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## Электроприводы KSB. Техническое описание

Electric Actuator

# ACTELEC

Direct-mount Quarter-turn Actuator,  
Types SQ5.2 to SQ12.2  
AUMA

## Type Series Booklet



## Electric Actuators

### Electric Quarter-turn Actuators by AUMA

## ACTELEC SQ05.2 to SQ12.2



#### Main applications

- Water
- Energy
- Industry

#### Operating data

Operating properties

Characteristic	Value
ACTELEC	ACTELEC SQ05.2 ACTELEC SQ07.2 ACTELEC SQ10.2 ACTELEC SQ12.2
Max. permissible temperature	-40 °C to +80 °C
Enclosure	IP68 (8 m, 96 hours)
Motor protection	Thermal class F
Power supply	Three-phase: 230 V / 50 Hz 400 V / 50 Hz  Single-phase: 110 - 120 V / 50 Hz, 60 Hz 220 - 240 V / 50 Hz, 60 Hz

#### Design details

- ACTELEC SQ05.2 / SQ12.2 electric quarter-turn actuators cover torques of up to 1200 Nm.
- Actuator/valve interface to ISO 5211
- They are suitable for all fields of application and all types of quarter-turn valves (centred-disc or offset-disc butterfly valves, ball valves, etc.).
- The actuators are equipped with removable adapters allowing them to be mounted on valves with different types of stem end (square or flat ends).

- The valves meet the requirements of the REACH 1907/2006 regulation. None of the substances listed in the candidate list and in Annex XIV of the regulation is present in a concentration above 0.1 % (w/w) (Article 33/REACH).
- The electric actuators are suitable for opening and closing valves in intermittent operation S2 - 15 min.
- Polyurethane coating, thickness 140 µm, colour: RAL 7037 grey
- Electrical motor protection by temperature switch
  - 2 electrical switches for stopping the motor in the limit position (1 switch for Open and 1 switch for Closed)
  - Torque limitation
- 2 torque switches for OPEN and CLOSED positions
- Heating resistor prevents condensation
- Manual override via handwheel
- Position indicator
- One or several adjustable limit stops
- Gear kinematics irreversible in any position

#### Variants

- Integrated electrical control system for remote control = MATIC version
- Additional electrical switches, adjustable across the entire stroke, for remote position indication (limit or intermediate positions)
- Double switch with torque switch
- Actual-position feedback via 1000-ohm potentiometer or 4-20 mA signal
- Communication interface - Intelligence - Field buses
- Other supply voltages
- ATEX design in compliance with the 94/9/EC Directive

## Technical data

### Type series

### Valve interface

Size	Interface standardised to ISO*	Max. permissible stem dimensions			
		Height	Square end	Flat end	Key
ACTELEC SQ05.2	F05 / F07	35	22	22	Contact KSB.
ACTELEC SQ07.2	F07 / F10	35/60	22	22	
ACTELEC SQ10.2	F10 / F12	45/75	30	27	
ACTELEC SQ12.2	F12 / F14	55/95	36	41	

### Three-phase current, 400 V, 50 Hz

Size	Actuating time [sec/90°]	Nominal power [kW]	Nominal current [A]	Starting current [A]
ACTELEC SQ05.2	8	0,04	0,4	1,0
	11 (standard)	0,04	0,4	1,0
	16	0,02	0,4	1,0
	22	0,02	0,4	1,0
ACTELEC SQ07.2	8	0,06	0,6	1,6
	11	0,06	0,6	1,6
	16	0,03	0,4	1,0
	22 (standard)	0,03	0,4	1,0
ACTELEC SQ10.2	32	0,01	0,3	0,7
	16	0,06	0,6	1,6
	22	0,06	0,6	1,6
	32 (standard)	0,04	0,5	1,0
ACTELEC SQ12.2	45	0,04	0,5	1,0
	63	0,02	0,3	0,7
	22	0,10	0,8	2,0
	32	0,06	0,6	1,6
ACTELEC SQ12.2	45	0,06	0,6	1,6
	63 (standard)	0,04	0,5	1,0

### Three-phase current, 230 V, 50 Hz

Size	Actuating time [sec/90°]	Nominal power [kW]	Nominal current [A]	Starting current [A]
ACTELEC SQ05.2	8	0,04	0,7	1,7
	11 (standard)	0,04	0,7	1,7
	16	0,02	0,7	1,7
	22	0,02	0,7	1,7
ACTELEC SQ07.2	8	0,06	1,0	2,8
	11	0,06	1,0	2,8
	16	0,03	0,7	1,7
	22 (standard)	0,03	0,7	1,7
	32	0,01	0,5	1,2
ACTELEC SQ10.2	16	0,06	1,0	2,8
	22	0,06	1,0	2,8
	32 (standard)	0,04	0,9	1,7
	45	0,04	0,9	1,7
	63	0,02	0,5	1,2
ACTELEC SQ12.2	22	0,10	1,4	3,5
	32	0,06	1,0	2,8
	45	0,06	1,0	2,8
	63 (standard)	0,04	0,9	1,7

**Single-phase alternating current 110 - 120 V / 50 Hz**

Size	Actuating time [sec/90°]	Nominal power [kW]	Nominal current [A]	Starting current [A]
ACTELEC SQ05.2	11 (standard)	0,04	2,3	4,6
ACTELEC SQ07.2	22 (standard)	0,03	2,3	4,6
ACTELEC SQ10.2	32 (standard)	0,04	2,3	4,6
ACTELEC SQ12.2	63 (standard)	0,04	2,3	4,6

**Single-phase alternating current 220 - 240 V / 50 Hz**

Size	Actuating time [sec/90°]	Nominal power [kW]	Nominal current [A]	Starting current [A]
ACTELEC SQ05.2	11 (standard)	0,04	1,1	2,3
ACTELEC SQ07.2	22 (standard)	0,03	1,1	2,3
ACTELEC SQ10.2	32 (standard)	0,04	1,1	2,3
ACTELEC SQ12.2	63 (standard)	0,04	1,1	2,3

### Technical specification

On/off control

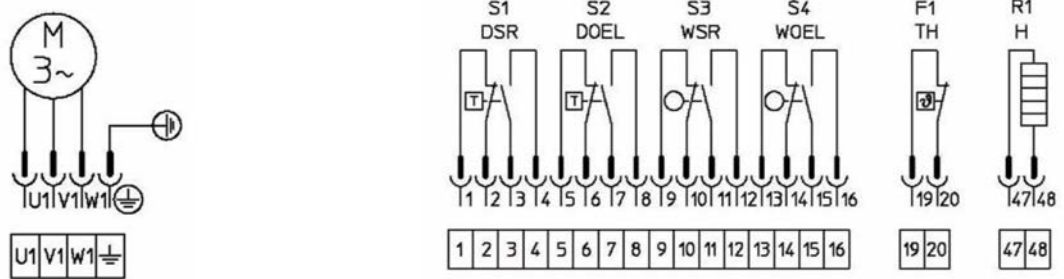
ACTELEC		SQ05.2	SQ07.2	SQ10.2	SQ12.2
Nominal torque [Nm]		150	300	600	1200
Actuating time in seconds	Standard	11	22	32	63
	Optional	8-16-22	8-11-16-32	16-22-45-63	22-32-45
Electrical switches for stopping the motor		Standard			
Adjustable mechanical travel stops		Standard			
Torque switches for OPEN and CLOSED positions		Standard			
Heating resistor 6 W - 110-250 V AC/DC power supply		Standard			
Manual override - number of handwheel turns		16	16	15	30
Power supply					
230 V or 400 V three-phase		Circuit diagram KMS TP100/001			
110 - 120 V or 220 - 240 V single-phase		Circuit diagram KMS1 TP100/001			
Other versions					
Integrated MATIC control system	230 V or 400 V three-phase	Circuit diagram MPS1110KS3 + F18E1 / KMS TP100/001			
	110 - 120 V or 220 - 240 V single-phase	Circuit diagram MPS1130KC3 - F18E1 / KMS(1) TP100/001			
Explosion protection		Available on request / Contact KSB.			

Circuit diagram

On/off control

Power supply 230 V or 400 V, three-phase, 50 Hz

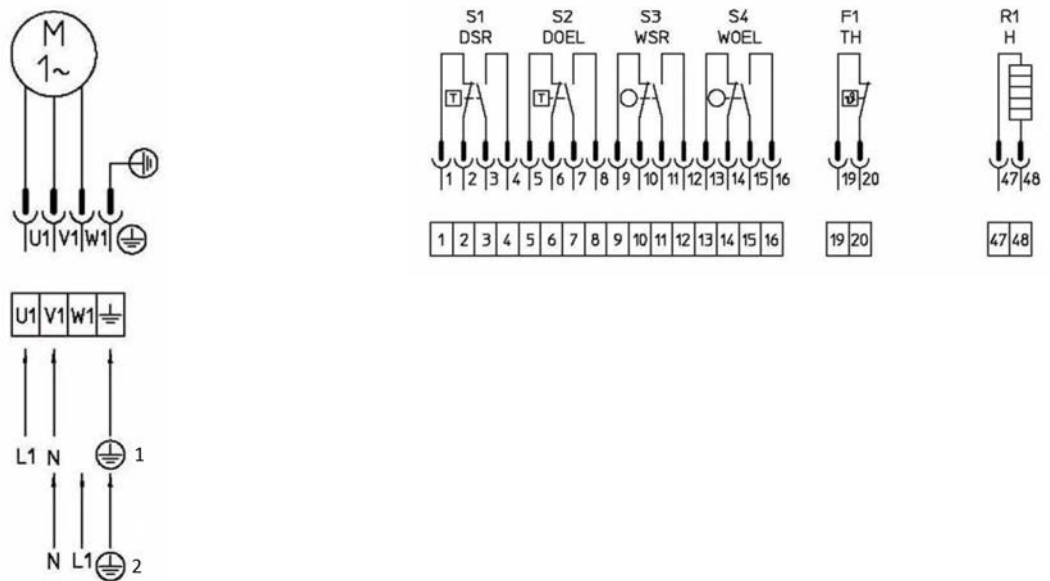
Circuit diagram KMS TP100/001



- Key:**
- |        |                                    |
|--------|------------------------------------|
| S1 DSR | Torque switch CLOSE, clockwise     |
| S2 DÖL | Torque switch OPEN, anti-clockwise |
| S3 WSR | Limit switch CLOSE, clockwise      |
| S4 WÖL | Limit switch OPEN, anti-clockwise  |
| F1 TH  | Thermal (motor) protection         |
| R1 H   | Heating resistor                   |

Power supply 110 V - 220 V or 220 V - 240 V, single-phase, 50 Hz

Circuit diagram KMS1 TP100/001

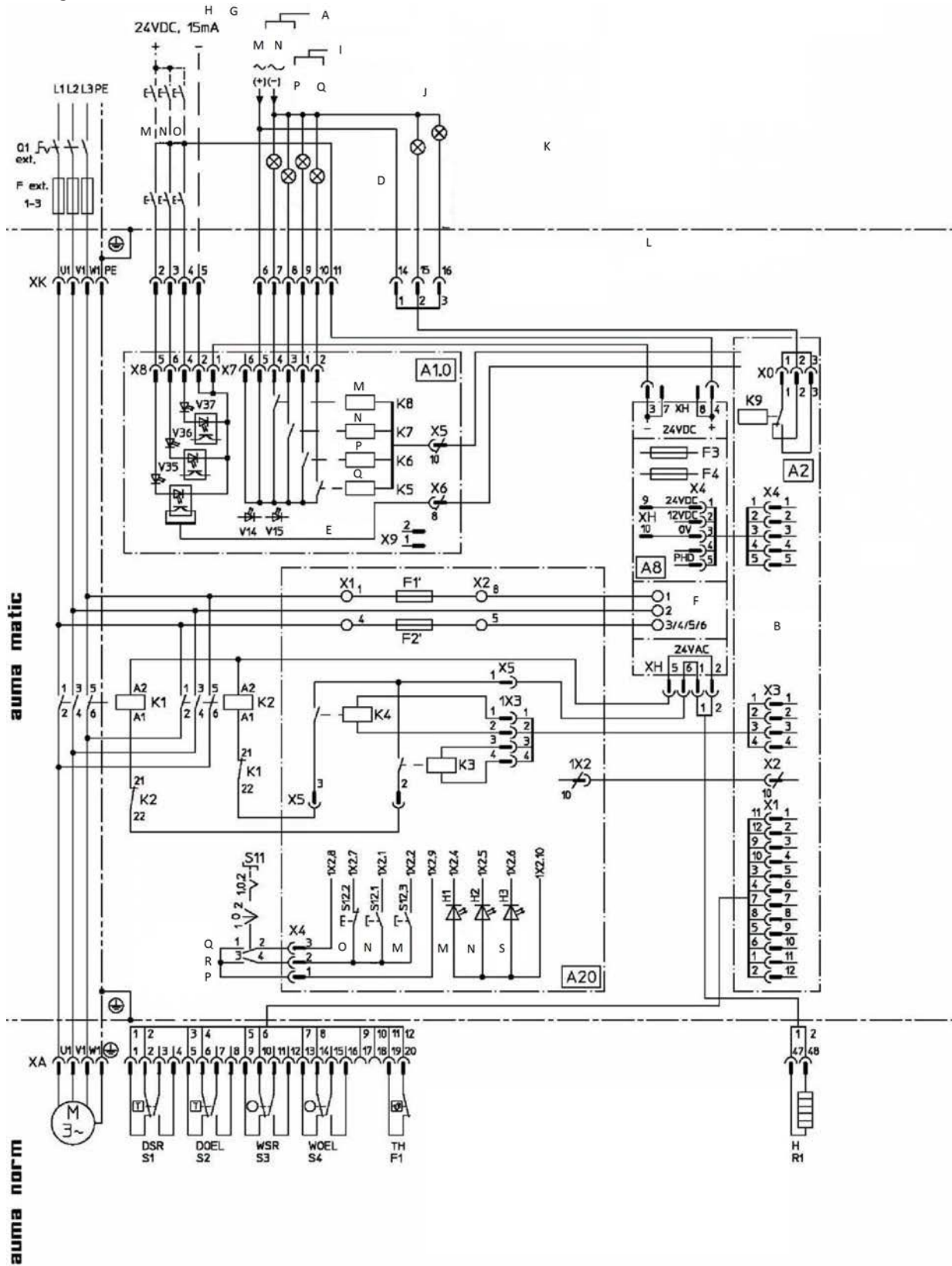


- Key:**
- |        |                                    |
|--------|------------------------------------|
| S1 DSR | Torque switch CLOSE, clockwise     |
| S2 DÖL | Torque switch OPEN, anti-clockwise |
| S3 WSR | Limit switch CLOSE, clockwise      |
| S4 WÖL | Limit switch OPEN, anti-clockwise  |
| F1 TH  | Thermal (motor) protection         |
| R1 H   | Heating resistor                   |
| 1      | Clockwise                          |
| 2      | Anti-clockwise                     |

Version with integrated MATIC control system

Power supply 230 V or 400 V, three-phase

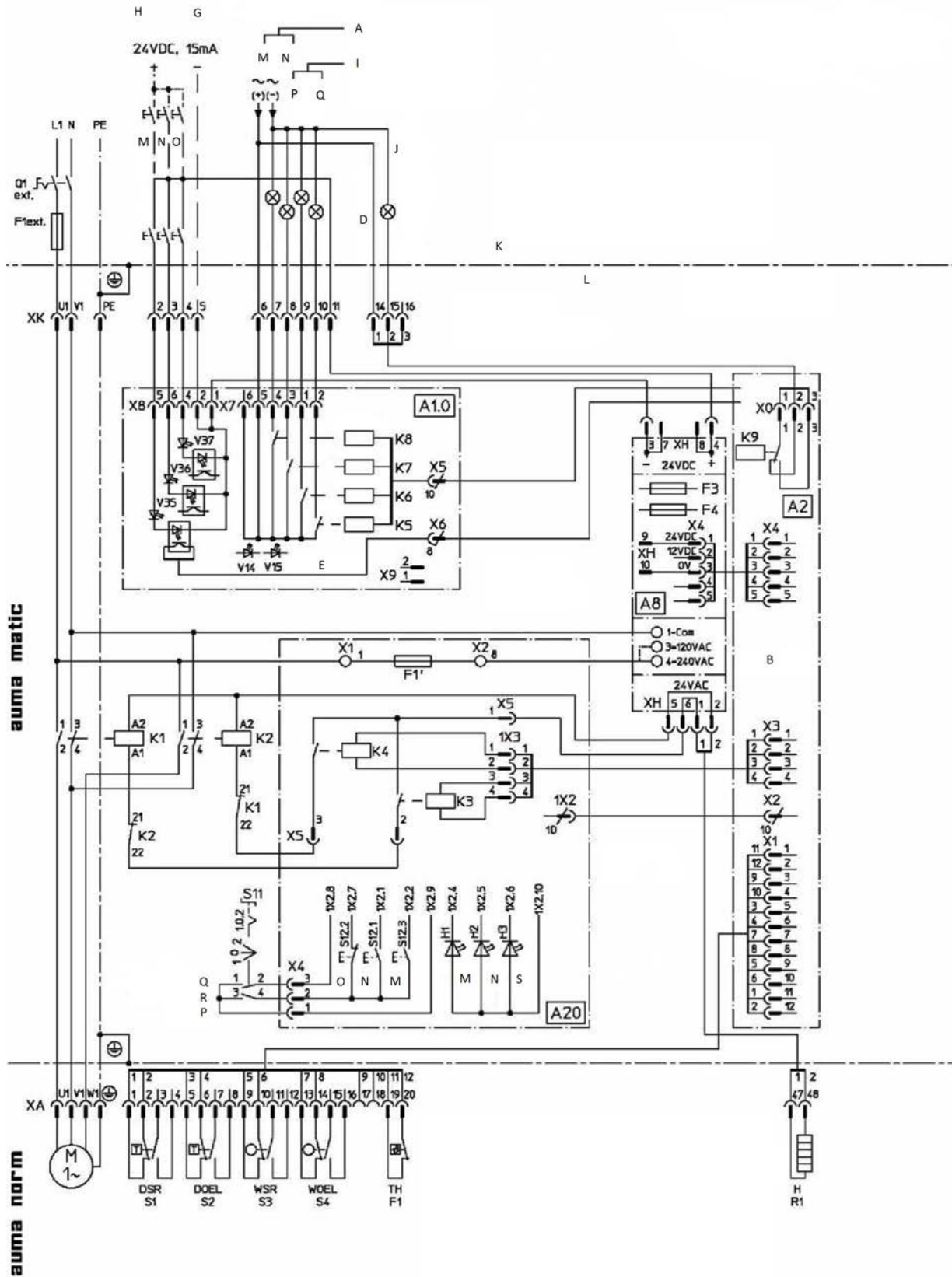
Circuit diagram MPS 1110KC3 - F18E1 - KMS TP 100-001





Power supply 230 V, single-phase

Circuit diagram MPS 1130KC3 - F18E1 - KMS1 TP 100-001



**Key to circuit diagrams MPS 1110KS3 - F18E1 - KMS TP 100/001 and MPS 1130KS3 - F18E1 - KMS1 TP 100/001**

A		Information A
B		Information B
C		Information C
D		Information D
E		Information E
F		Information F
G		Information G
H		External power supply, direct or alternating current
I		Position S11
J		General fault message signal - operational
K		Switching capacity of K5-K9 signal max. 250 V AC / 0.5 A / cos phi - 1 or 24 V DC / 2A
L		AUMA limit of scope of supply
M		Closed
N		Open
O		Stop
P		Local
Q		Remote control
R		Off
S		Fault
S 1	DSR	Torque switch, closing, clockwise
S 2	DÖL	Torque switch, opening, anti-clockwise
S 3	WSR	Limit switch CLOSE, clockwise
S 4	WÖL	Limit switch OPEN, anti-clockwise
S 3/2	WSR 1	Double switch for limit position with WSR / WÖL
S 4/2	WÖL 1	Double switch for limit position with WSR / WÖL
F 1	Th	Temperature switch (motor protection)
R1	H	Heating resistor
A 1.0		Interface board
A 2		Logic board
A 7		Positioner board
A 8		Power supply unit board
A 20		Signalling and control board
A 21		Signalling and control board
F 1'		Primary fuses - power supply
F 2'		Primary fuses - power supply
F 3		Secondary fuses
F 4		Secondary fuses
K 1		Changeover contact
K 2		Changeover contact
K 3		Control relay for changeover contact
K 4		Control relay for changeover contact
K 5 to K 9		Signalling relay
S 11		Local-OFF-Remote selector switch
S 11/2		Local-OFF-Remote selector switch
S 12.1		Pushbutton OPEN
S 12.2		Pushbutton STOP
S 12.3		Pushbutton CLOSE
S 13		Changeover switch for travel-dependent or torque-dependent closing
V 14		LED*, phase sequence and failure
V 15		LED*, torque switch tripped before limit position has been reached
V 35		LED, command CLOSE received from control station
V 36		LED, command OPEN received from control station
V 37		LED, command OFF received from control station

\* If LEDs V 14 and V 15 are lit at the same time, the temperature switch has tripped.

## Information details

### Information A

Operation (opening and closing) can be indicated by integration of the flashing light (S5).

Opening direction: connections X<sub>k</sub>6 - X<sub>k</sub>7

Closing direction: connections X<sub>k</sub>6 - X<sub>k</sub>8

In the limit position, the contacts remain closed.

For connection to an external PLC the flashing signal can be switched off, see AUMA MATIC operating manual.

### Information B

If changeover switch S 13 is in position "1", closing is controlled via limit switch WSR (S3).

The actuator stops and a fault message is generated if the torque switch DSR (S1) responds before or as the limit position is reached.

If changeover switch S 13 is in position "2", closing is controlled via torque switch DSR (S1).

The WSR (S3) switch serves as a signalling system. It must be set to trip shortly before the limit position CLOSED is reached.

If the torque switch trips before the limit switch, the actuator stops and a fault message is generated.

For detailed information on programming of the logic board, particularly regarding latching in REMOTE mode, refer to the AUMA MATIC operating manual.

### Information D

The following faults, indicating operating malfunctions, are identified and transmitted to a relay with changeover contacts, from where they can be transmitted to the control station:

- Power failure
- Incorrect phase sequence
- Phase failure
- Temperature switch has tripped
- Torque switch has tripped before limit position has been reached

Storage of the fault messages can be disabled by programming the unit accordingly, see AUMA MATIC operating manual.

### Information E

Input signals to DIN 19240. The nominal amperage of inputs X<sub>k</sub>2, X<sub>k</sub>3 and X<sub>k</sub>4 is 10 - 15 mA.

If the internal voltage of 24 V DC is used for remote control, the external contacts used must be volt-free.

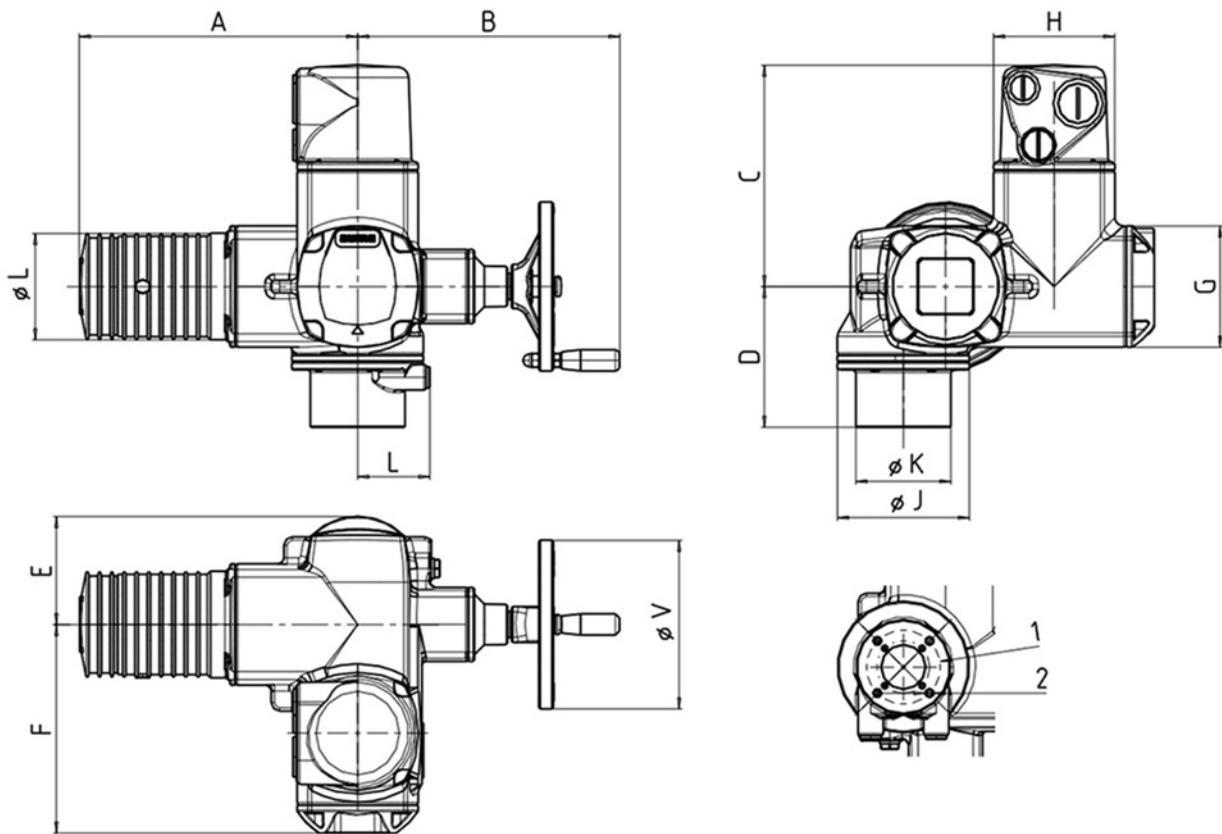
### Information F

The actuator will not operate in the case of incorrect phase sequence or phase failure. These faults will be indicated by the LED V14 on the interface board. The various faults indicated are listed in the "Information D" item.

### Information G

Volt-free contacts are provided for signalling. The internal control voltage (X<sub>k</sub>11 / 24V+ or X<sub>k</sub>5 / 24V-) must not be used for external lamps, relays, etc.

Dimensions



- 1: bore diameter  $\varnothing d1$
- 2: 4 evenly spaced holes  $\varnothing d2$

[mm]

Size	A	B	C	D	Ø E	F	G	H	Ø J	Ø K	L	Ø V	ISO 5211 interface			Weight [kg]
													Ref.	Ø d1	Ø d2	
ACTELEC SQ05.2	265	249	210	134	90	198	115	115	125	90	69	160	F05	50	M6	29
	265	249	210	134	90	198	115	115	125	90	69	160	F07	70	M8	
ACTELEC SQ07.2	265	249	210	134	90	198	115	115	125	90	69	160	F07	70	M8	29
	265	249	210	160	90	198	115	115	125	125	69	160	F10	102	M10	
ACTELEC SQ10.2	265	254	210	151	115	198	115	115	160	125	86	200	F10	102	M10	32
	265	254	210	183	115	198	115	115	160	150	86	200	F12	125	M12	
ACTELEC SQ12.2	265	254	210	175	115	198	115	115	210	150	109	200	F12	125	M12	45
	265	254	210	215	115	198	115	115	210	175	109	200	F14	140	M16	

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