

EMO

Motorized proportional and three-point actuators



To be precise.



EMO 1

Proportional actuator

Description



The EMO 1 proportional actuator is designed for connection to temperature controllers with constant control response, e.g. HEIMEIER Thermostat E 1. Four different models are available to respond to the particular output signal and control task: Control voltage 0–10 V; 10–0 V; 2–10 V; 10–2 V (d.c. voltage).

The actuator, in conjunction with an external resistor, can also be connected to controllers with a current output signal (0–20 mA, 20–0 mA, 4–20 mA, 20–4 mA).

The maintenance-free actuator functions quietly and draws very little power.

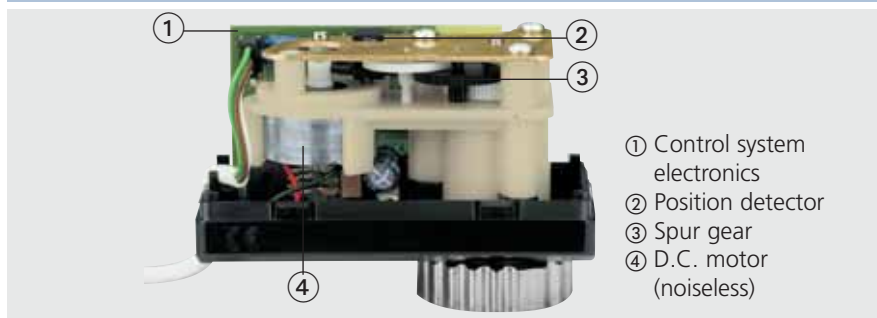
The compact body is made of highquality plastic and covers the motor, gears, travel recognition and an integrated micro-processor control system.

It may be installed on all HEIMEIER thermostatic valve bodies and three-way valves. Adapters enable the mounting of thermostatic valve bodies of other manufacturers, see leaflet EMO T or EMOtec.

The electrical connection is made via a 3-core earthed cable.

Construction

EMO 1 Proportional actuator



- Automatic stroke adjustment
- Runs extremely quiet
- Requires little power
- Controllable with standard signals
- Need not be acknowledged

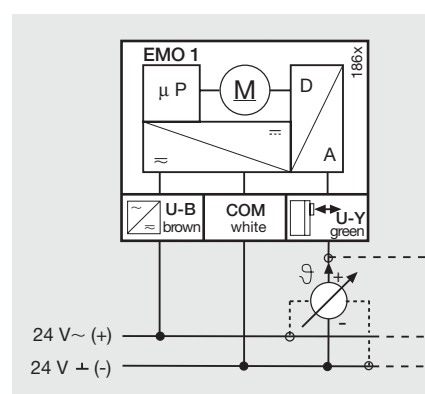
Function

When putting into operation, an actuator adjustment routine recognises the travel position of the valve in closed and open position. The output signal of the controller is then assigned to the actual valve stroke in a linear relationship.

Internally, the actuator works with an 8-bit analog/digital transformer, which breaks up the input signal into 256 positions. This enables a high resolution of the valve stroke. The motor shuts down as soon as a travel position has been reached which corresponds to an ascribed controller output signal. Stability in this position is guaranteed by the self-locking gears. The pressure power within the closed range is adapted for thermostatic valve bodies with soft valve discs. Following a fixed predetermined number of changes in position and after each interruption of operating voltage, the actuator automatically conducts an adjustment routine.

Note: EMO 1 is designed for standard control loops in heating, ventilation and air conditioning technology with higher order process controlled systems in which the control units are coordinated so as to prohibit a two-point action of the control system. Consequently, its application as an open/close actuator, e.g. for switching procedures, is to be avoided.

Connection diagram



Three-point actuator

Description



The EMO 3 three-point actuator is designed for connection to temperature controllers with a 24 V AC three-point output, e.g. HEIMEIER Thermostat E 3.

The three-point actuator EMO 3/230 is designed for connection to temperature controllers with a 230 V AC three-point output, e.g. boiler control systems (mixing control with e.g. HEIMEIER – three-way mixing valves).

The actuators are maintenance-free. They work quietly and use very little power.

The compact body is made of high-quality plastic and encapsulates the motor, gears, and magnetic coupling.

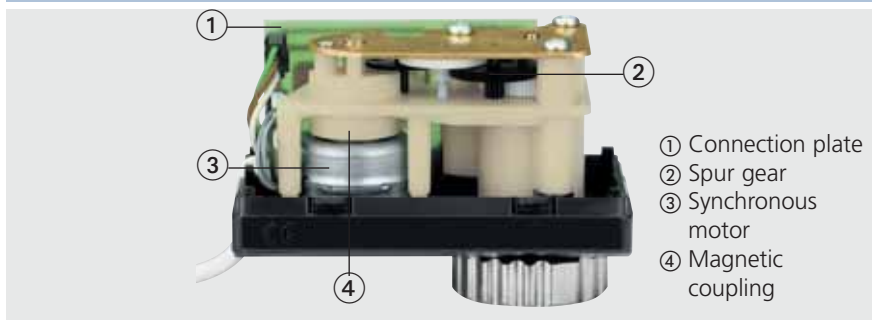
The magnetic coupling guarantees a non-wearing transmission of the motor torque as well as an optimized pressure power which is adapted to thermostatic valve bodies.

It may be installed on all HEIMEIER thermostatic valve bodies and three-way valves. Adapters enable the mounting of thermostatic valve bodies of other manufacturers, see leaflet EMO T or EMOtec.

The electrical connection is made via a 3-core earthed cable.

Construction

EMO 3 Three-point actuator



- Model with 230 V and 24 V operating voltage
- Automatic valve stroke adjustment
- Runs extremely quiet
- Requires little power
- Optimised pressure power

Function

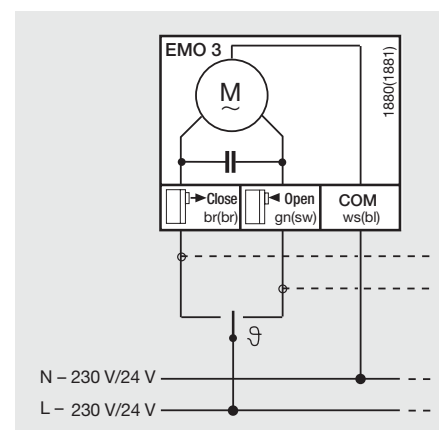
The motor of the three-point actuator is moved in both directions of rotation via an electrical open or close instruction. As soon as the output voltage of the controller has been interrupted, the actuator stops and retains its travel position at that moment. Stability in this position is guaranteed by the self-locking gears.

If the position of the actuator is closed or completely open, a torque-dependent decoupling of the motor from the gears occurs via a magnetic friction clutch. The resulting pressure power within the closed range is adapted for thermostatic valve bodies with soft valve discs.

The EMO 3 / 230 works additionally with an integrated runtime limiter that turns off the motor automatically after 10 minutes.

Note: The floating time of the controller must be coordinated with the flow time of the actuator such that, in closed or completely open position, no continuous operation of the motor ensures. If the actuator is in PWM mode (pulse-width modulation), a trigger time of min. 1 sec. must be maintained in order to ensure that the synchronizing speed is achieved.

Connection diagram



EMO 1, EMO 3 and EMO 3/230

Proportional and three-point actuators

Application

These motorized actuators EMO 1 and EMO 3 are designed to be mounted on thermostatic valve bodies and are installed in heating, ventilation, and air conditioning systems in conjunction with corresponding controllers, e.g. HEIMEIER Thermostat E.

Even with strict requirements for precision or with process controlled systems with high severity, optimal results can be achieved.

As a result of the extremely low power draw for the actuator, broadly branched networks, e.g. for centralized control and control systems (building automation), can be installed with minimal cable sections.

In the area of room temperature control, motorized actuators are used, for example, on radiators and convectors, heating manifolds for floor heating systems, ceil cooling systems and

radiant heating systems as well as on fan-coil units and induction devices in two and four-wire networks.

The actuator EMO 3/230 works ideally in supply pipe temperature control in heating systems. Its standard input signal "three-point 230 V" is compatible with most boiler control systems. It is the perfect actuator in connection with e.g. HEIMEIER three-way mixing valves.

Technical data

	EMO 1 proportional actuator	EMO 3 three-point actuator	EMO 3/230 three-point actuator
Operating voltage:	24 V AC/DC (+25% / -35%)	24 V AC (+25% / -10%)	230 V AC (+10% / -10%)
– frequency	0/50/60 Hz	50/60 Hz	50 Hz
Power input:	nom. 1.0 VA / max. 1.5 VA	max. 0.7 VA	max. 6 VA
Control voltage:	see order nos. (U-Y _{Br} ≤ 0.5 V AC _{eff})	–	–
Signal current:	max. 0.5 mA	–	–
Stroke:	max. 4.5 mm	max. 4.5 mm	max. 4.5 mm
Flow time:	25 s/mm	70 s/mm - 50 Hz/56 s/mm - 60 Hz	70 s/mm - 50 Hz Motor turn-off after approx. 10 min
Type of protection:	based on EN 60529	based on EN 60529	based on EN 60529
– horizontal installation	IP 42	IP 42	IP 42
– vertical standing installation	IP 43	IP 43	IP 43
Safety class:	II based on EN 60730	II based on EN 60730	II based on EN 60730
Body, color:	Plastic, white based RAL 9016	Plastic, white based RAL 9016	Plastic, white based RAL 9016
Connection cable:	1 m; 3 x 0.25 mm ² *)	1 m; 3 x 0.25 mm ² *)	1 m; 3 x 0.25 mm ² *)
CE certification (EMV/NS):	EN 55014/EN 60730-1	EN 55014/EN 60730-1	EN 60730-1
Ambient temperature:	0°C to 50°C in operation	0°C to 50°C in operation	0°C to 50°C in operation
Medium temperature:	max. 100°C	max. 100°C	max. 100°C
Storage temperature:	-20°C to +70°C (-4°F to + 158°F)	-20°C to +70°C (-4°F to + 158°F)	-20°C to +70°C (-4°F to + 158°F)
Mounting:	fits all HEIMEIER thermostatic valve bodies and three-way valves		

*) custom lengths upon request

Max. permissible differential pressure with closed valve: prospectus for thermostatic valve body; three-way reversing valve; three-way mixing valve; control valves for floor heating systems

Article numbers

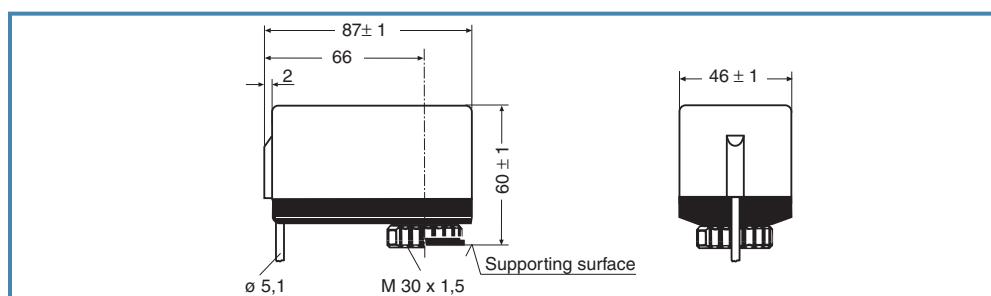
1860-00.500 0–10 V DC
1861-00.500**) 10–0 V DC
1862-00.500**) 2–10 V DC
1863-00.500**) 10–2 V DC

1880-00.500

1881-00.500

**) upon request

Dimensions



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