

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

## Intermittent duty S4 - 25 %, 400 V/50 Hz

Multi-turn actuator			Motor									
Type	Output speed [rpm]	Max. torque [Nm]	Motor type	Nominal power <sup>1)</sup> P <sub>N</sub> [kW]	Speed [rpm]	Nominal current <sup>2)</sup> I <sub>N</sub> [A]	Max. current <sup>3)</sup> I <sub>max</sub> [A]	Starting current I <sub>A</sub> [A]	cos φ	Overcurrent protection device setting [A]	AUMA power class for switchgear	
											Contact-	Thyristor
SAR 07.2	4	30	VD0R063-4-0,02	0.02	1,400	0.4	0.4	1.0	0.40	0.4	A1	B1
	5.6					0.4	0.4	1.0	0.40	0.4	A1	B1
	8		VD0R063-4-0,04	0.04	1,400	0.4	0.4	1.0	0.50	0.4	A1	B1
	11					0.4	0.5	1.0	0.50	0.5	A1	B1
	16		VD0R063-2-0,06	0.06	2,800	0.6	0.6	1.9	0.57	0.6	A1	B1
	22					0.6	0.7	1.9	0.57	0.7	A1	B1
	32		AD0R063-4-0,10	0.10	1,400	1.0	1.0	2.4	0.42	1.0	A1	B1
	45					1.0	1.0	2.4	0.42	1.0	A1	B1
63	AD0R063-2-0,20	0.20	2,800	0.8	1.2	4.4	0.60	1.2	A1	B1		
90				0.8	1.3	4.4	0.60	1.3	A1	B1		
SAR 07.6	4	60	VD0R063-4-0,03	0.03	1,400	0.4	0.4	1.0	0.43	0.4	A1	B1
	5.6					0.4	0.5	1.0	0.43	0.5	A1	B1
	8		VD0R063-4-0,06	0.06	1,400	0.6	0.7	1.6	0.38	0.7	A1	B1
	11					0.6	0.7	1.6	0.38	0.7	A1	B1
	16		VD0R063-2-0,12	0.12	2,800	0.7	0.9	3.0	0.52	0.9	A1	B1
	22					0.7	1.0	3.0	0.52	1.0	A1	B1
	32		AD0R063-4-0,20	0.20	1,400	1.6	1.9	4.6	0.42	1.9	A1	B1
	45					1.6	2.0	4.6	0.42	2.0	A1	B1
63	AD0R063-2-0,40	0.40	2,800	1.6	2.3	9.0	0.53	2.3	A1	B1		
90				1.6	2.5	9.0	0.53	2.5	A1	B1		
SAR 10.2	4	120	VD0R071-4-0,06	0.06	1,400	0.5	0.6	2.0	0.40	0.6	A1	B1
	5.6					0.5	0.6	2.0	0.40	0.6	A1	B1
	8		VD0R071-4-0,12	0.12	1,400	1.0	1.1	3.0	0.40	1.1	A1	B1
	11					1.0	1.2	3.0	0.40	1.2	A1	B1
	16		VD0R071-2-0,25	0.25	2,800	1.3	1.5	4.5	0.52	1.5	A1	B1
	22					1.3	1.8	4.5	0.52	1.8	A1	B1
	32		AD0R071-4-0,40	0.40	1,400	2.5	2.6	8.5	0.42	2.6	A1	B1
	45					2.5	3.0	8.5	0.42	3.0	A1	B1
63	AD0R071-2-0,70	0.70	2,800	3.0	3.6	16	0.54	3.6	A1	B1		
90				3.0	4.0	16	0.54	4.0	A1	B1		
SAR 14.2	4	250	VD0R090-4-0,12	0.12	1,400	0.5	0.8	2.8	0.60	0.8	A1	B1
	5.6					0.5	1.0	2.8	0.60	1.0	A1	B1
	8		VD0R090-4-0,25	0.25	1,400	1.0	1.6	5.2	0.60	1.6	A1	B1
	11					1.0	1.7	5.2	0.60	1.7	A1	B1
	16		VD0R090-2-0,45	0.45	2,800	1.5	3.0	9.0	0.64	3.0	A1	B1
	22					1.5	3.5	9.0	0.64	3.5	A1	B1
	32		AD0R090-4-0,75	0.75	1,400	2.5	4.0	16	0.62	4.0	A1	B1
	45					2.5	5.0	16	0.62	5.0	A1	B1
63	AD0R090-2-1,40	1.40	2,800	4.7	7.0	38	0.60	7.0	A2	B2		
90				4.7	9.0	38	0.60	9.0	A2	B2		
SAR 14.6	4	500	VD0R090-4-0,20	0.20	1,400	0.9	0.9	5.2	0.54	0.9	A1	B1
	5.6					0.9	1.0	5.2	0.54	1.0	A1	B1
	8		VD0R090-4-0,40	0.40	1,400	1.7	3.0	9.3	0.56	3.0	A1	B1
	11					1.7	3.5	9.3	0.56	3.5	A1	B1
	16		VD0R090-2-0,80	0.80	2,800	3.6	5.0	18	0.51	5.0	A1	B1
	22					3.6	5.5	18	0.51	5.5	A1	B1
	32		AD0R090-4-1,60	1.60	1,400	5.3	7.5	38	0.57	7.5	A2	B2
	45					5.3	9.0	38	0.57	9.0	A2	B2
63	AD0R090-2-3,00	3.00	2,800	9.0	13	58	0.60	13	A2	B3		
90				9.0	16	58	0.60	16	A2	B3		
SAR 16.2	4	1 000	VD0R112-4-0,40	0.40	1,400	1.4	2.7	10	0.65	2.7	A1	B1
	5.6					1.4	2.9	10	0.65	2.9	A1	B1
	8		VD0R112-4-0,80	0.80	1,400	2.8	5.0	22	0.57	5.0	A1	B2
	11					2.8	5.5	22	0.57	5.5	A1	B2
	16		VD0R112-2-1,50	1.50	2,800	5.6	9.0	40	0.60	9.0	A2	B2
	22					5.6	11	40	0.60	11	A2	B2
	32		AD0R112-4-3,00	3.00	1,400	8.5	13	60	0.71	13	A2	B3
	45					8.5	16	60	0.71	16	A2	B3
63	AD0R112-2-5,00	5.00	2,800	11	25	114	0.80	25	A3	–		
90				11	30	114	0.80	25	A3	–		

## Notes on table

1) Nominal power P <sub>N</sub>	Mechanical power output at motor shaft at running torque of multi-turn actuator (corresponds to approx. 35 % of maximum torque). The consumed electrical power can be calculated using the following formula: $P = U \times I \times \cos \varphi \times \sqrt{3}$
2) Nominal current I <sub>N</sub>	Current at running torque
3) Max. current I <sub>max</sub>	Current at maximum torque

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

Notes on installation and sizing																																												
Motor data	Motor data is approximate. Due to usual manufacturing tolerances, there may be deviations from the values given.																																											
Thermoswitches/PTC thermistors	<p>To protect against overheating, thermoswitches or PTC thermistors are embedded in the motor windings.</p> <p><b>Actuators without integral controls (AUMA NORM):</b> Thermoswitches or PTC thermistors have to be considered within the external controls (refer to terminal plan).</p> <p><b>Note: Failure to connect thermoswitches or PTC thermistors shall void the warranty for the motor.</b></p> <p><b>Rating of the thermoswitches</b></p> <table border="1"> <thead> <tr> <th colspan="2">AC current</th> <th colspan="2">DC current</th> </tr> </thead> <tbody> <tr> <td colspan="2">250 V, 50 – 60 Hz</td> <td>60 V</td> <td>1.0 A</td> </tr> <tr> <td>cos <math>\varphi</math> = 1</td> <td>2.5 A</td> <td>42 V</td> <td>1.2 A</td> </tr> <tr> <td>cos <math>\varphi</math> = 0.6</td> <td>1.6 A</td> <td>24 V</td> <td>1.5 A</td> </tr> </tbody> </table> <p><b>Actuators with AM or AC integral controls:</b> Thermal motor protection is already integrated.</p>	AC current		DC current		250 V, 50 – 60 Hz		60 V	1.0 A	cos $\varphi$ = 1	2.5 A	42 V	1.2 A	cos $\varphi$ = 0.6	1.6 A	24 V	1.5 A																											
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Mains voltage, mains frequency	<p>Permissible variation of mains voltage: <math>\pm 10</math> %</p> <p>Permissible variation of mains frequency: <math>\pm 5</math> %</p>																																											
Switchgear sizing	<p>For motor operation, reversing contactors (mechanically, electrically and electronically locked) or thyristors (electronically locked) can be used.</p> <p><b>Actuators without integral controls (AUMA NORM):</b> Switchgear are supplied by the customer. We recommend specification of switchgear suitable for their rated operating power/motor power in compliance with the assigned AUMA power class.</p> <p>Switchgear assignment to AUMA power classes:</p> <table border="1"> <thead> <tr> <th rowspan="2">AUMA power class</th> <th rowspan="2">Reversing contactor Rated operating power acc. to EN 60947-4-1 Utilization category AC-3</th> <th colspan="2">Reversing contactor Motor power according to UL/CSA at</th> </tr> <tr> <th>480 V AC</th> <th>600 V AC</th> </tr> </thead> <tbody> <tr> <td></td> <td>400 V AC</td> <td></td> <td></td> </tr> <tr> <td>A1</td> <td>4.0 kW</td> <td>5.0 hp</td> <td>5.0 hp</td> </tr> <tr> <td>A2</td> <td>7.5 kW</td> <td>10 hp</td> <td>10 hp</td> </tr> <tr> <td>A3</td> <td>15 kW</td> <td>20 hp</td> <td>25 hp</td> </tr> <tr> <td>A4</td> <td>30 kW</td> <td>60 hp</td> <td>60 hp</td> </tr> <tr> <td>A5</td> <td>55 kW</td> <td>75 hp</td> <td>100 hp</td> </tr> <tr> <td>A6</td> <td>75 kW</td> <td>100 hp</td> <td>125 hp</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th rowspan="2">AUMA power class</th> <th rowspan="2">Thyristor Rated operating current acc. to EN 60947-4-2 Utilization category AC-53a</th> </tr> <tr> <th>400 V AC</th> </tr> </thead> <tbody> <tr> <td>B1</td> <td>6 A</td> </tr> <tr> <td>B2</td> <td>8.5 A</td> </tr> <tr> <td>B3</td> <td>16 A</td> </tr> </tbody> </table> <p><b>Actuators with AM or AC integral controls:</b> Required switchgear in power classes A1 – A3 or B1 – B3 are already integrated in AM or AC controls. For switchgear of power classes A4 – A6, a control box is additionally required.</p> <p>For actuators with AM integral actuator controls and installed switchgear in AUMA power class A3, an optional thermal overcurrent protection device cannot be directly integrated within the AM. An additional control box is required. However, AC actuator controls can be used instead of AM controls. When opting for AC controls, the additional control box can be omitted.</p>	AUMA power class	Reversing contactor Rated operating power acc. to EN 60947-4-1 Utilization category AC-3	Reversing contactor Motor power according to UL/CSA at		480 V AC	600 V AC		400 V AC			A1	4.0 kW	5.0 hp	5.0 hp	A2	7.5 kW	10 hp	10 hp	A3	15 kW	20 hp	25 hp	A4	30 kW	60 hp	60 hp	A5	55 kW	75 hp	100 hp	A6	75 kW	100 hp	125 hp	AUMA power class	Thyristor Rated operating current acc. to EN 60947-4-2 Utilization category AC-53a	400 V AC	B1	6 A	B2	8.5 A	B3	16 A
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