SIEMENS

4501



ACVATIX™

Electromotoric actuators for valves

SAX..

with a 20 mm stroke

- **SAX31.. Operating voltage AC 230 V, 3-position control signal**
- **SAX61.. Operating voltage AC/DC 24 V, control signal DC 0…10 V, 4…20 mA**
- **SAX81.. Operating voltage AC/DC 24 V, 3-position control signal**
- **SAX61.. Position feedback, override control, choice of flow characteristic**
- **For direct mounting on valves; no adjustments required**
- **Manual adjuster, position indicator and status indication per LED**
- **Optional functions with auxiliary switches, potentiometer, function module, stem heating element**

Use

For the operation of Siemens 2-port and 3-port valves, types V..F21.., V..F31.., V..F40.., V..F41.., V..G41.., VVF52.. and V..F53.. with 20 mm stroke as control and safety shut-off valves in heating, ventilation and air conditioning systems.

Type summary

Product no.	Stock no.	Stroke	Pos. force	Operating voltage	Positioning signal	Spr. ret. time	Pos. time	LED	Manual adjuster	Extra functions
SAX31.00	S55150-A105	20 mm	800 N	AC 230 V	3-Punkt	-	120 s	-	Push and fix	-
SAX31.03	S55150-A106						30 s	✓		Position feedback, forced control, change of characteristic
SAX61.03 **SAX61.03U**	S55150-A100 S55150-A100-A100			AC/DC 24 V	DC 0…10 V DC 4…20 mA 0…1000 Ω					
SAX81.00 **SAX81.00U**	S55150-A102 S55150-A102-A100				3-Punkt		120 s	-		-
SAX81.03 **SAX81.03U**	S55150-A103 S55150-A103-A100						30 s			

Electrical accessories

Product no.	Auxiliary switch ASC10.51	Potentiometer ASZ7.5/.. [1]	Function module AZX61.1	Stem heating element ASZ6.6
Stock no.	S55845-Z103	S55845-Z104 (ASZ7.5/135) S55845-Z105 (ASZ7.5/200) S55845-Z106 (ASZ7.5/1000)	S55845-Z107	S55845-Z108
	Max. 2			Max. 1
SAX31..	Max. 2	Max. 1	-	Max. 1
SAX61..	Max. 2	-	Max. 1 AZX61.1	
SAX81..		Max. 1	-	

[1] Available with 135 Ω, 200 Ω or 1000 Ω

Mechanical Accessory

Weather shield ASK39.1

Ordering

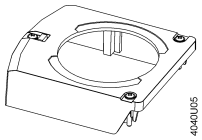
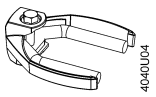
Example

Product no.	Stock no.	Description	Quantity
SAX81.03	S55150-A103	Actuator	1
ASZ7.5/1000	S55845-Z106	Potentiometer	1

Delivery

Actuators, valves and accessories are supplied in individual packs.

Spare parts

Product number / Stock number	Housing cover	Screw (valve stem coupling)	U-bracket
8000060843			

Combinations

Type reference		DN	PN class	k_{vs} [m^3/h]	Data sheet
2-port valves VV.. (control or safety shutoff valves)					
VVF21..	flange	25...80	6	1.9…100	N4310
VVF31..	flange	15...80	10	2.5…100	N4320
VVF40..	flange	15…80	16	1.9…100	N4330
VVF41..	flange	50		19 / 31	N4340
VVG41..	thread	15…50		0.63…40	N4363
VVF52..	flange	15…40	25	0.16…25	N4373
VVF53..	flange	15…50		0.16…40	N4405
3-port valves VX.. (control valves for "mixing" and "diverting" functions)					
VXF21..	flange	25…80	6	1.9…100	N4410
VXF31..	flange	15…80	10	2.5…100	N4420
VXF40..	flange	15…80	16	1.9…100	N4430
VXF41..	flange	15…50		1.9…31	N4440
VXG41..	thread			1.6…40	N4463
VXF53..	flange	15…50	25	1.6…40	N4405

Product documentation

Detailed Informations about the New Generation actuators can be found in the Basic documentation "Electromotoric actuators SAX.." (CE1P4040_01en).

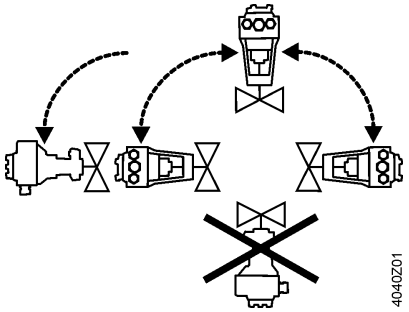
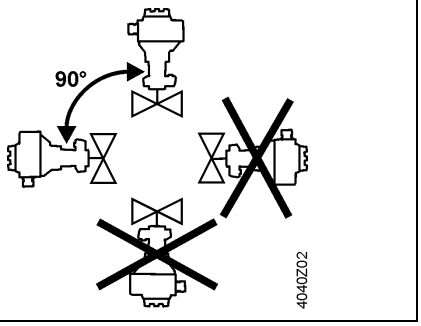
Notes

Engineering

SAX31.. and SAX81.. 3-position actuators must have their own specific controller, refer to "Connection Diagrams" (page 7).

SAX61.. 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

Indoor use	Outdoor use [1]
	

[1] Only in connection with weather shield ASK39.1

Maintenance The actuators are maintenance-free.

Warranty

The engineering data specified in chapter "Combinations" (page 3) are only guaranteed in connection with the Siemens valves listed.

Note **When using the actuators in connection with valves of other manufacture, correct functioning must be ensured by the user, and Siemens will assume no responsibility.**

Technical Data

		SAX..
Power supply	Operating voltage	
	SAX31..	AC 230 V ±15%
	SAX61..	AC 24 V ± 20% / DC 24 V + 20% / -15%
	SAX81..	AC 24 V ±20% / DC 24 V + 20 % / -15%
	Frequency	45…65Hz
	Fusing of supply lines	Max. 10 A slow
	Power consumption at 50 Hz	
	SAX31.00 Stem retracts / extends	3.5 VA / 2 W
	SAX31.03 Stem retracts / extends	6 VA / 3.5 W
	SAX61.03.. Stem retracts / extends	8 VA / 3.75 W
	SAX81.00.. Stem retracts / extends	3.5 VA / 2.25 W
	SAX81.03.. Stem retracts / extends	5 VA / 3.75 W
Function data	Positioning times (with the specified nominal stroke) The positioning time can vary, depending on the type of valve -> refer chapter "Type summary" (page 2)	
	SAX31.00, SAX81.00..	120 s
	SAX31.03, SAX61.03.., SAX81.03..	30 s
	Positioning force	800 N
	Nominal stroke	20 mm
	Permissible medium temperature (valve fitted)	-25…130 °C
Signal inputs	Positioning signal "Y" SAX31.., SAX81..	3-position
	SAX31.. Voltage	AC 230 V ±15%
	SAX81.. Voltage	AC 24 V ± 20 % / DC 24 V + 20 % / -15%
	SAX61.. (DC 0...10 V) Current draw	≤ 0.1 mA
	Input impedance	≥100 kΩ
	SAX61.. (DC 4...20 mA) Current draw	DC 4...20 mA ± 1%
	Input impedance	≤500 Ω
Parallel operation	SAX61..	≤ 10 (depending on controler output)
Forced control	Positioning signal "Z" SAX61..	R = 0…1000 Ω, G, G0
	R = 0…1000 Ω	Stroke proportional to R
	Z connected to G	Max. stroke 100% [1]
	Z connected to G0	Min. stroke 0% [1]
	Voltage	Max. AC 24 V ± 20%
		Max. DC 24 V + 20% / -15%
	Current draw	≤ 0.1 mA
Position feedback	Position feedback U SAX61..	DC 0...10 V ± 1%
	Load impedance	>10 kΩ res.
	Load	Max. 1 mA
Connecting cable	Wire cross-sectional areas	0.13…1.5 mm^2, AWG 24…16 [2]
	Cable entries SAX..	EU: 2 entries ∅ 20.5 mm (for M20)
		1 entry ∅ 25.5 mm (for M25)
	SAX..U	US: 3 entries ∅ 21.5 mm for ½" tube connection
Degree of protection	Housing from vertical to horizontal	IP54 as per EN 60529 [3]
	Insulation class	As per EN 60730
	Actuators SAX31.. AC 230 V	II
	Actuators SAX61.. AC / DC 24 V	III
	Actuators SAX81.. AC / DC 24 V	III
Environmental conditions	Operation	IEC 60721-3-3
	Climatic conditions	Class 3K5
	Mounting location	Indoors (weather-protected)
	Temperature General	-5…55 °C
	-	-
	Humidity (noncondensing)	5…95% r.h.
	Transport	IEC 60721-3-2
	Climatic conditions	Class 2K3
	Temperature	-25…70 °C
	Humidity	<95% r.h.
	Storage	IEC 60721-3-1
	Climatic conditions	Class 1K3
	Temperature	-15…55 °C
	Humidity	5…95% r.h.
	Max. media temperatur when mounted on valve	130 °C
Standards	CE conformity	
	As per EMC directive	2004/108/EC
	Immunity	EN 61000-6-2:[2005] Industrial [4]
	Emmissions	EN 61000-6-3:[2007] Residential
	Electrical safety	EN 60730-1
	Low-voltage directive AC 230 V	2006/95/EC
	C-tick	N 474
	UL conformity AC 230 V	-
	AC/DC 24 V	UL 873

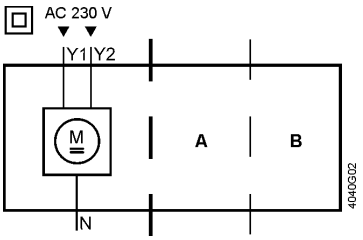
		SAX..
Environmental compatibility		ISO 14001 (environment) ISO 9001 (quality) SN 36350 (environment-compatible products) RL 2002/95/EG (RoHS)
Dimensions		See "Dimensions" (page 8)
Accessories	Potentiometer ASZ7.5/135 Voltage Current rating	0…135 Ω ± 5% DC 10 V <4 mA
	Potentiometer ASZ7.5/200 Voltage Current rating	0…200 Ω ± 5% DC 10 V <4 mA
	Potentiometer ASZ7.5/1000 Voltage Current rating	0…1000 Ω ± 5% DC 10 V <4 mA
	Auxiliary switch ASC10.51 Switching capacity	AC 24…230 V, 6 A res., 3 A ind.
	Stem heating element ASZ6.6	AC 24 V, 30 W

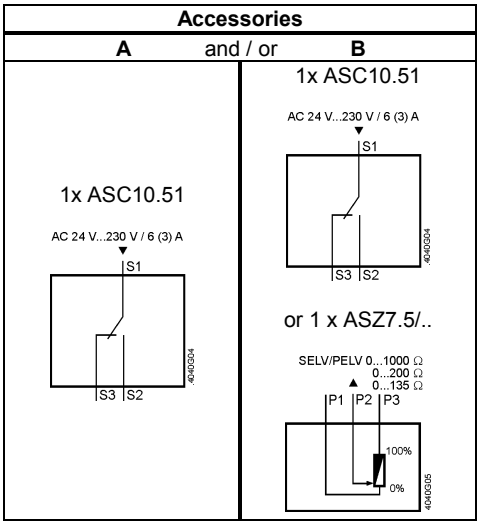
[1] Observe acting direction of DIL switches
[2] AWG = American wire gauge
[3] Also with weather shield ASK39.1
[4] Transformer 160 VA (e.g. Siemens 4AM 3842-4TN00-0EA0) for actuators operating on AC 24 V

Connection Diagrams

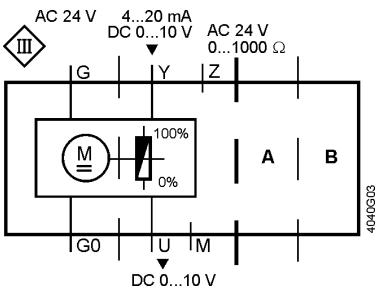
Internal Diagrams

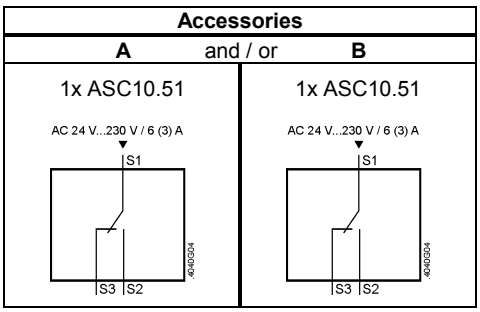
SAX31..



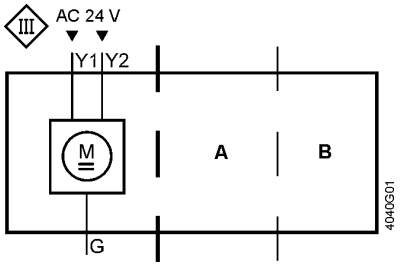


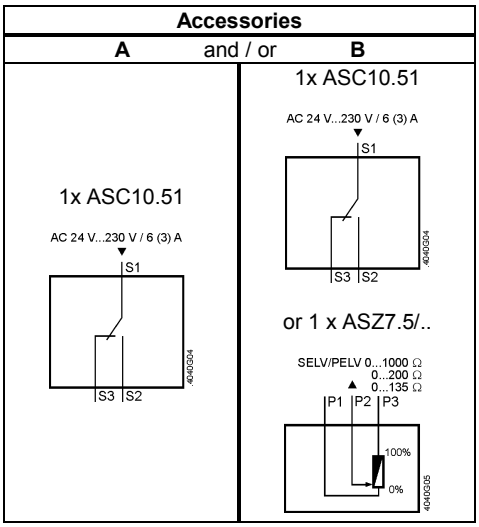
SAX61..





SAX81..

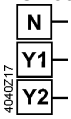




Connection terminals

SAX31..

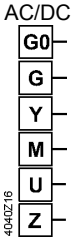
AC 230 V, 3-position



- N — Sytem neutral (SN)
- Y1 — Positioning signal (actuator's stem extends)
- Y2 — Positioning signal (actuator's stem retracts)

SAX61..

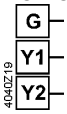
AC/DC 24 V, DC 0…10 V / 4…20 mA / 0…1000 Ω



- G0 — Sytem neutral (SN)
- G — Sytem potential (SP)
- Y — Positioning signal for DC 0…10 V / 4…20 mA
- M — Measuring neutral
- U — Position feedback DC 0...10 V
- Z — Positioning signal forced control

SAX81..

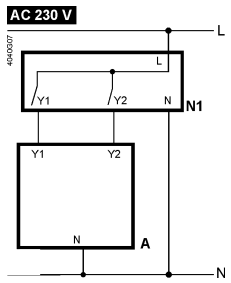
AC/DC 24 V, 3-position



- G — Sytem potential (SP)
- Y1 — Positioning signal (actuator's stem extends)
- Y2 — Positioning signal (actuator's stem retracts)

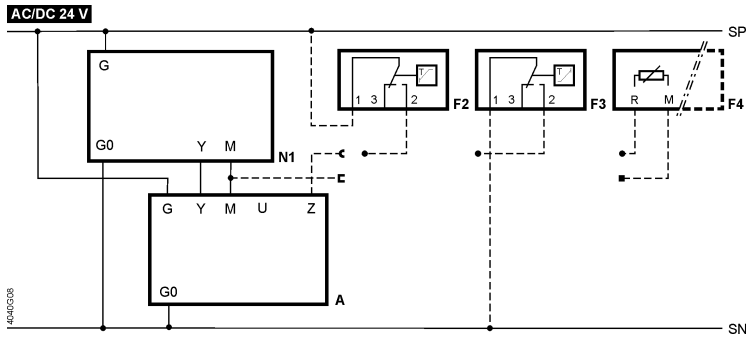
Connection Diagrams

SAX31..



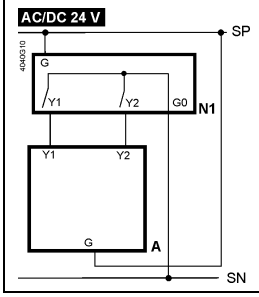
A	Actuator
L	Phase
N	Neutral
N1	Controller
Y1, Y2	Positioning signals

SAX61..



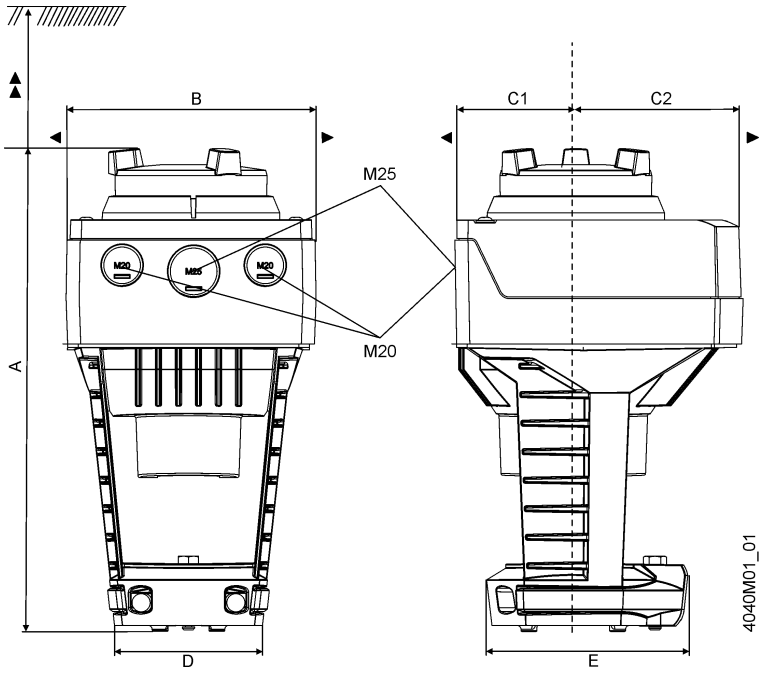
A	Actuator
F2	Frost protection thermostat; terminals: 1 – 2 frost hazard / sensor is interrupted (thermostat closes with frost) 1 – 3 normal operation
F3	Temperature detector
F4	Frost protection monitor with 0…1000 Ω signal output, does NOT support QAF21.. or QAF61..
M	Measuring neutral
N1	Controller
SN	System neutral
SP	System potential AC/DC 24 V
U	Position feedback
Y	Position signal
Z	Positioning signal forced control

SAX81..



A	Actuator
N1	controller
SN	System neutral
SP	System potential AC/DC 24 V
Y1, Y2	Positioning signals

Dimensions



Product no.	A	B	C	C1	C2	D	E	►	►►	kg
SAX..(U [1])	242	124	150	68	82	80	100	100	200	1,850
With ASK39.1	+25	154	300	200	100	-	-	-	-	2,080

Dimensions in mm

[1] SAX..U: For 1/2" tube connections (21.5 mm dia.)

Revision numbers

Product no.	Valid from rev. no.
SAX31.00	..G
SAX31.03	..G
SAX61.03..	..G
SAX81.00..	..G
SAX81.03..	..G

© 2011-2013 Siemens Switzerland Ltd