SIEMENS

4891

SSB.. without auxiliary switch

SSB..1 with auxiliary switch

ACVATIX™

Electromotoric actuators

SSB31..
SSB81..
SSB61..

for small valve types VVP45.., VXP45.., VMP45..
(DN ≤ 25, k_{VS} ≤ 6,3 m^3/h)

- **SSB31.. operating voltage AC 230 V 3-position control signal**
- **SSB81.. operating voltage AC 24 V 3-position control signal**
- **SSB61.. operating voltage AC / DC 24 V DC 0…10 V control signal**
- **Nominal force 200 N**
- **Automatic identification of valve stroke**
- **Direct mounting with union nut, no tools required**
- **Basic types complete with plug-in connecting cable, length 1.5 m**
- **Optional cable types**
  - **Cable length 1.5 m, 2.5 m and 4.5 m**
  - **Halogen-free cables**
- **Manual override and position indication**
- **Parallel connection of multiple actuators possible**
- **Auxiliary switch integrated in SSB31.1 and SSB81.1 actuators**

Use

For operation of Siemens valves V..P45.. for water-side control of hot and cooling water in heating, ventilation and air conditioning systems.

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Type summary

Standard versions

Type reference	Operating voltage	Run time at 50 Hz	Control signal	Connecting cable	Auxiliary switch
SSB31	AC 230 V	150 s	3-position	1.5 m	
SSB31/00 [1)]				no cable	
SSB31.1				1.5 m	Yes
SSB81	AC 24 V			1.5 m	
SSB81/00 [1)]				no cable	
SSB81.1				1.5 m	Yes
SSB61	AC / DC 24 V	75 s	DC 0…10 V	1.5 m	
SSB61/00 [1)]				no cable	

[1)] Available cable lengths or terminal block connectors refer to «Accessories», page 3

SSB81.., SSB61.. are UL and cUL approved.

Accessories

Type reference	Description	Operating voltage	Control signal
ASY3L15	Connecting cable 1.5 m	AC 230 V	3-position
ASY3L25	Connecting cable 2.5 m		
ASY3L45	Connecting cable 4.5 m		
ASY6L15	Connecting cable 1.5 m	AC / DC 24 V	DC 0…10 V
ASY6L25	Connecting cable 2.5 m		
ASY6L45	Connecting cable 4.5 m		
ASY6L45HF	Connecting cable 4.5 m, halogen-free, VDE 0207-24		
ASY8L15	Connecting cable 1.5 m	AC 24 V	3-position
ASY8L25	Connecting cable 2.5 m		
ASY8L45	Connecting cable 4.5 m		
ASY8L45HF	Connecting cable 4.5 m, halogen-free, VDE 0207-24		
ASY98	Retaining screw for terminal block connector. Included in ASY99 and ASY100.		
ASY99	Terminal block connector for 3-position actuators SSB81.. /00		
ASY100	Terminal block connector for DC 0…10 V modulating actuators SSB61..		

Ordering

Example:

Type	*Stock no.*	*Description*	*Quantity*
SSB81/00	SSB81/00	Electromotoric actuator	2
ASY99	ASY99	Terminal block	2

Delivery

Actuators, valves and accessories are packed separately. Items are supplied individually packed.

Rev.-No.

Overview tables, see page 9.

Equipment combinations

Type reference	Valve type	k_{vs} [m^3/h]	PN class	Data sheet
VVP45..	2-port valves	0.25…6.3	PN 16	N4845
VVP45..S	2-port valves, for CONEX compression fittings	0.63…2.5		N4854
VXP45..	3-port valves	0.25…6.3		N4845
VMP45..	3-port valves with T-bypass	0.25…4.0		
VMP45..S	3-port valves with T-bypass, for CONEX compression fittings	0.63…2.5		N4854

k_{vs} = nominal flow rate of cold water (5...30 °C) through the fully open valve (H_{100}) at a differential pressure of 100 kPa (1 bar)

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Function / mechanical design

When the actuator is driven by DC 0…10 V control voltage or by a 3-position signal, it produces a stroke which is transmitted to the valve stem.
The description of operation in this document applies to the valve versions which are fully closed when de-energized (NC valves).

3-position control signal
SSB31../SSB81..

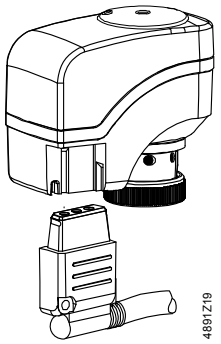
- Voltage at Y1: Stem extends Valve opens
- Voltage at Y2: Stem retracts Valve closes
- No voltage at Y1 and Y2: Actuator maintains its current position

DC 0...10 V control signal
SSB61..

- The valve opens / closes in proportion to the control signal at Y.
- At DC 0 V, the valve V..P45.. is fully closed (A → AB).
- When power supply is removed, the actuator maintains its current position.

Features and benefits

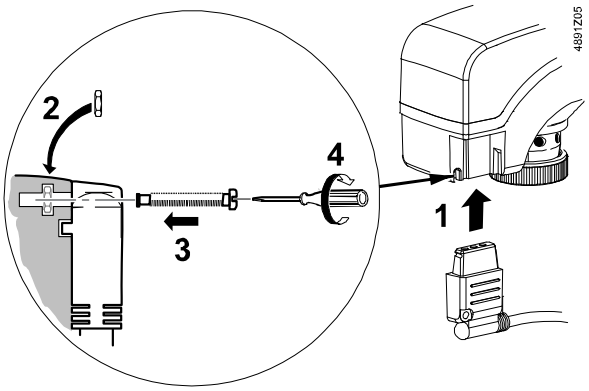
- Plastic housing
- Locking-proof, maintenance-free gear train
- Manual override with hexagonal socket wrench 3 mm
- Reduced power consumption in the holding positions
- Load-dependent switch-off in the event of overload and in stroke end positions
- Parallel operation of 6 SSB31.., 24 SSB81.. and 10 SSB61.. possible, provided the controllers' output is sufficient
- Terminal block connectors for customer made cables available
  (only for use with AC 24 V and AC / DC 24 V actuators)
- Connecting cables with AC 24 V and AC 230 V connectors cannot be mixed up
- Halogen-free cables available



Accessories

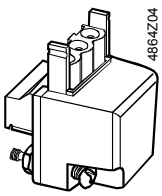
Retaining screw
ASY98

Type ASY98 to secure the cable connector. Included in ASY99 and ASY100.



The cable connector snaps into position, but can be additionally secured with the retaining screw.

Terminal block connectors
ASY99
ASY100



For special cable lengths of the AC / DC 24 V actuators.

- Type ASY99 for 3-position actuators SSB81/00
- Type ASY100 for DC 0…10 V modulating actuators SSB61/00

The terminal block connectors are supplied complete with Mounting Instructions (74 319 0385 0).

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Notes

Engineering

The actuators must be electrically connected in accordance with local regulations (refer to «Connection diagrams»), page 8.

⚠ Caution

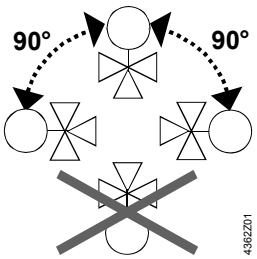
Regulations and requirements to ensure the safety of people and property must be observed at all times!

The permissible temperatures (refer to «Technical data», page 6) must be observed.
The connecting cable of the actuator may come into contact with the hot valve body, provided the temperature of the valve body does not exceed 80 °C.
SSB 31.1.. and SSB81.1.. actuators have an auxiliary switch ready integrated. Subsequent fitting to other types of actuators is not possible.

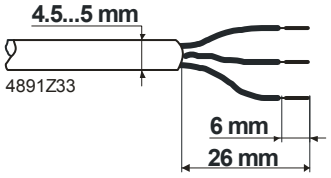
Mounting

The Mounting Instructions 4 319 0497 0 are enclosed in the product packaging. Assembly is made with the union nut; no tools or adjustments are required. The actuator must be fitted in position 0 (also refer to «Manual override», page 5) without operating voltage.
In the case of actuators without connecting cable (SSB../00), the separately ordered terminal block connector and connecting cable must be fitted.

Orientation



Installation



Crimp ferrule on stripped wire of connecting cable.

Commissioning

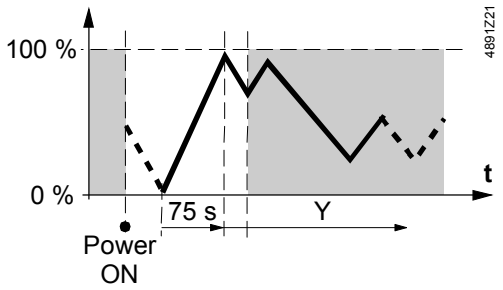
When commissioning, check wiring and the functioning of the actuator and auxiliary switch, if fitted.

- Actuator stem extends (from position 0 to 1): Valve opens
- Actuator stem retracts (from position 1 to 0): Valve closes

Self-calibration

⚠ Caution

During commissioning and whenever the operating voltage is switched on, the SSB61.. runs a self-calibration routine. (Valve stroke 0 → Max. stroke → Setpoint). Never intervene manually in this process.



<u>Note:</u> Correct calibration is only possible

- **with valve**
- **stroke > 1.5 mm**

The second or third attempt at calibration occurs automatically after an 8-minute delay.
After three failed calibration attempts the actuator stem remains in the extended position and the V..P45.. valves are opened.
For valves with strokes < 1.5 mm, the actuator/valve combination locks after three failed calibration attempts.

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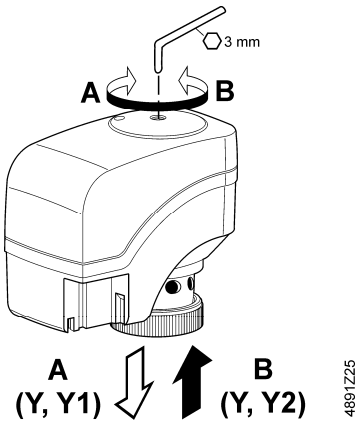
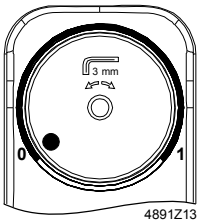
Manual override

A 3 mm hexagonal socket wrench can be used to move the actuator to any position between 0 and 1. If a control signal from the controller is present, then this takes priority in determining the position.

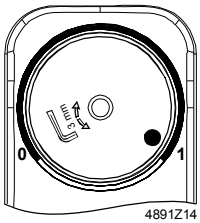
Note

To retain the manually set position, unplug the connecting cable or switch off power and the control signal.





Position indicator in position 0:
Valve closed



Position indicator in position 1:
Valve open

Maintenance

The actuators are maintenance-free.
When carrying out service work on the plant, following must be noted:

- Turn power off (e.g. remove the plug)
- If necessary, disconnect electrical connections from the terminals
- The actuator must be commissioned only with a correctly mounted valve in place!

Repair

SSB.. actuators cannot be repaired; the complete unit must be replaced.

Disposal

The device must not be disposed of together with domestic waste. This applies in particular to the PCB.
Legislation may demand special handling of certain components, or it may be sensible from an ecological point of view.
Current local legislation must be observed.

Warranty

The technical data given for these applications is valid only when the actuators are used with the Siemens valves listed under «Equipment combinations», page 2.

The use of the SSB.. actuators in conjunction with third-party valves invalidates any warranty offered by Siemens Switzerland Ltd / HVAC Products.

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Technical data

		SSB31..	SSB81..	SSB61..
Power supply	Operating voltage	AC 230 V	AC 24 V	AC 24 V or DC 24 V
	Voltage tolerance	± 15 %	± 20 %	± 20 % ± 25 %
	Rated frequency	50 / 60 Hz		
	Max. power consumption	6 VA	0.8 VA	2.5 VA
	⚠ Fuse for incoming cable	2 A, quickblow		
Control	Control signal	3-position		DC 0...10 V
	Input impedance for DC 0...10 V			> 100 kOhm
	Parallel operation (number of actuators) [1]	max. 6	max. 24	max. 10
Functional data	Run time for 5.5 mm stroke at 50 Hz	150 s		75 s
	Positioning speed	27.3 s/mm		13.6 s/mm
	Nominal stroke	5.5 mm		
	Nominal force	200 N		
	Perm. temperature of medium in the connected valve	1...110°C		
Electrical connections	Connecting cable of basic types	1.5 m 3-core to EN 60320 / IEC 60227		
	ASY 99, ASY100 cable diameter		< 5 mm	
	wire cross section		0.5…0.75 mm^2	
	ASY3L.. wire cross section	0,75 mm^2		
	ASY6L.., ASY8L.. wire cross section		0,5 mm^2	
Standards	Meets requirements for CE marking: EMC directive	2004/108/EC		
	Immunity	EN 61000-6-2	Industrial [2]	
	Emission	EN 61000-6-3	Residential	
	Low voltage directive	2006/95/EC		
	Electrical safety	EN 60730-1		
	Protection class to EN 60730	II	III	
	Contamination level	EN 60730, Class 2		
	Housing protection Upright to horizontal	IP40 to EN 60529		
	UL approbation		UL 873	
	cUL approbation		C22.2 No. 24-93	
	Environmental compatibility	ISO 14001 (Environment) ISO 9001 (Quality) SN 36350 (Environmentally compatible products) RL 2002/95/EG (RoHS)		
Dimensions / weight	Dimensions	refer to «Dimensions», page 9		
	Coupling thread to valve	union nut G¾ inch		
	Weight with / without auxiliary switch	0.4 kg / 0.35 kg		
Housing colors	Base and cover	RAL 7035 light gray		
Auxiliary switch	Mounted in SSB31.1 and SSB81.1	1 change-over switch		
	Switching point adjustable Factory setting 50 %	0...100%		
	Switching capacity [3]	max. AC 250 V, 1 A (0.5 A)		
	Connecting cable (recommended)	H03VV-F, 2x0.5…0.75 mm^2		

[1] Provided the controllers' output is sufficient

[2] Transformer 160 VA (e.g. Siemens 4AM3842-4TN00-0EA0) for AC 24 V actuators

[3] SSB81, in installations according to UL standards, AV 24 V, 1 A (0.5 A)

General ambient conditions

	Operation EN 60721-3-3	Transport EN 60721-3-2	Storage EN 60721-3-1
Environmental conditions	Class 3K3	Class 2K3	Class 1K3
Temperature	+1...50 °C	–25...70 °C	–5...50 °C
Humidity	5...85 % r.h.	< 95 % r.h.	5...95 % r.h.

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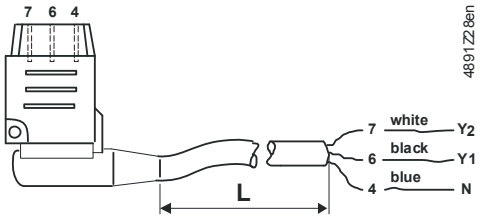
Connecting cable

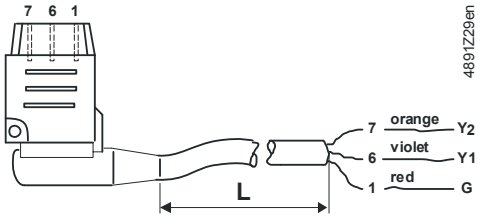
ASY3L.. with SSB31..



7	White	Y2	Control signal CLOSE (AC 230 V)
6	Black	Y1	Control signal OPEN (AC 230 V)
4	Blue	N	Neutral

L = 1,5 m, 2,5 m, or 4,5 m

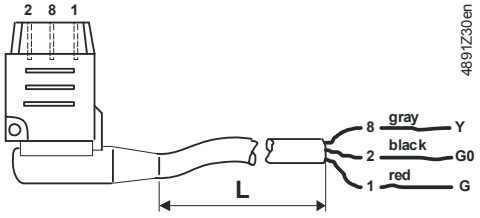
ASY8L.. with SSB81..



7	Orange	Y2	Control signal CLOSE (AC 24 V)
6	Violet	Y1	Control signal OPEN (AC 24 V)
1	Red	N	System potential AC 24 V

L = 1,5 m, 2,5 m, or 4,5 m

ASY6L.. with SSB61..

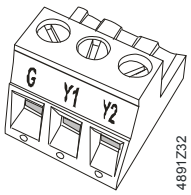


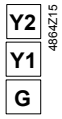
8	Grey	Y	Control signal DC 0...10 V
2	Black	G0	System neutral (- DC 24 V)
1	Red	G	System potential AC 24 V (+ DC 24 V)

L = 1,5 m, 2,5 m, or 4,5 m

Connection terminals

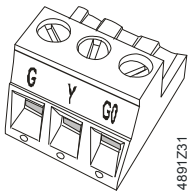
ASY99
for SSB81..

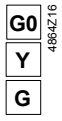




Control signal CLOSE
Control signal OPEN
System potential AC 24 V

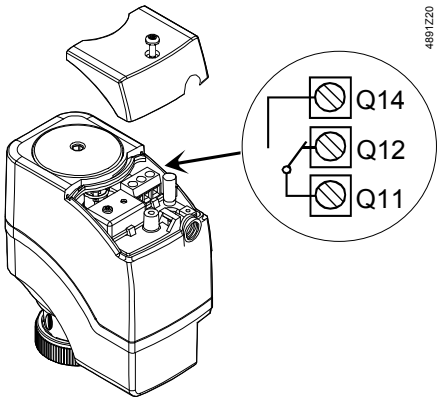
ASY100
for SSB61..





System neutral
Control signal DC 0...10 V
System potential AC/DC 24 V

Terminals for auxiliary switches
SSB31.1, SSB81.1



Factory setting:

0...50 % Q11 → Q12
50...1 % Q11 → Q14

The switching point can be adjusted by turning the switching cam with a screwdriver (see Mounting Instructions).
Recommended connecting cable: H03VV-F, 2x0.5…0.75 mm^2.

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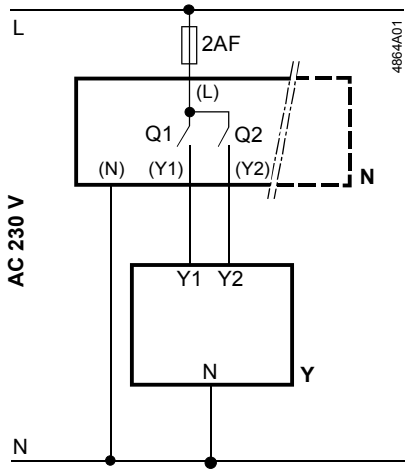
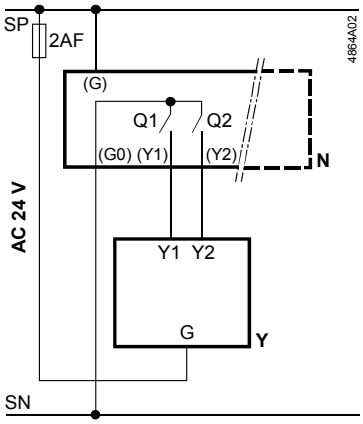
Connection diagrams

SSB31..



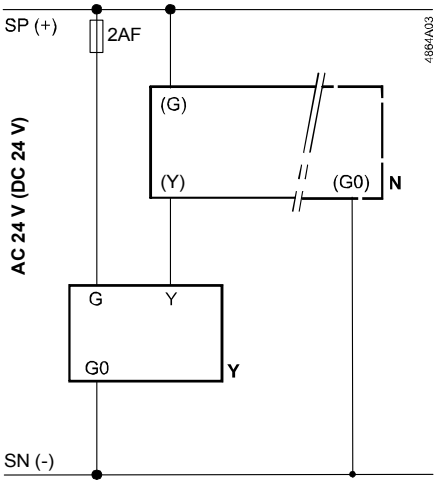
N	Controller
Y	Actuator
L	System potential AC 230 V
N	System neutral
Y1, Y2	Control signal OPEN, CLOSE
Q1, Q2	Controller contacts

SSB81..



N	Controller
Y	Actuator
SP, G	System potential AC 24 V
SN, G0	System neutral
Y1, Y2	Control signal OPEN, CLOSE
Q1, Q2	Controller contacts

SSB61..



N	Controller
Y	Actuator
SP, G	System potential AC 24 V
SN, G0	System neutral
Y	Control signal DC 0…10 V

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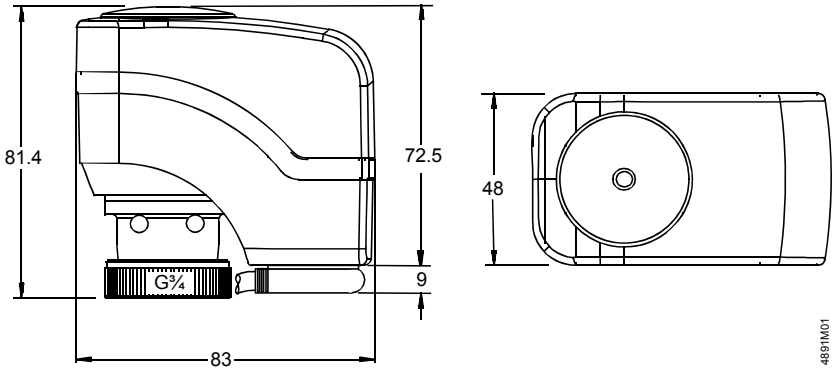
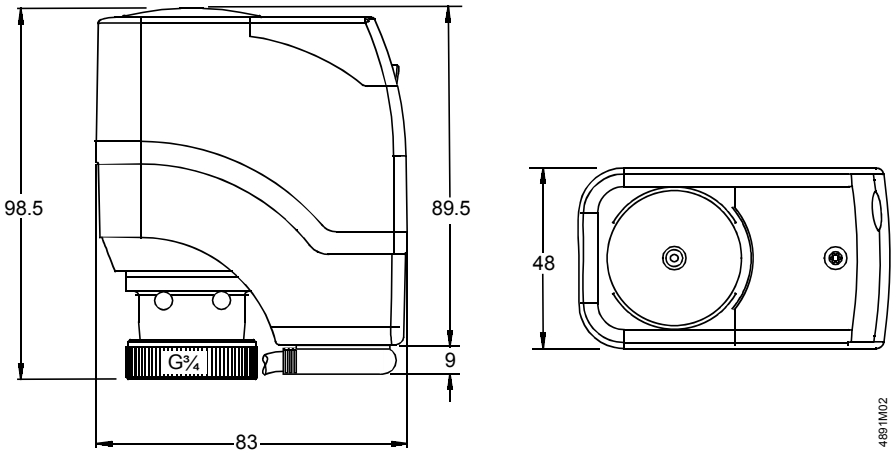
Dimensions

All dimensions in mm

Actuator without auxiliary switch
SSB31..
SSB81..
SSB61..



Actuator with auxiliary switch
SSB31.1..
SSB81.1..



Revision numbers

Type reference	Valid from Rev.-No.	Type reference	Valid from Rev.-No.
SSB31	J	SSB61	J
SSB31/00	J	SSB61/00	J
SSB31.1	J		
SSB81	J		
SSB81/00	J		
SSB81.1	J		

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