

## Technical data Globe valve actuators for open-close and modulating duty

### General information

MEC 03.1 actuator controls are required for operating AUMA multi-turn actuators SV 05.1 – SV 07.1.

Type	Output speed rpm	Torque <sup>1)</sup>	Run torque <sup>2)/</sup> Modulating torque <sup>3)</sup>	Valve attachment	Valve shaft			Handwheel/crank handle according to VG 85081 <sup>4)</sup>		Weight actuator (bronze) <sup>5)</sup>	MEC weight
	50 Hz/60 Hz	Max. [Nm]	Max. [Nm]	Standard EN ISO 5211	Cylindrical Max. [mm]	Square Max. [mm]	Two-flat Max. [mm]	∅ [mm]	Reduction ratio	approx. [kg]	approx. [kg]
SV 05.1	2.5 – 22	25	13	F07	20	17	17	125	13:1	9	3.5
SV 07.1	2.5 – 22	50	25	F07	25.4	22	22	125	13:1	14	3.5

- 1) Tripping torque for both directions
- 2) Permissible average torque across the whole travel
- 3) Maximum permissible torque for modulating duty
- 4) Hub does not correspond to VG 85081; other versions on request
- 5) Indicated weight includes globe valve 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 starts 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	
Limit switching	Contactless limit switches (Hall sensors) for end positions OPEN and CLOSED Turns per stroke: 1 – 8 (observe max. stem stroke)	
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:	<ul style="list-style-type: none"> <li>• Coupling unbored extended</li> <li>• Finish machining of coupling (standard or extended)               <ul style="list-style-type: none"> <li>- Bore according to EN ISO 5211 with 1 keyway according to DIN 6885-1</li> <li>- Square bore according to EN ISO 5211</li> <li>- Two-flat according to EN ISO 5211</li> </ul> </li> </ul>
Valve attachment	Dimensions according to EN ISO 5211	

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Features and functions of actuator controls										
Mains voltage, mains frequency	<p>Standard voltages:</p> <table border="1"> <thead> <tr> <th colspan="3">1-phase AC current Voltages/frequencies</th> </tr> </thead> <tbody> <tr> <td>Volt</td> <td>115</td> <td>230</td> </tr> <tr> <td>Hz</td> <td>50/60</td> <td>50/60</td> </tr> </tbody> </table> <p>Permissible variation of mains voltage: <math>\pm 10\%</math>            Permissible variation of mains frequency: <math>\pm 5\%</math>            For current consumption, refer to Electrical data SV .1 Globe valve actuators</p>	1-phase AC current Voltages/frequencies			Volt	115	230	Hz	50/60	50/60
1-phase AC current Voltages/frequencies										
Volt	115	230								
Hz	50/60	50/60								
External supply of the electronics (option)	<p>24 V DC <math>+20\%</math>/<math>-15\%</math>            Current consumption: With options up to 200 mA</p>									
Overvoltage category	Category III according to IEC 60364-4-443									
Power electronics	Power electronics with integral motor controller									
Control (input signals)	<ul style="list-style-type: none"> <li>Maximum 4 digital inputs (via opto-isolator)               <ul style="list-style-type: none"> <li>Control voltage 24 V DC, current consumption: approx. 15 mA per input</li> <li>Minimum pulse duration for shortest operation pulse: 10 ms.</li> <li>3 inputs on the same potential</li> <li>1 input galvanically isolated</li> </ul> </li> </ul> <p>Assignment for open-close actuators:</p> <ul style="list-style-type: none"> <li>OPEN, STOP, CLOSE (standard)</li> <li>OPEN, STOP, CLOSE, EMERGENCY (option)</li> <li>OPEN, STOP, CLOSE, MODE in combination with positioner (option)</li> </ul> <p>Assignment for modulating actuators with positioner:</p> <ul style="list-style-type: none"> <li>OPEN, STOP, CLOSE, MODE (standard)</li> <li>OPEN, EMERGENCY, CLOSE, MODE (option)</li> </ul> <p>Option:</p> <ul style="list-style-type: none"> <li>Analogue input 4 – 20 mA               <ul style="list-style-type: none"> <li>Used as input signal for E1 position setpoint (in combination with positioner) or as input signal for E3 motor speed.</li> <li>The analogue input as E1 position setpoint requires that the connected actuator is equipped with an RWG module.</li> </ul> </li> </ul>									

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Status signals (output signals)	Up to 4 programmable semi-conductors or relay outputs are available, each with max. 30 V/1 A switching power. They are preassigned with the signals as indicated below.
	Variants of semi-conductor output type:
	Standard: <ul style="list-style-type: none"> <li>4 outputs as NO with 19-pole signal connector: <ul style="list-style-type: none"> <li>-&gt; comparable to SGM/SVM actuators</li> <li>- 1 and 2 at one common, 3 and 4 respectively galvanically isolated</li> </ul> </li> </ul> Assignment: CLOSE, OPEN, fault, REMOTE
	Variant: <ul style="list-style-type: none"> <li>4 outputs as NO with 19-pole signal connector: <ul style="list-style-type: none"> <li>-&gt; comparable to SGM/SVM actuators</li> <li>- 1, 2 and 3 at one common, 4 galvanically isolated</li> </ul> </li> </ul> Assignment: CLOSE, OPEN, fault, REMOTE
	Variants of relay output type:
	Standard: <ul style="list-style-type: none"> <li>3 outputs as NO/NC (change-over contact) with 17-pole signal connector: <ul style="list-style-type: none"> <li>-&gt; compatible for replacing MEC 02.1</li> <li>- All on the same potential</li> </ul> </li> </ul> Assignment: OPEN, CLOSE, fault
Variants: <ul style="list-style-type: none"> <li>3 outputs as NO with 19-pole signal connector: <ul style="list-style-type: none"> <li>- All on the same potential</li> <li>Assignment: OPEN, CLOSE, fault</li> <li>Assignment (option): OPEN, CLOSE, system OK</li> </ul> </li> <li>4 outputs as NO with 19-pole signal connector: <ul style="list-style-type: none"> <li>- 1, 2 and 3 at one common, 4 galvanically isolated</li> <li>Assignment: CLOSE, OPEN, fault, REMOTE</li> </ul> </li> <li>4 outputs as NC with 19-pole signal connector: <ul style="list-style-type: none"> <li>- 1, 2 and 3 at one common, 4 galvanically isolated</li> <li>Assignment: CLOSE, OPEN, fault, REMOTE</li> </ul> </li> </ul>	
An analogue output can be selected as option for position feedback.	
Option: <ul style="list-style-type: none"> <li>Analogue output (passive) <ul style="list-style-type: none"> <li>- Galvanically isolated position feedback 4 – 20 mA (load 500 Ω)</li> <li>- The output must be supplied with 24 V DC.</li> <li>- The analogue input requires that the connected actuator is equipped with an RWG module.</li> </ul> </li> </ul>	
Voltage output	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)	<ul style="list-style-type: none"> <li>Push buttons OPEN, STOP (LOCAL - REMOTE), CLOSE</li> <li>2 multi-colour indication lights: <ul style="list-style-type: none"> <li>- End position CLOSED (yellow), fault/failure (red), end position OPEN (green), operation mode LOCAL (blue)</li> </ul> </li> </ul>
Functions	<ul style="list-style-type: none"> <li>Switch-off mode adjustable: <ul style="list-style-type: none"> <li>- Limit or torque seating for end positions OPEN and CLOSED</li> </ul> </li> <li>Torque monitoring across the whole travel</li> <li>Torque by-pass</li> <li>EMERGENCY behaviour programmable: <ul style="list-style-type: none"> <li>- Digital input low active</li> <li>- Reaction can be selected: Stop, run to end position CLOSED, run to end position OPEN</li> </ul> </li> <li>Positioner (option): <ul style="list-style-type: none"> <li>- Position setpoint via analogue input E1 = 4 – 20 mA</li> <li>- Programmable behaviour on loss of signal</li> <li>- Automatic adaptation of dead band (adaptive behaviour selectable)</li> <li>- Selection between open-close duty and modulating duty via digital MODE input</li> </ul> </li> </ul>
Electrical connection	Plug/socket connector with crimp connection

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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: <ul style="list-style-type: none"> <li>• Depth of water: maximum 8 m head of water</li> <li>• Duration of continuous immersion in water: Max. 96 hours</li> <li>• Up to 10 operations during continuous immersion</li> <li>• Modulating duty is not possible during continuous immersion</li> </ul>
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: <ul style="list-style-type: none"> <li>• WTD: in accordance with BV 0430[2] for surface vessels (180 g)</li> <li>• WTD: in accordance with BV 0430[2] for submarines (400 g)</li> <li>• Shock load up to 70 g</li> </ul>
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)