

## Electro-hydraulic actuators for valves

SKD..



### with a 20 mm stroke

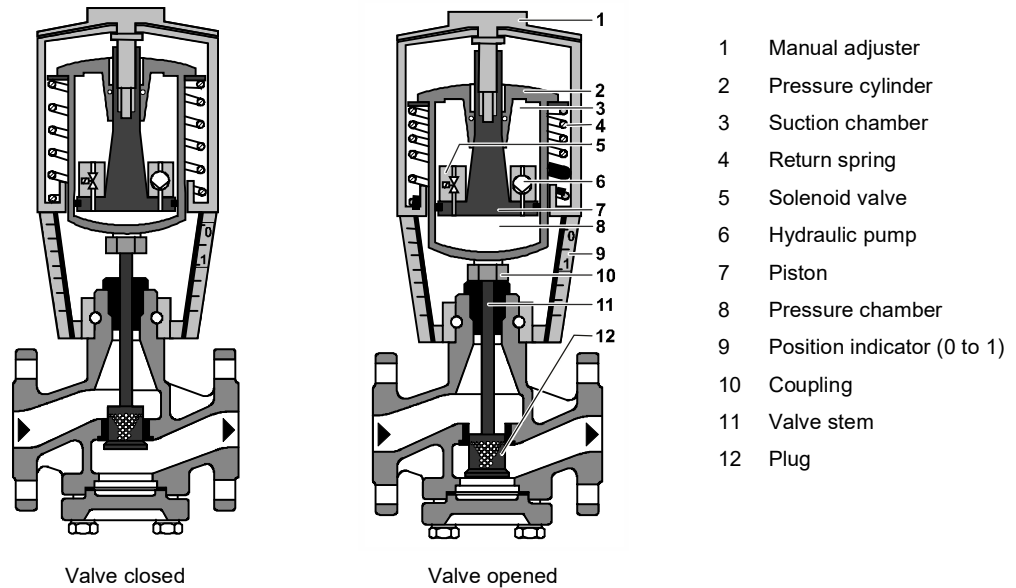
- SKD32.. Operating voltage AC 230 V, 3-position control signal
- SKD82.. Operating voltage AC 24 V, 3-position control signal
- SKD6.. Operating voltage AC 24 V
  - Control signal DC 0...10 V, 4...20 mA or 0...1000 Ω
  - SKD62/MO RS-485 for Modbus RTU communication
  - Selection of flow characteristic, position feedback, stroke calibration, LED status indication, override control
  - SKD62UA with selection of direction of operation, stroke limit control, sequence control with adjustable start point and operation range, operation of frost protection monitors QAF21.. and QAF61..
- Positioning force 1000 N
- Versions with or without spring-return function
- For direct mounting on valves; no adjustments required
- Manual adjuster and position indicator
- Optional functions with auxiliary switches, potentiometer, stem heater and mechanical stroke inverter
- SKD..U are UL-approved

## Use

For the operation of Siemens 2-port and 3-port valves of the types VVF..., VVG..., VXF... and VXG... with a 20 mm stroke as control and safety shut-off valves in heating, ventilation and air conditioning plants.

## Technical design

### Principle of electro-hydraulic actuators



**Opening the valve** The hydraulic pump [6] forces oil from the suction chamber [3] to the pressure chamber [8], thereby moving the pressure cylinder [2] downwards. The valve stem [11] retracts and the valve opens. Simultaneously, the return spring [4] is compressed.

**Closing the valve** Activating the solenoid valve [5] allows the oil in the pressure chamber to flow back into the suction chamber. The compressed return spring moves the pressure cylinder upwards. The valve stem extends and the valve closes.

#### Manual operation mode

Turning the manual adjuster [1] clockwise moves the pressure cylinder downwards and opens the valve. Simultaneously, the return spring [4] is compressed.

In the manual operation mode, the positioning signals Y and Z can further open the valve but cannot move to the 0 % stroke position of the valve. To retain the manually set position, switch off the power supply or disconnect the positioning signals Y and Z. The red indicator marked "MAN" is visible.

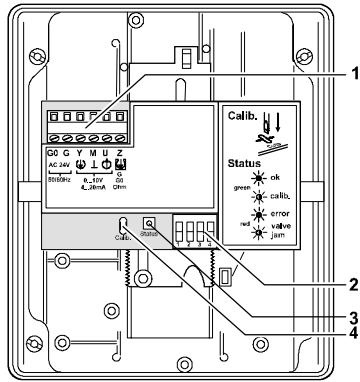


**Note:** When setting the controller to manual operation for a longer period of time, we recommend adjusting the actuator with the manual adjuster to the desired position. This guarantees that the actuator remains in this position for that period of time.

Attention: Do not forget to switch back to automatic operation after the controller is set back to automatic control.



SKD60 <sup>1)</sup>

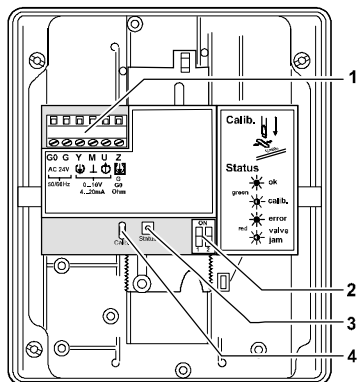


- 1 Connection terminals
- 2 DIL switches
- 3 LED status indication
- 4 Stroke calibration

<sup>1)</sup> From version ..L onward





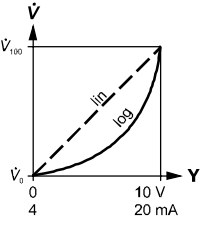
DIL switches								
Direction of operation		Fail-in-place (behaviour in case of control signal loss) <sup>**</sup>		Positioning signal Y Positioning feedback U		Flow characteristic		
ON		Reverse acting		Stops at current position		DC 4...20 mA		lin = linear
		Direct acting		Closes		DC 0...10 V		log = equal percentage
* Factory setting: all switches OFF						<p>Relationship between positioning signal Y and volumetric flow</p>		
<sup>**</sup> Only considered when DIL switch 3 ON (control signal = DC 4...20 mA)								

SKD60 <sup>2)</sup>, SKD62..

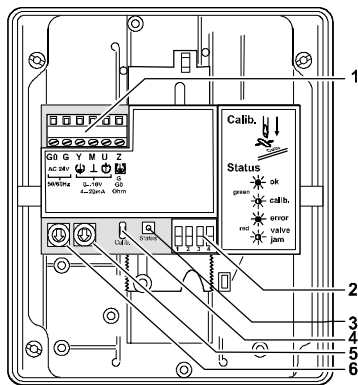


- 1 Connection terminals
- 2 DIL switches
- 3 LED status indication
- 4 Stroke calibration









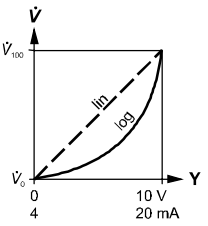
<sup>2)</sup> Up to and including version ..K

DIL switches			
		Positioning signal Y Positioning feedback U	Flow characteristic
ON		DC 4...20 mA	 lin = linear
OFF *		DC 0...10 V	 log = equal percentage
		* Factory setting: all switches OFF	Relationship between positioning signal Y and volumetric flow 

### SKD62UA



- 1 Connection terminals
- 2 DIL switches
- 3 LED status indication
- 4 Stroke calibration
- 5 Rotary switch UP (factory setting 0)
- 6 Rotary switch LO

DIL switches					
Direction of operation		Sequence control or stroke limit control		Positioning signal Y Positioning feedback U	Flow characteristic
ON	 Reverse acting	 Sequence control Signal addition QAF21../QAF61..	 DC 4...20 mA	 lin = linear	
OFF *	 Direct acting	 Stroke limit control	 DC 0...10 V	 log = equal percentage	
		* Factory setting: all switches OFF		Relationship between positioning signal Y and volumetric flow 	

## SKD62/MO

The Modbus converter is designed for analog control at 0...10 V.



Keep the analog signal setting on the actuator as is (switch 1 to OFF); adjustment not permitted.

The actuators are factory configured for equal-percentage characteristic.



DIL switch (internal actuator characteristic changeover) to "log" (switch 2 to OFF).

## Functions


### Notstellfunktion

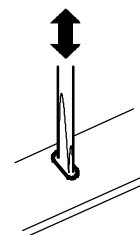
The SKD32.21, SKD32.51, SKD82.51.. and SKD62.. actuators, which feature a spring-return function, incorporate a solenoid valve which opens if the control signal or power fails. The return spring causes the actuator to move to the 0% stroke position and closes the valve.

### Calibration

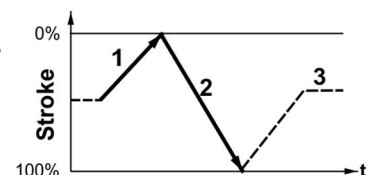
#### SKD60, SKD62.., SKD62/MO

In order to determine the stroke positions 0% and 100% in the valve, calibration is required on initial commissioning.

- Mechanical coupling of the actuator SKD6.. with a Siemens valve.
-  **Actuator must be in „Automatic operation mode“ enabling stroke calibration to capture the effective 0% and 100% values.**
- AC 24 V power supply applied.
- Housing cover removed.
- 1. Short-circuit contacts in calibration slot (e.g. with a screwdriver) and trigger calibration process.
- 2. Actuator moves to 0% stroke position [1].
  - Valve closes.
- 3. Actuator moves to 100% stroke position [2].
  - Valve opens.
- Measured values are stored.
- Normal operation:  
Actuator moves to the position [3] as indicated by signals Y or Z.  
LED is lit green permanently, positioning feedback U active, values correspond to the actual positions.



LED flashes grün, positioning feedback U inactive



A red lit LED on the actuator indicates a calibration error.








The LED on the SKD62/MO cable adapter flashes red during the calibration, as the positioning signal Y and the positioning feedback U do not correspond anymore. This is interpreted as a blockage and thus indicated as an error.

If necessary, the calibration can be repeated any number of times.

### LED indication of operational status

#### SKD60, SKD62.., SKD62/MO

The dual-colored LED indicating the operational status is visible when the cover is removed.

LED indication	Function	Remarks, troubleshooting
 Lit green	Normal operation	Automatic operation; everything o.k.
 Flashing green	Stroke calibration in progress	Wait until calibration is finished (LED stops flashing, will be lit green or red)
 Lit red	Faulty stroke calibration	Check mounting; restart stroke calibration (by short-circuiting calibration slot)
	Internal error	Replace electronics
 Flashing red	Inner valve jammed	Troubleshoot, check valve, restart stroke calibration
 Dark	No power supply	Check mains network, check wiring
	Electronics faulty	Replace electronics

As a general rule, the LED can only assume the states shown above – continuously lit red or green, flashing red or green, or off/dark.

## Override control Z

### SKD60, SKD62..

D The override control input Z can be operated in the following modes of operation:

Z-mode					
	No function	Fully open	Closed	Override with 0...1000 Ω	Signal addition SKD62UA only
<b>Connections</b>					
<b>Transfer</b>					
	Equal percentage or linear			Equal percentage or linear	
	<ul style="list-style-type: none"> <li>Z-contact not connected</li> </ul>	<ul style="list-style-type: none"> <li>Z-contact directly connected to G</li> </ul>	<ul style="list-style-type: none"> <li>Z-contact directly connected to G0</li> </ul>	<ul style="list-style-type: none"> <li>Z-contact connected to M via resistor R</li> <li>Starting position at 50 Ω</li> <li>End position at 900 Ω</li> </ul>	<ul style="list-style-type: none"> <li>Z-contact connected to R of frost protection monitor QAF21.. or QAF61..</li> </ul>
	<ul style="list-style-type: none"> <li>Valve stroke follows Y-input</li> </ul>	<ul style="list-style-type: none"> <li>Y-input has no effect</li> </ul>			<ul style="list-style-type: none"> <li>Valve stroke follows Y and R(Z) signal</li> </ul>



Shown operation modes are based on the factory setting “direct acting”.  
Y-input has no effect in Z-mode.

## Selection of direction of operation

### SKD60 (from version ..L), SKD62UA

- With normally-closed valves, “direct acting” means that with a signal input of 0 V, the valve closes (applies to all Siemens valves listed under Equipment combinations [→ 12]).
- With normally-open valves, “direct acting” means that with a signal input of 0 V, the valve is open.

Direct acting		Reverse acting		Stroke
Input	DC 0...10 V DC 4...20 mA 0...1000 Ω	Input	DC 0...10 V DC 4...20 mA 0...1000 Ω	



The mechanical spring-return function is not affected by the direction of operation selected.



## Stroke limit control and sequence control

### SKD62UA

Setting the stroke limit control	Setting the sequence control
The rotary switches LO and UP can be used to apply a lower and upper limit to the stroke in increments of 3%, up to a maximum of 45%.	The rotary switches LO and UP can be used to determine the start point or the operating range of a sequence.

Position of LO	Lower stroke limit	Position of UP	Upper stroke limit	Position of LO	Sequence control start point	Position of UP	Sequence control operating range
0	0 %	0	100 %	0	0 V	0	10 V
1	3 %	1	97 %	1	1 V	1	10 V *
2	6 %	2	94 %	2	2 V	2	10 V **
3	9 %	3	91 %	3	3 V	3	3 V ***
4	12 %	4	88 %	4	4 V	4	4 V
5	15 %	5	85 %	5	5 V	5	5 V
6	18 %	6	82 %	6	6 V	6	6 V
7	21 %	7	79 %	7	7 V	7	7 V
8	24 %	8	76 %	8	8 V	8	8 V
9	27 %	9	73 %	9	9 V	9	9 V
A	30 %	A	70 %	A	10 V	A	10 V
B	33 %	B	67 %	B	11 V	B	11 V
C	36 %	C	64 %	C	12 V	C	12 V
D	39 %	D	61 %	D	13 V	D	13 V
E	42 %	E	58 %	E	14 V	E	14 V
F	45 %	F	55 %	F	15 V	F	15 V

\* Operating range of QAF21.. (see below)

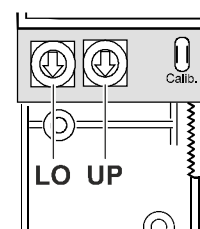
\*\* Operating range of QAF61.. (see below)

\*\*\* The smallest adjustment possible is 3 V; control with 0...30 V is only possible via Y.

## Stroke control with QAF21.. / QAF61.. signal addition

### SKD62UA

Setting the signal addition			
The operating range of the frost protection monitor QAF21.. or QAF61.. can be defined with rotary switches LO and UP.			
Position of LO	Sequence control start point	Position of UP	QAF21.. / QAF61.. operating range
0	→	1	QAF21..
0	→	2	QAF61..



## Type summary

Type		Operating voltage	Positioning signal	Spring-return		Positioning time				
				Function	Time					
SKD32.21 <sup>1)</sup>	-	AC 230 V	3-position	yes	8 s	30 s	10 s			
SKD32.50 <sup>1)</sup>				-	-					
SKD32.51 <sup>1)</sup>				yes	8 s					
SKD82.50 <sup>1)</sup>				Standard electronics	AC 24 V	DC 0...10 V 4...20 mA 0...1000 Ω	-	-	120 s	120 s
SKD82.50U <sup>2)</sup>							-	-		
SKD82.51 <sup>1)</sup>							-	-		
SKD82.51U <sup>2)</sup>							yes	8 s		
SKD60 <sup>1), 3)</sup>	Enhanced electronics	AC 24 V	DC 0...10 V 4...20 mA 0...1000 Ω	-	-	30 s	15 s			
SKD60U <sup>2)</sup>				-	-					
SKD62 <sup>1)</sup>				-	-					
SKD62U <sup>2)</sup>				yes	15 s					
SKD62UA <sup>2), 4)</sup>	Standard-elektronik	AC 24 V	Modbus RTU	-	-	30 s	15 s			
SKD62/MO <sup>2)</sup>				S55195-A129	-			-		

<sup>1)</sup> Approbation: CE

<sup>2)</sup> Approbation: CE, UL

<sup>3)</sup> Enhanced functions, from version ..L onward: Direction of operation, fail-in-place

<sup>4)</sup> Enhanced functions: Direction of operation, stroke control limit, sequence control, signal addition

### Scope of delivery

The actuator, valve and accessories are supplied in separate packaging and not assembled prior to delivery.

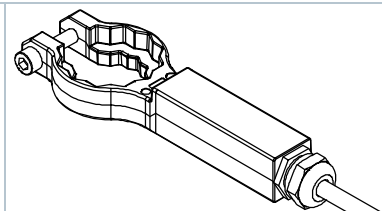
## Accessories / spare parts

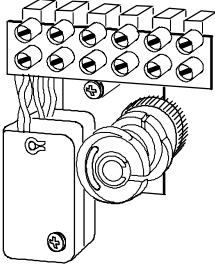
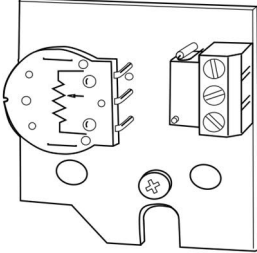
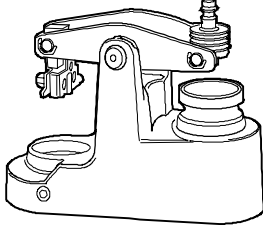
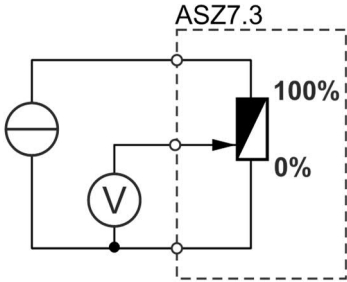
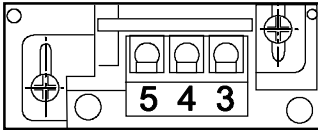
### Accessories

Type	Auxiliary switch	Double auxiliary switch	Potentiometer 1000 Ω	Stem heater AC 24 V	Mechanical stroke inverter
	ASC1.6	ASC9.3	ASZ7.3	ASZ6.6 (S55845-Z108)	ASK50
			Max. 2		
SKD32..	-	Max.1	Max.1	Max.1	Max.1
SKD82					
SKD6..	Max.1	-	-		

**SKD..** **ASZ6.6** (S55845-Z108)  
Stem heater

- For media below 0 °C
- Mount between valve and actuator



<b>SKD32..</b> <b>SKD82..</b>	<b>ASC9.3</b> Double auxiliary switch 	<b>ASZ7.3</b> Potentiometer 	<b>ASK50</b> Mechanical stroke inverter 
	Adjustable switching points	0...1000 Ω	0% actuator stroke corresponds to 100% valve stroke Mount between valve and actuator
	Note: ASZ7.3	<p>For the combination SIMATIC S5/S7 and use of positioning feedback, we recommend actuators with DC 0...9.8 V feedback signals.</p> <p>The signal peaks that occur in the potentiometer ASZ7.3 may result in error messages on Siemens SIMATIC. This is not the case when combined with Siemens HVAC controllers. The reason is that SIMATIC has a higher resolution and faster response time.</p> <p>Use the potentiometer as voltage divider on the 3-wire connection. Powering the potentiometer over the wiper may shorten the life cycle of the potentiometer. Signal peaks increase in frequency and scope over the lifespan in this operating mode.</p> 	
<b>SKD60</b> <b>SKD62..</b>	<b>ASC1.6</b> Auxiliary switch 		Switching point 0...5 % stroke


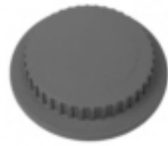

For more information, see Technical data [→ 19]

### Ordering (example)

Type / Stock number <sup>1)</sup>	Designation	Number of pieces
SKD62/MO / S55195-A129	Actuator Modbus RTU	1
ASC1.6	Auxiliary switch	1

<sup>1)</sup> Specify stock number if available.

## Spare parts

Actuator	Cover	Hand control <sup>1)</sup>	Control unit
			
SKD32.21	410456348	426855048	-
SKD32.50			
SKD32.51			
SKD82.50			
SKD82.50U			
SKD82.51			
SKD82.51U			
SKD60			466857598
SKD60U			466857488
SKD62			
SKD62U			
SKD62UA			
SKD62/MO			

<sup>1)</sup> Hand control, blue with mechanical parts

## Equipment combinations

### 2-port valves VV.. (control or safety shut-off valves)

Valve type		DN	PN class	k <sub>vs</sub> [m <sup>3</sup> /h]	Data sheet	
VVF21.. <sup>1)</sup>	Flanged	25...80	6	1.9...100	N4310	
VVF22..				2.5...100	N4401	
VVF31.. <sup>1)</sup>				15...80	10	1.6...100
VVF32..		1.9...100	N4402			
VVF40.. <sup>1)</sup>		50	16	1.9...100	N4330	
VVF41.. <sup>1)</sup>				19... 31	N4340	
VVF42..		15...80	25	1.6...100	N4403	
VVF52.. <sup>1)</sup>		15...50		0.16...25	N4373	
VVF53..		15...40	40	0.16...40	N4405	
VVF61..		15...50		0.19...31	N4382	
VVF63..		15...50		0.2...36	A6V11459527	
VVG41..		Threaded	15...50	16	0.63...40	N4363

Admissible differential pressures  $\Delta p_{\max}$  and closing pressures  $\Delta p_s$ : cf. relevant valve data sheets

<sup>1)</sup> Valves are no longer available

### 3-port valves VX.. (control valves for “mixing” and “distribution”)

Valve type		DN	PN class	$k_{vs}$ [m <sup>3</sup> /h]	Data sheet
VXF21.. <sup>1)</sup>	Flansch	25...80	6	1.9...100	N4410
VXF22..				2.5...100	N4401
VXF31.. <sup>1)</sup>					N4420
VXF32..		15...80	10	1.6...100	N4402
VXF40.. <sup>1)</sup>				1.9...100	N4430
VXF41.. <sup>1)</sup>		15...50	16	1.9...31	N4440
VXF42..		15...80		1.6...100	N4403
VXF53..		15...50		25	1.6...40
VXF61..			40	1.9...31	N4482
VXF63..				0.2...36	A6V11459527
VXG41..	Gewinde		16	1.6...40	N4463

Admissible differential pressures  $\Delta p_{max}$  and closing pressures  $\Delta p_s$ : cf. relevant valve data sheets

<sup>1)</sup> Valves are no longer available



Third-party valves with strokes between 6...20 mm can be motorized, provided they are “closed with the de-energized” fail-safe mechanism and provided that the necessary mechanical coupling is available. For SKD32.. and SKD82.. the Y1 signal must be routed via an additional, freely adjustable end switch (ASC9.3) to limit the stroke.

We recommend that you contact your local Siemens office for the necessary information.


#### Product documentation


SKD..			Accessories	Mounting instructions	
Mounting instructions SKD..	M3250	74 319 0325 0	<b>ASC1.6</b>	G4563.3	4 319 5544 0
		74 319 0326 0	<b>ASC9.3</b>	G4561.3	4 319 5545 0
		(Setting instructions Standard electronics)	<b>ASK50</b>	M4561.5	4 319 5549 0
		A5W00027551	<b>ASZ7.3</b>		74 319 0247 0
		(Mounting instructions Modbus converter)	<b>ACT control unit</b>	M4568	74 319 0554 0
		A6V12057657	<b>QAF21..</b>		74 319 0399 0
		(Communication profiles Modbus)	<b>ASZ6.6</b>	M4501.1	74 319 0750 0


Related documents such as environmental declarations, CE declarations, etc., can be downloaded at the following Internet address:


<http://siemens.com/bt/download>

## Sicherheit


	<b>⚠ CAUTION</b>
	<p><b>National safety regulations</b></p> <p>Failure to comply with national safety regulations may result in personal injury and property damage.</p> <ul style="list-style-type: none"> <li>• Observe national provisions and comply with the appropriate safety regulations.</li> </ul>


	<b>⚠ WARNING</b>
	<p><b>Tensioned spring return</b></p> <p>Opening the actuator housing can release the highly tensioned return spring, which can cause flying parts and injuries.</p> <ul style="list-style-type: none"> <li>• Do not open the actuator housing.</li> </ul>

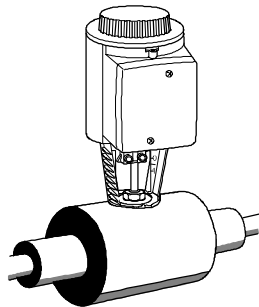
	<b>⚠ WARNING</b>
	<p><b>Risk of injury through broken housing or cover</b></p> <p>Dismounting the actuator with broken housing from the valve can release the highly tensioned spring return, which can cause flying parts and injury.</p> <ul style="list-style-type: none"> <li>• NEVER dismount actuator from valve.</li> <li>• Dismount valve-actuator combination (control device) as complete unit.</li> <li>• Disassembly only by qualified personnel.</li> <li>• Send the control device along with an error report to the local Siemens office for analysis and disposal.</li> <li>• Mount new control device (valve and actuator) properly.</li> </ul>

	<b>⚠ WARNING</b>
	<p><b>Risk of burns from hot actuator brackets</b></p> <p>The actuator brackets on heating plants can also become hot from the contact with the hot valve during operation. The temperature of the actuator bracket can reach 100 °C.</p> <p>When servicing the actuator:</p> <ul style="list-style-type: none"> <li>• Switch off both pump and operating voltage.</li> <li>• Close the main shutoff valve in the piping.</li> <li>• Release pressure in the pipes and allow them to cool off completely.</li> </ul>

Der elektrische Anschluss ist gemäss den örtlichen Vorschriften für Elektroinstallationen und dem Kapitel Anschlussschaltpläne [→ 26] durchzuführen.

	<b>NOTE</b>
	<b>Using a safety limiter</b> Failure to comply with applicable regulations for cable insulation may result in the suspension of the safety limiter function. <ul style="list-style-type: none"><li>• Compliance with all applicable regulations for cable insulation must be ensured by the plant operator.</li></ul>

	<b>▲ WARNING</b>
	<b>Risk of injury and fire from hot device parts</b> For media below 0 °C, the stem heater ASZ6.6 keeps the valve stem ice-free. In this case, the actuator bracket and the valve stem must not be insulated in order to ensure air circulation. Touching heated parts without safety measures leads to burns. <ul style="list-style-type: none"><li>• For safety reasons, the steam heater is operated with AC 24 V / 30 W.</li><li>• Recommendation: For media above 140 °C, the valve must be insulated.</li></ul>



Observe admissible temperatures, see Use [→ 2] and Technical data [→ 19].

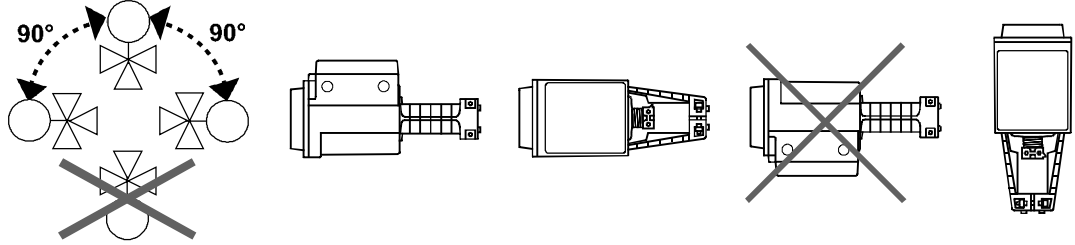
If an auxiliary switch is used, its switching point should be indicated on the plant schematic.

Every actuator must be driven by a dedicated controller, see Connection diagrams [→ 26].

## Mounting

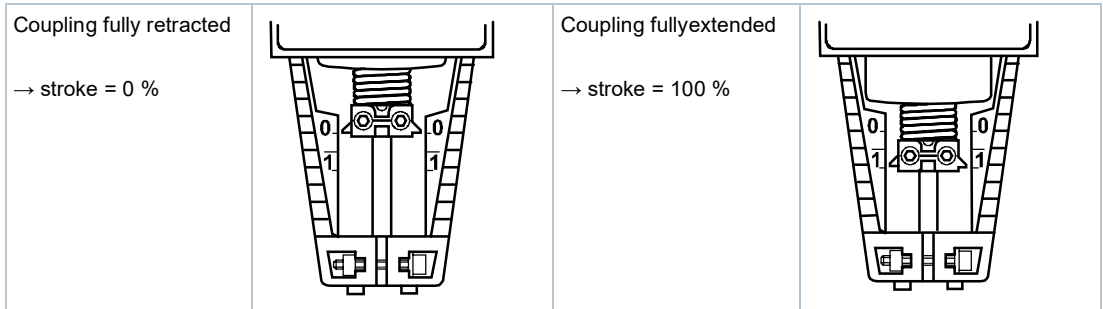
Mounting instructions 74 319 0324 0 for fitting the actuator to the valve and A5W00027551 for SKD62/MO are enclosed in the actuator packaging. The instructions for accessories are enclosed with the accessories themselves (see Product documentation [→ 13]).

### Mounting positions

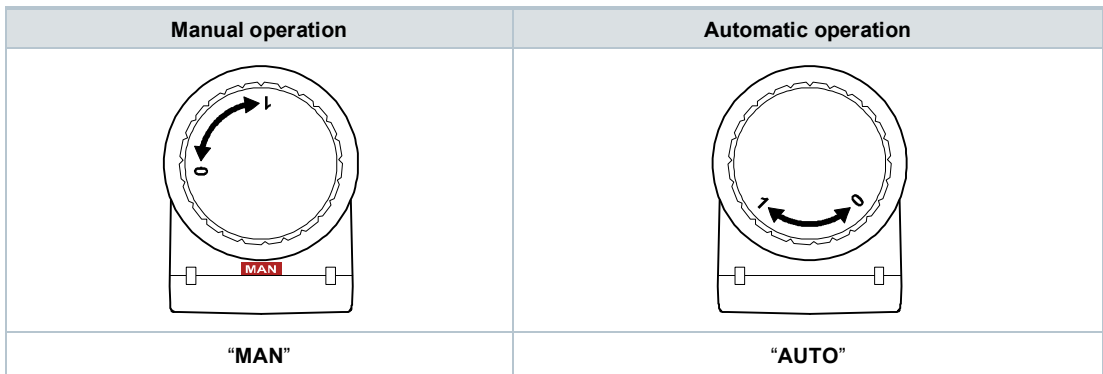


## Commissioning

When commissioning the system, check the wiring and functions, and set any auxiliary switches and potentiometers as necessary, or check the existing settings.



The manual adjuster must be rotated counter-clockwise to the end stop, i.e. until the red indicator marked "MAN" is no longer visible. This causes the Siemens valve, types VVF..., VVG..., VXF... and VXG... to close (stroke = 0 %).







## Maintenance

The actuators are maintenance-free.

When **servicing** the control device:

	<b>▲ WARNING</b>
	<b>Verbrennungsgefahr durch heiße Antriebskonsole</b> The actuator brackets on heating plants can also become hot from the contact with the hot valve during operation. The temperature of the actuator bracket can reach 100 °C. When servicing the actuator: <ul style="list-style-type: none"><li>• Switch off both pump and operating voltage.</li><li>• Close the main shutoff valve in the piping.</li><li>• Release pressure in the pipes and allow them to cool off completely.</li></ul>

	<b>▲ WARNING</b>
	<b>Risk of injury</b> <ul style="list-style-type: none"><li>• Disconnect electrical connections from the terminals as needed.</li><li>• The actuator must be properly installed prior to recommissioning the valve.</li></ul>




### **Recommendation SKD6..:**

Trigger stroke calibration after maintenance.

### **Repair:**

See Spare parts [→ 12]

	<b>▲ WARNING</b>
	<b>Risk of injury through broken housing or cover</b> Dismounting the actuator with broken housing from the valve can release the highly tensioned spring return, which can cause flying parts and injury. <ul style="list-style-type: none"><li>• NEVER dismount actuator from valve.</li><li>• Dismount valve-actuator combination (control device) as complete unit.</li><li>• Disassembly only by qualified personnel.</li><li>• Send the control device along with an error report to the local Siemens office for analysis and disposal.</li><li>• Mount new control device (valve and actuator) properly.</li></ul>

## Disposal



### **⚠️ WARNUNG**

#### **Tensioned spring return**

Opening the actuator housing can release the highly tensioned return spring, which can cause flying parts and injuries.

- Do not open the actuator housing.




The device is considered an electronic device for disposal in accordance with the European Guidelines and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

## Warranty

Technical data on specific applications are valid only together with Siemens products listed under "Equipment combinations". Siemens rejects any and all warranties in the event that third-party products are used.

Power supply		
Operating voltage		
	SKD32..	AC 230 V ± 15 %
	SKD82..	AC 24 V ± 20 % (SELV/PELV)
	SKD6..	
	SKD62/MO	
Frequency		50 / 60 Hz
Maximum power consumption at 50 Hz		
	SKD32.21	16 VA / 12 W
	SKD32.50	11 VA / 8 W
	SKD32.51	17 VA / 12 W
	SKD82.50, SKD82.50U	9 VA / 7 W
	SKD82.51, SKD82.51U	14 VA / 10 W
	SKD60..	10 VA / 8 W
	SKD62..	14 VA / 10 W
External supply cable fuse		
	SKD32..	Min. 0.5 A, slow Max. 6 A slow
	SKD82..	Min. 1 A, slow
	SKD6..	Max. 10 A slow

Function data			
Positioning time at 50 Hz <sup>1)</sup>			
	SKD32.21	Opening	30 s
		Closing	10 s
	SKD32.5.. SKD82.5..	Opening, closing	120 s
	SK6..	Opening	30 s
		Closing	15 s
Spring-return time <sup>1)</sup>			
	SKD32..	8 s	
	SKD82..		
	SKD62..	15 s	
Positioning force		1000 N	
Nominal stroke		20 mm	
Maximum permissible medium temperature (valve fitted)		-25...150 °C	
		 < 0 °C: Requires stem heater ASZ6.6	

Signal inputs / signal outputs		
Control signal		
	SKD32..	3-position
	SKD82..	
	SKD6..	DC 0...10 V
		DC 4...20 mA
		0...1000 Ω

Signal inputs / signal outputs			
Positioning signal Y SK6..			
	Input impedance	DC 0...10 V	100 k $\Omega$
		DC 4...20 mA	240 $\Omega$
	Signal resolution		< 1 %
	Hysteresis		1 %
Override control Z SK6..			
	Resistor		1000 $\Omega$
	Z not connected, priority terminal Y		No function
	Z connected directly to G		Max. stroke 100 %
	Z connected directly to G0		Min. stroke 0 %
	Z connected to M via 0...1000 $\Omega$		Stroke proportional to R
Position feedback U SK6..			
	Load impedance	DC 0...9,8 V	> 10 k $\Omega$
		DC 4...19.6 mA	< 500 $\Omega$

Enhanced functions SKD60 <sup>2)</sup> , SKD62UA			
Selection of direction of operation			
	SKD60, SKD62UA	Direct-acting / reverse-acting	DC 0...10 V / DC 10...0 V
			DC 4...20 mA / DC 20...4 mA
			0...1000 $\Omega$ / 1000...0 $\Omega$
Stroke limit control			
	SKD62UA	Range of lower limit	0...45 % adjustable
		Range of upper limit	100...55% adjustable
Sequence control			
	SKD62UA	Terminal Y	
		Starting point of sequence	0...15 V adjustable
		Operating range of sequence	3...15 V adjustable
Signal addition			
	SKD62UA	Z connected to R of	
		Frost protection monitor QAF21..	0...1000 $\Omega$ , added to Y signal
		Frost protection monitor QAF61..	DC 1,6 V, added to Y signal

Communication SKD62/MO			
Communication protocol			
	Modbus RTU		RS-485, not galvanically isolated
	Number of nodes		Max. 32
	Address range		1...248 / 255
		Factory setting	255
	Transmission formats		1-8-E-1 / 1-8-O-1 / 1-8-N-1 / 1-8-N-2
		Factory setting	1-8-E-1
	Baud rates (kBaud)		Auto / 9.6 / 19.2 / 38.4 / 57.6 / 76.8 / 115.2
		Factory setting	Auto
	Bus termination		120 $\Omega$ electronically switchable
		Factory setting	Off

Electrical connections and connecting cable		
Wire cross-sectional area		0.5...2.5 mm <sup>2</sup> , AWG 21...14 <sup>3)</sup>
Cable entries		4 x M20 (Ø 20.5 mm)
	With knockouts for standard ½" conduit connectors (Ø 21.5 mm)	Mit Ausbrechöffnungen für ½" Schlauchverbindungen (Ø 21,5 mm)
	SKD62/MO	Fixed connection cable
	Cable length	0.9 m
	Number of cores	5 x 0.75 mm <sup>2</sup>

Degree and class of protection		
Protection class		As per EN 60730
	Automatic action	Typ 1AA / Typ 1AC / Modulation Action
	Pollution degree	2
Housing protection upright to sideways		IP 54 as per EN 60529

Environmental conditions		
Operation		IEC 60721-3-3
	Climatic conditions	
	Temperature, general	-15...<50 °C
	Humidity (non-condensing)	5...95 % r.h.
Transportation		IEC 60721-3-2
	Climatic conditions	
	Temperature	-30...65 °C
	Humidity (non-condensing)	5...95 % r.h.
Storage		IEC 60721-3-1
	Climatic conditions	
	Temperature	-15...50 °C
	Humidity (non-condensing)	-5...95 % r.h.

Directives and standards		
Product standard		EN 60730-x
Electromagnetic compatibility (Applications)		For use in residential, commercial, and industrial environments
EU conformity (CE)		A5W00007752 <sup>4)</sup>
RCM conformity		A5W00007898 <sup>4)</sup>
EAC conformity		Eurasia conformity for all SKD..
UL, cUL	AC 230 V	-
	AC 24 V	UL 873 <a href="http://ul.com/database">http://ul.com/database</a>

Environmental compatibility
The product environmental declarations CE1E4561enX1 (SKD3.., SKD8..) <sup>4)</sup> , CE1E4561enX2 (SKD6..) <sup>4)</sup> and A6V101083254 (external Modbus converter) <sup>4)</sup> contain data on RoHS compliance, materials composition, packaging, environmental benefit and disposal.

Dimensions / weight		
Dimensions		See Dimensions [→ 30]
Weight		
	SKD32.21	3.65 kg
	SKD32.50	3.60 kg
	SKD32.51	3.65 kg
	SKD82.50	3.60 kg
	SKD82.50U	3.85 kg
	SKD82.51	3.65 kg
	SKD82.51U	3.90 kg
	SKD60 SKD62, SKD62/MO	3.60 kg
	External Modbus converter	0.15 kg
	SKD62U SKD62UA	3.85 kg
	Stroke inverter ASK50	1.10 kg

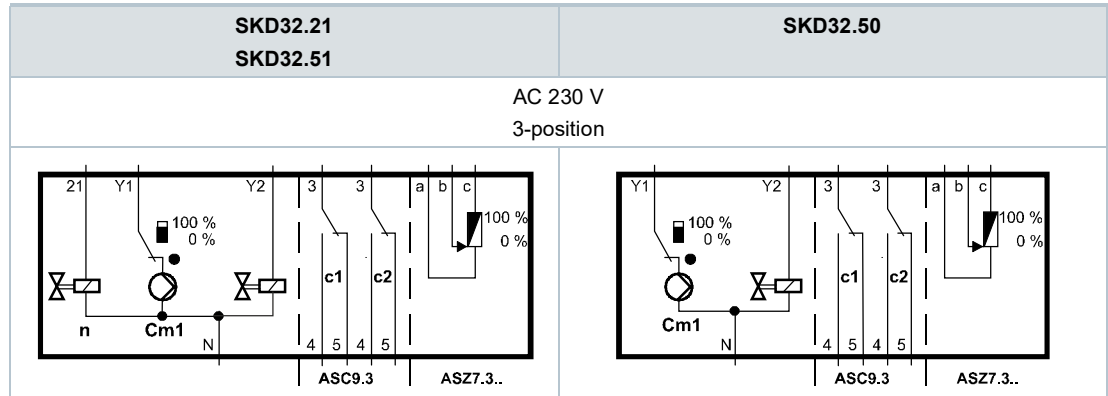
Materials	
Housing	Die-cast aluminium
Bracket	
Housing box	Plastic
Manual adjuster	

Accessories			
Auxiliary switch ASC1.6			
	SKD6..	Switching capacity	AC 24 V, 10 mA...4 A resistive, 2 A inductive
Double auxiliary switch ASC9.3			
	SKD32.., SKD82..	Switching capacity per auxiliary switch	AC 250 V, 6 A resistive, 2.5 A inductive
Potentiometer ASZ7.3			
	SKD32.., SKD82..	Change in overall resistance of potentiometer at nominal stroke	0... 1000 Ω
Stem heater ASZ6.6			
		Operating voltage	AC 24 V ± 20 %
		Power consumption	40 VA / 30 W
		Inrush current	Max. 8.5 A (Max. temperature 85 °C / 185 °F)

- 1) At room temperature (23 °C); low ambient temperatures or high  $\Delta p$  may prolong these times
- 2) From version ..L onward
- 3) AWG = American wire gauge
- 4) The documents can be downloaded at <http://www.siemens.com/bt/download>

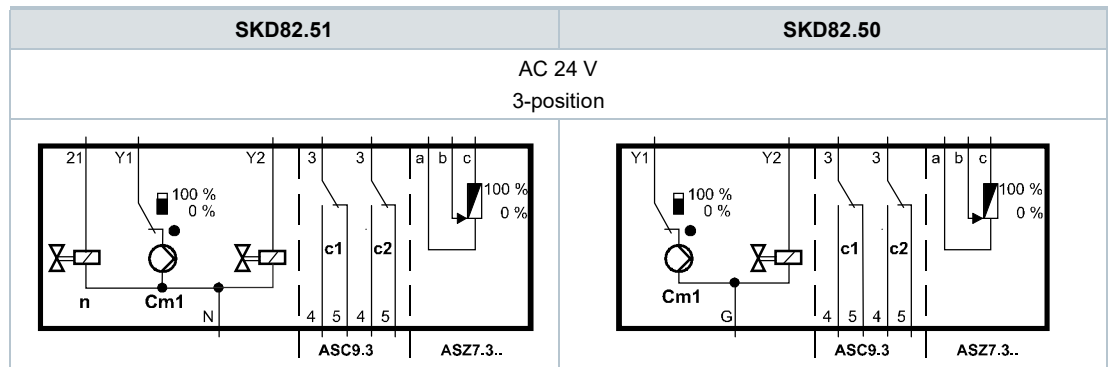
Internal diagrams

SKD32..



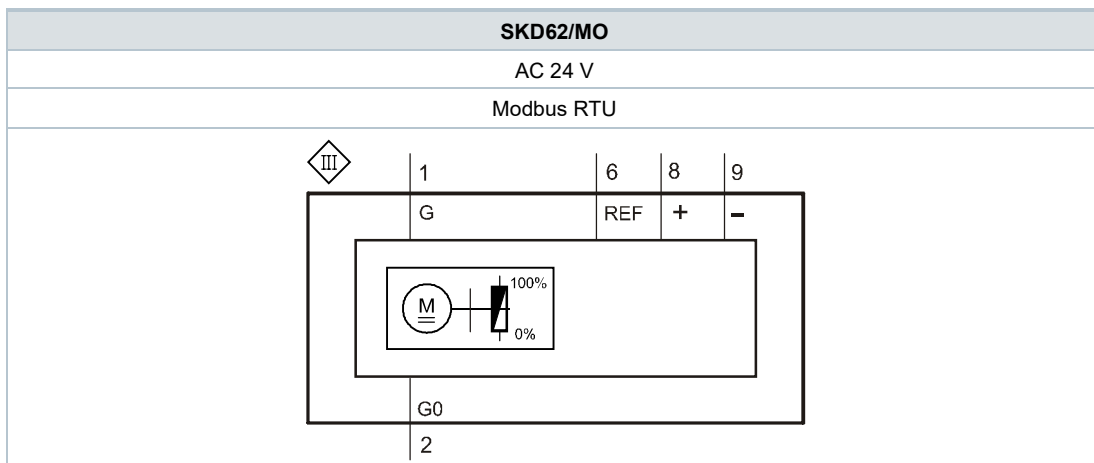
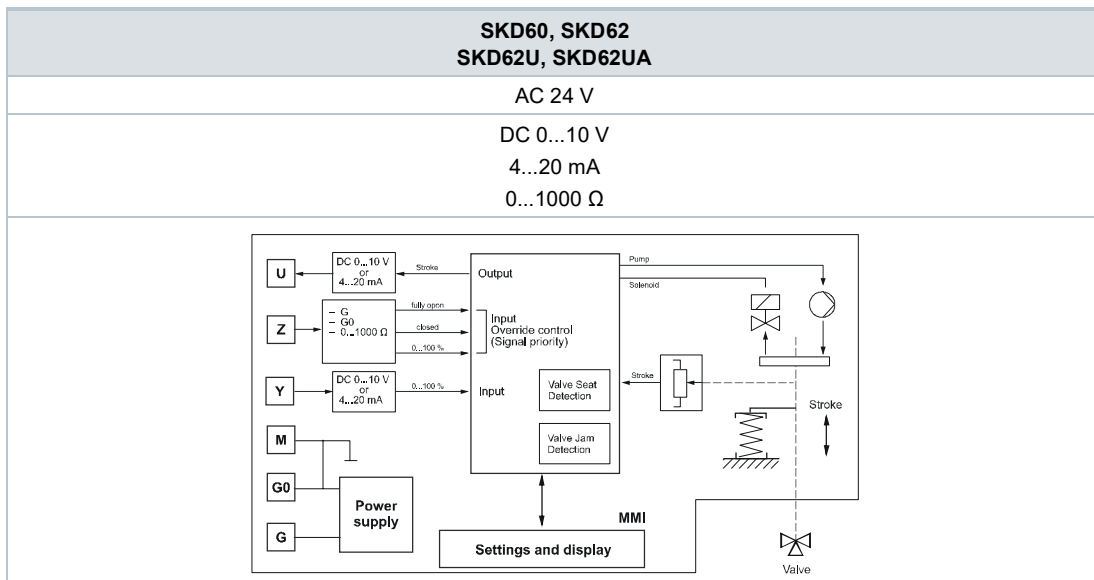
<b>Cm1</b>	End switch
<b>n</b>	Solenoid valve for spring-return
<b>c1, c2</b>	ASC9.3 double auxiliary switch
<b>a, b, c</b>	ASZ7.3 potentionmeter
<b>Y1</b>	Positioning signal „open“
<b>Y2</b>	Positioning signal „close“
<b>21</b>	Spring-return function
<b>N</b>	Neutral conductor

SKD82..



<b>Cm1</b>	End switch
<b>n</b>	Solenoid valve for spring-return
<b>c1, c2</b>	ASC9.3 double auxiliary switch
<b>a, b, c</b>	ASZ7.3 potentionmeter
<b>Y1</b>	Positioning signal „open“
<b>Y2</b>	Positioning signal „close“
<b>21</b>	Spring-return function
<b>G</b>	System potential

SKD6..

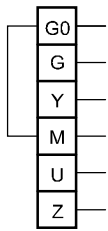


<b>U</b>	Position indication	<b>REF</b>	Reference line (Modbus RTU)
<b>Z</b>	Override control	<b>+</b>	Bus + (Modbus RTU)
<b>Y</b>	Positioning signal	<b>-</b>	Bus - (Modbus RTU)
<b>M</b>	Measuring neutral		
	<b>G0</b>	Operating voltage AC 24 V: System neutral (SN)	
	<b>G</b>	Operating voltage AC 24 V: System potential (SP) Switching without power as a spring-return function	

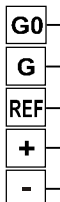


## Connection terminals

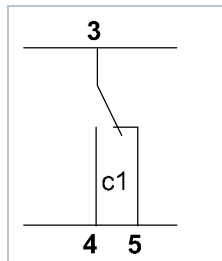
### SKD6..

	AC 24 V	DC 0...10 V 4...20 mA 0...1000 Ω
	System neutral (SN)	
	System potential (SP)	
	Positioning signal DC 0...10 (30) V or DC 4...20 mA	
	Measuring neutral (= G0)	
	Position indication DC 0...10 V oder DC 4...20 mA	
	Override control (Functions [→ 8])	

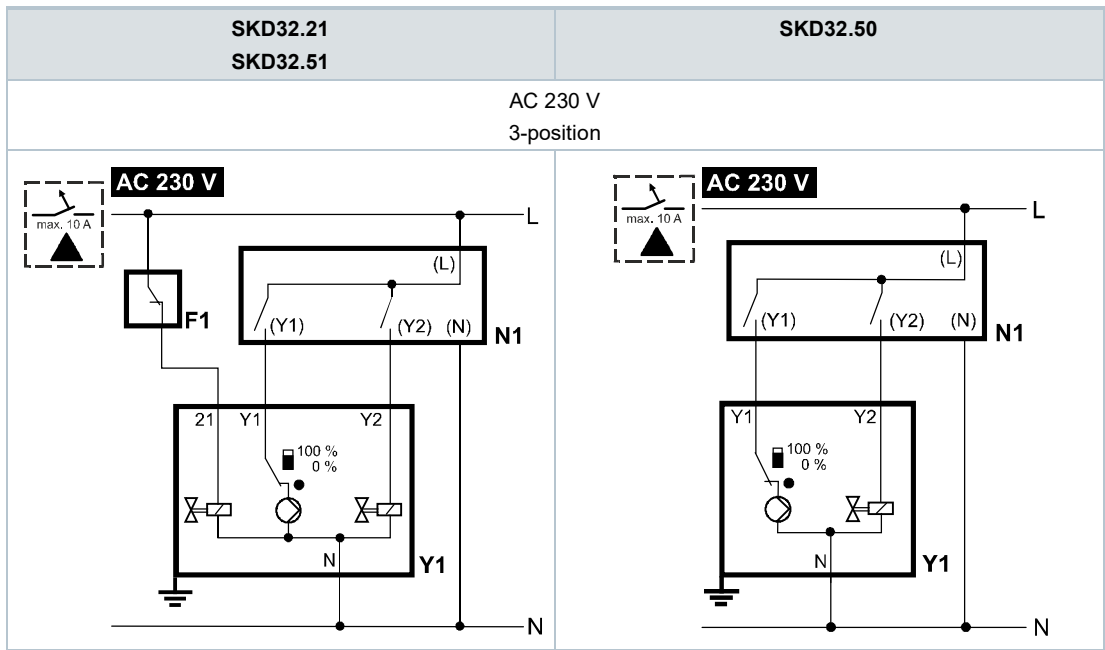
### SKD62/MO

	AC 24 V	Modbus RTU Connection cable
	System neutral (SN)	Black
	System potential (SP)	Red
	Reference line (Modbus RTU)	Violet
	Bus + (Modbus RTU)	Gray
	Bus - (Modbus RTU)	Pink

### Auxiliary switch ASC1.6

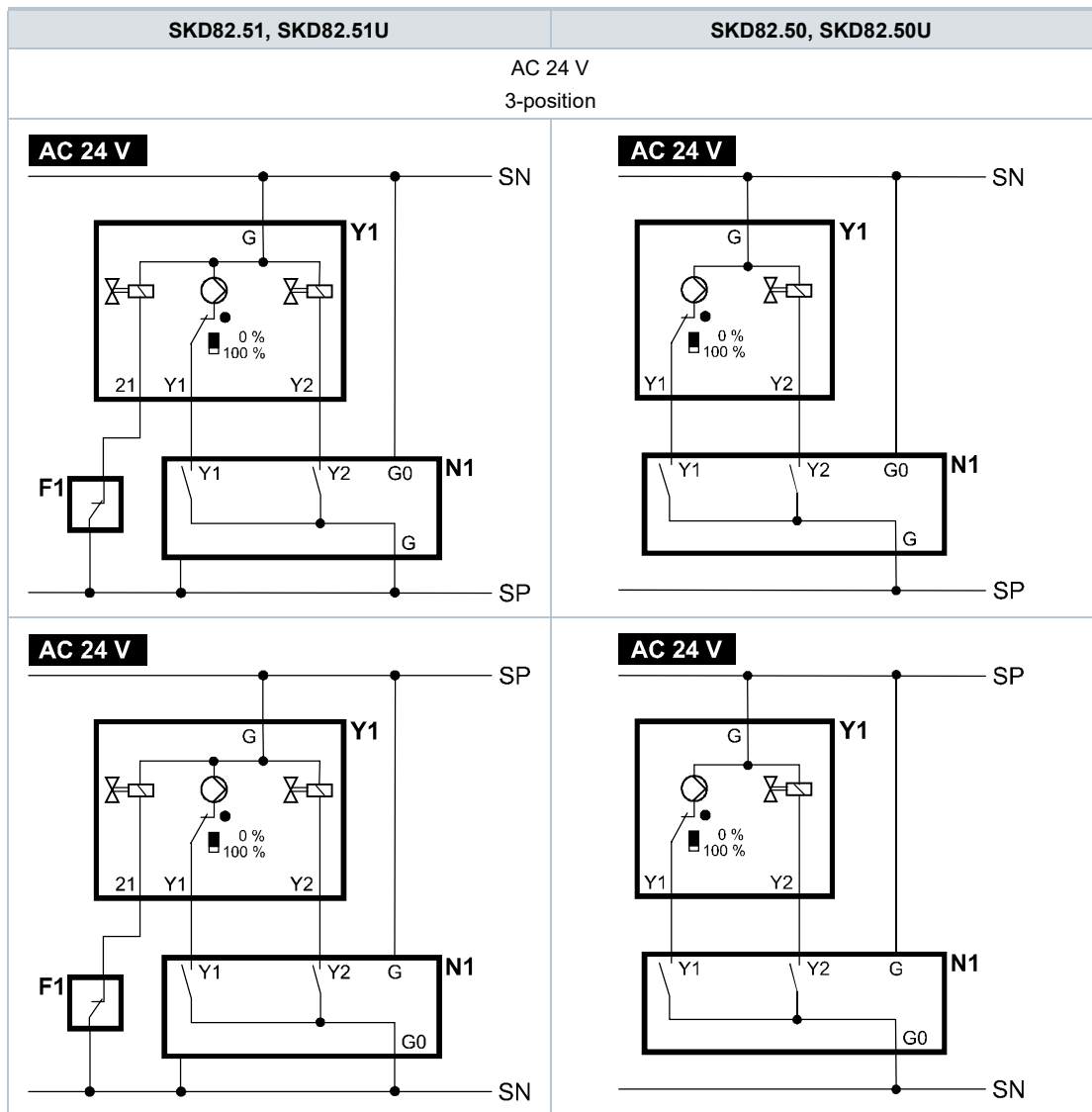


SKD32..



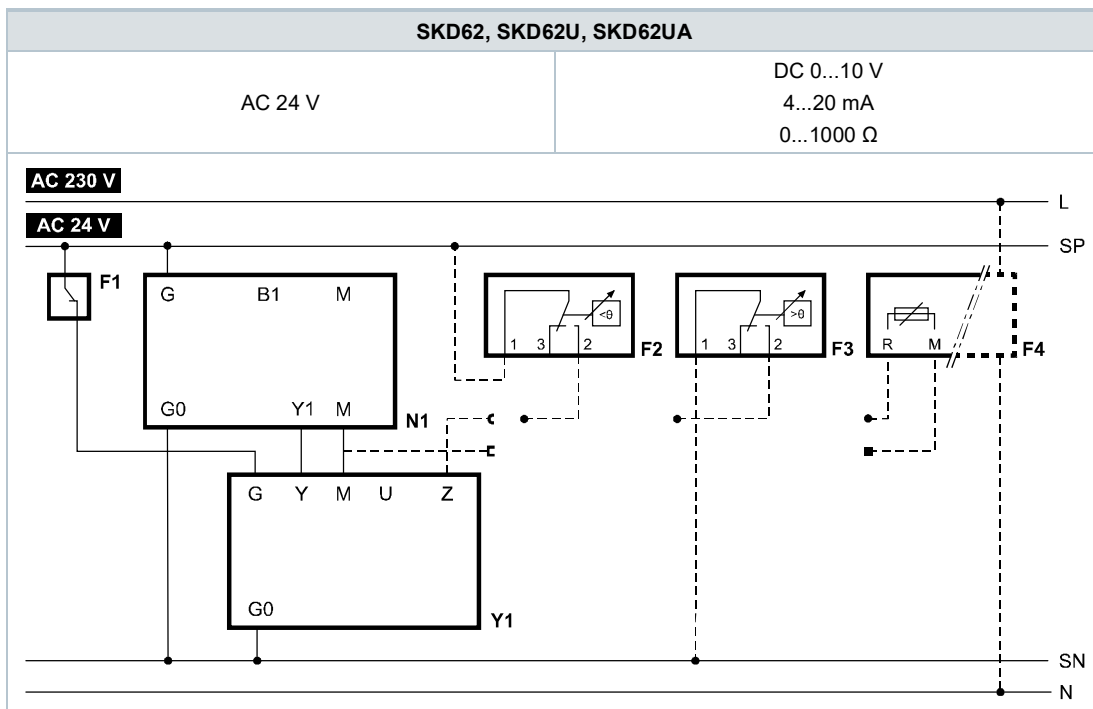
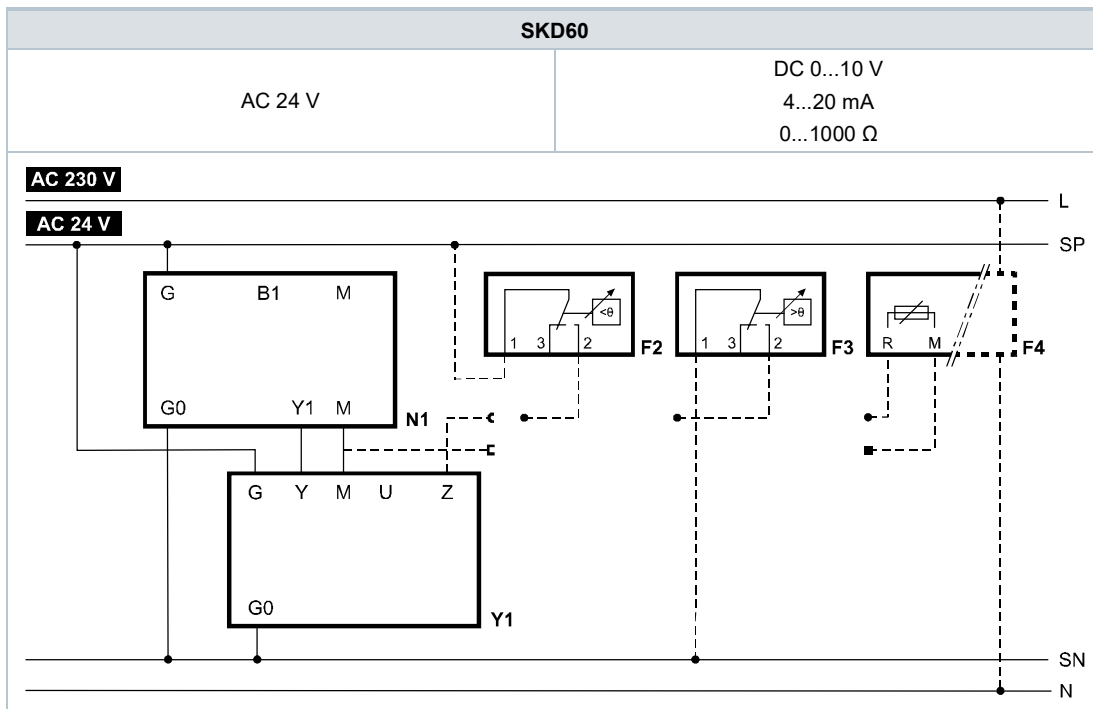
<b>F1</b>	Safety limiter (e.g. temperature limiter)			<b>Y1</b>	Positioning signal „open“
<b>N1, N2</b>	Controller	<b>L</b>	Phase	<b>Y2</b>	Positioning signal „close“
<b>Y1, Y2</b>	Actuators	<b>N</b>	Neutral	<b>21</b>	Spring-return function

SKD82..



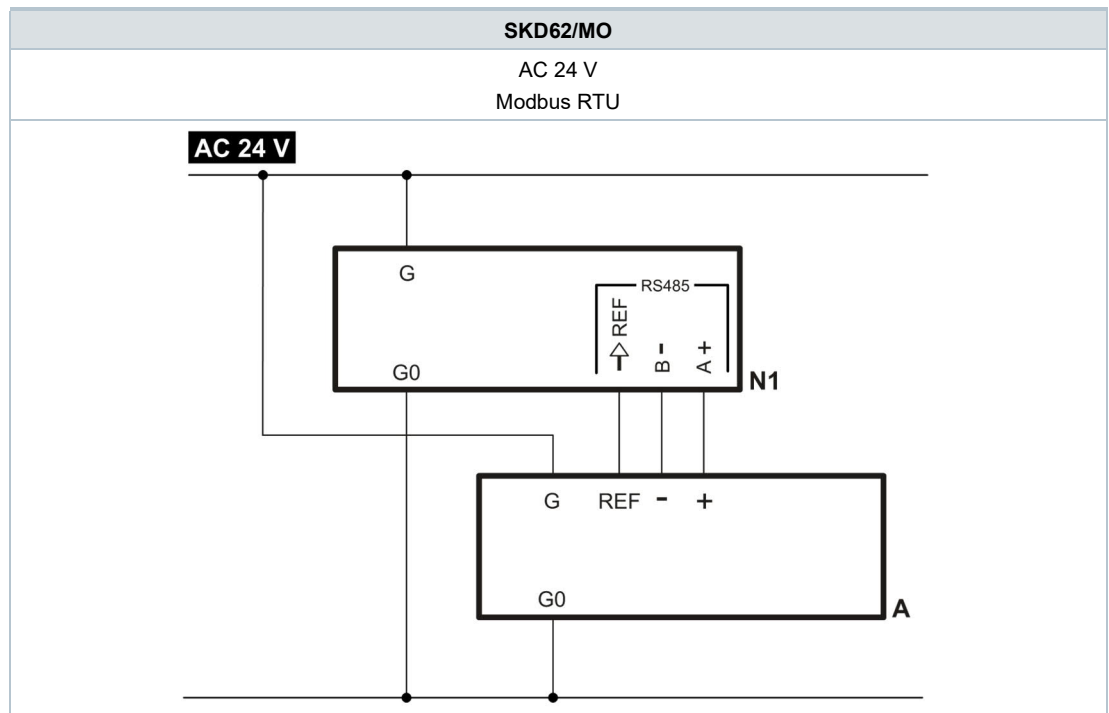
<b>F1</b>	Safety limiter (e.g. temperature limiter)			<b>(Y1), (Y2)</b>	Controller contacts
		<b>SP</b>	System potential AC 24 V	<b>Y1</b>	Positioning signal „open“
<b>N1, N2</b>	Controller	<b>SN</b>	System neutral	<b>Y2</b>	Positioning signal „close“
<b>Y1, Y2</b>	Actuators			<b>21</b>	Spring-return function

SKD6..



<b>Y1</b>	Actuator	<b>F3</b>	Temperature detector
<b>N1</b>	Controller	<b>F4</b>	Frost protection monitor with 0...1000 Ω signal output, e.g. QAF21.. or QAF61.. (only SKB62UA) *)
<b>F1</b>	Safety limiter (e.g. temperature limiter)	<b>G (SP)</b>	System potential AC 24 V
<b>F2</b>	Frost protection thermostat	<b>G0 (SN)</b>	System neutral
		Terminals:	1-2 Frost hazard/sensor is interrupted (thermostat closes with frost)
			1-3 Normal operation

\*) Only SKD62UA: only with sequence control and the appropriate selector switch settings, see Electronics [→ 5], Functions [→ 6]



<b>A</b>	Actuator
<b>N1</b>	Controller
<b>G</b>	System potential
<b>G0</b>	System neutral
<b>REF</b>	Reference line (Modbus RTU)
<b>+</b>	Bus + (Modbus RTU)
<b>-</b>	Bus - (Modbus RTU)



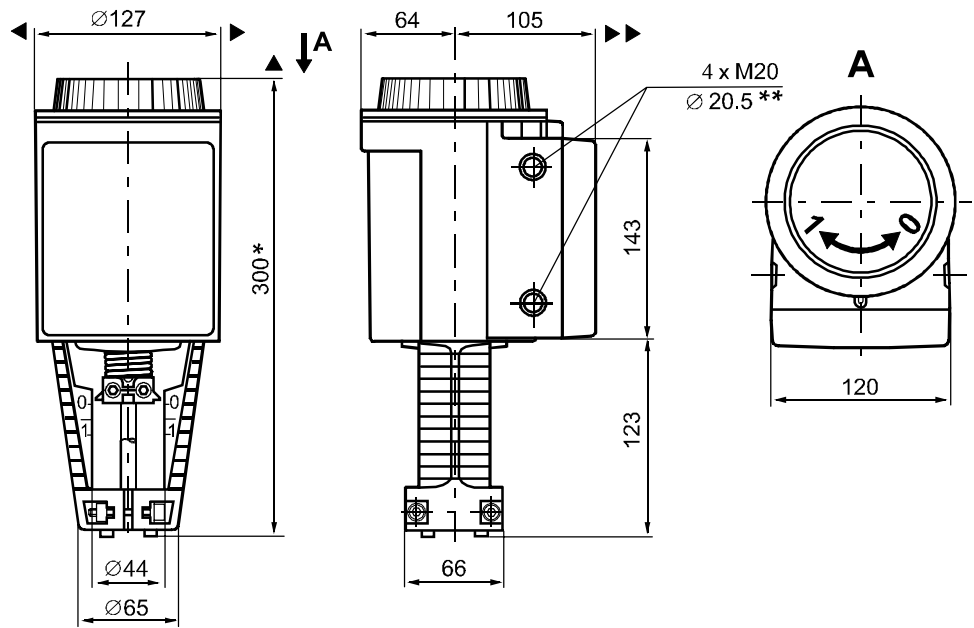
### **HINWEIS**

#### **Using safety limiter F1**

When using the safety limiter F1, ensure that no mistakes may occur on cable insulation that may cancel out the temperature limiter function (applies to both 230 V as well as 24 V types).

- For SN earthing (e.g. PELV) comply under all circumstances with the note above.

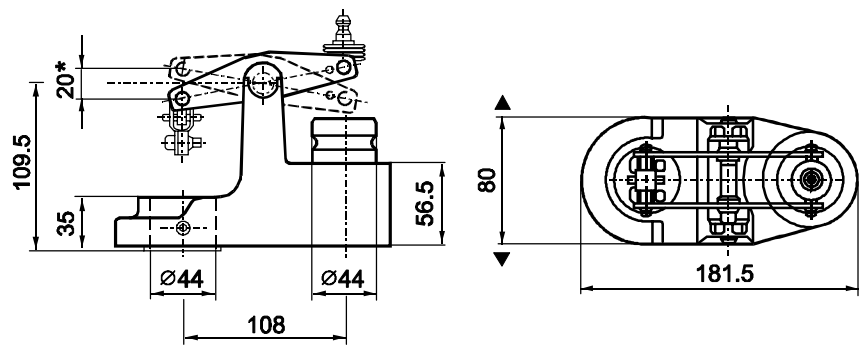
Actuator



All dimensions in mm

*	Height of actuator from plate <b>without</b> stroke inverter <b>ASK50 = 300 mm</b> Height of actuator from plate <b>with</b> stroke inverter <b>ASK50 = 357 mm</b>
**	<b>SKD..U: with knockouts for standard 1/2" conduit connectors (<math>\varnothing 21.5</math> mm)</b>
▶	> 100 mm, um clearance form ceiling or wall for mounting
▶▶	> 200 mm, connection, operation, maintenance, etc.

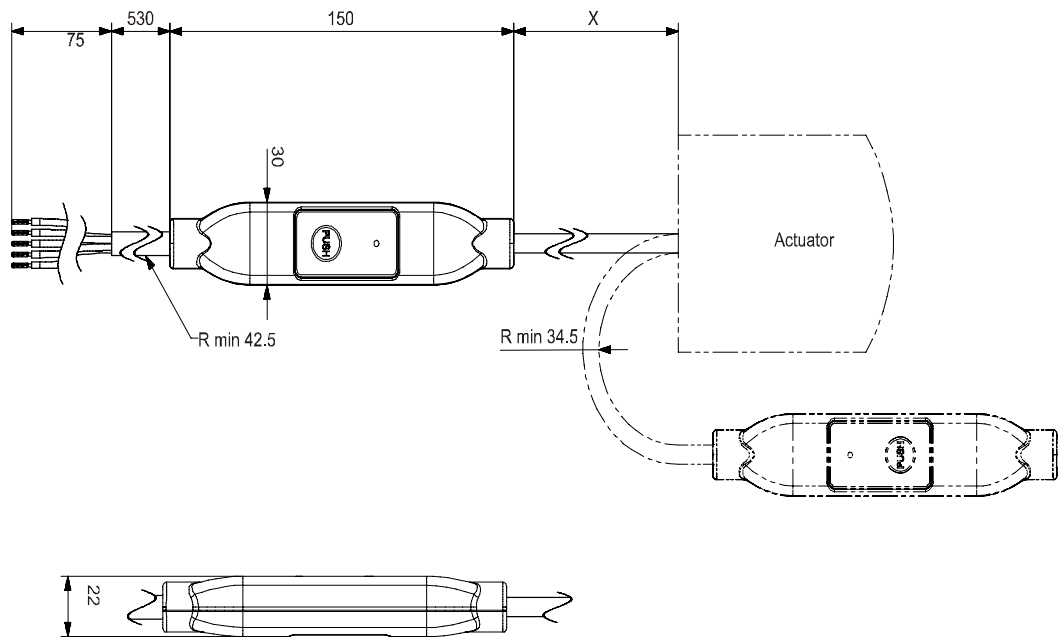
Stroke inverter ASK50



All dimensions in mm

*	Maximum stroke = 20 mm
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## External Modbus converter



All dimensions in mm

X	250 mm
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## Revision numbers

Type	Valid from rev. no.	Type	Valid from rev. no.
SKD32.50	..F	SKD62	..H
SKD32.51	..F	SKD62U	..H
SKD32.21	..F	SKD60	..H
SKD82.50	..F	SKD62UA	..H
SKD82.50U	..F	SKD62/MO	..J
SKD82.51	..F		
SKD82.51U	..F		