

EMO T



Actuators

High performance thermoelectric actuator –
For ON/OFF or PWM control

EMO T

Used in conjunction with small terminal valves e.g. TBV-C and TA-COMPACT-P or thermostatic valve bodies, the high performing EMO T actuator offers reliable on/off control and a high enclosure class. A long lifetime is ensured by the unique design. The position indicator is visible from all sides and allows easy maintenance procedures. A high adjusting force further enhances reliability.



Key features

- > **High adjusting force and long stroke**
For reliable and versatile operations.
- > **Position indicator visible from all sides**
For straightforward maintenance.
- > **High enclosure class IP54**
For secure operations at any installation positions.
- > **M30x1.5 connection**
Compatible with TA or HEIMEIER valves and floor heating manifolds with a M30x1.5 connection to the actuator.

Technical description

Applications:

Designed for ON/OFF or PWM control.

Supply voltage:

24 VAC/VDC +25% / -20%
230 VAC ±15%; Frequency 50-60 Hz

Power consumption:

24 V:
Starting ≤ 6 W (VA)
During operation ≤ 2 W (VA)
Starting current ≤ 250 mA, 60s
230 V:
Starting ≤ 58 W (VA)
During operation ≤ 2,5 W (VA)
Starting current ≤ 250 mA, 1s

Operating cycle time:

~ 4 min when starting from cold.

Adjusting force:

125 N

Stroke:

4,7 mm; valve position visible due to position indicator.

Temperature:

Max. ambient temperature: 50°C
Min. ambient temperature: -5°C
Max. medium temperature: 120°C
Storage temperature: -25°C to +70°C

Enclosure class:

IP54 at any position.

Protection class:

II, EN 60730

Certification:

CE, EN 60730-2-14

Cable:

Cable length: 0.8 m, 2 m or 5 m. 10 m cable length on request.
Connection cable: 2 x 0,75 mm².
The cable is stripped 100 mm and each wire is stripped 8 mm.
Halogen free as option, fire class B2_{ca} - s1a, d1, a1 according to EN 50575.

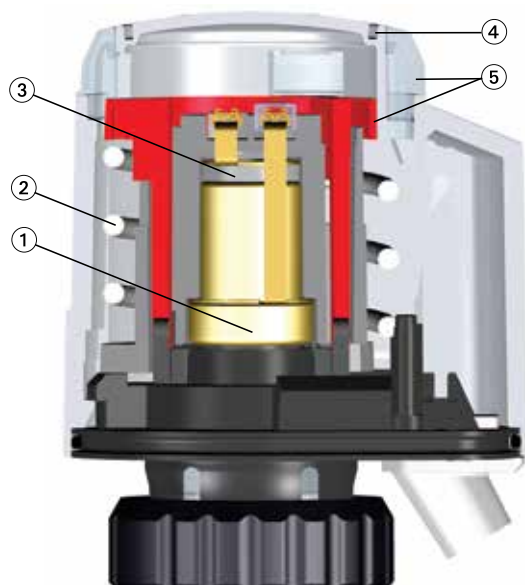
Connection to valve:

Retainer nut M30x1,5

Body:

Shock-resistant PC/ABS, white
RAL 9016.

Construction



1. Expansion system
2. Spring
3. PTC heating element
4. Groove to take up "colour clips" or specially printed "partner clips"
5. Position indicator

Application

The EMO T thermal actuator can be installed in temperature and/or timerelated 2-point control systems in, for example:

Heating installations

For floor, ceil, and radiator heating systems for individual room temperature control or group control in:

- Apartments, conference rooms, storage rooms, schools, etc.
- For reverse switching, mass flow control, etc.

Ventilation installations

For room temperature control, e.g. controlling the flow of hot water through the air heaters.

Air conditioning systems

For room temperature control, e.g. regulating the flow of cold water from fan-coil units, ceil cooling systems, etc.

Function

Closed when currentless (NC model)

Initiating operating voltage heats up the expansion system of the actuator. After the time lag, a uniform opening process ensues. If the voltage is cutoff, the actuator closes via the cooling of the expansion system after the time lag.

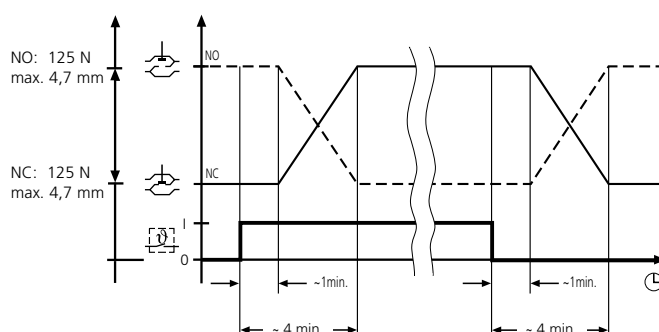
Open when currentless (NO model)

Initiating operating voltage heats up the expansion system of the actuator. After the time lag, a uniform closing process ensues. If the voltage is cutoff, the actuator opens via the cooling of the expansion system after the time lag.

Note:

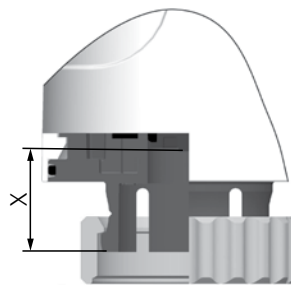
When conducting a performance test, be sure to check the time response (time lag)!
Opening and closing times are dependent on the ambient temperature.

Action chart



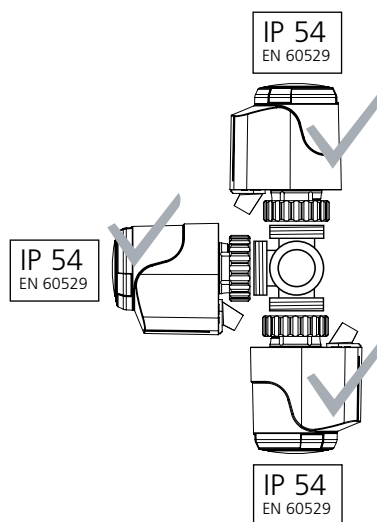
Working range

EMO T is designed to suit all TA/HEIMEIER valves and floor heating manifolds with M30x1,5 connection to actuator. The actuator has a working range corresponding to $X = 11,10 - 15,80$ mm.



Installation

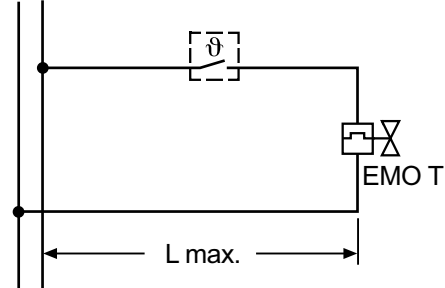
Enclosure class:



Connection diagram

N L — 1833/1837: 230 V AC (+15%/- 15%); nom. 2,5 W (max. 58 W/<1 sec.)

~ — 1843/1847: 24 V AC/DC (+25%/- 20%); nom. 2 W (max. 6 W/< 60 sec.)



(L max. see planning notes)

Planning notes

24 V transformer dimensioning

For operation with 24 V low voltage, a transformer is required which is in compliance with EN 60335 and possesses sufficient capacity.

For dimensioning transformer performance, the value for the starting phase needs to be taken into account. The same applies to the layout of switching contacts of room temperature controllers.

Minimum transformer power delivery results from: the sum of the take-up of the 24 V EMO T (in the starting phase) in addition to the sum of the take-up capacities of the room thermostat.

Room temperature controller (Article No. 1946-00.500) need not be taken into account.

24 V protective low voltage

With the required protective low voltage (SELV based on DIN VDE 0100) a safety isolating transformer in compliance with EN 61558 must be used.

Length of cable

In order to maintain the declared opening times for the actuators, the voltage loss (depending on length of cable and cross section) in the operating phase on the supply lines to the actuators may not exceed 4%.

For general dimensioning with copper lines, use the following standard formula:

$$L_{\text{max.}} = l / n$$

L max.: max. length of cable in [m] (see "Connection diagram")

l: table value in [m]

n: number of actuators

Line: Type/name	Cross section: A [mm ²]	I for each model:		Note: Application; comparison
		230 V [m]	24 V [m]	
LiY/twin flexible rod	0,34	-	38	only for 24 V; corresponds to ø 0.6 mm
Y(R)/bell wire	0,50	-	56	only for 24 V; model Y(R) 2 x 0.8
H03VVF/PVC mains cable	0,75	840	84	not to be concealed under plaster
NYM/house wiring cable	1,50	1680	168	also for NYIF 1.5 mm ²
NYIF/flat webbed house wire	2,50	2800	280	also for NYM 2.5 mm ²

Calculation example

Goal:

max. length of cable L max.

Given:

Voltage U = 24 V

Conductor cross section A = 2 x 1.5 mm²

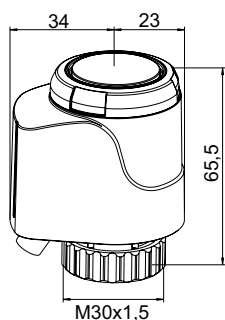
Value in table l = 168 m

Number of actuators n = 4

Solution:

$$l_{\text{max.}} = l / n = 168 \text{ m} / 4 = 42 \text{ m}$$

Articles

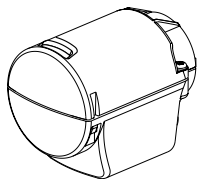
**24 VAC/VDC**

Cable length [m]	EAN	Article No
EMO T, NO (Normally open)		
0,8	4024052836413	1847-00.500
2	4024052836710	1847-01.500
5	4024052837014	1847-02.500
EMO T, NO (Normally open) - With halogen free cable		
0,8	5902276895364	322041-40061
2	5902276895371	322041-40062
5	5902276895388	322041-40063
EMO T, NC (Normally closed)		
0,8	4024052835218	1843-00.500
2	4024052835515	1843-01.500
5	4024052835812	1843-02.500
EMO T, NC (Normally closed) - With halogen free cable		
0,8	5902276895333	322041-40058
2	5902276895340	322041-40059
5	5902276895357	322041-40060

230 VAC

Cable length [m]	EAN	Article No
EMO T, NO (Normally open)		
0,8	4024052836611	1837-00.500
2	4024052836918	1837-01.500
5	4024052837212	1837-02.500
EMO T, NO (Normally open) - With halogen free cable		
0,8	5902276895302	322041-40055
2	5902276895319	322041-40056
5	5902276895326	322041-40057
EMO T, NC (Normally closed)		
0,8	4024052835416	1833-00.500
2	4024052835713	1833-01.500
5	4024052836017	1833-02.500
EMO T, NC (Normally closed) - With halogen free cable		
0,8	5902276895272	322041-40052
2	5902276895289	322041-40053
5	5902276895296	322041-40054

Accessories



Protective cover for EMO T and EMO TM

For high strain applications (e.g. public buildings, schools, kindergartens, etc) and as theft protection.

With M12x1,5 thread for protective conduit fitting. Delivery without conduit and fitting.

	EAN	Article No
White RAL 9016	4024052930111	1833-40.500



Connecting to other brands

Adapter for mounting the EMO T/EMO TM on valve bodies of other manufacturers. Threads M30x1.5 factory standard.

Manufacturer	EAN	Article No
Danfoss RA (Ø≈20 mm)	4024052297016	9702-24.700
Danfoss RAV (Ø≈34 mm)	4024052300112	9800-24.700
Danfoss RAVL (Ø≈26 mm)	4024052295913	9700-24.700
Vaillant (Ø≈30 mm)	4024052296019	9700-27.700
TA (M28x1,5)	4024052336418	9701-28.700
Herz (M28x1,5)	4024052296316	9700-30.700
Markaryd (M28x1,5)	4024052296514	9700-41.700
Comap (M28x1,5)	4024052296712	9700-55.700
Oventrop (M30x1,0)	4024052428519	9700-10.700
Giacomini (Ø≈22,6 mm)	4024052429714	9700-33.700
Ista (M32x1,0)	4024052511419	9700-36.700
Uponor (Velta)	4024052448111	9700-34.700
- Euro-/compact distributor or return valve 17		
Uponor (Velta)	4024052510917	9701-34.700
- Provario distributor		



Connecting to radiators with integrated valves

Adapter for mounting the EMO T/EMO TM with M30x1.5 connection on thermostatic insert for **Series 2** or **Series 3** clamping joint. M30x1.5 threading, factory standard.

Model	EAN	Article No
Series 2	4024052297214	9703-24.700
Series 3	4024052313518	9704-24.700

