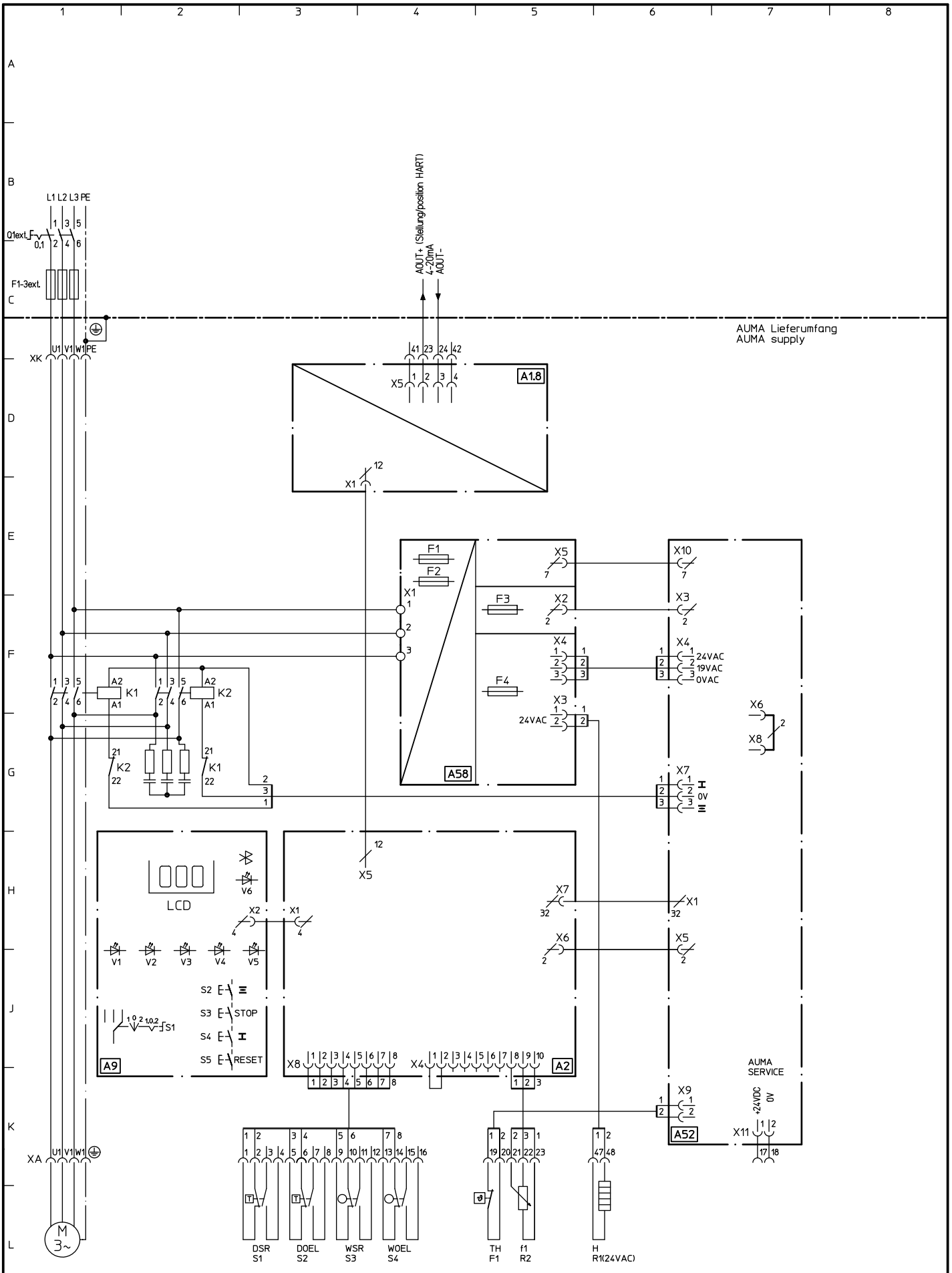
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Zust.	Änderung	Datum	Name	Norm	Montoire

AUMA Riester GmbH & Co. KG

TPCAI041-1C1-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt

Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.



Anschlussplan zeigt den Stellantrieb in Zwischenstellung, Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A2HRTCO

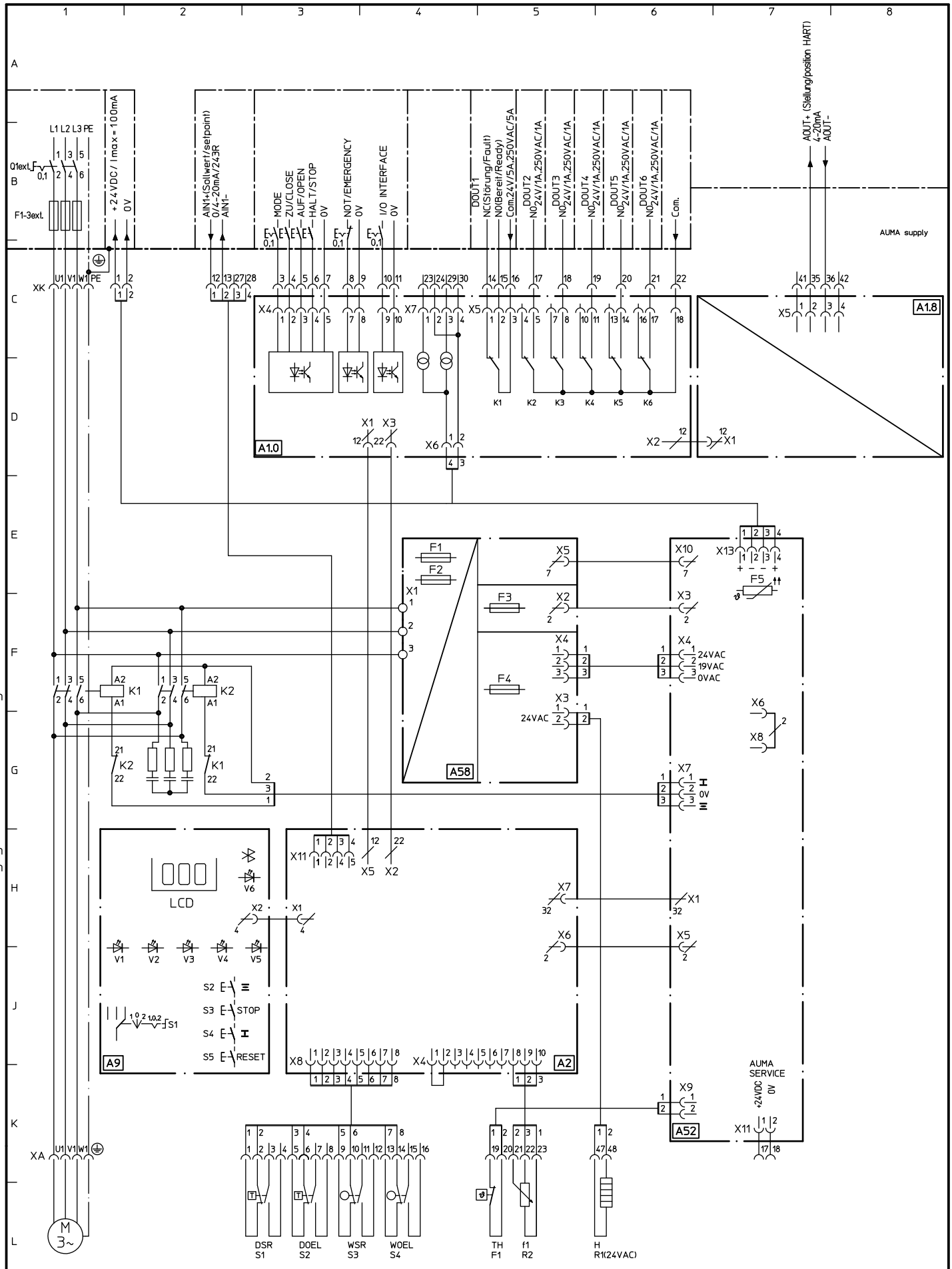
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02	2014-270	2014-11-07	Mon	Gepr.	Montoire
Zust.	Änderung	Datum	Name	Norm	Montoire

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TPCAJ000-1A1-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer

Projekt



Terminal plan shows the actuator in intermediate position, switches are not actuated.
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A4HRTCO

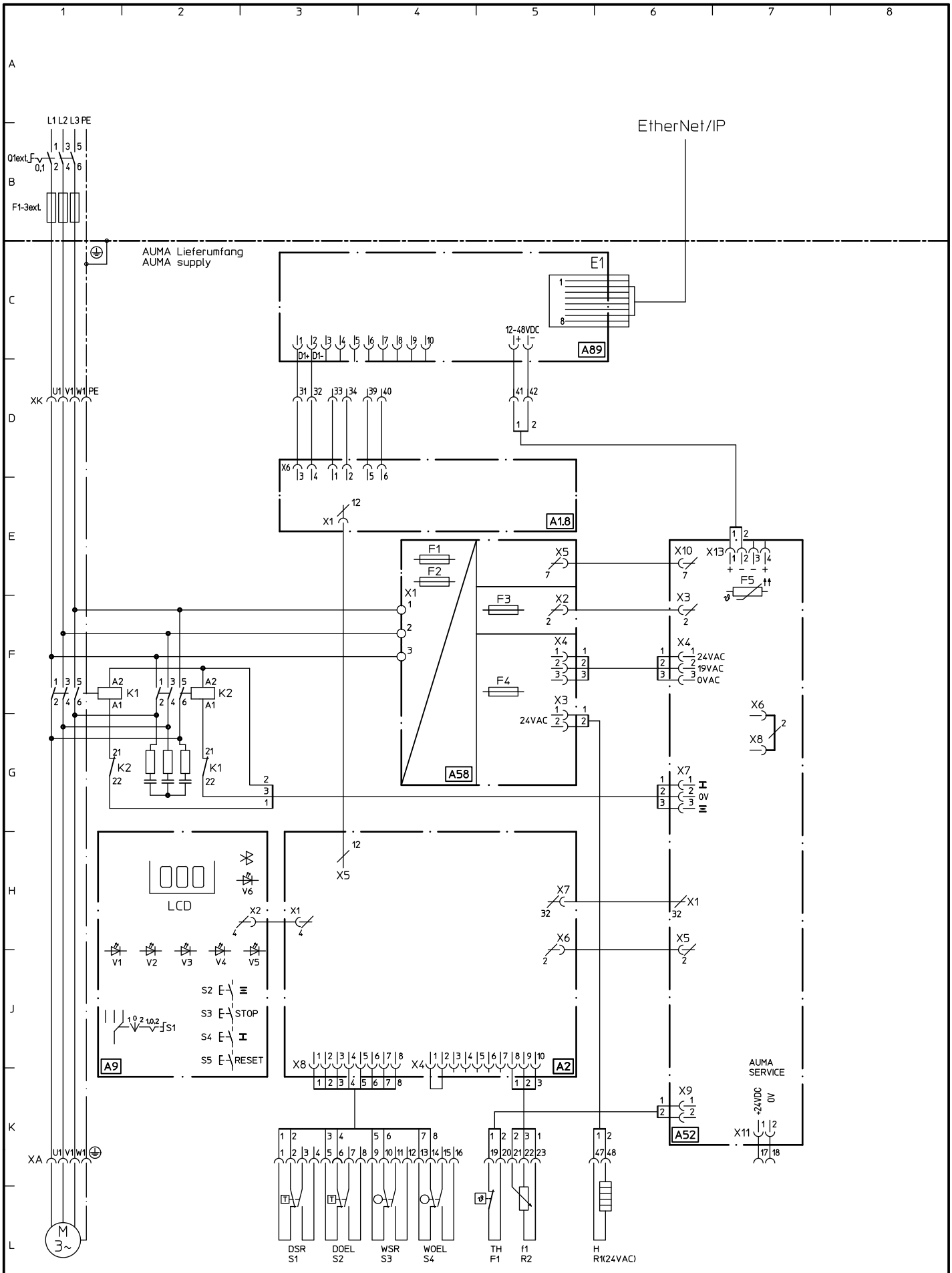
				Datum	2015-03-27
03	2015-086	2015-03-27	Mey	Bearb.	Meyer
02	2014-270	2014-11-07	Mon	Gepr.	Montoire
Zust.	Änderung	Datum	Name	Norm	Montoire

AUMA Riester GmbH & Co. KG

TPCAJ14D-1C1-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt

Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.



Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.

Anschlussplan zeigt den Stellantrieb in Zwischenstellung. Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A2ENIP

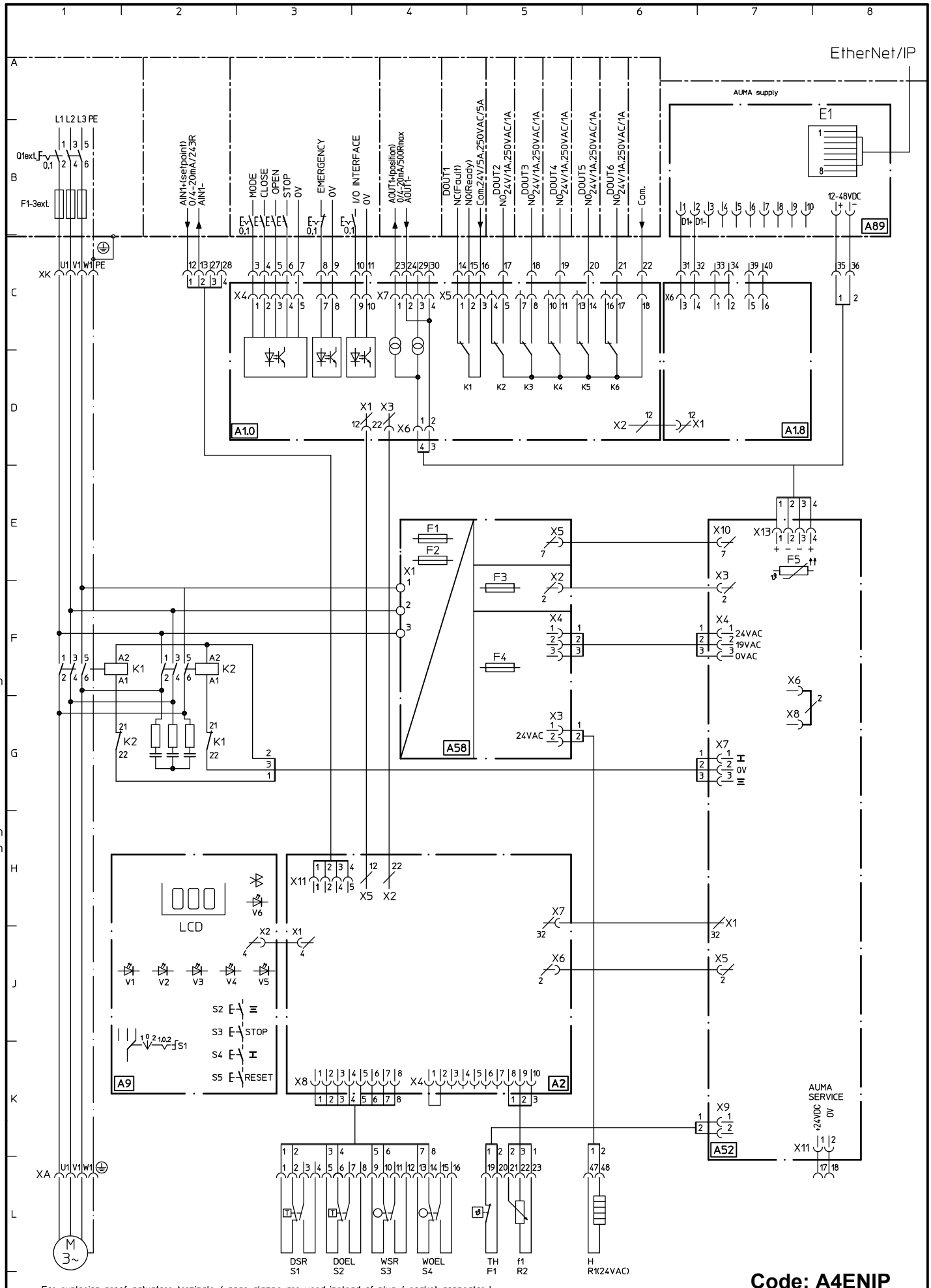
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				Bearb.	Meyer
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Zust.	Änderung	Datum	Name	Norm	Roemer

AUMA Riester GmbH & Co. KG

TPCAP000-1A1-A5E0 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer

Projekt



For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: A4ENIP

				Datum	2020-10-23
				Bearb.	Roemer
				Gepr.	Meyer
Zust.	Änderung	Datum	Name	Norm	Meyer

AUMA Riester GmbH & Co. KG

TPCAP121-1A1-A5E0 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt

Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.

Legend Actuator controls

A1.0		Interface board
K1 - 6		Output contacts
A1.1		Interface board
K7 - K12		Output contacts
A1.8		Fieldbus board
A2		Logic board
A4		Overvoltage protection thyristors
R1 - R4		Varistors
A9		Local controls
S1		Selector switch LOCAL - OFF - REMOTE
S2		Push button OPEN
S3		Push button STOP
S4		Push button CLOSE
S5		Push button RESET
V1 - V5		Indication lights
V6		Bluetooth
LCD		Graphic display
A13		Fieldbus connection board
A32		Overvoltage protection board for fieldbus
A52		Control board
F5		Fuse (for external supply 24 V DC)
A52.1		Option board
A58		Power supply unit
F3, F4		Secondary fuses
A88		Heater system board
A88.1		Motor heater fuse
A90		WirelessHART Adapter (in SIL version: A90 = SIL module)
B2/B4	EWG/RWG	Electronic position transmitter
B6	MWG	Magnetic limit and torque transmitter
F1, F2		Primary fuses for power supply
F1	TH	Thermoswitches
F7		Thermal overload relay
K0		Contactor for all-pole disconnection of thyristors
K1, K2		Reversing contactors
Q1		Disconnect switch
Q2		Motor protection switch
R1	H	Heater in switch compartment
R2	f1	Potentiometer
R2/2	f2	Potentiometer in tandem arrangement with R2
R3	PTC1	PTC thermistor
R4	H	Motor heater
R5	H	Heater in AUMATIC
S0		EMERGENCY stop button (latching)
S1	TSC	Torque switch, closing, clockwise rotation
S2	TSO (DOEL)	Torque switch, opening, counterclockwise rotation
S3	LSC (WSR)	Limit switch, closing, clockwise rotation
S4	LSO (WOEL)	Limit switch, opening, counterclockwise rotation
S5	BL	Blinker transmitter (in SIL version)

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Legend Actuator controls

S1/2 S2/2	DSR 1 DOEL 1	Torque switches in tandem arrangement with DSR/DOEL (TSC/TSO)
S3/2 S4/2	WSR 1 WOEL 1	Limit switches in tandem arrangement with WSR/WOEL (LSC/LSO)
S3/3 S4/3	WSR 2 WOEL 2	Limit switches in triple arrangement with WSR/WOEL (LSC/LSO)
S6 S7	WDR WDL	Limit switches, DUO, for 2 intermediate positions, adjustable
S6/2 S7/2	WDR 1 WDL 1	Limit switches, DUO, for 2 intermediate positions in tandem arrangement with WDR/WDL (LSA/LSB)
S17	HA	Handwheel activation switch
XK		Customer connection
XA		Actuator connection

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

ACV 01.2

Information on wiring diagram selection

General information

This data sheet is used as supplement to wiring diagram selection for ACV 01.2 (Y007.370)

Notes

The wiring diagrams listed in the wiring diagram selection can be downloaded from our website (www.auma.com). This manual includes examples of wiring diagrams for all control types in their basic versions.

Wiring diagram selection

The short designations (AV1 etc.) are descriptive numberings.

I/O interface	
AV1:	**With position feedback signal 0/4 – 20 mA (potentiometer in actuator), basic version**
	CLOSE, OPEN, STOP, EMERGENCY (24 V DC), 6 programmable output contacts[1)] TPCH-0A1-1CF-A000 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCH-0A1-1CE-A000 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV2:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer in actuator)**
	CLOSE, OPEN, STOP, EMERGENCY (24 V DC), 6 programmable output contacts[1)] TPCH-1B1-1CF-A000 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCH-1B1-1CE-A000 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV1N:	**With position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	CLOSE, OPEN, STOP, EMERGENCY (24 V DC), 6 programmable output contacts[1)] TPCH-0A1-1CF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCH-0A1-1CE-A000 TPA00R100-0I1-000, 1-ph; 220 V – 240 V
AV2N:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	MODE, CLOSE, OPEN, STOP, EMERGENCY (24 V DC), setpoint (0/4 – 20 mA), 6 programmable output contacts[1)] TPCH-1B1-1CF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCH-1B1-1CE-A000 TPA00R100-0I1-000, 1-ph; 220 V – 240 V
AV5N:	**With position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	CLOSE, OPEN, STOP, EMERGENCY, INTERLOCK CLOSE, INTERLOCK OPEN, 6 programmable output contacts[1)] TPCH-0D1-1CF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCH-0D1-1CE-A000 TPA00R100-0I1-000, 1-ph; 220 V – 240 V

Profibus DP	
AV2DP:	**With position feedback (potentiometer in actuator), basic version**
	Profibus TPCHA000-1AF-A000 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCHA000-1AE-A000 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV2NDP:	**With position/torque feedback (MWG in actuator)**
	Profibus TPCHA000-1AF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCHA000-1AE-A000 TPA00R100-0I1-000, 1-ph; 220 V – 240 V

Profibus DP combined with I/O interface	
AV4DP:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer within actuator), basic version**
	MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1)] TPCHA121-1CF-A000 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCHA121-1CE-A000 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV4NDP:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1)] TPCHA121-1CF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCHA121-1CE-A000 TPA00R100-0I1-000, 1-ph; 220 V – 240 V

1) Refer to notes on page 4.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Wiring diagram selection

Profinet PN	
AV2PN:	**With position feedback (potentiometer in actuator)**
	Profinet TPCHN000K1AF-A000 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCHN000K1AE-A000 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV2NPN:	**With position/torque feedback (MWG in actuator)**
	Profinet TPCHN000K1AF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCHN000K1AE-A000 TPA00R100-0I1-000,) 1-ph; 220 V – 240 V

Profinet PN combined with I/O interface	
AV4PN:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer in actuator)**
	Profinet TPCHN121K1CF-A000 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCHN121K1CE-A000 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV4NPN:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	Profinet TPCHN121K1CF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCHN121K1CE-A000 TPA00R100-0I1-000, 1-ph; 220 V – 240 V

Modbus RTU	
AV2MB:	**With position feedback (potentiometer in actuator), basic version**
	Modbus TPCHC000-1AF-A000 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCHC000-1AE-A000 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV2NMB:	**With position/torque feedback (MWG in actuator)**
	Modbus TPCHC000-1AF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCHC000-1AE-A000 TPA00R100-0I1-000, 1-ph; 220 V – 240 V

Modbus RTU combined with I/O interface	
AV4MB:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer within actuator), basic version**
	MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1)] TPCHC121-1CF-A000 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCHC121-1CE-A000 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV4NMB:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1)] TPCHC121-1CF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCHC121-1CE-A000 TPA00R100-0I1-000, 1-ph; 220 V – 240 V

Modbus TCP/IP	
AV2MBTCP:	**With position feedback (potentiometer in actuator), basic version**
	Modbus TCP/IP TPCHC000-1AF-A5E0 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCHC000-1AE-A5E0 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV2NMBTCP:	**With position/torque feedback (MWG in actuator)**
	Modbus TCP/IP TPCHC000-1AF-A5E0 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCHC000-1AE-A5E0 TPA00R100-0I1-000, 1-ph; 220 V – 240 V

1) Refer to notes on page 4.

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Wiring diagram selection

Modbus TCP/IP combined with I/O interface	
AV4MBTCP:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer within actuator), basic version**
	MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1)] TPCHC121-1AF-A5E0 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCHC121-1AE-A5E0 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV4NMBTCP:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1)] TPCHC121-1AF-A5E0 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCHC121-1AE-A5E0 TPA00R100-0I1-000, 1-ph; 220 V – 240 V

Foundation Fieldbus FF	
AV2FF:	**With position feedback (potentiometer in actuator), basic version**
	Foundation Fieldbus FF TPCHF000-1AF-A000 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCHF000-1AE-A000 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV2NFF:	**With position/torque feedback (MWG in actuator)**
	Foundation Fieldbus FF TPCHF000-1AF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCHF000-1AE-A000 TPA00R100-0I1-000, 1-ph; 220 V – 240 V

Foundation Fieldbus FF combined with I/O interface	
AV4FF:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer within actuator), basic version**
	MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1)] TPCHF121-1CF-A000 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCHF121-1CE-A000 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV4NFF:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1)] TPCHF121-1CF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCHF121-1CE-A000 TPA00R100-0I1-000, 1-ph; 220 V – 240 V

HART Actuator	
AV2HRT:	**With position feedback (potentiometer in actuator), basic version**
	HART Actuator TPCHI000-1AF-A000 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCHI000-1AE-A000 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV2NHRT:	**With position/torque feedback (MWG in actuator)**
	HART Actuator TPCHI000-1AF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCHI000-1AE-A000 TPA00R100-0I1-000, 1-ph; 220 V – 240 V

HART Actuator combined with I/O interface	
AV4HRT:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer within actuator), basic version**
	MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1)] TPCHI041-1CF-A000 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCHI041-1CE-A000 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV4NHRT:	**With positioner and position/torque feedback signal 0/4 – 20 mA (MWG in actuator)**
	MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1)] TPCHI041-1CF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCHI041-1CE-A000 TPA00R100-0I1-000, 1-ph; 220 V – 240 V

1) Refer to notes on page 4.

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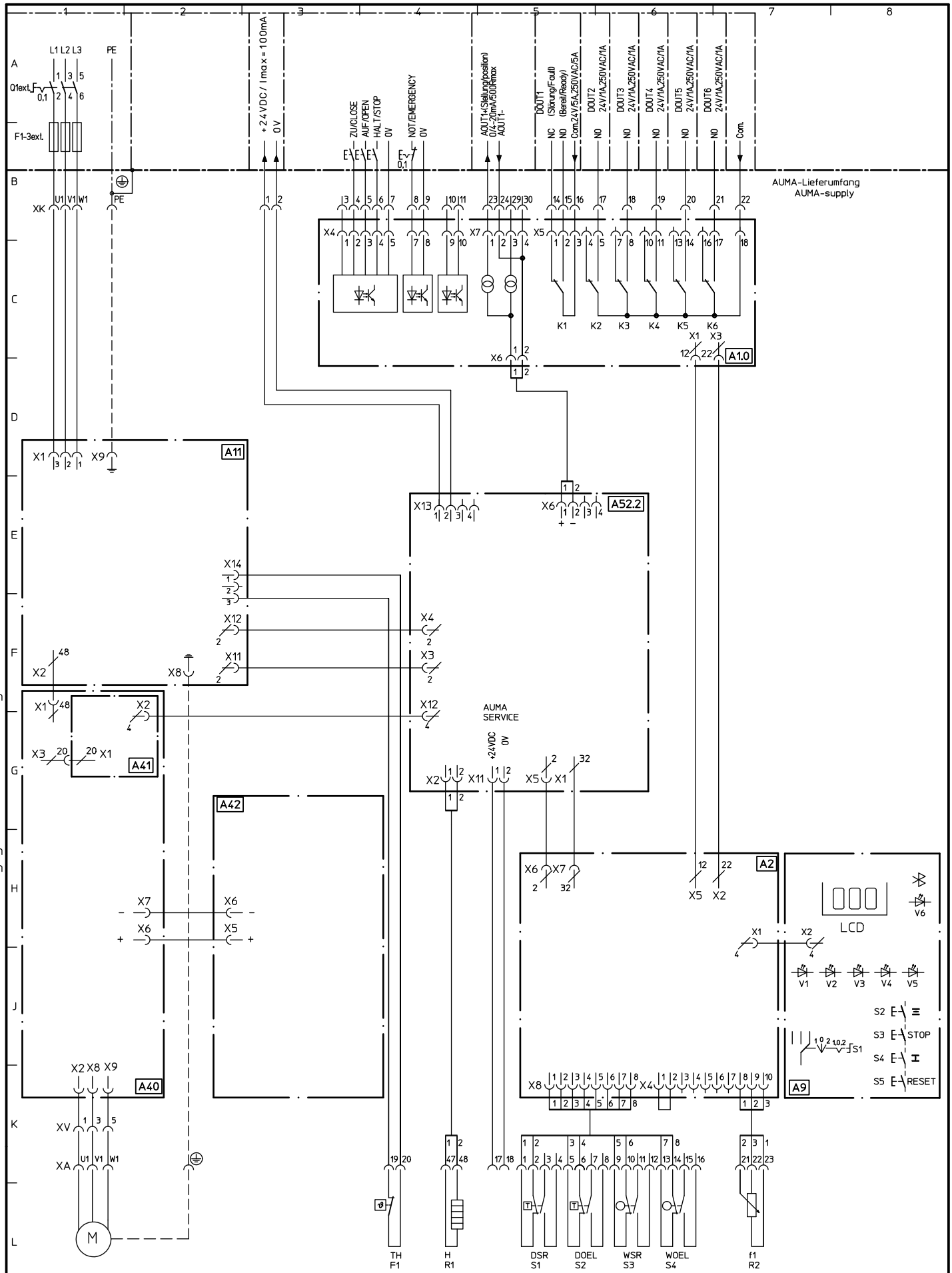
Wiring diagram selection

HART Current Output	
AV2HRTCO:	**With position feedback (potentiometer in actuator), basic version**
	HART Current Output TPCHJ000-1AF-A000 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCHJ000-1AE-A000 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV2NHRTCO:	**With position/torque feedback (MWG in actuator)**
	HART Current Output TPCHJ000-1AF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCHJ000-1AE-A000 TPA00R100-0I1-000, 1-ph; 220 V – 240 V

HART Current Output with I/O interface	
AV4HRTCO:	**With positioner and position feedback signal 0/4 – 20 mA (potentiometer within actuator), basic version**
	MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1)] TPCHJ14D-1CF-A000 TPA00R1AA-0A1-000, 3-ph; 380 V – 480 V TPCHJ14D-1CE-A000 TPA00R1AA-0A1-000, 1-ph; 220 V – 240 V
AV4NHRTCO:	**With position/torque feedback (MWG in actuator)**
	MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O (24 V DC), 6 programmable output contacts[1)] TPCHJ14D-1CF-A000 TPA00R100-0I1-000, 3-ph; 380 V – 480 V TPCHJ14D-1CE-A000 TPA00R100-0I1-000, 1-ph; 220 V – 240 V

1) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN

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Anschlussplan zeigt den Stellantrieb in Zwischenstellung, Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: AV1

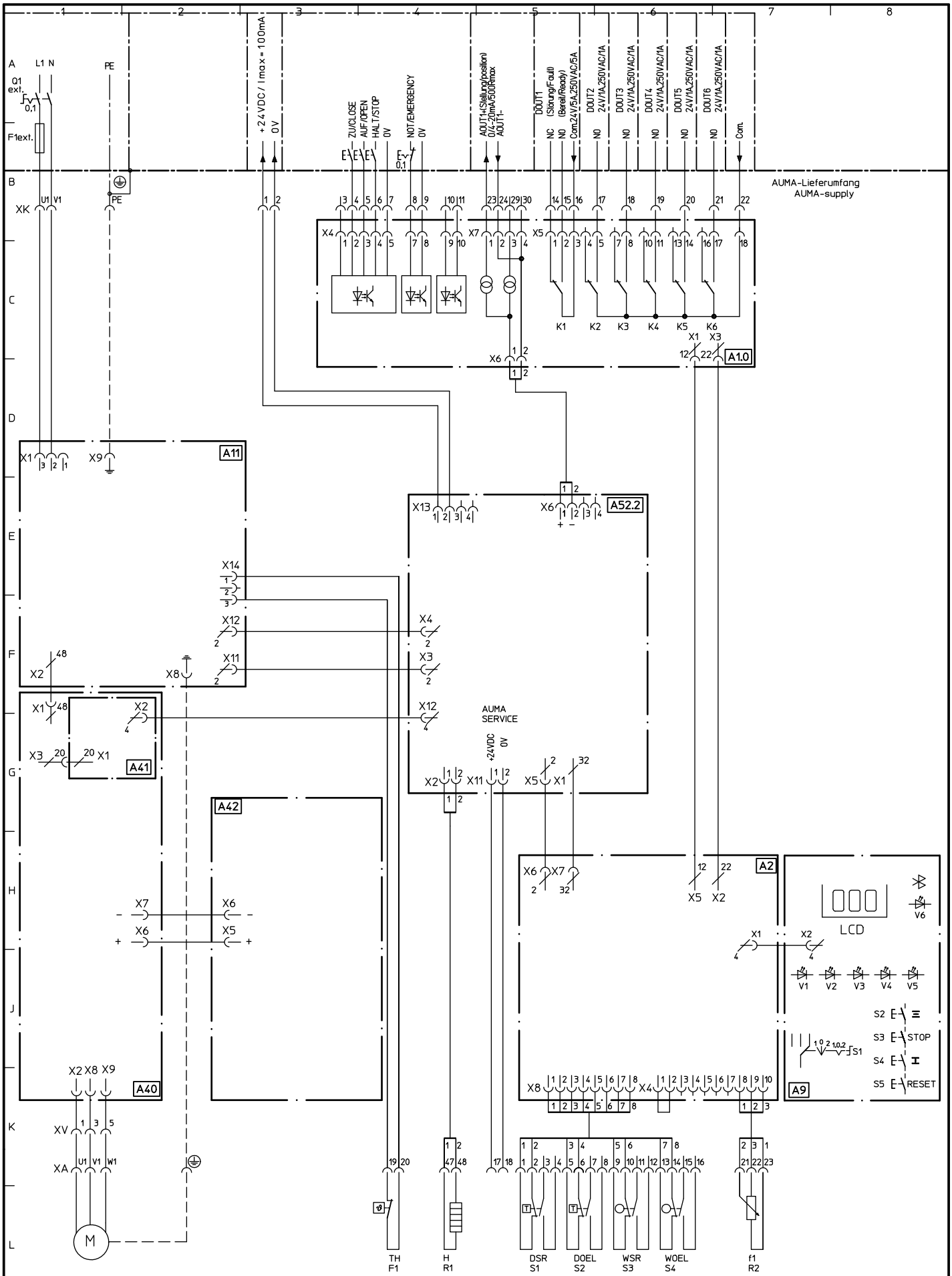
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				Bearb.	Meyer
01	2017-089	2017-05-30	Mey	Gepr.	Roemer
Zust.	Änderung	Datum	Name	Norm	Roemer

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Legende	Auftragsnummer	Bestellnummer
		Projekt

Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.



Anschlussplan zeigt den Stellantrieb in Zwischenstellung, Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
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Code: AV1

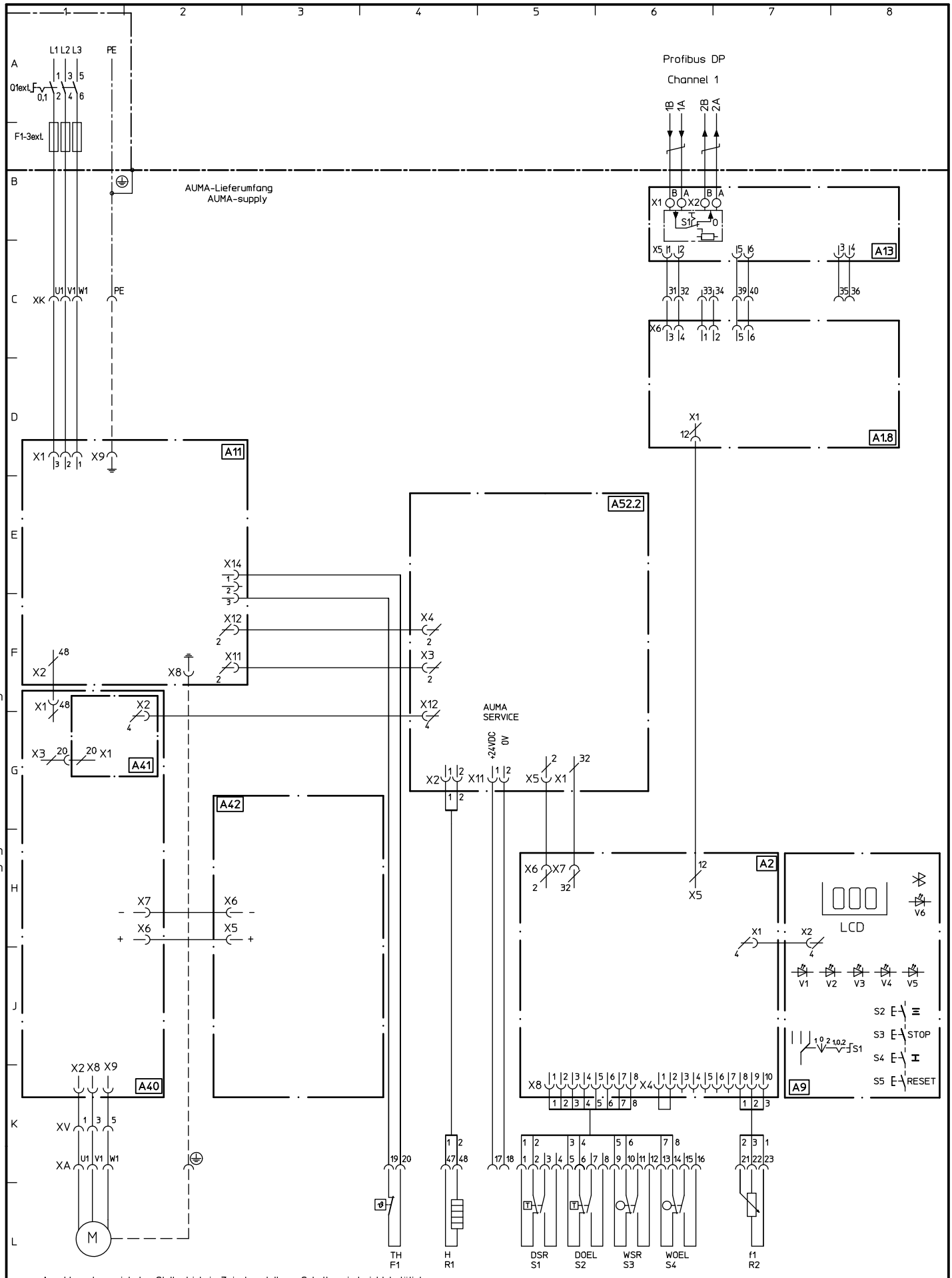
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01	733/09	2017-09-26	Mey	Gepr.	Roemer
Zust.	Änderung	Datum	Name	Norm	Roemer

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		Projekt

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Code: AV2DP

Zust.	Änderung	Datum	Name		
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				Bearb.	Meyer
				Gepr.	Roemer
				Norm	Roemer

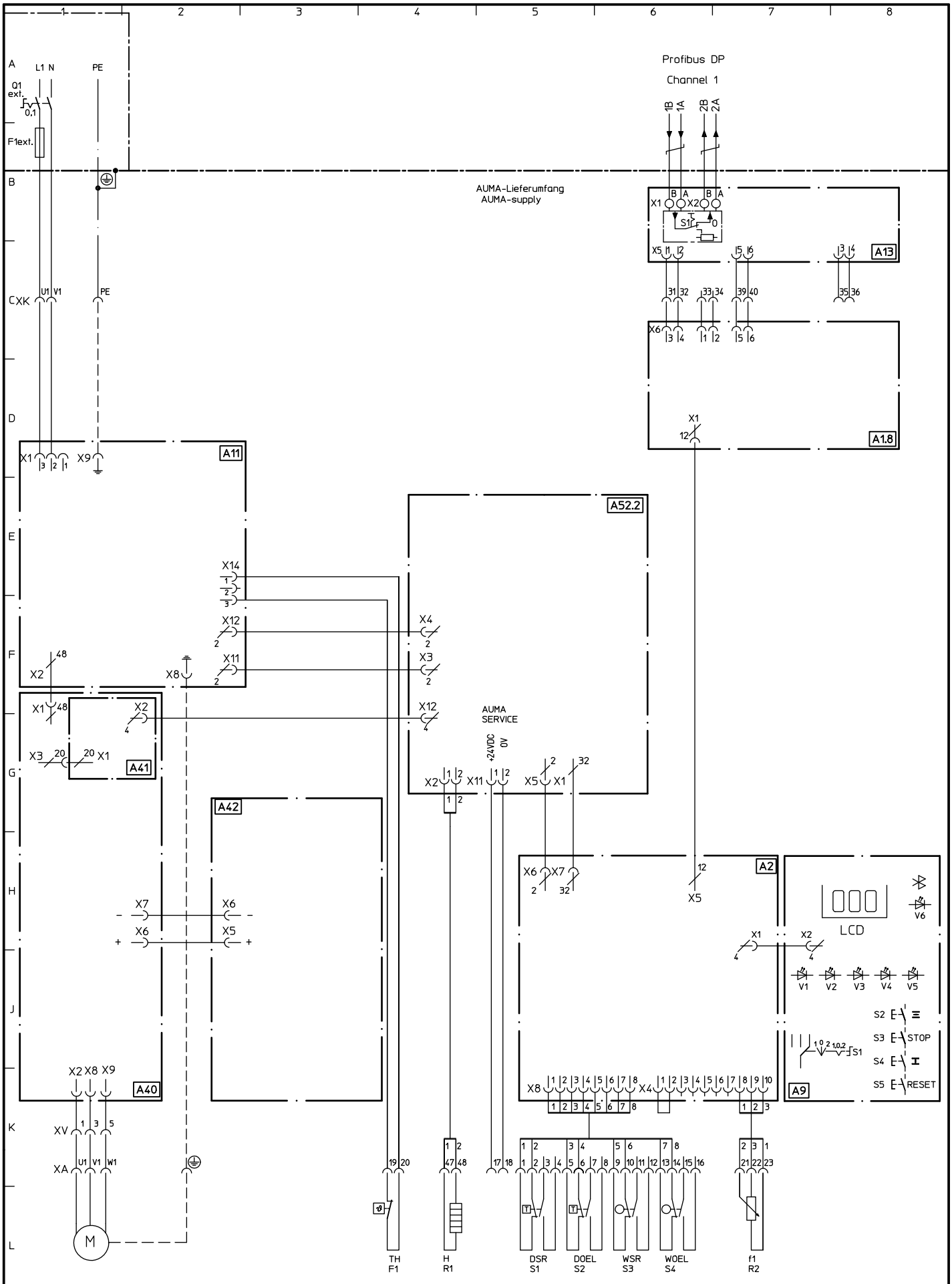
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Legende	Auftragsnummer	Bestellnummer

Projekt

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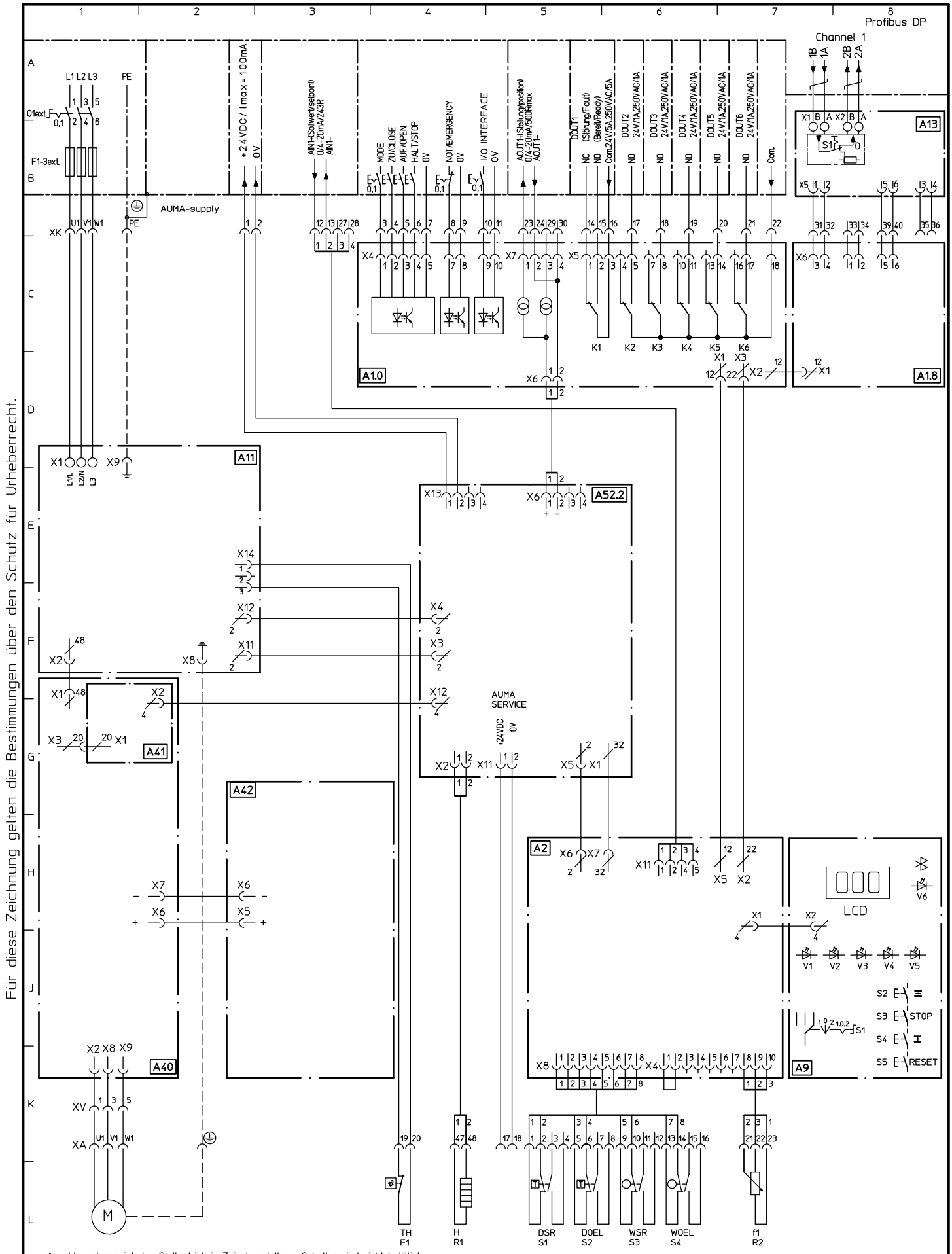
Code: AV2DP

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01	733/09	2017-09-26	Mey	Gepr.	MuellerSe
Zust.	Änderung	Datum	Name	Norm	MuellerSe

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Legende	Auftragsnummer	Bestellnummer
		Projekt



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For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: AV4DP

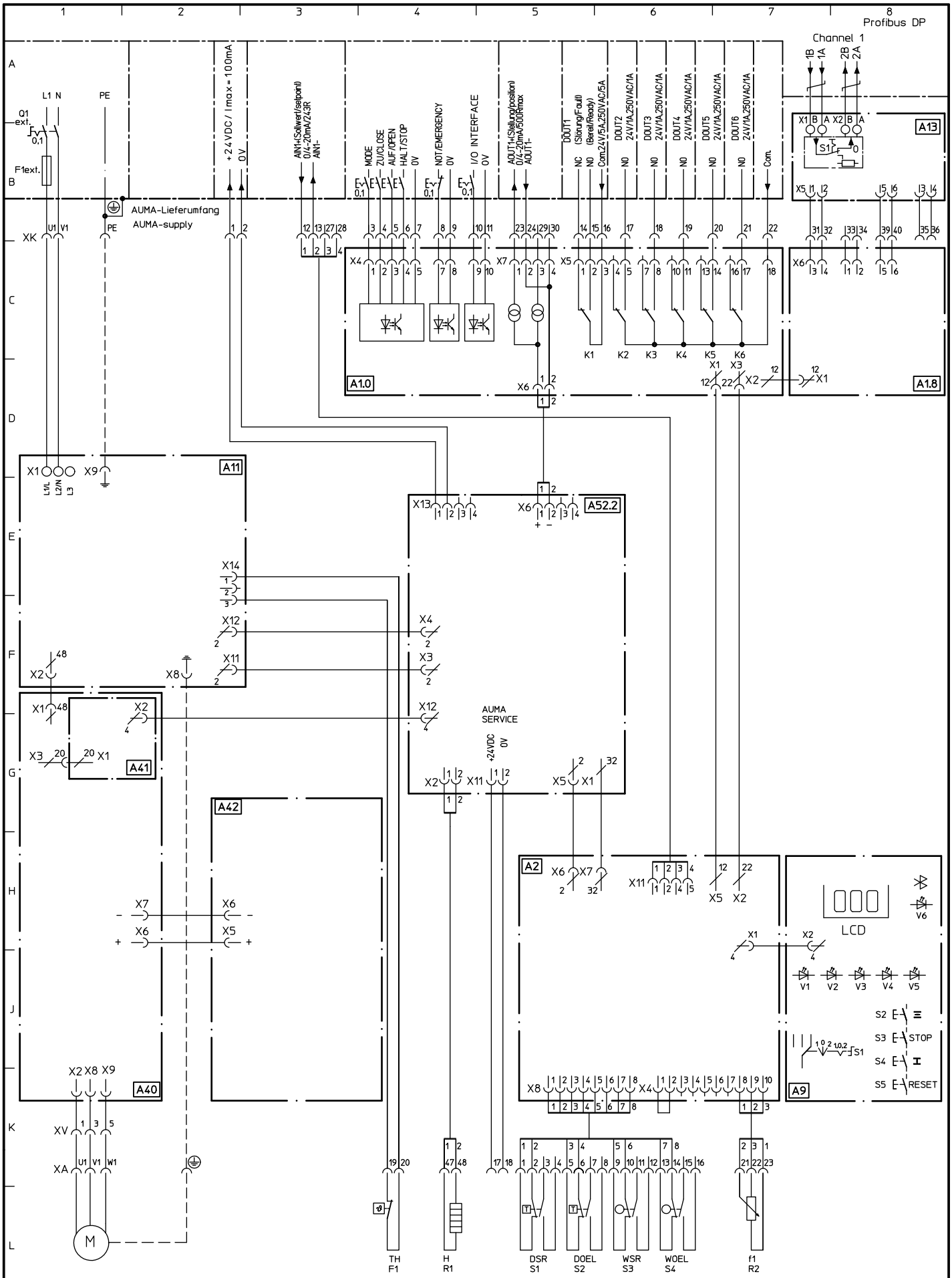
03	733/09	2018-07-05	Mey	Datum	2018-07-05
02	733/09	2017-07-05	Mey	Bearb.	Meyer
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Zust.	Änderung	Datum	Name	Norm	Roemer

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Legende	Auftragsnummer	Bestellnummer

Projekt



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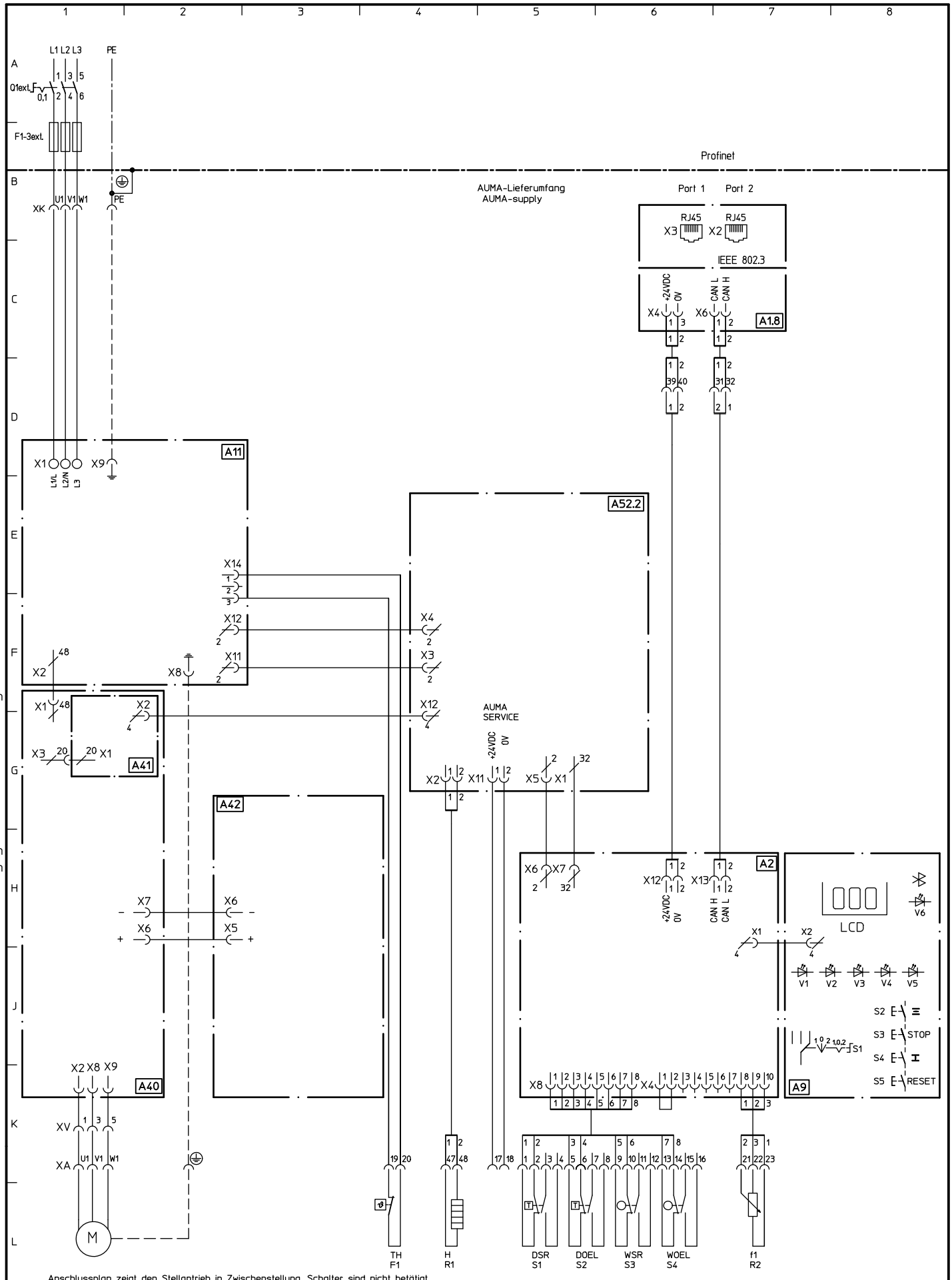
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Zust.	Änderung	Datum	Name	Norm	Roemer

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Legende	Auftragsnummer	Bestellnummer
		Projekt

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Code: AV2PN

				Datum	2018-03-02
				Bearb.	Roemer
01	733/09	2018-03-02	Roe	Gepr.	Meyer
Zust.	Änderung	Datum	Name	Norm	Meyer

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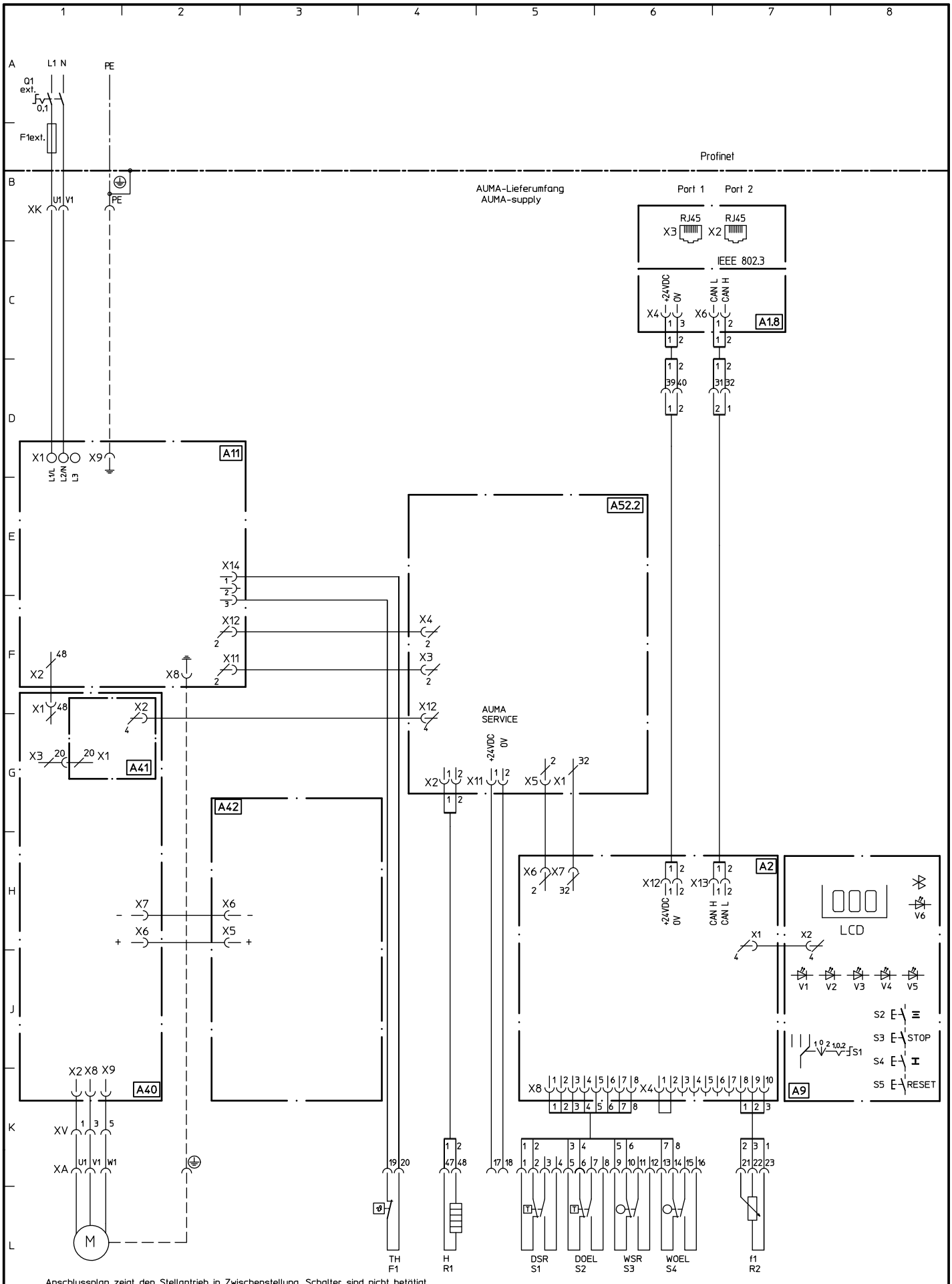
TPCHN000K1AF-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer

Projekt

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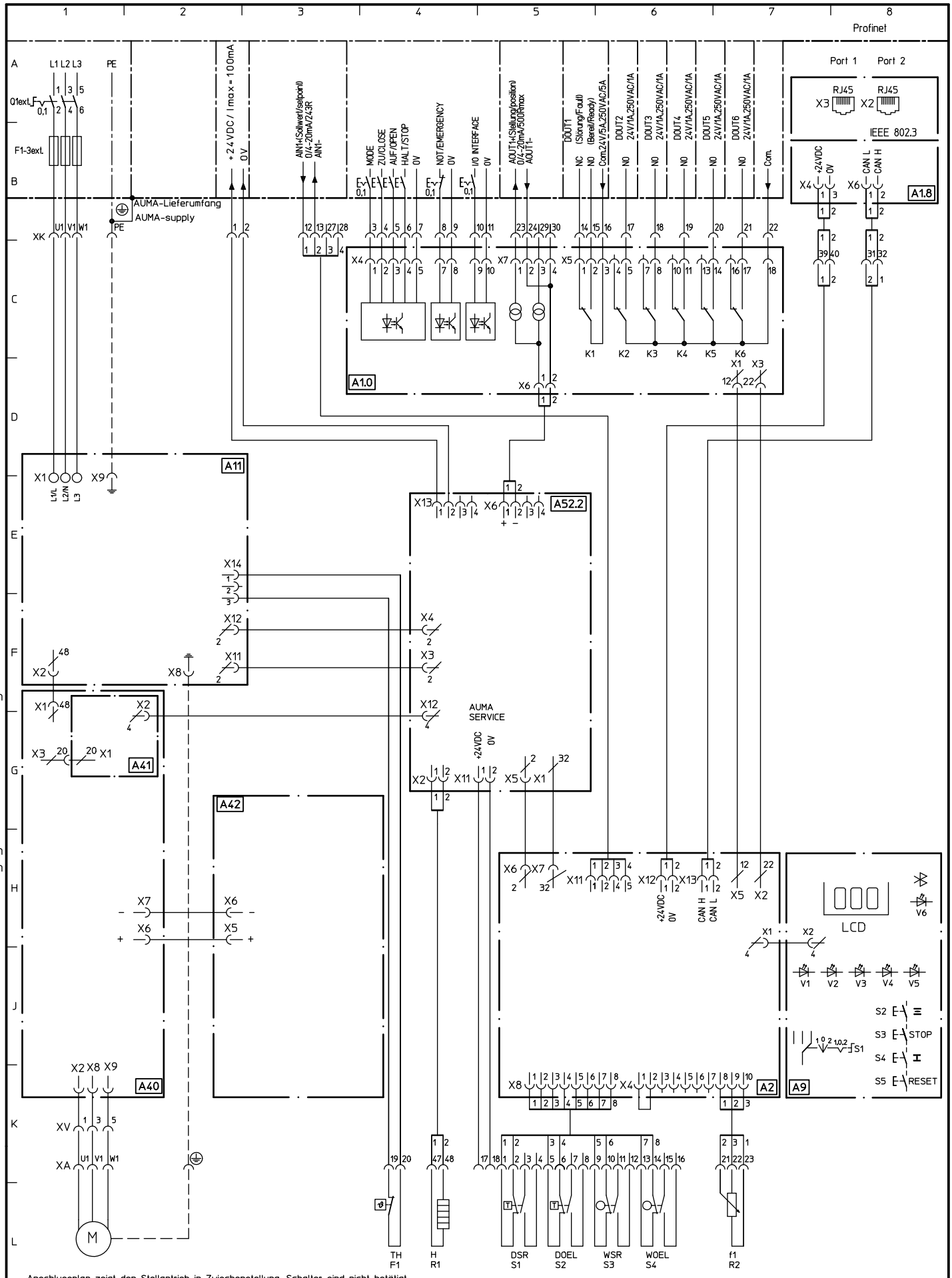
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Zust.	Änderung	Datum	Name	Norm	Meyer

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Legende	Auftragsnummer	Bestellnummer
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Code: AV4PN

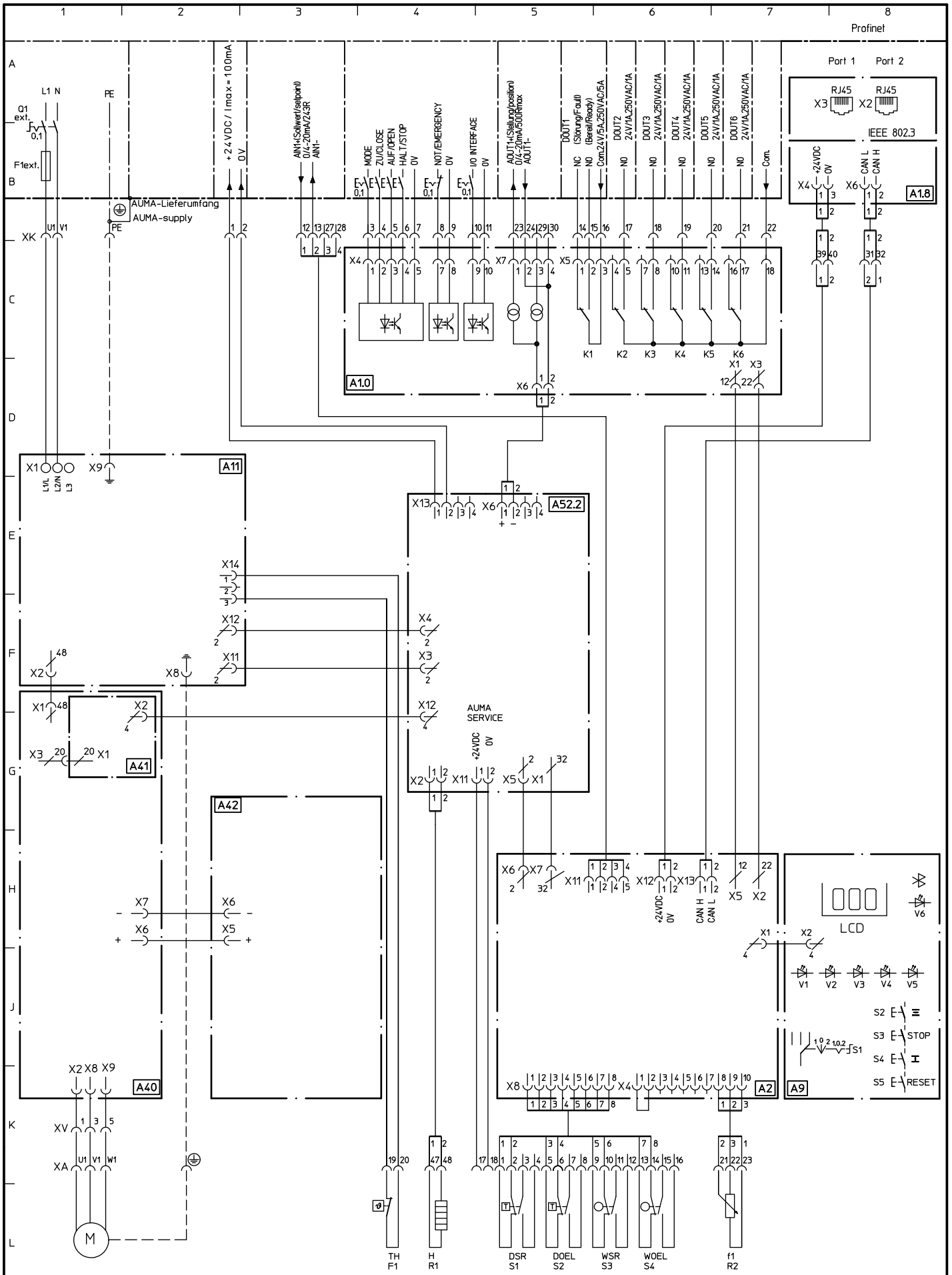
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01	733/09	2018-03-02	Roe	Gepr.	MuellerSe
Zust.	Änderung	Datum	Name	Norm	MuellerSe

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Legende	Auftragsnummer	Bestellnummer
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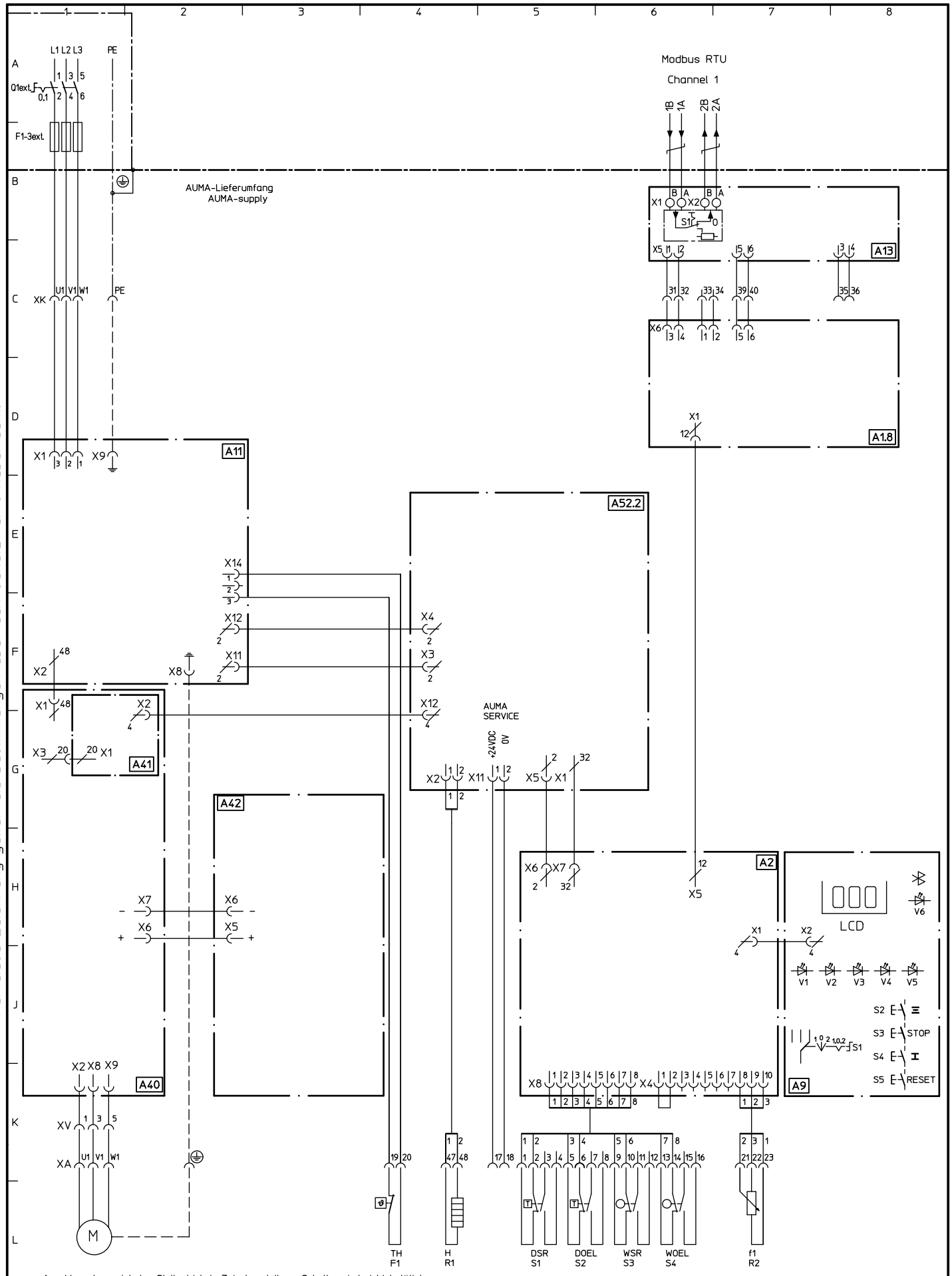
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Zust.	Änderung	Datum	Name	Norm	MuellerSe

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Legende	Auftragsnummer	Bestellnummer

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Code: AV2MB

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Zust.	Änderung	Datum	Name	Norm	Roemer

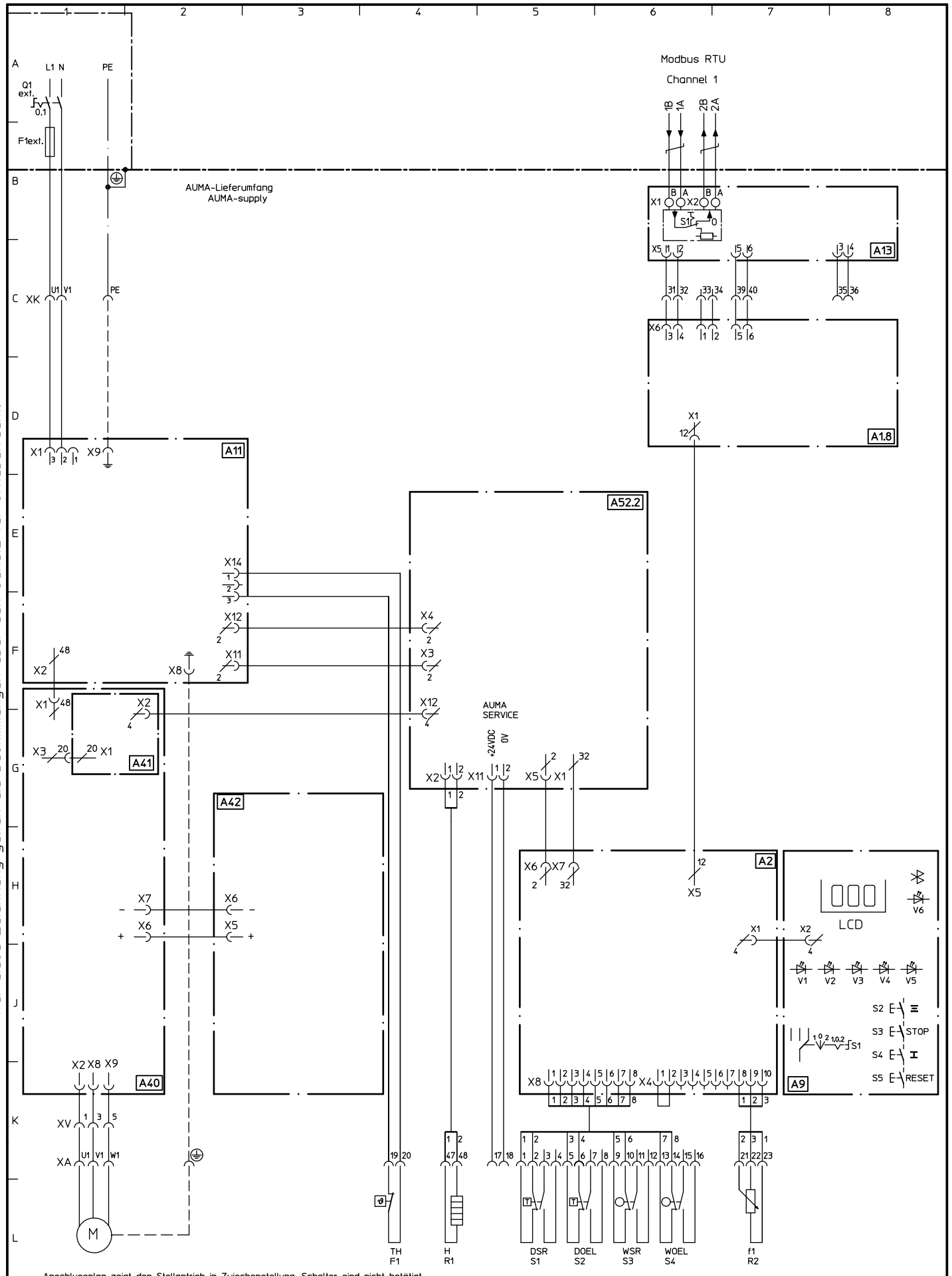
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Legende	Auftragsnummer	Bestellnummer
		Projekt

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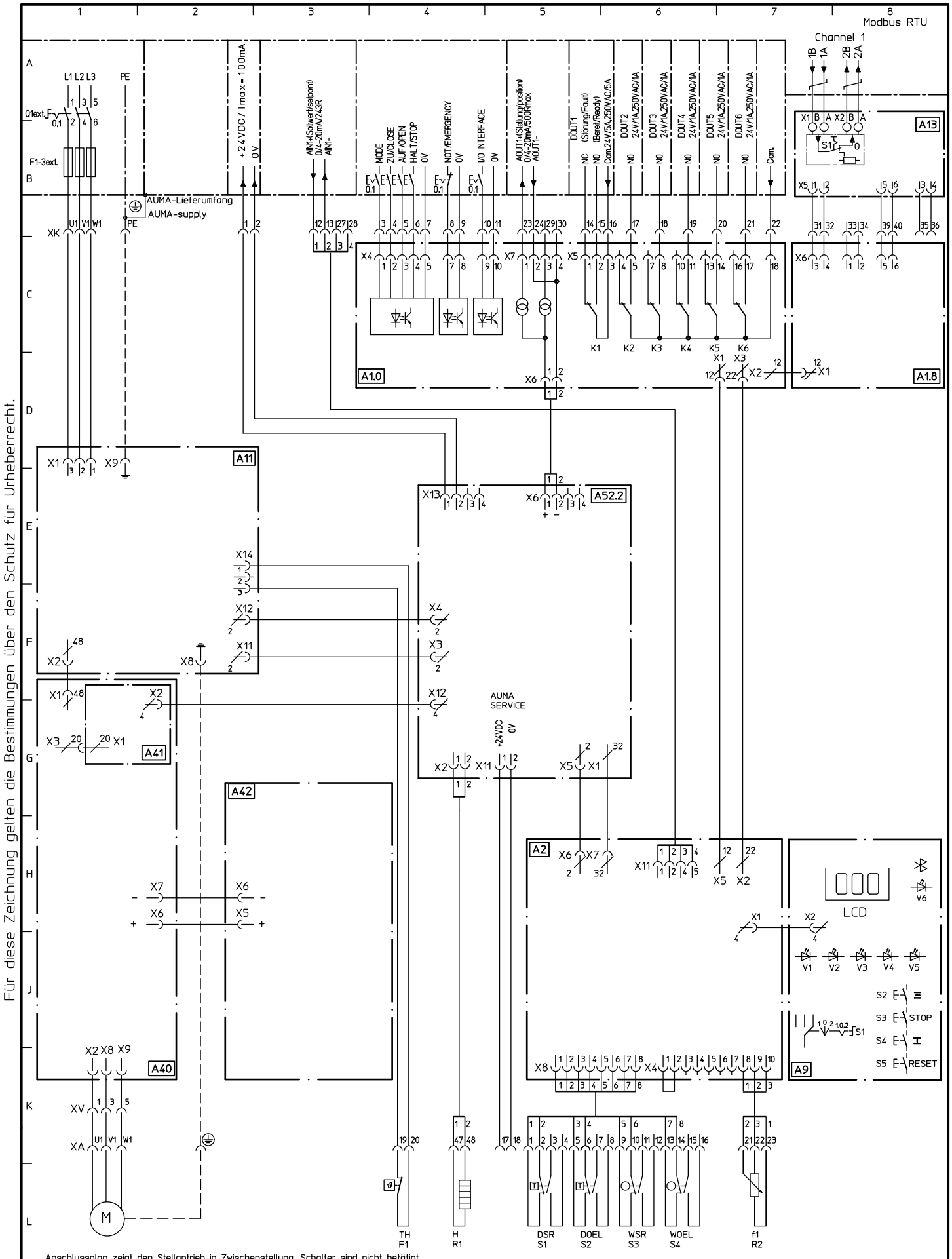
Code: AV2MB

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Zust.	Änderung	Datum	Name	Norm	Roemer

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Legende	Auftragsnummer	Bestellnummer
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Code: AV4MB

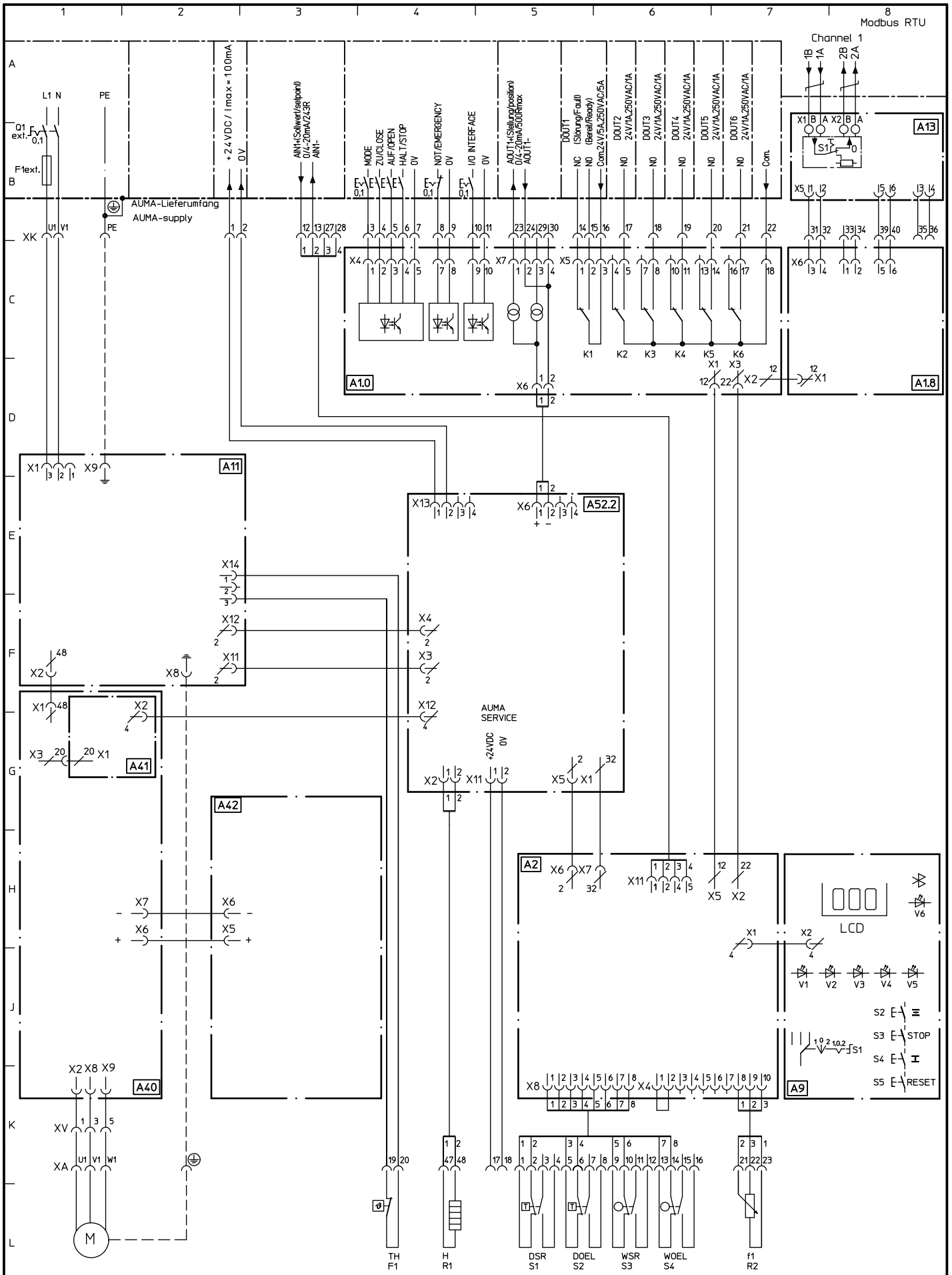
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02	2019-058	2019-02-15	Mey	Bearb.	Meyer
01	2017-089	2017-06-09	Mey	Gepr.	MuellerSe
Zust.	Änderung	Datum	Name	Norm	MuellerSe

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Legende	Auftragsnummer	Bestellnummer
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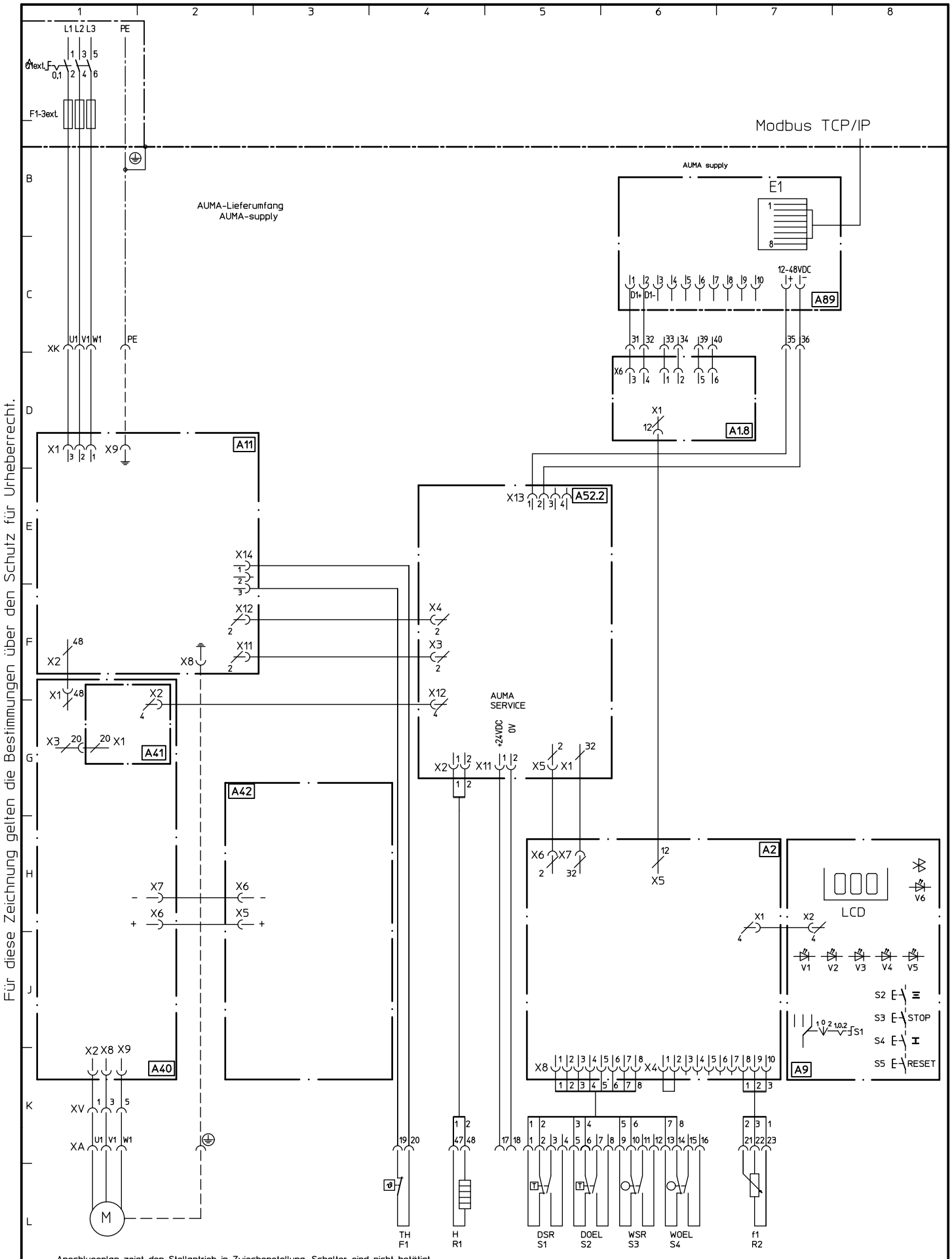
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Zust.	Änderung	Datum	Name	Norm	MuellerSe

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Legende	Auftragsnummer	Bestellnummer

Projekt



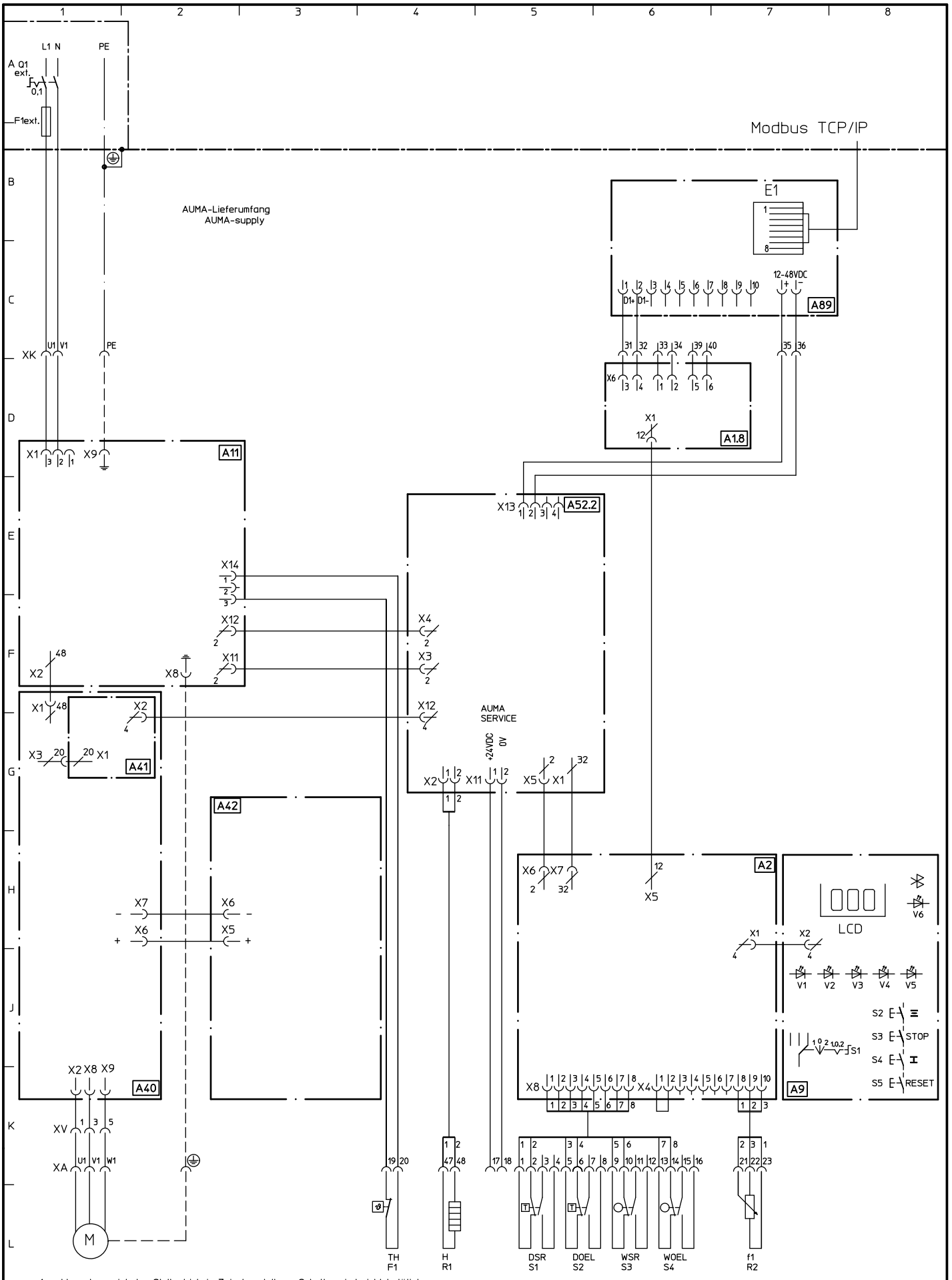
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Zust.	Änderung	Datum	Name	Norm	Roemer

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Legende	Auftragsnummer	Bestellnummer
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Code: AV2MBTCP

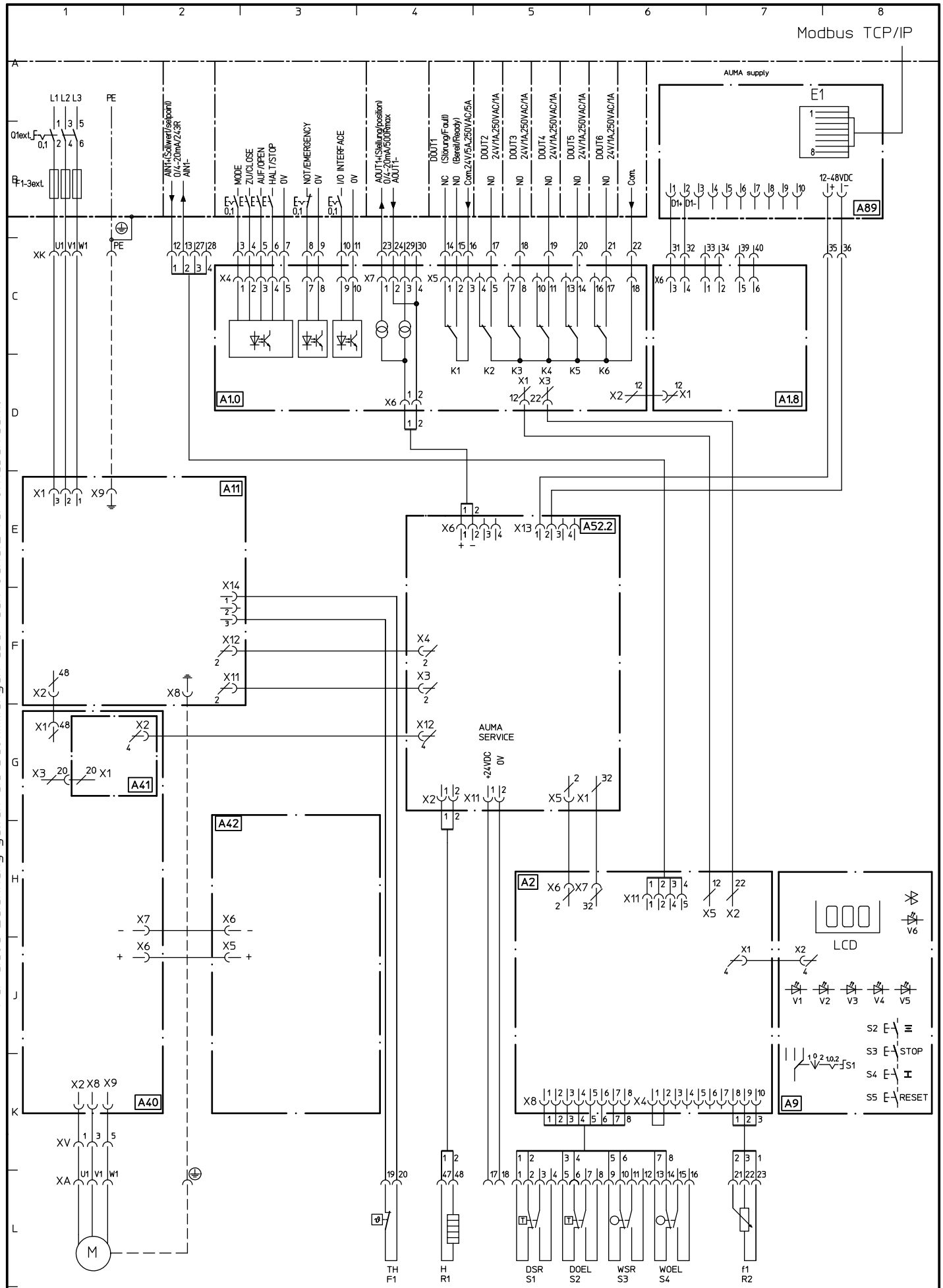
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Zust.	Änderung	Datum	Name	Norm	Roemer

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Legende	Auftragsnummer	Bestellnummer
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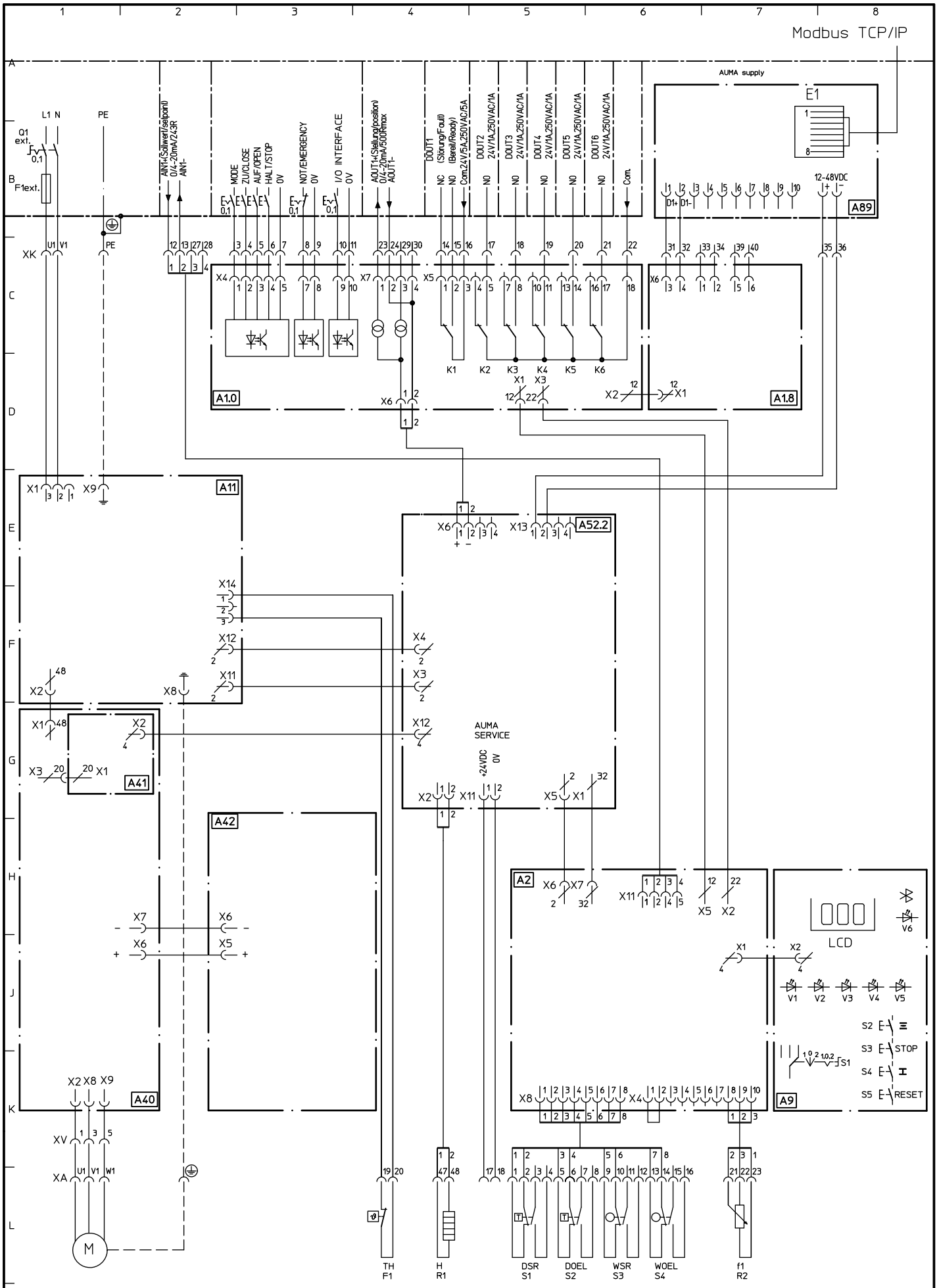
Code: AV4MBTCP

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Zust.	Änderung	Datum	Name	Norm	MuellerSe

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Legende	Auftragsnummer	Bestellnummer
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Code: AV4MBTCP

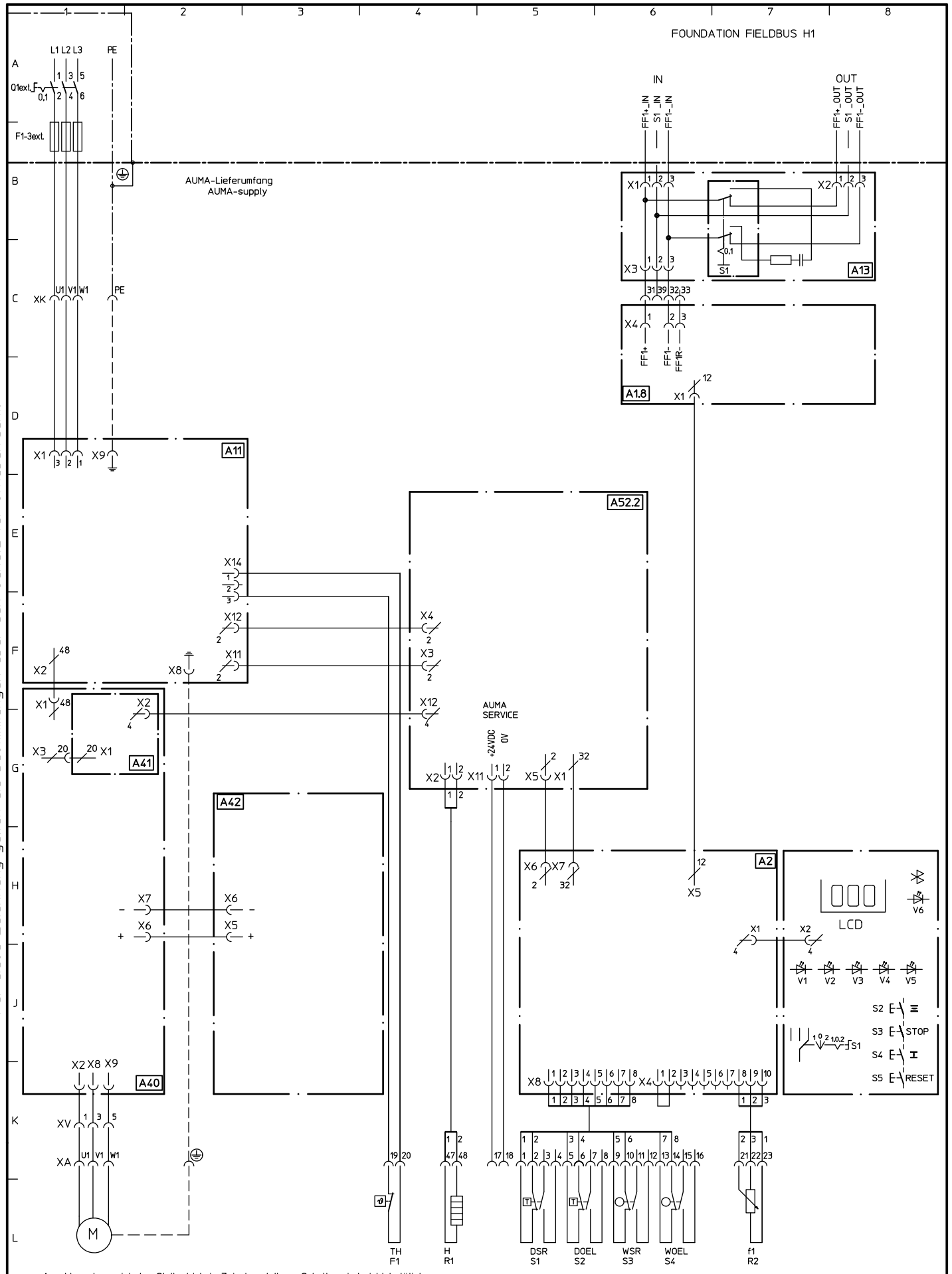
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Zust.	Änderung	Datum	Name	Norm	MuellerSe

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Legende	Auftragsnummer	Bestellnummer

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Code: AV2FF

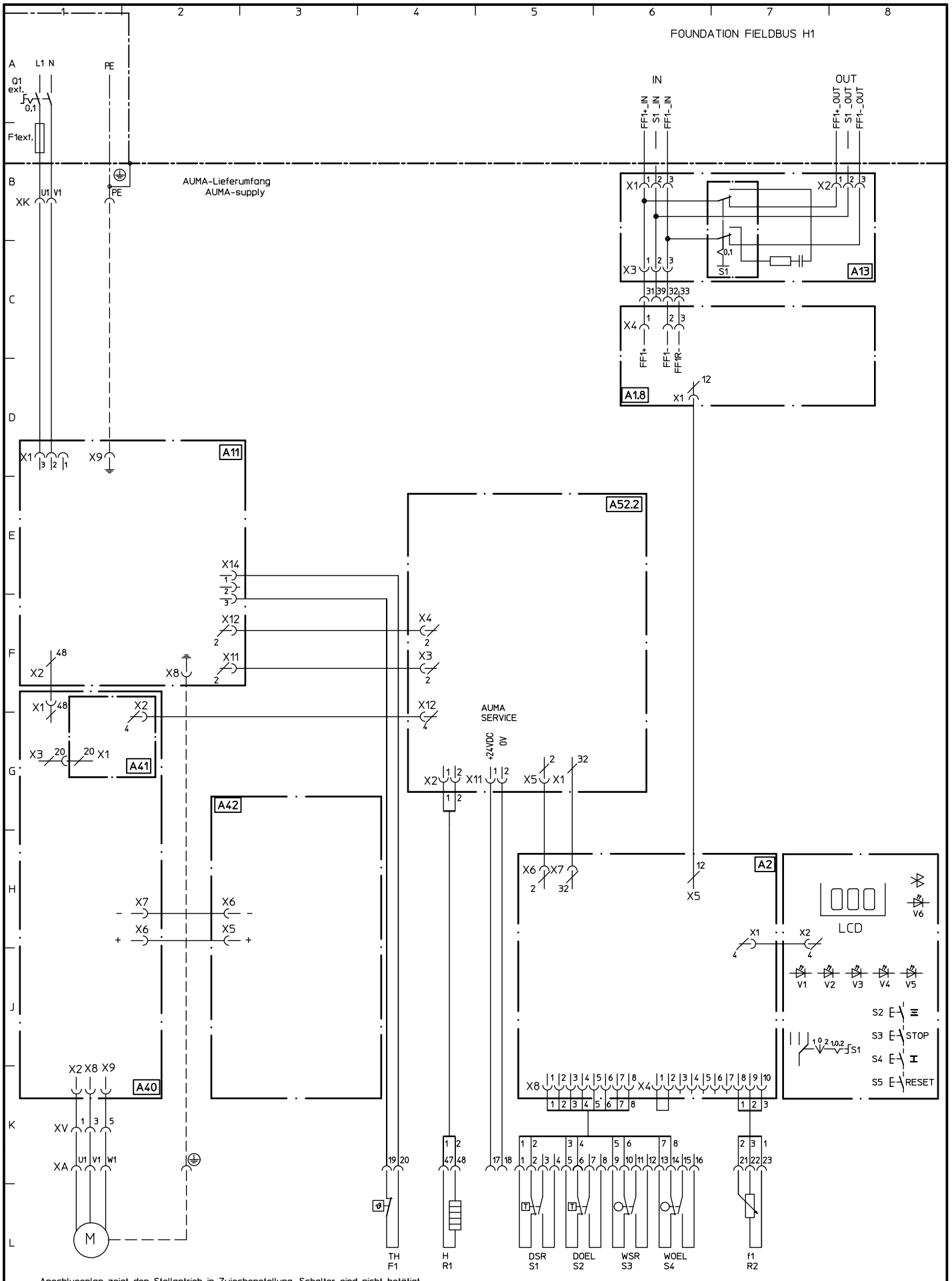
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Zust.	Änderung	Datum	Name	Norm	Roemer

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TPCHF000-1AF-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
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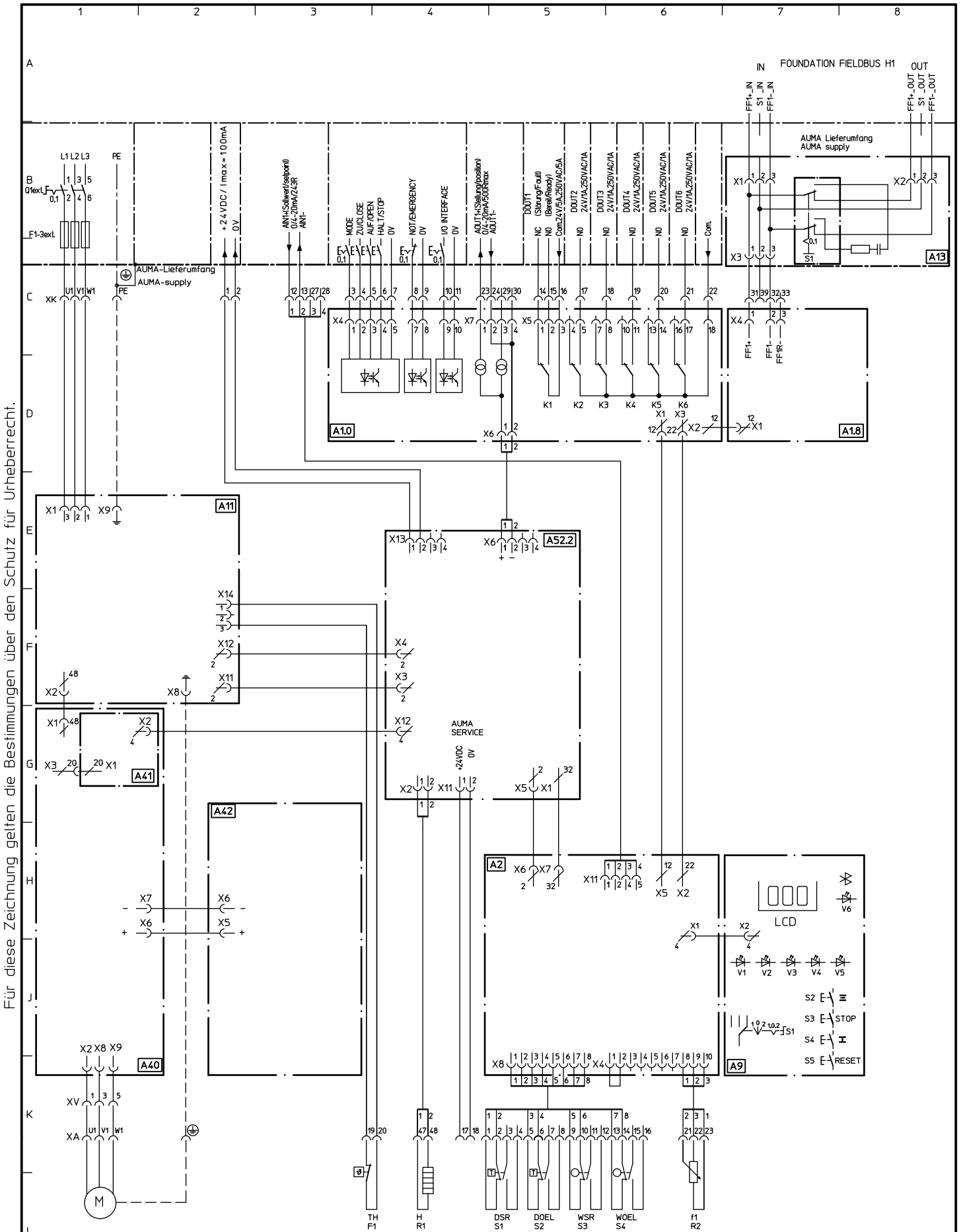
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Zust.	Änderung	Datum	Name	Norm	Roemer

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Legende	Auftragsnummer	Bestellnummer
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Code: AV4FF M-1.1

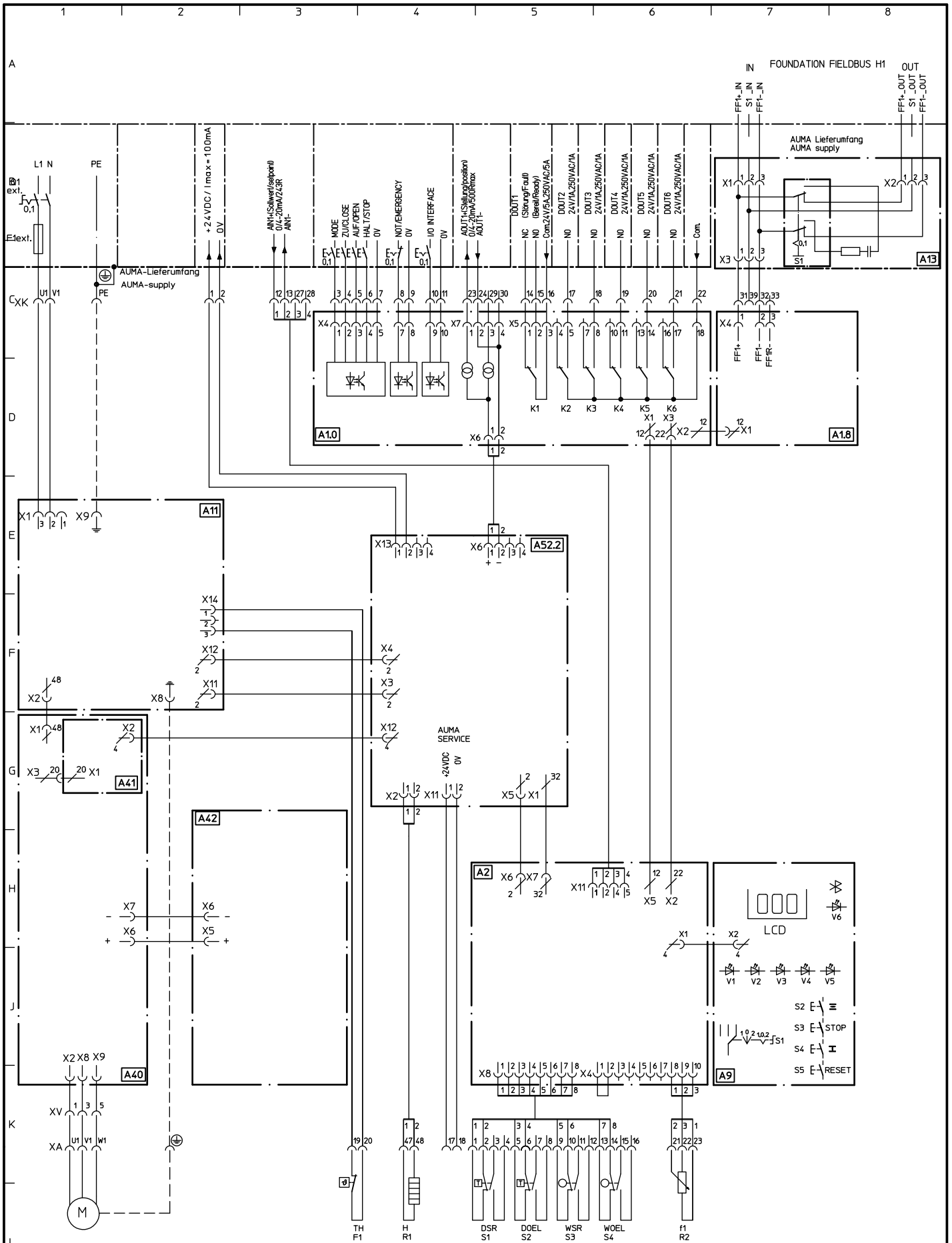
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Zust.	Änderung	Datum	Name	Norm	MuellerSe

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Legende	Auftragsnummer	Bestellnummer
		Projekt



Anschlussplan zeigt den Stellantrieb in Zwischenstellung. Schalter sind nicht betätigt.
Terminal plan shows the actuator in intermediate position, switches are not actuated.

Bei Ex-Antrieben werden an Stelle der Stecker Schraubklemmen / Käfigzugfederklemmen verwendet !
For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

Code: AV4FF M-1.1

Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.

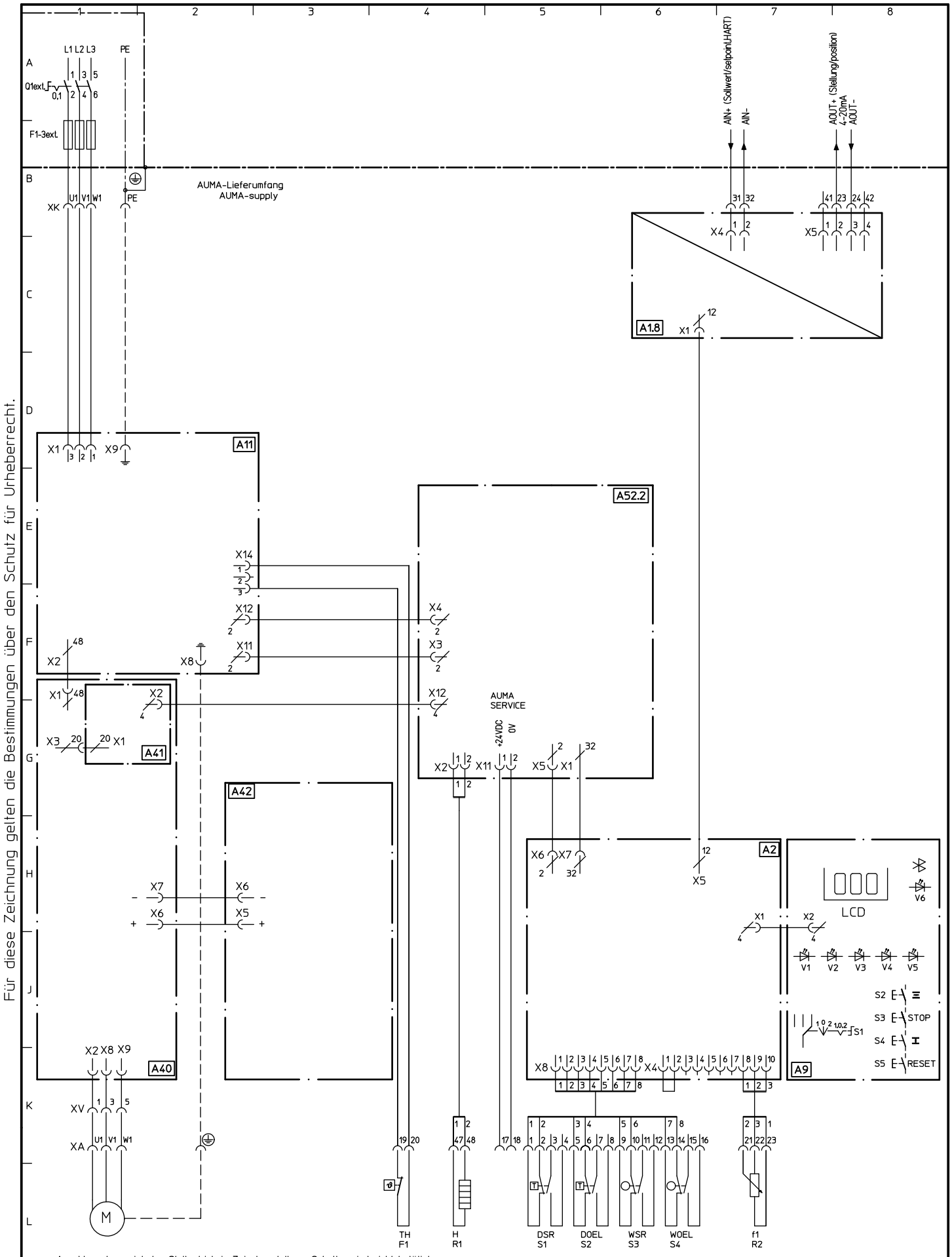
				Datum	2019-02-15
				Bearb.	Meyer
01	2019-058	2019-02-15	Mey	Gepr.	MuellerSe
Zust.	Änderung	Datum	Name	Norm	MuellerSe

AUMA Riester GmbH & Co. KG

TPCHF121-1CE-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer

Projekt



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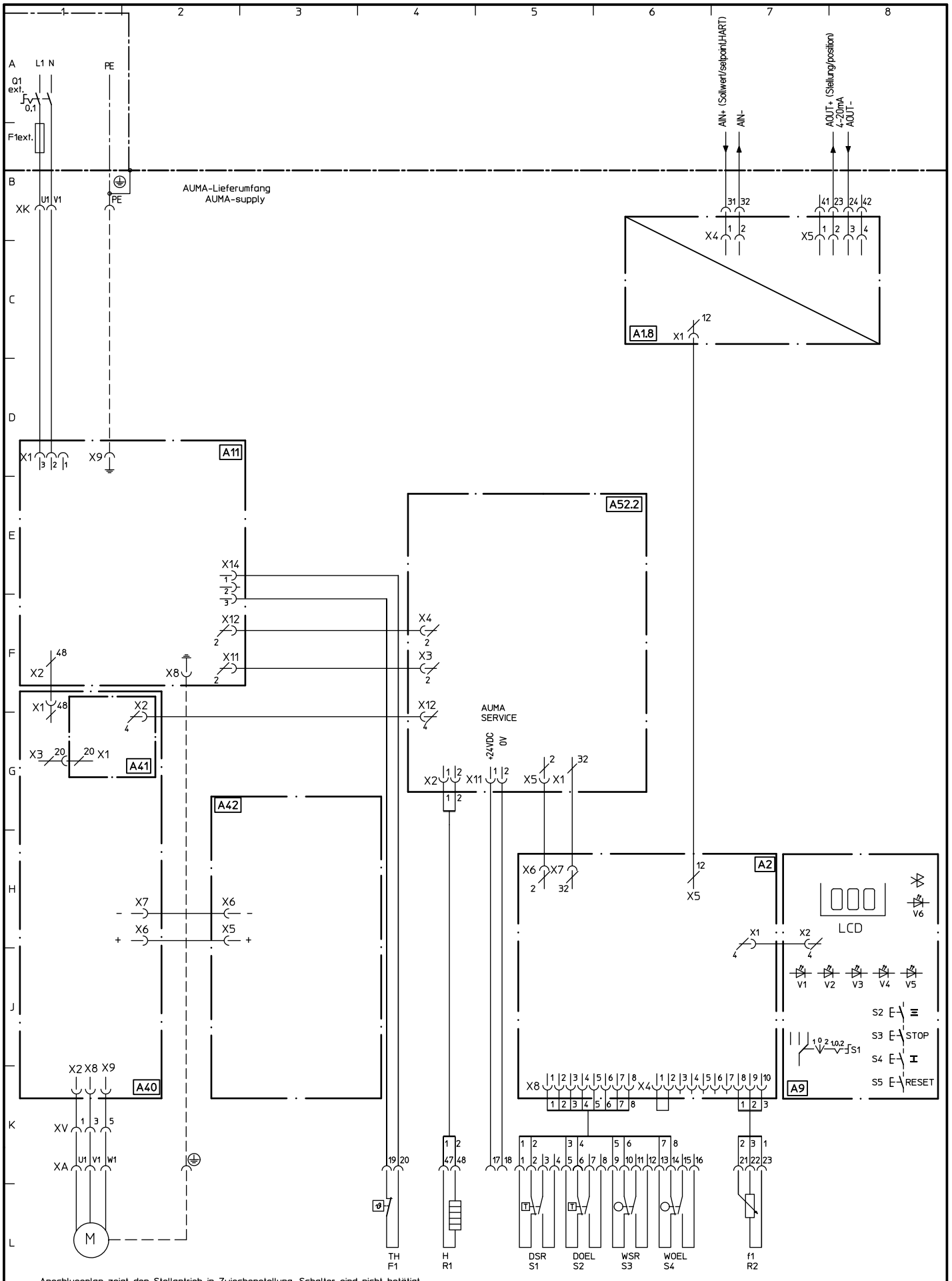
Code: AV2HRT

				Datum	2017-07-28
				Bearb.	Meyer
				Gepr.	Roemer
Zust.	Änderung	Datum	Name	Norm	Roemer

AUMA Riester GmbH & Co. KG

TPCHI000-1AF-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt



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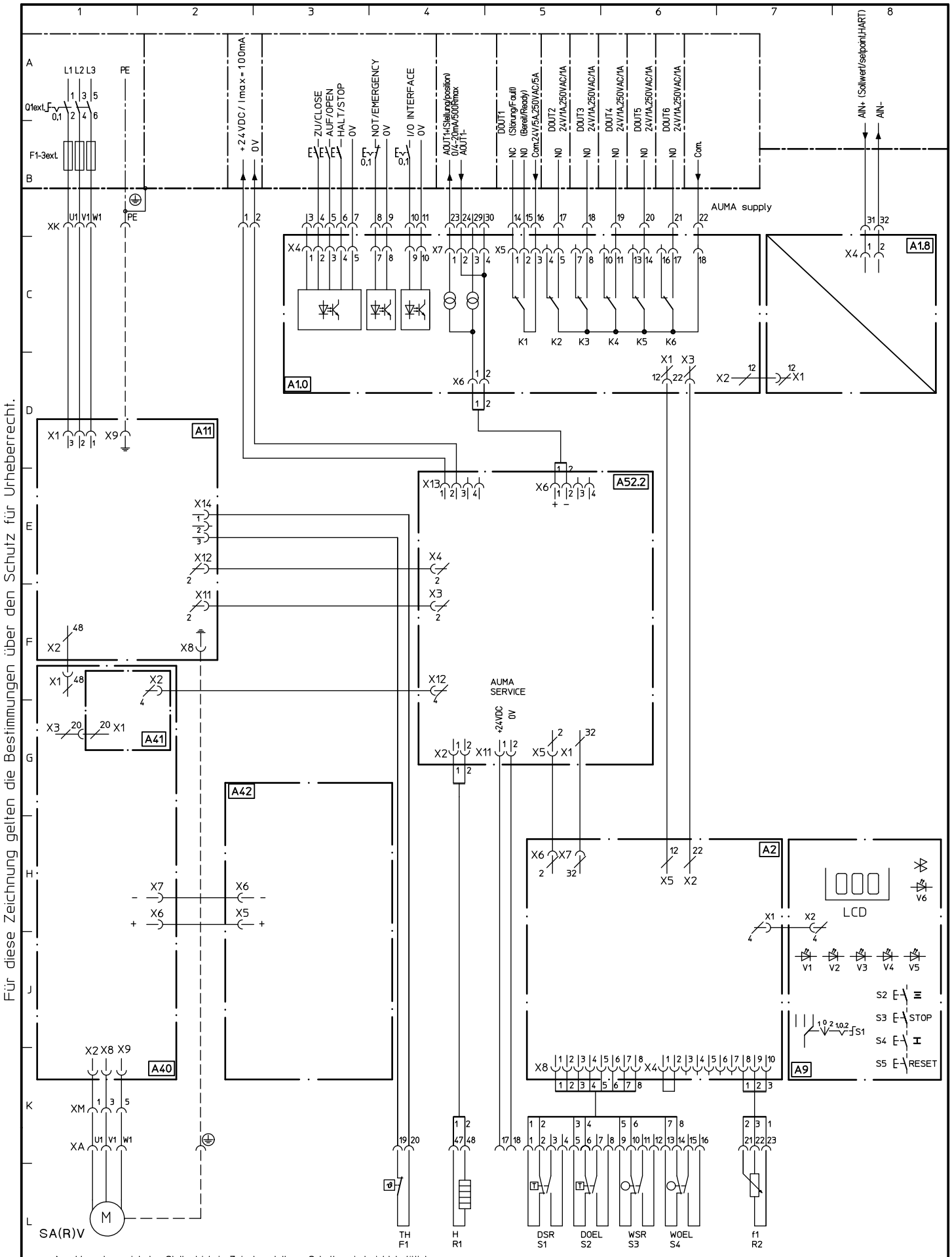
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				Gepr.	Roemer
Zust.	Änderung	Datum	Name	Norm	Roemer

AUMA Riester GmbH & Co. KG

TPCHI000-1AE-A000 TPA00R1AA-0A1-000

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		Projekt

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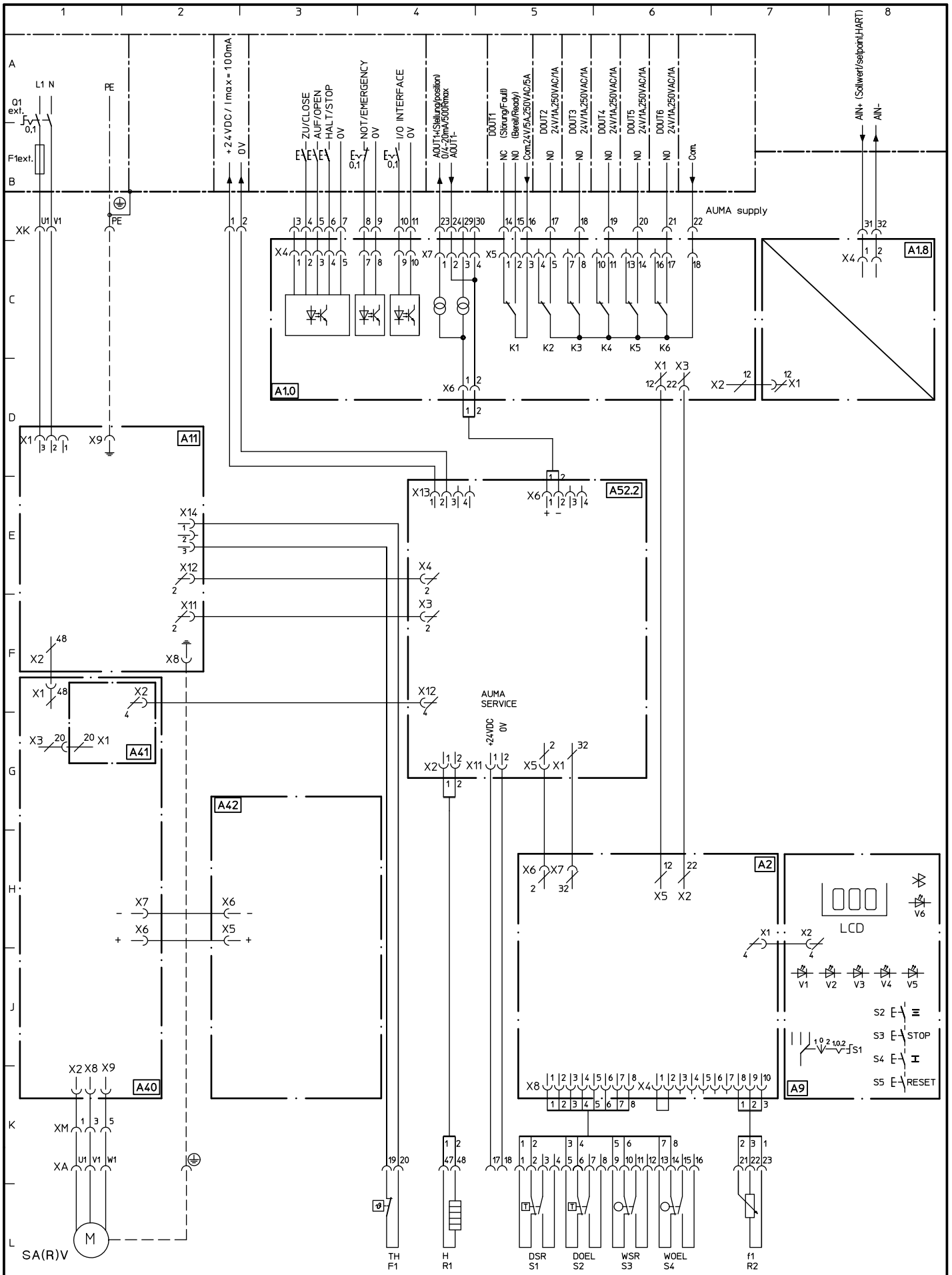
				Datum	2017-07-31
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				Gepr.	MuellerSe
Zust.	Änderung	Datum	Name	Norm	MuellerSe

AUMA Riester GmbH & Co. KG

TPCHI041-1CF-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt

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Code: AV4HRT

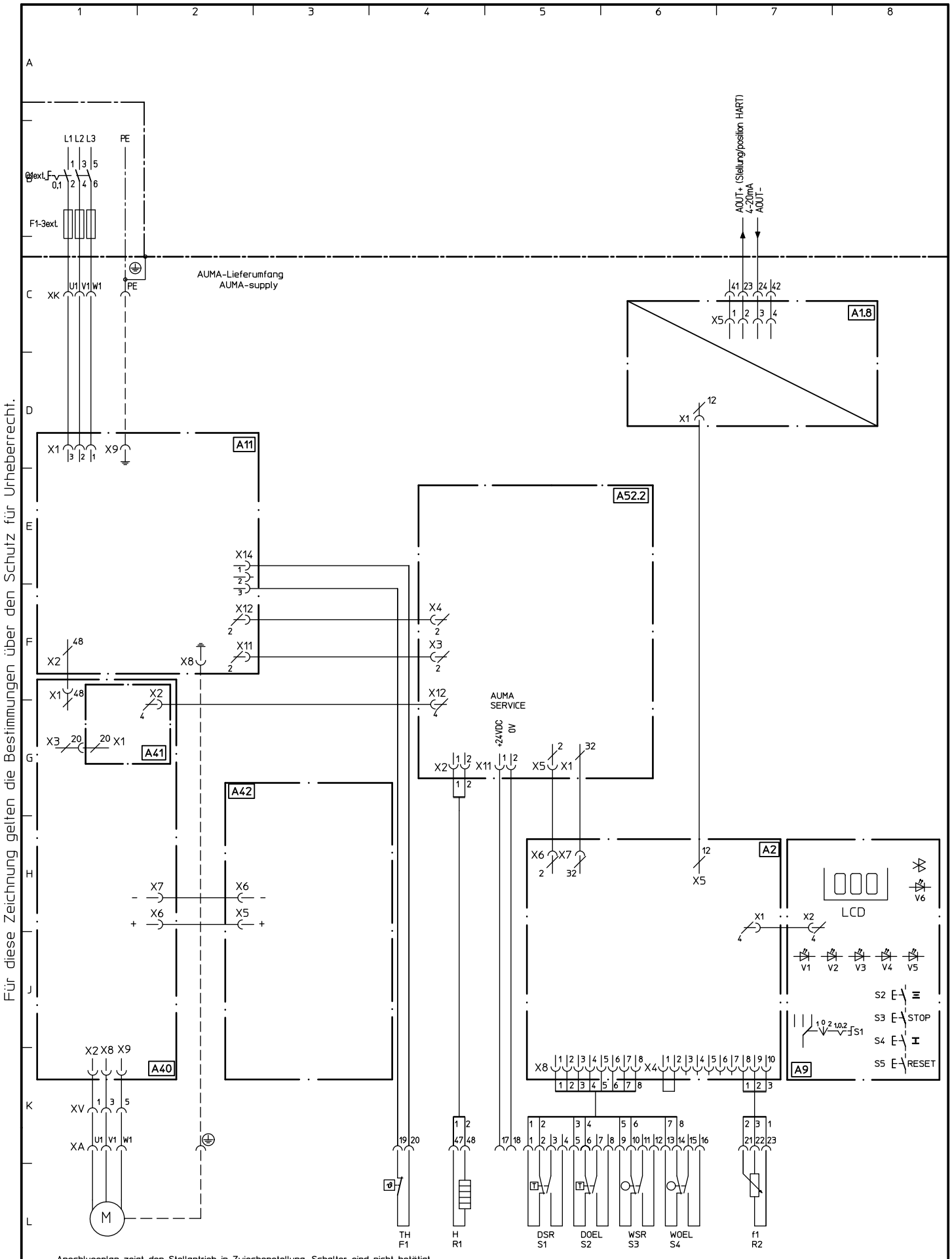
				Datum	2017-07-31
				Bearb.	Meyer
				Gepr.	MuellerSe
Zust.	Änderung	Datum	Name	Norm	MuellerSe

AUMA Riester GmbH & Co. KG

TPCHI041-1CE-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer

Projekt



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Code: AV2HRTCO

				Datum	2017-07-31
				Bearb.	Meyer
				Gepr.	MuellerSe
Zust.	Änderung	Datum	Name	Norm	MuellerSe

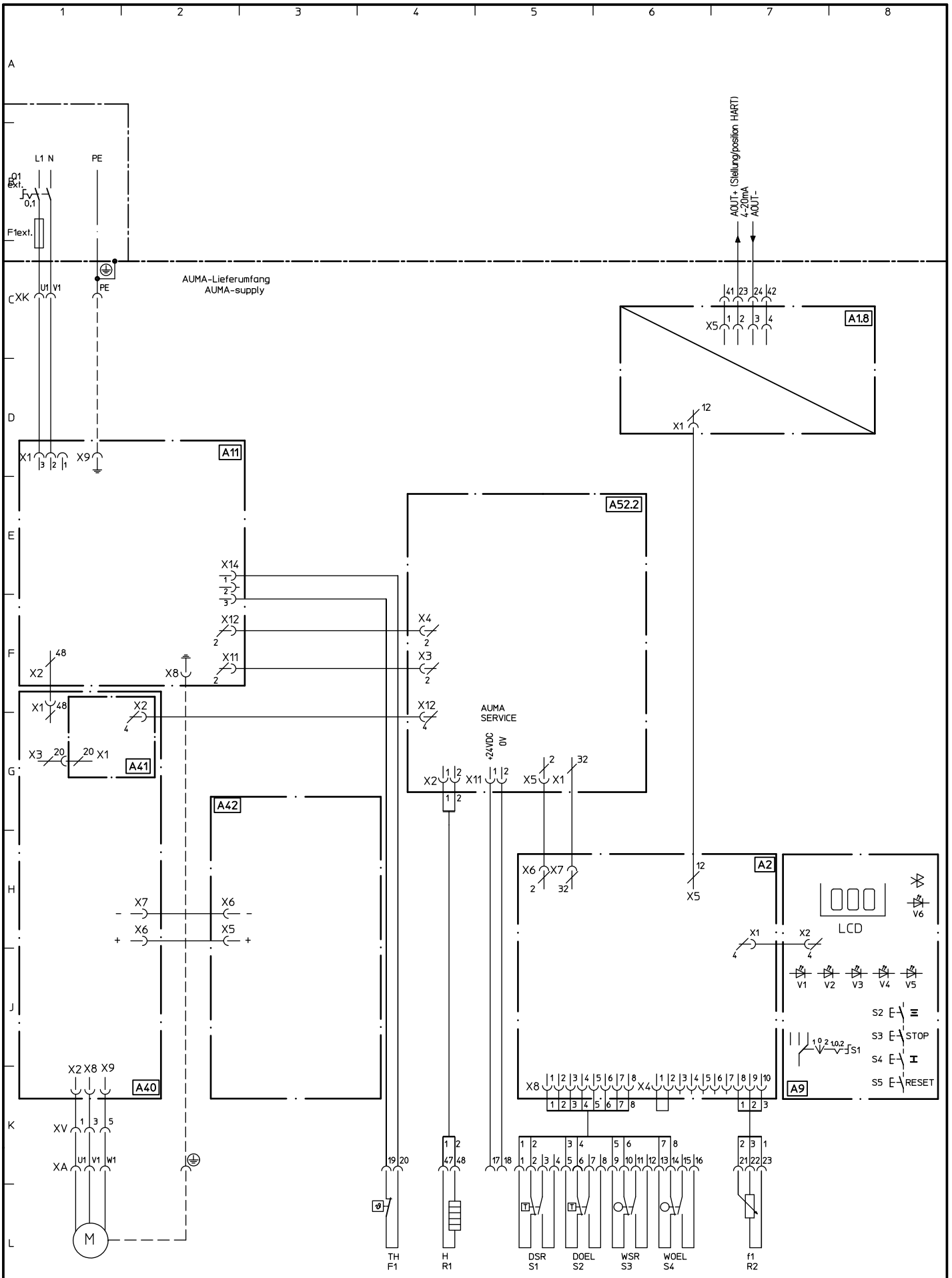
AUMA Riester GmbH & Co. KG

TPCHJ000-1AF-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt

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Code: AV2HRTCO

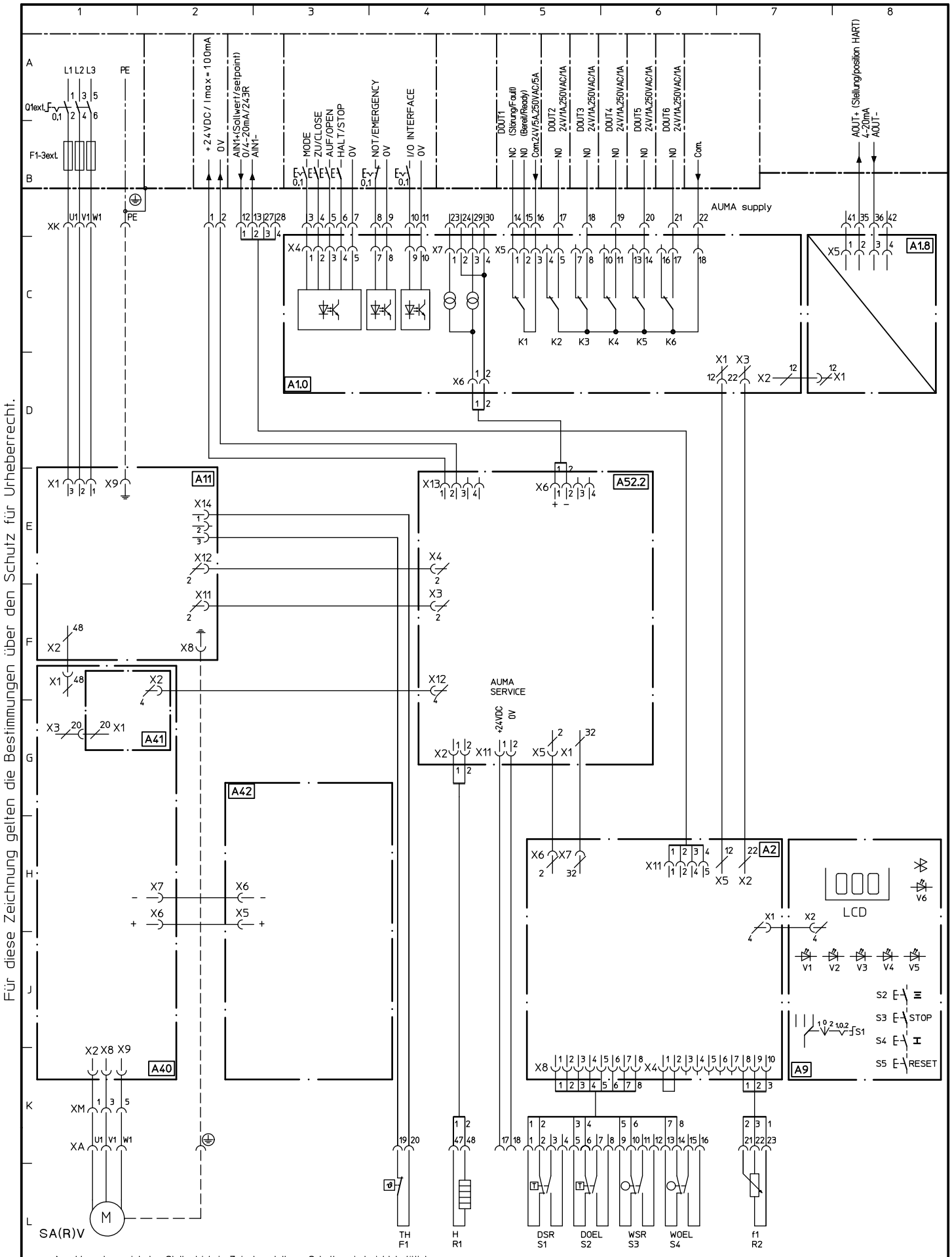
				Datum	2017-08-02
				Bearb.	Meyer
				Gepr.	MuellerSe
Zust.	Änderung	Datum	Name	Norm	MuellerSe

AUMA Riester GmbH & Co. KG

TPCHJ000-1AE-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer

Projekt



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Code: AV4HRTCO

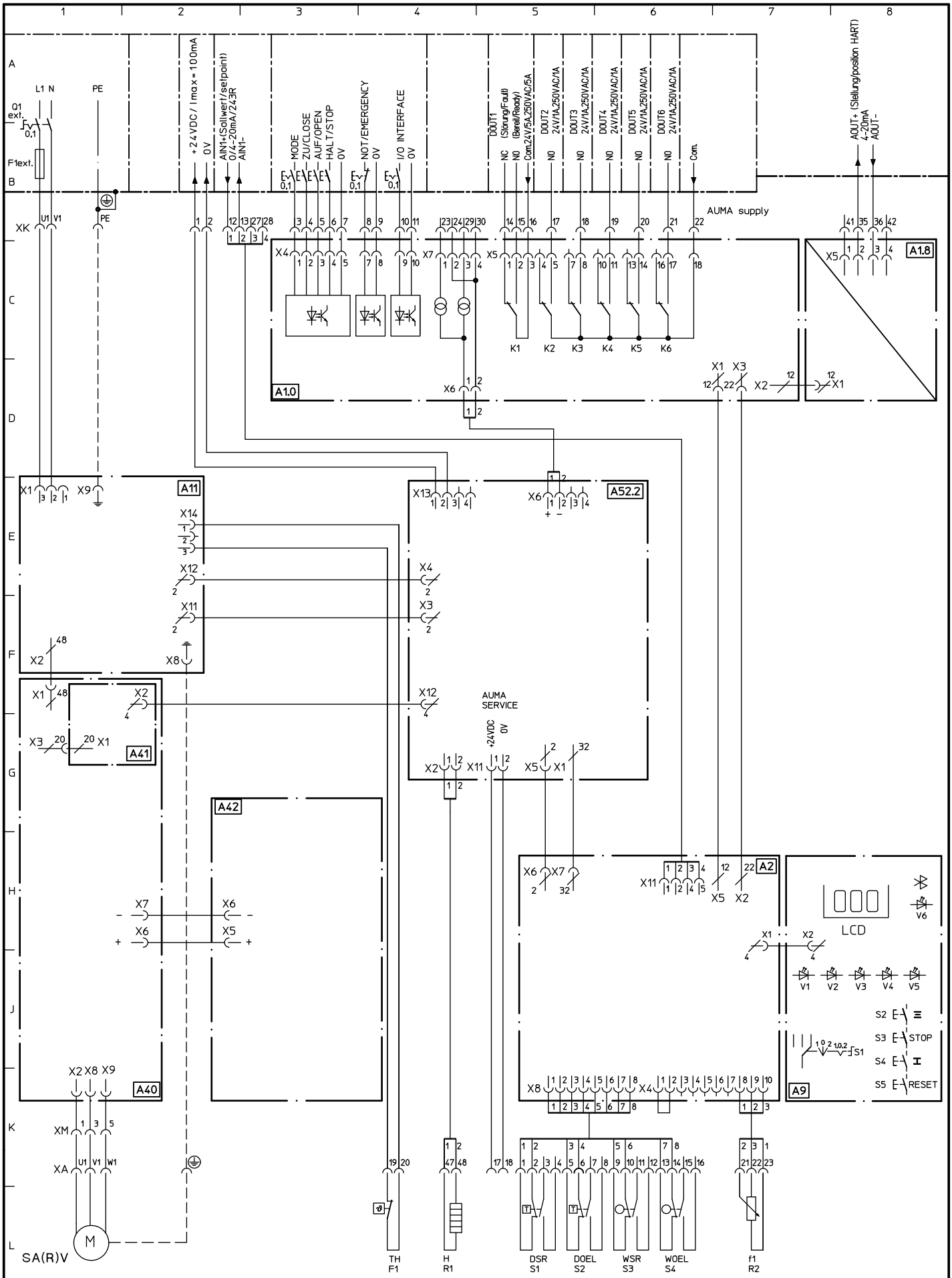
				Datum	2019-09-12
				Bearb.	Meyer
02	2019-196	2019-09-12	Mey	Gepr.	Roemer
Zust.	Änderung	Datum	Name	Norm	Roemer

AUMA Riester GmbH & Co. KG

TPCHJ14D-1CF-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt

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Code: AV4HRTCO

				Datum	2019-09-12
				Bearb.	Meyer
01	2019-196	2019-09-12	Mey	Gepr.	Roemer
Zust.	Änderung	Datum	Name	Norm	Roemer

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TPCHJ14D-1CE-A000 TPA00R1AA-0A1-000

Legende	Auftragsnummer	Bestellnummer
		Projekt

Legend AUMATIC

A1.0		Interface board
K1 - 6		Output contacts
A1.1		Interface board
K7 - K12		Output contacts
A1.3		Interface board with mains failure proof output contacts
K2 - K5		Mains failure proof output contacts (bistable)
K1 + K6		Output contacts
A1.8		Fieldbus board
A2		Logic board
A9		Local controls
S1		Selector switch LOCAL - OFF - REMOTE
S2		Push button OPEN
S3		Push button STOP
S4		Push button CLOSE
S5		Push button RESET
V1 - V5		Indication lights
V6		Bluetooth
LCD		Graphic display
A11		Power supply unit
A13		Fieldbus connection board
A32		Overvoltage protection board for fieldbus board
A40		Switchgear
A41		Motor control
A42		ACV DC link
A42.1		ACV DC link/heating system
A52.1		Option board
A52.2		ACV control board
F5		Fuse (for 24 V DC supply)
A90		WirelessHART adapter
B2/B4	EWG/RWG	Electronic position transmitter
B6	MWG	Magnetic limit and torque transmitter
F1	TH	Thermoswitch
F8, F9		Heating system protection
Q1		Disconnect switch
Q2		Motor protection switch
R1	H	Heater in switch compartment
R2	f1	Potentiometer
R2/2	f2	Potentiometer in tandem arrangement with R2
R3	PTC1	PTC thermistor
R4	H	Motor heater
R5, R5.1	H	Heating element
S0		EMERGENCY stop button (latching)
S1	TSC	Torque switch, closing, clockwise rotation
S2	TSO (DOEL)	Torque switch, opening, counterclockwise rotation
S3	LSC (WSR)	Limit switch, closing, clockwise rotation
S4	LSO (WOEL)	Limit switch, opening, counterclockwise rotation
S1/2 S2/2	DSR 1 DOEL 1	Torque switches in tandem arrangement with DSR/DOEL (TSC/TSO)
S3/2 S4/2	WSR 1 WOEL 1	Limit switches in tandem arrangement with WSR/WOEL (LSC/LSO)

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Legend AUMATIC

S3/3 S4/3	WSR 2 WOEL 2	Limit switches in triple arrangement with WSR/WOEL (LSC/LSO)
S6 S7	WDR WDL	Limit switches, DUO, for 2 intermediate positions, adjustable
S6/2 S7/2	WDR 1 WDL 1	Limit switches, DUO, for 2 intermediate positions in tandem arrangement with WDR/WDL (LSA/LSB)
S17	HA	Handwheel activation switch
XM		Internal power plug
XK		Customer connection
XA		Actuator connection

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Wiring diagram code

		Extract of wiring diagram code														
		Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Position	I/O interface	**TPC**	**A**	**–**	**0**	**A**	**1**	**–**	**1**	**C**	**1**	**–**	**A**	**0**	**0**	**0**
	Profibus DP	**TPC**	**A**	**A**	**0**	**0**	**0**	**–**	**1**	**A**	**1**	**–**	**A**	**0**	**0**	**0**
1	**Controls type**															
	A AC 01.2/ACExC 01.2															
	H ACV 01.2/ACVExC 01.2															
2	**Interface to the distributed control system**															
	– I/O interface															
	A Profibus DP															
	C Modbus RTU/Modbus TCP/IP															
	F Foundation Fieldbus															
	I HART Connection Type: Actuator															
	J HART Current Output															
	N Profinet															
	P Ethernet/IP															
3	**Analogue inputs**															
	0 Without															
	1 4 – 20 mA for positioner															
	A With 2 free analogue inputs															
4	**Digital inputs**															
	A CLOSE, OPEN, STOP, EMERGENCY															
	B With positioner: MODE, CLOSE, OPEN, STOP, EMERGENCY															
	0 Without															
	1 With 4 free digital inputs															
	2 With 6 inputs: MODE, CLOSE, OPEN, STOP, EMERGENCY, I/O interface															
	4 With 5 inputs: CLOSE, OPEN, STOP, EMERGENCY, I/O interface															
5	**Output contacts, position and torque feedback signals (0/4 – 20 mA)**															
	1 / D 5 NO contacts, 1 change-over contact, position feedback signal torque feedback signal (in combination with MWG)															
	0 Without															
6	**Additional equipment**															
	– Without															
	K Profinet, 2xIEEE 802.3															
7	**Local controls**															
	1 Push buttons OPEN, STOP, CLOSE, RESET, selector switch LOCAL - OFF - REMOTE, display, 5 indication lights															
8	**Auxiliary voltage for supply of digital inputs**															
	A Without															
	C 24 V DC															
9	**Switchgear**															
	1 Reversing contactors max. AUMA power class A3 (refer to Electrical data SA .2/SAR .2 with 3-phase AC motor)															
	2 Thyristors max. AUMA power class B2 (refer to Electrical data SA .2/SAR .2 with 3-phase AC motor)															
	3 Thyristors max. AUMA power class B3 (refer to Electrical data SA .2/SAR .2 with 3-phase AC motor)															
	4 Thyristors with additional tripping max. AUMA power class B2 (refer to Electrical data SA .2/SAR .2 with 3-phase AC motor)															
	5 Thyristors with additional tripping max. AUMA power class B3 (refer to Electrical data SA .2/SAR .2 with 3-phase AC motor)															
	E Power electronics 1-ph[1)]															
	F Power electronics 3-ph[1)]															

1) Refer to notes on page 2.

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Wiring diagram code

		Extract of wiring diagram code														
		Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Position	I/O interface	**TPC**	**A**	**–**	**0**	**A**	**1**	**–**	**1**	**C**	**1**	**–**	**A**	**0**	**0**	**0**
	Profibus DP	**TPC**	**A**	**A**	**0**	**0**	**0**	**–**	**1**	**A**	**1**	**–**	**A**	**0**	**0**	**0**
10	**Motor protection evaluation**															
	– Thermoswitches (standard for AC 01.2), refer to wiring diagram TPA															
	1 Thermoswitch with thermal overload relay															
	– PTC thermistors with tripping device (standard for ACExC), refer to TPA terminal plan															
11	**Heater**															
	A Internally supplied within the switch compartment of the actuator															
12 – 14	**Control elements**															
	000 Without															
	A20 KP suitable wiring															
	5E0 Modbus TCP/IP or Ethernet/IP															
	5EF Modbus TCP/IP Ex or Ethernet/IP															
	410 Profibus Ex															
	460 Profibus Ex, KP suitable wiring															

Notes on tables on page 1	
1)	In combination with ACV 01.2 only.

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Solutions for a world in motion

AC 01.2
Actuator controls . Bluetooth class II
Push buttons OPEN, STOP, CLOSE, RESET
Current consumption 380 to 500 V AC = max. 250 mA
Category III according to IEC 60364-4-443 . Thyristor unit
Selector switch LOCAL - OFF - REMOTE . NO contacts max. 250 V AC, 5 A
Push buttons OPEN, STOP, CLOSE, RESET. –25 °C to +70 °C . 12 output contacts
Permissible variation of mains voltage: ±10 % . IEC 60068-2-6 1 g, from 10 Hz to 200 Hz
Chip AUMA CDT Profibus DP 0/4 – 20 mA . Output signals: 5 potential-free NO contacts
Standard voltages: 3-phase AC current voltages/frequencies . Volt 380, 400, 415, 440, 460, 480, 500 . Hz 50, 50, 50, 60, 60, 60, 50 . Selector switch LOCAL - OFF - REMOTE . Graphic LC display
1-phase AC current voltages/frequencies . Volt 110, 115, 120, 220, 230, 240 . Hz 60, 50 . AUMA NE 107 . Chip AUMA CDT Profibus DP 0/4 – 20 mA . Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN . F16 . IP 68
Special voltages: 3-phase AC current voltages/frequencies Volt 525, 575, 660, 690 . 1-phase AC current voltages/frequencies Volt 208. Hz 50, 50, 50, 50 Hz 60 . 24 V DC +20 %/–15 %
PID EMERGENCY Stop TPCA-0A1-1C1-A000 TPA00R1AA-0A1-000 . Control voltage 24 V

AC 01.2
Actuator controls
External supply 24 V DC +20 %/–15 %
Chip AUMA CDT Profibus DP 0/4 – 20 mA
NO contacts max. 250 V AC , 5 A . Bluetooth class II . Control voltage 24 V DC . Profibus. SPP
KS, KX . Current consumption 380 to 500 V AC
Push buttons OPEN, STOP, CLOSE, RESET . IP 68
Selector switch LOCAL - OFF - REMOTE . Default configuration: End position CLOSED, Torque fault OPEN . Thyristor unit . 5 potential-free NO contacts
Category III according to IEC 60364-4-443 . Pollution

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info@auma.com

AUMA subsidiaries or representatives are implanted in more than 70 countries. For detailed contact information, please refer to **www.auma.com**

SAR 07.2 – SAR 16.2
Speed 4 – 216 1/min.
Torque range
S2-15 min
S2-30 min.
Min. 10 [Nm] . Max. 710 [Nm]
Max. Ø rising. stem 26 mm
Pulse duration . Weight approx. 19 kg
Handwheel Ø 160 [mm]
F16 . Valve attachment
Reduction ratio 11:1 8:1
Handwheel lockable
Insulation class Standard: F, tropicalized
3-ph AC asynchronous motor, type IM B9 according to IEC 60034. IP 68
60 Hz . F10 . Terminal plan TPA00R1AA-001-000 (basic version). SA07.2
F14. Valve attachment Standard: B1 according to EN ISO 5210 . SA14.2
A, B, D, E according to DIN 3210 . C according to DIN 3338 . F14, F16
RWG 0/4 – 20 mA . Options: A, B2, B3, B4 according to EN ISO 5210
Turns per stroke: 2 to 500 . Ambient temperature –40 °C to +80 °C
IP 68 . (EMC): (2004/108/EG) , (2006/42/EG) . Weight approx. 19 kg
50 Hz . F10 . AUMA . Self-locking. SAR07.2: 19/20 . SAR07.6: 20/21
SAR10.2: 22/25 . Enclosure protection according to EN 60529 IP 68. Volt
220, 230, 240, 380, 400, 415, Hz 50, 50, 50, 50, 50, 50, 60, 60, 60, 60, 60
AUMA . Category III according to IEC 60364-
4-443
Power tool
for emergency operation with
square
30mm
or 50 mm. F07,F 10, F14
IP 68
Standard: Intermittent
duty
S4 - 25 %
21/25;
SAR14.2:
44/48;
SAR14.6:
46/53;
SAR16.2:
67/79/83;
Finish coating
Powder paint
Two-component iron-mica
combination

F05 – F014 . SQ 05.2 – SQ 14.2
Swing angle: djustable between
75° and < 105° . IP 68 . SQ 05.2
SQ 07.2 . Turns for 90°: 11 – 70
SQR 07.2
Weight approx. 21 kg . AUMA
EMC: (2004/108/EG) (2006/42/EG)
Intermittent duty S4 - 25 % . Enclosure protection according to EN 60529. F05
Valve attachment EN ISO 5211 F05 F07 F12 F14 . KS, KX, KX-G . 50 Hz, 60 Hz
Position feedback signal, analogue (options) Potentiometer or 0/4 – 20 mA (RWG)
Standard voltages: 3-phase AC current - voltages/frequencies Volt 220 230 240
380 400 415 440 460 480 500 . Hz 50 . Intermittent duty S4 - 25 % . IP 68
Power depending on the size 12.5 – 25 W . Weight approx. 44 kg . SQR 07.2
Valve attachment Standard EN ISO 5211. Option DIN3210. SQ 07.2 - F05. KS
Swing angle: 75° to < 105°, 15° to < 45°, 45° to < 75°, 105° to < 135° . IP 68
Ambient temperature –40 °C to +80 °C. Category III according to IEC60364-4-443. F05
3-ph AC asynchronous motor , type IM B9 according to IEC 60034 . Blinker transmitter
SQR 12.2 . 3-ph AC asynchronous motor IM B9 . Min. 75 Nm Max. 300 Nm
Power tool for emergency operation with square 30 mm F05,
Standard Metric threads, square
F07, SQ 07.2:
bore, bore with two-flats . IP 68
F10. SQR
07.2:
SQR 05.2: F05,F07. SQR 07.2:
F07,
F10.
F07, F10. SQR 10.2: F10, F12 .
SQR
10.2:
SQR 12.2: F12, F14.SQR 14.2:
F10.
SQR
F14, F16. Handwheel lockable
14.2:
F14.
Options: F, tropicalized
SQR 14.2: F14 SQR
Handwheel Ø 160 mm
14.2: F16.
Thermoswitches (NC)
50 Hz 60 Hz

Subject to changes without notice. The product features and technical data provided do not express or imply any warranty. Y005.106/003/en/1.24