SIEMENS

Electromotoric actuators

SSB..

For globe/control valves VVP45.., VXP45.., VMP45.. in zone and room applications

- SSB131.09.. operating voltage AC 24 V, 3-position control signal
- SSB331.09.. operating voltage AC 230 V, 3-position control signal
- SSB161.05.. Operating voltage AC/DC 24 V, positioning signal DC 0...10 V
- Nominal force 200 N
- Automatic identification of valve stroke
- Direct mounting with ¾” plastic threaded coupling nut, no tools required
- Manual override
- Position and actuator motion indication (LED)
- Parallel operation of multiple actuators possible
- SSB..H with integrated removable 1.5 m cable length
- SSB..H/00 with no cable and cover for direct cable kit plug-in connection
  - Accessories: PVC and halogen-free 1.5m, 3m and 6m cable length kits
- SSB..UT with 3-pin terminal block with M16x1.5 threaded integrated conduit adapter cover, no cable
- Load-dependent switch-off in the event of overload and in stroke end positions

Use

For water-side control of hot and chilled water in heating, ventilation and air conditioning systems with:

- Siemens VVP45.., VXP45.. and VMP45.. valve series

Technical design

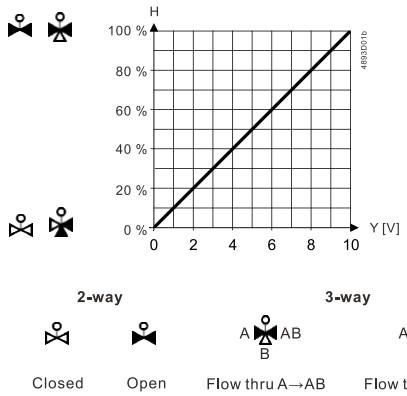
When the actuator is driven by a 3-position or DC 0…10 V control signal, it produces a stroke which is transmitted to the valve spindle.

3-position control signal

Voltage at Y1:	Stem extends	Normally open valve closes, normally closed valve opens
Voltage at Y2:	Stem retracts	Normally open valve opens, normally closed valve closes
No voltage at Y1 or Y2:	Actuator maintains its current position	

DC 0…10 V positioning signal

- The valve opens / closes in proportion to the positioning signal at Y.
- At DC 0 V, actuator spindle is retracted, the normally closed valve is fully closed.
- When there is no operating voltage, the actuator maintains its current position.
- The actuator provides a position feedback signal U of DC 0…10 V proportional to the calibrated valve stroke*.

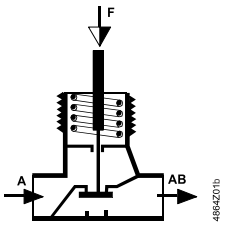
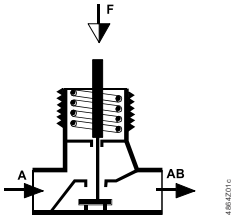


Y = Positioning signal Y [V]

H = Percentage of calibrated valve stroke

U = Position feedback signal

* Not available for SSB161.05UT

Positioning Signal	SSB161.. Actuator's spindle	VVP45.., VXP45.. and VMP45.. Normally Closed Valves' stem	
0 V	Retracted 	Extended (valve closed)	
10 V	Extended 	Retracted (valve open)	

LED indications

SSB131.., SSB331..

Variants	LED	Color	Pattern	Description
SSB331.. and SSB131..	LED 1	Green	Constant	Actuator spindle is fully extended.
	LED 2	Green	Constant	Actuator spindle is moving in-between.
	LED 3	Green	Constant	Actuator spindle is fully retracted.

SSB161..

Variants	Status	LED indication patterns
SSB161..	Stroke movement: spindle retracting	Flashing green in sequence: LED1-->LED2-->LED3 (500 ms each)
	Stroke movement: spindle extending	Flashing green in sequence: LED3-->LED2-->LED1 (500 ms each)
	spindle stays in position	At H0 - H40: Constant green (LED3) At H40 - H60: Constant green (LED2) At H60 - H100: Constant green (LED1)
	Calibration	Flashing green (LED2): 100 ms on, 100 ms off
	Error*	Constant red (LED2)
	Manual operation	Flashing green/red alternatively (LED2): Green 500 ms, red 500 ms

* Error caused by mechanical jam or calibration failure. Calibration through resetting the operating voltage required.

Type summary

Type	Stock number	Operating voltage	Control signal	Force	Feedback	Running speed at 50 Hz	Actuator characteristic	Cable length	Cable cover
SSB331.09H	S55180-A133	AC 230 V	3-position	200 N	-	16 s/mm	-	1.5 m	Removable with integrated cable
SSB331.09H/00	S55180-A177							-	No cover
SSB331.09UT	S55180-A180								M16x1.5 threaded integrated conduit adapter
SSB131.09H	S55180-A135	AC 24 V						1.5 m	Removable with integrated cable
SSB131.09H/00	S55180-A173							-	No cover
SSB131.09UT	S55180-A170								M16x1.5 threaded integrated conduit adapter
SSB161.05HF	S55180-A134	AC/DC 24 V	DC 0…10 V		DC 0...10 V	5 s/mm	Linear	1.5 m	Removable with integrated cable
SSB161.05HF/00	S55180-A146							-	No cover
SSB161.05UT	S55180-A148				-				M16x1.5 threaded integrated conduit adapter

Accessories

Type	Stock number	Wires and cross section [mm²]	Voltage [V]	Cable length [m]
ASY331L15	S55845-Z307	3x0.75 PVC	230	1.5
ASY331L30	S55845-Z308	3x0.75 PVC	230	3
ASY331L60	S55845-Z309	3x0.75 PVC	230	6
ASY331L15HF	S55845-Z310	3x0.75 halogen-free	230	1.5
ASY331L30HF	S55845-Z311	3x0.75 halogen-free	230	3
ASY331L60HF	S55845-Z312	3x0.75 halogen-free	230	6
ASY131L15	S55845-Z313	3x0.34 PVC	24	1.5
ASY131L30	S55845-Z314	3x0.34 PVC	24	3
ASY131L60	S55845-Z315	3x0.34 PVC	24	6
ASY131L15HF	S55845-Z316	3x0.34 halogen-free	24	1.5
ASY131L30HF	S55845-Z317	3x0.34 halogen-free	24	3
ASY131L60HF	S55845-Z318	3x0.34 halogen-free	24	6
ASY161L15	S55845-Z266	5x0.34	24	1.5
ASY161L30	S55845-Z267	5x0.34	24	3
ASY161L60	S55845-Z268	5x0.34	24	6
ASY161L15HF	S55845-Z269	5x0.34 halogen-free	24	1.5
ASY161L30HF	S55845-Z270	5x0.34 halogen-free	24	3
ASY161L60HF	S55845-Z271	5x0.34 halogen-free	24	6

Ordering

When ordering, specify both type and quantity.

Example:

Type	Stock number	Designation	Quantity
SSB331.09H	S55180-A133	200N Actuator	1

Delivery

Valves and actuators must be ordered separately. For easier valve assembly, actuators ordered separately have the actuator spindle fully retracted.

The cable gland is not within the scope of delivery and needs to be ordered separately (supplied by thirds).

Equipment combinations

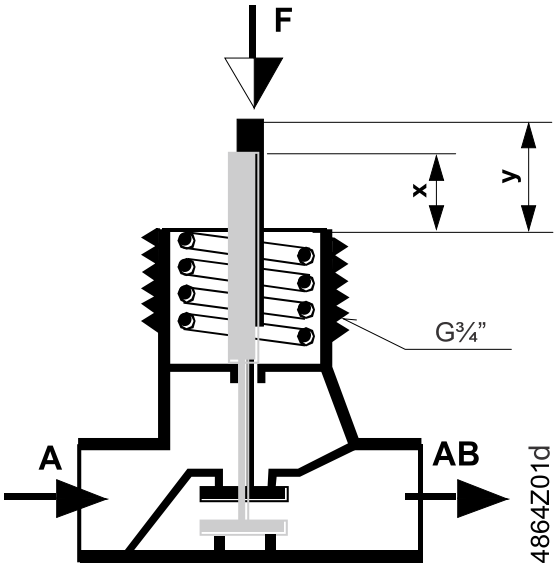
SSB.. combinable with the following valves

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 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		N4845
VMP45..S	3-port valves with T-bypass, for compression fittings	0.63…2.5		N4854
Others	Valves (¾") from other manufacturers, without adapter	-	-	-

Note: SSB.. Actuators are not suitable for valves VVP45..N.

Note: To ensure trouble-free operation of third-party valves with the actuators, the valves must satisfy the following requirements:

- Threaded connections with coupling nut:
  - SSB..: ¾"; open dimension X ≥ 8.5 mm; closed dimension Y ≤ 14.6 mm
- Nominal force F ≤ 200 N
  - SSB..: 200 N



Controllers

Type	SSB131..	SSB331..	SSB161..
	AC 24 V	AC 230 V	AC/DC 24 V
	3-position	3-position	DC 0…10V
DXR2	DXR2..09T.., DXR2..10.., DXR2..11.., DXR2..12P.., DXR2..18.., DXR2..10PL..	-	DXR2..
RXB..	RXB21.1.., RXB24.1..	-	RXB39.1..
Synco 700, Synco 200	RMH760B-1, RMK770-1, RLU202, RLU222	-	RMU7...0B-1, RMS705B-1, RMH760B-1, RMK770-1, RLU220, RLU222, RLU232, RLU236

Room thermostats

Type	SSB131..	SSB331..	SSB161..
	AC 24 V	AC 230 V	AC/DC 24 V
	3-position	3-position	DC 0…10V
RDG..	RDG200T, RDG200KN, RDG204KN, RDG405KN	RDG200T, RDG200KN, RDG100KN, RDG100, RDG100T	RDG260T, RDG260KN, RDG264KN, RDG160T, RDG160KN, RDG405KN
RDF..	-	RDF800KN, RDF800/NF, RDF302, RDF600, RDF600T, RDF600KN, RDF660..	-
RDU..	-	-	RDU340..
RCU..	-	-	RCU50..

Product documentation

Topic	Title	Document ID
Mounting and installation	Mounting instructions[1)]	A6V15343701
Standards and directives	CE declarations	SSB131.09H, SSB131.09H/00, SSB131.09UT, SSB161.05HF, SSB161.05HF/00, SSB161.05UT: A5W00254962A SSB331.09H, SSB331.09H/00, SSB331.09UT: A5W00750101A
	RCM conformity	SSB131.09H, SSB131.09H/00, SSB131.09UT, SSB161.05HF, SSB161.05HF/00, SSB161.05UT: A5W00254983A SSB331.09H, SSB331.09H/00, SSB331.09UT: A5W00750104A
	UKCA conformity declarations	SSB131.09H, SSB131.09H/00, SSB131.09UT, SSB161.05HF, SSB161.05HF/00, SSB161.05UT: A5W00257055A SSB331.09H, SSB331.09H/00, SSB331.09UT: A5W00750103A
Environmental compatibility	Environmental declarations	SSB131.09H, SSB131.09H/00, SSB131.09UT: A5W00734981A SSB331.09H, SSB331.09H/00, SSB331.09UT: A5W00734983A SSB161.05UT, SSB161.05HF/00 : A5W00266709A SSB161.05HF: A5W00242127A

[1)] The mounting instructions are enclosed with the product.

Related documents such as the environmental declarations, declarations of conformity, etc., can be downloaded from the following Internet address:

www.siemens.com/bt/download

Notes

Engineering

The actuators must be electrically connected in accordance with local regulations (see "Connection diagrams [▶ 18]").

⚠ 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.

Observe permissible temperatures (see "Technical data [▶ 14]"). 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.

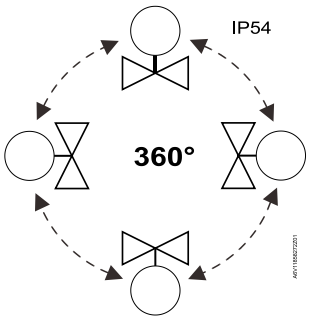
Mounting

⚠ WARNING	
	• Do not use pipe wrenches, spanners or similar tools. • Before mounting, fit the actuator in a position where the actuator spindle is fully retracted (see “Manual operation”). • Avoid lateral pressure or (cable) tension on the mounted actuator!

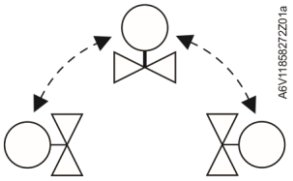
Valve and actuator are easy to assemble on site before commissioning:

- Remove protective cover from the valve body.
- Position the actuator and tighten the union nut manually.
- See Mounting instructions enclosed with the product package for graphical instructions.

Orientation

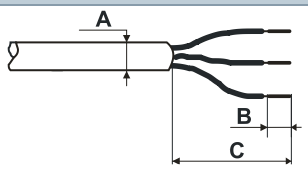


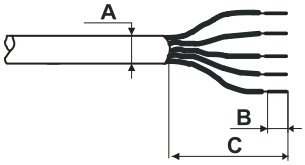
SSB..H, SSB..H/00+ ASY..



SSB..UT

Installation

		A [mm]	B [mm]	C [mm]
	SSB131..	4.5	6.0	60
	SSB331..	6.9	6.0	60
Crimp ferrule on stripped wire of connecting cable.				

		A [mm]	B [mm]	C [mm]
	SSB161..	5.5	6.0	60
Crimp ferrule on stripped wire of connecting cable.				

- Observe all admissible temperatures (see “Technical data [▸ 14]”).
- Operate the actuator only with alternating current for SSB131.. and SSB331.. (see “Technical data [▸ 14]”).
- Do not twist the cable.

- Magnets can damage the actuator.
- Provide a means for isolation from the power supply, e.g., connecting a circuit breaker or switch fuse upstream of the control unit.

⚠ 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.

⚠ CAUTION	
	**Phase cut and pulse-duration-modulated (PDM) signals are not suitable.** **Regulations and requirements to ensure the safety of people and property must be observed at all times!**

Commissioning

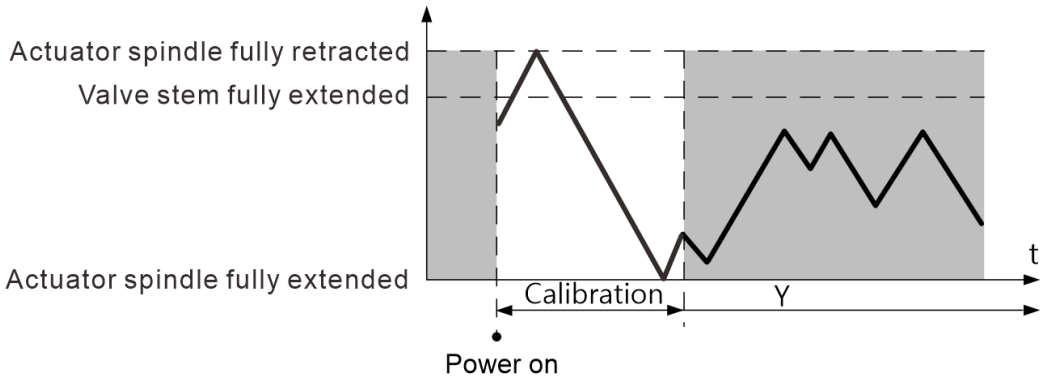
When commissioning, check both wiring and functioning of the actuator.

- Actuator spindle extends Normally open valve closes, normally closed valve opens
- Actuator spindle retracts Normally open valve opens, normally closed valve closes

NOTICE	
!	The actuator must be commissioned only with a correctly mounted valve in place!

Self-calibration

When operating voltage is applied, the actuator self-calibrates (fully retracted → fully extended → setpoint).



Note (Rev B models only): If the actuator spindle reaches the valve stem fully extended position five times or remains in that position for 5 minutes during normal operation, a synchronization is automatically triggered. During this process, the actuator moves to the actuator spindle fully retracted and then returns to the valve stem fully extended position. The actuator does not follow the control signal during this synchronization sequence. Once the synchronization is complete, the actuator resumes normal operation and moves according to the control signal setpoint.

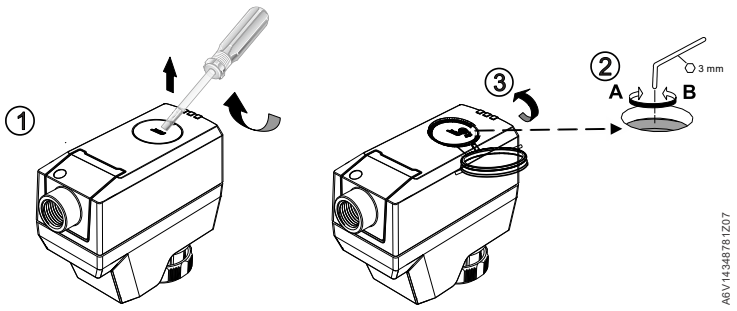
⚠ CAUTION	
	Never intervene manually during self-calibration.

NOTICE	
!	• Correct calibration is only possible with valve stroke > 1.2 mm. Valve stroke < 1.2 mm results in calibration failure. • If calibration fails, the actuator performs another calibration automatically after 10 seconds. • After three failed calibration attempts, the actuator spindle remains in the extended position and the valves are closed. The state of the LED then changes to "stays red".

A 3-mm hexagonal wrench can be used to move the actuator to any position.

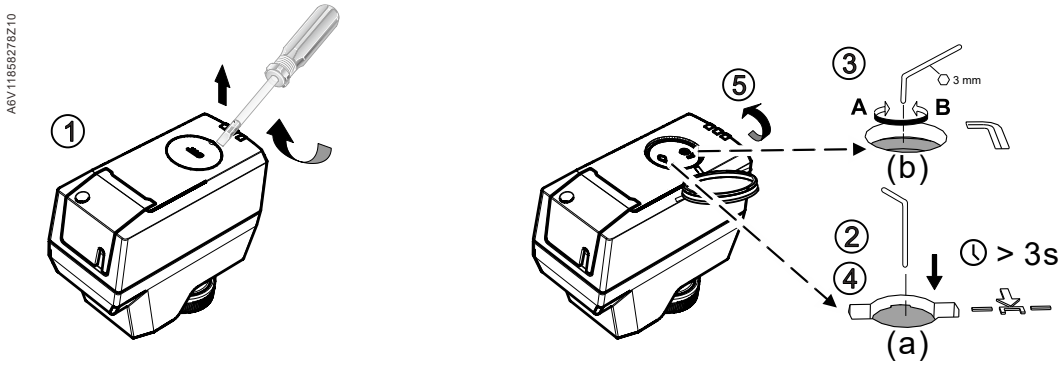
To move the actuator spindle manually (3-position control, SSB131.. and SSB331..)

1. Open the cover using a proper screwdriver. Note that IP54 protection does not apply if the cover is open.
2. Adjust the position of the actuator spindle by rotating Allen wrench illustrated below clockwise or counter-clockwise.
   – The actuator spindle moves down if you rotate clockwise; it moves up if you rotate counter-clockwise. The manually set position is retained.
3. Close the cover to ensure IP54 protection.



To move the actuator spindle manually (DC 0...10 V control, SSB161..)

1. Open the cover using a proper screwdriver. Note that IP54 protection does not apply if the cover is open.
2. Press and hold down button (a) illustrated below for at least three seconds.
   – The actuator ignores any positioning signal from the controller.
3. Adjust the position of the actuator spindle by rotating Allen wrench (b) illustrated below clockwise or anti-clockwise.
   – The actuator spindle moves down if you rotate clockwise; it moves up if you rotate anti-clockwise. The manually set position is retained.
4. To exit manual operation mode, press and hold down button (a) illustrated below again for at least three seconds.
   – The actuator runs a self-calibration automatically. Positioning signal sent from the controller takes effect.
5. Close the cover to ensure IP54 protection.

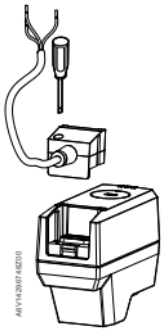


NOTICE	
!	**If operating voltage is applied to actuator, press button (a) before and after manually adjusting the position of the actuator spindle so that the actuators ignores the positioning signal.** If no operating voltage and positioning signal are applied, manual operation can be done without pressing button (a). If the actuator position is manually adjusted in automatic operation (without carrying out point b), this can lead to errors (see LED indication)

Cabling operation

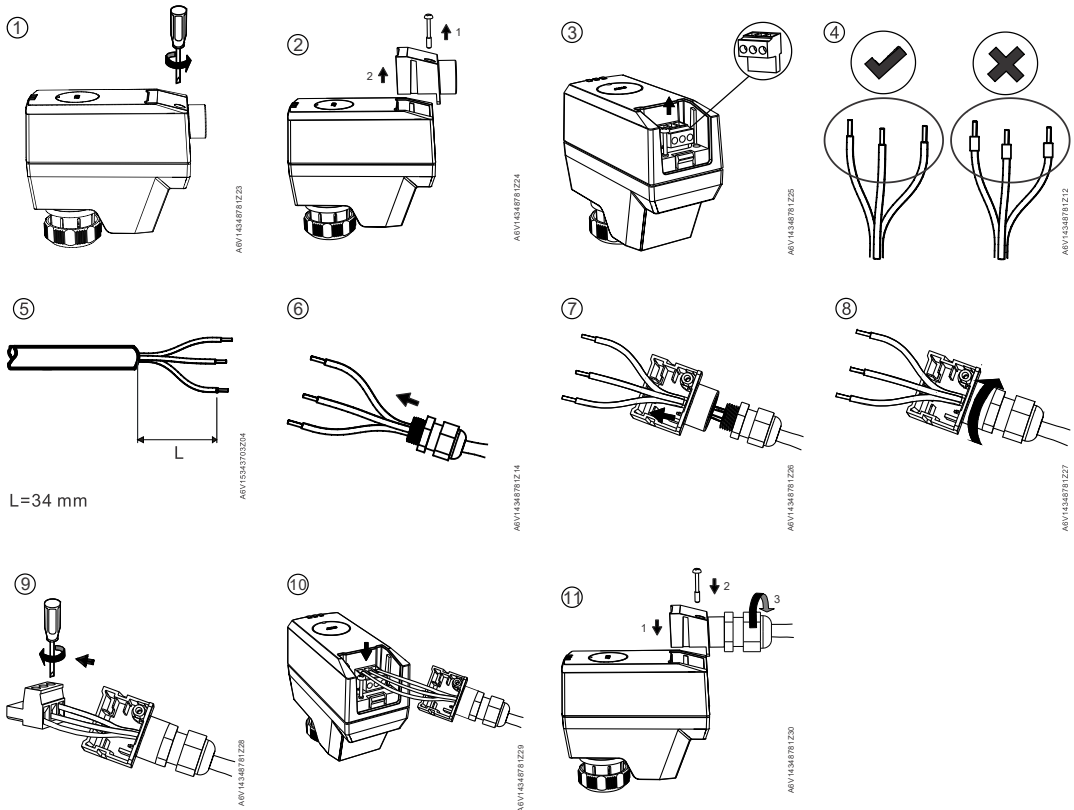
SSB..H, SSB..H/00

1. Unscrew cover screw*
2. Remove cover*
3. Select the desired ASY.. cable kit to be plugged-in
4. Install the cover
5. Screw in the cover screw



* Not applicable for SSB..H/00

SSB..UT



Maintenance

The actuators require no maintenance.

⚠ WARNING	
	**Operating voltage must be switched off during any maintenance!**

NOTICE	
!	When carrying out service work on the plant, note the following: ● Switch off operating voltage. ● If necessary, disconnect electrical connections from the terminals. ● The actuator must be commissioned only with a correctly mounted valve in place!

Repair

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

Disposal

	The device is considered an electronic device for disposal in accordance with European guidelines and may not be disposed of as domestic waste. ● Dispose of the device through channels provided for this purpose. ● Comply with all local and currently applicable laws and regulations.

Warranty

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

Open Source Software (OSS) (SSB161..)

Software license overview

These devices use Open Source Software (OSS). All Open Source Software components used in the product (to include copyrights and licensing agreement) are available at http://siemens.com/bt/download.

Firmware version	OSS document		Device
	Document ID	Title	
2.10.0 or above	A6V13503690	Readme OSS for Modulating Room Actuator 200 N, 300 N	All

Technical data

Power supply		SSB131..	SSB331..	SSB161..
Operating voltage		AC 24 V ± 20 %	AC 230 V ± 15 %	AC 24 V (± 15 %) or DC 24 V (± 20 %)
Frequency		50/60 Hz		
Power consumption	Running	1 VA	11 VA	3 VA
	Holding	0.2 VA	0.4 VA	2 VA
Primary fuse or breaker rating		External, 2 A quick blow		

Signal input	SSB131..	SSB331..	SSB161..
Control signal	3-position	3-position	DC 0…10 V
Input impedance	-		100 kΩ
Parallel operation (number of actuators)[1)]	Max. 10	Max. 6	Max. 10

[1)] Provided that the controller output is sufficient.

Signal output (SSB161.05HF, SSB161.05HF/00)	
Feedback signal U	DC 0...10 V
Max. output current	1 mA
Resolution	1:100

Operating data	SSB131..	SSB331..	SSB161..
Position with de-energized contact Y/Y1/Y2	See "Technical design [▶ 2]"		0 %
Running speed at 50 Hz	16 s/mm		5 s/mm
Positioning force	200 N		
Stroke	6.1 mm		
Permissible temperature of medium in the connected valve	1...120 °C		
Sound level	< 30 dB(A)		

Electrical connection (connecting cable integral)	SSB131..	SSB331..	SSB161..
Cable length	1.5 m, according to VDE 0207	1.5 m, according to IEC 60227-5	1.5 m, according to VDE 0207
Cross section of prewired connection cables	0.34 mm^2 (3 ×)	0.75 mm^2 (3 ×)	0.34 mm^2 (5 ×)
Permissible length for signal lines	< 20 m		

Electrical connection (connecting cable integral) (SSB..UT)	
Cable length	<20 m
Cross section of prewired connection cables	0.5...1.5 mm^2
Cable diameter	<5.5 mm

Electrical connection (connecting cable integral) (SSC..UT)	
Cable length	<20 m
Cross section of prewired connection cables	0.5...1.5 mm^2
Cable diameter	<5.5 mm

Mounting	SSB..H	SSB..UT
Fixing on valve	¾" plastic threaded coupling nut	
Orientation	360°	270°, cable down

Standards	SSB161..	SSB131..H	SSB331..H	SSB..UT
EU conformity (CE)	A5W00254962A	A5W00254962A	A5W00750101A	A5W00254962A
RCM conformity	A5W00254983A	A5W00254983A	A5W00750104A	A5W00254983A
UKCA	A5W00257055A	A5W00257055A	A5W00750103A	A5W00257055A
Housing protection degree	IP 54	IP 54	IP 54	IP 20
Protection class according to EN 60730	III	III	II	III
Pollution degree	2			
Overvoltage category	I		II	I
Environmental compatibility	The product environmental declaration (A5W00242127A for SSB161.., A5W00734983A for SSB331.., A5W00734981A for SSB131..) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).			
UL Approval Federal Communications Commission	UL as per UL60730-1, UL60730-2-14 http://ul.com/database cUL as per CSA – CAN E60730-1, E730-2-14 FCC CFR 47 Part 15 Class B			
ICES003	CAN ICES-3 (B)/NMB-3(B)			

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio

communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation

FCC Caution: Changes or modifications not expressly approved by Siemens Switzerland Ltd. could void user authority to operate the equipment. United States representative https://new.siemens.com/us/en/products/buildingtechnologies/home.html

Housing color	
Cover/base	2003, Ti-Gray
Coupling nut	Plastic

General ambient conditions			
	Operation	**Transport**	**Storage**
Temperature	1...50 ℃	-25...70 ℃	-25...70 ℃
Humidity	5...95 % r.h. non condensing	<95 % r.h. non condensing	5...95 % r.h. non condensing
Atmospheric pressure	Min. 700 hPa, corresponding to max. 3,000 m above see level		

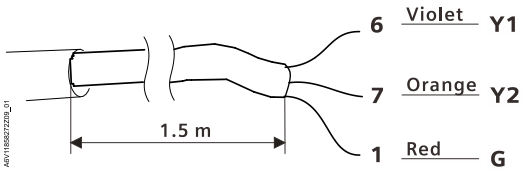
Material	
Cover/base	PC + ABS

Product	**Weight**	**Product**	**Weight**
SSB331.09H	329 g	SSB131.09H	279 g
SSB331.09H/00	224 g	SSB131.09H/00	214 g
SSB131.09UT	230 g	SSB161.05HF	298 g
SSB161.05HF/00	208 g	SSB161.05UT	222 g
SSB331.09UT	240 g		

Diagrams

Connection terminals

SSB131.09H, SSB131.09H/00

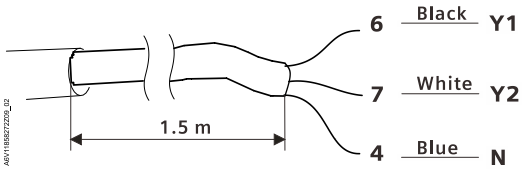


Y1 = Control signal OPEN (AC 24 V)

Y2 = Control signal CLOSE (AC 24 V)

G = System potential AC 24 V

SSB331.09H, SSB331.09H/00

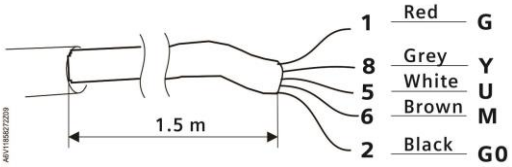


Y1 = Control signal OPEN (AC 230 V)

Y2 = Control signal CLOSE (AC 230 V)

N = Neutral

SSB161.05HF, SSB161.05HF/00



G = System potential (AC/DC 24 V)

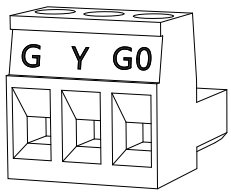
Y = Positioning signal DC 0…10 V

U = Positioning feedback signal

M = Measurement reference

G0 = System neutral

SSB161.05UT

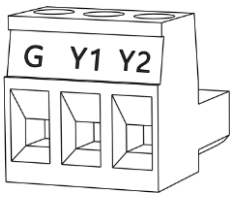


G0 = System neutral

Y = Positioning signal DC 0…10 V

G = System potential AC/DC 24 V

SSB131.09UT

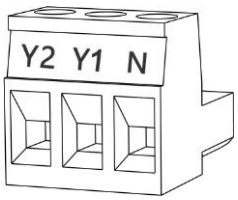


G = System potential (AC 24 V)

Y1 = Control signal OPEN (AC 24 V)

Y2 = Control signal CLOSE (AC 24 V)

SSB331.09UT



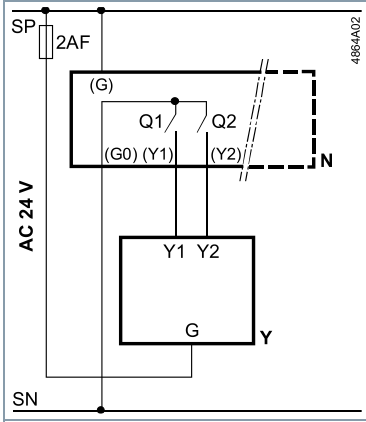
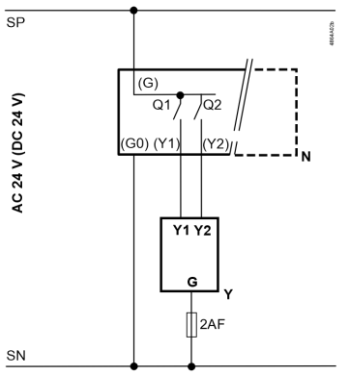
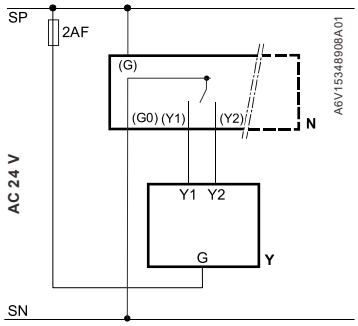
Y2 = Control signal CLOSE (230 V)

Y1 = Control signal OPEN (230 V)

N = Neutral

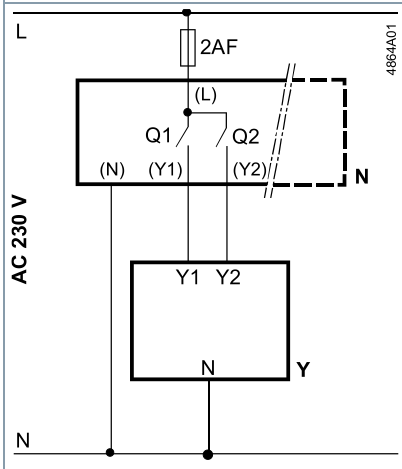
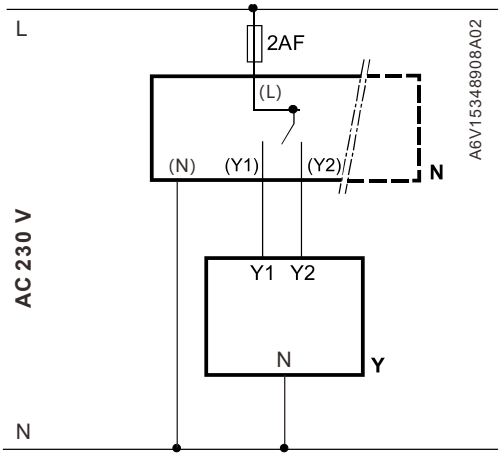
Connection diagrams

SSB131..

Neutral switch	Hot switch	SPDT
		

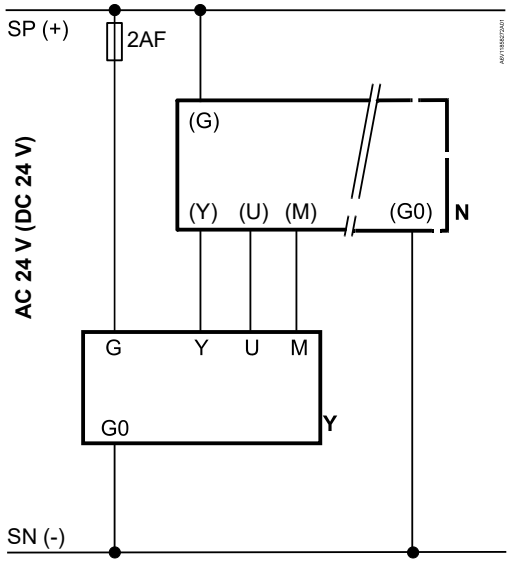
N = Controller
Y = Actuator
SP, G = System potential AC 24 V
SN, G0 = System neutral
Y1, Y2 = Control signal OPEN, CLOSE

SSB331..

Hot switch	SPDT
	

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

SSB161..

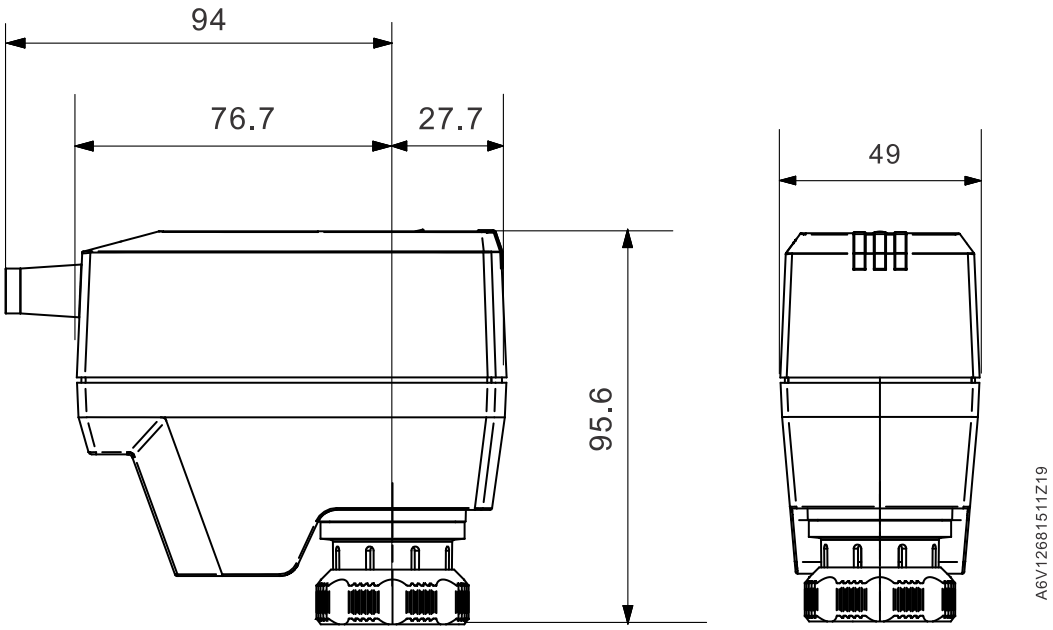


N = Controller
Y = Positioning signal (DC 0…10 V)
SP, G = System potential (AC/DC 24 V)
SN, G0 = System neutral
U = Positioning feedback signal
M = Measurement reference

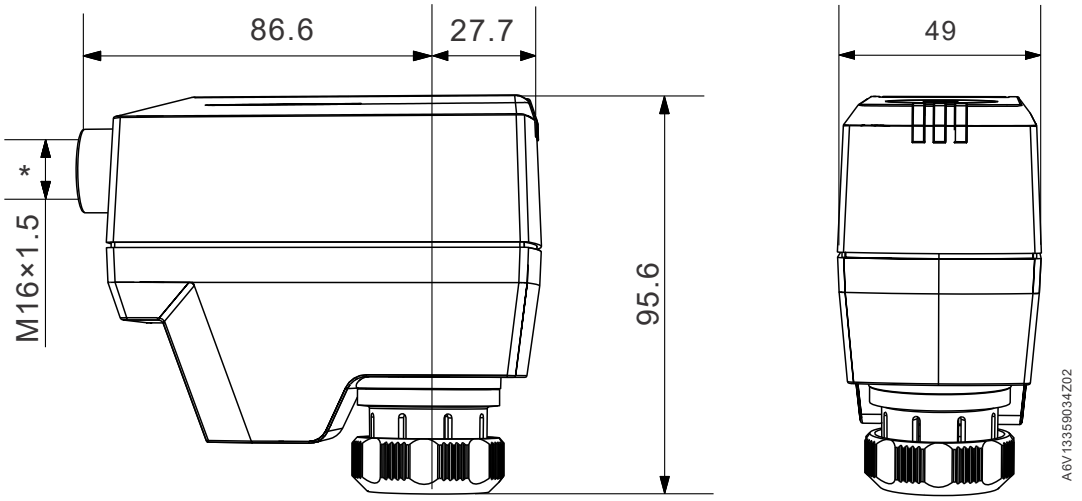
Dimensions

mm

SSB..H, SSB..H/00



SSB..UT



*: The maximum cable gland thread length is 11 mm.

Revision numbers

Type	Valid from rev. no.	Type	Valid from rev. no.
SSB331.09H	..A	SSB131.09H	..A
SSB331.09H/00	..A	SSB131.09H/00	..A
SSB131.09UT	..A	SSB161.05HF	..B
SSB161.05HF/00	..B	SSB161.05UT	..B
SSB331.09UT	..A		

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