

Type	Output speed rpm	Torque range ¹⁾		Modulating torque ²⁾	Number of starts ³⁾	Pulse duration ⁴⁾	Pulse duration on reversal ⁵⁾	Valve attachment ⁶⁾			Handwheel		Weight ⁷⁾	
		Min. [Nm]	Max. [Nm]					Max. [Nm]	Max. [1/h]	Min. [ms]	Max. [ms]	Standard EN ISO 5210		Option DIN 3210
SAR 07.2	4	15	30	15	600	50	275	F07	–	26	160	11 : 1	29	
	5.6						220					8 : 1		
	8						155					11 : 1		
	11						130					8 : 1		
	16				200		90					11 : 1		
	22						80					8 : 1		
	32						75					11 : 1		
	45						70					8 : 1		
SAR 07.6	4	30	60	30	600	50	275	F07	–	26	160	11 : 1	30	
	5.6						220					8 : 1		
	8						155					11 : 1		
	11						130					8 : 1		
	16				200		90					11 : 1		
	22						80					8 : 1		
	32						75					11 : 1		
	45						70					8 : 1		
SAR 10.2	4	60	120	60	600	50	275	F10	G0	40	200	11 : 1	33	
	5.6				220		8 : 1							
	8				300		11 : 1							
	11				100		130					8 : 1		
	16						90					11 : 1		
	22						80					8 : 1		
	32						200					75	11 : 1	
	45				70							8 : 1		
SAR 14.2	4	120	250	120	600	70		275	F14	G1/2	58	315	11 : 1	68
	5.6				220			8 : 1						
	8				200		11 : 1							
	11				50		130	8 : 1						
	16						90	11 : 1						
	22						80	8 : 1						
	32						200	75					11 : 1	
	45				70			8 : 1						
SAR 14.6	4	250	500	200	600	70		275	F14	G1/2	58	400	11 : 1	76
	5.6				220			8 : 1						
	8				200		11 : 1							
	11				100		130	8 : 1						
	16			90			11 : 1							
	22			80			8 : 1							
	32			175			75	11 : 1						
	45				70		8 : 1							
SAR 16.2	4	500	1 000		400	300	100	275	F16	G3	77	500	11 : 1	123
	5.6					220		8 : 1						
	8			200	155	11 : 1								
	11				130	8 : 1								
	16				90	11 : 1								
	22				80	8 : 1								

General information

AUMA NORM multi-turn actuators require electric controls.

For sizes SAR 07.2 – SAR 16.2 with DC motors, AUMA offer AC actuator controls. These can also easily be mounted to the actuator at a later date.

1) – 8) Refer to notes on page 2.

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

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Technical data Multi-turn actuators for modulating duty with DC motors

Notes on tables on page 1	
1) Torque range	The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Modulating torque	Maximum permissible torque for modulating duty
3) Number of starts	For actuators equipped with AC .2 integral controls and contactors of power class A2 or A4, max. 300 starts/h
4) Pulse duration	For identical direction of rotation: time during which the motor must be electrically supplied until there is a movement at the output drive.
5) Pulse duration on reversal	For reversal of direction of rotation: time during which the motor must be electrically supplied until there is a movement at the output drive.
6) Valve attachment	Indicated flange sizes apply for output drive types A and B1. Refer to separate dimension sheets for further output drive types.
7) Weight	Indicated weight includes AUMA NORM multi-turn actuator with 1-phase DC motor, electrical connection in standard version, output drive type B1 and handwheel.
8) Rising valve stem	Stem diameter for rising stem in combination with AUMA stem protection tube made of PMMA max. 30 mm

Features and functions																						
Type of duty	Standard: Intermittent duty S4 - 25%, class C according to EN 15714-2 For nominal voltage and +40 °C ambient temperature and at modulating torque load.																					
Motors	1-phase DC shunt motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6 1-phase DC compound motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6 Motor type depending on actuator type/output speed. Refer to Electrical data SAR 07.2 – SAR 16.2 with DC motors																					
Mains voltage	Standard voltage: <table border="1"> <thead> <tr> <th colspan="7">DC current - Voltages</th> </tr> <tr> <th>Volt</th> <th>24</th> <th>48</th> <th>60</th> <th>110</th> <th>125</th> <th>220</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> Permissible variation of mains voltage: ±10 %	DC current - Voltages							Volt	24	48	60	110	125	220							
DC current - Voltages																						
Volt	24	48	60	110	125	220																
Overvoltage category	Category III according to IEC 60364-4-443																					
Insulation class	F, tropicalized																					
Motor protection	Without																					
Self-locking	Yes, multi-turn actuators are self-locking, if the valve position cannot be changed from standstill while torque acts upon the output drive.																					
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation Options: Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm																					
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)																					
Electrical connection	Controls: AUMA plug/socket connector with screw-type connection Motor: AUMA plug/socket connector with screw-type connection or motor terminal board Options: Power connection via terminals or crimp type connection Gold-plated control plug (sockets and plugs)																					

Technical data Multi-turn actuators for modulating duty with DC motors

Threads for cable entries	Cable entries for AUMA plug/socket connector with screw-type connection:						
	Standard:	Metric threads					
	Options:	Pg-threads, NPT-threads, G-threads					
	Cable entries for motor connection via separate motor terminal board:						
	Standard:	Metric threads					
	Motor size	24 V	48 V	60 V	110 V	125 V	220 V
	FNOR063-4	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5
	FNOR063-2	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5
	FNOR071-4	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5
	FNOR071-2	2 x M25 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5	2 x M20 x 1.5
	FNOR080-4	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
	FNOR080-2	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
	FNOR090-4	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
	FNOR090-2	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5
FLOR100-4	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	
FLOR100-2	–	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	
FLOR112-4	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	
Terminal plan	TPA11R0AA-001-000 (DC shunt motor, motor connection on AUMA plug/socket connector)						
	TPA12R0AA-001-000 (DC shunt motor, motor connection on separate terminal box)						
	TPA13R0AA-001-000 (DC compound motor, motor connection on separate terminal box)						
	TPA14R0AA-001-000 (DC compound motor, motor connection on AUMA plug/socket connector)						
	Depending on motor type/output speed. Refer to Electrical data SAR 07.2 – SAR 16.2 with DC motors						
Valve attachment	Standard:	B1 according to EN ISO 5210					
	Options:	A, B2, B3, B4, C according to EN ISO 5210 A, B, D, E according to DIN 3210 C according to DIN 3338					
	Special valve attachments: AF, AK, AG, B3D, ED, DD, IB1, IB3 A prepared for permanent lubrication of stem						

Electromechanical control unit

Limit switching	Counter gear mechanism for end positions OPEN and CLOSED Turns per stroke: 2 to 500 (standard) or 2 to 5,000 (option)						
	Standard:	Single switch (1 NC and 1 NO) for each end position, not galvanically isolated					
	Options:	Tandem switch (2 NC and 2 NO) for each end position, switch galvanically isolated Triple switch (3 NC and 3 NO) for each end position, switch galvanically isolated Intermediate position switches (DUO limit switching), adjustable for each direction of operation					
Torque switching	Torque switching adjustable for directions OPEN and CLOSE						
	Standard:	Single switch (1 NC and 1 NO) for each direction, not galvanically isolated					
	Option:	Tandem switch (2 NC and 2 NO) for each direction, switch galvanically isolated					
Switch contact materials	Standard:	Silver (Ag)					
	Option:	Gold (Au), recommended for low voltage actuator controls					
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20 mA (electronic position transmitter)						
Mechanical position indicator (option)	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED						
Running indication (option)	Blinker transmitter						
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC					
	Option:	24 – 48 V DC/DC					
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with AC actuator controls.						

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Electronic control unit (option, only in combination with AC actuator controls)	
Non-Intrusive setting	MWG magnetic limit and torque transmitter Turns per stroke: 1 to 500 (standard) or 10 to 5,000 (option)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Mechanical position indicator (option)	Continuous self-adjusting indication with symbols OPEN and CLOSED
Running indication	Blinking signal via actuator controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

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
Ambient temperature	Standard: -30 °C to +70 °C
	Options: -40 °C to +70 °C Lower temperatures and temperatures exceeding +70 °C on request
Humidity	Up to 100 % relative humidity across the entire permissible temperature range
Enclosure protection according to EN 60529	Standard: IP68 with AUMA DC motor For special motors, differing enclosure protection is possible
	Option: Terminal compartment additionally sealed against interior of actuator (double sealed) According to AUMA definition, enclosure protection IP68 meets the following requirements: <ul style="list-style-type: none"> • Depth of water: maximum 8 m head of water • Duration of continuous immersion in water: Max. 96 hours • Up to 10 operations during continuous immersion • Modulating duty is not possible during continuous immersion
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)
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 Two-component iron-mica combination
Colour	Standard: AUMA silver-grey (similar to RAL 7037)
	Option: Available colours on request
Lifetime	AUMA multi-turn actuators meet or exceed the lifetime requirements of EN 15714-2. Detailed information can be provided on request.
Noise level	< 72 dB (A)

Further information	
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for industrial valve automation Electrical data SAR 07.2 – SAR 16.2 with DC motors Technical data for switches Technical data Electronic position transmitter/potentiometer Technical data Sizing of reduction gearings Technical data Manual force at handwheel at multi-turn actuators SA/SAR 07.2 – SA/SAR 16.2, SAEx/SAREx 07.2 – SAEx/SAREx 16.2