Technical data Actuator controls AUMATIC

AC 01.2

Actuator controls AC 01.2 for controlling multi-turn actuators of the SA/SAR type range and part-turn actuators of the SG/SGR type range. For versions with fieldbus interfaces see separate documents.

Features and functions

Power supply, mains frequency

Standard voltages:

3-ph AC voltages/frequencies											**1-ph AC** voltages/frequencies						
Volt	220	230	240	380	400	415	440	460	480	500	Volt	110	115	120	220	230	240
Hz	50	50	50	50	50	50	60	60	60	50	Hz	60	60	60	50	50	50

Special voltages:

3-ph AC voltages/frequencies					**1-ph AC** voltages/frequencies	
Volt	525	575	660	690	Volt	208
Hz	50	50	50	50	Hz	60

Permissible variation of the nominal voltage: ±10 %
Permissible variation of the mains frequency: ±5 %
Option:
Permissible variation of the mains frequency: ±30 %

External supply of the electronics (option)

24 V DC + 20 % / –15 %,
Current consumption: Basic version approx. 250 mA, with options up to 500 mA
The external power supply must have a reinforced insulation against the 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 controls depending on the 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

The controls are designed for the rated power of the motor, refer to Electrical Data Multi-turn actuators/Part-turn actuators

Switchgear

Standard: Reversing contactors[1] (mechanically and electrically interlocked) for AUMA power class[2] A1

Options: Reversing contactors[1] (mechanically and electrically interlocked) for AUMA power class[2] A2

Thyristor unit (recommended for modulating actuators) for AUMA power classes[2] B1, B2 and B3

Control

Standard: Control inputs 24 V DC[3], OPEN, STOP, CLOSE, EMCY (via opto-isolator, OPEN, STOP, CLOSE with one common), current consumption: approx. 10 mA per input, observe minimum impulse duration for modulating actuators

Option: Control inputs115 V AC[3], OPEN, STOP, CLOSE, EMCY (via opto-isolator, OPEN, STOP, CLOSE with one common), current consumption: approx. 15 mA per input

Output signals

Standard: 6 programmable output contacts:
5 NO contacts with one common, max. 250 V AC, 1 A (resistive load)
Standard 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)
Standard configuration:
Collective fault signal (torque fault, phase failure, motor protection tripped)

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)

1) 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.
2) Assignment of AUMA power classes, refer electrical data for multi-turn or part-turn actuators.
3) All input signals must be fed with the same potential.

Output signals	Options:	12 programmable output contacts: 10 NO contacts, respectively 5 with one common, 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 output contact max. 250 V AC, 5 A (resistive load) 10 programmable output contacts: 10 potential-free change-over contacts without one common, per output contact max. 250 V AC, 5 A (resistive load) All output signals must be fed with the same potential
Position feedback signal	Galvanically isolated analogue output E2 = 0/4 – 20 mA (load max. 500 Ω)	
Voltage output	Auxiliary voltage 24 V DC, max. 100 mA to supply the control inputs, galvanically isolated from internal voltage supply	
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 local controls if selector switch is in position REMOTE. Not activated as factory setting.
		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 5 indication lights: End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (white), end position OPEN (red)
Bluetooth communication interface	Bluetooth class II chip, version 2.0 with a range of up to 10 m in industrial environment. Supports the Bluetooth profile SPP (Serial Port Profile). Parameterization program: AUMA ToolSuite, commissioning and diagnostic tool for Windows based PCs, PDAs and smartphones	
Application functions	Standard:	Switch-off mode adjustable limit or torque seating for end position OPEN and end position CLOSED
		Torque by-pass, adjustable to up to 5 seconds (no torque monitoring during this time)
		Start and end stepping mode as well as ON and OFF times (1 to 1,800 sec.) can be set individually for directions OPEN and CLOSE)
		8 freely selectable intermediate positions between 0 und 100 % Reaction and signal behaviour can be programmed
	Option:	Positioner: Position setpoint via analogue input E1 = 0/4 – 20 mA Programmable behaviour on loss of signal Automatic adaptation of the dead band (adaptive behaviour selectable) Split Range operation MODE input for changing from OPEN - CLOSE to modulating duty
Safety functions	Standard:	EMERGENCY operation, behaviour programmable Digital input low active Reaction selectable: Stop, operation to end position CLOSED, operation to end position OPEN, operation to intermediate position Torque monitoring and thermal protection[4] can be by-passed during EMERGENCY operation
	Options:	Enabling local controls via digital input LOCAL. Thus, the actuator operation can be enabled or disabled via push buttons on the local controls.
		Remote enabling of operation commands OPEN and CLOSE via two digital inputs Interlock OPEN and Interlock CLOSE.
		EMERGENCY stop push button (latching) interrupts electrical operation, irrespective of the selector switch position.

4) Not possible in combination with PTC tripping device

Monitoring functions	Standard:	Valve overload protection (adjustable), results in switching off and generates a fault signal
		Monitoring the heater in actuator, generates an alarm signal
		Monitoring the permissible on time and number of starts (adjustable) generates an alarm signal
		Operation time monitoring (adjustable) results in switching off and generates an alarm signal
		Phase failure monitoring, results in switching off and generates a fault signal
		Automatic correction of the direction of rotation upon wrong phase sequence (3-ph AC current)
Diagnostic functions	Electronic device ID with order and product data	
	Logging of operating data: Respectively, a resettable counter and a lifetime counter 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 entries for setting history, operation history and fault history: Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required"	
	Torque characteristics 3 torque characteristics (torque - operating time characteristics), can be saved separately for open and close directions. Current and saved torque characteristics can be indicated on the display.	
Motor protection evaluation	Standard:	Monitoring of the motor temperature in combination with thermoswitches in the actuator motor
	Options:	Thermal overload relay in the controls in combination with thermoswitches within the actuator
		PTC tripping device in combination with PTC thermistors in the actuator motor
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection:
	Options:	Terminals or crimp connection Gold-plated control plug (pins and sockets)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Wiring diagram (basic version)	TPCA-0A1-1C1-A000 TPA00R1AA-0A1-000	
Further options for Non-intrusive version with MWG in the actuator		
Setting the limit and torque switching via local controls		
Torque feedback signal	Galvanically isolated analogue output E6 = 0/4 – 20 mA (load max. 500 Ω)	
Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	Standard:	≤ 2,000 m above sea level
	Option:	> 2,000 m above sea level, please contact the factory
Ambient temperature	Standard:	–25 °C to +70 °C
	Options:	–40 °C to+70 °C, low temperature version, incl. heating system –50 °C to+70 °C, extreme low temperature version, incl. heating system
	Low temperature versions incl. heating system for connecting to external voltage supply 230 V AC or 115 V AC.	
Humidity	Up to 100 % relative humidity across the total permissible temperature range	
Enclosure protection according to EN 60529	Standard:	IP 68 with AUMA 3-ph AC motor For special motors variant enclosure protection: refer to name plate
	Option:	DS terminal compartment additionally sealed against interior (double sealed)
	According to AUMA definition, enclosure protection IP 68 meets the following requirements:	Depth of water: maximum 8 m head of water Duration of flooding: maximal 96 hours Up to 10 operations during flooding Modulating duty is not possible during flooding
Pollution degree	Within multi-turn actuator: pollution degree 2 Outside multi-turn actuator (in closed conditions): pollution degree 4	
Vibration resistance according to IEC 60068-2-6	1 g, for 10 to 200 Hz Resistant to vibrations 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 installation in industrial units, in water or power plants with a low pollutant concentration as well as for installation in occasionally or permanently aggressive atmosphere with a moderate pollutant concentration (e.g. in wastewater treatment plants, chemical industry)
	Options:	KX Suitable for installation in extremely aggressive atmosphere with high humidity and high pollutant concentration
Finish coating	Standard:	Two-component iron mica combination Powder coating
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Other colours are possible on request
Accessories		
Wall bracket[5)]	AUMATIC mounted separately from the actuator, including plug/socket connector. Connecting cables on request. Recommended for high ambient temperatures, difficult access, or in case of heavy vibration during service.	
Further information		
Weight	Approx. 7 kg (with AUMA plug/socket connector)	
EU Directives	Electromagnetic Compatibility (EMC): (2004/108/CE) Low Voltage Directive: (2006/95/CE) Machinery Directive: (2006/42/CE)	
Reference documents	Product description “Actuator controls AUMATIC” Dimensions “Multi-turn actuators/part-turn actuators with integral controls AUMATIC”	

5) Cable length between actuator and AUMATIC max. 100 m. Not suitable for version with potentiometer in the actuator. Instead of the potentiometer, an RWG has to be used. Cable length for Non-intrusive version with MWG in the actuator max. 100 m. Requires separate data cable for MWG.