

Actuators

You can use the actuators from Berger Lahr to position flaps, valves or slides with great precision. Inside the compact servo drive housing there is a motor, a gearbox and a control unit. There is a choice of three actuator types to solve your positioning problems: STM, STA and STE.

Overview actuators

Actuator type	Description	Described on ...
STE	Actuators of type STE are controlled by analogue signals (current or voltage). The angle of rotation of the shaft can be set via analogue signals. The operating range can be freely defined between 0 and 90°. Any angle of rotation can be selected within the defined operating range. Depending on the version, the setpoint can be set as a voltage from 0 to 10 V or as a current from 4 to 20 mA. The limits of the operating range can also be safeguarded by two limit switches.	Page 133 Scale drawings page 131
STA	Actuators of type STA are available with 3, 4 or 5 cams. Two cams serve to define the limits, and the others are available for controlling external devices. The cams are continuously adjustable. Actuators of type STA are also fitted with 1 or 2 relays. Switching actions for controlling the motor are controlled via these relays. STA actuators are used to move air flaps in oil and gas burners. Various wiring arrangements are available for connecting to standard burners. Actuators of type STA can be supplied to run clockwise or anti-clockwise.	Page 137 Scale drawings page 131
STM	Actuators of type STM are constructed in the same way as actuators of type STA. They differ in having no relays. Actuators of type STM are available in clockwise and anti-clockwise versions.	Page 147 Scale drawings page 131

Type code for Actuators

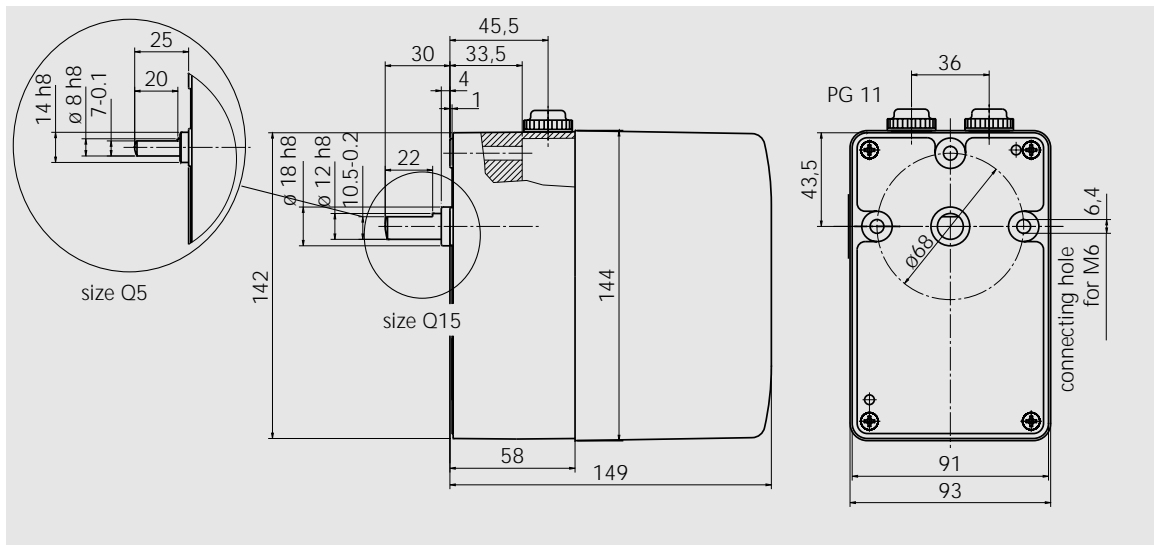
Example	STM30 B3.37/6 – 51N R P
Product family Actuators	
Actuator type STE = electronic actuator STA = actuator with cams and relais STM = actuator with cams	STM30 B3.37/6 – 51N R P
Running time for 90° Example: 30 = 30 seconds for running time for 90°	STM30 B3.37/6 – 51N R P
Size / case B0, B1, B2, B3, Q3	STM30 B3.37/6 – 51N R P
Motor type : RSM 36/8, RSM 36/12, RSM 37/6, RSM 41/6, RSM 42/6, RSM 51/6	STM30 B3.37/6 – 51N R P
Operation program / wiring Example: 51N 5 = Number of function cams 1 = Counter number N = Cams	STM30 B3.37/6 – 51N R P
Sense of rotation R = Right L = Left	STM30 B3.37/6 – 51N R P
Potentiometer installation P = Prepared for potentiometer installation POT = Potentiometer integrated (if no P or POT => not prepared for potentiometer installation, no potentiometer integrated)	STM30 B3.37/6 – 51N R P

Areas of application

- Air valves for oil and gas burners
- Exhaust valves on boilers
- Mixing valves
- Electrically adjustable armatures
- Slide movements
- Part-turn valve actuators
- Positioning tasks in the construction of apparatus and machines
- Valves for water treatment
- Electrical engineering, open and closed loop control tasks
- Weighing and dosing technology
- Drive technology
- Control technology: Control of ball valves, flow control

Actuators

Scale drawings



Sizes Q5, Q15

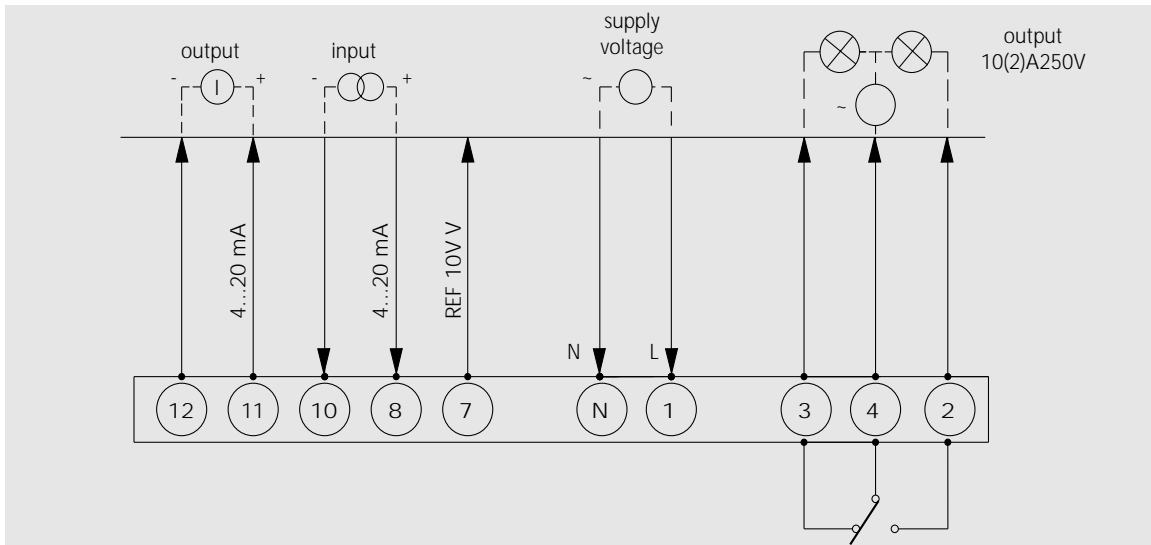
Characteristics of actuators of type STE

- Actuators of type STE work with a power supply of 230 V AC. They can be connected directly to the mains.
- The angle of rotation is set by means of a potentiometer. This permits simple adjustment of the angular area on site.
- Short start/stop times allow precise switching times and improve dynamic performance.
- Precise movements are made possible by speeds which are not affected by changes in voltage or load.
- As the actuator displays high holding torque when de-energized, no additional brake elements are required.
- Through its compact construction, the actuator takes up little room.
- The actuators can be installed in any position, allowing for free flexibility.
- Connection to the mains is made via screw terminals for the B3, Q3 and Q15 and via plug for the B0. This does away with the need for any adaptors.
- The actuators are lubricated for life, and no on-site maintenance is required.

General data for actuator type STE

	Values
Power supply	230 V AC / 50 Hz
Switching power of auxiliary switches	10(2) A 250 V (to CEE 24 / VDE 0630)
Number of limit switches	2
Number of auxiliary switches	1
Degree of noise suppression	N (to VDE 0875)
Protection grade	STE ... B3: DIN 40050, IP 40 STE ... Q3: DIN 40050, IP 40; IP 54 on request
Permitted ambient temperature	Operation: 0 ... 50 °C Transport and storage: -20 ... +60 °C

STE IO1



STE with IO1 wiring – control via current signals

In heating technology, the STE actuator with IO1 wiring can be used for the following components:

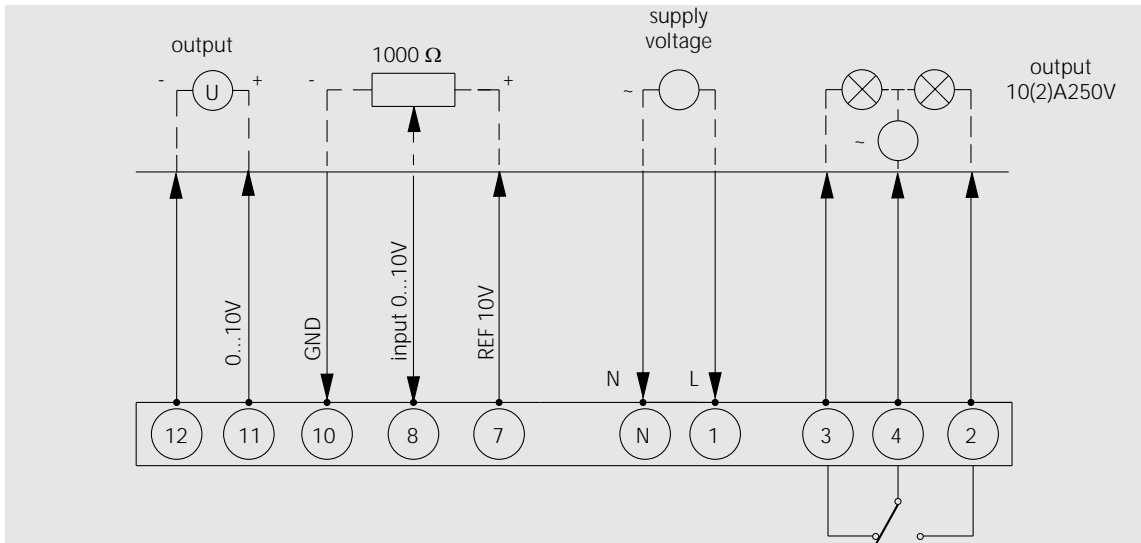
- Positioning valves.

In control technology, the STE actuator with IO1 wiring can be used for the following areas of application:

- Moving ball valves
- Flow control.

Technical Data

Actuator type	Sense of rotation	Positioning signal	Actual value	Auxiliary size	Running time for 90°	Rated torque	Static holding torque
STE30 B3.37/6 - IO1	R / L	4 ... 20 mA	4 ... 20 mA	10 V	30 s	3 Nm	2 Nm
STE30 Q3.51/12	R / L	4 ... 20 mA	4 ... 20 mA	10 V	30 s	10 Nm	6.5 Nm
STE30 Q15 51/6 - IO1	R / L	4 ... 20 mA	4 ... 20 mA	10 V	30 s	15 Nm	10 Nm



STE with U01 wiring – control via current signal

In heating technology, the STE actuator with U01 wiring can be used for the following components:

- Positioning valves.

In control technology, the STE actuator with U01 wiring can be used for the following areas of application:

- Moving ball valves
- Flow control.

Technical Data

Actuator type	Sense of rotation	Positioning signal	Actual value	Auxiliary size	Running time for 90°	Rated torque	Static holding torque
STE30 B3.37/6 - U01	R / L	0 ... 10 V	0 ... 10 V	—	30 s	3 Nm	2 Nm
STE30 Q3.51/12 - U01	R / L	0 ... 10 V	0 ... 10 V	—	30 s	10 Nm	6.5 Nm
STE30 Q15.51/6 - U01	R / L	0 ... 10 V	0 ... 10 V	—	30 s	15 Nm	10 Nm

Actuators

Characteristics of actuators of type STA

- The cams can be continuously adjusted by hand, fine tuning with a screw-driver. This makes on-site adjustment easier.
- Short start/stop times allow precise switching times and ensure good dynamic performance.
- Precise movements are made possible by speeds which are not affected by changes in voltage or load.
- As the actuator displays high holding torque when de-energized, no additional brake elements are required.
- Through its compact construction, the actuator takes up little room.
- Actuators can be installed in any plane.
- Connection to the mains is made via screw terminals for the B1, B2 and B3 and by plug for the B0. This does away with the need for any adaptors.
- The optional version with a potentiometer allows a feedback signal on the angle of rotation to be evaluated.
- The actuators are lubricated for life, and no on-site maintenance is required.

General data for actuator type STA

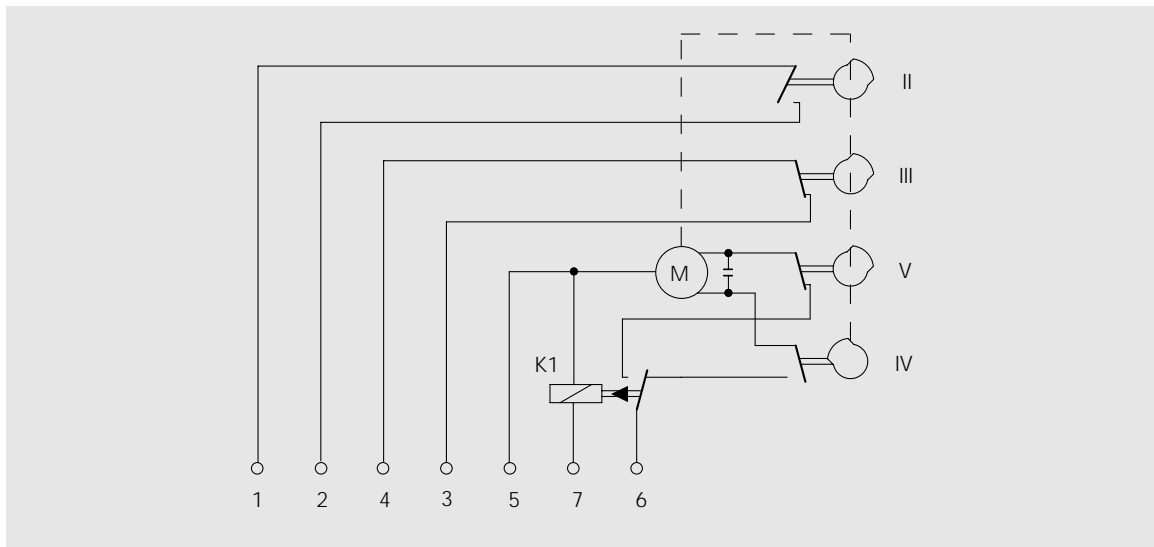
	Values
Power supply	230 V AC / 50Hz
Switching power of auxiliary switches	10(2) A 250 V (to CEE 24 / VDE 0630)
Protection grade	DIN 40050, IP 40 STA, STM ... Q3 ... are available with IP 54
Permitted ambient temperature	Operation: 0 ... 60 °C Transport and storage: -20 ... +60 °C

Accessories: potentiometer installation set

The angle of rotation of the actuators can be recorded by a mechanically coupled potentiometer and passed to an external control unit for further processing. All actuators whose type code ends in a "P" can be retro-fitted with a potentiometer.

Potentiometer installation sets with resistor values of 100Ω and 1000Ω through 90° are available.

STA 2N36



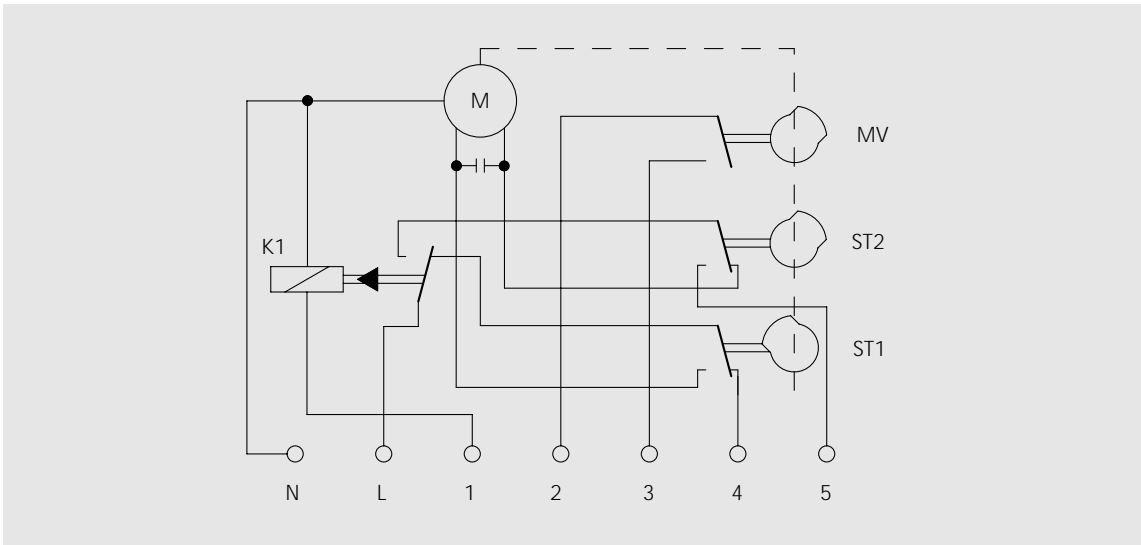
STA with 2N36 wiring

In heating technology, the STA actuator with 2N36 wiring can be used for the following components:

- For **small** and **medium** power burners
- For air valves **with no** air seal.

Technical Data

Actuator type	Sense of rotation	Running time for 90°	Rated torque	Static holding torque
STA3.5 B0.37/6 - 2N36	R / L	3.5 s	0.8 Nm	0.3 Nm
STA5 B0.36/8 - 2N36	R / L	5 s	0.6 Nm	0.2 Nm
STA13 B0.36/8 - 2N36	R / L	13 s	1.0 Nm	0.6 Nm



STA with 2N13 wiring

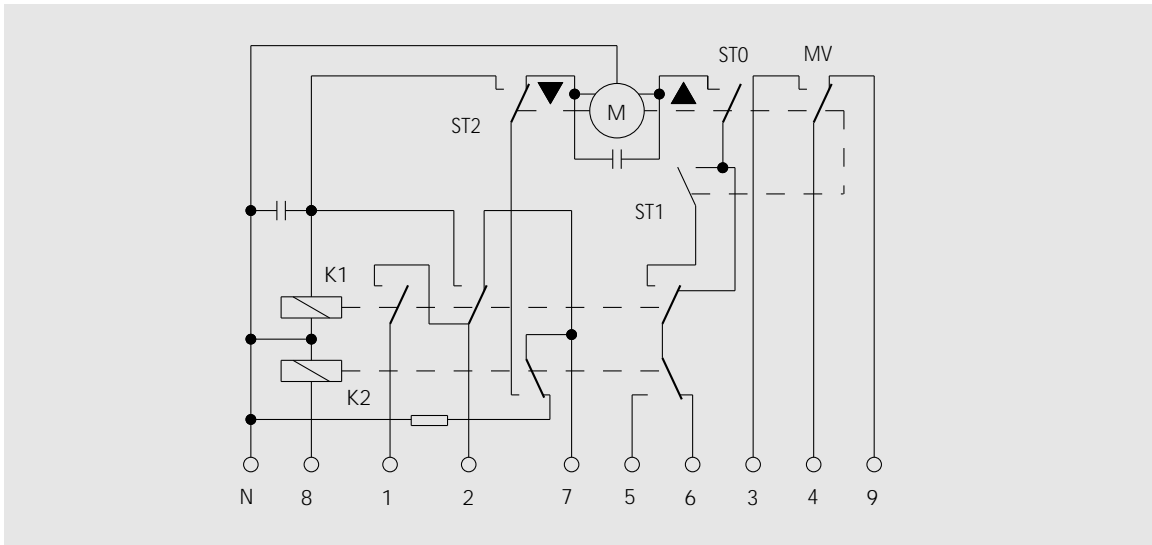
In heating technology, the STA actuator with 2N13 wiring can be used for the following components:

- For **small** and **medium** power burners
- For air valves **with no** air seal.

Technical Data

Actuator type	Sense of rotation	Running time for 90°	Rated torque	Static holding torque
STA3 B2.41/6 - 2N13	R / L	3 s	1.6 Nm	0.4 Nm
STA6 B2.41/6 - 2N13	R / L	6 s	3.0 Nm	0.8 Nm
STA12 B1.37/6 - 2N13	R / L	12 s	2.6 Nm	1.1 Nm
STA30 B1.37/6 - 2N13	R / L	30 s	3.0 Nm	2.0 Nm

STA 3N21



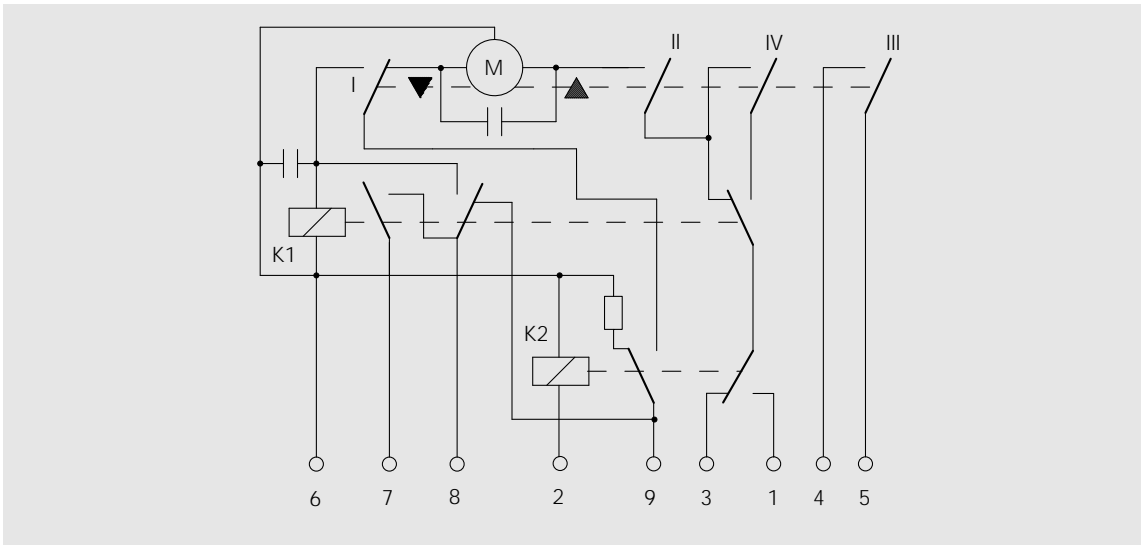
STA with 3N21 wiring

In heating technology, the STA actuator with 3N21 wiring can be used for the following components:

- For two-stage **gasburners** of **medium** and **high** power
- For controlling air valves
- For burner equipment with or without air valve monitoring.

Technical Data

Actuator type	Sense of rotation	Running time for 90°	Rated torque	Static holding torque
STA3 B3.42/ 6-3N21	R / L	3 s	1.6 Nm	0.4 Nm
STA6 B2.37/ 6-3N21	R / L	6 s	1.4 Nm	0.6 Nm
STA6 B3.42/6-3N21	R / L	6 s	2.6 Nm	1.0 Nm
STA12 B2.37/6-3N21	R / L	12 s	3.0 Nm	1.1 Nm
STA30 B2.37/6-3N21	R / L	30 s	3.0 Nm	2.0 Nm



STA with 3N23 wiring

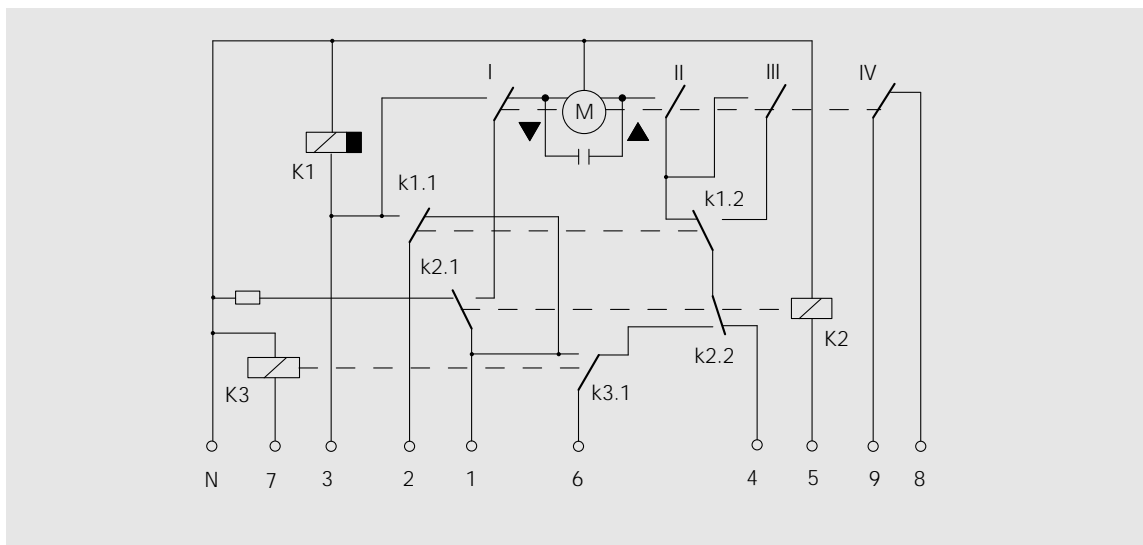
In heating technology, the STA actuator with 3N23 wiring can be used for the following components:

- For two-stage **gasburners** of **small** and **medium** power
- For controlling air valves.

Technical Data

Actuator type	Sense of rotation	Running time for 90°	Rated torque	Static holding torque
STA3.5 B0.37/6 - 3N23	R / L	3.5 s	0.8 Nm	0.3 Nm
STA5 B0.36/8 - 3N23	R / L	5 s	0.6 Nm	0.2 Nm
STA13 B0.36/8 - 3N23	R / L	13 s	1.0 Nm	0.6 Nm

STA 3N27



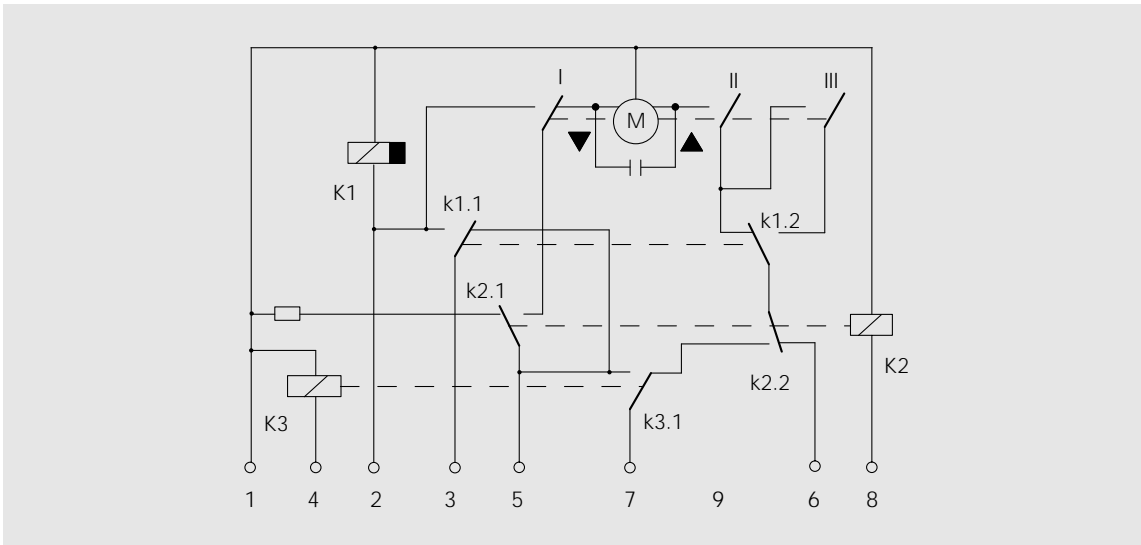
STA with 3N27 wiring

In heating technology, the STA actuator with 3N27 wiring can be used for the following components:

- For two-stage **gasburners** of **medium** and **high** power
- For controlling air valves
- For burner equipment with or without air valve monitoring.

Technical Data

Actuator type	Sense of rotation	Running time for 90°	Rated torque	Static holding torque
STA3 B3.42/6 - 3N27	R / L	3 s	1.6 Nm	0.4 Nm
STA6 B2.37/6 - 3N27	R / L	6 s	1.4 Nm	0.6 Nm
STA6 B3.42/6 - 3N27	R / L	6 s	2.6 Nm	1.0 Nm
STA12 B2.37/6 - 3N27	R / L	12 s	3.0 Nm	1.1 Nm
STA30 B2.37/6 - 3N27	R / L	30 s	3.0 Nm	2.0 Nm



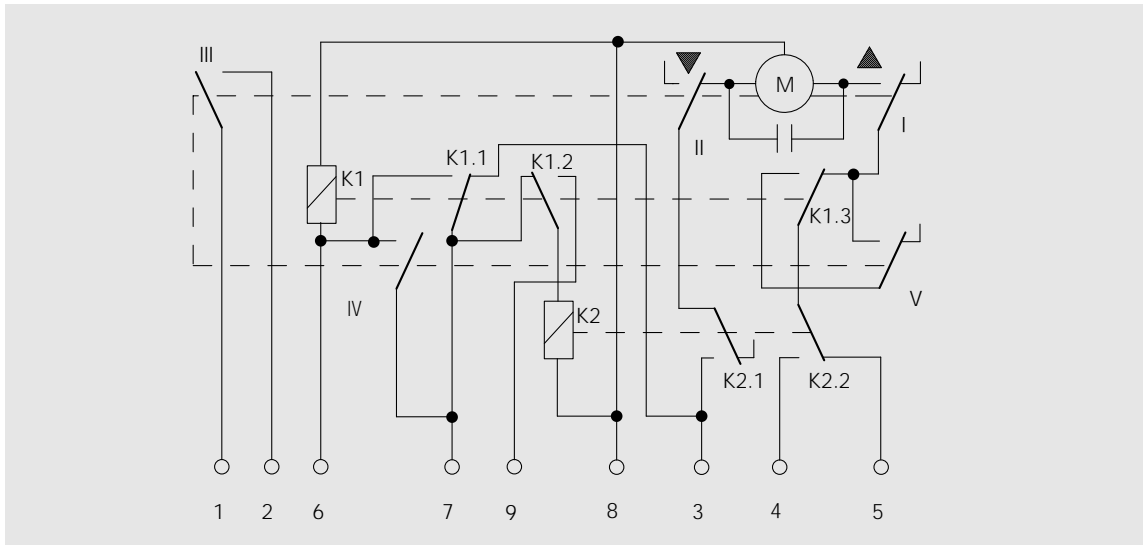
STA with 3N28 wiring

In heating technology, the STA actuator with 3N28 wiring can be used for the following components:

- For two-stage **gasburners** of **medium and high** power
- For controlling air valves
- For burner equipment with or without air valve monitoring.

Technical Data

Actuator type	Sense of rotation	Running time for 90°	Rated torque	Static holding torque
STA3 B3.42/6 - 3N28	R / L	3 s	1.6 Nm	0.4 Nm
STA6 B2.37/6 - 3N28	R / L	6 s	1.4 Nm	0.6 Nm
STA6 B3.42/6 - 3N28	R / L	6 s	2.6 Nm	1.0 Nm
STA12 B2.37/6 - 3N28	R / L	12 s	3.0 Nm	1.1 Nm
STA30 B2.37/6 - 3N28	R / L	30 s	3.0 Nm	2.0 Nm



STA with 4N22 wiring

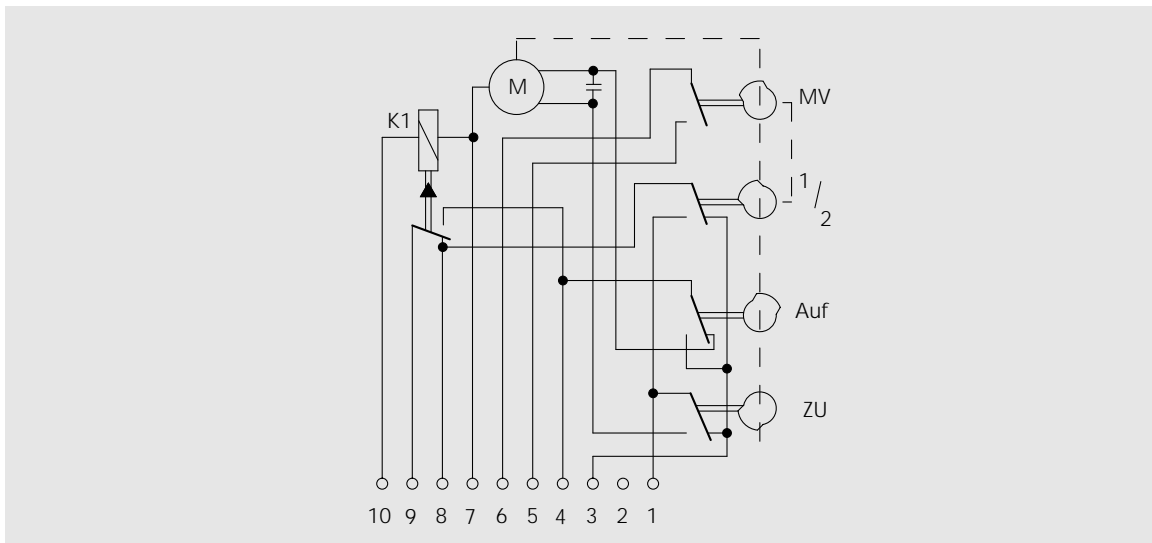
In heating technology, the STA actuator with 4N22 wiring can be used for the following components:

- For **oil** and **gas** burners of **small** and **medium** power
- For controlling air valves
- Two-stage or modulating operating mode.

Technical Data

Actuator type	Sense of rotation	Running time for 90°	Rated torque	Static holding torque
STA3.5 B0.37/6 - 4N22	R / L	3.5 s	0.8 Nm	0.3 Nm
STA5 B0.36/8 - 4N22	R / L	5 s	0.6 Nm	0.2 Nm
STA13 B0.36/8 - 4N22	R / L	13 s	1.0 Nm	0.6 Nm

STA 3N12



STA with 3N12 wiring

In heating technology, the STA actuator STA with 4N18 wiring can be used for the following components:

- For **oil** and **gas**burners of **small** and **medium** power
- For controlling air valves
- Two-stage or modulating operating mode.

Technical Data

Actuator type	Sense of rotation	Running time for 90°	Rated torque	Static holding torque
STA3 B3.42/6 - 3N12	R / L	3 s	1.6 Nm	0.4 Nm
STA6 B2.37/6 - 3N12	R / L	6 s	1.4 Nm	0.6 Nm
STA6 B3.42/6 - 3N12	R / L	6 s	2.6 Nm	1.0 Nm
STA12 B2.37/6 - 3N12	R / L	12 s	3.0 Nm	1.1 Nm
STA30 B2.37/6 - 3N12	R / L	30 s	3.0 Nm	2.0 Nm

Characteristics of actuators of type STM

- The cams can be continuously adjusted by hand, fine tuning with a screw-driver. This makes on-site adjustment easier.
- Short start/stop times allow precise switching times and ensure good dynamic performance.
- Precise movements are made possible by speeds which are not affected by changes in voltage or load.
- As the actuator displays high holding torque when de-energized, no additional brake elements are required.
- Through its compact construction, the actuator takes up little room.
- Actuators can be installed in any plane.
- Connection to the mains is made via screw terminals for the B1, B2, B3 and Q3 by plug for the B0. This does away with the need for any adaptors.
- The optional version with a potentiometer allows a feedback signal on the angle of rotation to be evaluated.
- The actuators are lubricated for life, and no on-site maintenance is required.

General data for actuator type STM

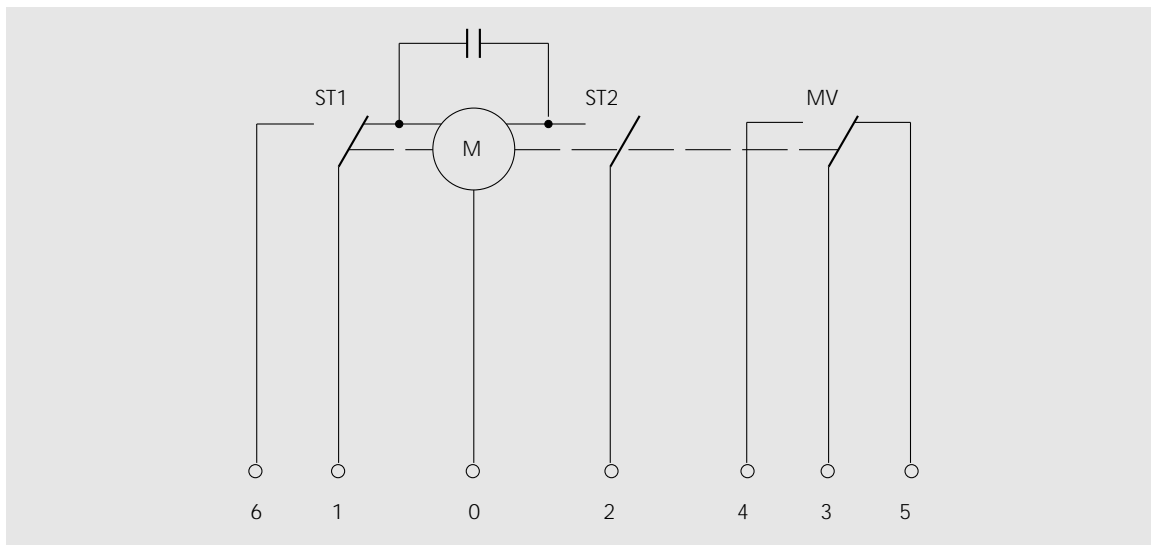
	Values
Power supply	230 V AC / 50Hz
Switching power of auxiliary switches	10(2) A 250 V (to CEE 24 / VDE 0630)
Protection grade	DIN 40050, IP 40 STA, STM ... Q3 ... are available with IP 54
Permitted ambient temperature	Operation: 0 ... 60 °C Transport and storage: -20 ... +60 °C

Accessories: potentiometer installation set

The angle of rotation of the actuators can be recorded by a mechanically coupled potentiometer and passed to an external control unit for further processing. All actuators whose type code ends in a "P" can be retro-fitted with a potentiometer.

Potentiometer installation sets with resistor values of 100Ω and 1000Ω through 90° are available.

STM 31N



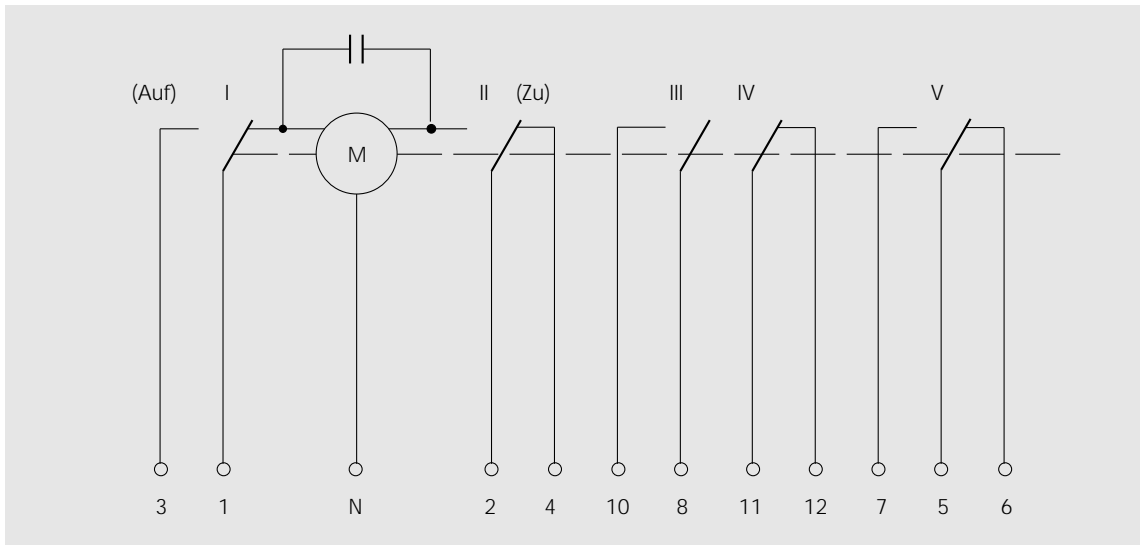
STM with 31N wiring

STM actuators are used in all industries, especially the following:

- Apparatus construction
- Electrical engineering for open and closed loop control tasks
- Weighing and dosing technology for movement tasks
- Heating, air conditioning and ventilation engineering.

Technical Data

Actuator type	Sense of rotation	Running time for 90°	Rated torque	Static holding torque
STM3 B2.41/6 - 31N	R / L	3 s	1.6 Nm	0.4 Nm
STM6 B2.41/6 - 31N	R / L	6 s	2.6 Nm	0.8 Nm
STM12 B1.37/6 - 31N	R / L	12 s	3 Nm	1.1 Nm
STM30 B1.37/6 - 31N	R / L	30 s	3 Nm	2 Nm



STM with 51N wiring

STM actuators are used in all industries, especially the following:

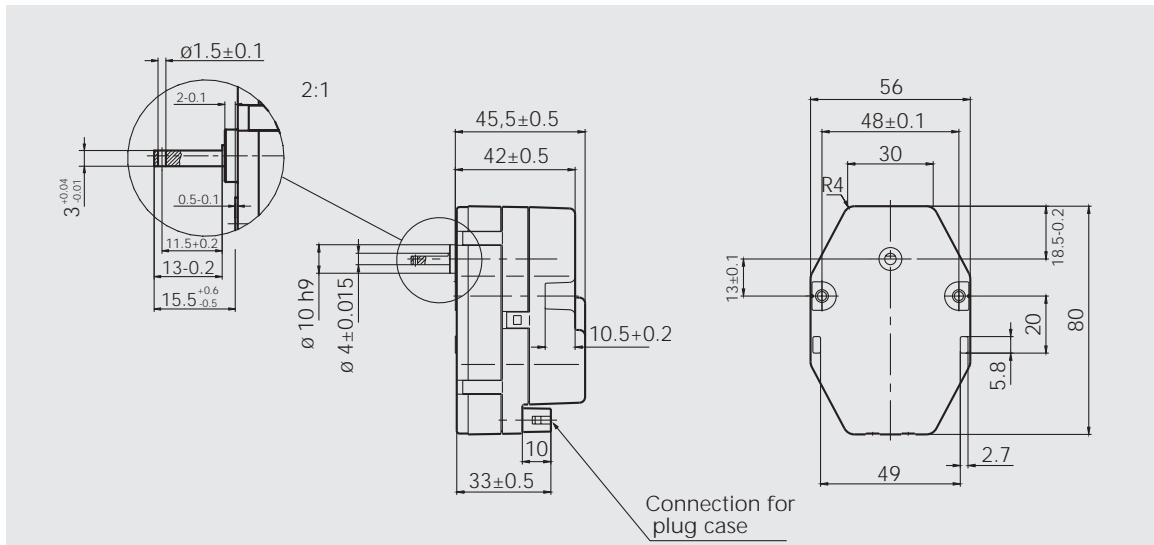
- Apparatus construction
- Electrical engineering for open and closed loop control tasks
- Weighing and dosing technology for movement tasks
- Heating, air conditioning and ventilation engineering.

Technical Data

Actuator type	Sense of rotation	Running time for 90°	Rated torque	Static holding torque
STM4.5 Q3.51/6 - 51N ¹	R / L	4.5 s	3 Nm	1.5 Nm
STM9 Q3.51/12 - 51N ¹	R / L	9 s	4 Nm	1.5 Nm
STM12 B2.37/6 - 51N	R / L	12 s	3 Nm	1.1 Nm
STM15 Q3.51/6 - 51N ¹	R / L	15 s	9 Nm	6 Nm
STM30 B3.37/6 - 51N ¹	R / L	30 s	3 Nm	2 Nm
STM30 Q3.51/12 - 51N ¹	R / L	30 s	10 Nm	6.5 Nm

¹ Potentiometer installation possible

STM 6SF-L



STM 6SF-L

In the simple version of the actuators, the STM 6SF, an anti-blocking asynchronous motor is used as the drive. This actuator moves to a preset limit and the power remains on. When de-energized, the shaft is reset by means of a mechanical spring – a safety precaution in the event of a power failure.

The STM 6SF-L actuator is particularly suited to moving air valves in heating burners in the lower performance range.

Technical Data

	Values
Rated voltage	230 VAC -15% +10%
Rated frequency	50 Hz
Current consumption	24 mA
Apparent power	5.5 VA
Sense of rotation	anti-clockwise
Control time	6 s
Driving torque	26 Ncm
Reverse torque	1 Ncm
Weight	200 g
Ambient temperature	0 ... 60 °C
Operating mode S1	100% ED
Protection grade	IP 40, to DIN 40 050
Insulation class	E, to VDE 0530