

**SIEMENS**

**7<sub>812</sub>**



## **Actuators**

for air dampers and control valves of oil burners

**SQM1...  
SQM2...**

### **Reversible electromotoric actuators**

- **Torques:**
  - SQM1... up to 10 Nm
  - SQM2... up to 20 Nm
- **Running times:**
  - SQM1... 14... 100 s
  - SQM2... 29... 66 s
- **Versions:**
  - Clockwise or counterclockwise rotation

The SQM... and this Data Sheet are intended for use by OEMs which integrate the actuators in their products!

### **Use**

The reversible actuators of the SQM... range are for use in connection with controllers or switching devices equipped with changeover contacts.

#### Warning notes

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**To avoid injury to persons, damage to property or the environment, the following warning notes must be observed!**

**Only qualified staff may open, 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, completely isolate the plant from mains supply (all-polar disconnection). Ensure that the plant cannot be inadvertently switched on again and that it is indeed dead. If not observed, there is a risk of electric shock hazard
- Ensure protection against electric shock hazard by providing adequate protection for the connection terminals and by securing the housing cover
- Each time work has been carried out (mounting, installation, service work, etc.), check to ensure that wiring is in an orderly state
- Fall or shock can adversely affect the safety functions. Such units must not be put into operation, even if they do not exhibit any damage

#### Mounting notes

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- Ensure that the relevant national safety regulations are complied with
- When mounting actuator and damper linkage, the gear train can be disengaged with a lever, thus allowing the actuator's drive shaft to be easily adjusted in either direction of rotation

## Standards and certificates



### Applied directives:

- Low-voltage directive 2014/35/EC
- Electromagnetic compatibility EMC (immunity) 2014/30/EC

Compliance with the regulations of the applied directives is verified by the adherence to the following standards / regulations:

- Automatic electrical controls for household and similar use Part 1: General requirements DIN EN 60730-1
- Automatic electrical controls for household and similar use Part 2-14: Particular requirements for electric actuators DIN EN 60730-2-14

**The relevant valid edition of the standards can be found in the declaration of conformity!**





EAC Conformity mark (Eurasian Conformity mark)



ISO 9001:2008  
 ISO 14001:2004  
 OHSAS 18001:2007

In combination with  
 the burner control

Type		
SQM10.15502	●	●
SQM10.15561	●	●
SQM10.15562	●	●
SQM10.16102	●	●
SQM10.16501	●	●
SQM10.16502	●	●
SQM10.16532	●	●
SQM10.16561	●	●
SQM10.16562	●	●
SQM10.17502	●	●
SQM11.15502	---	●
SQM11.15562	---	●
SQM11.16501	---	●
SQM11.16502	---	●
SQM20.16502	---	●
SQM20.18501	---	●
SQM20.18502	---	●
SQM21.16502	---	●
SQM21.18501	---	●
SQM21.18502	---	●

## Disposal notes



The actuator contains electrical and electronic components and must not be disposed of together with household waste.

Local and currently valid legislation must be observed.

## Mechanical design

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Housing	<ul style="list-style-type: none"> <li>- The actuator's cover is made of impact-proof and heat-resistant plastic. Color of cover: Dark-grey</li> <li>- The housing of the gear train is made of die-cast aluminum and has 4 threaded holes for cable glands Pg11</li> </ul>
Actuator	<ul style="list-style-type: none"> <li>- Reversible, locking-proof synchronous motor</li> </ul>
Adjustment of switching points	<ul style="list-style-type: none"> <li>- With adjustable cams</li> <li>- Setting scales beside the cams give the switching point's angular position</li> <li>- Cams can be adjusted manually, either with the enclosed hook spanner or tool</li> </ul>
Position indicator	<ul style="list-style-type: none"> <li>- Internally: Scale at the beginning of the cam stack on the gear train side</li> <li>- Only SQM21....: Equipped with position indicator visible from outside (also refer to «Dimensions»)</li> </ul>
Electrical connections	<ul style="list-style-type: none"> <li>- Screw terminals</li> </ul>
Gear train	<ul style="list-style-type: none"> <li>- The reduction gearing has self-lubricating sinter-bronze bearings and requires no maintenance</li> </ul>
Drive shaft	<ul style="list-style-type: none"> <li>- Ready fitted to the front of the gear train</li> </ul>
Mounting and fixing	<ul style="list-style-type: none"> <li>- Gear train front is used as the mounting surface</li> <li>- Fixing by means of 3 threaded holes with inside thread M5</li> </ul>

## Type summary

Running time 50 Hz <sup>1)</sup> for angular rotation		<sup>3)</sup>	Direction of rotation when facing the drive shaft and with control voltage applied to terminal 1	Number of auxiliary switches	Nominal torque <sup>2)</sup>	Start- ing torque	Hold- ing torque	AC 220...240 V <sup>4)</sup>	AC 110 V <sup>4)</sup>
90°	130°							Type reference	Type reference
<b>Standard version</b> , diameter of drive shaft 10 mm									
14 s	20 s	1	Counterclockwise	5	10 Nm	10 Nm	4 Nm	<b>SQM10.15502</b>	---
14 s	20 s	2	Counterclockwise	5	10 Nm	10 Nm	4 Nm	<b>SQM10.15562</b>	<b>SQM10.15561</b>
29 s	42 s	1	Counterclockwise	1	10 Nm	15 Nm	7 Nm	<b>SQM10.16102</b>	---
29 s	42 s	1	Counterclockwise	5	10 Nm	15 Nm	7 Nm	<b>SQM10.16502</b>	<b>SQM10.16501</b>
29 s	42 s	1	Counterclockwise	5	10 Nm	15 Nm	7 Nm	<b>SQM10.16532</b> <sup>5)</sup>	---
29 s	42 s	2	Counterclockwise	5	10 Nm	15 Nm	7 Nm	<b>SQM10.16562</b>	<b>SQM10.16561</b>
70 s	100 s	1	Counterclockwise	5	10 Nm	15 Nm	15 Nm	<b>SQM10.17502</b>	---
14 s	20 s	1	Clockwise	5	10 Nm	10 Nm	4 Nm	<b>SQM11.15502</b>	---
14 s	20 s	2	Clockwise	5	10 Nm	10 Nm	4 Nm	<b>SQM11.15562</b>	---
29 s	42 s	1	Clockwise	5	10 Nm	15 Nm	7 Nm	<b>SQM11.16502</b>	<b>SQM11.16501</b>
<b>Heavy duty version</b>									
Diameter of drive shaft 12 mm									
Gear train shafts made of hardened steel, gearwheels nitrated									
Type SQM21... with external position indication (refer to «Dimensions»)									
29 s	42 s	1	Counterclockwise	5	20 Nm	20 Nm	12 Nm	<b>SQM20.16502</b>	---
45 s	66 s	1	Counterclockwise	5	20 Nm	20 Nm	12 Nm	<b>SQM20.18502</b>	<b>SQM20.18501</b>
29 s	42 s	1	Clockwise	5	20 Nm	20 Nm	12 Nm	<b>SQM21.16502</b>	---
45 s	66 s	1	Clockwise	5	20 Nm	20 Nm	12 Nm	<b>SQM21.18502</b>	<b>SQM21.18501</b>

<sup>1)</sup> At frequency 60 Hz, running times are about 17 % shorter

<sup>2)</sup> Based on 150,000 position changes

<sup>3)</sup> Wiring according to diagram no.

<sup>4)</sup> Additional types on request

<sup>5)</sup> With thread for mounting an ASK33.9

## Ordering

When ordering, please give type references of actuator and accessories according to «Type summary».

In addition to the actuator, the following item is to be ordered separately; it is also supplied separately:

## Technical data

General actuator data	Operation voltage	AC 220...240 V, 50 Hz –15 % / +10 % AC 220 V, 60 Hz –15 % / +10 %  On request: AC 110 V, 50 / 60 Hz ±6 %
	Switching capacity of end and auxiliary switches	10 (3) A, AC 24...250 V
	Positioning angle	up to 160° (scale range)
	Mounting position	optional
	Safety class	I
	Degree of protection	IP 54, DIN 40050 (at provided design of cable entry or fastening element for not used holes)
	Cable entry M16 and M20	for 2 x M16 x 1.5 and 2 x M20 x 1.5
	Weight	approx. 1.7 kg
	Actuator motor	synchronous motor
	Power consumption	9 VA
	Lifecycle	Cycles (CLOSE ⇒ OPEN ⇒ CLOSE) with rated torque: typically 250.000
Environmental conditions	<b>Storage</b>	DIN EN 60 721-3-1
	Climatic conditions	class 1K3
	Mechanical conditions	class 1M2
	Temperature range	-20...+70 °C
	Humidity	< 95 % r.F.
	<b>Transport</b>	DIN EN 60 721-3-2
	Climatic conditions	class 2K2
	Mechanical conditions	class 2M2
	Temperature range	-50...+60 °C
	Humidity	< 95 % r.h.
	<b>Operation</b>	DIN EN 60 721-3-3
	Climatic conditions	class 3K5
	Mechanical conditions	class 3M2
	Temperature range (switch on ratio < 0.5)	-20...+60 °C
	Humidity	< 95 % r.h.



**Caution!**  
**Condensation, formation of ice and ingress of water are not permitted!**

## Function

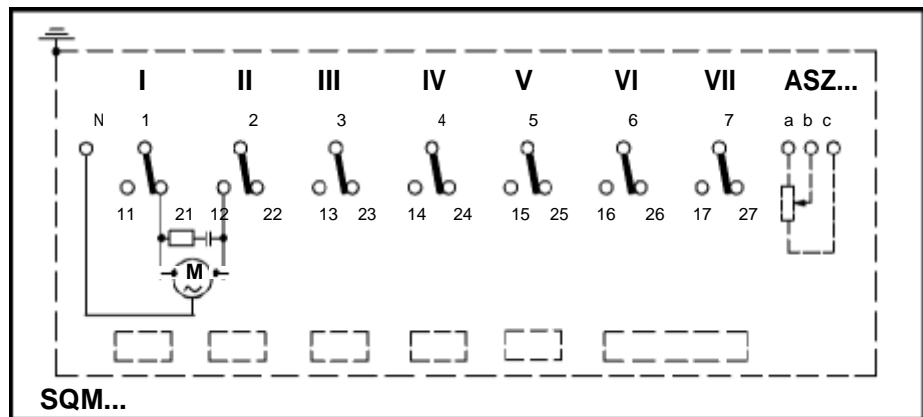
The synchronous motor drives the shaft via the gear train. Attached to the drive shaft is a cam stack which actuates the end and auxiliary switches. The switching position of each end and auxiliary switch can be adjusted within the operating range with the help of the relevant cams.

The control section includes 2 end switches and a maximum of 5 auxiliary switches. In addition, a potentiometer can be integrated (as a feedback potentiometer for P-control, or as a setting unit for slave control, or for remote position indication).

## Connection diagram

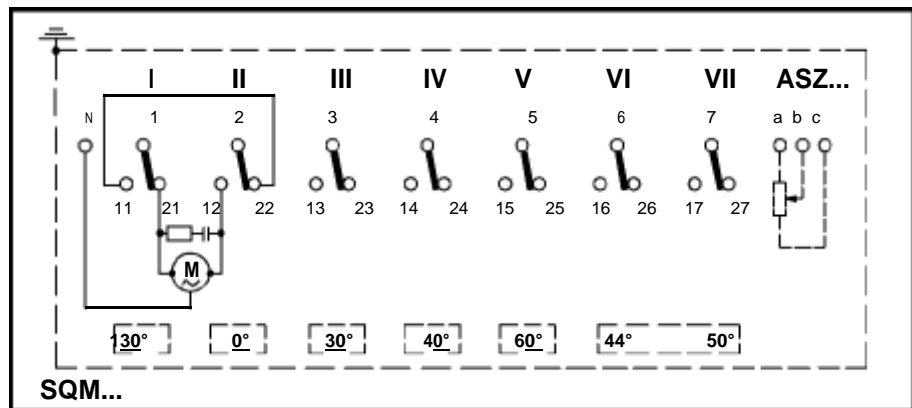
SQM...

Diagram no. 1 (H 4 318 1521 0)



7812a01/1097

Diagram no. 2 (H 4 318 1522 0)



7812a02/1097

Dimensions in mm



Type reference	a	b	c	d	e
<b>SQM1...</b>	10h8	3N9	4	20	6
<b>SQM2...</b>	12h8	3N9	4	21.5	4.5

The groove on the drive shaft is in the marked position, when the cam stack of control unit is in the 0° position (as supplied).