

## Electromotoric actuator

SSA131.00, SSA331.00, SSA161.05



### For pressure independent combi valves (PICV), radiator valves, MiniCombi valves (MCV) and small globe valves

- SSA131.. Operating voltage AC 24 V, 3-position control signal
- SSA331.. Operating voltage AC 230 V, 3-position control signal
- SSA161.. Operating voltage AC/DC 24 V, positioning signal DC 0...10 V
- Direct mounting with coupling nut, no tools required
- Position and actuator motion indication (LED)
- Positioning force 100 N
- Parallel operation of multiple actuators possible
- Integral cable length 1.5 m

## Use

- For radiator valves, VDN..., VEN..., VUN..
- For Siemens PICV (pressure independent combi valves) VPP46.. and VPI46..
- For MiniCombi valves VPD..., VPE..
- For small valves VD1..CLC
- For radiator valves (M30 x 1.5) from other manufacturers without adapter
- Typically in radiator, chilled ceiling, VAV and fan coil unit applications.
- Max. 24 units of SSA131.00, 6 units of SSA331.00 or 10 units of SSA161.05 are able to operate in parallel, provided the controller output suffices.

## Technical design

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

The description of operation in this document applies to valve versions that are fully open when valve stem is extended / no actuator is mounted (Normally Open (NO) valve).

### 3-position control signal (for SSA131.00 and SSA331.00 only)

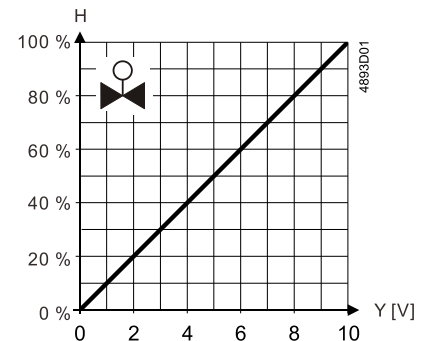
- |  |   |              |
|--|---|--------------|
| • Voltage at Y1:                                       | Stem retracts                           | Valve opens  |
| • Voltage at Y2:                                       | Stem extends                            | Valve closes |
| • No voltage at Y1 or Y2:                              | Actuator maintains its current position |              |
| • Voltage applied to both Y1 and Y2 (not recommended): | Actuator maintains its current position |              |

### DC 0...10 V control signal (for SSA161.05 only)

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

Y = Control signal Y [V]

H = Percentage of calibrated valve stroke

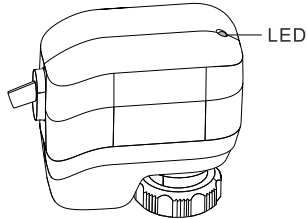


## LED indication

### LED colors and patterns for SSA131.00 and SSA331.00

	LED	Color	Pattern	Description
	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.

## LED colors and patterns for SSA161.05

	LED color	Pattern	Flashing interval	Description	
	Green	Flashing	0.1 s	Self-calibration	
			0.5 s	Actuator stem is moving.	
	Red	Constant	-	-	Actuator stem reaches a set position. The LED turns off after it is constantly on for five seconds.
				-	Error*

\* Hint: calibration or power reset required.

## Type summary

Type	Stock number	Operating voltage	Running speed at 50 Hz	Running time 2.5 mm	Control signal	Cable length
SSA131.00	S55180-A106	AC 24 V	27 s/mm	67.5 s	3-position	1.5 m
SSA331.00	S55180-A105	AC 230 V	27 s/mm	67.5 s	3-position	1.5 m
SSA161.05	S55180-A107	AC/DC 24 V	10 s/mm	25 s	DC 0...10 V	1.5 m

## Ordering

When ordering, specify both type and quantity.

Example:

Type	Stock number	Designation	Quantity
SSA331.00	S55180-A105	Electromotoric actuator	2

## Delivery

Valves and actuators are supplied in separate packages. For easier valve assembly, the position of the actuator stem (spindle) is fully retracted.

## Equipment combinations

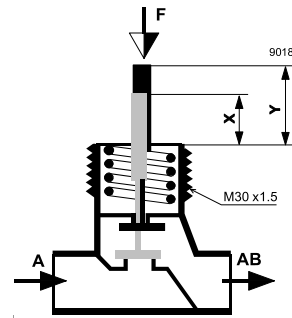
### Valves

Type reference	Valve type	$K_{vs}$ [m <sup>3</sup> /h]	$\dot{V}$ [l/h]	PN class	Data sheet
VDN.., VEN.., VUN..	Radiator valves	0.09...1.41	-	PN 10	N2105, N2106
VPD.., VPE..	MCV radiator valves	-	25...483*		N2185
VD1..CLC	Small valves	0.25...2.60	-		N2103
VPP46.., VPI46..	PICV valves DN10..DN32	-	30...4001	PN 25	N4855
<p><math>K_{vs}</math>: Nominal flow rate of cold water (5...30 °C) through the fully open valve (H100) by a differential pressure of 100 kPa (1 bar)</p> <p>Radiator valves (M30 x 1.5) from other manufacturers, without adapter</p>					
<ul style="list-style-type: none"> <li>Heimeier</li> </ul>		<ul style="list-style-type: none"> <li>Crane D981..</li> </ul>		<ul style="list-style-type: none"> <li>TA-Type TBV-C</li> </ul>	
<ul style="list-style-type: none"> <li>Oventrop M30 x 1.5 (from 2001)</li> </ul>		<ul style="list-style-type: none"> <li>MNG</li> </ul>		<ul style="list-style-type: none"> <li>Junkers</li> </ul>	
<ul style="list-style-type: none"> <li>Honeywell-Braukmann</li> </ul>		<ul style="list-style-type: none"> <li>Cazzaniga</li> </ul>		<ul style="list-style-type: none"> <li>Beulco (new)</li> </ul>	

\* Nominal volume flow at 0.5 mm stroke.

**Note:** To ensure trouble-free operation of third-party valves with the SSA.. actuator, the valves must satisfy the following requirements:

- Threaded connections with coupling nut M30 × 1.5.
- Nominal force  $F \leq 100$  N
- Dimension  $X \geq 8.3$  mm
- Dimension  $Y \leq 14.8$  mm



## Controllers

Type	SSA131.00	SSA331.00	SSA161.05
	AC 24 V	AC 230 V	AC/DC 24 V
	3-position	3-position	DC 0...10 V
DXR2	DXR2..09T.., DXR2..10.., DXR2..11.., DXR2..12P.., DXR2..18.., DXR2..10PL..	-	DXR2..09..
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	SSA131.00	SSA331.00	SSA161.05
RDG..	RDG405KN	RDG100KN, RDG100, RDG100T	RDG160KN, RDG160T, RDG405KN
RDF..	-	RDF800KN, RDF800KN/NF, RDF302, RDF600, RDF600T, RDF600KN	-
RDU..	-	-	RDU340
RCU..	-	-	RCU50..

## Product documentation

Topic	Title	Document ID:
Mounting and installation	Mounting instructions <sup>1)</sup>	A6V11858272
Standards and directives	CE declarations	A5W00106106A
	RCM conformity	A5W00106107A
Environmental compatibility	Environmental declarations	A5W00109220A


<sup>1)</sup> The mounting instructions is enclosed in product packaging.

Related documents such as environmental declarations, CE declarations etc., can be downloaded from <http://siemens.com/bt/download>.

## Notes


### Engineering

The actuators must be electrically connected in accordance with local regulations (see "Connection diagrams [→ 10]").

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

Observe permissible temperatures (see "Technical data [→ 8]"). 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.

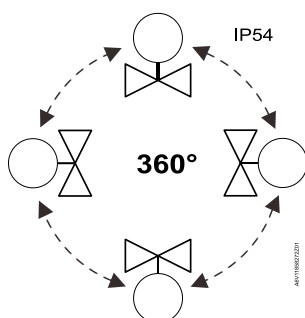
## Mounting

	<b>⚠ WARNING</b>
	<ul style="list-style-type: none"> <li>Do not use pipe wrenches, spanners or similar tools.</li> <li>Avoid lateral pressure or (cable) tension on the mounted actuator!</li> </ul>

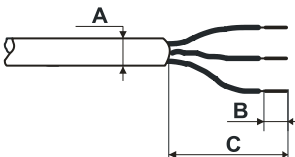
Valve and actuator are easy to assemble on site before commissioning:

- 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



## Installation

	A [mm]	B [mm]	C [mm]
	SSA131.00	4.5	4.2
	SSA331.00	5.9	6.0
	SSA161.05	4.5	4.2
Crimp ferrule on stripped wire of connecting cable.			

- Observe all admissible temperatures (see "Technical data [→ 8]").
- Operate the actuator only with alternating current for SSA131.00 and SSA331.00 (see "Technical data [→ 8]").
- 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 stem extends                      Valve closes
- Actuator stem retracts                      Valve opens

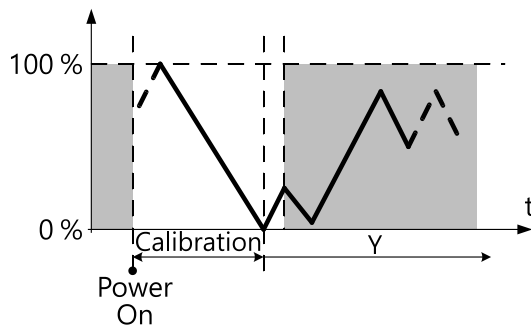


**NOTICE**

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

**Self-calibration (SSA161.05 only)**

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




**NOTICE**

- Correct calibration is only possible with valve stroke > 1.2 mm. Valve stroke < 1.2 mm results 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 closed.

**Maintenance**

The actuators require no maintenance.


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

<b>!</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 the European Guidelines and may not be disposed of as domestic garbage.</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)

#### 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	
1.8.0	A6V12067557	Readme OSS "MRA Modulating – 1.1"	SSA161.05

## Technical data

Power supply				
	SSA131.00	SSA331.00	SSA161.05	
Operating voltage	AC 24 V	AC 230 V	AC 24 V	DC 24 V
Tolerance	± 20 %	± 15 %	± 15 %	± 20 %
Frequency	50/60 Hz			
Power consumption	Running	0.8 VA	7 VA	2.5 VA
	Holding	0.2 VA	0.2 VA	2 VA
Primary fuse or breaker rating	External, 2 A quick blow			

Signal input			
	SSA131.00	SSA331.00	SSA161.05
Control signal	3-position		DC 0...10 V
Input impedance for DC 0...10 V	-		100 kOhm
Parallel operation (number of actuators) <sup>1)</sup>	Max. 24	Max. 6	Max. 10

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

Operating data			
	SSA131.00	SSA331.00	SSA161.05
Position with de-energized contact Y/Y1/Y2	See "Technical design [→ 2]"		
Running speed at 50 Hz	27 s/mm		10 s/mm
Positioning force	100 N		
Stroke	1.2...6.5 mm		
Permissible temperature of medium in the connected valve	1...110 °C (1...90 °C for MCV-radiator valves)		

Electrical connection (connecting cable integral)			
	SSA131.00	SSA331.00	SSA161.05
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> (3 x)	0.75 mm <sup>2</sup> (3 x)	0.34 mm <sup>2</sup> (3 x)
Permissible length for signal lines	20 m		

Mounting	
Fixing on valve	Plastic coupling nut M30 x 1.5
Orientation	360°



<b>Standards</b>			
	<b>SSA131.00</b>	<b>SSA331.00</b>	<b>SSA161.05</b>
EU conformity (CE)	A5W00106106A		
RCM conformity	A5W00106107A		
Housing protection degree	IP 54		
Protection class according to EN 60730	III	II	III
Environmental compatibility	The product environmental declaration (A5W00109220A) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).		

<b>Housing color</b>	
Cover/base	RAL 9003, signal white
Coupling nut	RAL 7035, light gray

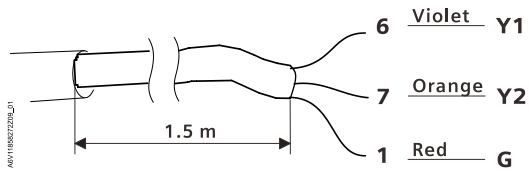
<b>General ambient conditions</b>			
	<b>Operation EN 60721-3-3</b>	<b>Transport EN 60721-3-2</b>	<b>Storage EN 60721-3-1</b>
Environmental conditions	Class 3K3	Class 2K3	Class 1K3
Temperature	1...50 °C	-25...70 °C	-5...50 °C
Humidity	5...85 % r.h.	<95 % r.h.	5...95 % r.h.

<b>Material</b>	
Cover/base	PC + ABS

<b>Weight</b>	
SSA131.00	216 g
SSA161.05	205 g
SSA331.00	258 g

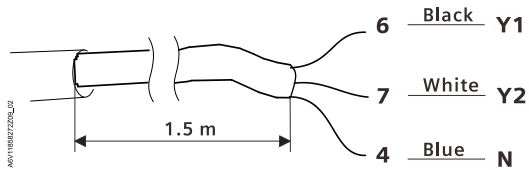
Connection terminals

SSA131.00



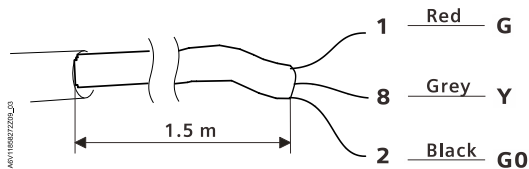
Y1 = Control signal OPEN (AC 24 V)  
 Y2 = Control signal CLOSE (AC 24 V)  
 G = System potential AC 24 V

SSA331.00



Y1 = Control signal OPEN (AC 230 V)  
 Y2 = Control signal CLOSE (AC 230 V)  
 N = Neutral

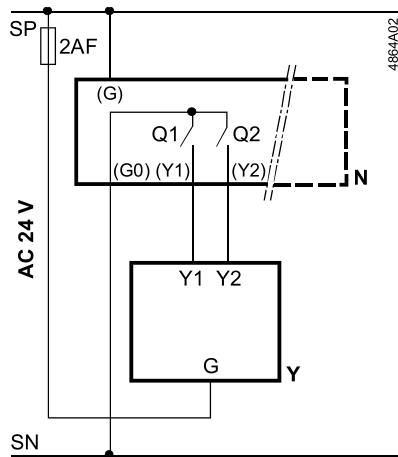
SSA161.05



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

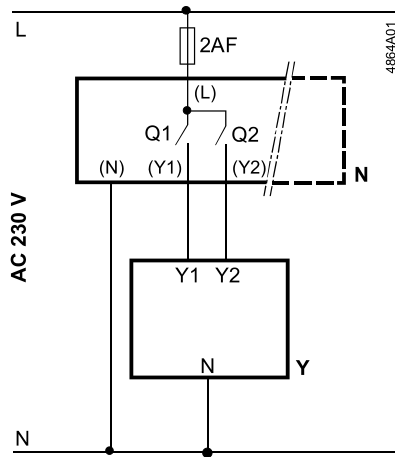
Connection diagrams

SSA131.00



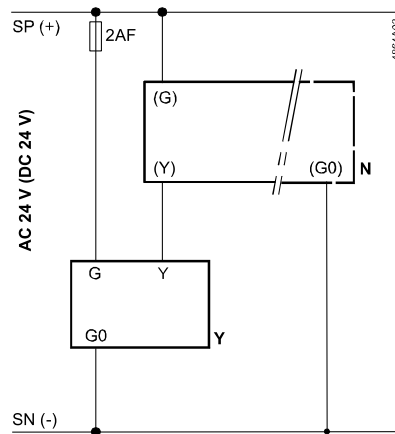
N = Controller  
 Y = Actuator  
 SP, G = System potential AC 24 V  
 SN, G0 = System neutral  
 Y1, Y2 = Control signal OPEN, CLOSE  
 Q1, Q2 = Controller contacts

### SSA331.00



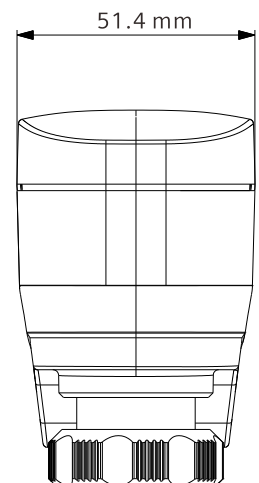
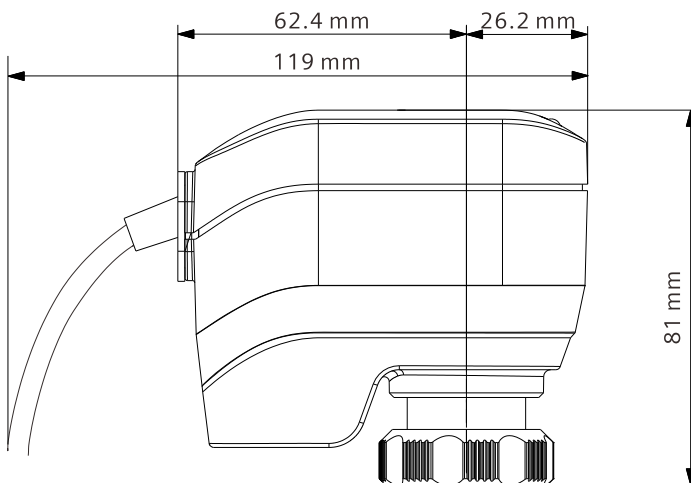
**N** = Controller  
**Y** = Actuator  
**L** = System potential AC 230 V  
**N** = System neutral  
**Y1, Y2** = Control signal OPEN, CLOSE  
**Q1, Q2** = Controller contacts

### SSA161.05



**N** = Controller  
**Y** = Actuator  
**SP, G** = System potential AC 24 V  
**SN, G0** = System neutral  
**Y** = Control signal

### Dimensions



## Revision numbers

Type	Valid from rev. no.
SSA131.00	..A
SSA331.00	..A
SSA161.05	..A

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