

## Electromotoric actuators

SSF..



SSF..H



SSF..H/00

### For globe/control valves VVP47.., VXP47.., VMP47.. in zone and room applications

- SSF131.09.. operating voltage AC 24 V, 3-position control signal
- SSF331.09.. operating voltage AC 230 V, 3-position control signal
- SSF161.05.. Operating voltage AC/DC 24 V, positioning signal DC 0...10 V
- Nominal force 200 N
- Automatic identification of valve stroke
- Direct mounting with M30x1.5 plastic threaded coupling nut, no tools required
- Manual override
- Position and actuator motion indication (LED)
- Parallel operation of multiple actuators possible
- SSF..H with integrated removable 1.5 m cable length
- SSF..H/00 with no cable and cover for direct cable kit plug-in connection
  - Accessories: PVC and halogen-free 1.5 m, 3 m and 6 m cable length kits
- 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 VVP47.., VXP47.. and VMP47.. valve series
- In conjunction with the AL100 adapter, the actuators are also suitable for use with the 2W.., 3W.. and 4W.. valves

## Technical design

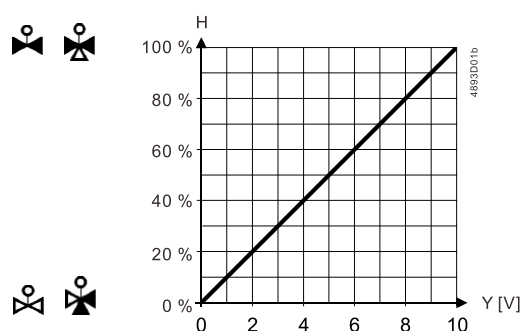
When the actuator is driven by a 3-position or DC 0...10 V control signal, it produces a stroke which is transmitted to the valve spindle.

### 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\*.

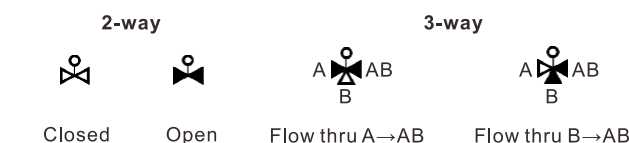



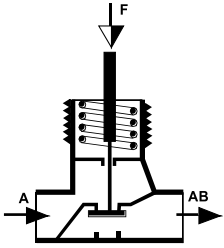

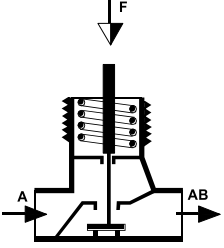
Y = Positioning signal Y [V]

H = Percentage of calibrated valve stroke

U = Position feedback signal



\* Not available for SSF161.05UT




Positioning Signal	SSF161.. Actuator's spindle	VVP47.., VXP47.. and VMP47.. Normally Closed Valves' stem	
0 V	Retracted 	Extended (valve closed)	 4864201b
10 V	Extended 	Retracted (valve open)	 4864201c

LED indications

SSF131..., SSF331..

Variants	LED	Color	Pattern	Description
SSF331.. and SSF131..	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. 



SSF161..

Variants	Status	LED indication patterns
SSF161..	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

Type summary

Type	Stock number	Operating voltage	Control signal	Force	Feedback	Fail-safe	Running speed at 50 Hz	Stroke	Actuator characteristic	Cable length	Cable cover
SSF331.09H	S55180-A130	AC 230 V	3-position	200 N	-	-	16 s/mm	6.5 mm	-	1.5 m	Removable with integrated cable
SSF331.09H/00	S55180-A176									-	No cover
SSF131.09H	S55180-A132									1.5 m	Removable with integrated cable
SSF131.09H/00	S55180-A172									-	No cover
SSF161.05HF	S55180-A131	AC 24 V	DC 0...10 V		DC 0...10 V		5 s/mm		Linear	1.5 m	Removable with integrated cable
SSF161.05HF/00	S55180-A145									-	No cover

## 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
SSF331.09H	S55180-A130	200 N 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).

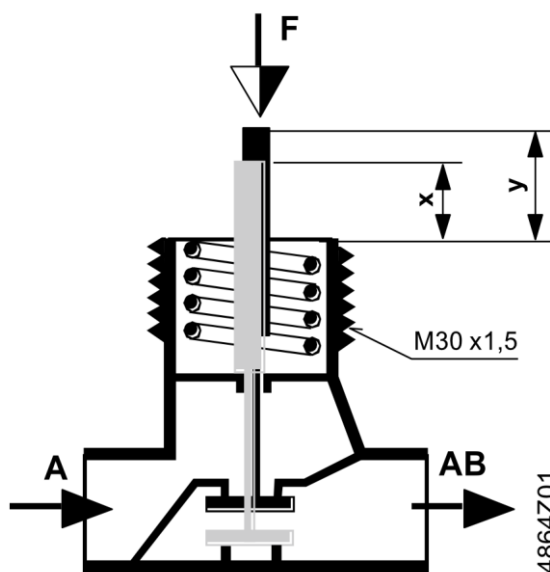
**SSF.. combinable with the following valves**

Type reference	Valve type	$K_{vs}$ [m³/h]	PN class	Data sheet
VVP47..	2-port valves	0.25...4.0	PN 16	N4847
VXP47..	3-port valves	0.25...6.3		N4847
VMP47..	3-port valves with T-bypass	0.25...2.5		N4847
2W..K.. <sup>1)</sup>	2-port valves	0.6...2.5		N4846
3W.. <sup>1)</sup>	3-port valves	0.6...4.0		N4846
4W.. <sup>1)</sup>	3-port valves with T-bypass	0.6...2.5		
Others	Valves (¾") from other manufacturers, without adapter	-	-	-

<sup>1)</sup> With assembly adapter AL100

**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:
  - SSF...: M30x1.5; open dimension X ≥ 11.4 mm; closed dimension Y ≤ 14.2 mm
- Nominal force F ≤ 200 N
  - SSF...: 200 N



## Controllers

Type	SSF131..	SSF331..	SSF161..
	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	SSF131..	SSF331..	SSF161..
	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 <sup>1)</sup>	A6V15343704
Standards and directives	CE conformity declarations	A5W00254962A
	RCM conformity declarations	A5W00254983A
	UKCA conformity declarations	A5W00257055A
Environmental compatibility	Environmental declarations	SSF131.09H, SSF131.09H/00: A5W00734981 SSF331.09H, SSF331.09H/00: A5W00734983A SSF161.05HF/00: A5W00266709A SSF161.05HF: A5W00242127A

<sup>1)</sup> 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](http://www.siemens.com/bt/download)

## Engineering

The actuators must be electrically connected in accordance with local regulations (see "Connection diagrams [► 16]").

### ⚠ 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.

## Mounting

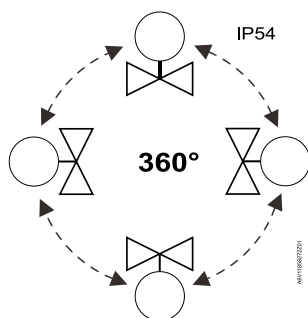
### ⚠ WARNING



- 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:

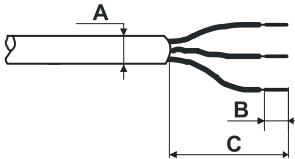
- Remove protective cover from the valve body.
- Position the actuator and tighten the union nut manually.
- See [Mounting instructions](#) enclosed with the product package for graphical instructions.

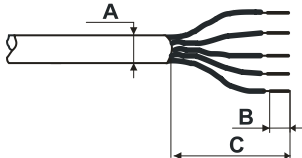


SSF..H, SSF..H/00 + ASY..




Installation

		A [mm]	B [mm]	C [mm]
	SSF131..	4.5	6.0	60
	SSF331..	6.9	6.0	60
Crimp ferrule on stripped wire of connecting cable.				

		A [mm]	B [mm]	C [mm]
	SSF161..	5.5	6.0	60
Crimp ferrule on stripped wire of connecting cable.				


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

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

Commissioning

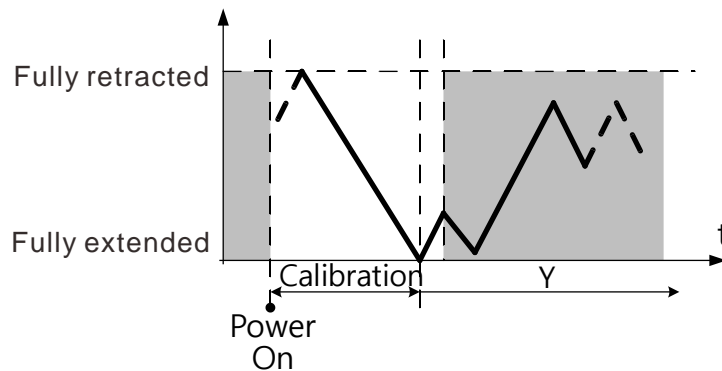
When commissioning, check both wiring and functioning of the actuator.

- 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).



### ⚠ CAUTION



Never intervene manually during self-calibration.

### NOTICE



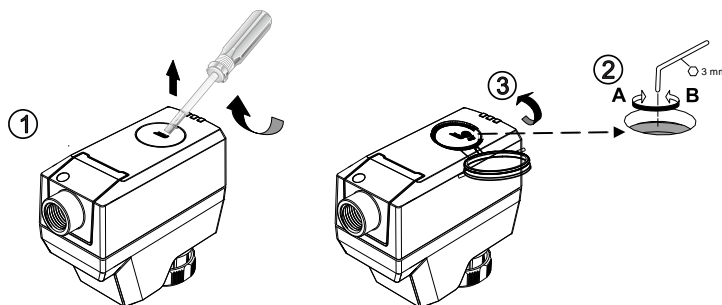
- Correct calibration is only possible with valve stroke > 1.2 mm. Valve stroke < 1.2 mm results in calibration failure.
- If calibration fails, the actuator performs another calibration automatically after 10 seconds.
- After three failed calibration attempts, the actuator spindle remains in the extended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

## Manual operation

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

### To move the actuator spindle manually (3-position control, SSF131.. and SSF331..)

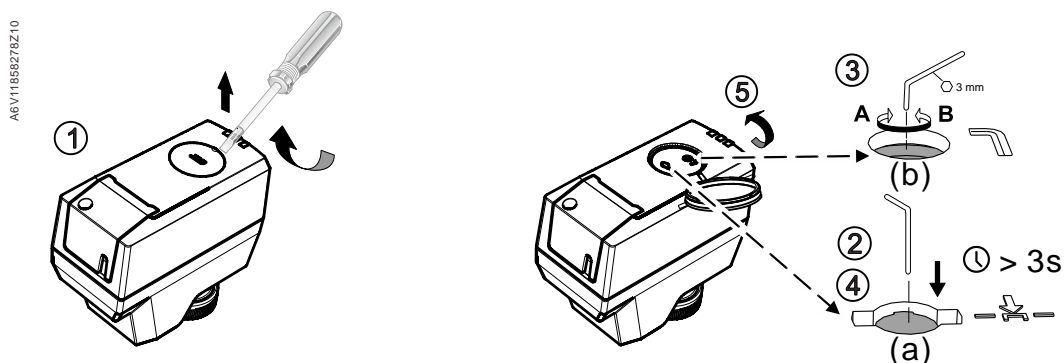
1. Open the cover using a proper screwdriver. Note that IP54 protection does not apply if the cover is open.
2. Adjust the position of the actuator spindle by rotating Allen wrench illustrated below clockwise or counter-clockwise.
  - The actuator spindle moves down if you rotate clockwise; it moves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



A6V14348781207

### To move the actuator spindle manually (DC 0...10 V control, SSF161..)

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

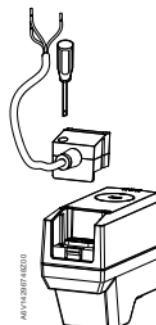


If operating voltage is applied to actuator, press button (a) before and after manually adjusting the position of the actuator spindle so that the actuators ignores the positioning signal. If no operating voltage and positioning signal are applied, manual operation can be done without pressing button (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

#### SSF..H, SSF..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 SSF..H/00

## Maintenance

The actuators require no maintenance.


<b>⚠ WARNING</b>	
	<b>Operating voltage must be switched off during any maintenance!</b>

<b>NOTICE</b>	
	<p>When carrying out service work on the plant, note the following:</p> <ul style="list-style-type: none"><li>• Switch off operating voltage.</li><li>• If necessary, disconnect electrical connections from the terminals.</li><li>• The actuator must be commissioned only with a correctly mounted valve in place!</li></ul>

## Repair

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

## Disposal

	<p>The device is considered an electronic device for disposal in accordance with European guidelines and may not be disposed of as domestic waste.</p> <ul style="list-style-type: none"><li>• Dispose of the device through channels provided for this purpose.</li><li>• Comply with all local and currently applicable laws and regulations.</li></ul>
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## 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) (SSF161..)

### 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		SSF131..	SSF331..	SSF161..
Operating voltage		AC 24 V $\pm$ 20 %	AC 230 V $\pm$ 15 %	AC 24 V ( $\pm$ 15 %) or DC 24 V ( $\pm$ 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	SSF131..	SSF331..	SSF161..
Control signal	3-position	3-position	DC 0...10 V
Input impedance	-		100 k $\Omega$
Parallel operation (number of actuators) <sup>1)</sup>	Max. 10	Max. 6	Max. 10

<sup>1)</sup> Provided that the controller output is sufficient.

Signal output (SSF161.05HF, SSF161.05HF/00)	
Feedback signal U	DC 0...10 V
Max. output current	1 mA
Resolution	1:100

Operating data	SSF131..	SSF331..	SSF161..
Position with de-energized contact Y/Y1/Y2	See "Technical design [► 2]"		0 %
Running speed at 50 Hz	16 s/mm		< 5 s/mm $\pm$ 25 %
Positioning force	200 N		
Stroke	1.2...6.5 mm		
Permissible temperature of medium in the connected valve	1...120 °C		

Electrical connection (connecting cable integral)	SSF131..	SSF331..	SSF161..
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 <sup>2</sup> (5 ×)	0.75 mm <sup>2</sup> (3 ×)	0.34 mm <sup>2</sup> (3 ×)
Permissible length for signal lines	20 m		

Mounting	
Connection to valve	Brass coupling nut M30 × 1.5
Orientation	360°, cable down

Standards	SSF161..	SSF131..H	SSF331..H
EU conformity (CE)	A5W00254962A	A5W00254962A	A5W00750101A
RCM conformity	A5W00254983A	A5W00254983A	A5W00750104A
UKCA	A5W00257055A	A5W00257055A	A5W00750103A
Housing protection degree	IP 54	IP 54	IP 54
Protection class according to EN 60730	III	III	II
Pollution degree	2		
Overvoltage category	I		II
Environmental compatibility	The product environmental declaration (A5W00242127A for SSF161.05HF, A5W00266709A for SSF161.05HF/00, A5W00734983A for SSF331.., A5W00734981A for SSF131..) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).		
UL Approval	UL as per UL60730-1, UL60730-2-14 <a href="http://ul.com/database">http://ul.com/database</a>		
Federal Communications Commission	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 regulations

**Modification of this device to receive cellular radio telephone service signals is prohibited under FCC rules and federal law.**

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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## Statement

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.

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

General ambient conditions			
	Operation	Transport	Storage
Temperature	1...50 °C	-25...70 °C	-25...70 °C
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 sea level		

Product	Weight	Product	Weight
SSF331.09H	325 g	SSF131.09H	275 g
SSF331.09H/00	221 g	SSF131.09H/00	210 g
SSF161.05HF/00	205 g	SSF161.05HF	291 g

Diagrams

Connection terminals

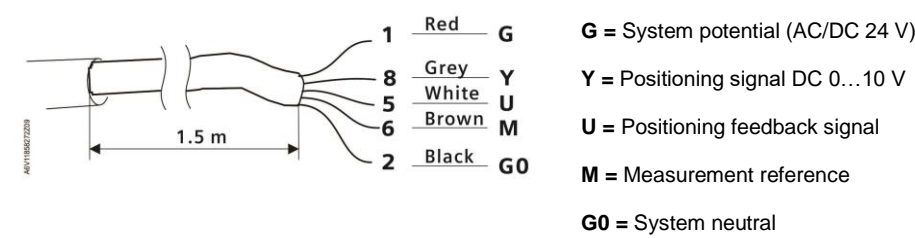
SSF131.09H, SSF131.09H/00



SSF331.09H, SSF331.09H/00

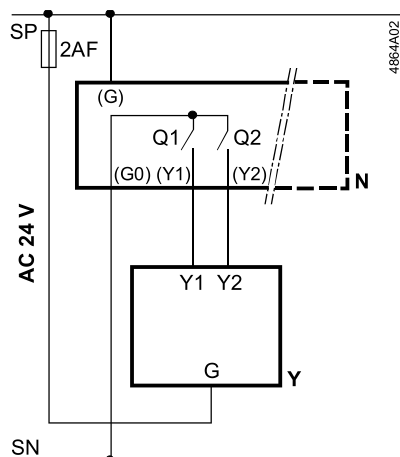


SSF161.05HF, SSF161.05HF/00



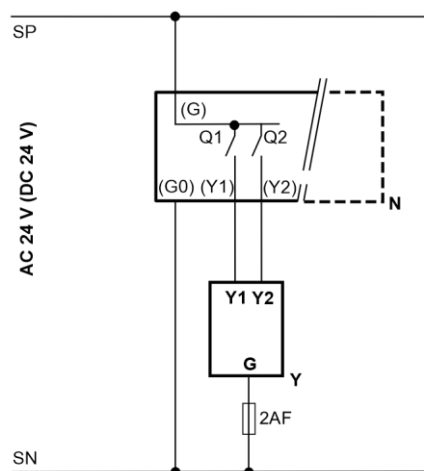
### SSF131..

#### Neutral switch

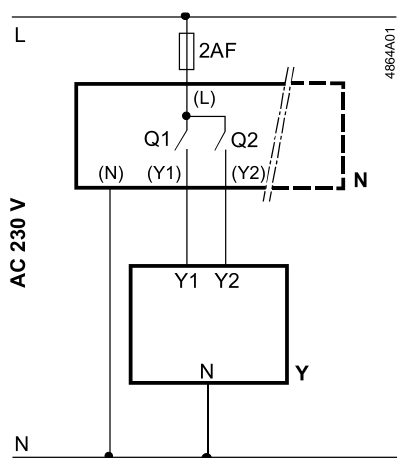


**N** = Controller  
**Y** = Actuator  
 SP, G = System potential AC 24 V  
 SN, G0 = System neutral  
 Y1, Y2 = Control signal OPEN, CLOSE  
 Q1, Q2 = Controller contacts

#### Hot switch



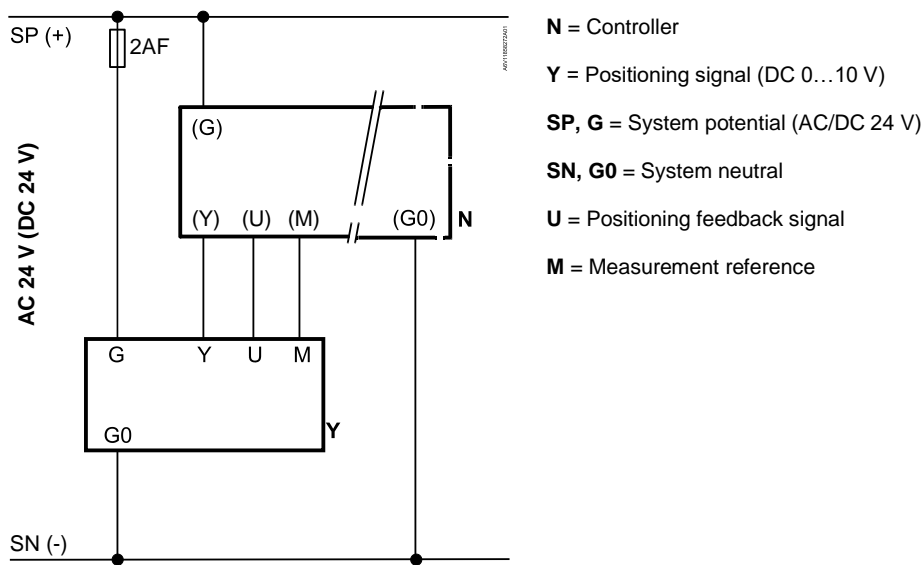
### SSF331..



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



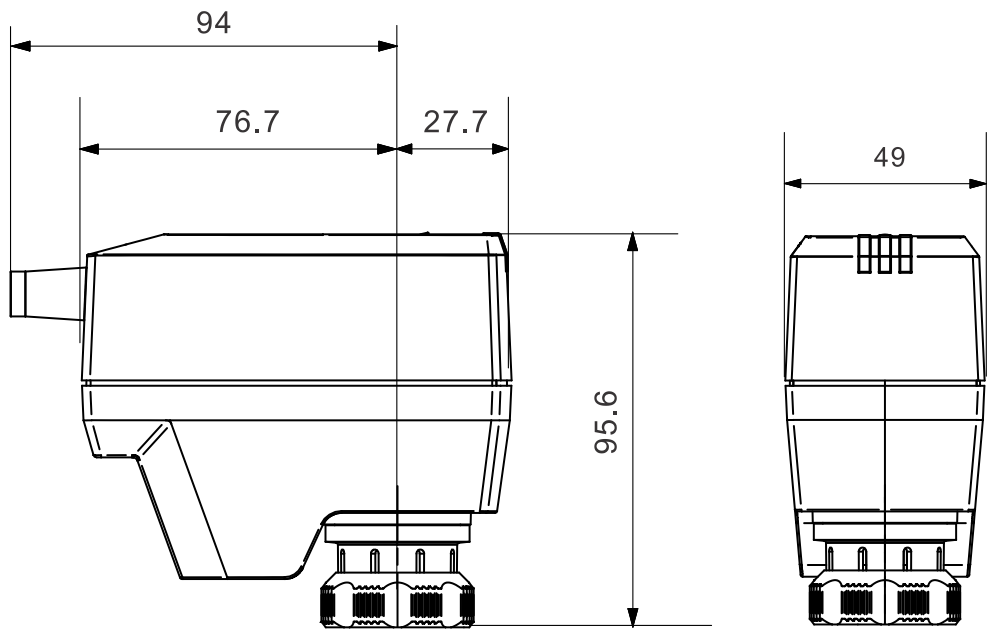
SSF161..



Dimensions

mm

SSF..H, SSF..H/00



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

Revision numbers

Type	Valid from rev. no.	Type	Valid from rev. no.
SSF331.09H	..A	SSF131.09H	..A
SSF331.09H/00	..A	SSF131.09H/00	..A
SSF161.05HF	..A	SSF161.05HF/00	..A

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