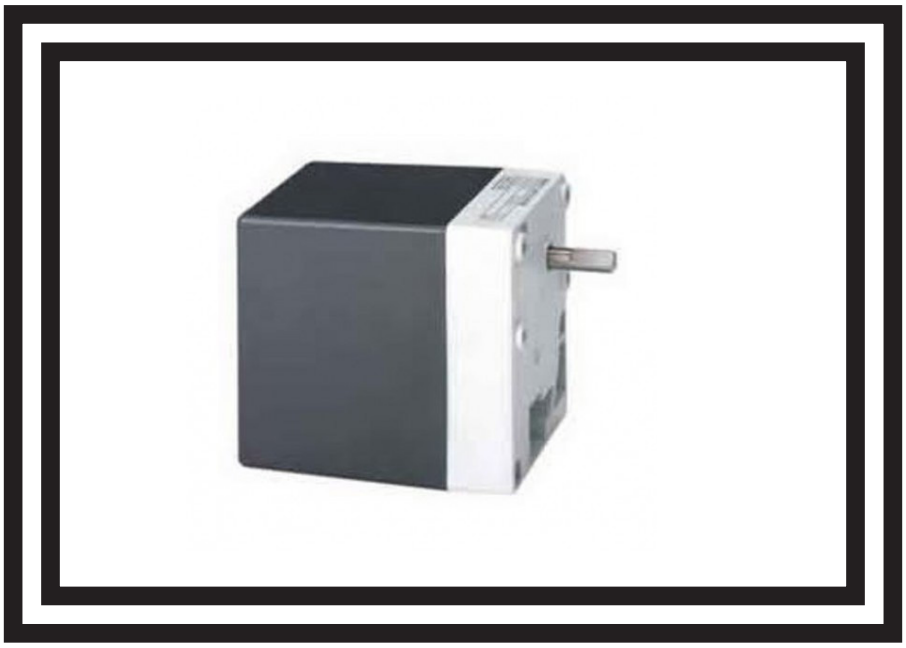
User Manuel

SQN3...

SQN4...



Siemens
Servomotor
Actuator

English

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Use / features

The SQN3... / SQN4... actuators are designed for driving gas or air dampers of oil or gas burners of small to medium capacity, or for load-dependent control of the fuel or combustion air volume:
- In connection with P-PI or PID controllers, such as the RWF40...
- Directly via the different types of burner controls, such as LOA..., LMO..., LMG... or LFL...
- In connection with 1- or 2-wire control or 3-position controllers
• All types of actuators with:
- Impact-proof and heat-resistant plastic housing
- Screw terminals for the electrical connections
- Maintenance-free gear train, which can be disengaged
- Internal and external position indication
- Easy-to-adjust end and auxiliary switches for setting the switching points
• Holding torque: - SQN3... 0.8...3 Nm
- SQN4... 6 Nm
• Running time: - SQN3... 4.5...30 s
- SQN4... 120 s
• Direction of rotation: - SQN30...counterclockwise
- SQN31... / SQN41...clockwise

Warning notes

To avoid injury to persons, damage to property or the environment, the following warning notes should be observed!
Do not interfere with or modify the actuators!
• All activities (mounting, installation and service work, etc.) must be performed by qualified staff
• Before making any wiring changes in the connection area of the actuators, completely isolate the equipment from the mains supply (all-polar disconnection)
• Ensure protection against electric shock hazard by providing adequate protection for the connection terminals and by securing the housing cover
• Check to ensure that wiring is in an orderly state
• Fall or shock can adversely affect the safety functions. Such actuators must not be put into operation, even if they do not exhibit any damage

Mounting notes

• Ensure that the relevant national safety regulations are complied with

Commissioning notes

• Prior to commissioning, check to ensure that wiring is in an orderly state

Mechanical design

- Made of impact-proof and heat-resistant plastic
- The housing accommodates:
– The reversible synchronous motor with gear train, which can be disengaged
– The camshaft of the control section
– The relays (depending on the type of actuator)
– The switches, connected to the terminals via the printed circuit board
Color: Gear train housing light-grey, cover dark-grey
- Reversible and locking-proof synchronous motor
- Automatic reengagement
- Pin «K»
Manual disengagement of gear train from motor by pressing pin «K1».
Adjustment of switching points
- With adjustable cams
- Scales beside the cams indicate the angle of the switching point
- Cams manually adjustable with tool supplied with the actuator
Position indication
- Internally: Scale on the gear train side of the camshaft
- Externally: Scale in viewing window (refer to «Dimensions»)
Electrical connections
- Refer to «Technical data»
Gear train
- Maintenance-free
Drive shaft
- Made of black-finished steel.
- Ready fitted to the front of the gear train
- Different versions available
Mounting and fixing
- Front of the gear train is used as the mounting surface
- Actuator is secured via through-holes

Special versions for fitting potentiometer

Fitting a potentiometer
Certain types of actuators are supplied ready prepared for fitting a potentiometer.
These actuators differ from the basic type only in that the housing is higher and that
they are prepared for accommodating a potentiometer. Accessories are not required.
The required type of potentiometer is to be ordered as a separate item (refer to «Ordering
»). In that case, the third digit after the dot in the actuator's type reference will
change from «1» to «2».
Example:
SQN31.111A2700 → basic type
SQN31.112A2700 → version for fitting a potentiometer

Conversion by the user
Users have the choice of converting a basic type of actuator to a version for fitting a potentiometer.
For that, a conversion kit type AGA32 is available (refer to «Ordering»).
Conversion of the basic type reference must be noted by the user on the actuator's
type field using a permanent felt-tip pen.

Actuators SQN30... / counterclockwise rotation [8])

Diagram no.	Drive shaft [1]) no.	Running time at 50 Hz [2]) for 90°	Operating torque (max.) Nm	Holding torque Nm	HS [7]) pcs.	Relay pcs.	Housing length [1]) mm	Types for mains voltage / mains frequency AC 220 V -15 % AC 240 V +10 % 50...60 Hz [4])	AC 100 V -15 % AC 110 V +10 % 50...60 Hz [3])
0	0	4.5	1	0.8	3	---	125	**SQN30.102A2700** [5])	---
1	0	4.5	1	0.8	2	1	110	**SQN30.111A2700**	**SQN30.111A1700**
1	0	4.5	1.5	0.8	2	1	110	**SQN30.111A3500** [9])	---
2	0	4.5	1	0.8	1	2	110	**SQN30.121A2700**	**SQN30.121A1700**
2	0	4.5	1.5	0.8	1	2	110	**SQN30.121A3500** [9])	---
3	0	4.5	1	0.8	1	2	110	**SQN30.131A2700**	**SQN30.131A1700**
5	0	4.5	1	0.8	1	2	110	**SQN30.151A2700**	**SQN30.151A1700**
5	0	12	1.8	1.8	1	2	110	**SQN30.251A2700**	**SQN30.251A1700**
0	0	30	3	3	3	---	110	**SQN30.401A2700**	---
0	3	30	3	3	3	---	110	**SQN30.401A2730**	---
0	0	30	3	3	3	---	125	**SQN30.402A2700** [5])	**SQN30.402A1700** [5])
0	3	30	3	3	3	---	125	**SQN30.402A2730** [5])	---
3	0	30	3	3	1	2	110	**SQN30.431A2700**	---
5	0	30	3	3	1	2	110	**SQN30.451A2700**	---

Actuators SQN31... / clockwise rotation [8])

Diagram no.	Drive shaft [1]) no.	Running time at 50 Hz [2]) for 90°	Operating torque (max.) Nm	Holding torque Nm	HS [7]) pcs.	Relay pcs.	Housing length [1]) mm	Types for mains voltage / mains frequency AC 220 V -15 % AC 240 V +10 % 50...60 Hz [4])	AC 100 V -15 % AC 110 V +10 % 50...60 Hz [3])
0	0	4.5	1	0.8	3	---	110	**SQN31.101A2700**	**SQN31.101A1700**
0	0	4.5	1	0.8	3	---	125	**SQN31.102A2700** [5])	**SQN31.102A1700** [5])
1	0	4.5	1	0.8	2	1	110	**SQN31.111A2700**	---
1	6	4.5	1	0.8	2	1	110	**SQN31.111A2760**	---
2	0	4.5	1	0.8	1	2	110	**SQN31.121A2700**	---
2	3	4.5	1	0.8	1	2	110	**SQN31.121A2730**	---
2	6	4.5	1	0.8	1	2	110	**SQN31.121A2760**	---
5	0	4.5	1	0.8	1	2	110	**SQN31.151A2700**	**SQN31.151A1700**
5	3	4.5	1	0.8	1	2	110	**SQN31.151A2730**	---
2	0	12	1.8	1.8	1	2	110	**SQN31.221A2700**	---
2	3	12	1.8	1.8	1	2	110	**SQN31.221A2730**	---
5	0	12	1.8	1.8	1	2	110	**SQN31.251A2700**	**SQN31.251A1700**
5	3	12	1.8	1.8	1	2	110	**SQN31.251A2730**	---
5	0	12	1.8	1.8	1	2	125	**SQN31.252A2700** [5])	**SQN31.252A1700** [5])
5	0	15	2	1.8	1	2	110	**SQN31.351A2700**	---
0	0	30	3	3	3	---	110	**SQN31.401A2700**	**SQN31.401A1700**
0	3	30	3	3	3	---	110	**SQN31.401A2730**	---
0	6	30	3	3	3	---	110	**SQN31.401A2760**	---
0	0	30	3	3	3	---	125	**SQN31.402A2700** [5])	**SQN31.402A1700** [5])
1	0	30	3	3	2	1	110	**SQN31.411A2700**	---
1	3	30	3	3	2	1	110	**SQN31.411A2730**	---
6	0	23	2.5	2.5	---	2	125	**SQN31.762A2700** [5])	---
4	0	120	6	6	2	1	110	**SQN31.941A2700**	---

Actuators SQN41... / clockwise rotation [8])

Diagram no.	Drive shaft [1]) no.	Running time at 50 Hz [2]) for 90°	Operating torque (max.) Nm	Holding torque Nm	HS [7]) pcs.	Relay pcs.	Housing length [1]) mm	Types for mains voltage / mains frequency AC 220 V -15 % AC 240 V +10 % 50...60 Hz [4])	AC 100 V -15 % AC 110 V +10 % 50...60 Hz [3])
4	0	120	6	6	2	1	110	**SQN41.941A2700**	---

Legend

[1]) Refer to «Dimensions»
[2]) At 60 Hz, running times are about 20 % shorter
[3]) AC 100…110 V +10 % / -15 % possible, but in case of undervoltage torque is reduced by about 20 %
[4]) AC 220…240 V +10 % / -15 % possible, but in case of undervoltage torque is reduced by about 20 %
[5]) Suited for fitting a potentiometer (refer to «Fitting a potentiometer»)
[6]) Under nominal conditions; under extreme conditions (e.g. +60 °C, AC 230 V –15 %) about –25 %
[7]) Optional auxiliary switches (in addition to the 2 end switches)
[8]) When facing the drive shaft and when control voltage is fed to end switch I
[9]) On time at: - AC 220 V -15 % / +10 % and 50 Hz – max. 50 %
- AC 240 V -15 % / +10 % and 50 Hz – max. 35 %

Technical data

General actuator data

Actuator	Mains voltage	AC 220…240 V –15 % +10 % AC 100…110 V –15 % +10 %
	Mains frequency	50...60 Hz ±6 %
	Type of motor	synchronous motor
	Power consumption	6.5 VA
	Angular position	max. 160°
	Mounting position	optional
	Degree of protection	IP 40 to DIN 40050, provided adequate cable entries and fixing screws are used
	Safety class	I to VDE 0631
	Cable entry	threaded cable gland holder for 1 x Pg9 and 1 x Pg11, no locknut required cable strain relief to be provided by the user (also refer to «Degree of protection»), Pg glands for all types are included in the delivery
	Cable connections	screw terminals for wires having a cross-sectional area of 0.5 to 2.5 mm²
	Ferrules	matching the dia. of the stranded wire
	Direction of rotation	refer to «Type summary»
	Torques and holding torques	refer to «Type summary»
	Running times	refer to «Type summary»
	Weight (on average)	approx. 800 g
End and auxiliary switches	Number of end switches	2
	Number of auxiliary switches	refer to «Type summary»
	Actuation	via camshaft, color-coded cams (refer to «Connection diagrams»
	Switching voltage	AC 24...250 V
	Adjustment of cams in increments of	1°
	Max. terminal rating at cos φ = 0.9	**under load ON, with no load OFF** - starting current 14 A - operating current 2 A **under load ON...OFF** - starting current 7 A - operating current 1 A