Technical data Multi-turn actuators for modulating duty with 3-phase AC motors

SAR 07.2 – SAR 16.2 AUMA NORM

Type	Speed rpm		Torque range[1]			Modulating torque[2]		Number of starts	Duration of impulse[3]	Back-lash	Valve attachment		Valve stem diameter	Handwheel		
	50 Hz	60 Hz	min. Nm	S4-25% S5-25% max. Nm	S4-50% max. Nm	S4-25% max. Nm	S4-50% max. Nm	max. c/h	min. ms	max. ms	Standard EN ISO 5210	Option DIN 3210	for a rising valve stem[4] max. mm	Ø mm	Reduct. ratio	approx. kg[5]
SAR 07.2	4	4.8	15	30	20	15	10	1,500	50	260	F07	G0	26	160	11 : 1	19
	5.6	6.7								200					8 : 1	
	8	9.6								155					11 : 1	
	11	13								130					8 : 1	
	16	19								100					11 : 1	
	22	26								90					8 : 1	
	32	38								75	F10		34		11 : 1	20
	45	54								70					8 : 1	
	63	75						1,200		65					11 : 1	
	90	108								60					8 : 1	
SAR 07.6	4	4.8	30	60	40	30	20	1,500	50	260	F07	G0	26	160	11 : 1	20
	5.6	6.7								200					8 : 1	
	8	9.6								155					11 : 1	
	11	13								130					8 : 1	
	16	19								100					11 : 1	
	22	26								90					8 : 1	
	32	38								75	F10		34		11 : 1	21
	45	54								70					8 : 1	
	63	75						1,200		65					11 : 1	
	90	108								60					8 : 1	
SAR 10.2	4	4.8	60	120	90	60	45	1,500	50	260	F10	G0	40	200	11 : 1	22
	5.6	6.7								200					8 : 1	
	8	9.6								155					11 : 1	
	11	13								130					8 : 1	
	16	19								100					11 : 1	
	22	26								90					8 : 1	
	32	38								75					11 : 1	25
	45	54								70					8 : 1	
	63	75						1,200		65					11 : 1	
	90	108								60					8 : 1	
SAR 14.2	4	4.8	120	250	180	120	90	1,200	70	280	F14	G1/2	57	315	11 : 1	44
	5.6	6.7								220					8 : 1	
	8	9.6								175					11 : 1	
	11	13								150					8 : 1	
	16	19						900		120					11 : 1	48
	22	26								110					8 : 1	
	32	38						600		100					11 : 1	
	45	54								90					8 : 1	
	63	75						400		85					11 : 1	
	90	108								80					8 : 1	
SAR 14.6	4	4.8	250	500	360	200	180	1,200	70	280	F14	G1/2	57	400	11 : 1	46
	5.6	6.7								220					8 : 1	
	8	9.6								175					11 : 1	
	11	13								150					8 : 1	
	16	19						900		120					11 : 1	53
	22	26								110					8 : 1	
	32	38						600		100					11 : 1	
	45	54								90					8 : 1	
	63	75						400		85					11 : 1	
	90	108								80					8 : 1	
SAR 16.2	4	4.8	500	1,000	710	400	350	900	100	300	F16	G3	75	500	11 : 1	67
	5.6	6.7								250					8 : 1	
	8	9.6								200					11 : 1	
	11	13								175					8 : 1	
	16	19						600		150					11 : 1	
	22	26								140					8 : 1	
	32	38						300		130					11 : 1	79
	45	54								120					8 : 1	
	63	75						200		115					11 : 1	82
	90	108								110					8 : 1	

1) Tripping torque adjustable for directions OPEN and CLOSE
2) Maximum torque in modulating duty
3) For identical direction of rotation
4) For output drive types A and B1
5) Weight for multi-turn actuator AUMA NORM with 3-phase AC motor, standard electrical connection, output drive type B1 and handwheel

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General information

Multi-turn actuators AUMA NORM require electric controls. AUMA offers the actuator controls AUMA MATIC AM or AUMATIC AC for the sizes SAR 07.2 – SAR 16.2. These can also easily be mounted to the actuator at a later date

Features and functions

Type of duty

Standard: Intermittent duty S4 - 25 %
Option: Intermittent duty S4 - 50 %
Intermittent duty S5 - 25 % (insulation class H required)

For nominal voltage and 40 °C ambient temperature and at average load with 35 % of the max. torque

Motors

3-ph AC asynchronous motor, type IM B9 according to IEC 60034

Mains voltage, mains frequency

Standard voltages:

3-ph current Voltages/frequencies										
Volt	220	230	240	380	400	415	440	460	480	500
Hz	50	50	50	50	50	50	60	60	60	50

Special voltages:

3-ph current Voltages/frequencies				
Volt	525	575	660	690
Hz	50	50	50	50

Permissible variation of mains voltage: ±10 %
Permissible variation of mains frequency: ±5 %

Overvoltage category

Category III according to IEC 60364-4-443

Insulation class

Standard: F, tropicalized
Option: H, tropicalized

Motor protection

Standard: Thermoswitches (NC)
Option: PTC thermistors (PTC according to DIN 44082)[6)]

Self-locking

Output speeds up to 90 rpm (50 Hz) or 108 rpm (60 Hz)
NOT self-locking: Output speeds from 125 rpm (50 Hz) or 150 rpm (60 Hz)
Multi-turn actuators are self-locking, if the valve position cannot be changed from standstill while torque acts upon the output drive.

Motor heater (option)

Voltages: 110 – 220 V AC, 220 – 240 V AC or 400 V AC (external supply)
Power depending on the sizes 12.5 – 25 W

Manual operation

Manual drive for setting and emergency operation, handwheel does not rotate during electric operation.
Option: Handwheel lockable
Handwheel spindle extension
Power tool in case of emergency

Indication for manual operation (option)

Indication whether manual operation is active/not active via single switch (1 NC and 1 NO)
For further details, see separate data sheet

Electrical connection

Standard: AUMA plug/socket connector with screw-type connection
Options: Terminals or crimp connection
Control plug gold-plated (pins and sockets)

Threads for cable entries

Standard: Metric threads
Options: Pg-threads, NPT-threads, G-threads

Terminal plan

TPA 00R1AA-001-000 (basic version)

Valve attachment

Standard: B1 according EN ISO 5210
Options: A, B2, B3, B4 according to EN ISO 5210
A, B, D, E according to DIN 3210
C according to DIN 3338

Special output drive types: AF, B3D, ED, DD, IB1, IB3
A prepared for permanent lubrication of stem

Electro-mechanical control unit

Limit switching

Counter gear mechanism for end positions CLOSED and OPEN
Turns per stroke: 2 to 500 (standard), or 2 to 5,000 (option)
Standard: Single switches (1 NC and 1 NO) for each end position, not galvanically isolated
Options: Tandem switches (2 NC and 2 NO) for each end position, switches galvanically isolated
Triple switches (3 NC and 3 NO) for each end position, switches galvanically isolated
Intermediate position switches (DUO limit switching), available for any intermediate position

For further details, see separate data sheet

6) PTC thermistors require additionally a suitable tripping device in the controls.

Torque switching	Torque switching adjustable for directions OPEN and CLOSE Standard: Single switch (1 NC and 1 NO) for each direction Options: Tandemswitch (2 NC and 2 NO) for each direction, switches not galvanically isolated For further details, see separate data sheet
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20 mA (RWG) For further details see separate data sheet
Mechanical position indicator	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED
Running indication	Blinker transmitter For further details see separate data sheet
Heater in switch compartment	Standard: Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC Options: 24 – 48 V AC/DC or 380 – 400 V AC A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with the AUMA MATIC AM or AUMATIC AC actuator controls.
Electronic control unit (only in combination with actuator controls AUMATIC AC 01.1/AC 01.2)	
Non-Intrusive settings (option)	Magnetic limit and torque transmitter MWG For 1 to 500 turns per stroke or 10 to 5,000 turns per stroke
Position feedback signal	via actuator controls
Torque feedback signal	via actuator controls
Mechanical position indicator	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED
Running indication	Blinking signal via controls
Heater in switch compartment	Resistance type heater at 5 W, 24 V AC
Service conditions	
Use	Approved for indoor and outdoor use
Mounting position	Any position
Level of mounting	Standard: ≤ 2,000 m above sea level Option: > 2,000 m above sea level, please contact the factory
Ambient temperature[7)]	Standard: –40 °C to +60 °C Options: –50 °C to +60 °C –60 °C to +60 °C
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: pollution degree 4
Vibration resistance according to EN 60068-2-6	2 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. Valid for multi-turn actuators in version AUMA NORM (with AUMA plug/socket connector, without actuator controls). 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 KX-G Same as KX, however aluminium-free version (outer parts)
Finish coating	Standard: Two-component iron-mica combination Powder paint
Colour	Standard: AUMA silver-grey (similar to RAL 7037) Option: Other colours are possible on request
Lifetime[8)]	SAR 07.2 – SAR 10.2: 7.5 million modulating steps SAR 14.2 – SAR 16.2: 5.0 million modulating steps One modulating step equals 90° movement at output drive for an average modulating torque of 35 % of the max. torque

7) Version with RWG from –50 °C to +60 °C.

8) The lifetime in operation hours (h) 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 possible for the process.

Further information	
EU directives	Electromagnetic Compatibility (EMC): (2004/108/EC) Low Voltage Directive: (2006/95/EC) Machinery Directive: (2006/42/EC)
Reference documents	Product description “Electric multi-turn actuators SA .2 with AM .1 and AC .2” Dimension sheets SAR .2 Electrical data SAR .2