

ACVATIX™

## Electro-hydraulic actuators for valves

SKB..



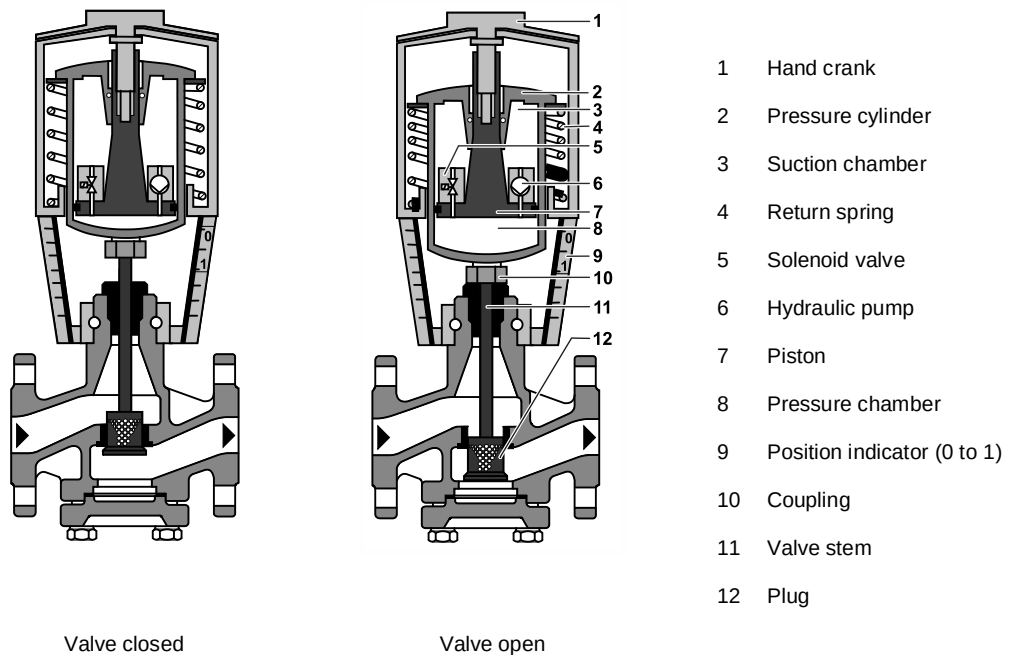
### with 20 mm stroke

- SKB32.. operating voltage AC 230 V, 3-position control signal
- SKB82.. operating voltage AC 24 V, 3-position control signal
- SKB6.. op. voltage AC 24 V, control signal DC 0...10 V, 4...20 mA, 0...1000 Ω
  - SKB62/MO RS-485 for Modbus RTU communication
  - Selectable flow characteristic, position feedback, stroke calibration, LED status indication, override control
  - SKB62UA with selection of direction of operation, stroke limit control, sequence control with adjustable start point and operating range, operation of frost protection monitors QAF21.. and QAF61..
- Positioning force 2800 N
- For direct mounting on valves; no adjustments required
- With hand crank and position indication; optionally with/out spring-return function
- Optional functions with auxiliary switches, potentiometer, stem heater and mechanical stroke inverter
- SKB..U are UL-approved

For the operation of Siemens 2-port and 3-port valves of the series VVF..., VVG..., VXF... and VVG... with 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] into 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

For manual operation swing out the crank so that the display window becomes visible. By rotating the crank clockwise, the pressure cylinder is moved downwards. The display window shows the engagement bar and/or the scale dial with stroke indication.

In manual operation mode, the positioning signals Y and Z can further open the valve, but cannot close 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 crank remains swung out and the red indicator dial remains visible in the display window.



When setting the controller to manual operation for a longer period of time, we recommend adjusting the actuator with the hand crank 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.

### **Automatic operation mode**

For automatic operation, turn the hand crank clockwise to the end stop - position 0 % - until the read scale disappears in the display window. Afterwards, swing the crank closed.

### **Minimum volume flow**

The actuator can be manually adjusted to a stroke position > 0 %, allowing its use in applications requiring a constant minimum volume flow.

### **SKB32.., SKB82..**

#### **3-position control signal**

The actuator is controlled by a 3-position signal via either terminal Y1 or Y2, and generates the desired stroke, which is transferred to the valve stem:

- |                            |                                                          |              |
|----------------------------|----------------------------------------------------------|--------------|
| • Voltage on Y1:           | Piston extends                                           | Valve opens  |
| • Voltage on Y2:           | Piston retracts                                          | Valve closes |
| • No voltage on Y1 and Y2: | Piston and valve stem remain in the respective positions |              |

### **SKB62.., SKB60**

#### **Y positioning signal - DC 0...10 V and/or 0...1000 Ω, DC 4...20 mA**

The actuator is controlled either via terminal Y or override control Z. The positioning signals generate the desired stroke, which is transferred to the valve stem, by means of the above described principle of operation:

- |                        |                                                          |              |
|------------------------|----------------------------------------------------------|--------------|
| • Signal Y increasing: | Piston extends                                           | Valve opens  |
| • Signal Y decreasing: | Piston retracts                                          | Valve closes |
| • Signal Y constant:   | Piston and valve stem remain in the respective positions |              |
| • Override control Z:  | See "Functions [► 7]"                                    |              |

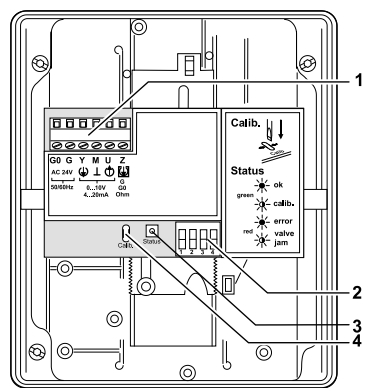
### **Frost protection thermostat, frost protection monitor**

A frost protection thermostat can be connected to the SKB6.. actuator.

The added signals from the frost protection monitors QAF21.. and QAF61.. require the use of SKB62UA actuators. Notes on special programming of the electronics can be found in "Electronics [► 5]".

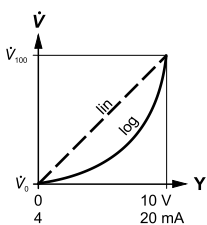
Connection diagrams for operation with frost protection thermostat or monitor can be found in "Connection diagrams [► 27]".

SKB60 <sup>1)</sup>

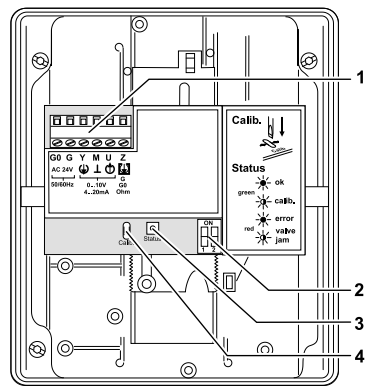


- 1 Connection terminals
- 2 DIL switches
- 3 LED status indication
- 4 Stroke calibration

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

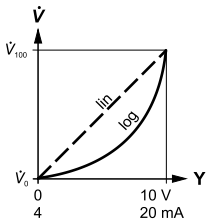
| DIL switches                                                                  |                                                                                     |                |                                                                                     |                           |  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

SKB60 <sup>2)</sup>, SKB62..

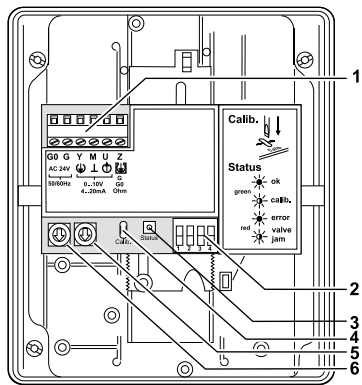


- 1 Connection terminals
- 2 DIL switches
- 3 LED status indication
- 4 Stroke calibration

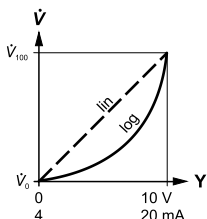
<sup>2)</sup> Up to and including version ..K

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

SKB62UA



- 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<br>Positioning feedback U                                      |              | Flow characteristic                                                                   |                             |
| ON                                    |  | Reverse acting |  | Sequence control<br>Signal addition<br>QAF21../QAF61.. |  | DC 4...20 mA |  | lin = linear                |
| OFF *                                 |  | Direct acting  |  | Stroke limit control                                   |  | DC 0...10 V  |  | log = equal percent-<br>age |
|                                       |                                                                                     |                |                                                                                     |                                                        | Relationship between posi-<br>tioning signal Y and volume<br>flow                   |              |  |                             |
| * Factory setting: all switches "OFF" |                                                                                     |                |                                                                                     |                                                        |                                                                                     |              |                                                                                       |                             |

## SKB62/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 "OFF"); adjustment not permitted.

The actuators are factory set for equal-percentage characteristic.



Actuator-internal characteristic changeover must remain set to "log" (switch 2 "OFF").

## Functions

### Spring-return function

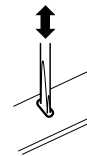
The SKB32.51.., SKB82.51.. and SKB62.. actuators, which feature a spring-return function, incorporate a solenoid valve which opens if the control signal or power fails. The return spring causes the actuator to move to the "0 %" stroke position and closes the valve.

### Stroke calibration

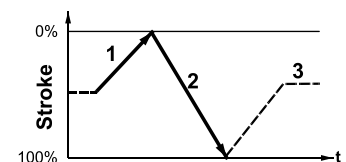
#### SKB60, SKB62.., SKB62/MO

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

- ✓ Actuator SKB6.. mechanically coupled 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 saved.
- ⇒ Normal operation:
  - Actuator moves to the position indicated by signal Y or Z [3].
  - LED lit steadily green, positioning feedback U active, values correspond to the actual positions.



LED flashes green, positioning feedback U inactive



A calibration error is indicated by the LED on the actuator lighting up red.



The LED on the SKB62/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 jam and thus indicated as an error.

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

### LED status indication SKB60, SKB62.., SKB62/MO

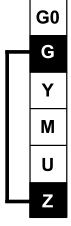
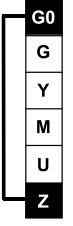
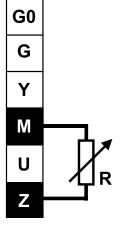
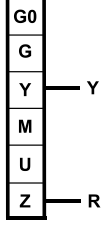
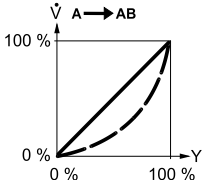
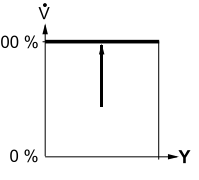
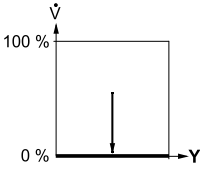
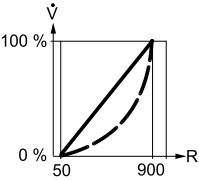
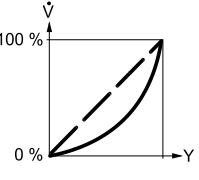
The dual-colored LED indicating the operational status is visible when the cover is removed.

| LED indication                                                                                   | Function                       | Note, trouble shooting                                                               |
|--------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------|
|  Lit green      | Normal operation               | Automatic operation; everything OK                                                   |
|  Flashing green | Stroke calibration in progress | Wait until calibration is finished<br>(LED stops flashing, instead 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             | Trouble shoot, check valve, restart stroke calibration                               |
|  Off            | No power supply                | Check mains network, check wiring                                                    |
|                                                                                                  | Electronics faulty             | Replace electronics                                                                  |

The LED can exclusively assume the states shown above - continuously lit red or green, flashing red or green, or off/dark.

### Override control Z SKB60, SKB62..

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

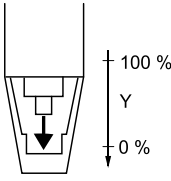
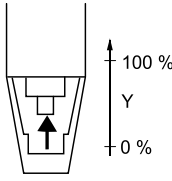
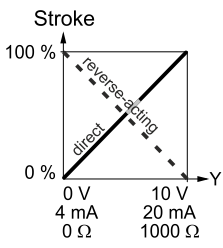
| Z mode      |                                                                                     |                                                                                       |                                                                                        |                                                                                                                                                           |                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
|             | No function                                                                         | Fully open                                                                            | Closed                                                                                 | Override with<br>0...1000 Ω                                                                                                                               | Signal addition<br>SKB62UA only                                                                                             |
| Connections |  |    |     |                                                                      |                                        |
| Transfer    |  |    |     |                                                                      |                                        |
|             | Equal percentage or linear characteristic                                           |                                                                                       |                                                                                        |                                                                                                                                                           | Equal percentage or linear characteristic                                                                                   |
|             | <ul style="list-style-type: none"> <li>• Z contact not connected</li> </ul>         | <ul style="list-style-type: none"> <li>• Z contact connected directly to G</li> </ul> | <ul style="list-style-type: none"> <li>• Z contact connected directly to G0</li> </ul> | <ul style="list-style-type: none"> <li>• Z contact connected to M via resistor R</li> <li>• Starting pos. at 50 Ω</li> <li>• End pos. 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 SKB60 (from version ..L), SKB62UA

- With NC (= normally closed) valves, "direct acting" means that with a signal input of 0 V, the valve closes (applies to all Siemens valve listed in "Equipment combinations [► 13]").
- With NO (= 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<br>DC 4...20 mA<br>0...1000 Ω | Input                                                                             | DC 0...10 V<br>DC 4...20 mA<br>0...1000 Ω |                                                                                     |



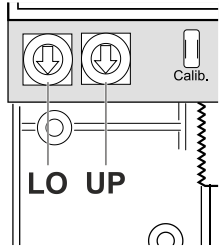
The mechanical spring-return function is not affected by the selection of the direction of operation.

#### Stroke control with QAF21.. / QAF61.. signal addition SKB62UA

Setting the signal addition

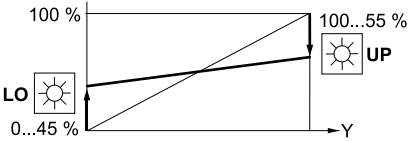
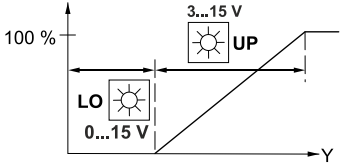
The operating range of the frost protection monitor QAF21.. or QAF61.. can be defined with rotary switches LO and UP.

| Position of LO | Sequence control start point | Position of UP | QAF21.. / QAF61.. operating range |
|----------------|------------------------------|----------------|-----------------------------------|
| 0              | →                            | 1              | QAF21..                           |
| 0              | →                            | 2              | QAF61..                           |





## Stroke limit control and sequence control SKB62UA

| Stroke limit control setting                                                                                                             |                    |                |                    | Sequence control setting                                                                                     |                              |                |                                  |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------|--------------------|--------------------------------------------------------------------------------------------------------------|------------------------------|----------------|----------------------------------|
| 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 QAF21.. (see "Stroke control with QAF21.. / QAF61.. signal addition", "Functions [► 8]")

\*\* Operating range QAF61.. (see "Stroke control with QAF21.. / QAF61.. signal addition", "Functions [► 8]")

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

## Type summary

| Type                         |                |             | Operating voltage | Positioning signal                     | Spring-return |      | Positioning time |         |
|------------------------------|----------------|-------------|-------------------|----------------------------------------|---------------|------|------------------|---------|
|                              | Stock no.      | Electronics |                   |                                        | Function      | Time | Opening          | Closing |
| SKB32.50 <sup>1)</sup>       | BPZ:SKB32.50   | -           | AC 230 V          | 3-position                             | -             |      | 120 s            | 120 s   |
| SKB32.50/F <sup>1), 3)</sup> | BPZ:SKB32.50/F |             |                   |                                        |               |      |                  |         |
| SKB32.51 <sup>1)</sup>       | BPZ:SKB32.51   |             |                   |                                        | yes           | 10 s |                  |         |
| SKB32.51/F <sup>1), 3)</sup> | BPZ:SKB32.51/F |             |                   |                                        |               |      |                  |         |
| SKB82.50 <sup>1)</sup>       | BPZ:SKB82.50   |             |                   |                                        | -             |      | 120 s            | 120 s   |
| SKB82.50U <sup>2)</sup>      | BPZ:SKB82.50U  |             |                   |                                        |               |      |                  |         |
| SKB82.51 <sup>1)</sup>       | BPZ:SKB82.51   |             |                   |                                        | yes           | 10 s |                  |         |
| SKB82.51U <sup>2)</sup>      | BPZ:SKB82.51U  |             |                   |                                        |               |      |                  |         |
| SKB60 <sup>1), 4)</sup>      | BPZ:SKB60      | Standard    | AC 24 V           | DC 0...10 V<br>4...20 mA<br>0...1000 Ω | -             |      | 10 s             | 10 s    |
| SKB62 <sup>1)</sup>          | BPZ:SKB62      |             |                   |                                        |               |      |                  |         |
| SKB62/F <sup>1), 3)</sup>    | BPZ:SKB62/F    |             |                   |                                        |               |      |                  |         |
| SKB62U <sup>2)</sup>         | BPZ:SKB62U     |             |                   |                                        |               |      |                  |         |
| SKB62UA <sup>2), 5)</sup>    | BPZ:SKB62UA    | Enhanced    |                   | Modbus RTU                             |               |      |                  |         |
| SKB62/MO <sup>2)</sup>       | S55195-A127    | Standard    |                   |                                        |               |      |                  |         |

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

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

<sup>3)</sup> Only available in France

<sup>4)</sup> Additional functions (from version ..L): direction of operation, fail-in-place

<sup>5)</sup> Additional 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.

### Ordering example

| Type / Stock no.       | Designation         | Quantity |
|------------------------|---------------------|----------|
| SKB62/MO / S55195-A127 | Actuator Modbus RTU | 1        |
| ASC1.6 / BPZ:ASC1.6    | Auxiliary switch    | 1        |

## Accessories

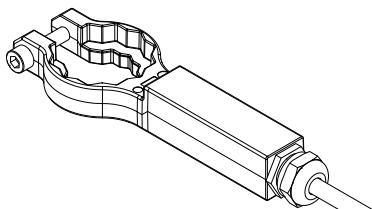
| Type    | Auxiliary switch | Double aux. switch | Potentiometer 1000 $\Omega$ | Stem heater AC 24 V  | Mechanical stroke inverter |
|---------|------------------|--------------------|-----------------------------|----------------------|----------------------------|
|         | ASC1.6           | ASC9.3             | ASZ7.3                      | ASZ6.6 [S55845-Z108] | ASK51                      |
|         | Total max. 2     |                    |                             |                      |                            |
| SKB32.. | -                | Max. 1             | Max. 1                      | Max. 1               | Max. 1                     |
| SKB82.. |                  |                    |                             |                      |                            |
| SKB6..  | Max. 1           | -                  | -                           |                      |                            |

### SKB..

#### ASZ6.6 [S55845-Z108]

Stem heater

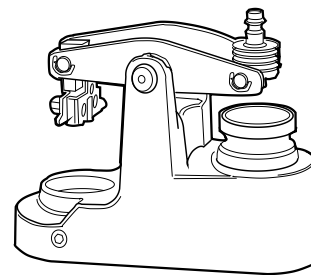
- For media below 0 °C
- Mount between valve and actuator



#### ASK51 [BPZ:ASK51]

Mechanical stroke inverter

- 0 % actuator stroke corresponds to 100 % valve stroke
- Mount between valve and actuator

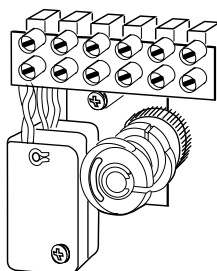


### SKB32.. SKB82..

#### ASC9.3 [BPZ:ASC9.3]

Double auxiliary switch

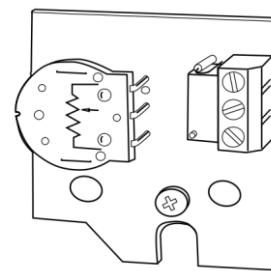
- Adjustable switching points



#### ASZ7.3 [BPZ:ASZ7.3]

Potentiometer

- 0...1000  $\Omega$

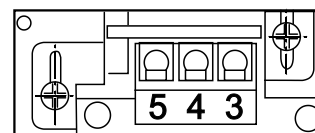


### SKB60 SKB62..

#### ASC1.6 [BPZ:ASC1.6]

Auxiliary switch

- Switching point 0...5 % stroke



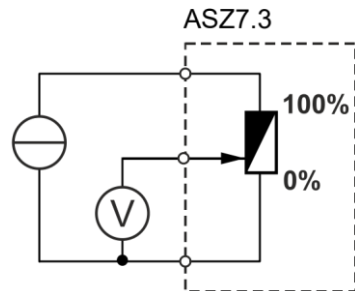


### ASZ7.3

For the combination SIMATIC S5/S7 and use of positioning feedback, we recommend actuators with DC 0...9.8 V feedback signals.

The signal peaks occurring 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.

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.



For more information, see "Technical data [► 19]".

### Spare parts

| Actuator             | Cover                                                                               | Hand crank <sup>1)</sup>                                                            | Clamp                                                                                | Stem connection                                                                       | Electronics<br>(control unit)                                                         |
|----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                      |  |  |  |  |  |
| SKB32.50, SKB32.50/F | 410455828                                                                           | 426855108                                                                           | 410355768                                                                            | 417856498                                                                             | -                                                                                     |
| SKB32.51, SKB32.51/F |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| SKB82.50             |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| SKB82.50U            |                                                                                     |                                                                                     | 410356058                                                                            |                                                                                       |                                                                                       |
| SKB82.51             |                                                                                     |                                                                                     | 410355768                                                                            |                                                                                       |                                                                                       |
| SKB82.51U            |                                                                                     |                                                                                     | 410356058                                                                            |                                                                                       |                                                                                       |
| SKB60                |                                                                                     |                                                                                     | 410355768                                                                            |                                                                                       | 466857598                                                                             |
| SKB62, SKB62/F       |                                                                                     |                                                                                     | 410356058                                                                            |                                                                                       | 466857488                                                                             |
| SKB62U               |                                                                                     |                                                                                     |                                                                                      |                                                                                       | 466857518                                                                             |
| SKB62UA              |                                                                                     |                                                                                     |                                                                                      |                                                                                       | 466857488                                                                             |
| SKB62/MO             |                                                                                     |                                                                                     |                                                                                      |                                                                                       | 410355768                                                                             |

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

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

| Valve type            |          | DN      | PN class | k <sub>vs</sub> | Data sheet  |
|-----------------------|----------|---------|----------|-----------------|-------------|
|                       |          |         |          | [m³/h]          |             |
| VVF21.. <sup>1)</sup> | Flanged  | 25...80 | 6        | 1.9...100       | N4310       |
| VVF22..               |          |         |          | 2.5...100       | N4401       |
| VVF31.. <sup>1)</sup> |          | 15...80 | 10       |                 | N4320       |
| VVF32..               |          |         |          | 1.6...100       | N4402       |
| VVF40.. <sup>1)</sup> |          | 50      | 16       | 1.9...100       | N4330       |
| VVF41.. <sup>1)</sup> |          |         |          | 19...31         | N4340       |
| VVF45..               |          |         |          |                 | N4345       |
| VVF42..               |          | 15...80 | 25       | 1.6...100       | N4403       |
| VVF52.. <sup>1)</sup> |          | 15...50 |          | 0.16...25       | N4373       |
| VVF53..               |          | 15...40 |          | 0.16...40       | N4405       |
| VVF61..               |          | 15...50 | 40       | 0.19...31       | N4382       |
| VVF63..               |          |         |          | 0.2...36        | A6V11459527 |
| VVG41..               | Threaded |         | 16       | 0.63...40       | N4363       |

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

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

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

| Valve type            |          | DN      | PN class | k <sub>vs</sub> | Data sheet  |
|-----------------------|----------|---------|----------|-----------------|-------------|
|                       |          |         |          | [m³/h]          |             |
| VXF21.. <sup>1)</sup> | Flanged  | 25...80 | 6        | 1.9...100       | N4410       |
| VXF22..               |          |         |          | 2.5...100       | N4401       |
| VXF31.. <sup>1)</sup> |          | 15...80 | 10       |                 |             |
| VXF32..               |          |         |          | 1.6...100       | N4402       |
| VXF40.. <sup>1)</sup> |          | 15...50 | 16       | 1.9...100       | N4430       |
| VXF41.. <sup>1)</sup> |          |         |          | 1.9...31        | N4440       |
| VXF42..               |          |         |          | 1.6...100       | N4403       |
| VXF53..               |          | 15...50 | 25       | 1.6...40        | N4405       |
| VXF61..               |          |         | 40       | 1.9...31        | N4482       |
| VXF63..               |          |         |          | 0.2...36        | A6V11459527 |
| VXG41..               | Threaded |         | 16       | 1.6...40        | N4463       |

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

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



Third-party valves with strokes between 6...20 mm can be motorized, provided they have "closed in de-energized state" fail-safe mechanisms and provided that the necessary mechanical coupling is available. For SKB32.. and SKB82..., 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

| SKB..                                                        |       |               | Accessories      | Mounting instructions |               |
|--------------------------------------------------------------|-------|---------------|------------------|-----------------------|---------------|
| Mounting instructions SKB..                                  | M3240 | 74 319 0324 0 | ASC1.6           | G4563.3               | 4 319 5544 0  |
| 74 319 0326 0<br>(Setting instructions standard electronics) |       |               | ASC9.3           | G4561.3               | 4 319 5545 0  |
|                                                              |       |               | ASK51            | M4561.6               | 4 319 5550 0  |
| A5W00027551<br>(Mounting instructions Modbus converter)      |       |               | ASZ7.3           | 74 319 0247 0         |               |
|                                                              |       |               | ACT control unit | M4568                 | 74 319 0554 0 |
| A6V12057657<br>(Modbus communication profiles)               |       |               | QAF21..          | 74 319 0399 0         |               |
|                                                              |       |               | ASZ6.6           | 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>

## Notes

### Safety

#### CAUTION



##### National safety regulations

Failure to comply with national safety regulations may result in personal injury and property damage.

- Observe national provisions and comply with the appropriate safety regulations.

#### WARNING



##### Tensioned return spring

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

- Do not open the actuator housing.

## ⚠ WARNING



### Risk of injury through broken housing or cover

Dismounting the actuator with broken housing from the valve can release the highly tensioned return spring, which can lead to flying parts and injuries.

- NEVER dismount actuator from valve.
- Dismount valve-actuator combination (control device) as complete unit.
- Disassembly only by qualified personnel.
- Send the control device along with an error report to the local Siemens office for analysis and disposal.
- Mount new control device (valve and actuator) properly.

## ⚠ WARNING



### Risk of burns from hot actuator brackets

The actuator brackets on heating plants will become hot from contact with the hot valve during operation. The temperature of the actuator bracket can reach 100 °C.

When servicing the actuator:

- Switch off both pump and operating voltage.
- Close the main shut-off valve in the piping.
- Release pressure in the pipes and allow them to cool off completely.

## Engineering

Perform the electrical connections in accordance with local regulations on electrical installations, as well as the section "Connection diagrams [► 27]".

## NOTICE



### Using a safety limiter

Failure to comply with the applicable regulations for cable insulation may result in the suspension of the safety limiter function.

- Compliance with all applicable regulations for cable insulation must be ensured by the plant operator.

## ⚠ WARNING



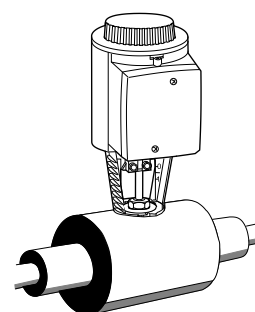
### Risk of injury and fire from hot device parts

For media below 0 °C, the stem heater ASZ6.6 keeps the valve stem free of ice. 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.

- For safety reasons, the stem heater is operated with AC 24 V / 30 W.

Recommendation: For media above 140 °C, the valve must be insulated.



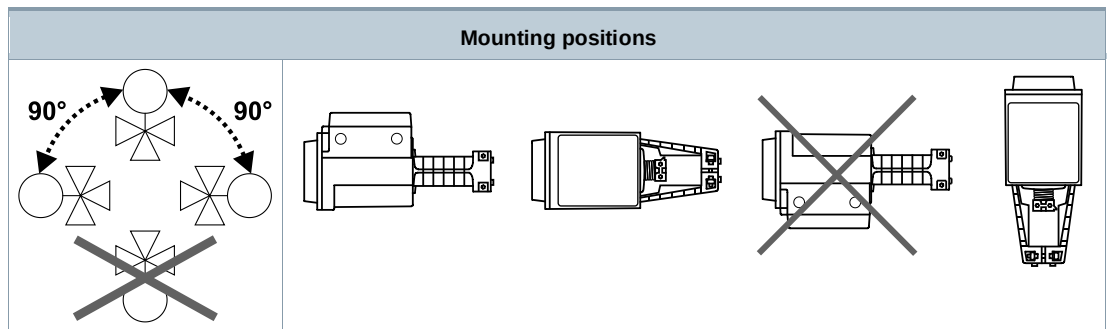
Observe permissible temperatures, see "Use [► 2]" and "Technical data [► 19]".

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 [► 27]".

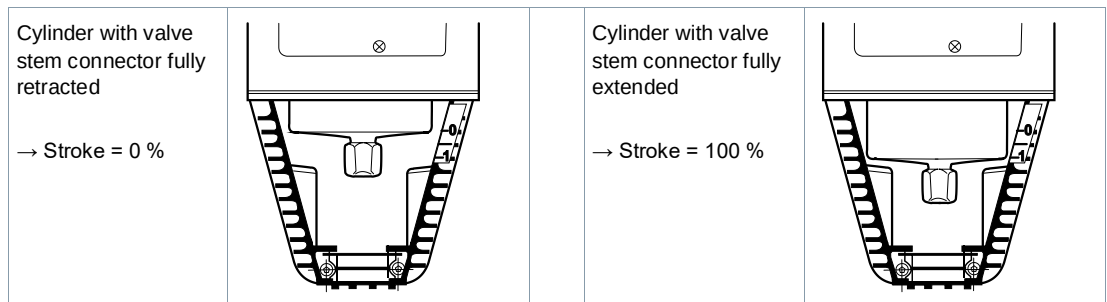
## Mounting

The mounting instructions M3240 / 74 319 0324 0 for fitting the actuator to the valve and A5W00027551 for SKB62/MO are enclosed in the actuator packaging. The instructions for accessories are enclosed with the accessories themselves (see "Product documentation [► 14]").



## 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 hand crank must be rotated counter-clockwise to the end stop, in order to close the Siemens valves of the series VVF.. and VXF.. (stroke = 0 %).

## Operation

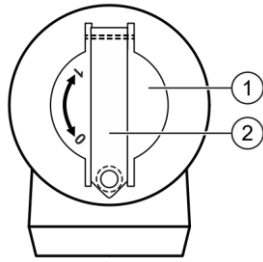
### Automatic operation

For automatic operation, the crank [2] on the manual stroke adjuster [1] must be engaged. If not engaged, turn the crank counter-clockwise until the display window [3] shows neither the scale [4] nor the crank engagement bar.

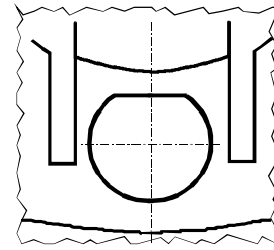
### Manual operation

For manual operation, swing out the crank [2] so that the display window [3] becomes visible. By rotating the crank or the manual adjuster [1], the display window shows the engagement bar and/or the scale dial [4] with stroke indication.

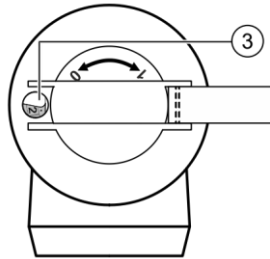




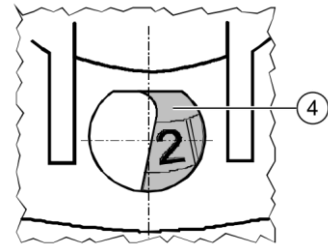
Engaged crank [2] on the manual adjuster [1]



Display window with invisible scale dial and crank engagement bar



Swung-out crank; display window [3]



Display window with scale dial [4] and stroke indication in mm

## Maintenance

Actuators are maintenance-free.

### Servicing the control device:

#### ⚠ WARNING



##### **Risk of burns from hot actuator brackets**

The actuator brackets on heating plants will become hot from contact with the hot valve during operation. The temperature of the actuator bracket can reach 100 °C.

When servicing the actuator:

- Switch off both pump and operating voltage.
- Close the main shut-off valve in the piping.
- Release pressure in the pipes and allow them to cool off completely.

#### ⚠ WARNING



##### **Risk of injury**

- Disconnect electrical connections from the terminals as needed.
- The actuator must be properly installed prior to recommissioning the valve.



##### **Recommendation SKB6..:**

Trigger stroke calibration after maintenance.

## Repair:

See "Spare parts [► 12]"

|  <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 lead to flying parts and injuries.</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> |

## Disposal

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



This symbol or any other national label indicate that the product, its packaging, and, where applicable, any batteries may not be disposed of as domestic waste. Delete all personal data and dispose of the item(s) at separate collection and recycling facilities in accordance with local and national legislation.

For additional details, refer to [Siemens information on disposal](#).

## Warranty

The application-specific technical data is guaranteed only in combination with the Siemens products listed in the "Equipment combinations" section. If third-party products are used, any guarantee provided by Siemens will be invalidated.

| Power supply                       |                      |                                   |
|------------------------------------|----------------------|-----------------------------------|
| Operating voltage                  |                      |                                   |
|                                    | SKB32..              | AC 230 V $\pm$ 15 %               |
|                                    | SKB82..              | AC 24 V $\pm$ 20 % (SELV/PELV)    |
|                                    | SKB6..               |                                   |
| Frequency                          |                      | 50 / 60 Hz                        |
| Maximum power consumption at 50 Hz |                      |                                   |
|                                    | SKB32.50, SKB32.50/F | 10 VA / 8 W                       |
|                                    | SKB32.51, SKB32.51/F | 16 VA / 12 W                      |
|                                    | SKB82.50, SKB82.50U  | 8 VA / 7 W                        |
|                                    | SKB82.51, SKB82.51U  | 12 VA / 9 W                       |
|                                    | SKB60                | 10 VA / 8 W                       |
|                                    | SKB62..              | 14 VA / 10 W                      |
| External supply cable fuse         |                      |                                   |
|                                    | SKB32..              | Min. 0.5 A, slow<br>Max. 6 A slow |
|                                    | SKB82..              | Min. 1 A, slow<br>Max. 10 A slow  |
|                                    | SKB6..               |                                   |

| Function data                                         |                      |                  |                                                                                                                                                            |
|-------------------------------------------------------|----------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Positioning time at 50 Hz <sup>1)</sup>               |                      |                  |                                                                                                                                                            |
|                                                       | SKB32..              | Opening, Closing | 120 s                                                                                                                                                      |
|                                                       | SKB82..              |                  |                                                                                                                                                            |
|                                                       | SKB6..               | Opening          | 120 s                                                                                                                                                      |
|                                                       |                      | Closing          | 10 s                                                                                                                                                       |
| Spring-return time <sup>1)</sup>                      |                      |                  |                                                                                                                                                            |
|                                                       | SKB32.51, SKB32.51/F |                  | 10 s                                                                                                                                                       |
|                                                       | SKB82.51, SKB82.51U  |                  |                                                                                                                                                            |
|                                                       | SKB62..              |                  |                                                                                                                                                            |
| Positioning force                                     |                      |                  | 2800 N                                                                                                                                                     |
| Nominal stroke                                        |                      |                  | 20 mm                                                                                                                                                      |
| Maximum permissible medium temperature (fitted valve) |                      |                  | -25...220 °C                                                                                                                                               |
|                                                       |                      |                  | <div><div></div><div>&lt; 0 °C: Requires stem heater ASZ6.6</div></div> |

| Signal inputs / signal outputs |                                      |                |                          |
|--------------------------------|--------------------------------------|----------------|--------------------------|
| Control signal                 |                                      |                |                          |
|                                | SKB32..                              | 3-position     |                          |
|                                | SKB82..                              |                |                          |
|                                | SKB6..                               | DC 0...10 V    |                          |
|                                |                                      | DC 4...20 mA   |                          |
|                                |                                      | 0...1000 Ω     |                          |
| Positioning signal Y (SKB6..)  |                                      |                |                          |
|                                | Input impedance                      | DC 0...10 V    | 100 kΩ                   |
|                                |                                      | DC 4...20 mA   | 240 Ω                    |
|                                | Signal resolution                    |                | < 1 %                    |
|                                | Hysteresis                           |                | 1 %                      |
| Override control Z (SKB6..)    |                                      |                |                          |
|                                | Resistor                             |                | 0...1000 Ω               |
|                                | 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 Ω      |                | Stroke proportional to R |
| Position feedback U (SKB6..)   |                                      |                |                          |
|                                | Load impedance                       | DC 0...9.8 V   | > 10 kΩ                  |
|                                |                                      | DC 4...19.6 mA | < 500 Ω                  |

| Additional functions SKB60 <sup>2)</sup> , SKB62UA |                   |                                     |                               |
|----------------------------------------------------|-------------------|-------------------------------------|-------------------------------|
| Selection of direction of operation                |                   |                                     |                               |
|                                                    | SKB60,<br>SKB62UA | Direct-acting / reverse-act-<br>ing | DC 0...10 V / DC 10...0 V     |
|                                                    |                   |                                     | DC 4...20 mA / DC 20...4 mA   |
|                                                    |                   |                                     | 0...1000 Ω / 1000...0 Ω       |
| Stroke limit control                               |                   |                                     |                               |
|                                                    | SKB62UA           | Range of lower limit                | 0...45 % adjustable           |
|                                                    |                   | Range of upper limit                | 100...55% adjustable          |
| Sequence control                                   |                   | Terminal Y                          |                               |
|                                                    | SKB62UA           | Start point of sequence             | 0...15 V adjustable           |
|                                                    |                   | Operating range of se-<br>quence    | 3...15 V adjustable           |
| Signal addition                                    |                   | Z connected to R of                 |                               |
|                                                    | SKB62UA           | Frost protection monitor<br>QAF21.. | 0...1000 Ω, added to Y signal |
|                                                    |                   | Frost protection monitor<br>QAF61.. | DC 1.6 V, added to Y signal   |

| Communication SKB62/MO |                      |                                                |
|------------------------|----------------------|------------------------------------------------|
| Communication protocol |                      |                                                |
|                        | Modbus RTU           | RS-485, not galvanically isolated              |
|                        | Number of nodes      | Max. 32                                        |
|                        | Address range        | 1...245 / 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 rate (kBaud)    | Auto / 9.6 / 19.2 / 38.4 / 57.6 / 76.8 / 115.2 |
|                        | Factory setting      | Auto                                           |
|                        | Bus termination      | 120 Ω electronically switchable                |
|                        | Factory setting      | Off                                            |

| Electrical connections and connecting cables |                 |                                                               |
|----------------------------------------------|-----------------|---------------------------------------------------------------|
| Wire cross-sectional area                    |                 | 0.5...2.5 mm <sup>2</sup> , AWG 21...14 <sup>3)</sup>         |
| Cable inlet                                  |                 | 4 x M20 (Ø 20.5 mm)                                           |
|                                              | SKB..U          | With knockouts for standard ½" conduit connectors (Ø 21.5 mm) |
|                                              | SKB62/MO        | Fixed connection cable                                        |
|                                              | Cable length    | 0.9 m                                                         |
|                                              | Number of wires | 5 x 0.75 mm <sup>2</sup>                                      |

| Degree and class of protection         |                  |                                         |
|----------------------------------------|------------------|-----------------------------------------|
| Protection class                       |                  | As per EN 60730                         |
|                                        | Automatic action | Type 1AA / Type 1AC / Modulation Action |
|                                        | Pollution degree | 2                                       |
| Housing protection upright to sideways |                  | IP54 as per EN 60529                    |

| Environmental conditions |                           |                      |
|--------------------------|---------------------------|----------------------|
| Operation                |                           | IEC 60721-3-3 (1994) |
|                          | Climatic conditions       | Class 3K5            |
|                          | Temperature, general      | -15...55 °C          |
|                          | Humidity (non-condensing) | 5...95 % r.h.        |
| Transportation           |                           | IEC 60721-3-2 (1994) |
|                          | Climatic conditions       | Class 2K3            |
|                          | Temperature               | -30...65 °C          |
|                          | Humidity (non-condensing) | 5...95 % r.h.        |

| Environmental conditions |                     |                           |                |
|--------------------------|---------------------|---------------------------|----------------|
| Storage                  |                     | IEC 60721-3-1 (1994)      |                |
|                          | Climatic conditions |                           | Class 1K3      |
|                          |                     | Temperature               | -15...55 °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)                           |          | A5W00007751 <sup>4)</sup>                                          |
| UK conformity (UKCA)                         |          | A5W00221181A <sup>4)</sup>                                         |
| RCM conformity                               |          | A5W00007895 <sup>4)</sup>                                          |
| EAC conformity                               |          | Eurasia conformity for all SKB..                                   |
| 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 CE1E4564enX1 (SKB32.., SKB82..) <sup>4)</sup> , CE1E4564enX2 (SKB6..) <sup>4)</sup> and A6V101083254 (external Modbus converter) <sup>4)</sup> contain data on environmentally compatible product design and assessments (RoHS compliance, material composition, packaging, environmental benefit, disposal). |

| Dimensions / Weight |                          |                           |         |
|---------------------|--------------------------|---------------------------|---------|
| Dimensions          |                          | See "Dimensions [ ► 31]"  |         |
| Weight              |                          |                           |         |
|                     | SKB32.50, SKB32.50/F     |                           | 9.15 kg |
|                     | SKB32.51, SKB32.51/F     |                           | 9.20 kg |
|                     | SKB82.50                 |                           | 9.15 kg |
|                     | SKB82.50U                |                           | 9.45 kg |
|                     | SKB82.51                 |                           | 9.20 kg |
|                     | SKB82.51U                |                           | 9.50 kg |
|                     | SKB60<br>SKB62, SKB62/MO |                           | 9.20 kg |
|                     |                          | External Modbus converter | 0.15 kg |
|                     | SKB62U, SKB62UA          |                           | 9.50 kg |
|                     | Stroke inverter ASK51    |                           | 1.0 kg  |

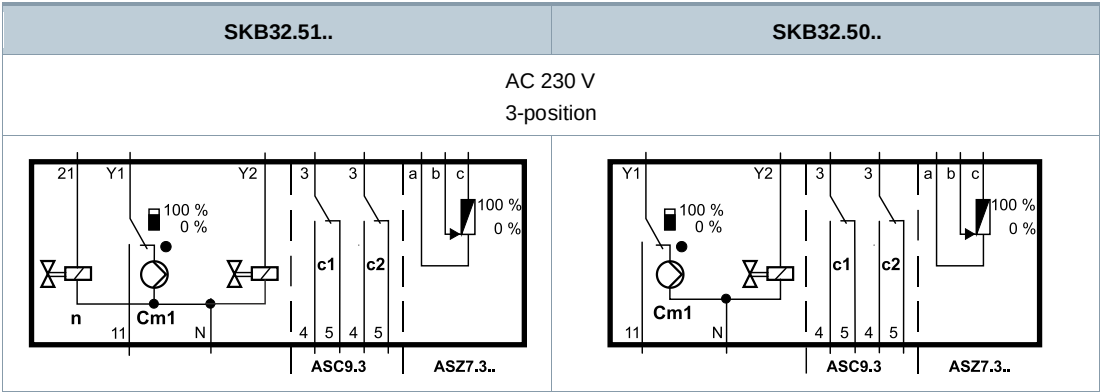
| Materials   |                    |
|-------------|--------------------|
| Housing     | Die-cast aluminium |
| Bracket     |                    |
| Housing box | Plastic            |
| Hand crank  |                    |

| Accessories                    |                     |                                                                 |                                                  |
|--------------------------------|---------------------|-----------------------------------------------------------------|--------------------------------------------------|
| Auxiliary switch ASC1.6        |                     |                                                                 |                                                  |
|                                | SKB6..              | Switching capacity                                              | AC 24 V / 10 mA....4 A resistive / 2 A inductive |
| Double auxiliary switch ASC9.3 |                     |                                                                 |                                                  |
|                                | SKB32..,<br>SKB82.. | Switching capacity per auxiliary switch                         | AC 250 V / 6 A resistive / 2.5 A inductive       |
| Potentiometer ASZ7.3           |                     |                                                                 |                                                  |
|                                | SKB32..,<br>SKB82.. | 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<br>(Max. temperature 85 °C / 185 °F)  |

- 1) At room temperature (23 °C); low ambient temperatures or high Δp 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>

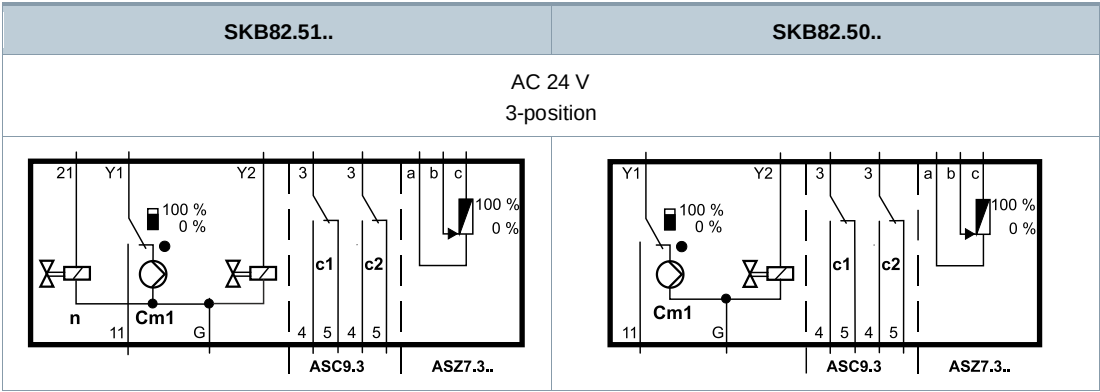
Internal diagrams

SKB32..



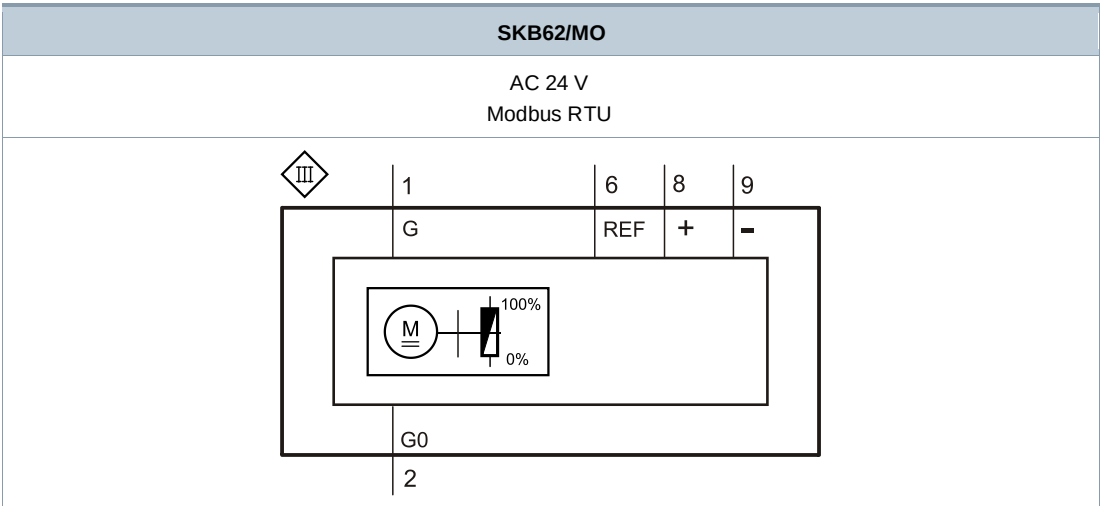
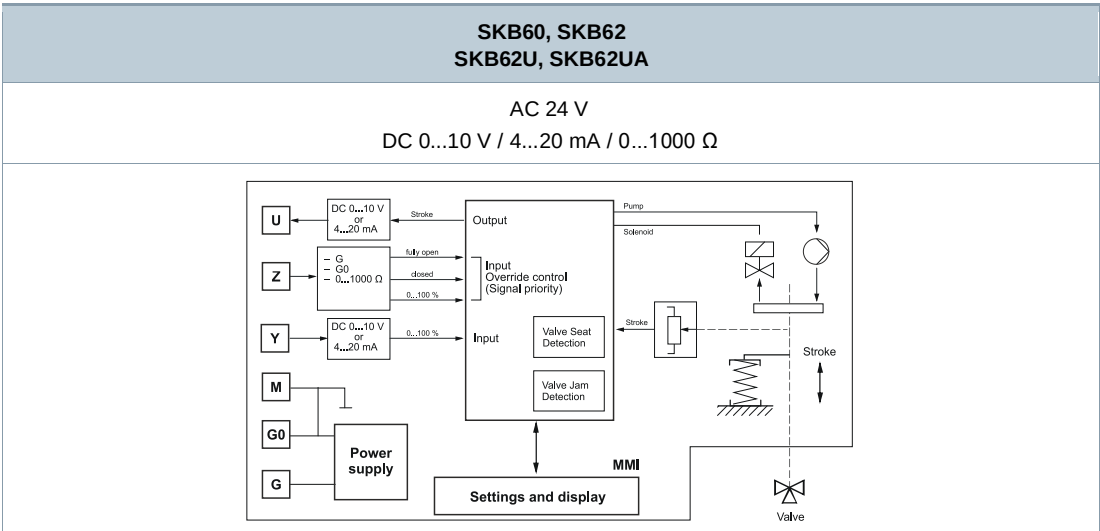
- |                |                                  |           |                            |
|----------------|----------------------------------|-----------|----------------------------|
| <b>Cm1</b>     | End switch                       | <b>Y1</b> | Positioning signal "open"  |
| <b>n</b>   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

SKB82..



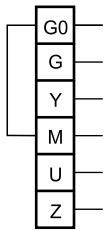
- |                |                                  |           |                            |
|----------------|----------------------------------|-----------|----------------------------|
| <b>Cm1</b>     | End switch                       | <b>Y1</b> | Positioning signal "open"  |
| <b>n</b>   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



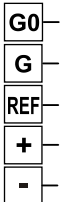


|          |                    |                                                                                               |                        |
|----------|--------------------|-----------------------------------------------------------------------------------------------|------------------------|
| <b>U</b> | Position feedback  | <b>REF</b>                                                                                    | Reference (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:<br>System neutral (SN)                                             |                        |
|          | <b>G</b>           | Operating voltage AC 24 V:<br>System potential (SP)<br>De-energize for spring-return function |                        |

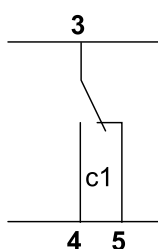
### SKB6..

|                                                                                   | AC 24 V                                             | DC 0...10 V / 4...20 mA / 0...1000 $\Omega$ |
|-----------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------|
|  | System neutral (SN)                                 |                                             |
|                                                                                   | System potential (SP)                               |                                             |
|                                                                                   | Positioning signal DC 0...10 (30) V or DC 4...20 mA |                                             |
|                                                                                   | Measuring neutral (= G0)                            |                                             |
|                                                                                   | Position feedback DC 0...10 V or DC 4...20 mA       |                                             |
|                                                                                   | Override control ("Functions [► 7]")                |                                             |

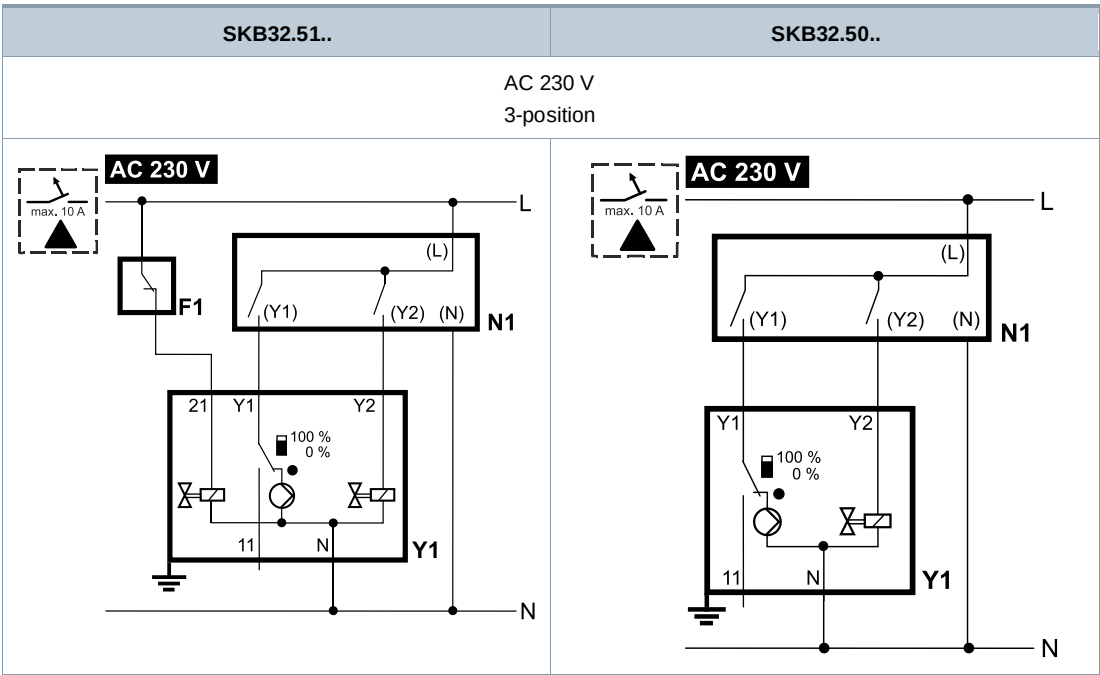
### SKB62/MO

|                                                                                    | AC 24 V                     | Modbus RTU connecting cable |
|------------------------------------------------------------------------------------|-----------------------------|-----------------------------|
|  | System neutral (SN)         | black                       |
|                                                                                    | System potential (SP)       | red                         |
|                                                                                    | Reference line (Modbus RTU) | purple                      |
|                                                                                    | Bus + (Modbus RTU)          | gray                        |
|                                                                                    | Bus - (Modbus RTU)          | pink                        |

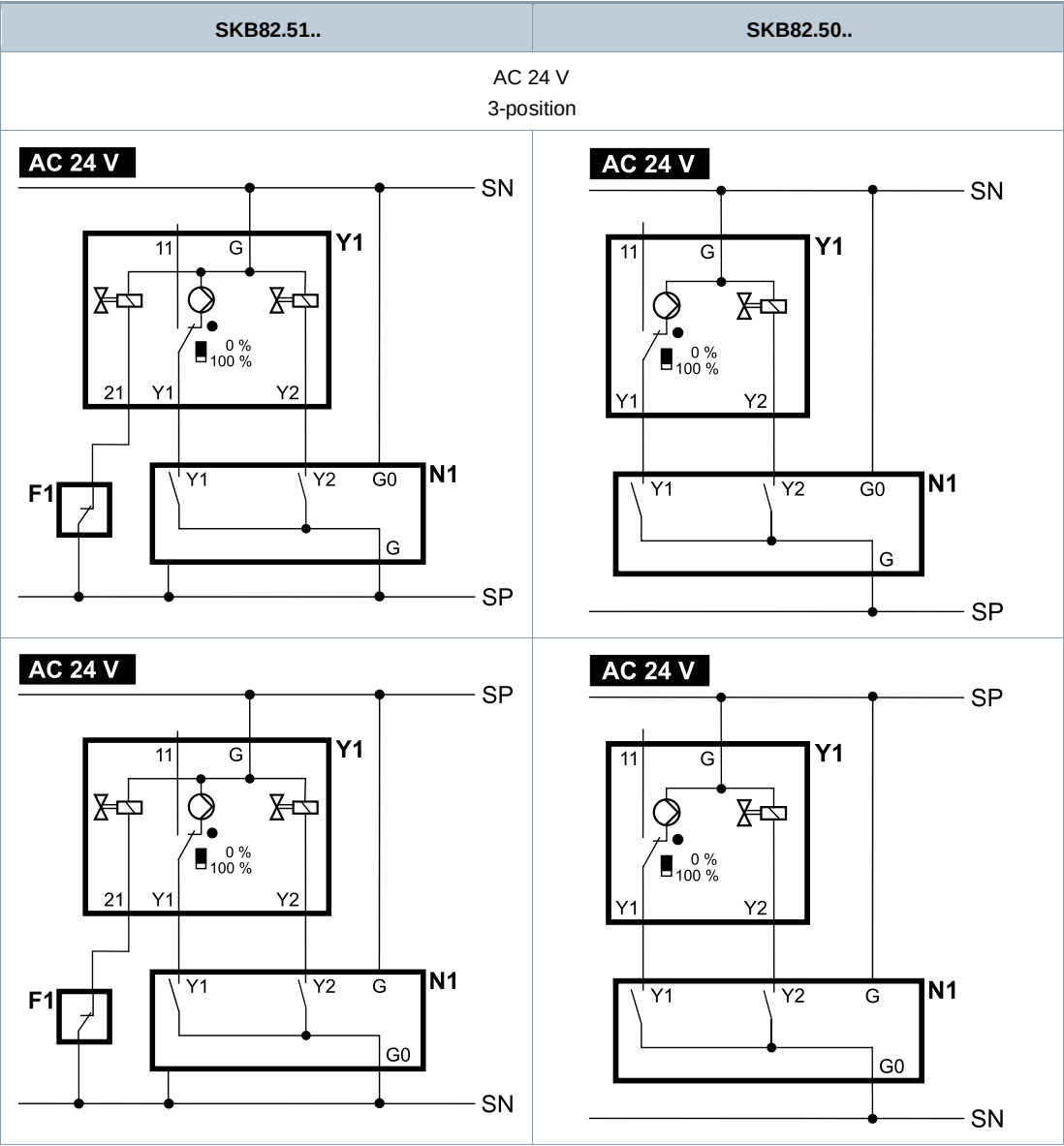
### Auxiliary switch ASC1.6



SKB32..

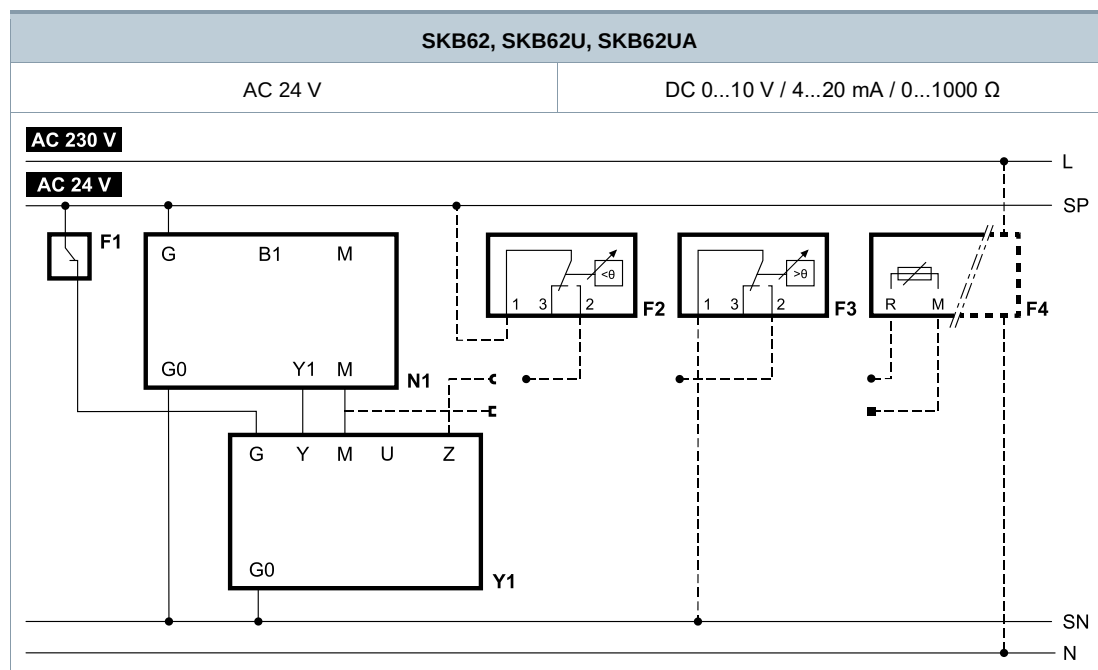


|        |                                           |    |                           |
|--------|-------------------------------------------|----|---------------------------|
| F1     | Safety limiter (e.g. temperature limiter) | Y1 | Positioning signal "open" |
| N1, N2 | Controller                                | L  | Phase                     |
| Y1, Y2 | Actuators                                 | N  | Neutral                   |
|        |                                           | 21 | Spring-return function    |

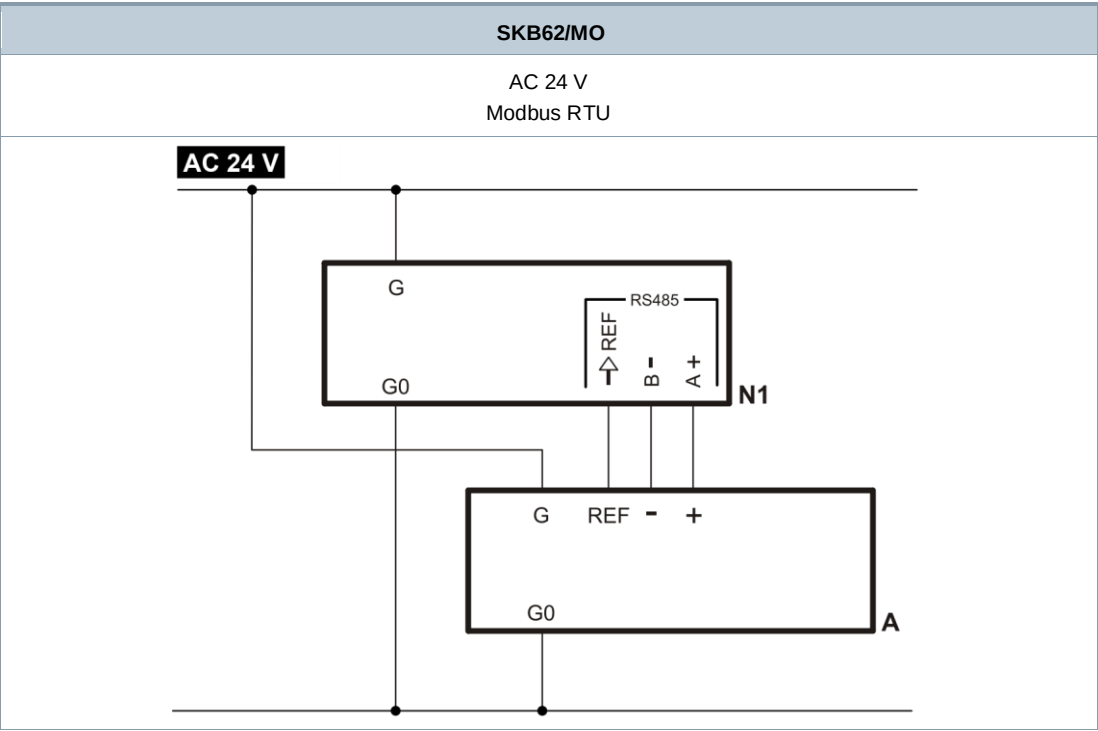


|               |                                           |           |                          |                   |                            |
|---------------|-------------------------------------------|-----------|--------------------------|-------------------|----------------------------|
|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

The diagram illustrates the wiring for the SKB60 system. It features two AC input sections: AC 230 V and AC 24 V. The AC 230 V section is connected to a control unit (G B1 M) and a digital output module (F2). The AC 24 V section is connected to a control unit (G0 Y1 M) and a digital output module (F3). The DC output section (DC 0...10 V / 4...20 mA / 0...1000 Ω) is connected to a relay module (F4). The diagram shows the internal wiring of these modules and the connections to the power lines (L, SP, SN, N).



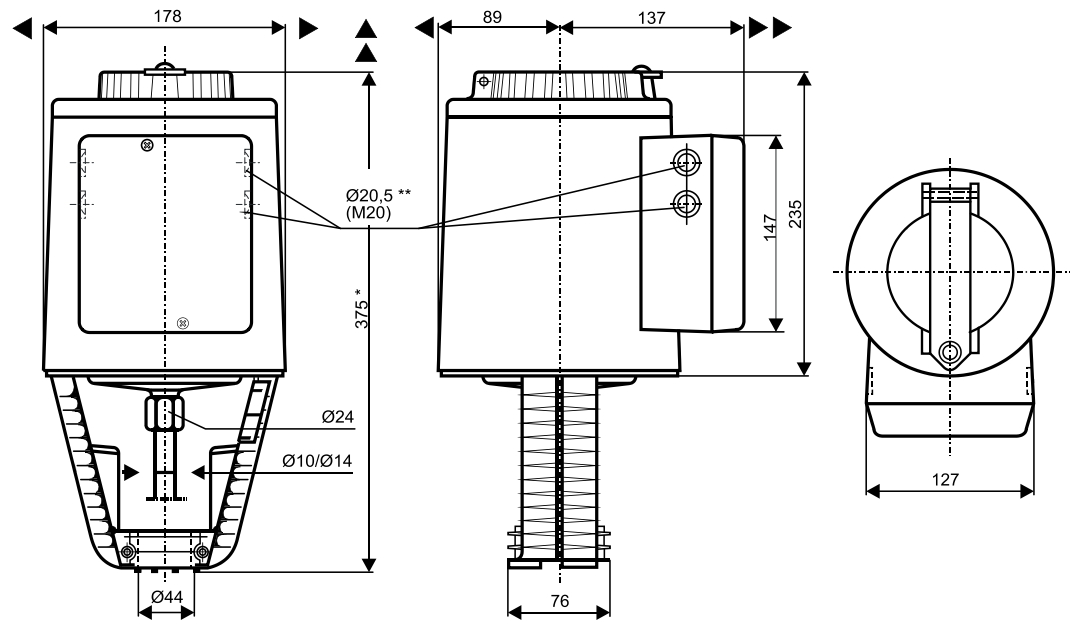
<sup>\*)</sup> Only SKB62UA: only with sequence control and the appropriate rotary switch settings, see "Electronics [► 5]", "Functions [► 6]"



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

| <b>NOTICE</b> |                                                                                                                                                                                                                                                                                                                                                                         |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | <p><b>Using safety limiter F1</b></p> <p>When using a safety limiter F1, ensure that no mistakes occur when insulating cables that may cancel out the temperature limiter function (applies to both 230 V as well as 24 V types).</p> <ul style="list-style-type: none"><li>For SN grounding (e.g. PELV), comply under all circumstances with the note above.</li></ul> |

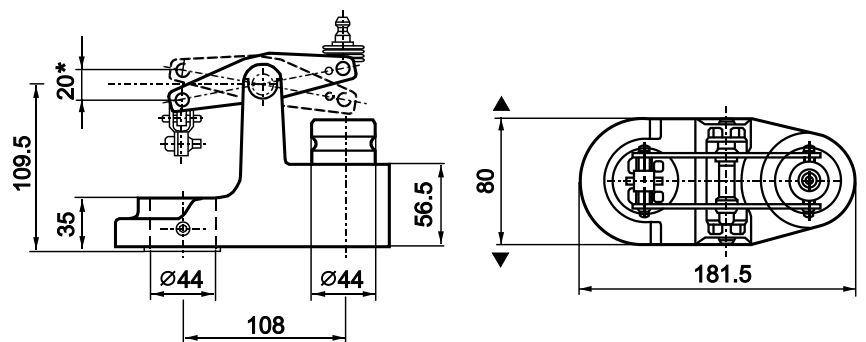
## Actuator



Dimensions in mm

- \* Height of actuator from plate **without** stroke inverter ASK51 = 375 mm  
Height of actuator from plate **with** stroke inverter ASK51 = 432 mm
- \*\* **SKB..U: with knockouts for standard ½" conduit connectors (Ø 21.5 mm)**
- ▶ > 100 mm, minimum clearance from ceiling or wall for mounting
- ▶▶ > 200 mm, for connection, operation, maintenance, etc.

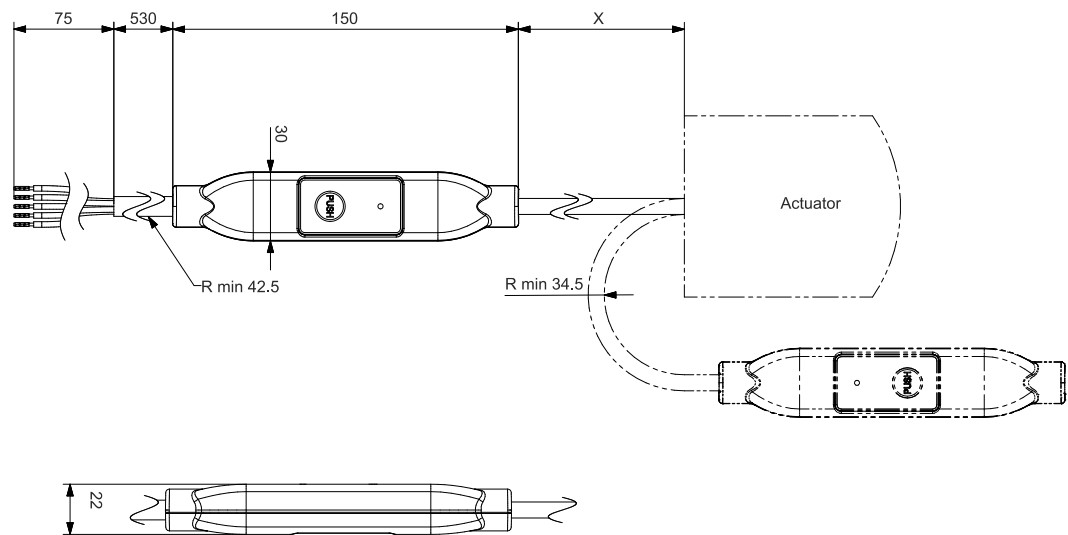
## Stroke inverter ASK51



Dimensions in mm

- \* Maximum stroke = 20 mm

External Modbus converter



Dimensions in mm

X 250 mm

Revision numbers

| Type       | Valid from rev no. | Type     | Valid from rev no. |
|------------|--------------------|----------|--------------------|
| SKB32.50   | ..D                | SKB60    | ..G                |
| SKB32.50/F | ..D                | SKB62    | ..G                |
| SKB32.51   | ..D                | SKB62/F  | ..G                |
| SKB32.51/F | ..D                | SKB62U   | ..G                |
| SKB82.50   | ..D                | SKB62UA  | ..G                |
| SKB82.50U  | ..D                | SKB62/MO | ..H                |
| SKB82.51   | ..D                |          |                    |
| SKB82.51U  | ..D                |          |                    |



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