

Technical data Part-turn actuators for open-close and modulating duty

General information

MEC 03.1 actuator controls are required for operating AUMA part-turn actuators SG 04.2 – SG 10.2.

Type	Operating time for 90° in seconds (adjustable in 9 steps)	Torque range (Unseating torque) ¹⁾	Run torque ^{2)/} Modulating torque ³⁾	Valve attachment	Valve shaft			Handwheel/crank handle according to VG 85081 ⁴⁾		Weight actuator (bronze) ⁵⁾	MEC weight
	50 Hz/60 Hz	Max. [Nm]	Max. [Nm]	Standard EN ISO 5211	Cylindrical Max. [mm]	Square Max. [mm]	Two-flat Max. [mm]	Ø [mm]	Turns for 90°	approx. [kg]	approx. [kg]
SG 04.2	4 – 63	25 – 63	32	F07	20	17	17	125	13.5	7.0	3.5
SG 05.2	4 – 63	50 – 125	63	F07	20	17	17	125	13.5	9.0	3.5
SG 07.2	4 – 63	100 – 250	125	F07	25.4	22	22	125	13.5	14	3.5
SG 10.2	5.6 – 90	200 – 500	250	F10	38	30	27	150	13.5	22	3.5

- 1) The "Torque by-pass" function (can be activated) allows increasing the pre-set torque to 130 % (unseating torque). This increase only applies during actuator start for an adjustable time period, allowing to unseat blocked valves.
- 2) Permissible average torque in open-close duty S2 - 15 min
- 3) Torque in modulating duty S4 - 40 %
- 4) Hub does not correspond to VG 85081; other versions on request
- 5) Indicated weight includes part-turn actuator with electrical connection in standard version, unbored coupling and handwheel/crank handle.

Features and functions of actuator

Type of duty	Open-close duty:	Short-time duty S2 - 15 min	
	Modulating duty:	Intermittent duty S4 - 40 % with maximum number of starts of 1,800 cycles per hour (option)	
	For nominal voltage and 40 °C ambient temperature and at average running or modulating torque load. The type of duty must not be exceeded.		
Motor	Variable speed, brushless motor		
Insulation class	F, tropicalized		
Housing material	Actuator:	Bronze	
	Actuator controls:	Aluminium	
Self-locking	Yes		
Swing angle	82° – 98° adjustable between min. and max. values		
Limit switching	Contactless limit switches (Hall sensors) for end positions OPEN and CLOSED		
Torque switching	Via electronic current measurement, status signals for directions OPEN and CLOSE, adjustable in 8 steps		
Mechanical position indicator	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED		
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation		
Coupling	Standard:	Coupling unbored	
	Options:	• Coupling unbored extended • Finish machining of coupling (standard or extended) - Bore according to EN ISO 5211 with 1 keyway according to DIN 6885-1 - Square bore according to EN ISO 5211 - Two-flat according to EN ISO 5211	
Valve attachment	Dimensions according to EN ISO 5211		

Technical data Part-turn actuators for open-close and modulating duty

Features and functions of actuator controls

Mains voltage, mains frequency	Standard voltages:		
	1-phase AC current		
	Voltages/frequencies		
	Volt	115	230
	Hz	50/60	50/60
	Permissible variation of mains voltage: ±10 %		
	Permissible variation of mains frequency: ±5 %		
	For current consumption, refer to Electrical data for SG .2 Part-turn actuators		
External supply of the electronics (option)	24 V DC +20 %/–15 % Current consumption: With options up to 200 mA		
Overvoltage category	Category III according to IEC 60364-4-443		
Power electronics	Power electronics with integral motor controller		
Control (input signals)	- Maximum 4 digital inputs (via opto-isolator) - Control voltage 24 V DC, current consumption: approx. 15 mA per input - Minimum pulse duration for shortest operation pulse: 100 ms. 3 inputs on the same potential 1 input galvanically isolated Assignment for open-close actuators: - OPEN, STOP, CLOSE (standard) - OPEN, STOP, CLOSE, EMERGENCY (option) - OPEN, STOP, CLOSE, MODE in combination with positioner (option) Assignment for modulating actuators with positioner: - OPEN, STOP, CLOSE, MODE (standard) - OPEN, EMERGENCY, CLOSE, MODE (option)		
	Option:	- Analogue input 4 – 20 mA (not available for SG 04.2) - Used as input signal for E1 position setpoint (in combination with positioner) or as input signal for E3 motor speed. - The analogue input as E1 position setpoint requires that the connected actuator is equipped with an RWG module.	

Technical data Part-turn actuators for open-close and modulating duty

Features and functions of actuator controls	
Status signals (output signals)	Up to 4 programmable semi-conductors (switching capacity max. 24 V DC/2A) or relay outputs (switching capacity max. 30 V DC/2A) are available. They are preassigned with the signals as indicated below.
	Variants of semi-conductor output type:
	Standard: 4 outputs as NO with 19-pole signal connector: -> comparable to SGM/SVM actuators - 1 and 2 at one common, 3 and 4 respectively galvanically isolated Assignment: CLOSE, OPEN, fault, REMOTE
	Variant: 4 outputs as NO with 19-pole signal connector: -> comparable to SGM/SVM actuators - 1, 2 and 3 at one common, 4 galvanically isolated Assignment: CLOSE, OPEN, fault, REMOTE
	Variants of relay output type:
	Standard: 3 outputs as NO/NC (change-over contact) with 17-pole signal connector: -> compatible for replacing MEC 02.1 - All on the same potential Assignment: OPEN, CLOSE, fault
	Variants: 3 outputs as NO with 19-pole signal connector: - All on the same potential Assignment: OPEN, CLOSE, fault Assignment (option): OPEN, CLOSE, system OK 4 outputs as NO with 19-pole signal connector: - 1, 2 and 3 at one common, 4 galvanically isolated Assignment: CLOSE, OPEN, fault, REMOTE 4 outputs as NC with 19-pole signal connector: - 1, 2 and 3 at one common, 4 galvanically isolated Assignment: CLOSE, OPEN, fault, REMOTE
An analogue output can be selected as option for position feedback.	
Voltage output	Option: - Analogue output (passive) (not available for SG 04.2) - Galvanically isolated position feedback 4 – 20 mA (load 500 Ω) - The output must be supplied with 24 V DC. - The analogue input requires that the connected actuator is equipped with an RWG module.
	Auxiliary voltage 24 V DC, max. 100 mA for supply of the control inputs, galvanically isolated from internal voltage supply (not available for version with 17-pole signal connector for connection to DCS). Not available for "external electronics supply" option.
Local controls (option)	- Push buttons OPEN, STOP (LOCAL - REMOTE), CLOSE 2 multi-colour indication lights: - End position CLOSED (yellow), fault/failure (red), end position OPEN (green), operation mode LOCAL (blue)
Functions	- Switch-off mode adjustable: - Limit or torque seating for end positions OPEN and CLOSED - Torque monitoring across the whole travel - Torque by-pass - EMERGENCY behaviour programmable: - Digital input low active - Reaction can be selected: Stop, run to end position CLOSED, run to end position OPEN - Positioner (option): - Position setpoint via analogue input E1 = 4 – 20 mA - Programmable behaviour on loss of signal - Automatic adaptation of dead band (adaptive behaviour selectable) - Selection between open-close duty and modulating duty via digital MODE input
Electrical connection	Plug/socket connector with crimp connection

Technical data Part-turn actuators for open-close and modulating duty

Features and functions of actuator controls		
Wiring diagram (basic version)	For version with 3 inputs, 4 semi-conductor outputs, 19-pole signal connector for connection to DCS.	
	Open-close duty:	TPCM-AA4--C70-510 AIM110-000
	Modulating duty:	TPCM-CC4--C70-510 AIM110-000
Service conditions		
Mounting position	Any position	
Ambient temperature	–25 °C to +70 °C	
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection according to EN 60529	Standard:	IP67
	Option:	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 • 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, 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.	
Shock resistance	Standard:	Without
	Options:	• WTD: in accordance with BV 0430[2] for surface vessels (180 g) • WTD: in accordance with BV 0430[2] for submarines (400 g) • Shock load up to 70 g
Corrosion protection Actuator (bronze)	Sea water resistant bronze housing. All external screws and shafts are made of stainless steel.	
Corrosion protection Actuator controls	Suitable for use in areas with high salinity, almost permanent condensation, and high pollution due to double layer powder coating.	
Colour	Actuator:	Bronze
	Actuator controls:	AUMA silver-grey (similar to RAL 7037)
Lifetime	Open-close duty:	20,000 operating cycles OPEN - CLOSE - OPEN An operating cycle is based on an operation from CLOSED to OPEN and back to CLOSED, at a respective rotary movement of 90°.
	Modulating duty:	5 million modulating steps
	The lifetime depends on the load and the number of starts. A high starting frequency will rarely improve the modulating accuracy. To reach the longest possible maintenance and fault-free operating time, the number of starts per hour chosen should be as low as permissible for the process.	
Further information		
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)	