

Thermostat E

**Electronic
room temperature controller for
proportional and three-point
actuators**



To be precise.



Thermostat E

Description



The HEIMEIER Thermostats E 1 and E 3 are micro-processor-operated electronic room temperature controllers with incorporated sensors and adjustable PI control behaviour.

The Thermostat E 1 with constant control behaviour (0–10 V) allows connecting proportionally operating motorized actuators, e.g. EMO 1.

The Thermostat E 3 with a three-point output signal will be used in conjunction with three-point motorized actuators such as e.g. HEIMEIER EMO 3 or in case of a puls-width modulated output signal (PWM) with two-point actuators, e.g. HEIMEIER EMO T or EMOTec.

The setting value is adjustable between 10° and 30°C. An upper or lower limitation of the setting value range can be

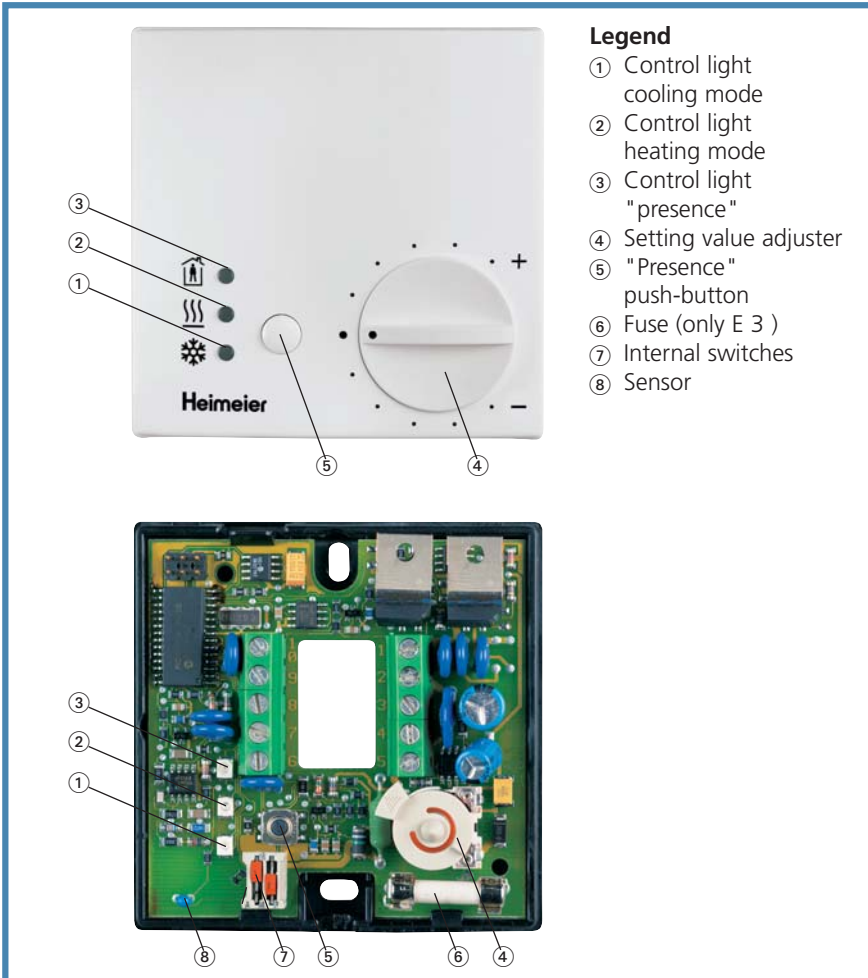
effected by arranged hidden stops. A "presence" push-button allows during heating mode, e.g. a room temperature set back by 4 K. Control lights indicate the operating mode such as "presence" and heating or cooling.

Two inputs for potential-free normally open (n/o) contacts allow connecting, for the temperature set back (X1), an external timing clock or for the purpose of a change-over from heating to cooling mode (c/o) an external switch respectively. There are further connecting possibilities for an external temperature sensor (T_{ext}), dew point detector (TP) and for a setting value shift (w).

The thermostatic controllers E 1 and E 3 are designed for an installation on a wall or on a recessed (concealed) socket.

Structure

Thermostatic controller E



Legend

- ① Control light cooling mode
- ② Control light heating mode
- ③ Control light "presence"
- ④ Setting value adjuster
- ⑤ "Presence" push-button
- ⑥ Fuse (only E 3)
- ⑦ Internal switches
- ⑧ Sensor

- Uncomplicated temperature set back by "presence" push-button
- Adjustable limitation of the setting value range
- Flexible use due to adaptable regulating parameters
- Thermostat E 3 adjustable to puls-width modulated output signal (PWM)

Function

The measured room air temperature (X_1) is compared with the setting value (X_2). The thus resulting deviations will be amplified by the adjustable proportional range (X_p) and converted into the following output signals:

Thermostat E 1 constant output signal to the P(I) control with constantly operating actuators. For the operating mode "heating" and "cooling" the controller output Y_1 provides the triggering sens "heating" and the controller output Y_2 the triggering sens "cooling". For the operating mode "heating" or "cooling", in case an external change-over switch has been installed, the triggering sens "heating" can be

changed over to "cooling" at the controller output Y_1 .

Thermostat E 3

An internal switch allows various output signal settings.

Three-point output signal for a PI control with three-point actuators. The operating mode "heating" can be shifted to "cooling" by an external change-over switch.

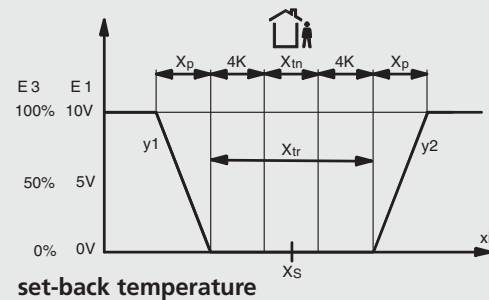
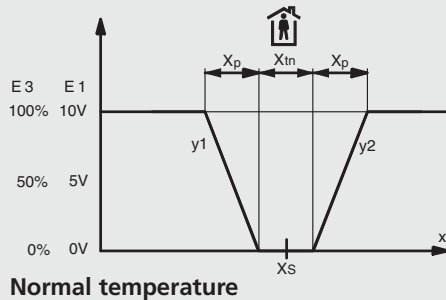
Puls-width modulated output signal for a P(I) control with thermal two-point actuators. For the operating mode "heating" and "cooling" the controller output (Y_1) provides the triggering sens "heating" and the controller output (Y_2)

provides the triggering sens "cooling". For the operating mode "heating" or "cooling" the controller output (Y_1) can provide the triggering sens "heating" but an integrated external change-over switch allows a change-over to "cooling".

In case of the thermostatic controllers E 1 and E 3 the control signal of the "presence" push-button or of the timing clock will shift the setting value, depending upon the operating mode, by 4 K. The regulating parameters as set when supplied ex works can, of course, be adapted to the installation conditions later (please, see Technical Data). The once set values will remain active even in case of a voltage failure.

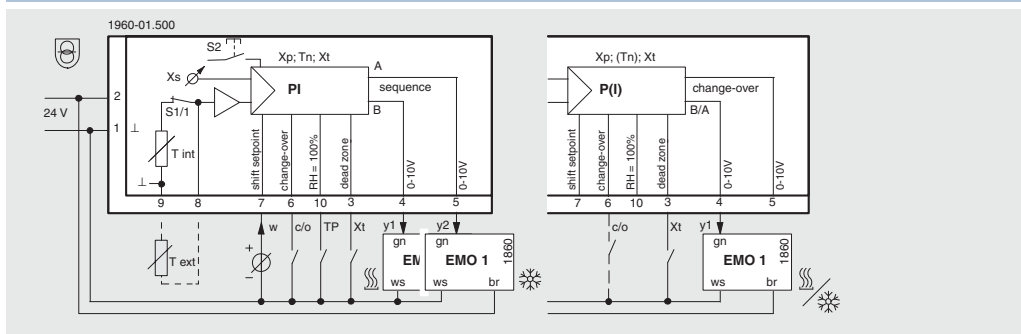
Functional diagrams

operating mode heating and/or cooling

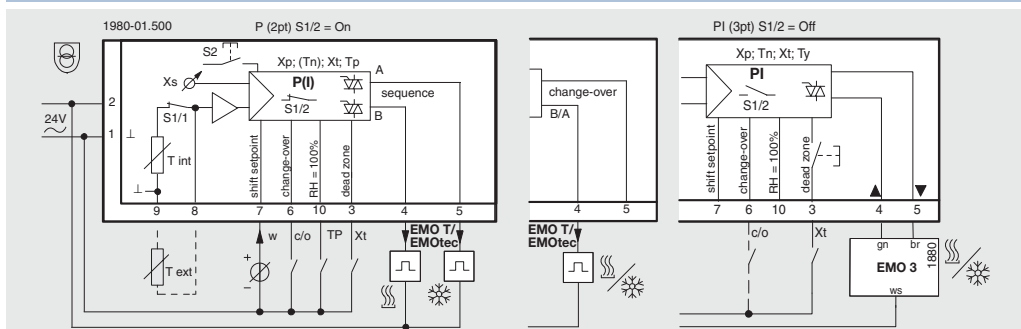


Wiring diagram

Thermostat E 1



Thermostat E 3



Thermostat E

Application

The constantly operating and three-point thermostatic room temperature controllers E 1 or E 3 respectively in conjunction with the corresponding actuators (e.g. HEIMEIER EMO 1 and EMO 3) are employed in the field of heating, aeraing and air condition engineering. For the temperature control of individual or separate rooms constantly operating and

three-point controllers are used in residential and business buildings where heating radiators, underfloor heating, ceiling cooling systems or blower convectors etc. are installed. Especially in those cases where elevated requirements for an accurate temperature control or a controlled system of high degrees of difficulty prevail optimal control results can be achieved.

In case of a similarly constant control by two-point actuators (e.g. HEIMEIER EMO T or EMOtec) the Thermostat E 3 can be adjusted to puls-width modulated output signals (PWM).

The operating voltage must be provided by safety transformers in compliance with EN 60742 or equivalent appliances must be used.

Technical data

	Thermostat E 1 (constant controller)	Thermostat E 3 (three-point controller)
Operating voltage:	24 V AC/DC ($\pm 20\%$), 50/60 Hz, 2.5 VA	24 V AC ($\pm 20\%$), 50/60 Hz, 2.5 VA
Output voltage:	0-10 V DC	24 V AC
Output current:	y_1/y_2 : max. 2 each load > 5kOhm	nominal 0.5 (max. 0.9) A, each actuat. outp.
- Connection EMO:	EMO 1 max. 2 x 4 pieces	EMO 3 max. 10 pieces, EMOT/EMOtec max. 2x2 pcs
- Fuse protection:	secured against short-circuits	fine-wire fuse 5 x 20 mm, 4 A FF
Setting value range:	10°C–30°C (50°F–86°F) anti-frost position $\leq 6^\circ\text{C}$	10°C–30°C (50°F–86°F) anti-frost position $\leq 6^\circ\text{C}$
- Setback (X_t):	X_t = dead zone (X_{tn}) ± 4 K	X_t = dead zone (X_{tn}) ± 4 K
Operating modes:	Heating and/or cooling	Heating or cooling with three-point controller heating and/or cooling with PWM controller
Control behaviour:	P or PI controller (parametrically adjustable)	P or PI controller (parametrically adjustable)
Control parameter (nonvolatile):	ex works adjustment, setting range	ex works adjustment, setting range
- Controller type:	P controller	PI controller
- Proportional range (x_p):	5 K; 2–22 K	5 K; 2–22 K
- Dead zone (X_m):	0.4 K; 0.4–5.5 K	0.4 K; 0.4–5.5 K
- Adjustment time (T_n):	0.0 (= off), 6–60 min. (= PI controller)	30 min; 0(=off), 6–60 min. (=PI controller)
- Period (T_p) or running time (T_r) actuator:	–	20 min; 0,5–20 min.
- Zero (nullification):	0; 10 to 30 °C (50 to 86 °F)	0; 10 to 30 °C (50 to 86 °F)
Run time limit (T_m):	–	3x running time actuator (T_r) (with 3-point controller)
Type of protection / class of protection:	IP 30 acc. EN 60529/III acc. IEC 536	IP 30 acc. EN 60529/III acc. IEC 536
CE certification (EMC / L.T.):	EN 55081-1-2 and EN 50082-1/EN 60730-1	EN 55081-1-2 and EN 50082-1/EN 60730-1
Ambient temperature:	0°C to 50°C (32°F to 113°F) in operation	0°C to 50°C (32°F to 113°F) in operation
Housing, color:	Plastic, white RAL 9010/socket black	Plastic, white RAL 9010/socket black
Connection cross-section:	screw terminals, max. 1 mm ²	screw terminals, max. 1 mm ²
Installation:	Fastened to the wall or on recessed box	Fastened to the wall or on recessed box

1 mm = 0,0394 inch

Article numbers

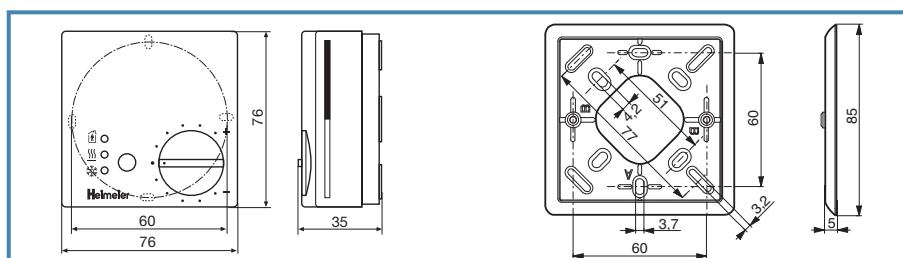
1960-01.500

1980-01.500

Accessories

Intermediate plate white, RAL 9010 for installation of the Thermostat E on recessed (concealed) boxes.
Article number: **1960-01.433**

Dimensions



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