

Electromotive actuators for VPI46.., VPF.. valves

SB..P



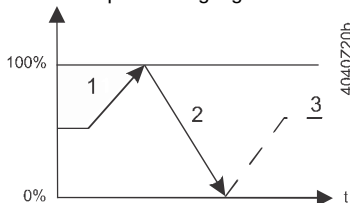
Actuators with 15, 20 or 40 mm stroke and 300 N, 700 N or 1600 N force

- SBX31P, SBV31P operating voltage AC 230 V, positioning signal 3-position
- SBY61P, SBX61P, SBV61P operating voltage AC 24 V, positioning signal 0...10 V
- SBX81P, SBV81P operating voltage AC 24 V, positioning sign 3-position
- For direct mounting on valves; no adjustments required
- Manual adjuster, stroke position indication
- Optional functional by function module

Use

Electromotive actuators to operate Siemens combi valves for type series VPF44.. VPF43.., VPI46.. as control valves on ventilation, air conditioning, district heating and refrigeration plants.

Functions

Function	Description	Type
3-position control	A 3-position signal controls the actuator via connection terminals Y1 or Y2. The desired position is transmitted to the valve. Power on Y1: actuator's stem extends Power on Y2: actuator's stem retracts	SBX31P, SBV31P SBX81P, SBV81P
Modulating control	The modulating positioning signal provides stepless motor control. The positioning signal range (DC 0...10 V) corresponds to the positioning range (closed...open, or 0...100 % stroke) in a equip percentage manner.	SBX61P SBY61P SBV61P
Position feedback U	Signal returned to acquire the position via input.	
Calibration	During commissioning with valves, every time power is applied to the actuator without Y input (or $Y = 0\text{ V}$), the actuator carries out a self-calibration with the valve. During commissioning, the actuator detects the valve's end positions and files the exact stroke in its internal memory. Calibration takes place in the following phases: • Actuator drives to H100 (1), valve opens. Detection of upper end position. Waiting for 20~30s • Actuator drives to H0 (2), valve closes. Detection of lower end position. Waiting for 20~30s • The detected values are stored (3). Then the actuator follows the positioning signal.  No manual interventions are permitted during calibration.	

Type summary

Type	Item No.	Stroke	Positioning force	Operating voltage	Positioning signal	Positioning time	Manual adjuster	Auxiliary functions
SBX31P	S55160-A110	20 mm	700 N	AC 230 V	3-position	120 s	Turnkey for manual adjustment	-
SBX61P	S55160-A111			AC 24 V	DC 0...10 V			AZX420 ¹⁾
SBX81P	S55160-A112				3-position			-
SBV31P	S55160-A113	40 mm	1600 N	AC 230 V	3-position	180 s	Turnkey for manual adjustment	-
SBV61P	S55160-A114			AC 24 V	DC 0...10 V			AZX420 ¹⁾
SBV81P	S55160-A115				3-position			-
SBY61P	S55160-A118	15mm	300 N	AC 24 V	DC 0...10 V	90 s	Turnkey for manual adjustment	AZX420 ¹⁾

¹⁾ 4...20 mA signal by AZX420 function module

Scope of delivery

Actuators, valves and accessories are supplied in individual packs.

Accessories/spare parts

Electrical accessories

Product No.	Stock No.	Description	SBX31P SBV31P	SBX81P SBV81P	SBX61P SBV61P
AZX420	S55845-Z120	Function module	-	-	Max. 1

Ordering (example)

Type	Stock number	Designation	Number of pieces
SBV61P	S55160-A114	Actuator	1
AZX420	S55845-Z120	Function module	1

Equipment combinations

Valves				Actuators				
				SBX..P		SBV..P		
		DN	H ₁₀₀ [mm]	Δp _{max} [kPa]	Δp _s [kPa]	Δp _{max} [kPa]	Δp _s [kPa]	
Standard flow rate	VPF44.50F15 VPF54.50F15	50	20	600	700	-	-	
	VPF44.65F25 VPF54.65F25	65						
	VPF44.80F35 VPF54.80F35	80						
	VPF44.100F70 VPF54.100F70	100	40	-	-	600	700	
	VPF43.125F110 VPF53.125F110	125					600	
	VPF43.150F160 VPF53.150F160	150	43					600
	VPF43.200F210 VPF53.200F210	200						
High flow rate	VPF44.50F25 VPF54.50F25	50	20	600	700	-	-	
	VPF44.65F35 VPF54.65F35	65						
	VPF44.80F45 VPF54.80F45	80						
	VPF44.100F90 VPF54.100F90	100	40	-	-	600	700	
	VPF43.125F135 VPF53.125F135	125					600	
	VPF43.150F200 VPF53.150F200	150	43					600
	VPF43.200F280 VPF53.200F280	200						

Valves				SBY61P	
		DN	H ₁₀₀ [mm]	$\Delta p_{\max}$ [kPa]	Δp_s [kPa]
Standard flow rate	VPI46.40F9.5Q	40	15	600	700
	VPI46.50F12Q	50			

Note:

H₁₀₀ = nominal stroke

$\Delta p_{\max}$ = maximum permissible differential pressure across valve's control path, valid for the entire actuating range of the motorized valve

Δp_s = maximum permissible differential pressure at which the motorized valve will close securely against the pressure (close off pressure)

Title	Contents	Document ID
Electromotive actuators for valves SB..P	Mounting instruction	A6V10628469
PICV PN16 with flanged connections VPF43../VPF44..	Data sheet	A6V11466366
Electromotive actuator SBX/V31..	EU conformity (CE)	A5W90000888
Electromotive actuator SBX/Y/V61../81..	EU conformity (CE)	A5W90000889
Electromotive actuator SBX/Y/V..	RCM conformity	A5W90000885
Electromotive actuator SBX/Y/V..	Product environmental declaration	CE1E4519en

Related documents such as environmental declarations, CE declarations, etc., can be downloaded at the following Internet address:

<http://siemens.com/bt/download>

Safety

	⚠ 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.

	⚠ WARNING
	Risk of burns from hot actuator brackets The actuator brackets on heating plants can also become hot from the contact with the hot valve during operation. The temperature of the actuator bracket can reach 95 °C. When servicing the actuator: - Switch off both pump and operating voltage. - Close the main shutoff valve in the piping. - Allow the piping to cool off.

Engineering

SBX31P/SBV31P/SBX81P/SBV81P

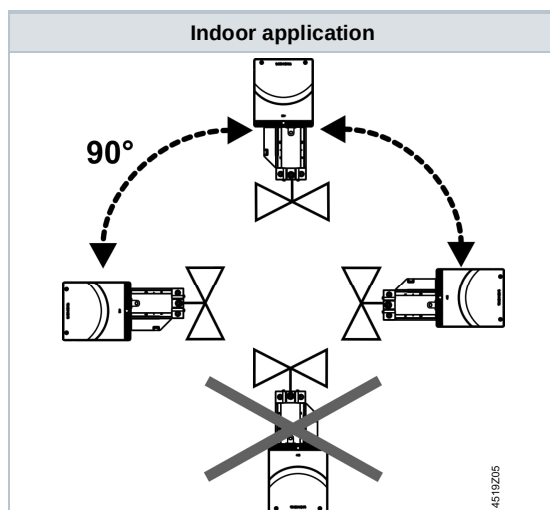
3-position actuators must be controlled by a controller, see Connection diagrams [→ 11].

SBY61P/SBX61P/SBV61P

Up to 10 actuators can drive in parallel on a controller output with a rating of 1 mA.
 Modulating actuators have an input impedance of 100 kΩ.

Mounting

Mounting positions



Operation

Positioning signal direction and flow characteristic

	Actuator SBX61/SBV61	Combi-Valve VPF43/VPF53	Combination	
log				On PICV which stem retracts to the close position, the valve is fully closed at positioning signal $Y = 0 \text{ V}$.

Maintenance

The actuators are maintenance-free.

Disposal



The device is considered an electronic device for disposal in accordance with the European Guidelines and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

Warranty service

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.

Technical data

Power		
Operating voltage		
	SBX31P, SBV31P	AC 230 V ± 15 %
	SBY61P, SBX61P, SBV61P	AC 24 V ± 20 %
	SBX81P, SBV81P	
Frequency		50/60 Hz
Power consumption at 50 Hz		
	SBX31P/SBV31P	9 VA/9 VA
	SBY61P/SBX61P/SBV61P	5 VA/5 VA/7 VA
	SBX81P/SBV81P	4 VA/7 VA

Operating data		
Positioning times (with the specified nominal stroke)		The positioning time may vary depending on the type of valve (Type summary [$\rightarrow$ 3])
	SBY..P	90 s
	SBX..P	120 s
	SBV..P	180 s
Positioning force		
	SBY..P	300 N
	SBX..P	700 N
	SBV..P	1600 N
Nominal stroke		
	SBY..P	15 mm
	SBX..P	20 mm
	SBV..P	40 mm
Permissible media temperature (valve fitted)		1...95 °C

Signal inputs			
Positioning signal "Y"			
	SB..31P, SB..81P		3-position
	SBX31P, SBV31P	Voltage	AC 230 V ± 15 %
	SBV81P, SBV81P		AC 24 V ± 20 %
	SB..61P		
	DC 0...10 V	current	≤ 0.1 mA
		Input impedance	≥ 100 k Ω
	DC 4...20 mA ¹⁾	current	DC 4...20 mA ± 1 %
		Input impedance	≤ 220 Ω

Parallel connection	
SBY61P, SBX61P, SBV61P	≤ 10 (depending on controller output)

Position feedback			
Position feedback U			
	SB..61P		
	DC 0...10 V	Load impedance	>10 k Ω resistive
	4...20 mA ¹⁾	Load impedance	<500 Ω

Connection cables	
Wire cross-sectional areas	0.5...1.5 mm ² , AWG 20...15 ²⁾
Cable entries	2 entries $\varnothing$ 20.5 mm (for M20)

Degree of protection and class			
Housing from vertical to horizontal		IP 54 as per EN 60529	
Protection class		As per EN 60730-1	
	SBX31P SBV31P	AC 230 V	Class I
	SBY61P SBX61P SBV61P	AC 24 V	Class III
	SBX81P		
	SBV81P		

Environmental conditions		
Operation		
	Climatic conditions	
	Mounting location	Indoors (weather-protected)
	Temperature, general	-10...55 °C
	Humidity (non-condensing)	5...95 % r.h.
Transportation		
	Climatic conditions	
	Temperature	-25...70 °C
	Humidity	< 95 % r.h.
Storage		
	Climatic conditions	
	Temperature	-15...55 °C
	Humidity	5...95 % r.h.

Directives and standards	
Product standard	EN 60730-1
Electromagnetic compatibility (field of use)	For residential, commercial, and industrial environments
EU conformity (CE)	
AC 230V	A5W90000888*
AC 24 V	A5W90000889*
RCM conformity	A5W90000885*

Environmental compatibility
The product environmental declaration CE1E4519en* contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

Dimensions
See Dimensions [→ 13]

Accessories ⁶⁾		
Function module	SBY61P, SBX61P, SBV61P	AZX420
External fusing of supply line	- Non-renewable fuse 6...10 A slow - Circuit break max. 13 A, tripping characteristic B, C, D to EN 60898 - Power source with current limitation of max. 10 A	

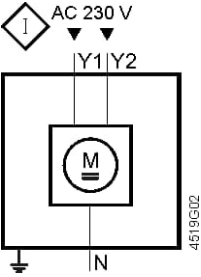
¹⁾ With AXZ420 function module

²⁾ AWG = American wire gauge

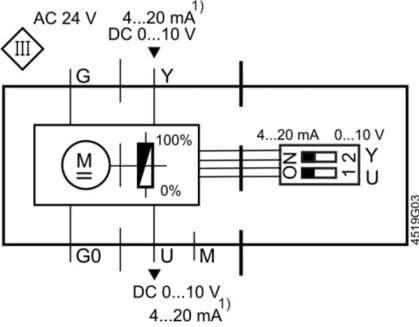
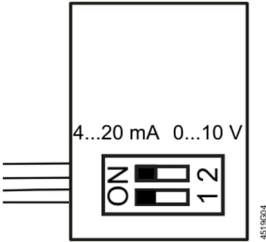
* The documents can be downloaded from <http://siemens.com/bt/download>.

Internal Diagrams

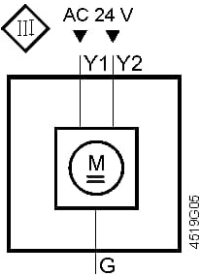
SB..31P

	Accessories
	-

SB..61P

	Accessories
 ¹⁾ Only when AZX420 function module is used	1 x AZX420 

SB..81P

	Accessories
	-

Connection terminals

SB..31P

	AC 230 V	3-position
4519Z06 Y2 Y1 N	Positioning signal (actuator's stem retracts)	
	Positioning signal (actuator's stem extends)	
	System neutral (SN)	

SB..61P

	AC 24 V	DC 0...10 V, 4...20 mA
4519Z08 U M Y G0 G	Position feedback DC 0...10 V/4...20 mA ¹⁾	
	Measuring neutral	
	Positioning signal for DC 0...10 V/4...20 mA ¹⁾	
	System neutral (SN)	
	System potential (SP)	
	Position feedback DC 0...10 V/4...20 mA ¹⁾	

¹⁾Only when AZX420 function module is used

SB..81P

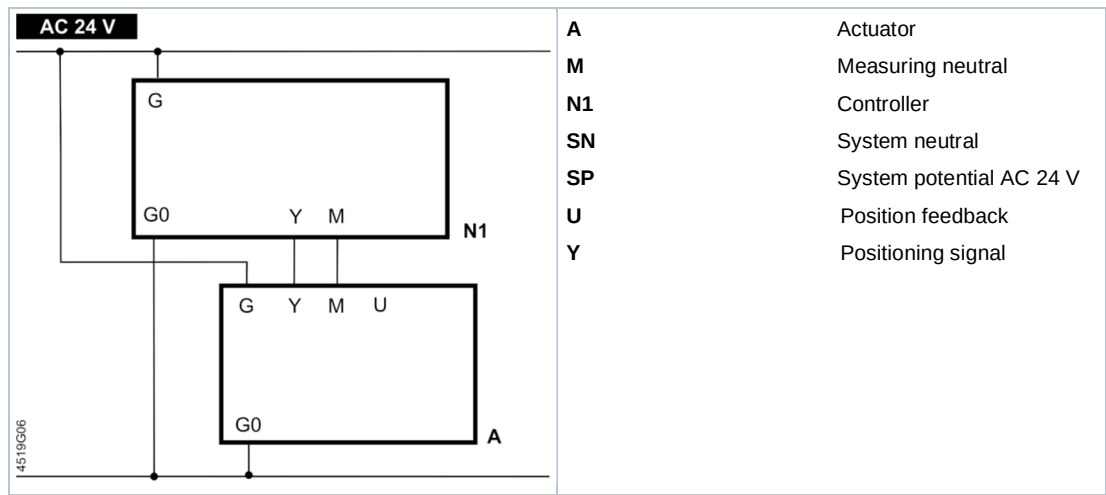
	AC 24 V	3-position
4519Z07 Y2 Y1 G	Positioning signal (actuator's stem retracts)	
	Positioning signal (actuator's stem extends)	
	System potential (SP)	

Connection diagrams

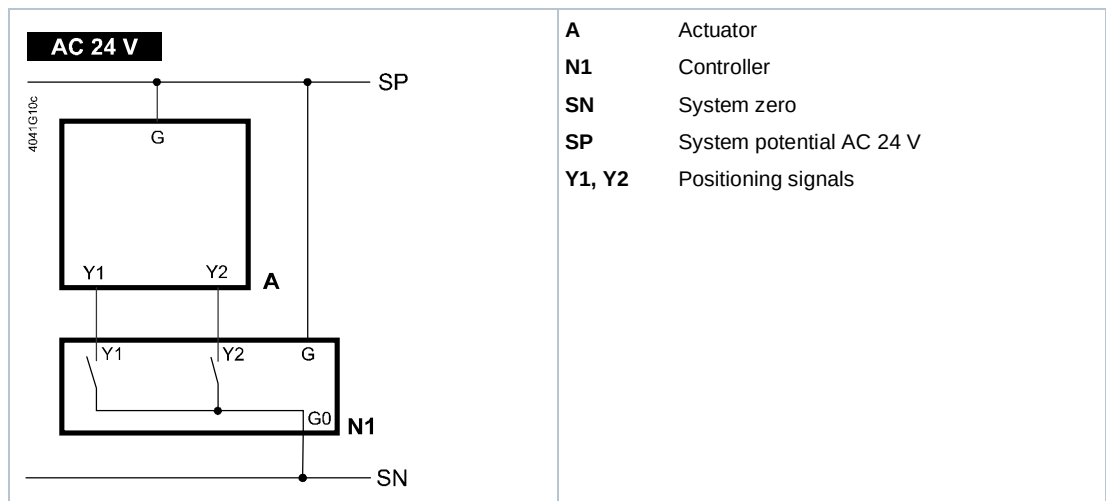
SB..31P

	<table><tr><td>A</td><td>Actuator</td></tr><tr><td>L</td><td>Phase</td></tr><tr><td>N</td><td>Neutral</td></tr><tr><td>N1</td><td>Controller</td></tr><tr><td>Y1, Y2</td><td>Positioning signals</td></tr></table>	A	Actuator	L	Phase	N	Neutral	N1	Controller	Y1, Y2	Positioning signals
A	Actuator										
L	Phase										
N	Neutral										
N1	Controller										
Y1, Y2	Positioning signals										

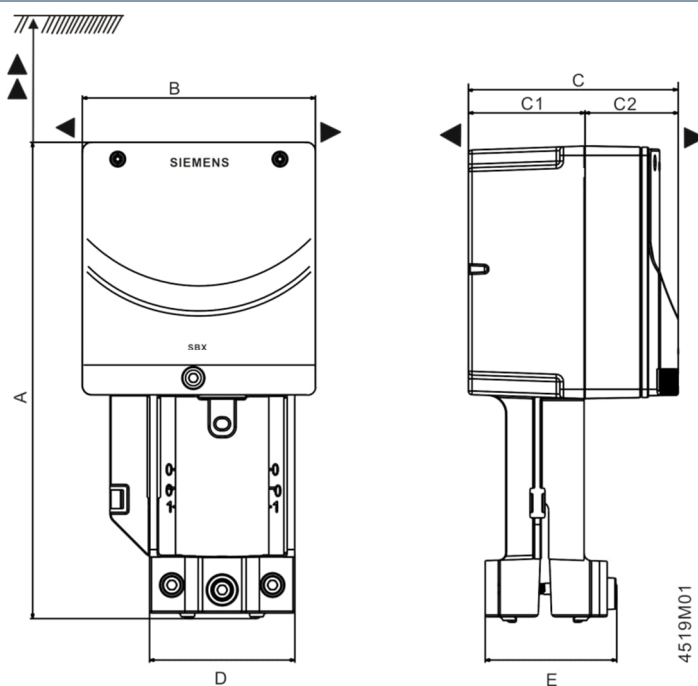
SB..61P



SB..81P



Dimensions



Type	A	B	C	C1	C2	D	E	▶	▶▶	kg
SBY..P, SBX..P	256	125	113	63	50	78	71	200	100	1,5
SBV..P	316	153	113	58	55	78	71	200	100	2,3

Dimensions in mm

Revision numbers

Type	Valid from rev. no.	Type	Valid from rev. no.
SBX31P	..A	SBV31P	..A
SBX61P	..A	SBV61P	..A
SBX81P	..A	SBV81P	..A
SBY61P	..A		

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