



Actuator SQM40.../SQM41...

Actuators for air and gas dampers

**SQM40...
SQM41...**

-
- Electromotoric actuator up to 18 Nm torque
 - Clockwise and counterclockwise variants
 - Running times from 5 to 65 seconds
 - Different shaft ends available
 - Electronic version with analog control input
 - Internal position indication
 - Drive shaft can be disengaged
 - Variants with UL and CSA approval, as well as GL marine approval

The SQM40.../SQM41... and this Data Sheet are intended for use by OEMs which integrate the actuators in their products!

Use

The SQM40.../SQM41... actuators are suited for driving oil pressure controller, butterfly valves, dampers or for use on other applications that require rotary motion. Areas of application are oil and gas burners of medium to higher capacity as well as thermal process plants.

The actuators are used primarily for load-dependent control of the flow of gas, oil and combustion air:

- In connection with modulating 3-position controllers or continuous controllers (e.g., 4...20 mA) and/or...
- ... directly by burner controls

Supplementary documentation

Product type	Type of documentation	Documentation number
SQM45... / SQM48...	Data Sheet	N7814
SQM10... / SQM20...	Data Sheet	N7812
ASZ...	Data Sheet	N7921
ASZ22.3x	Mounting Instruction	74 319 0921 0 (M7921)

Warning notes



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

Only qualified personnel may open, interfere with or modify the actuators!

- Read the documentation on the actuators carefully and fully. If not observed, dangerous situations might occur
- The user must ensure that the actuators meet the requirements of the relevant application standards
- Safety-related applications are only available with Siemens burner controls!
- All product-related activities (mounting, settings and maintenance) must be performed by qualified and authorized personnel



Caution!

- Risk of electric shock hazard – to disconnect the actuator from power, it may be necessary to open more than one switch. Before performing maintenance work, the actuator must be disconnected from power
- The electrical connection between the conduit fittings is not made automatically. It must be established on installation site
- The connecting plate is made of plastic and does not provide earthing of the conduit fittings. Earthing must be ensured by adequate washers and wire links
- All cam switch settings must satisfy the requirements of the relevant application standards
- To provide protection against electric shock hazard, the connecting terminals must have adequate touch protection. Make certain that non-insulated connections or wires cannot be touched
- 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 actuators must not be put into operation even if they do not exhibit any damage
- Static charges must be avoided since they can damage the actuator's electronic components when touched.

Recommendation: Use ESD equipment

Notes on use in North America

- Use of flexible conduit including adequate accessories is mandatory
- Use of copper wiring is mandatory
- All circuits of class 2 must use cables type CL3, CL3R, CL3P or comparable types, OR
All circuits are wired according to class 1 (electrical light or power circuits)

Mounting notes

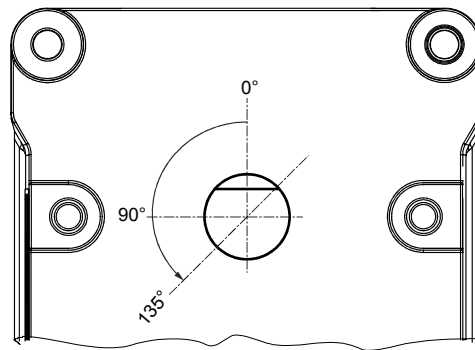
- Ensure that the relevant national safety regulations and notes on standards are complied with
- In geographical areas where DIN regulations apply, the mounting and installation requirements of VDE must be satisfied, especially DIN/VDE 0100, 0550 and DIN/VDE 0722
- Make certain that the actuator is not exposed to direct solar radiation
- Required tightening torques for the fixing screws of the
 - housing cover: 3.5 Nm
 - connecting cover: 2 Nm



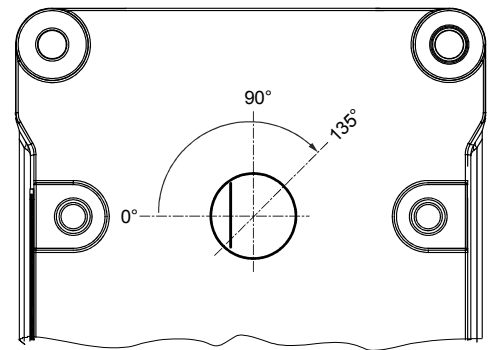
Note!

Ensure correct direction of rotation!

SQM40... (left, CCW)



SQM41... (right, CW)



7817z13/0315

Installation notes

- Ensure that the electrical wiring is in compliance with national and local safety regulation
- Make certain that strain relief of the connected cables conforms to the relevant standards (e.g. as per DIN EN 60730 and DIN EN 60335)
- Ensure that spliced wires cannot get into contact with neighboring terminals. Use adequate ferrules
- Unused terminals of the SQM40.../SQM41... must be covered by dummy plugs
- When making the wiring, the AC 120 V or AC 230 V section must be separated from other voltage sections, thus ensuring protection against electric shock hazard
- The connection between the actuator drive shaft and the relevant controlling element must be form-fitted
- Only plastic versions of cable glands may be used

Electrical connection

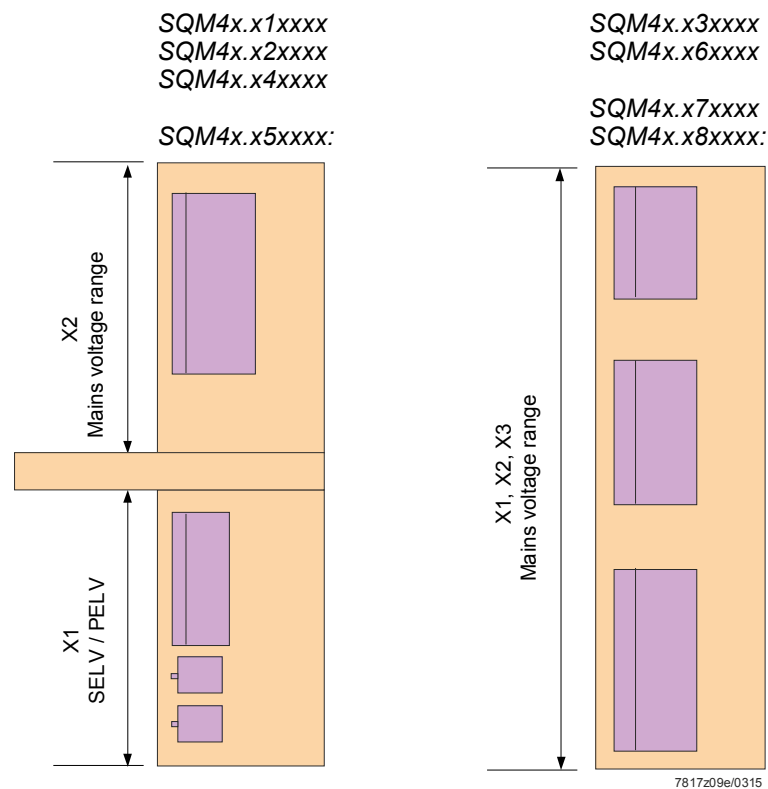
- The actuators must always be powered via a prefuse of max. 6.3 AT (as per DIN EN 6012- 2/5)
- For the protective earth connection, the housing of all variants has a marked **PE** connecting terminal. A tightening torque of 1.2 Nm must be observed for fitting the screw
- The supplied RAST3.5 connectors or RAST5 connectors must be used with screw terminals for electrical connections. A tightening torque of 0.25 Nm must be observed for fitting the screw



Note!

The connection of fuel valves is only permitted on fused output terminals, see chapter *Connection diagrams*. For this purpose, specific unit variants are available fitted with a unit-internal, non-replaceable fuse. The unit-internal fuse is used to protect each switching contact from welding in the event of external short-circuit. In addition, please note that the maximum current load for the fused output terminals is reduced, see chapter *Connection diagrams*.

Marking of the SQM40... / SQM41... connection areas:



Note!

SELV or PELV depends on the safety class of the connected components. In the case of PELV, the relevant component is connected to protective earth.

Cam settings

The mechanical setting facility for the cams is physically separated from the connection terminals. When the actuator is disconnected from power, the switches can be adjusted via a scale. The cams can be changed via adjusting screws. The scale indicates the angles of the switching points.

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

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



EAC Conformity mark (Eurasian Conformity mark)



ISO 9001:2015
ISO 14001:2015
OHSAS 18001:2007



China RoHS
Hazardous substances table:
<http://www.siemens.com/download?A6V10883536>



For types marked with **R**
Example: SQM40.264**R**10
For use in US/Canada where the power supply lines require a connection facility for flexible conduit, the actuator's product no. includes type suffix «R» (see following example). These products are **UL** and **CSA** listed.



For types marked with **36** or **38**
Examples: SQM4x.36xA**2**x, SQM4x.38xA**2**x
For marine applications, environmental category A.

Lifetime

The actuator has a designed lifetime* of 250,000 start cycles (close ⇒ open ⇒ close) under load with the rated torque in the entire rotation angle range, which under normal operating conditions in heating mode corresponds to approx.

10 years of usage (starting from the date of manufacture on the device type plate). This lifetime is based on the endurance tests specified in standard EN 298.

A summary of the conditions has been published by the European Control Manufacturers Association (Afecon - www.afecor.org).

The designed lifetime is based on use of the actuator according to the manufacturer's Data Sheet. After reaching the designed lifetime in terms of the number of startup cycles, or the respective time of usage time, the actuator is to be replaced by authorized personnel.

* The designed lifetime is not the warranty time specified in the Terms of Delivery.

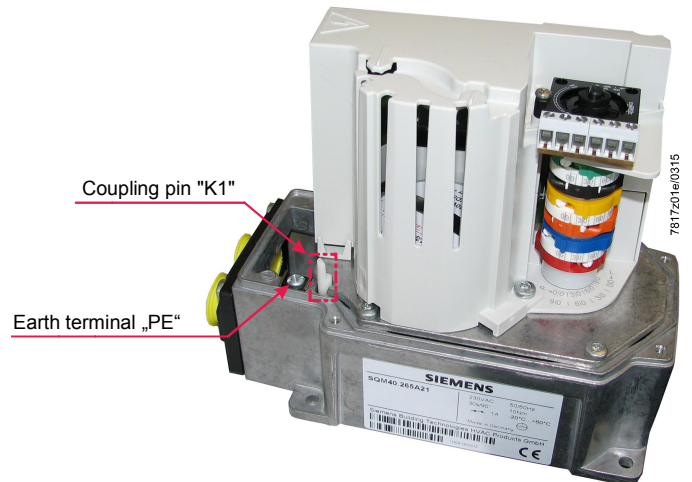
Disposal notes

The unit contains electrical and electronic components and must not be disposed of together with domestic waste.

Local and currently valid legislation must be observed.

Mechanical design

- | | |
|-------------|--|
| Housing | <ul style="list-style-type: none"> • Lower housing part made of die-cast aluminum • Housing cover made of impact-proof and heat-resistant plastic |
| Drive motor | <ul style="list-style-type: none"> • Synchronous motor |
| Coupling | <ul style="list-style-type: none"> • Shaft can be manually disengaged from the motor by operating the coupling (coupling pin (K1)) • Automatic reengagement
Disengagement of drive shaft / motor by pressing coupling pin «K1» |



- | | |
|--------------------------------|---|
| Earthing connection | <ul style="list-style-type: none"> • Earth terminal (PE) with screw fitting |
| Cam shaft drive | <ul style="list-style-type: none"> • Non-reactive gear |
| Adjustment of switching points | <ul style="list-style-type: none"> • With adjustable cams • Scales beside the cams indicate the angle of the switching point |
| Position indicator | <ul style="list-style-type: none"> • Internally <ul style="list-style-type: none"> – Scale 0...135° at the end of the cam assembly – Scale range to direction of rotation with arrow marking for SQM41 or with marking in slot die for SQM40 |
| Electrical connections | <ul style="list-style-type: none"> • RAST3.5 screw terminals are factory supplied, depending on the PCB variant • RAST5 screw terminals are factory supplied, depending on the PCB variant • Optional: Insulation displacement connectors • Cable entry by means of 2 openings in the connector cover supplied. The cable glands are not included in the scope of delivery • Large openings in the housing allow easy cable installation |
| Gear train | Maintenance-free gearwheels and bearings. |
| Drive shaft | <ul style="list-style-type: none"> • Different shaft versions available, shafts are supplied assembled • Drive shaft is not replaceable |
| Actuator fixing | Mounting holes on the lower side of the housing (shaft side), such as actuators SQM45... / SQM48... using M5 screws, or alternatively as actuators SQM10... / SQM20... front mounting using M5 self-tapping screws (see chapter <i>Dimensions</i>). |

Type summary (other types on request)

Article no.	Type	Direction of rotation		Torque ¹⁾ / running time ¹⁾ for 90°	PCB						Shaft no.	Regional version		Operating voltage		Potentiometer	
		Counter-clockwise	Clockwise		Electronic version Diagram no.	Switch version Diagram no.	3-position	2-position	No. of switches	No. of relay		EU	US / Canada	AC120V	AC230V	Double 90°	Double 135°
BPZ:SQM40.025A21	SQM40.025A21	●		2.5 Nm / 5 s	2				4		5	●			●	●	
BPZ:SQM40.065A23	SQM40.065A23	●		2.5 Nm / 5 s		6	●		6		5	●			●		●
BPZ:SQM40.115R11	SQM40.115R11	●		5 Nm / 15 s	1				3		5		●	●		●	
BPZ:SQM40.115R13	SQM40.115R13	●		5 Nm / 15 s	1				3		5		●	●			●
BPZ:SQM40.141A21	SQM40.141A21	●		5 Nm / 15 s	4				3		1	●			●	●	
BPZ:SQM40.144R11	SQM40.144R11	●		5 Nm / 15 s	4				3		4		●	●		●	
BPZ:SQM40.145A21	SQM40.145A21	●		5 Nm / 15 s	4				3		5	●			●	●	
BPZ:SQM40.145R11	SQM40.145R11	●		5 Nm / 15 s	4				3		5		●	●		●	
BPZ:SQM40.155R11	SQM40.155R11	●		5 Nm / 15 s	5				4		5		●	●		●	
BPZ:SQM40.155R13	SQM40.155R13	●		5 Nm / 15 s	5				4		5		●	●			●
BPZ:SQM40.161A20	SQM40.161A20	●		5 Nm / 15 s		6	●		6		1	●			●		
BPZ:SQM40.165A20	SQM40.165A20	●		5 Nm / 15 s		6	●		6		5	●			●		
BPZ:SQM40.165A21	SQM40.165A21	●		5 Nm / 15 s		6	●		6		5	●			●	●	
BPZ:SQM40.165R11	SQM40.165R11	●		5 Nm / 15 s		6	●		6		5		●	●		●	
BPZ:SQM40.171A20	SQM40.171A20	●		5 Nm / 15 s		7		●	5	1	1	●			●		
BPZ:SQM40.175A21	SQM40.175A21	●		5 Nm / 15 s		7		●	5	1	5	●			●	●	

Type summary (other types on request) (cont'd)

Article no.	Type	Direction of rotation		Torque ¹⁾ / running time ¹⁾ for 90°	PCB						Shaft no.	Regional version		Operating voltage		Potentiometer	
		Counter-clockwise	Clockwise		Electronic version Diagram no.	Switch version Diagram no.	3-position	2-position	No. of switches	No. of relay		EU	US / Canada	AC120V	AC230V	Double 90°	Double 135°
BPZ:SQM40.185R11	SQM40.185R11	●		5 Nm / 15 s		8	●		6		5		●	●		●	
BPZ:SQM40.215R11	SQM40.215R11	●		10 Nm / 30 s	1				3		5		●	●		●	
BPZ:SQM40.215R13	SQM40.215R13	●		10 Nm / 30 s	1				3		5		●	●			●
BPZ:SQM40.235A20	SQM40.235A20	●		10 Nm / 30 s		3		●	4	3	5	●			●		
BPZ:SQM40.241A21	SQM40.241A21	●		10 Nm / 30 s	4				3		1	●			●	●	
BPZ:SQM40.241R11	SQM40.241R11	●		10 Nm / 30 s	4				3		1		●	●		●	
BPZ:SQM40.244A21	SQM40.244A21	●		10 Nm / 30 s	4				3		4	●			●	●	
BPZ:SQM40.244R11	SQM40.244R11	●		10 Nm / 30 s	4				3		4		●	●		●	
BPZ:SQM40.245A11	SQM40.245A11	●		10 Nm / 30 s	4				3		5	●		●		●	
BPZ:SQM40.245A21	SQM40.245A21	●		10 Nm / 30 s	4				3		5	●			●	●	
BPZ:SQM40.245R11	SQM40.245R11	●		10 Nm / 30 s	4				3		5		●	●		●	
BPZ:SQM40.247A21	SQM40.247A21	●		10 Nm / 30 s	4				3		7	●			●	●	
BPZ:SQM40.255A21	SQM40.255A21	●		10 Nm / 30 s	5				4		5	●			●	●	
BPZ:SQM40.255R11	SQM40.255R11	●		10 Nm / 30 s	5				4		5		●	●		●	
BPZ:SQM40.255R13	SQM40.255R13	●		10 Nm / 30 s	5				4		5		●	●			●
BPZ:SQM40.261A11	SQM40.261A11	●		10 Nm / 30 s		6	●		6		1	●		●		●	
BPZ:SQM40.261A20	SQM40.261A20	●		10 Nm / 30 s		6	●		6		1	●			●		
BPZ:SQM40.261A21	SQM40.261A21	●		10 Nm / 30 s		6	●		6		1	●			●	●	
BPZ:SQM40.261R11	SQM40.261R11	●		10 Nm / 30 s		6	●		6		1		●	●		●	

Type summary (other types on request) (cont'd)

Article no.	Type	Direction of rotation		Torque ¹⁾ / running time ¹⁾ for 90°	PCB						Shaft no.	Regional version		Operating voltage		Potentiometer	
		Counter-clockwise	Clockwise		Electronic version Diagram no.	Switch version Diagram no.	3-position	2-position	No. of switches	No. of relay		EU	US / Canada	AC120V	AC230V	Double 90°	Double 135°
BPZ:SQM40.265A11	SQM40.265A11	●		10 Nm / 30 s		6	●		6		5	●		●		●	
BPZ:SQM40.265A20	SQM40.265A20	●		10 Nm / 30 s		6	●		6		5	●			●		
BPZ:SQM40.265A21	SQM40.265A21	●		10 Nm / 30 s		6	●		6		5	●			●	●	
BPZ:SQM40.265R11	SQM40.265R11	●		10 Nm / 30 s		6	●		6		5		●	●		●	
BPZ:SQM40.267A20	SQM40.267A20	●		10 Nm / 30 s		6	●		6		7	●			●		
BPZ:SQM40.271A20	SQM40.271A20	●		10 Nm / 30 s		7		●	5	1	1	●			●		
BPZ:SQM40.274R10	SQM40.274R10	●		10 Nm / 30 s		7		●	5	1	4		●	●			
BPZ:SQM40.275A20	SQM40.275A20	●		10 Nm / 30 s		7		●	5	1	5	●			●		
BPZ:SQM40.275A21	SQM40.275A21	●		10 Nm / 30 s		7		●	5	1	5	●			●	●	
BPZ:SQM40.275R10	SQM40.275R10	●		10 Nm / 30 s		7		●	5	1	5		●	●			
BPZ:SQM40.281A20	SQM40.281A20	●		10 Nm / 30 s		8	●		6		1	●			●		
S55452-D305-A100	SQM40.285A20	●		10 Nm / 30 s		8	●		6		5	●			●		
BPZ:SQM40.285R11	SQM40.285R11	●		10 Nm / 30 s		8	●		6		5		●	●		●	
BPZ:SQM40.317A23	SQM40.317A23	●		18 Nm / 65 s	1				3		7	●			●		●
BPZ:SQM40.317R11	SQM40.317R11	●		18 Nm / 65 s	1				3		7		●	●		●	
BPZ:SQM40.317R13	SQM40.317R13	●		18 Nm / 65 s	1				3		7		●	●			●
BPZ:SQM40.357R11	SQM40.357R11	●		18 Nm / 65 s	5				4		7		●	●		●	
BPZ:SQM40.357R13	SQM40.357R13	●		18 Nm / 65 s	5				4		7		●	●		●	
S55452-D301-A100	SQM40.367A10	●		18 Nm / 65 s		6	●		6		7	●		●			
BPZ:SQM40.387A20	SQM40.387A20	●		18 Nm / 65 s		8	●		6		7	●			●		
BPZ:SQM40.387A23	SQM40.387A23	●		18 Nm / 65 s		8	●		6		7	●			●		●

Type summary (other types on request) (cont'd)

Article no.	Type	Direction of rotation		Torque ¹⁾ / running time ¹⁾ for 90°	PCB						Shaft no.	Regional version		Operating voltage		Potentiometer	
		Counter-clockwise	Clockwise		Electronic version Diagram no.	Switch version Diagram no.	3-position	2-position	No. of switches	No. of relay		EU	US / Canada	AC120V	AC230V	Double 90°	Double 135°
BPZ:SQM40.387R11	SQM40.387R11	●		18 Nm / 65 s		8	●		6		7		●	●		●	
BPZ:SQM41.141A21	SQM41.141A21		●	5 Nm / 15 s	4				3		1	●			●	●	
BPZ:SQM41.145A21	SQM41.145A21		●	5 Nm / 15 s	4				3		5	●			●	●	
BPZ:SQM41.161A20	SQM41.161A20		●	5 Nm / 15 s		6	●		6		1	●			●		
BPZ:SQM41.165R11	SQM41.165R11		●	5 Nm / 15 s		6	●		6		5		●	●		●	
S55452-D304-A100	SQM41.181A20		●	5 Nm / 15 s		8	●		6		1	●			●		
BPZ:SQM41.185R11	SQM41.185R11		●	5 Nm / 15 s		8	●		6		5		●	●		●	
BPZ:SQM41.241A11	SQM41.241A11		●	10 Nm / 30 s	4				3		1	●		●		●	
BPZ:SQM41.241A21	SQM41.241A21		●	10 Nm / 30 s	4				3		1	●			●	●	
BPZ:SQM41.241R11	SQM41.241R11		●	10 Nm / 30 s	4				3		1		●	●		●	
BPZ:SQM41.244A21	SQM41.244A21		●	10 Nm / 30 s	4				3		4	●			●	●	
BPZ:SQM41.244R11	SQM41.244R11		●	10 Nm / 30 s	4				3		4		●	●		●	
BPZ:SQM41.245A11	SQM41.245A11		●	10 Nm / 30 s	4				3		5	●		●		●	
BPZ:SQM41.245A21	SQM41.245A21		●	10 Nm / 30 s	4				3		5	●			●	●	
BPZ:SQM41.245R11	SQM41.245R11		●	10 Nm / 30 s	4				3		5		●	●		●	

Type summary (other types on request) (cont'd)

Article no.	Type	Direction of rotation		Torque ¹⁾ / running time ¹⁾ for 90°	PCB						Shaft no.	Regional version		Operating voltage		Potentiometer	
		Counter-clockwise	Clockwise		Electronic version Diagram no.	Switch version Diagram no.	3-position	2-position	No. of switches	No. of relay		EU	US / Canada	AC120V	AC230V	Double 90°	Double 135°
BPZ:SQM41.254R11	SQM41.254R11		●	10 Nm / 30 s	5				4		4		●	●		●	
S55452-D305-A100	SQM41.255R11		●	10 Nm / 30 s	5				4		5		●	●		●	
BPZ:SQM41.261A11	SQM41.261A11		●	10 Nm / 30 s		6	●		6		1	●		●		●	
BPZ:SQM41.261A21	SQM41.261A21		●	10 Nm / 30 s		6	●		6		1	●			●	●	
BPZ:SQM41.261R11	SQM41.261R11		●	10 Nm / 30 s		6	●		6		1		●	●		●	
BPZ:SQM41.264A21	SQM41.264A21		●	10 Nm / 30 s		6	●		6		4	●			●	●	
BPZ:SQM41.264R11	SQM41.264R11		●	10 Nm / 30 s		6	●		6		4		●	●		●	
BPZ:SQM41.265R11	SQM41.265R11		●	10 Nm / 30 s		6	●		6		5		●	●		●	
BPZ:SQM41.267A21	SQM41.267A21		●	10 Nm / 30 s		6	●		6		7	●			●	●	
BPZ:SQM41.271R10	SQM41.271R10		●	10 Nm / 30 s		7		●	5	1	1		●	●			
BPZ:SQM41.275A21	SQM41.275A21		●	10 Nm / 30 s		7		●	5	1	5	●			●	●	
BPZ:SQM41.275R10	SQM41.275R10		●	10 Nm / 30 s		7		●	5	1	5		●	●			
BPZ:SQM41.285R11	SQM41.285R11		●	10 Nm / 30 s		8	●		6		5		●	●		●	
BPZ:SQM41.357A23	SQM41.357A23		●	18 Nm / 65 s	5				4		7	●			●		●
BPZ:SQM41.357R11	SQM41.357R11		●	18 Nm / 65 s	5				4		7		●	●		●	
BPZ:SQM41.367A21	SQM41.367A21		●	18 Nm / 65 s		6	●		6		7	●			●	●	
BPZ:SQM41.387R11	SQM41.387R11		●	18 Nm / 65 s		8	●		6		7		●	●		●	

1) Specifications apply to ambient temperatures of 23 °C and a mains voltage of AC 120 V or AC 230 V and a mains frequency of 50 Hz.

With a mains frequency of 60 Hz, the running times and torques are approx. 17% less.

Type summary (cont'd) (other types on request) (cont'd)



Note

Not all types of actuators are available ex stock. Additional versions are available on request.

Drive shafts:

Type of drive shaft	Torque	Shaft no.
Ø 10 mm, woodruff key as per DIN 6888	Max. 10 Nm	1
□ 9.5 mm, square shaft	Max. 15 Nm	4
Ø 10 mm D type shaft, compatible with SQM45...	Max. 10 Nm	5
Ø 14 mm with parallel key as per DIN 6885, compatible with SQM48...	Max. 20 Nm	7

Accessories

Accessories must be ordered as separate items:



Proportional controlling element with mounting plate

VKP...

Proportional controlling element for mounting between threaded flanges in gas trains.
Refer to data sheet N7632.



Mounting plate

ASK33.1

Article no.: **BPZ:ASK33.1**

For mounting the SQM40... / SQM41... onto the VKP... proportional controlling element
See Mounting Instruction 74 319 0843 0 (M7646)



Mounting kit

ASK33.4

Article no.: **BPZ:ASK33.4**

For fitting SQM40... / SQM41... to the butterfly valve VKF41.xxC
See Mounting Instruction 74 319 0916 0 (M7813 / 7814)



Front cover (on request)

For making the connections for the power supply lines

- For 1/2" NPT protective sleeve

AGA45.1

Article no.: **BPZ:AGA45.111**

- For metric cable gland

AGA45.12

Article no.: **BPZ:AGA45.12**



Note!

Front covers AGA45.11 and AGA45.12 are only to be used as replacements.

The corresponding AGA45... version is factory-prefitted onto the SQM40... / SQM41...



Connector sets (on request)

With screw terminals for replacement:

- For SQM4x.x1xxxx

AGA45.1

Article no.: **BPZ:AGA45.1**

- For SQM4x.x4xxxx

AGA45.4

Article no.: **BPZ:AGA45.4**

- For SQM4x.x2xxxx, SQM4x.x5xxxx

AGA45.5

Article no.: **BPZ:AGA45.5**

- For SQM4x.x3xxxx, SQM4x.x6xxxx, SQM4x.x7xxxx, SQM4x.x8xxxx

AGA45.6

Article no.: **BPZ:AGA45.6**



Potentiometers (on request)

For retrofitting

- For SQM40... / SQM41...: Double potentiometer 2*1000 Ω , 90°

ASZ22.32

Article no.: **S55852-Z301-A100**

- For SQM40...: Double potentiometer 2*1000 Ω , 135°

ASZ22.35

Article no.: **S55852-Z303-A100**

- For SQM41...: Double potentiometer 2*1000 Ω , 135°

ASZ22.34

Article no.: **S55852-Z302-A100**

Refer to Data Sheet N7921.



Note!

ASZ22... potentiometers are only intended for the retrofitting onto SQM40... / SQM41... types with the end number 0 (SQM4x.xxxx0). For all SQM40... / SQM41... types with the end number 1 (SQM4x.xxxx1) or 3 (SQM4x.xxxx3), the potentiometers are factory installed.

Technical Data

General unit data	Operating voltage	
	- SQM4x.xxxA1...	AC 120 V -15%/+10%
	- SQM4x.xxxA2...	AC 230 V -15%/+10%
	- SQM4x.xxxR1...	AC 120 V -15%/+10%
	Operating frequency	50...60 Hz ±6%
	Drive motor	Synchronous motor
	Power consumption	10 VA
	Operating angle	Between 0° and max. 90° or between 0° and max. 135°, depending on the type
	Mounting position	Optional
	Degree of protection	IP66
	Safety class	I
	External overload fuse	Max. 6.3 AT (slow) to DIN EN 60127-2/5
	Internal overload fuse	2 AT (slow), depending on the type, non-exchangeable
	Cable entry	2 x M16 without thread or 2 x ½" NPT thread, depending on the type
	Wire cross-sectional area of the connecting wires, including earth terminal (PE)	0.5...2.5 mm ²
	Direction of rotation	Facing the shaft end (mounting surface):
	• SQM40...	Counterclockwise (CCW)
	• SQM41...	Clockwise (CW)
	Torque	2.5 Nm / 5 Nm / 10 Nm / 18 Nm, depending on type ¹⁾
	Torque tolerance	-25%
	Holding torque	Each valid at the tolerance limits of temperature and operating voltage 50% Of the torque for types with 5 Nm, 10 Nm, and 18 Nm torque 36% Of the torque for types with 2.5 Nm torque
	Running time	5 s, 15 s, 30 s and 65 s, depending on type ¹⁾
	Running time tolerance	+10%
	Pause time at change in direction of rotation, zero-current state	>100 ms
	End and auxiliary switches	
	• Type	To DIN 41636
	• Switching voltage	AC 24...250 V
• Switching capacity	See specifications in chapter <i>Connection diagrams</i>	
Number of end switches	2	
Number of auxiliary switches	Max. 4, depending on type	
Drive shaft	Supplied as standard, non-exchangeable	
Weight	Approx. 2 kg	
Temperature of the mounting surface	Max. 60 °C	
Rated surge voltage	Overvoltage category III in accordance with DIN EN 60730-1 chapter 20	
Backlash between the actuator motor and actuator shaft		
• ex works	<1°	
• after 250,000 cycles	<1.2°	

- 1) Specifications apply to ambient temperatures of 23 °C and a mains voltage of AC 120 V or AC 230 V and a mains frequency of 50 Hz. With a mains frequency of 60 Hz, the running times and torques are approx. 17% less.

Technical Data (cont'd)

Lifetime	250,000 start cycles (close ⇒ open ⇒ close) under load with the rated torque in the entire rotation angle range. 2,000,000 control cycles under load with 75% of rated torque in rotation angle range of 10°
----------	---

Analog inputs

General	
Linearity	<5% of the control range
Control range	0...90° or 0...135°, depending on type
Voltage setpoint	
X1-1 (U-IN), X1-2 (GND)	DC 2...10 V
- Umin	DC 2 V
- Umax	DC 10 V
Input impedance	≥5 kΩ
Current setpoint	
X1-3 (I-IN), X1-2 (GND)	DC 4...20 mA
- Imin	DC 4 mA
- Imax	DC 20 mA
Input impedance	≤500 Ω
Impedance setpoint	
X1-4, X1-5, X1-6 (GND)	0...135 Ω
- RNominal	135 Ω ±5%

For use in North America

Cross-sectional area of the power supply lines	
SQM4x.x1xxxx / SQM4x.x4xxxx / SQM4x.x5xxxx, (X2), (PE)	Class 1, min. AWG 16 Suited for 105 °C
SQM4x.x6xxxx / SQM4x.x7xxxx / SQM4x.x8xxxx, (X1)/(X2)/(X3), (PE)	Max. 2.5 mm ² or AWG 14
SQM4x.x1xxxx / SQM4x.x2xxxx / SQM4x.x4xxxx / SQM4x.x5xxxx (X1)	Class 2, min. AWG 22 Suited for 105 °C
	Max. 1 mm ² or AWG 18
NEMA classification	NEMA4 (in progress)
Outdoor use	



Attention!
Waterproof cable conduits and cable glands are required (e.g. type DWTT/7 or QCRV2/8)

Environmental conditions

Storage	DIN EN 60721-3-1
Climatic conditions	Class 1K3
Mechanical conditions	Class 1M2
Temperature range	-20...60 °C
Humidity	<95% r.h.
Transport	DIN EN 60721-3-2
Climatic conditions	Class 2K3
Mechanical conditions	Class 2M2
Temperature range	-20...60 °C
Humidity	<95% r.h.
Operation	DIN EN 60721-3-3
Climatic conditions	Class 3K5
Mechanical conditions	Class 3M4
Temperature range	-20...60 °C -15...+60 °C for 18 Nm design
Humidity	<95% r.h.
Installation altitude	Max. 2,000 m above sea level

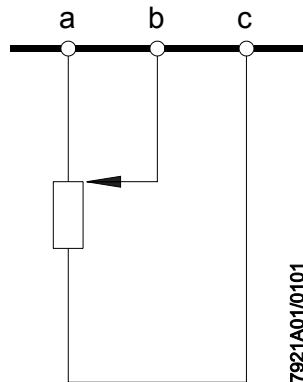


Notice!
Condensation, formation of ice, and ingress of water are not permitted. If this is not observed, there is a risk of loss of safety functions and a risk of electric shock.

Technical Data (cont'd)

Conductive plastic potentiometer	Resistance	2*1000 Ω double potentiometer with separated resistance tracks
	Operating voltage	DC 10 V
	Permissible hysteresis	0.3% of 90° or of 135°, depending on type
	Total resistance tolerance	±20%
	Effective angular rotation	90° or 135°, depending on type
	Terminal strip	Triple-pole
	For cross-sectional areas of	0.5...1 mm ²
	Wiper current rating	Max. 100 μA
	Transfer resistance of wiper contact	Max. R _ü ≤ 100 Ω
	Linearity (referred to R _{ges} = 1000 Ω)	±1%
	Smoothness (alpha = 10°) / microlinearity	<0.5%
	Life cycle	Approx. 2 million positioning cycles
	Temperature coefficient	0.4 Ω/K

Conductive plastic potentiometer connection diagram



Potentiometer drawn in start position (as supplied).

Terminal markings:
a = high end of potentiometer
b = potentiometer wiper
c = low end of potentiometer

Apply operating voltage only on terminals «a» and «c». Conductive plastic potentiometers can be destroyed if operating voltage is applied incorrectly between «a → b» or «b → c».

The polarity of the potentiometer end pickups «a → c» must be observed in order to achieve the correct signal direction to the potentiometer wiper «b».

If the ASZ22.32 potentiometer specified for 90° is operated outside of the effective range of angular rotation of 90°, no valid signal will be present at the wiper contact (interrupted circuit). This can happen if the switch position of the switching cam I for high-fire is configured for over 90°.

The 90° version ASZ22.32 can be used for both directions of rotation, SQM40... (counterclockwise) and SQM41... (clockwise).

The 135° versions ASZ22.34 and ASZ22.35 are each intended for a particular direction of rotation.

The direction of rotation of the potentiometer must correspond with the direction of rotation of the actuator as follows:

- ASZ22.34 can only be used with SQM41... (clockwise)
- ASZ22.35 can only be used with SQM40... (counterclockwise)

Connection diagrams and connection terminals

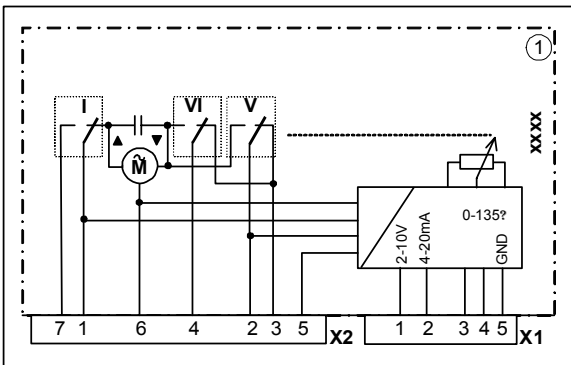
SQM4x.x1xxxx

Electronic version with independent high-fire and low-fire feedback



Note!

For the sake of clarity, the plug-in contacts do not appear in sequential order in the circuit diagram. Consecutive numbers are printed on the unit, however, e.g. 1...7.



Mains voltage terminals			Dimensioning
X1-1	2...10 V	Input	max. DC 10 V to X1-5
X1-2	4...20 mA	Input	max. 20 mA to X1-5
X1-3	0...135 Ω 1	Input	
X1-4	0...135 Ω 2	Input	
X1-5	0...135 Ω 3 (GND)	Input	

Mains voltage terminals			Dimensioning
X2-1	Open (I)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi > 0.9$ *
X2-2	Move to low-fire (V)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi > 0.9$ *
X2-3	Low-fire position reached (V)	Output	AC 120 V / AC 230 V max. 10 mA, $\cos\varphi > 0.9$
X2-4	Close / ignition (VI)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi > 0.9$
X2-5	Controller release	Input	AC 120 V / AC 230 V max. 60 mA / 30 mA
X2-6	Neutral	Input	AC 120 V / AC 230 V max. 60 mA / 30 mA
X2-7	Open position reached (I)	Output	AC 120 V / AC 230 V max. 10 mA, $\cos\varphi > 0.9$

* Only the control lines to the burner controls or to the control unit may be connected at the marked terminals.

It is not permitted to connect additional external loads, such as signal lamps.

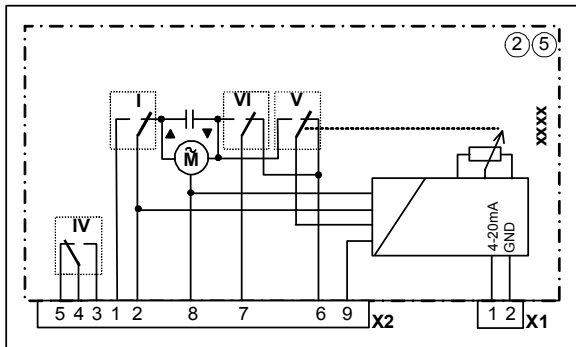
Range adjustment

See SQM4x.x4xxxx in this chapter.



Note!

For the sake of clarity, the plug-in contacts do not appear in sequential order in the circuit diagram. Consecutive numbers are printed on the unit, however, e.g. 1...7.



Low-voltage terminals			Dimensioning
X1-1	4...20 mA	Input	max. 20 mA to X1-2
X1-2	GND	Input	---
Mains voltage terminals			Dimensioning
X2-1	Open position reached (I)	Output	AC 120 V / AC 230 V max. 10 mA, $\cos\varphi >0.9$
X2-2	Open, high-fire (I)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi >0.9$ *
X2-3	Auxiliary switch AUX (IV) NO contact	Output	AC 120 V / AC 230 V max. 1 A, $\cos\varphi >0.9$
X2-4	Auxiliary switch AUX (IV)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi >0.9$
X2-5	Auxiliary switch AUX (IV) NC opener	Output	AC 120 V / AC 230 V max. 1 A, $\cos\varphi >0.9$
X2-6	Low-fire position / ignition load position reached (V / VI)	Output	AC 120 V / AC 230 V max. 10 mA, $\cos\varphi >0.9$
X2-7	Close / ignition (VI)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi >0.9$ *
X2-8	Neutral	Input	AC 120 V / AC 230 V max. 60 mA / 30 mA
X2-9	Controller release	Input	AC 120 V / AC 230 V max. 60 mA / 30 mA

* Only the control lines to the burner controls or to the control unit may be connected at the marked terminals.

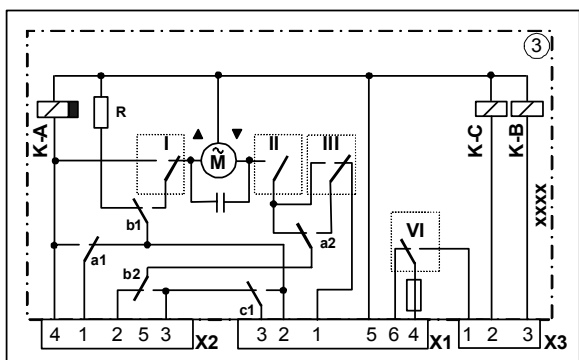
It is not permitted to connect additional external loads, such as signal lamps.

Range adjustment

See SQM4x.x4xxxx in this chapter.

Note!

For the sake of clarity, the plug-in contacts do not appear in sequential order in the circuit diagram. Consecutive numbers are printed on the unit, however, e.g. 1...7.



Mains voltage terminals			Dimensioning
X1-1	Free	---	---
X1-2	Controller, open	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-3	Controller release	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-4	Auxiliary switch AUX (VI)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$ **
X1-5	Neutral	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-6	Auxiliary switch AUX (VI) NC opener	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$ **
X2-1	Fan supply voltage	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X2-2	Mains voltage, close	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X2-3	Low-fire controller	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X2-4	Fan motor	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X2-5	Free	---	---
X3-1	Auxiliary switch AUX (VI) NO contact	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$ **
X3-2	Open (I) / close (II), changeover relay K-C	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X3-3	Operation, changeover relay K-B	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$



Notice!

** When connecting a fuel valve:
Max. 0.3 A, $\cos\phi > 0.8$ inductive.

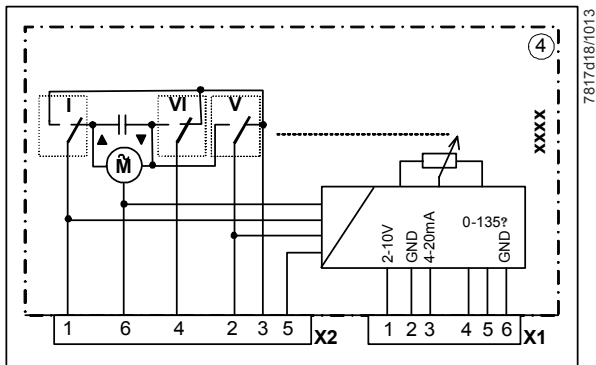
Range adjustment

See SQM4x.x4xxxx in this chapter.



Note!

For the sake of clarity, the plug-in contacts do not appear in sequential order in the circuit diagram. Consecutive numbers are printed on the unit, however, e.g. 1...7.



Low-voltage terminals			Dimensioning
X1-1	2...10 V	Input	max. DC 10 V to X1-2
X1-2	GND	Input	
X1-3	4...20 mA	Input	Max. 20 mA to X1-2
X1-4	0...135 Ω 1	Input	
X1-5	0...135 Ω 2	Input	
X1-6	0...135 Ω 3 (GND)	Input	
Mains voltage terminals			Dimensioning
X2-1	Opening (I)	Input	AC 120 V / AC 230 V max. 1 A, cosφ >0.9 *
X2-2	Move to low-fire (V)	Input	AC 120 V / AC 230 V max. 1 A, cosφ >0.9 *
X2-3	Position reached	Output	AC 120 V / AC 230 V max. 10 mA, cosφ >0.9
X2-4	Closing/ignition (VI)	Input	AC 120 V / AC 230 V max. 1 A, cosφ >0.9
X2-5	Controller release	Input	AC 120 V / AC 230 V max. 60 mA / 30 mA
X2-6	Neutral	Input	AC 120 V / AC 230 V max. 60 mA / 30 mA

* Only the control lines to the burner controls or to the control unit may be connected at the marked terminals. It is not permitted to connect additional external loads, such as signal lamps.

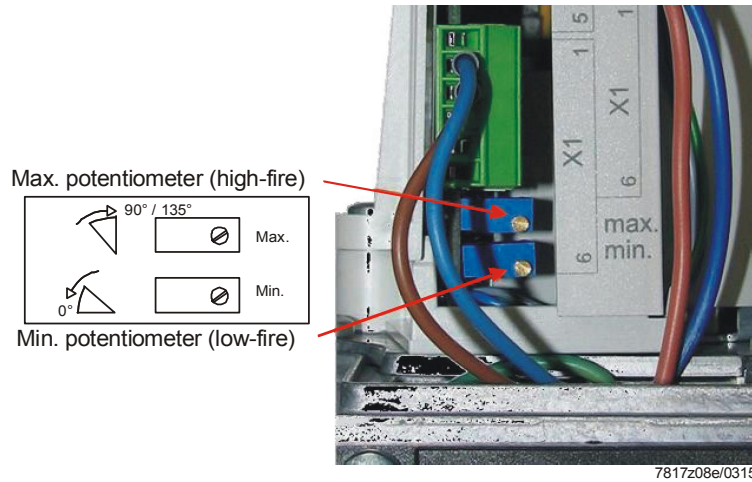
Range adjustment

Adjust the range of the analog signal to match the switch positions (min. and max. position):

1. Set cam I to the required high-fire position (e.g. 85°; position is indicated on the scale next to the cam).
2. Set cam V to the required low-fire position (e.g. 20°).
3. Preset the signal at the analog input according to the required high-fire position (e.g. 20 mA).
4. Turn the potentiometer for maximum angular rotation
 - a) clockwise, if the actuator has not yet reached its maximum angular rotation, or
 - b) counterclockwise until the actuator starts
5. Preset the signal at the analog input according to the low-fire position (e.g. 4 mA).
6. Turn the potentiometer for minimum angular rotation
 - a) counterclockwise, if the actuator has not yet reached its minimum angular rotation, or
 - b) clockwise until the actuator starts

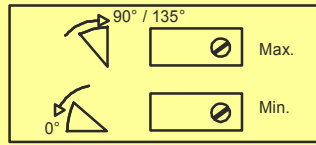
Modulation always takes place between high- and low-fire.

Also, it is possible to define a closed position or a separate ignition position by setting cam VI (independent of cam V, e.g. for defining a position higher than the low-fire position).



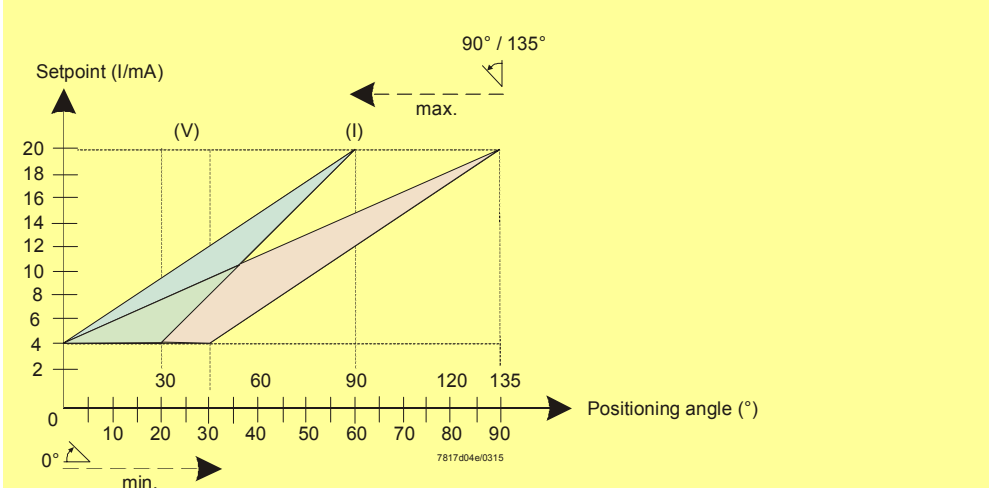
Note!

When starting up, the direction of rotation of the potentiometer setting must be observed:



Note

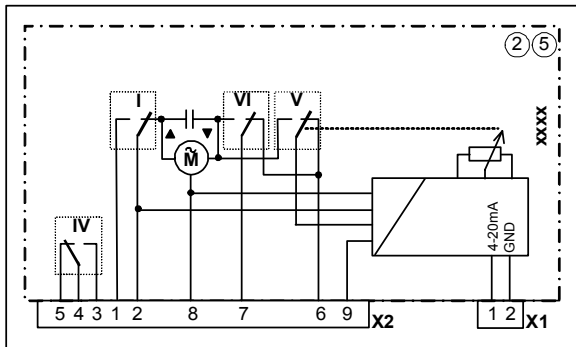
The working range of the potentiometer setting, shown as an example for the current input 4...20 mA.





Note!

For the sake of clarity, the plug-in contacts do not appear in sequential order in the circuit diagram. Consecutive numbers are printed on the unit, however, e.g. 1...7.



Low-voltage terminals			Dimensioning
X1-1	4...20 mA	Input	max. 20 mA to X1-2
X1-2	GND	Input	---
Mains voltage terminals			Dimensioning
X2-1	Open position reached (I)	Output	AC 120 V / AC 230 V max. 10 mA, $\cos\varphi >0.9$
X2-2	Open / high-fire (I)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi >0.9$ *
X2-3	Auxiliary switch AUX (IV) NO contact	Output	AC 120 V / AC 230 V max. 1 A, $\cos\varphi >0.9$
X2-4	Auxiliary switch AUX (IV)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi >0.9$
X2-5	Auxiliary switch AUX (IV) / NC opener	Output	AC 120 V / AC 230 V max. 1 A, $\cos\varphi >0.9$
X2-6	Low-fire position / ignition load position reached (V, VI)	Output	AC 120 V / AC 230 V max. 10 mA, $\cos\varphi >0.9$
X2-7	Close / ignition (VI)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi >0.9$ *
X2-8	Neutral	Input	AC 120 V / AC 230 V max. 60 mA / 30 mA
X2-9	Controller release	Input	AC 120 V / AC 230 V max. 60 mA / 30 mA

* Only the control lines to the burner controls or to the control unit may be connected at the marked terminals.
It is not permitted to connect additional external loads, such as signal lamps.

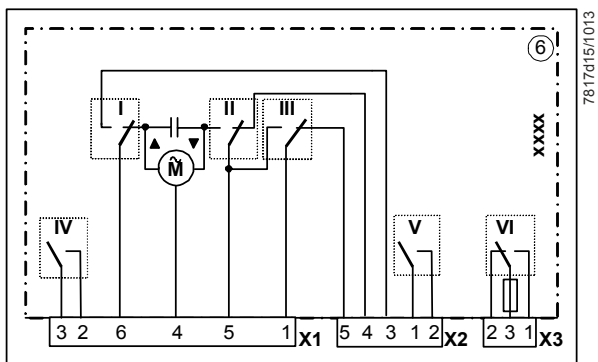
Range adjustment

See SQM4x.x4xxxx in this chapter.



Note!

For the sake of clarity, the plug-in contacts do not appear in sequential order in the circuit diagram. Consecutive numbers are printed on the unit, however, e.g. 1...7.



Mains voltage terminals			Dimensioning
X1-1	Move to ignition position (III)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-2	Auxiliary switch AUX (IV) NO contact	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-3	Auxiliary switch AUX (IV)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-4	Neutral		AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-5	Closing (II)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-6	Opening (I)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X2-1	Auxiliary switch AUX (V)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X2-2	Auxiliary switch AUX (V) NO contact	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X2-3	Open position reached (I)	Output	AC 120 V / AC 230 V max. 0.3 A, $\cos\phi > 0.8$
X2-4	Close position reached (II)	Output	AC 120 V / AC 230 V max. 0.3 A, $\cos\phi > 0.8$
X2-5	Ignition position reached (III)	Output	AC 120 V / AC 230 V max. 0.3 A, $\cos\phi > 0.8$
X3-1	Auxiliary switch AUX (VI) NO contact	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$ **
X3-2	Auxiliary switch AUX (VI) NC opener	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$ **
X3-3	Auxiliary switch AUX (VI)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$ **




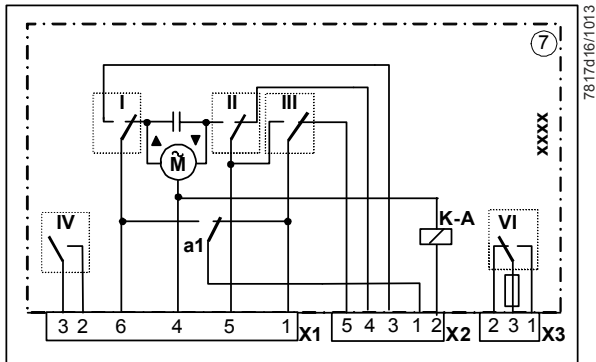
Notice!

**** When connecting a fuel valve: Max. 0.3 A, $\cos\phi > 0.8$ inductive.**

Range adjustment

See SQM4x.x4xxxx in this chapter.

 **Note!**
For the sake of clarity, the plug-in contacts do not appear in sequential order in the circuit diagram.
Consecutive numbers are printed on the unit, however, e.g. 1...7.



Mains voltage terminals			Dimensioning
X1-1	Move to ignition position (III)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi > 0.9$
X1-2	Auxiliary switch AUX (IV) NO contact	Output	AC 120 V / AC 230 V max. 1 A, $\cos\varphi > 0.9$
X1-3	Auxiliary switch AUX (IV)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi > 0.9$
X1-4	Neutral		AC 120 V / AC 230 V max. 1 A, $\cos\varphi > 0.9$
X1-5	Closing (II)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi > 0.9$
X1-6	Opening (I)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi > 0.9$
X2-1	Mains voltage	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi > 0.9$
X2-2	Open / close relay	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi > 0.9$
X2-3	Open position reached (I)	Output	AC 120 V / AC 230 V max. 0.3 A, $\cos\varphi > 0.8$
X2-4	Close position reached (II)	Output	AC 120 V / AC 230 V max. 0.3 A, $\cos\varphi > 0.8$
X2-5	Ignition position reached (III)	Output	AC 120 V / AC 230 V max. 0.3 A, $\cos\varphi > 0.8$
X3-1	Auxiliary switch AUX (VI) NO contact	Output	AC 120 V / AC 230 V max. 1 A, $\cos\varphi > 0.9$ **
X3-2	Auxiliary switch AUX (VI) NC opener	Output	AC 120 V / AC 230 V max. 1 A, $\cos\varphi > 0.9$ **
X3-3	Auxiliary switch AUX (VI)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\varphi > 0.9$ **



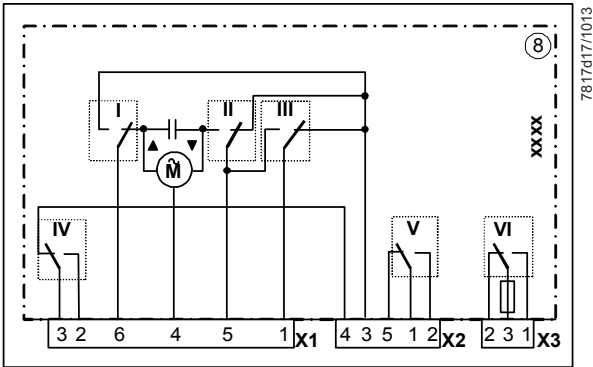
Notice!
**** When connecting a fuel valve:
Max. 0.3 A, $\cos\varphi > 0.8$ inductive.**

Range adjustment

See SQM4x.x4xxxx in this chapter.

Note!

For the sake of clarity, the plug-in contacts do not appear in sequential order in the circuit diagram. Consecutive numbers are printed on the unit, however, e.g. 1...7.



Mains voltage terminals			Dimensioning
X1-1	Move to position (III)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-2	Auxiliary switch AUX (IV) NO contact	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-3	Auxiliary switch AUX (IV)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-4	Neutral	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$ inductive
X1-5	Closing (II)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-6	Opening (I)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X2-1	Auxiliary switch AUX (V)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X2-2	Auxiliary switch AUX (V) NO contact	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X2-3	Position reached (I / II / III)	Output	AC 120 V / AC 230 V max. 0.3 A, $\cos\phi > 0.8$
X2-4	Auxiliary switch AUX (IV) NC opener	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X2-5	Auxiliary switch AUX (V) NC opener	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X3-1	Auxiliary switch AUX (VI) NO contact	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$ **
X3-2	Auxiliary switch AUX (VI) NC opener	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$ **
X3-3	Auxiliary switch AUX (VI)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$ **



Notice!

** When connecting a fuel valve:
Max. 0.3 A, $\cos\phi > 0.8$ inductive.

Range adjustment

See SQM4x.x4xxxx in this chapter.

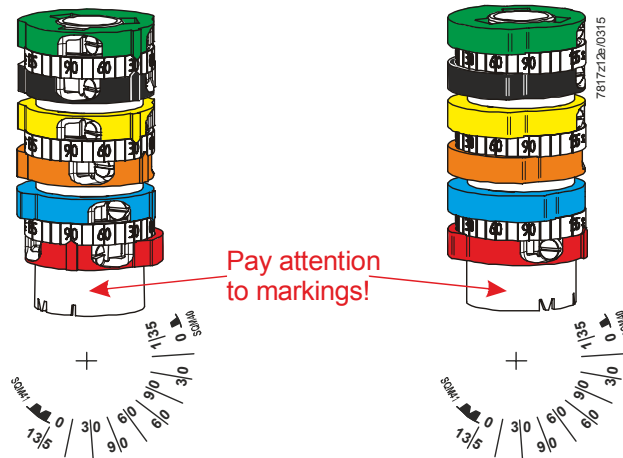
Position indication, preadjustment and coloring of the cams

Position indication SQM40...

External angle scale
Marking in slot shape

Position indication SQM41...

Internal angle scale
Arrow marking



Note!

The setting of the switch positions must be checked before startup.

SQM4x.x1xxxx
SQM4x.x4xxxx

Electronic version

Cam	Color	Position	Preadjustment
Cam I	Red	High-fire	90°
Cam II	Blue	Not used	---
Cam III	Orange	Not used	---
Cam IV	Yellow	Not used	---
Cam V	Black	Low-fire	15°
Cam VI	Green	OFF / ignition	0°

SQM4x.x3xxxx

2 position version

Cam	Color	Position	Preadjustment
Cam I	Red	High-fire	90°
Cam II	Blue	OFF / low-fire	0°
Cam III	Orange	Ignition position	15°
Cam IV	Yellow	Not used	---
Cam V	Black	Not used	---
Cam VI	Green	Auxiliary switch	30°

SQM4x.x2xxxx
SQM4x.x5xxxx

Electronic version

Cam	Color	Position	Preadjustment
Cam I	Red	High-fire	90°
Cam II	Blue	Not used	---
Cam III	Orange	Not used	---
Cam IV	Yellow	Auxiliary switch	30°
Cam V	Black	Low-fire	30°
Cam VI	Green	OFF / ignition	0°

Position indication, preadjustment and coloring of the cams (cont'd)

SQM4x.x6xxxx
SQM4x.x8xxxx

3 position version			
Cam	Color	Position	Preadjustment
Cam I	Red	High-fire	90°
Cam II	Blue	OFF / low-fire	0°
Cam III	Orange	Ignition position	15°
Cam IV	Yellow	Auxiliary switch	30°
Cam V	Black	Auxiliary switch	30°
Cam VI	Green	Auxiliary switch	30°

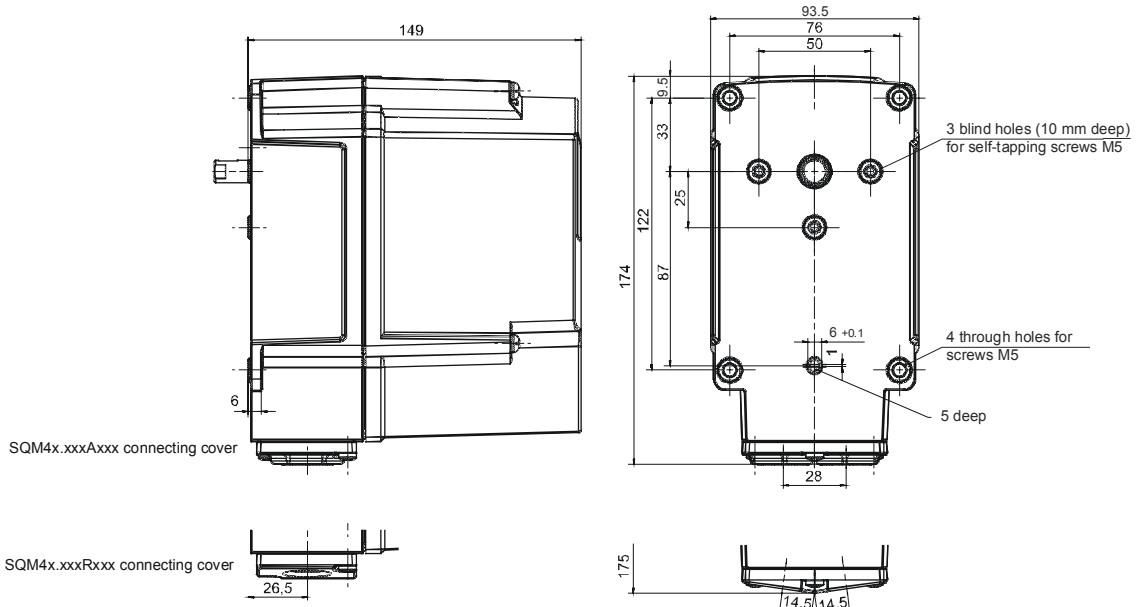
SQM4x.x7xxxx

3 position version			
Cam	Color	Position	Preadjustment
Cam I	Red	High-fire	90°
Cam II	Blue	OFF / low-fire	0°
Cam III	Orange	Ignition position	15°
Cam IV	Yellow	Auxiliary switch	30°
Cam V	Black	Not used	---
Cam VI	Green	Auxiliary switch	30°

Dimensions

Dimensions in mm

SQM40.../SQM41...



			Shaft no.
SQM4x.xx1xxx	Slot for woodruff key 3x3.7 series A Din6888		1
SQM4x.xx4xxx	Square		4
SQM4x.xx5xxx	D-shaft		5
SQM4x.xx7xxx	Slot for parallel key A5x3x28 DIN6885 T3		7

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