SIEMENS

Electromotoric actuator

SSE131.09U, SSE161.05U, SSF161.05U

- SSE161.05U, SSF161.05U: Operating voltage AC/DC 24 V, positioning signal DC 0...10 V
- SSE131.09U: Operating voltage AC 24 V, 3-position control signal
- SSE161.05U, SSF161.05U: Self-calibrating to the valve stroke
- Direct mounting with coupling nut, no tools required
- Manual override
- Position and actuator motion indication (LED)
- Positioning force 45 lbf (200 N)
- Parallel operation of multiple actuators possible

Use

- For 2-way & 3-way 599 Series Zone Valves: 599-00210 - 599-00214, 599-00230 - 599-00234, 599-00510 - 599-00514, 599-00530 - 599-00534
- Typically in chilled ceiling, VAV and fan coil unit applications
- Max.10 units of SSE161.05U, SSF161.05U can operate in parallel, provided the controller output suffices.
- Max.10 units of SSE131.09U can operate in parallel, provided the controller output suffices.

Technical design

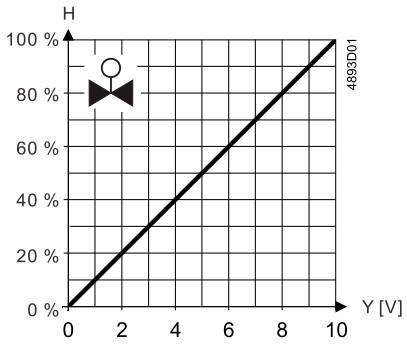
When the actuator is driven by DC 0…10 V positioning signal, it produces a stroke, which is transmitted to the valve stem.

3-position control signal (SSE131.09U)

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

DC 0...10 V control signal (SSE161.05U, SSF161.05U)

- The valve opens / closes in proportion to the control signal at Y.
- At DC 0 V, the actuator stem is retracted, the normally closed valve is fully closed and the normally open valve is fully open.
- When no power is supplied, the actuator maintains its current position.



Y = Control signal Y [V]

H = Percentage of calibrated valve stroke

LED indication

Status	LED indication patterns
Variants	
Modulation: Stem retracting	Flashing green in sequence: LED1-->LED2-->LED3 (500 ms each)
Modulation: Stem extending	Flashing green in sequence: LED3-->LED2-->LED1 (500 ms each)
Stem 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

Variants	LED	Color	Pattern	Description
SSE131.09U 	LED 1	Green	Constant	Actuator stem is fully extended.
	LED 2	Green	Constant	Actuator stem is moving in-between.
	LED 3	Green	Constant	Actuator stem is fully retracted.

Type summary

Type	Stock number	Operating voltage	Running speed	Running time 5.5 mm	Control signal	Actuator characteristic
SSE131.09U	S55180-A156	AC 24 V	16 s/mm	88 s ± 25 %	3-position	-
SSE161.05U	S55180-A157	AC/DC 24 V	5 s/mm	12.5 s ± 25 %	DC 0...10 V	Linear
SSF161.05U	S55180-A158	AC/DC 24 V	5 s/mm	12.5 s ± 25 %	DC 0...10 V	Linear

Accessories

Product Type	Stock Number	Picture	Name	Conduit interface
ASY101	S55845-Z277		Conduit Adaptor	3/8 inch flex conduit

Ordering

When ordering, specify both stock number and quantity.
Example:

Type	Stock number	Designation	Quantity
SSE161.05U	S55180-A157	Electromotoric actuator	60

Delivery

Valves and actuators can be ordered assembled in the factory or ordered separately. For easier valve assembly, actuators ordered separately have the actuator stem fully retracted.

Equipment combinations

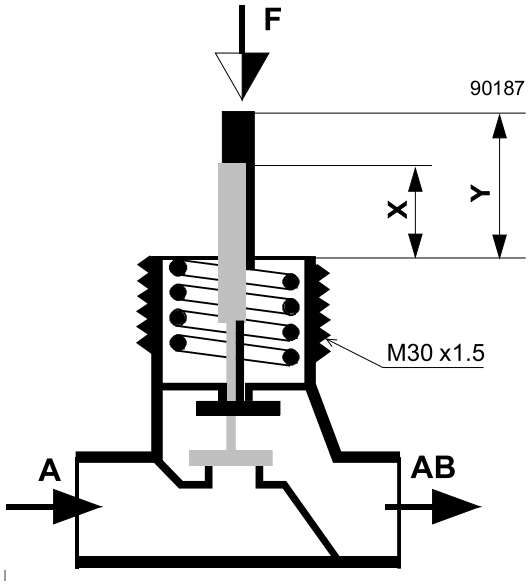
Valves

Combinable valves for SSE131.09U, SSE161.05U and SSF161.05U - 2-way & 3-way 599 Series Zone

Valve	Nominal Line Size		Flow Rate		Connection	
	Inch	mm	Cv	Kvs	NPT	Sweat
2-Way	0.5	15	1.0	(0.85)	599-00210	599-00510
	0.5	15	2.5	(2.15)	599-00211	599-00511
	0.5	15	4.0	(3.4)	599-00214	599-00514
	0.75	20	4.1	(3.5)	599-00212	599-00512
	1	25	7.0	(6.0)	599-00213	599-00513
3-Way	0.5	15	1.0	(0.85)	599-00230	599-00530
	0.5	15	2.5	(2.15)	599-00231	599-00531
	0.5	15	4.0	(3.4)	599-00234	599-00534
	0.75	20	4.1	(3.5)	599-00232	599-00532
	1	25	7.0	(6.0)	599-00233	599-00533

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

- Threaded connections with coupling nut M30 × 1.5
- Nominal force F ≤ 45 lbf (200 N)
- Dimension X ≥ 0.33 in (8.3 mm)
- Dimension Y ≤ 0.58 in (14.8 mm)



Product documentation

Topic	Title	Document ID
Installation	Mounting instruction	A6V13122037
Standards and directives	CE declarations	A5W00254962A
	RCM conformity	A5W00254983A
Environmental compatibility	Environmental declarations	A5W00242127A

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").

⚠ CAUTION

National safety regulations

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

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

Observe permissible temperatures (see "Technical data [▶ 10]").

Mounting

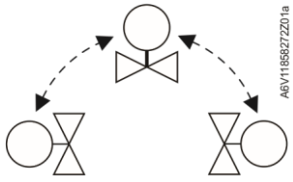
⚠ WARNING

- Do not use pipe wrenches, pliers or similar tools.
- 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 connection nut manually.
- See "Mounting instruction" for graphical instructions.

Orientation



Commissioning

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

- Actuator stem extends Normally open valve closes, normally closed valve opens
- Actuator stem 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 (SSE161.05U, SSF161.05U)

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

⚠ CAUTION	
	Never intervene manually during self-calibration.

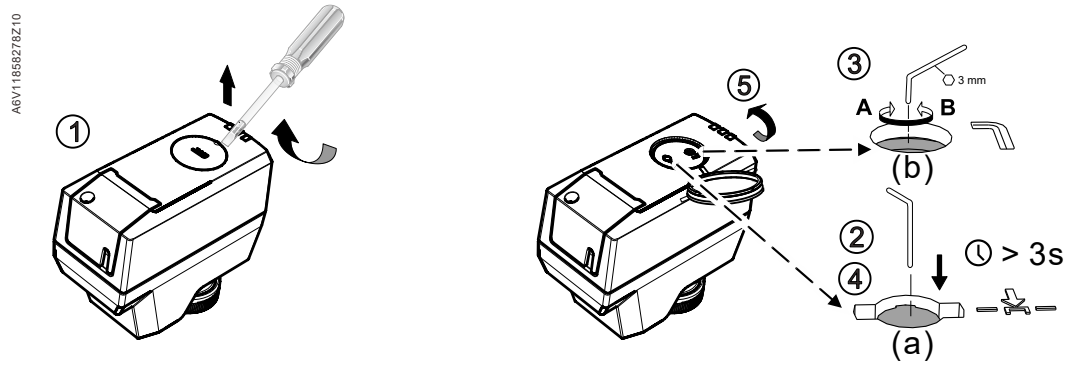
NOTICE	
!	● Correct calibration is only possible with valve stroke > 0.05 inch (1.2 mm). Valve stroke < 0.05 inch (1.2 mm) results in calibration failure. ● If calibration fails, the actuator performs another calibration automatically after 10 seconds. ● After three failed calibration attempts, the actuator stem remains in the extended position and the valves are open.

Manual operation

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

To move the actuator stem manually (SSE161.05U, SSF161.05U)

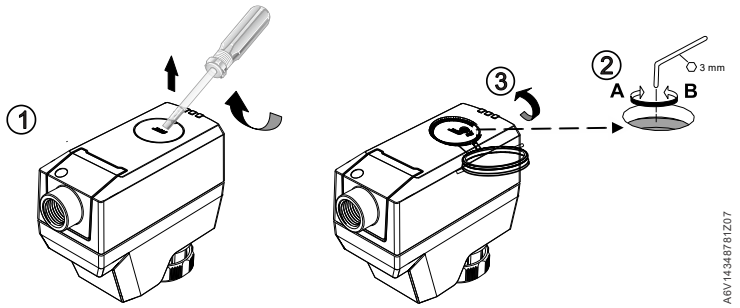
1. Open the cover using a proper screwdriver.
2. Press and hold down button (a) illustrated below for at least three seconds.
   – The actuator ignores any control signal from the controller.
3. Adjust the position of the actuator stem by rotating Allen wrench (b) illustrated below clockwise or counter-clockwise.
   – The actuator stem moves down if you rotate clockwise; it moves up if you rotate counter-clockwise. The manually set position is retained.
4. To release the actuator from manual operation mode, press and hold down button (a) illustrated below again for at least three seconds.
   – The actuator runs a self-calibration automatically. Control signal sent from the controller takes effect.
5. Close the cover.



NOTICE	
!	**If operating voltage is applied to actuator, press button (a) before and after manually adjusting the position of the actuator stem.** If no operating voltage and control signal are applied, manual operation can be done without pressing button (a).

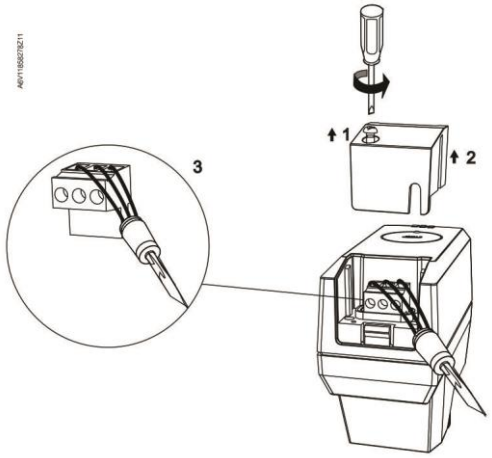
To move the actuator stem manually (SSE131.09U)

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.



Cabling operation

1. Unscrew cover screw
2. Remove cover
3. Connect or disconnect wire terminals (terminal block is removable)
4. Install the cover
5. Screw in the cover screw



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

	This symbol or any other national label indicates 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 regulations. For additional details, refer to Siemens information on disposal.

Warranty

Technical data on specific applications are only valid 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) (SSE161.05U, SSF161.05U)

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	SSE161.05U, SSF161.05U	SSE131.09U
Operating voltage	AC 24 V (± 15 %) or DC 24 V (± 20 %)	AC 24 V (± 20 %)
Frequency	50/60 Hz	50/60 Hz
Power consumption	3 VA (AC); 1.2 W (DC)	1 VA (AC)
Primary fuse or breaker rating	External, 2 A quick blow	External, 2 A quick blow

Signal input	SSE161.05U, SSF161.05U	SSE131.09U
Control signal	Modulating: DC 0...10 V to Y	Floating: AC 24 V to Y1 or Y2
Input impedance	100 kOhm	-
Parallel operation (number of actuators)	Max. 10[1)]	Max. 10[1)]

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

Operating data	SSE161.05U, SSF161.05U	SSE131.09U
Position with de-energized contact Y	See "Technical design [▶ 2]"	See "Technical design [▶ 2]"
Running speed (time for 5.5 mm)	< 5 s/mm ± 25 % (27.5 s ± 25 %)	< 16 s/mm ± 25 % (88 s ± 25 %)
Positioning force	45 lbf (200 N)	45 lbf (200 N)
Stroke	0.05 to 0.25 inch (1.2…6.5 mm)	0.05 to 0.25 inch (1.2…6.5 mm)
Permissible temperature of medium in the connected valve	34 to 230 °F (1…110 ℃)	34 to 230 °F (1…110 ℃)

Electrical connection	
Permissible length for signal lines	65 ft (20 m)
Wire cross section	18...20 AWG (0.5...0.75 mm²)
Cable diameter	<0.22 inch (5.5 mm)

Mounting	
Connection to valve	Plastic coupling nut M30 × 1.5
Orientation	Above horizontal

Standards	
EU conformity declaration (CE)	A5W00254962A
RCM conformity declaration	A5W00254983A
UK conformity declaration (UKCA)	A5W00257055A
Housing protection degree	NEMA 2 / IP20 (EN 60529)
Protection class according to EN 60730	III

Standards	
Pollution degree	2
Overvoltage category	I
Environmental compatibility	The product environmental declaration (A5W00242127A) 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 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	RAL 9017

General ambient conditions			
	Operation	**Transport**	**Storage**
Temperature	34 to 122°F (1…50 ℃)	-13 to 158°F (-25…70 ℃)	-13 to 158°F (-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 sea level	-	-

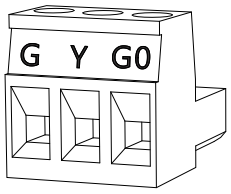
Material	
Cover/base	PC + ABS
Connecting nut	Plastic

Weight	
SSE131.09U	8.0 ounces (226 g)
SSE161.05U	7.7 ounces (217 g)
SSF161.05U	7.6 ounces (216 g)

Diagrams

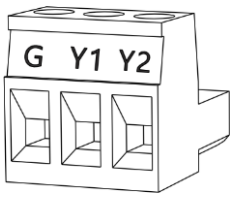
Connection terminals

SSE161.05U, SSF161.05U



G0	System neutral
Y	Control signal (DC 0...10 V)
G	System potential (AC/DC 24 V)

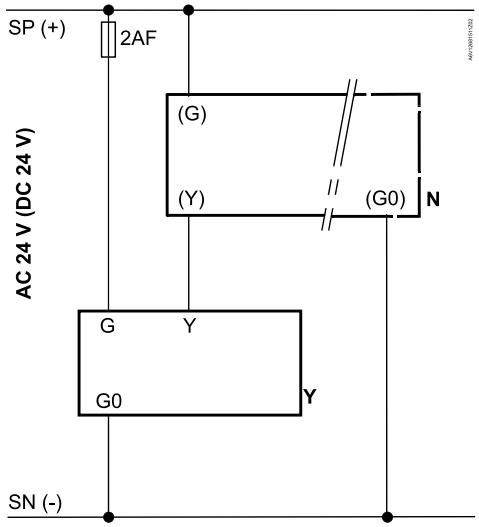
SSE131.09U



G	system potential (AC 24 V)
Y1	3-position (AC 24 V)
Y2	3-position (AC 24 V)

Connection diagrams

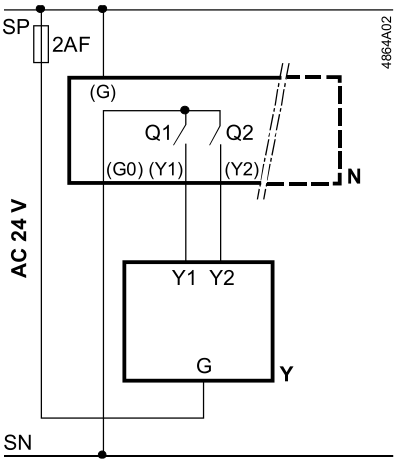
SSE161.05U, SSF161.05U



N = Controller
Y = Actuator
SP, G = System potential AC 24 V
SN, G0 = System neutral
Y = Control signal
2AF = Fuse rated current is 2A

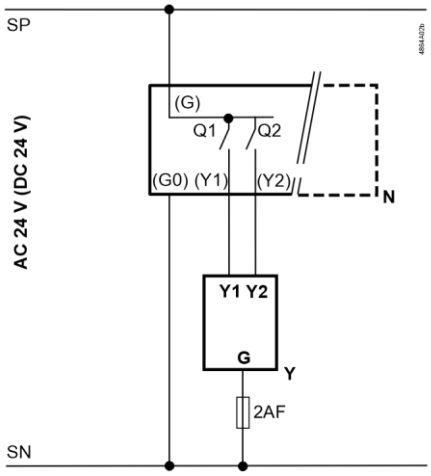
SSE131.09U

Neutral switch



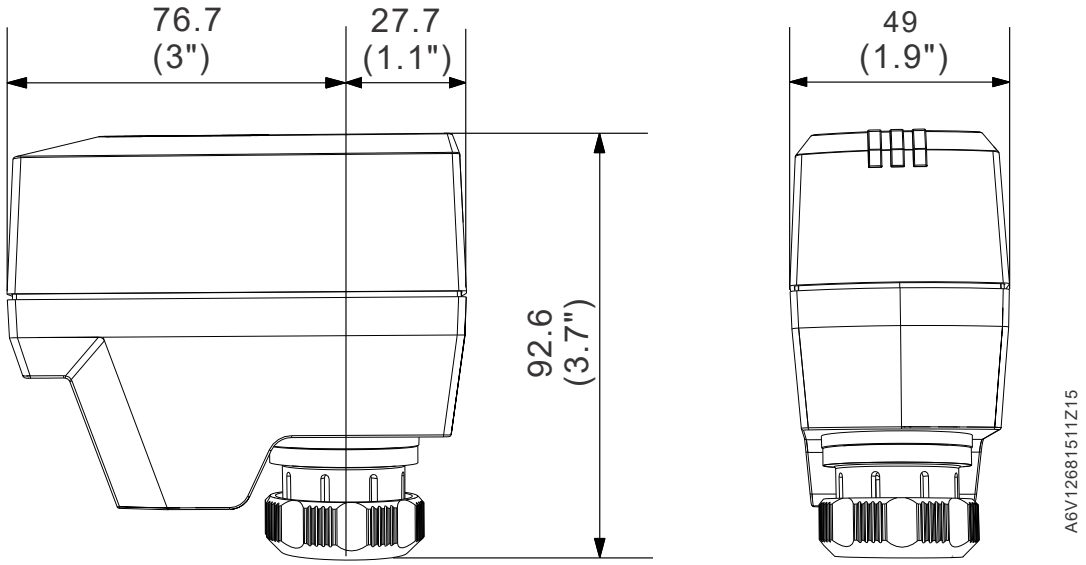
N = Controller
Y = Actuator
SP, G = System potential AC 24 V
SN, G0 = System neutral
Y1, Y2 = Control signal OPEN, CLOSE
Q1, Q2 = Controller contacts
2AF = Fuse rated current is 2A

Hot switch



Dimensions

mm (inch)



Revision numbers

Type	Valid from rev. no.
SSE131.09U	..A
SSE161.05U	..A
SSF161.05U	..A

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