SIEMENS

4573

SQS35.50, SQS35.53,
SQS65.5
with spring return function, without manual adjuster

SQS35.00, SQS35.03,
SQS65, SQS65.2,
SQS85.00, SQS85.03
without spring return function, with manual adjuster

acvatix

Electromotoric Actuators

for valves with 5.5 mm stroke

SQS35…
SQS85…
SQS65…

- **SQS35… operating voltage AC 230 V, 3-position control signal**
- **SQS85… operating voltage AC 24 V, 3-position control signal**
- **SQS65… operating voltage AC 24 V, DC 0…10 V, DC 2…10 V or 0…1000 Ω control signal**
- **Positioning force 400 N**
- **Direct mounting on valves; no adjustments required**
- **Optional auxiliary switch for extra functions with SQS35.00, SQS35.03, SQS85.00, SQS85.03**
- **With or without spring return function to DIN 32730**
- **Position indication**
- **Manual adjuster on actuators without spring return function**

Use

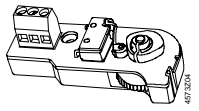
For operation of Siemens valves VVG44..., VVG55... and VXG44.... with 5.5 mm stroke for water-side control of hot water and cooling water in heating, ventilation and air conditioning systems.

In conjunction with the ASK30 mounting kit, the former Landis & Gyr-valves with 4 mm or 5.5 mm stroke can also be operated: X3i..., VVG45..., VXG45..., VXG46..., VVI51....

Type summary

Type reference	Operating voltage	Positioning signal		Positioning time	Spring return function	Spring return time
SQS35.00	AC 230 V	3-position		150 s	No	
SQS35.03				35 s		
SQS35.50				150 s	Yes	8 s
SQS35.53				35 s		
SQS65.5	AC 24 V	DC 0…10 V	0…1000 Ω	35 s	Yes	8 s
SQS65					No	
SQS65.2		DC 2…10 V				
SQS85.00		3-position		150 s		
SQS85.03				35 s		

Accessories

Type reference	Description	For actuators	Space for
ASC9.6 	Auxiliary switch Switching point adjustable from 0...100 % stroke	SQS35.00, SQS35.03 SQS85.00, SQS85.03	1 x ASC9.6

Order

When ordering, please give the quantity, product name, type reference, and any accessories required.

Example: 20 actuators SQS35.00 and
20 auxiliary switch ASC9.6

Delivery

Actuators, valves and accessories are supplied in separate packages.

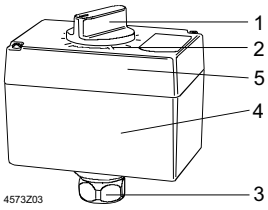
Equipment combinations

Type reference	DN	PN class	k_{vs} [m^3/h]	Datasheet	SQS35…	SQS65…	SQS85…
VVG44...	15...40	PN 16	0.25…25	N4364	✓	✓	✓
VXG44…				N4464	✓	✓	✓
VVG55…	15...25	PN 25	0.25…6.3	N4379	✓	✓	✓

Function / mechanical design

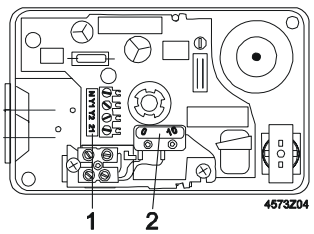
The reversible synchronous motor is driven by a 3-position or a proportional DC 0...10 V, DC 2...10 V or 0…1000 Ω control signal. The stroke is generated via an antilocking gear train.

Design



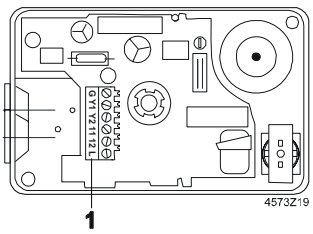
1 Manual adjuster
(SQS35.00, SQS35.03, SQS65, SQS65.2, SQS85.00, SQS85.03)
2 Position indication
3 Coupling nut for valve neck
4 Housing
5 Removable cover

Terminal strip, auxiliary switch



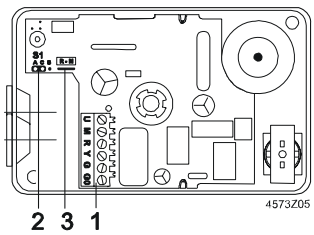
SQS35...

1 Terminal strip
2 Auxiliary switch built-in as standard in SQS35.50, SQS35.53



SQS85...

1 Terminal strip



SQS65...

1 Terminal strip
2 «lin» / «log» connection
3 R – M bridge

SQS35…, SQS85…
3-position
control signal

- Voltage at Y1: Stem extends, valve opens
- Voltage at Y2: Stem retracts, valve closes
- No voltage at Y1 or Y2: Actuator holds the current position

SQS35.50, SQS35.53
Spring return function

In the event of an AC 230 V power failure on terminal 21, the actuator will return mechanically (return spring) to its 0 % stroke position within 8 seconds, closing the valve. The Y positioning signal is not valued.

SQS65…
DC 0/2…10 V or
0…1000 Ω control
signal

- The valve opens / closes in proportion to the control signal at Y or R.
- At DC 0/2 V or 0 Ω the valve is closed (A → AB).
- When power supply is removed, the actuator maintains its current position.

SQS65.5
Spring return function

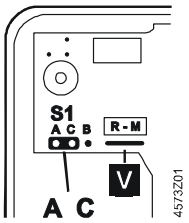
In the event of a power failure, the actuator will return mechanically (return spring) to its 0 % stroke position within 8 seconds, closing the valve. The Y positioning signal is not valued.

SQS65...
Selecting the flow characteristic

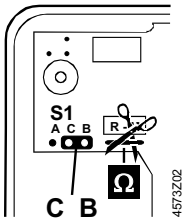
Connector S1 (under the cover, on the printed circuit board) can be repositioned to change the flow characteristic of valves from «equal percentage» to «linear»; in all cases the flow characteristic relates to the through-port of the valve.

Position of S1

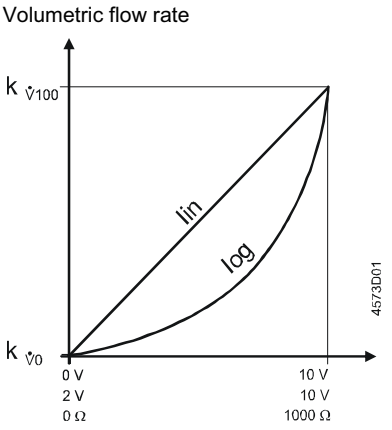
S1 connected to A and C:
equal-percentage flow characteristic
(factory setting)



S1 connected to B and C:
linear flow characteristic



Flow characteristic



Relationship between the DC 0…10 V, DC 2…10 V or 0…1000 Ω control signal and the volumetric flow rate

Control signals:
Y = DC 0...10 V or DC 2...10V
R = 0...1000 Ω; **cut through R – M bridge**

Flow characteristic
log = Equal-percentage valve characteristic (factory setting)
lin = Linear valve characteristic

Flow range
$k_{\dot{V}100}$ = Volumetric flow 100%
$k_{\dot{V}0}$ = Volumetric flow 0 %

Priority of signals

Positioning signal Y	DC 0/2…10 V		DC 0/2…10 V
Signal R		0…1000 Ω [1)]	0…1000 Ω [1)]
Position / stroke	The Y positioning signal is valued.	The R signal is valued.	Signal addition Y and R
Position feedback U	DC 0…10 V	DC 0…10 V	DC 0…10 V

1) Use with 0…1000 Ω signal indicator, e.g. frost protection. For details see connection diagram

Features and benefits

- Electromotoric actuator, maintenance-free
- Reversible synchronous motor
- Antilocking gear train
- Load-dependent switch-off in stroke limit positions

Engineering notes

The actuators must be electrically connected in accordance with local regulations and the connection diagrams.

Caution ⚠ **Safety regulations and restrictions designed to ensure the safety of people and property must be observed at all times.**

SQS65… **With the SQS65… actuators, the connector used to select the flow characteristic must be set to «lin» for valve types VVG55...**

Admissible temperatures refer to «Technical data»
If an auxiliary switch is required, its switching point should be indicated on the plant schematic.

Mounting notes

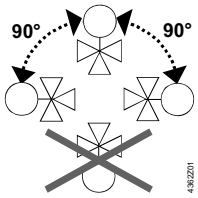
Mounting Instructions are enclosed in the product packaging.

Overview Mounting Instructions

Type reference	Mounting Instructions
SQS35…	M4573.7
SQS85…	
ASC9.6	G4573.1

Type reference	Mounting Instructions
SQS65.5	M4573.3
SQS65	M4573.4
SQS65.2	M4573.5

Orientation



Commissioning notes

When commissioning the system, check wiring and the functions. In addition, select or check the auxiliary switch settings.

Manual adjuster ⚠ Switching off the positioning signal.
The valve can be fully closed (= 0 % stroke) by turning the manual adjuster counterclockwise. Control is automatically resumed when the positioning signal returns.

3-position control Every actuator must be driven by a dedicated controller (refer to «Connection diagrams»).

Maintenance notes

The actuators are maintenance-free.

When servicing the actuator:
- Switch off pump and power supply
- Close the main shutoff valve in the pipework
- Release pressure in the pipes and allow them to cool down completely
- If necessary, disconnect electrical connections from the terminals

The actuator must be correctly fitted to the valve before recommissioning.

Repair The actuator can not be repaired. It has to be replaced as a complete unit.

Disposal

The device contains electrical and electronic components and must not be disposed of together with domestic waste. This applies in particular to the PCB.

Legislation may demand special handling of certain components, or it may be sensible from an ecological point of view.

Current local legislation must be observed.

Warranty

The technical data relating to specific applications are valid only in conjunction with the valves listed in this Data Sheet under «Equipment combinations».

The use of the actuators in conjunction with third-party valves invalidates all claims under Siemens Switzerland Ltd / HVAC Products warranty.

Technical data

		SQS35.00 SQS35.03	SQS35.50 SQS35.53	SQS85.00 SQS85.03	SQS65 SQS65.2, SQS65.5
Power supply	Operating voltage	AC 230 V ± 15 %		AC 24 V ± 20 %	
	Frequency	50 Hz		50 Hz [1]	
	Power consumption	SQS35.00: 2.5 VA	SQS35.50: 5 VA	2 VA	SQS65, SQS65.2: 4.5 VA
		SQS35.03: 3.5 VA	SQS35.53: 6 VA		SQS65.5: 7 VA
	End switches switching capacity, terminals 11 or 12	AC 250 V, 6 A res. 2.5 A ind.		AC 250 V, 6 A res. 2.5 A ind.	
Signal inputs	Terminals Y1, Y2	3-position			
	Terminal Y				SQS65, SQS65.5: DC 0…10 V, max. 0.1 mA
					SQS65.2: DC 2…10 V, max. 0.1 mA
	Terminal R				0…1000 Ω
Signal output	Terminal U				DC 0...10 V, max. 0.5 mA
	Parallel operation of actuators	not possible			max. 10
Operating data	Positioning time in control mode for opening / closing	SQS35.00: 150 s	SQS35.50: 150 s	SQS85.00: 150 s	35 s
		SQS35.03: 35 s	SQS35.53: 35 s	SQS85.03: 35 s	
	Positioning time with spring return		8 s for closing		SQS65.5: 8 s for closing
	Positioning force	400 N			
	Nominal stroke	5.5 mm			
	Admissible temperature	of medium in the valve 1…130 °C (short-time up to 150 °C)			
Electrical connections	Cable entry	2 openings ∅20.5 mm (for M20)			
Norms and standards	CE-conformity EMC-directive	2004/108/EC			
	Immunity	EN 61000-6-2	Industrial [2]		EN 61000-6-1 Residential
	Emission	EN 61000-6-3	Residential		
	Low voltage directive	2006/95/EC			
	Electrical safety	EN 60730-1			

		SQS35.00 SQS35.03	SQS35.50 SQS35.53	SQS85.00 SQS85.03	SQS65 SQS65.2, SQS65.5
	Housing protection standard Upright to horizontal	IP54 to EN 60529			
	Environmental compatibility	ISO 14001 (Environment) ISO 9001 (Quality) SN 36350 (Environmentally compatible products) RL 2002/95/EG (RoHS)			
Dimensions / Weight	Dimensions	refer to «Dimensions»			
	Weight with packaging	0.6 kg	0.7 kg	0.6 kg	0.6 kg SQS65.5: 0,7 kg
Materials	Actuator housing	Plastics			
	Housing cover and manual adjuster	Plastics			
	Gear train and stem with coupling	Plastics			
Accessories	Auxiliary switch ASC9.6 switching capacity	AC 250 V, 3 A resistive 3 A inductive		AC 250 V, 3 A resistive 3 A inductive	

[1] For applications at 60 Hz use SQS65…U resp. SQS85…U actuators.

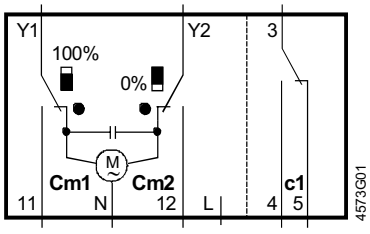
[2] Transformer 160 VA (e.g. Siemens 4AM 3842-4TN00-0EA0) for AC 24 V actuators

General environmental conditions

	Operation EN 60721-3-3	Transport EN 60721-3-2	Storage EN 60721-3-1
Environmental conditions	Class 3K5	Class 2K3	Class 1K3
Temperature	–5...+50 °C	–25...+70 °C	–5...+50 °C
Humidity	5...95 % r.h.	< 95 % r.h.	5...95 % r.h.

Internal diagrams

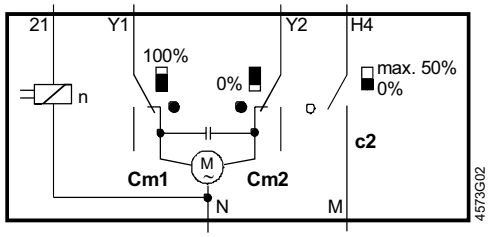
SQS35…



SQS35.00, SQS35.03

AC 230 V, 3-position, without spring return function

Cm1 End switch 100 % stroke
Cm2 End switch 0 % stroke
c1 ASC9.6 auxiliary switch can be fitted
L Potential-free auxiliary terminal

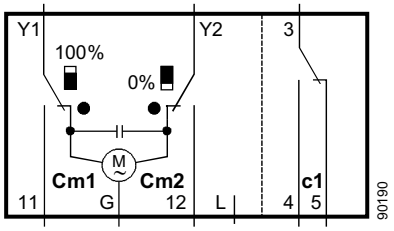


SQS35.50, SQS35.53

AC 230 V, 3-position, with spring return function

c2 Built-in auxiliary switch with fixed preset minimum flow limit control (factory-fitted)
21 Spring return function

SQS85...



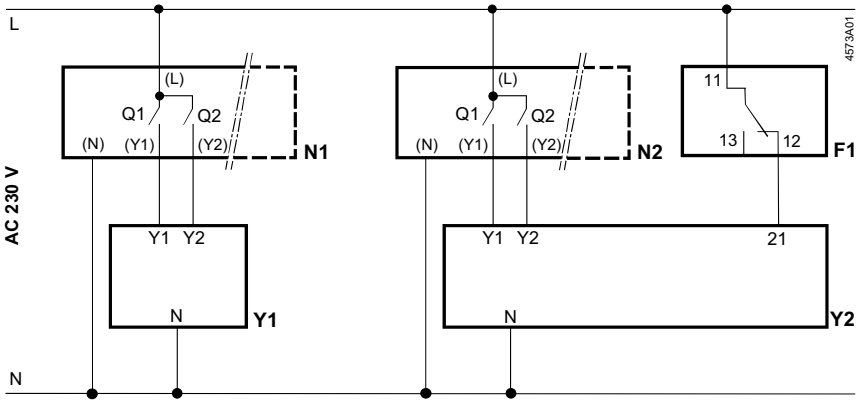
SQS85.00, SQS85.03

AC 24 V, 3-pos. without spring return function

Cm1 End switch 100 % stroke
Cm2 End switch 0 % stroke
c1 ASC9.6 auxiliary switch can be fitted
L Potential-free auxiliary terminal

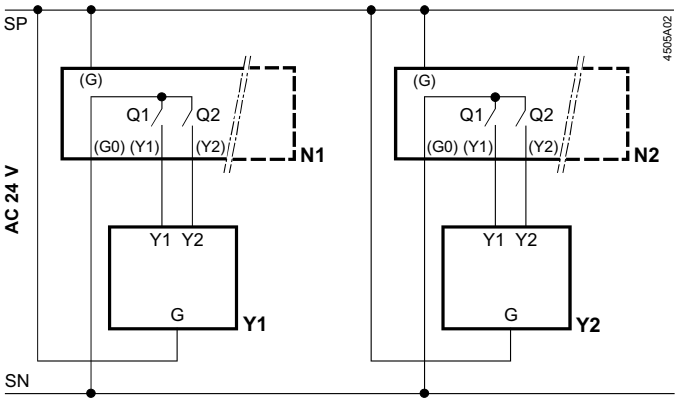
Connection diagrams

SQS35…



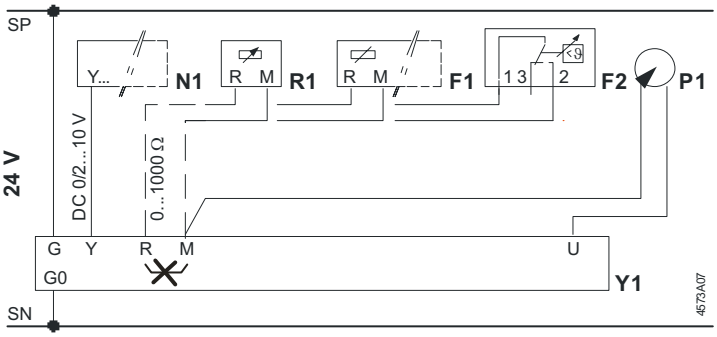
N1, N2	Controller	**N**	System neutral
Y1	Actuator SQS35.00, SQS35.03	**Q1, Q2**	Controller contacts
Y2	Actuator SQS35.50, SQS35.53	**F1**	Maximum limiter (spring return function)
L	System potential AC 230 V		

SQS85…



N1, N2	Controller	**SN**	System neutral
Y1, **Y2**	Actuator	**Q1, Q2**	Controller contacts
SP	System potential AC 24 V		

SQS65…

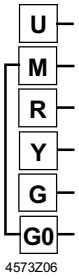


N1 Controller
Y1 Actuator
R1 Signal indicator with 0…1000 Ω output
F1 Frost protection monitor with 0…1000 Ω output
F2 Frost protection thermostat
Terminal: 1 – 3 frost hazard / sensor is interrupted (thermostat closes with frost)
1 – 2 Normal operation
P1 Position indicator DC 0…10 V
SP System potential AC 24 V
SN System neutral

Note

If a device is connected to terminal R, the factory-fitted bridge across R – M on the printed circuit board must be cut through.

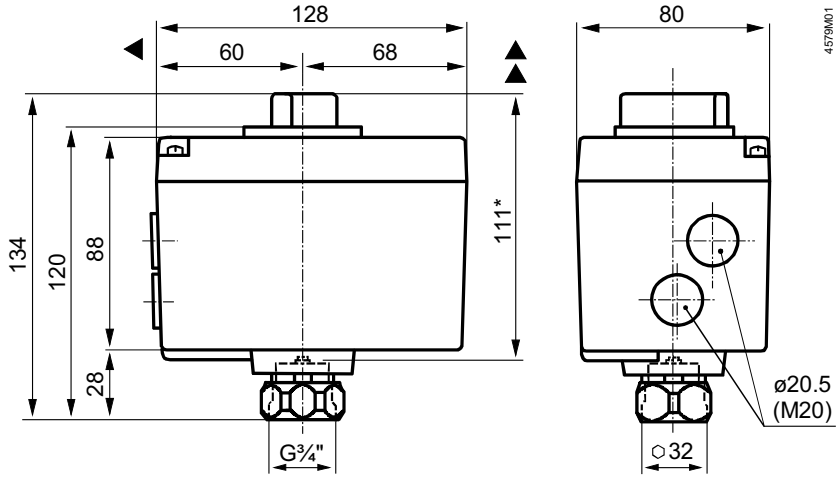
Connection terminals SQS65…



- U — Position indicator DC 0…10 V
- M — Measuring neutral (= G0)
- R — Signal input 0…1000 Ω
- Y — Signal input DC 0…10 V (SQS65.2: DC 2…10 V)
- G — Operating voltage AC 24 V: system potential SP
- G0 — Operating voltage AC 24 V: system potential SN

Dimensions

Dimensions in mm



* Height of actuator after fitting on valve

◀ > 100 mm Minimum clearance from wall or ceiling

▲ ▲ > 200 mm for mounting, connection, operation, service etc