SIEMENS

Промэлектроника
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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

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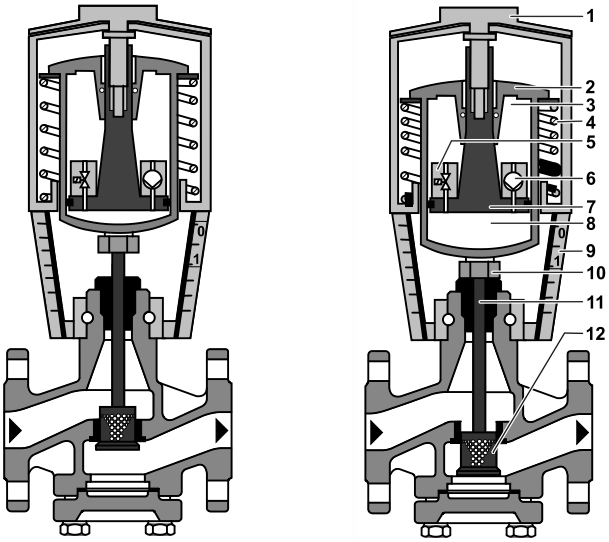
Use

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



Valve closed

Valve open

1	Hand crank
2	Pressure cylinder
3	Suction chamber
4	Return spring
5	Solenoid valve
6	Hydraulic pump
7	Piston
8	Pressure chamber
9	Position indicator (0 to 1)
10	Coupling
11	Valve stem
12	Plug

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]"

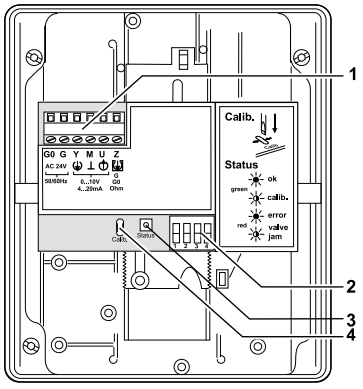
Frost protection thermostat, frost protection monitor

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 [1)]



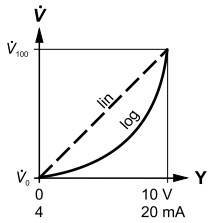
1 Connection terminals

2 DIL switches

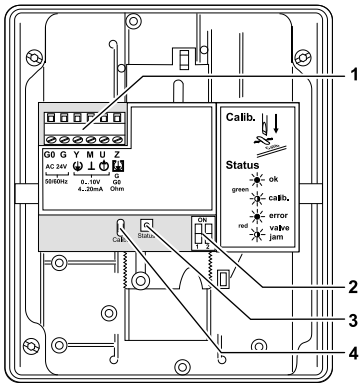
3 LED status indication

4 Stroke calibration

[1)] From version ..L onward

DIL switches								
	Direction of operation		**Fail-in-place** (behavior in case of control signal loss) **		**Positioning signal Y** **Positioning feedback U**		**Flow characteristic**	
ON	ON 1 2 3 4	Reverse acting	ON 1 2 3 4	Stops at current position	ON 1 2 3 4	DC 4...20 mA	ON 1 2 3 4	lin = linear
OFF *	ON 1 2 3 4	Direct acting	ON 1 2 3 4	Closes	ON 1 2 3 4	DC 0...10 V	ON 1 2 3 4	log = equal percentage
					Relationship between positioning signal Y and volume flow			
*	Factory setting: all switches "OFF"							
**	Only considered when DIL switch 3 "ON" (positioning signal = DC 4...20 mA)							

SKB60 [2)], SKB62..



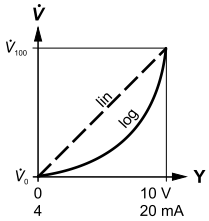
1 Connection terminals

2 DIL switches

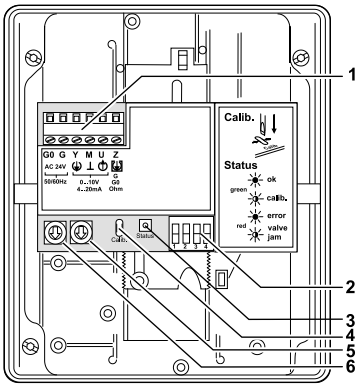
3 LED status indication

4 Stroke calibration

[2)] Up to and including version ..K

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

SKB62UA



1 Connection terminals

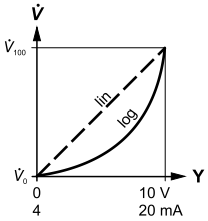
2 DIL switches

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** **Positioning feedback U**		**Flow characteristic**	
ON		Reverse acting		Sequence control Signal addition QAF21../QAF61..		DC 4...20 mA		lin = linear
OFF *		Direct acting		Stroke limit control		DC 0...10 V		log = equal percentage
					Relationship between positioning signal Y and volume 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.

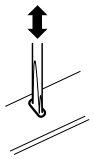
✓ Actuator SKB6.. mechanically coupled with a Siemens valve.

✓ ⚠ **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.

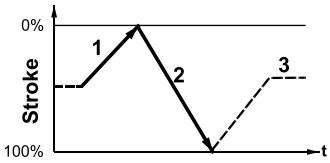
1. Short-circuit contacts in calibration slot (e.g. with a screwdriver) and trigger calibration process.
2. Actuator moves to "0 %" stroke position[1].
   ⇨ Valve closes.
3. Actuator moves to "100 %" stroke position [2].
   ⇨ Valve opens.



LED flashes green, positioning feedback U inactive

⇨ 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.



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

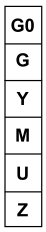
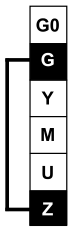
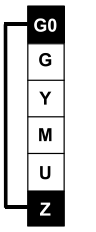
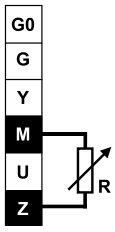
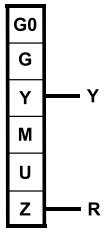
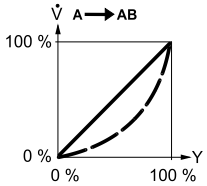
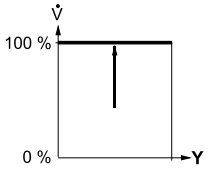
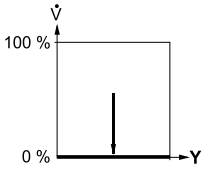
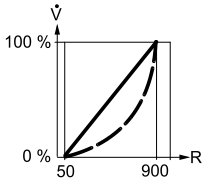
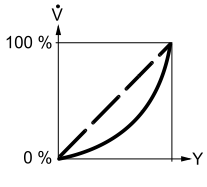
The dual-colored LED indicating the operational status is visible when the cover is removed.

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 (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..

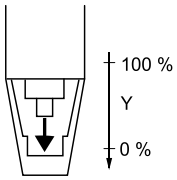
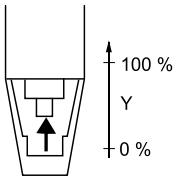
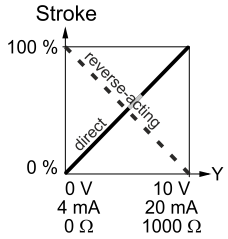
The override control input Z can be operated in the following modes of operation:

Z mode					
	No function	**Fully open**	**Closed**	**Override with 0…1000 Ω**	**Signal addition** SKB62UA only
Connections					
Transfer					
	Equal percentage or linear characteristic			Equal percentage or linear characteristic	
	• Z contact not connected	• Z contact connected directly to G	• Z contact connected directly to G0	• Z contact connected to M via resistor R • Starting pos. at 50 Ω End pos. at 900 Ω	• Z contact connected to R of frost protection monitor QAF21.. or QAF61..
	• Valve stroke follows Y input	• Y input has no effect			• Valve stroke follows Y **and** R(Z) signal

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 DC 4...20 mA 0...1000 Ω	Input	DC 0...10 V DC 4...20 mA 0...1000 Ω	

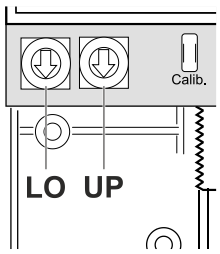
The mechanical spring-return function is not affected by the selection of the direction of operation.

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

Setting the signal addition

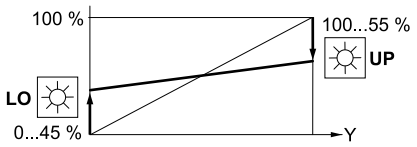
The operating range of the frost protection monitor QAF21.. or QAF61.. can be defined with rotary switches LO and UP.

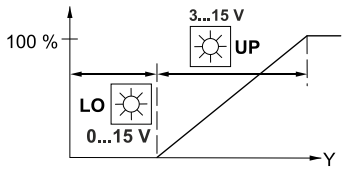
Position of LO	Sequence control start point	Position of UP	QAF21.. / QAF61.. operating range
0	→	1	QAF21..
0	→	2	QAF61..



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
0	0 %	0	100 %
1	3 %	1	97 %
2	6 %	2	94 %
3	9 %	3	91 %
4	12 %	4	88 %
5	15 %	5	85 %
6	18 %	6	82 %
7	21 %	7	79 %
8	24 %	8	76 %
9	27 %	9	73 %
A	30 %	A	70 %
B	33 %	B	67 %
C	36 %	C	64 %
D	39 %	D	61 %
E	42 %	E	58 %
F	45 %	F	55 %

Position of LO	Sequence control start point	Position of UP	Sequence control operating range
0	0 V	0	10 V
1	1 V	1	10 V *
2	2 V	2	10 V **
3	3 V	3	3 V ***
4	4 V	4	4 V
5	5 V	5	5 V
6	6 V	6	6 V
7	7 V	7	7 V
8	8 V	8	8 V
9	9 V	9	9 V
A	10 V	A	10 V
B	11 V	B	11 V
C	12 V	C	12 V
D	13 V	D	13 V
E	14 V	E	14 V
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

<table>
<tr><th colspan="3">Type</th><th rowspan="2">Operating voltage</th><th rowspan="2">Positioning signal</th><th colspan="2">Spring-return</th><th colspan="2">Positioning time</th></tr>
<tr><th></th><th>Stock no.</th><th>Electronics</th><th>Function</th><th>Time</th><th>Opening</th><th>Closing</th></tr>
<tr><td>SKB32.50 [1)]</td><td>BPZ:SKB32.50</td><td rowspan="8">-</td><td rowspan="4">AC 230 V</td><td rowspan="8">3-position</td><td colspan="2">-</td><td rowspan="8">120 s</td><td rowspan="8">120 s</td></tr>
<tr><td>SKB32.50/F [1), 3)]</td><td>BPZ:SKB32.50/F</td></tr>
<tr><td>SKB32.51 [1)]</td><td>BPZ:SKB32.51</td><td>yes</td><td>10 s</td></tr>
<tr><td>SKB32.51/F [1), 3)]</td><td>BPZ:SKB32.51/F</td></tr>
<tr><td>SKB82.50 [1)]</td><td>BPZ:SKB82.50</td><td rowspan="8">AC 24 V</td><td colspan="2">-</td></tr>
<tr><td>SKB82.50U [2)]</td><td>BPZ:SKB82.50U</td></tr>
<tr><td>SKB82.51 [1)]</td><td>BPZ:SKB82.51</td><td>yes</td><td>10 s</td></tr>
<tr><td>SKB82.51U [2)]</td><td>BPZ:SKB82.51U</td></tr>
<tr><td>SKB60 [1), 4)]</td><td>BPZ:SKB60</td><td rowspan="4">Standard</td><td rowspan="5">DC 0...10 V
4...20 mA
0...1000 Ω</td><td colspan="2">-</td><td rowspan="5">10 s</td></tr>
<tr><td>SKB62 [1)]</td><td>BPZ:SKB62</td><td rowspan="5">yes</td><td rowspan="5">10 s</td></tr>
<tr><td>SKB62/F [1), 3)]</td><td>BPZ:SKB62/F</td></tr>
<tr><td>SKB62U [2)]</td><td>BPZ:SKB62U</td></tr>
<tr><td>SKB62UA [2), 5)]</td><td>BPZ:SKB62UA</td><td>Enhanced</td></tr>
<tr><td>SKB62/MO [2)]</td><td>S55195-A127</td><td>Standard</td><td>Modbus RTU</td></tr>
</table>

[1)] Approval: CE

[2)] Approval: CE, UL

[3)] Only available in France

[4)] Additional functions (from version ..L): direction of operation, fail-in-place

[5)] 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

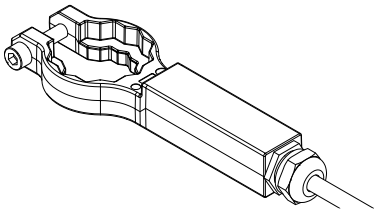
Type / Stock no.	Designation	Quantity
SKB62/MO / S55195-A127	Actuator Modbus RTU	1
ASC1.6 / BPZ:ASC1.6	Auxiliary switch	1

Accessories

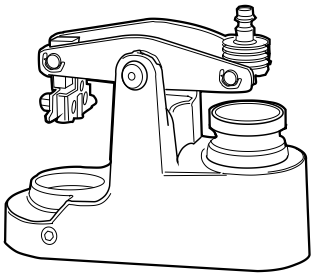
Type	Auxiliary switch	Double aux. switch	Potentiometer 1000 Ω	Stem heater AC 24 V	Mechanical stroke inverter
	ASC1.6	**ASC9.3**	**ASZ7.3**	**ASZ6.6 [S55845-Z108]**	**ASK51**
	Total max. 2				
SKB32..	-	Max. 1	Max. 1	Max. 1	Max. 1
SKB82..					
SKB6..	Max. 1	-	-		

SKB..

ASZ6.6 [S55845-Z108]
Stem heater
- For media below 0 °C
- Mount between valve and actuator

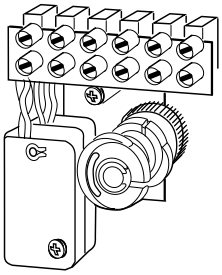


ASK51 [BPZ:ASK51]
Mechanical stroke inverter
- 0 % actuator stroke corresponds to 100 % valve stroke
- Mount between valve and actuator

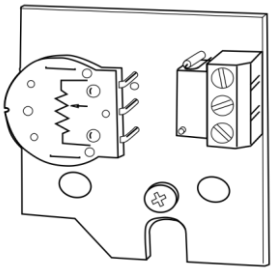


SKB32..
SKB82..

ASC9.3 [BPZ:ASC9.3]
Double auxiliary switch
- Adjustable switching points

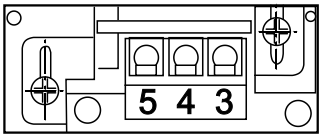


ASZ7.3 [BPZ:ASZ7.3]
Potentiometer
- 0...1000 Ω



SKB60
SKB62..

ASC1.6 [BPZ:ASC1.6]
Auxiliary switch
- Switching point 0...5 % stroke

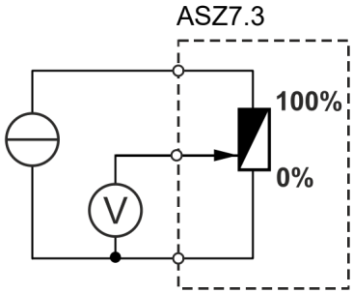


ASZ7.3

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 [1]	Clamp	Stem connection	Electronics (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					466857488
SKB62U			410356058		
SKB62UA					466857518
SKB62/MO			410355768		466857488

[1] Hand crank, blue with mechanical parts

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

Valve type		DN	PN class	k_{vs} [m³/h]	Data sheet
VVF21.. [1]	Flanged	25...80	6	1.9...100	N4310
VVF22..				2.5...100	N4401
VVF31.. [1]		15...80	10		N4320
VVF32..				1.6...100	N4402
VVF40.. [1]			16	1.9...100	N4330
VVF41.. [1]		50		19...31	N4340
VVF45..					N4345
VVF42..		15...80		1.6...100	N4403
VVF52.. [1]		15...50	25	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 Δp_{max} and closing pressure Δp_s: cf. relevant valve data sheets

[1] Valves no longer available

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

Valve type		DN	PN class	k_{vs} [m³/h]	Data sheet
VXF21.. [1]	Flanged	25...80	6	1.9...100	N4410
VXF22..				2.5...100	N4401
VXF31.. [1]		15...80	10		N4420
VXF32..				1.6...100	N4402
VXF40.. [1]			16	1.9...100	N4430
VXF41.. [1]		15...50		1.9...31	N4440
VXF42..		15...80		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 Δp_{max} and closing pressure Δp_s: cf. relevant valve data sheets

[1] 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 (Setting instructions standard electronics)				**ASC9.3**	G4561.3	4 319 5545 0
				ASK51	M4561.6	4 319 5550 0
A5W00027551 (Mounting instructions Modbus converter)				**ASZ7.3**		74 319 0247 0
				ACT control unit	M4568	74 319 0554 0
A6V12057657 (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.

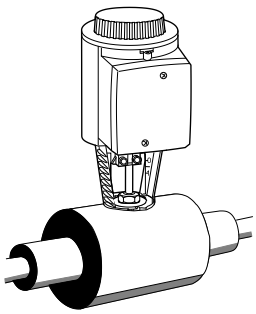
⚠ WARNING	
	Risk of injury through broken housing or cover Dismounting the actuator with broken housing from the valve can release the highly tensioned return spring, which can lead to flying parts and injuries. ● NEVER dismount actuator from valve. ● Dismount valve-actuator combination (control device) 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. 

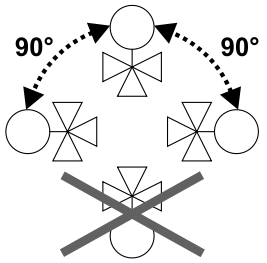
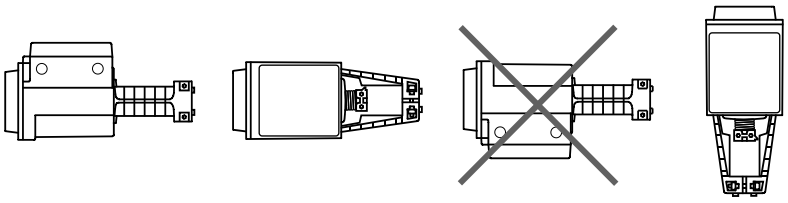
Observe permissible temperatures, see "Use [► 2]" and "Technical data [► 19]".

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]".

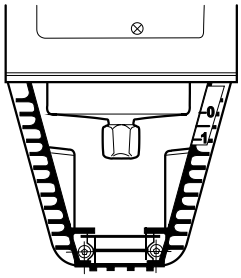
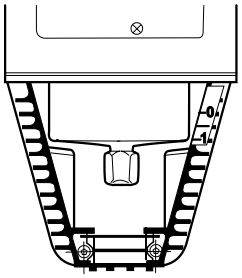
Mounting

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]").

Mounting positions	
	

Commissioning

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

Cylinder with valve stem connector fully retracted → Stroke = 0 %			Cylinder with valve stem connector fully extended → Stroke = 100 %	

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 %).

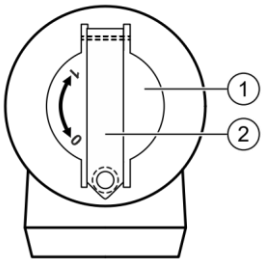
Operation

Automatic operation

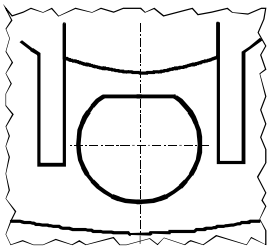
For automatic operation, the crank [2] on the manual stroke adjuster [1] must be engaged. If not engaged, turn the crank counter-clockwise until the display window [3] shows neither the scale [4] nor the crank engagement bar.

Manual operation

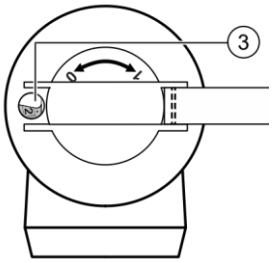
For manual operation, swing out the crank [2] so that the display window [3] becomes visible. By rotating the crank or the manual adjuster [1], the display window shows the engagement bar and/or the scale dial [4] with stroke indication.



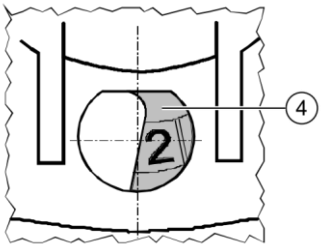
Engaged crank [2] on the manual adjuster [1]



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]"

⚠ WARNING	
	Risk of injury through broken housing or cover Dismounting the actuator with broken housing from the valve can release the highly tensioned spring-return, 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.

Disposal

⚠ 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.

	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.

Technical data

Power supply		
Operating voltage		
	SKB32..	AC 230 V ± 15 %
	SKB82..	AC 24 V ± 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 Max. 6 A slow
	SKB82..	Min. 1 A, slow Max. 10 A slow
	SKB6..	

Function data			
Positioning time at 50 Hz [1)]			
	SKB32..	Opening, Closing	120 s
	SKB82..		
	SKB6..	Opening	120 s
		Closing	10 s
Spring-return time [1)]			
	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
			< 0 °C: Requires stem heater ASZ6.6

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 [2], SKB62UA			
Selection of direction of operation			
	SKB60, SKB62UA	Direct-acting / reverse-acting	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 sequence	3...15 V adjustable
Signal addition		Z connected to R of	
	SKB62UA	Frost protection monitor QAF21..	0...1000 Ω, added to Y signal
		Frost protection monitor 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 mm², AWG 21...14 [3)]
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 mm²

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 [4)]
UK conformity (UKCA)		A5W00221181A [4)]
RCM conformity		A5W00007895 [4)]
EAC conformity		Eurasia conformity for all SKB..
UL, cUL	AC 230 V	-
	AC 24 V	UL 873 http://ul.com/database

Environmental compatibility
The product environmental declarations CE1E4564enX1 (SKB32.., SKB82..) [4)], CE1E4564enX2 (SKB6..) [4)] and A6V101083254 (external Modbus converter) [4)] 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 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.., SKB82..	Switching capacity per auxiliary switch	AC 250 V / 6 A resistive / 2.5 A inductive
Potentiometer ASZ7.3			
	SKB32.., 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 (Max. temperature 85 °C / 185 °F)

[1] At room temperature (23 °C); low ambient temperatures or high Δp may prolong these times.

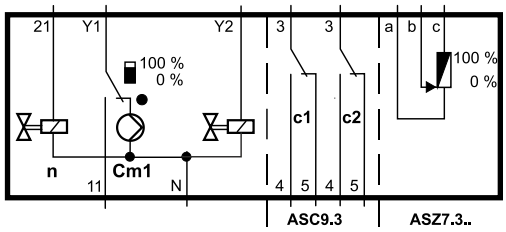
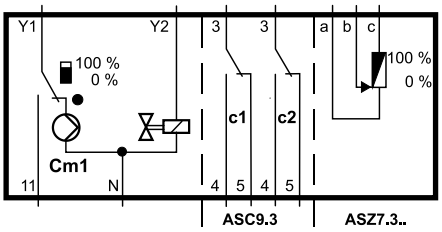
[2] From version ..L onward

[3] AWG = American wire gauge

[4] The documents can be downloaded at http://www.siemens.com/bt/download

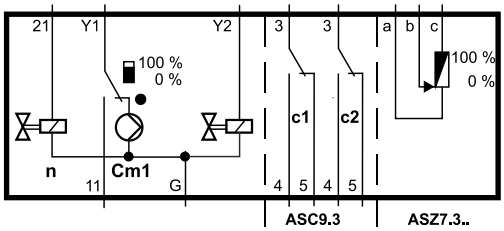
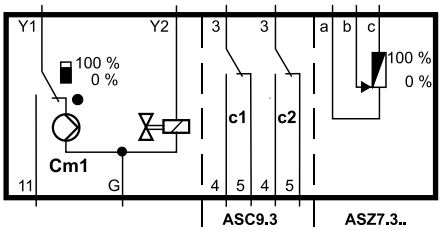
Internal diagrams

SKB32..

SKB32.51..	SKB32.50..
AC 230 V 3-position	
	

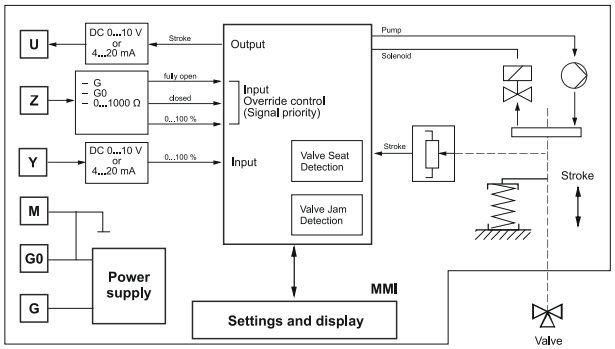
Cm1	End switch	**Y1**	Positioning signal "open"
n	Solenoid valve for spring-return	**Y2**	Positioning signal "close"
c1, c2	ASC9.3 double auxiliary switch	**21**	Spring-return function
a, b, c	ASZ7.3 potentiometer	**N**	Neutral conductor

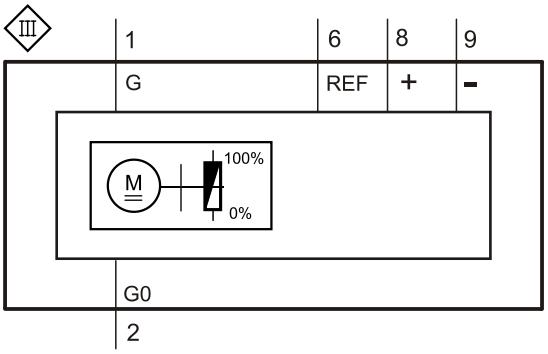
SKB82..

SKB82.51..	SKB82.50..
AC 24 V 3-position	
	

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

SKB6..

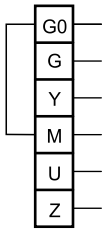
SKB60, SKB62 SKB62U, SKB62UA
AC 24 V DC 0...10 V / 4...20 mA / 0...1000 Ω


SKB62/MO
AC 24 V Modbus RTU


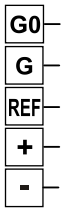
U	Position feedback	**REF**	Reference (Modbus RTU)
Z	Override control	**+**	Bus + (Modbus RTU)
Y	Positioning signal	-	Bus - (Modbus RTU)
M	Measuring neutral		

G0	Operating voltage AC 24 V: System neutral (SN)
G	Operating voltage AC 24 V: System potential (SP) De-energize for spring-return function

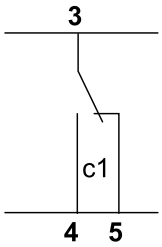
SKB6..

	AC 24 V	DC 0...10 V / 4...20 mA / 0...1000 Ω
	System neutral (SN)	
	System potential (SP)	
	Positioning signal DC 0...10 (30) V *or* DC 4...20 mA	
	Measuring neutral (= G0)	
	Position feedback DC 0...10 V *or* DC 4...20 mA	
	Override control ("Functions [▶ 7]")	

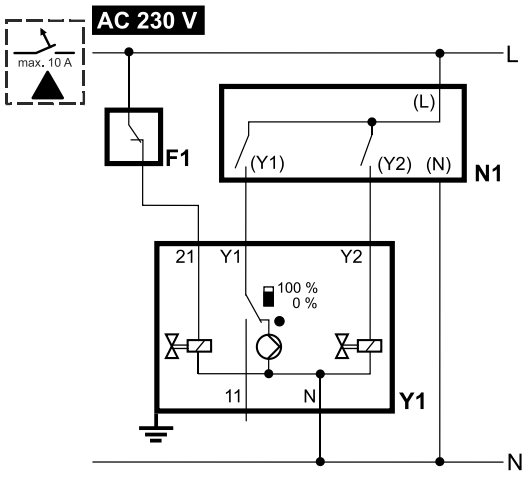
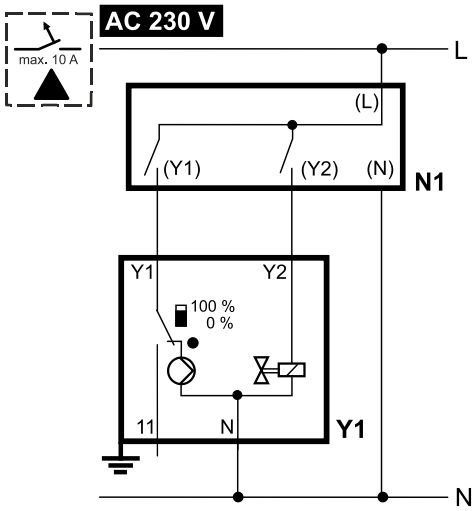
SKB62/MO

	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

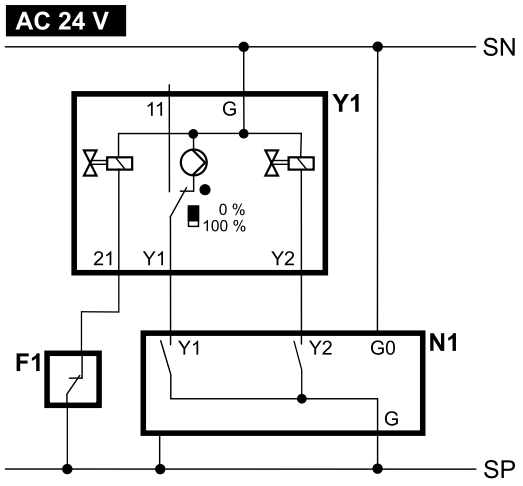
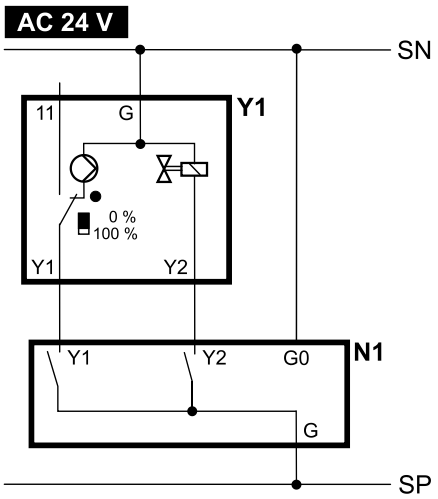
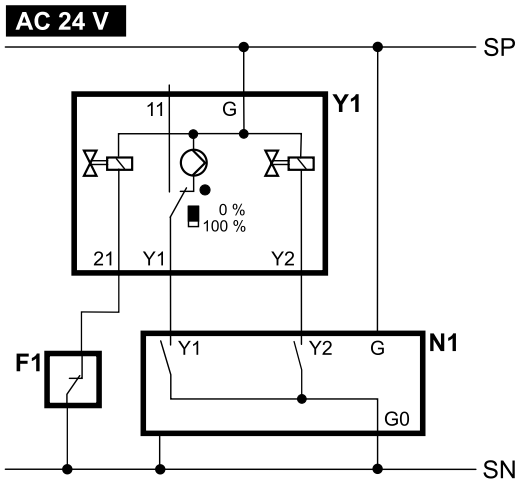
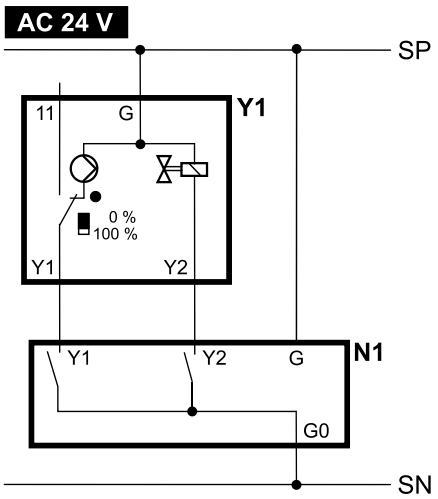


SKB32..

SKB32.51..	SKB32.50..
AC 230 V 3-position	
	

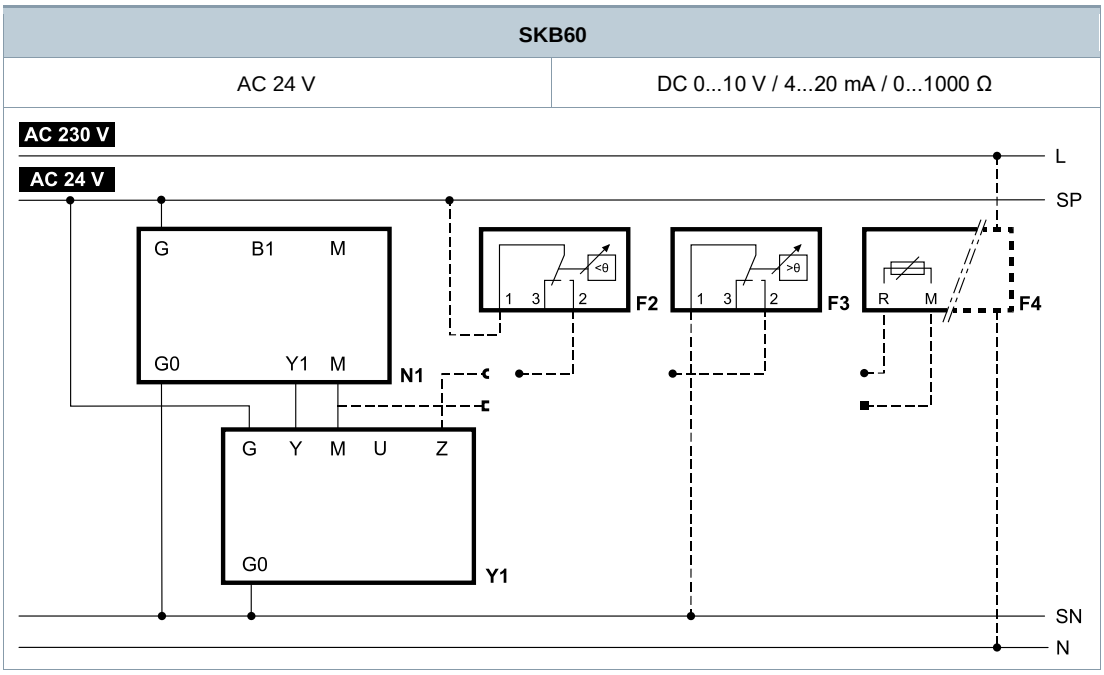
F1	Safety limiter (e.g. temperature limiter)			**Y1**	Positioning signal "open"
N1, N2	Controller	**L**	Phase	**Y2**	Positioning signal "close"
Y1, Y2	Actuators	**N**	Neutral	**21**	Spring-return function

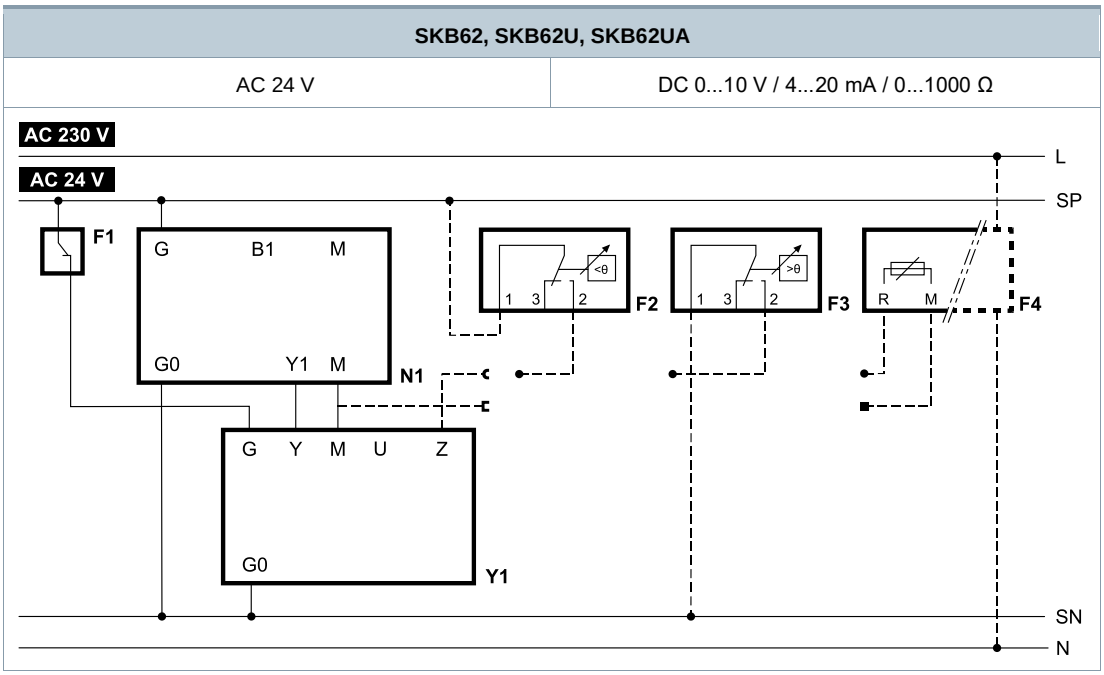
SKB82..

SKB82.51..	SKB82.50..
AC 24 V 3-position	
	
	

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

SKB6..



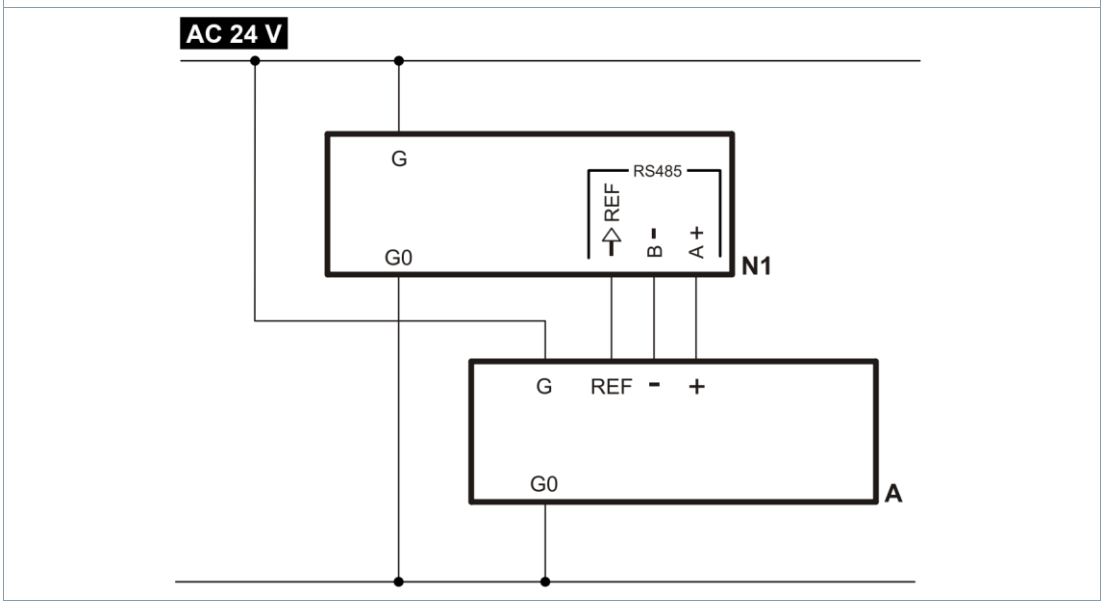


Y1	Actuator	**F3**	Temperature detector
N1	Controller	**F4**	Frost protection monitor with 0...1000 Ω signal output, e.g. QAF21.. or QAF61.. (SKB62UA) only *)
F1	Safety limiter (e.g. temperature limiter)	**G (SP)**	System potential AC 24 V
F2	Frost protection thermostat	**G0 (SN)**	System neutral

Terminals 1-2 Frost hazard/sensor is interrupted (closes with frost)
1-3 Normal operation

*) Only SKB62UA: only with sequence control and the appropriate rotary switch settings, see "Electronics [▶ 5]", "Functions [▶ 6]"

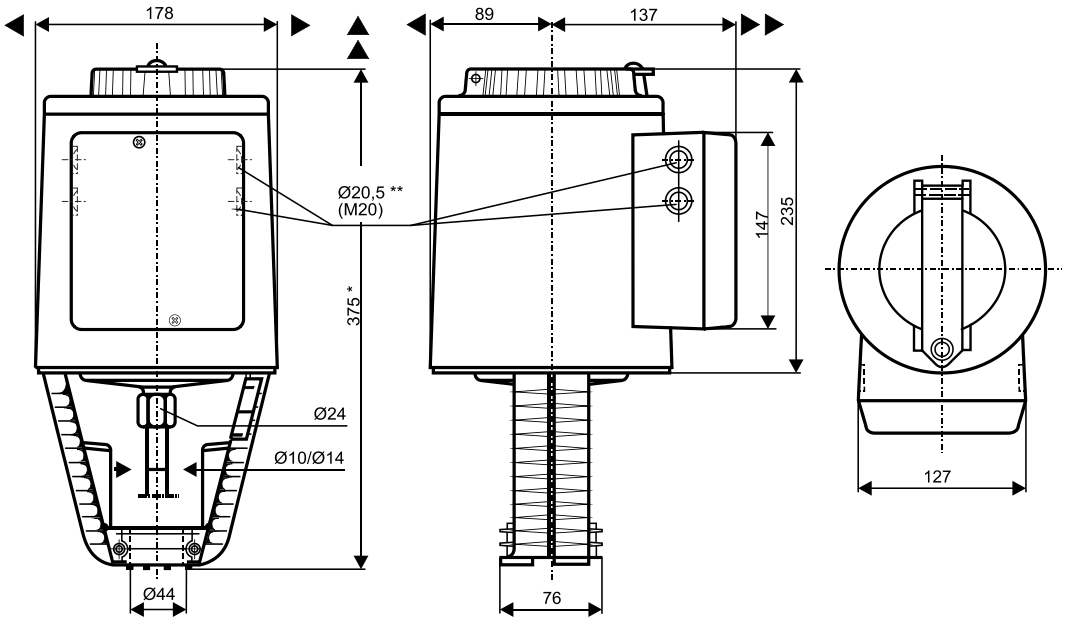
SKB62/MO
AC 24 V Modbus RTU



A	Actuator	**REF**	Reference (Modbus RTU)
N1	Controller	**+**	Bus + (Modbus RTU)
G	System potential	-	Bus - (Modbus RTU)
G0	System neutral		

NOTICE	
⚠	**Using safety limiter F1** 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). ● For SN grounding (e.g. PELV), comply under all circumstances with the note above.

Actuator



Dimensions in mm

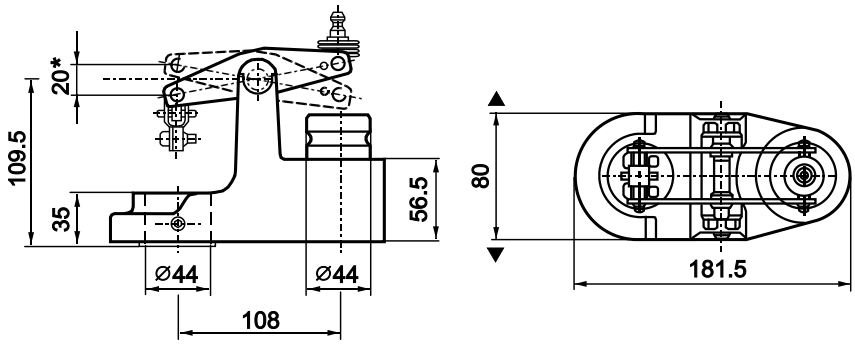
* Height of actuator from plate **without** stroke inverter **ASK51 = 375 mm**
Height of actuator from plate **with** stroke inverter **ASK51 = 432 mm**

** **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

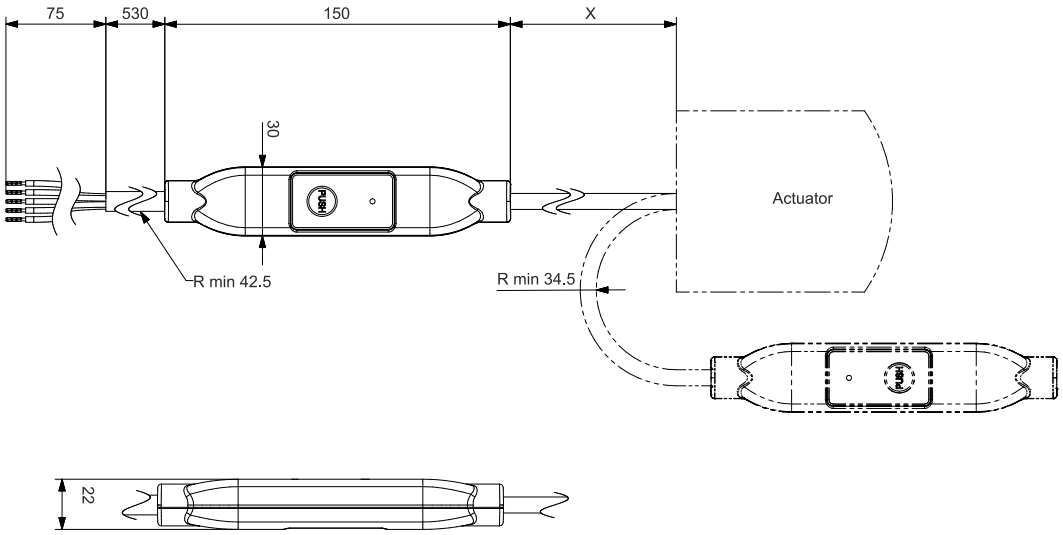


]

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		