



ACVATIX™

Electromotoric actuators

SQD35.00

SQD85.03

SQD65

for Combi valves VPI45..., DN40/50

-
- **SQD35.00** operating voltage AC 230 V, 3-position control signal
 - **SQD85.03** operating voltage AC 24 V, 3-position control signal
 - **SQD65** operating voltage AC 24 V, DC 0...10 V control signal or 0...1000 Ω
 - **Positioning force > 400 N**
 - **Direct mounting on valves; no adjustments required**
 - **Optional auxiliary switch for extra functions with SQD35.00, SQD85.03**
 - **Direction of movement indication**
 - **Manual adjuster**

Use


For operation of Siemens Combi valves VPI45..., DN40/50 with 6.5 mm stroke for water-side control of low temperature hot water and cooling water in heating, ventilation and air conditioning systems.

Type summary

| Type | Operating voltage | Positioning signal | Positioning time |
|-------------------------------|-------------------|-------------------------|------------------|
| SQD35.00 | AC 230 V | 3-position | 170 s |
| SQD65 ¹⁾ | AC 24 V | DC 0...10 V, 0...1000 Ω | 43 s |
| SQD85.03 ¹⁾ | | 3-position | |

1) UL approved versions: SQD65UG, SQD85.03UG (AC 24V, 3-position, 43 s)

Accessory

| Type | Description | For actuators | Space for |
|---|---|----------------------|------------|
| ASC9.6  | Auxiliary switch. Switching point adjustable from 0...100 % stroke | SQD35.00 SQD85.03 | 1 x ASC9.6 |

Ordering

| Example: | Product number | Stock number | Designation |
|----------|----------------|--------------|--|
| | SQD35.00 | SQD35.00 | Electromotoric actuator, stroke 6.5 mm |
| | ASC9.6 | ASC9.6 | Auxiliary switch |

Delivery

Actuators, valves and accessories are supplied in separate packages.

Spare parts, Rev.-Nr.

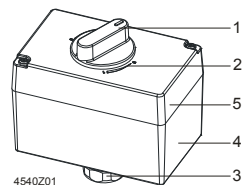
See overview, page 8.

Equipment combinations

| Valve type | DN | PN-class | V [l/h] | Data sheet | SQD35.00 | SQD65 | SQD85.03 |
|------------|---------|----------|-------------|------------|----------|-------|----------|
| VPI45.. | 40 / 50 | PN 25 | 2300...8500 | N4853 | ✓ | ✓ | ✓ |

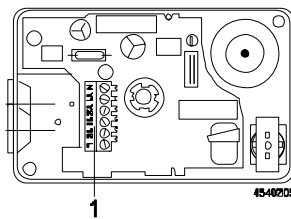
Technical / mechanical design

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



4540201

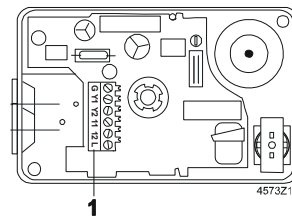
- 1 Manual adjuster (SQD35.00, SQD65, SQD85.03)
- 2 Direction of movement indication
- 3 Coupling nut M30x1.5 for valve neck
- 4 Housing
- 5 Removable cover



4540205

SQD35.00

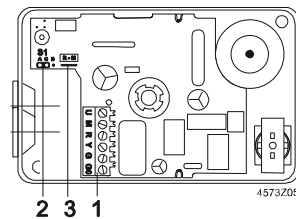
- 1 Terminal strip



4573219

SQD85.03

- 1 Terminal strip



4573205

SQD65

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

SQD35.00, SQD85.03

3-position control signal

- Voltage at Y1:
- Voltage at Y2:
- No voltage at Y1 or Y2:

Stem extends, valve opens

Stem retracts, valve closes

Actuator holds the current position

SQD65

DC 0...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 V or 0 Ω the valve is closed (A → AB).
- When power supply is removed, the actuator maintains its current position.

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.

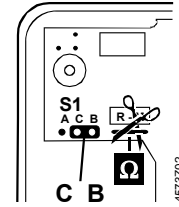
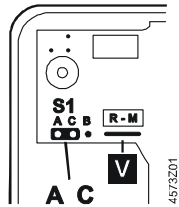
Position of S1

S1 connected to A and C:

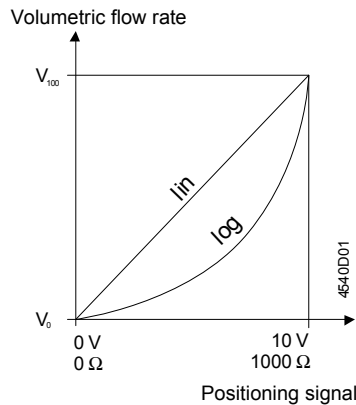
S1 connected to B and C:

equal-percentage flow characteristic

linear flow characteristic



Flow characteristic



Relationship between the DC 0...10 V or
0...1000 Ω positioning signal and the
volumetric flow rate

Control signals:

Y = DC 0...10 V

R = 0...1000 Ω; cut through R – M bridge

Flow characteristic

log = Equal-percentage valve characteristic
(factory setting)

lin = Linear valve characteristic

Flow range

V₁₀₀ = Volumetric flow 100%

V₀ = Volumetric flow 0 %

Priority of signals

| | | | |
|-----------------------------|-------------------------------------|--------------------------|--------------------------|
| Positioning signal Y | DC 0...10 V | | DC 0...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.

Admissible temperatures refer to "Technical data" (page 5).

If an auxiliary switch is required, its switching point should be indicated on the plant schematic.

Mounting notes

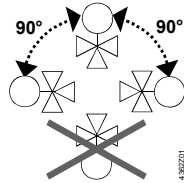
Mounting Instructions are enclosed in the product packaging.

Overview mounting instructions


| Type | Mounting instructions |
|--------|-----------------------|
| SQD.. | M4540 |
| ASC9.6 | G4573.1 |

Installation notes

Orientation



Commissioning notes

Manual adjuster 

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

Switch off the positioning signal.

The valve can be fully closed (= 0 % stroke) by turning the manual adjuster counter-clockwise. 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", page 6).

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", page 2.

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

Technical data

| | | SQD35.00 | SQD85.03 | SQD65 |
|---|---|---|-------------------------------------|--------|
| Power supply | Operating voltage | AC 230 V ± 15 % | AC 24 V ± 20 % | |
| | | | SELV/PELV | |
| | Rated voltage | AC 230 V | AC 24 V | |
| | Frequency | 50 Hz | 50 Hz ¹⁾ | |
| | Power consumption | 2.5 VA | 2 VA | 4.5 VA |
| Signal inputs | End switches Cm1, Cm2 Switching capacity terminal 11 or 12 | AC 250 V, 6 A res., 2.5 A ind. | | |
| | Terminals Y1, Y2 | 3-position | | |
| | Terminal Y | | | |
| Terminal R | DC 0...10 V, max. 0.1 mA | | | |
| Terminal U | 0...1000 Ω | | | |
| Signal output | Terminal U | DC 0...10 V, max. 0.5 mA | | |
| | Parallel operation of actuators | max. 10 | | |
| Operating data | Positioning time open / close | 170 s | 43 s | 43 s |
| | Positioning force | > 400 N | | |
| | Nominal stroke | 6.5 mm | | |
| | Admissible temperature | of medium in the valve 1...120 °C | | |
| | Cable entries | 2 openings Ø 20.5 mm (for M20) | | |
| Electrical connections Norms and standards | CE-conformity | | | |
| | EMC-directive | 2004/108/EC | | |
| | Immunity | EN 61000-6-2:[2005] Industrial ²⁾ | EN 61000-6-1: [2007] Residential | |
| | AC: Emission | EN 61000-6-3:[2007] Residential | | |
| | Low voltage directive | 2006/95/EC | | |
| | Electrical safety | EN 60730-1 | | |
| | 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 | 0.6 kg | 0.6 kg |
| Mounting | Coupling thread to valve | valve neck nut M30 x 1.5 | | |
| Materials | Actuator housing | Plastics | | |
| | Housing cover and manual adjuster | Plastics | | |
| | Gear train and stem with coupling | Plastics | | |
| Accessory | Auxiliary switch ASC9.6 switching capacity | AC 250 V, 3 A res., 3 A ind. | | |

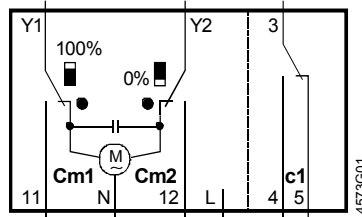
¹⁾ For applications at 60 Hz use SQD65UG respectively SQD85.03UG actuators.

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

| General environmental conditions | Operation | Transport | Storage |
|-------------------------------------|---------------|--------------|---------------|
| | | EN 60721-3-3 | EN 60721-3-2 |
| 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

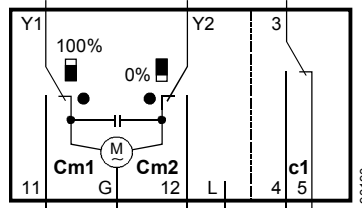
SQD35.00



AC 230 V, 3-position

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

SQD85.03

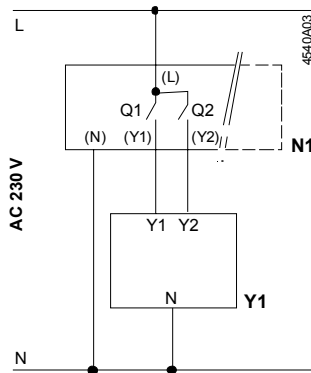


AC 24 V, 3-position

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

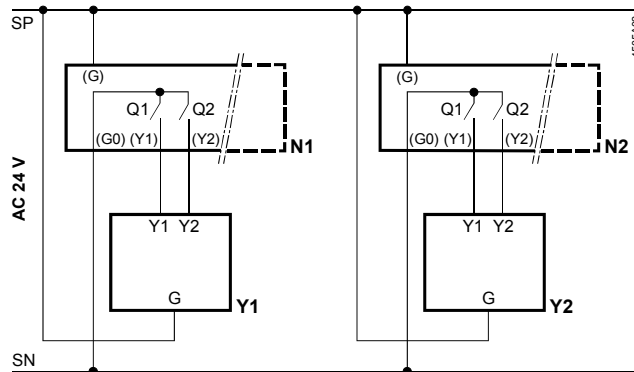
Connection diagrams

SQD35.00



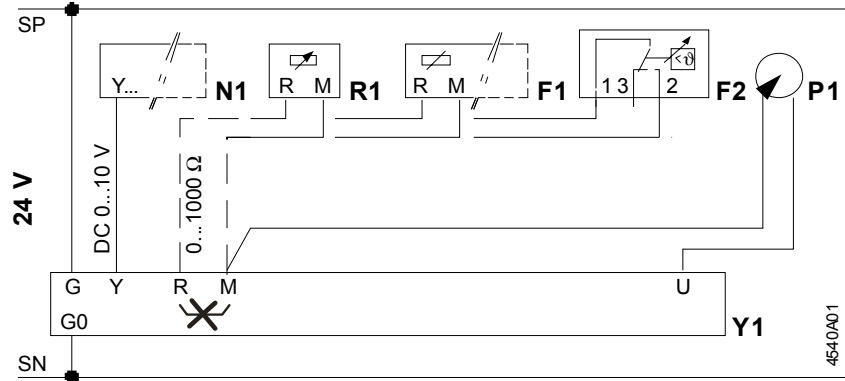
- N1 Controller
- Y1 Actuator SQD35.00
- Q1, Q2 Controller contacts
- L System potential AC 230 V
- N System neutral

SQD85.03



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

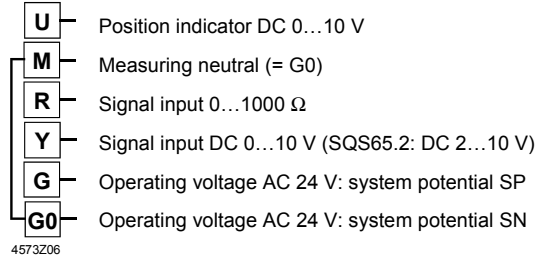
SQD65



- 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 feedback DC 0...10 V
- SP** System potential AC 24 V
- SN** System neutral

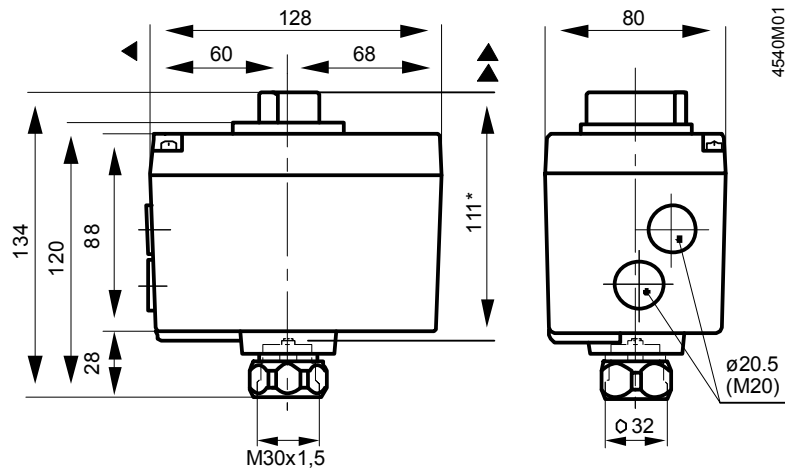
Note If a device is connected to terminal R, the factory-fitted bridge across R – M on the printed circuit board must be cut through.

Connection terminals SQD65



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

Spare parts

Order numbers for spare parts

| | Cover | plug metric | Valve neck nut (M30x1,5) |
|-----------------|---|--|---|
| Actuator |  |  |  |
| SQD35.00 | 74 104 0365 8 | 4 280 5629 8 | 74 160 0025 8 |
| SQD65 | 74 104 0365 8 | 4 280 5629 8 | 74 160 0025 8 |
| SQD85.03 | 74 104 0365 8 | 4 280 5629 8 | 74 160 0025 8 |

Revision numbers

| Type | Valid from rev. no. | Type | Valid from rev. no. | Type | Valid from rev. no. |
|-----------------|---------------------|--------------|---------------------|-----------------|---------------------|
| SQD35.00 | ..A | SQD65 | ..A | SQD85.03 | ..A |