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**E+E ELEKTRONIK®**
*Ges.m.b.H.*

# EE10-T

EE10 is dedicated for accurate room temperature (T) measurement in residential and commercial HVAC.

For model EE10-M3, the measured data is available either on the analogue output or on the BACnet MS/TP or Modbus RTU interface, as well as on the optional display.

The EE10-M7 features a passive output and can be fitted with a wide choice of temperature sensors.

The stylish enclosure is available in several colors and in two sizes according to regional standards.

The back cover, which contains only the screw terminals, can be mounted and wired first. The front cover containing the electronics can be simply snapped onto the back cover right before commissioning. Thus the active part of the device is not exposed to construction site pollution and can be replaced without tools within seconds.

**EE10**

## Typical Applications

**Building automation**
**Indoor climate control**

## Features

**High accuracy and long term stability**
**Fast and easy installation**
**Modbus, BACnet, analogue or passive outputs**

## Technical Data

### Measured values

**Temperature**

| | |
|---|---|
| Accuracy[1] at 20 °C (68 °F) and $U_v$=24 V DC | ±0.3 °C (±0.54 °F) |

### Output

| | | |
|---|---|---|
| **Analogue** | 0-10 V | -1 mA < $I_L$ < 1 mA |
| | 4-20 mA (two wires) | $R_L$ < ($U_v$-10)/0.02 < 500 Ohm |
| **Digital Interface** | RS485 with max. 32 devices on one bus | |
| Protocol | Modbus RTU or BACnet MS/TP | |
| **Temperature passive** | please see ordering guide | |

### General

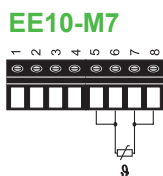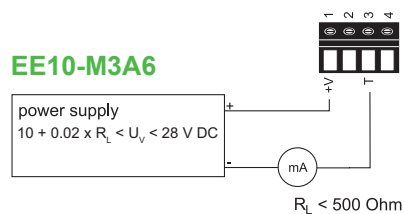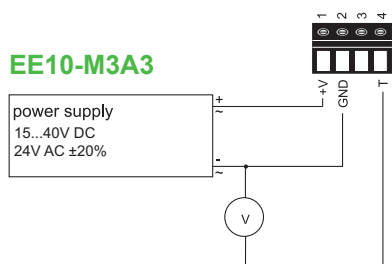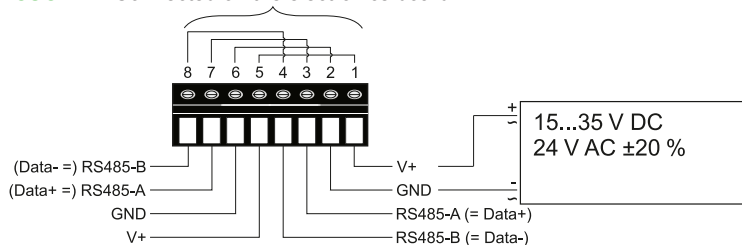| | |
|---|---|
| Voltage supply ($U_v$) | |
| 0 - 10 V | 15 - 40 V DC or 24 V AC ±20% |
| 4 - 20 mA | 10 + 0.02 x $R_L$ < $U_v$ < 28 V DC   ($R_L$ < 500 Ohm) |
| RS485 | 15 - 35 V DC or 24 V AC ±20% |
| Current consumption | |
| Analogue | for DC supply: typ. 4 mA / for AC supply: typ. 15 mA$_{eff}$ |
| Digital | for DC supply typ. 11 mA / for AC supply: typ. 30 mA$_{eff}$ |
| Electrical connection | screw terminals max. 1.5 mm$^2$ (AWG 16) |
| Housing (polycarbonate) | US Version: UL94V-0 approved / EU Version: UL94HB approved |
| Protection class | IP30 |
| CE compatibility according | EN61326-1 |
| | EN61326-2-3 |
| Temperature working range | -5...55 °C (23...131 °F) |
| Temperature storage range | -25...60 °C (-13...140 °F) |

1) The accuracy statement includes the uncertainty of the factory calibration with an enhancement factor k=2 (2-times standard deviation). The accuracy was calculated in accordance with EA-4/02 and with regard to GUM (Guide to the Expression of Uncertainty in Measurement).

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# Connection Diagram

**EE10-M3A3**

power supply
15...40V DC
24V AC ±20%

**EE10-M3A6**

power supply
$10 + 0.02 \times R_L < U_V < 28$ V DC

$R_L < 500$ Ohm

**EE10-M7**

**EE10-M3J3**    Connected on the electronics board.

(Data- =) RS485-B
(Data+ =) RS485-A
GND
V+

V+
GND
RS485-A (= Data+)
RS485-B (= Data-)

15...35 V DC
24 V AC ±20 %

The bus address can be set with
DIP-Switches on the electronics board.

**Screw terminals appropriate for daisy-chain wiring**

# Enclosure
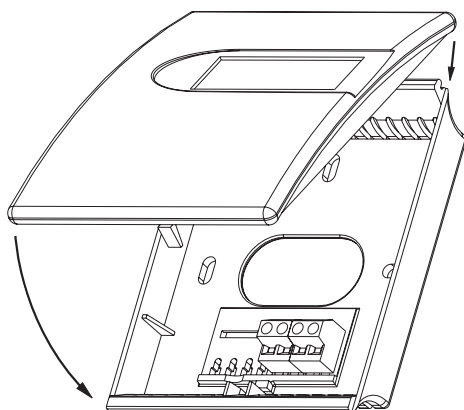
**Dimensions:**

EU: W x H x D = 85 x 100 x 26 mm (3.3 x 3.9 x 1")
US: W x H x D = 85 x 136 x 26 mm (3.3 x 5.4 x 1")

**Colour:**

EU-Standard, US:
Front cover: signal white RAL9003
Back cover: light grey RAL7035

EU-Grey:
Front and back cover: anthracite grey RAL7016

EU-Silver:
Front and back cover: white aluminum RAL9006

# Scope of Supply

- EE10 sensor according ordering guide
- Mounting material
- Test report according DIN EN10204 - 2.2 (for EE10-T)
- Quick user guide (for digital output only)

# Ordering Guide

| | | | EE10- | |
|---|---|---|---|---|
| **Model** | Temperature active | | M3 | |
| | Temperature passive | | | M7 |
| **Output** | 0-10 V | | A3 | |
| | 4-20 mA | | A6 | |
| | RS485 | | J3 | |
| **T-sensor passive**[1] | Pt 100 DIN A | | | TP1 |
| | Pt 1000 DIN A | | | TP3 |
| | NTC 10k ±1%, $B_{25/100}$ = 3950K | | | TP5 |
| | NTC 1.8k | | | TP7 |
| | Ni1000, TK6180 | | | TP9 |
| | NTC 10k ±0.5%, $B_{25/50}$ = 3950K | | | TP11 |
| | NTC 10k ±1%, $B_{25/85}$ = 3435K | | | TP14 |
| **Display** | without display | | no code | |
| | with display | | D1 | |
| **Enclosure** | EU-Standard (RAL9003 / RAL7035) | | no code | no code |
| | EU-Grey (RAL7016) | | CH74 | CH74 |
| | EU-Silver (RAL9006) | | CH93 | CH93 |
| | US (RAL9003 / RAL7035) | | RG2 | RG2 |

**Output Setup**

**Analogue A3, A6**

| | | EE10- | |
|---|---|---|---|
| **Temperature Unit** | T [°C] | no code | |
| | T [°F] | MB2 | |
| **Scale T low** | 0 | no code | |
| | value[2] | SBL value | |
| **Scale T high** | 50 | no code | |
| | value[2] | SBH value | |

**Digital J3**

| | | EE10- | |
|---|---|---|---|
| **Protocol** | Modbus RTU[3] | P1 | |
| | BACnet MS/TP[4] | P3 | |
| **Unit** | metric-SI | no code | |
| | non-metric | U2 | |
| **Baud rate** | 9600 (usual for Modbus) | BD5 | |
| | 19200 | BD6 | |
| | 38400 (usual for BACnet) | BD7 | |
| | 57600[5] | BD8 | |
| | 76800[5] | BD9 | |

1) T sensor details at www.epluse.com/R-T_Characteristics. For other passive T sensors please contact E+E.
2) -5 °C (23 °F) < Scale T low < 20 °C (68 °F).     25 °C (77 °F) < Scale T high < 55 °C (131 °F).     Scale T high – Scale T low > 20 °C (68 °F).
3) Factory setting: Even Parity, Stopbits 1.     Modbus Map see User Guide at www.epluse.com/ee10
4) Factory setting: No parity, Stopbits 1.     Product Implementation Conformance Statement (PICS) available at www.epluse.com/ee10
5) Only for BACnet MS/TP

# Order Example

### EE10-M3A3D1

| | |
|---|---|
| Model: | Temperature active |
| Output: | 0-10 V |
| Display: | with display |
| Enclosure: | EU-Standard (RAL9003 / RAL7035) |
| Temperature Unit: | °C |
| Scale T low: | 0 °C |
| Scale T high: | 50 °C |

### EE10-M7TP1

| | |
|---|---|
| Model: | Temperature passive |
| T-sensor passive: | Pt 100 DIN A |
| Enclosure: | EU-Standard (RAL9003 / RAL7035) |

### EE10-M3J3P3BD7

| | |
|---|---|
| Model: | Temperature active |
| Output: | RS485 |
| Display: | without display |
| Enclosure: | EU-Standard (RAL9003 / RAL7035) |
| Protocol: | BACnet MS/TP |
| Unit: | metric-SI |
| Baud rate: | 38400 |