Actuator controls AUMATIC ACExC 01.1 for controlling multi-turn actuators of the SAExC/SARExC type range and part-turn actuators of the SGExC/SGRExC type range. For versions with fieldbus interfaces see separate documents.

Features and functions

Explosion protection

Standard: II2G EEx de IIC T4
Option: II2G EEx d IIC T4

EC-type-examination certificate

PTB 01 ATEX 1087 or PTB 01 ATEX 1119

Power supply, mains frequency, and current consumption

Standard voltages:

3-ph AC voltages/frequencies											**1-ph AC** (SGExC only) 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	50

Special voltages:

3-ph AC voltages/frequencies					**1-ph AC** (SGExC only) 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 %

Current consumption of the controls depending on the mains voltage:
100 to 120 V AC = max. 650 mA
208 to 240 V AC = max. 325 mA
380 to 690 V AC = max. 190 mA

External supply of the electronics (option)

24 V DC + 20 %/ – 15 %,
Current consumption: Basic version approx. 200 mA, with options up to 500 mA

Rated power

Refer to motor name plate
The controls is designed for the rated power of the actuator

Overvoltage category

Category III according to IEC 60 644-1

Switchgear

Standard: Reversing contactors[1)] (mechanically and electrically interlocked) for motor power up to 1.5 kW, nominal motor current up to 9 A (OPEN - CLOSE duty) or 5.2 A (modulating duty)

Option: Reversing contactors[1)] (mechanically and electrically interlocked) for motor power up to 7.5 kW, nominal motor current up to 20 A (OPEN - CLOSE duty) or 18 A (modulating duty)

Control

Standard: Control inputs 24 V DC, OPEN - STOP - CLOSE - EMERGENCY (via opto-isolator, with one common), current consumption: approx. 10 mA per input
Observe min. duration of impulse for modulating actuators

Option: Control inputs 115 V AC, OPEN - STOP - CLOSE - EMERGENCY (via opto-isolator, with one common), current consumption: approx. 15 mA per input

Output signals

Standard: 6 output relays:

5 potential-free 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) for collective fault signal
Standard configuration:
Torque fault, phase failure, motor protection tripped

Option: 5 potential-free NO/NC contacts without one common, per relay max. 250 V AC, 5 A (resistive load)

Voltage output

Standard: Auxiliary voltage 24 V DC, max. 100 mA to supply the control inputs, galvanically isolated from internal voltage supply

Option: Auxiliary voltage 115 V AC, max. 30 mA to supply the control inputs[2)], galvanically isolated from internal voltage supply

1) The reversing contactors are designed for a lifetime of 2 million starts.
2) 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 - RESET
		5 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)
		LC display, illuminated
		Programming interface (infra-red)
	Options:	Bluetooth programming interface with Bluetooth class II chip with a range of up to 10 m. supports the Bluetooth profile SPP (Serial Port Profile).
		Release of the local controls: RELEASE input for external release of the operation via local controls
		Special colours for the 5 indication lights: End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (white), end position OPEN (red)
		Protection cover, lockable
		Protection cover with indicator glass, lockable
Functions	Standard:	Switch-off mode adjustable limit or torque seating for end position OPEN and end position CLOSED
		Torque monitoring over the whole travel
		Torque by-pass, adjustable to up to 5 seconds (no torque monitoring during this time)
		Phase failure monitoring[3] with automatic phase correction
		EMERGENCY 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[2] can be by-passed during EMERGENCY operation
	Options:	Positioner[4]: Nominal position value 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
		Process controller, PID[4]: Nominal process value via analogue input E1 = 0/4 – 20 mA Actual process value via analogue input E4 = 0/4 – 20 mA Programmable behaviour on loss of signal Limitation of the control range MODE input for changing from OPEN - CLOSE to modulating duty
Monitoring functions	Programmable monitoring of the max. number of starts, generates warning signal	
	Reaction monitoring for operation command (programmable from 1 to 15 seconds), generates fault signal – results in switching off	
	Operating time monitoring (programmable from 4 to 1,800 seconds), generates warning signal	
Electronic name plate	Order data:	Commission number AUMATIC, commission number actuator, KKS number (definition system for power plants), valve number, plant number
	Product data:	Product name, works number actuator, works number AUMATIC Software version logic, hardware version logic, date of final test, wiring diagram, terminal plan
	Project data:	Project name, 2 freely definable customer fields with a max. of 19 digits each
	Service data:	Service telephone, Internet address, service text 1, service text 2
Logging of operating data	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	

2) Not possible in combination with PTC tripping device

3) During an adjustable period (factory setting 10 seconds), faults in the supply voltage (e.g. voltage drops) will not lead to an fault signal.

4) Requires position transmitter in actuator

Motor protection evaluation	Standard:	Monitoring of the motor temperature with PTC tripping device in combination with PTC thermistors in the actuator motor
	Option:	Thermal overload relay in combination with thermoswitches in the actuator motor
Electrical connection	Standard:	Plug/socket connector with screw-type terminals (KP, KPH) Threads for cable glands: M-threads: 1 x M20 x 1.5; 2 x M25 x 1.5 Pg-threads: 1 x Pg13.5; 2 x Pg21 NPT-threads: 2 x ¾" NPT; 1 x 1¼" NPT G-threads: 2 x G¾"; 1 x G1"; 1 x G1¼"
	Options:	Plug/socket connector with spring cage terminals (KES) increased safety EEx e: M-threads: 1 x M20 x 1.5; 2 x M25 x 1.5; 1 x M32 x 1.5 Pg-threads: 1 x Pg13.5; 2 x Pg21; 1 x Pg29 NPT-threads: 2 x¾" NPT; 1 x 1¼" NPT G-threads: 2 x G¾"; 1 x G1¼"
		Plug/socket connector with spring cage terminals (KES) flameproof enclosure EEx d (Explosion protection II2G EEx d IICT4): M-threads: 2 x M25 x 1.5; 1 x M32 x 1.5 NPT-threads: 4 x 1" NPT
		Special threads, other than standard mentioned above, possible
		Parking frame for wall mounting of the disconnected plug
		Protection cover for plug compartment (when plug is removed)
Wiring diagram (basic version)	ACP E3FC-2P0CA-001 KMS TP200/001	
Further options for Non-intrusive version with MWG in the actuator		
Setting of limit and torque switching via local controls		
Position feedback	Galvanically isolated analogue output E2 = 0/4 – 20 mA (load max. 500 Ω)	
Torque feedback	Galvanically isolated analogue output E6 = 0/4 – 20 mA (load max. 500 Ω)	
Electronic timer	Start and end of stepping mode as well as ON and OFF time (1 up to 300 seconds) can be programmed individually for the directions OPEN and CLOSE.	
Intermediate positions	Any 8 intermediate positions between 0 and 100 % Reaction and signal behaviour programmable	
Further options for version with potentiometer or RWG in the actuator		
Position feedback	Galvanically isolated analogue output E2 = 0/4 – 20 mA (load max. 500 Ω)	
Electronic timer	Start and end of stepping mode as well as ON and OFF time (1 up to 300 seconds) can be programmed individually for the directions OPEN and CLOSE.	
Intermediate positions	Any 4 intermediate positions between 0 and 100 % Reaction and signal behaviour programmable	
Service conditions		
Enclosure protection according to EN 60 529	Standard:	IP 67 (when mounted), terminal compartment additionally sealed against interior (double sealed)
	Option:	IP 68[5)]
Corrosion protection	Standard:	KN Suitable for installation in industrial units, in water- or power plants with a low pollutant concentration
	Options:	KS Suitable for installations in occasionally or permanently aggressive atmosphere with a moderate pollutant concentration (e.g. wastewater treatment plants, chemical industry) KX Suitable for installation in extremely aggressive atmosphere with high humidity and high pollutant concentration
Finish coating	Standard:	Two-component iron-mica combination
	Option:	Special primer/special finish coat (customer's choice)
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Other colours than standard colour are possible on request
Ambient temperature[6)]	Standard:	– 20 °C to + 40 °C
	Options:	– 40 °C to + 40 °C, low temperature version incl. heating system – 50 °C to + 40 °C, extreme low temperature version incl. heating system
	Low temperature versions inc. heating system for connection to external power supply 230 V AC or 115 V AC.	
Vibration resistance[7)] according to IEC 60 068-2-6	1 g, from 10 Hz to 200 Hz (only actuator with actuator controls. Not valid in combination with gearboxes)	
Weight	Approx. 12 kg (including Ex-plug/socket connector with terminal board)	

5) For version in enclosure protection IP 68, higher corrosion protection KS or KX is strongly recommended.

6) With a special sizing of the actuator up to max. + 60 °C possible.

7) Resistant to vibrations during start-up or for failures of the plant. However, a fatigue strength may not be derived from this.

Accessories	
Wall bracket[8)]	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 vibrations during service.
Programming software for PC	COM-AC An interface cable is required for the standard infra-red programming interface.
Further information	
EU Directives	ATEX Directive: (94/9/EC) Electromagnetic Compatibility (EMC): (89/336/EEC) Low Voltage Directive: (73/23/EEC) Machinery Directive: (98/37/EC)
Reference documents	Product description “Actuator controls AUMATIC” Dimensions “Multi-turn actuators/part-turn actuators with integral controls AUMATIC”

8) 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. If actuator and AUMATIC are separated at a later date, the max. cable length is 10 m.