

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: Refer to table: 3-phase AC standard voltages [► 4] Refer to table: 1-phase AC standard voltages [► 4] Special voltages AC: Refer to table: 3-phase AC special voltages [► 4] Refer to table: 1-phase AC special voltages [► 4] Permissible variation of mains voltage: $\pm 10\%$ Permissible variation of mains voltage: $\pm 30\%$ (option) Permissible variation of mains frequency: $\pm 5\%$ DC standard voltages: Refer to table: DC standard voltages for multi-turn actuators [► 4], DC standard voltages for part-turn actuators [► 4] Special voltages DC: On request 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 controls depending on mains voltage: For permissible variation of mains voltage of $\pm 10\%$: • 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 $\pm 30\%$ (as an option): • 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 60364-4-44	
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 class A3 Thyristor unit for mains voltage up to 600 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, minimum pulse duration: 100 ms, respect max. number of starts 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

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)
	Options:	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) 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		- Actuator with MWG (non-intrusive): 2 analogue outputs (galvanically isolated): Position feedback signal and torque feedback signal as continuous 0/4 – 20 mA value (load max. 500 Ω) - Actuator with potentiometer (intrusive): 1 analogue output (galvanically isolated): Position feedback as continuous 0/4 – 20 mA value (load max. 500 Ω)
Analogue input (option)		2 analogue inputs (galvanically isolated): With positioner/process controller option: Connection of position setpoint/actual process value as continuous 0/4 – 20 mA values

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 STOP 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
	Options:	• 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 version 4.2 + EDR: With a range up to 10 m in industrial environments supports the SSP Bluetooth profile (Serial Port Profile). Permanently active/inactive, deactivation/activation from REMOTE or selector switch. Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PCs) • AUMA Assistant App (Commissioning and Diagnostic Tool for Android and iOS devices)	
Application functions	Standard:	• Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque bypass: 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 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 the dead band (adaptive behaviour can be selected) – 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
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 bypassed during EMERGENCY operation – Thermal protection can be bypassed 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 function: Enabling the operation commands OPEN or CLOSE via two digital inputs • 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)	

Technical data Actuator controls

Features and functions	
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 actuator 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 pins)
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

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: 1-phase AC standard voltages

Voltages/frequencies				
Volt [1~]	110 – 120	110 – 120	220 – 240	220 – 240
Hz	50	60	50	60

Table 3: 3-phase AC special voltages

Voltages/frequencies									
Volt [3~]	220	240	525	575	575	600	660	690	690
Hz	50	50	50	50	60	60	50	50	60

Table 4: 1-phase AC special voltages

Voltages/frequencies	
Volt [1~]	208
Hz	60

Table 5: DC standard voltages for multi-turn actuators

Voltages						
Volt [dc]	24	48	60	110	125	220

Table 6: DC standard voltages for part-turn actuators

Voltages			
Volt [dc]	24	110	220

Further options for version with MWG in actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Galvanically isolated analogue output 0/4 – 20mA (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

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Technical data Actuator controls

Service conditions		
Ambient temperature	Standard:	−30 °C to +70 °C
	Options:	−40 °C to +60 °C, low temperature version
		−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	IP68	
	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: maximum 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 EN 60068-2-6	1 g, from 10 Hz to 200 Hz	
	Resistant to vibration during start-up or for plant failures. 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	
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 PCs/notebooks) AUMA Assistant App (Commissioning and Diagnostic Tool for Android and iOS devices)	
DMF torque measurement flange	Accessories 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	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 mit 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	