

EE10

Humidity and Temperature Room Sensors

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

The RH and T measured data is available either on two analogue outputs, or on a BACnet or Modbus RTU interface. A version with analogue RH and passive T output is also available. The measured data corresponding to the active outputs can be read locally on the optional display.

Additional physical quantities are available on the Modbus RTU and BACnet MS/TP interface: absolute humidity, mixing ratio, enthalpy, frost point temperature and water vapor partial pressure.

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 or analogue outputs

Technical Data

Measured values

Relative Humidity

Working range 0...95 % RH

Accuracy¹⁾ at 20 °C (68 °F) and $U_v=24$ V DC

Analogue (0-10 V, 4-20 mA)

±2 % RH (40...60 % RH)

±3 % RH (10...90 % RH)

Digital (RS485)

±3 % RH (30...70 % RH)

±5 % RH (10...90 % RH)

Temperature dependence

typical 0.06 % RH / °C (0.03 % RH / °F)

Temperature

Accuracy¹⁾ at 20 °C (68 °F) and $U_v=24$ V DC

output A3: ±0.25 °C (±0.45 °F)

output A6: ±0.4 °C (±0.72 °F)

output J3: ±0.3 °C (±0.54 °F)

Output

Analogue

(RH: 0...100 % RH / T: see ordering guide)

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

Protocol

RS485 with max. 32 devices on one bus

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

$10 + 0.02 \times R_L < U_v < 28$ V DC ($R_L < 500$ Ohm)

RS485

15 - 35 V DC or 24 V AC ±20%

Current consumption

Analogue (0-10 V, 4-20 mA)

for DC supply: typ. 4 mA / for AC supply: typ. 15 mA_{eff}

Digital (RS485)

for DC supply: typ. 9 mA / for AC supply: typ. 20 mA_{eff}

Electrical connection

screw terminals max. 1.5 mm² (AWG 16)

Housing (polycarbonate)

US Version: UL94V-0 approved / EU Version: UL94HB approved

Protection class

IP30

Display

for EE10-M1

Humidity / Temperature alternating

for EE10-M6

Humidity

CE compatibility according

EN61326-1

EN61326-2-3



Temperature working range

-5...55 °C (23...131 °F)

Temperature storage range

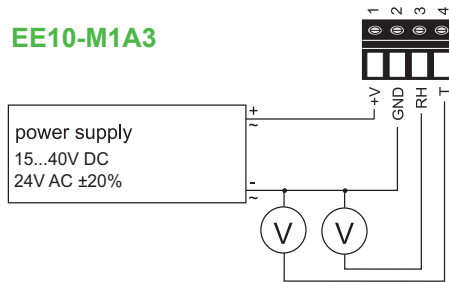
-25...60 °C (-13...140 °F)

¹⁾ Traceable to intern. standards, administrated by NIST, PTB, BEV...

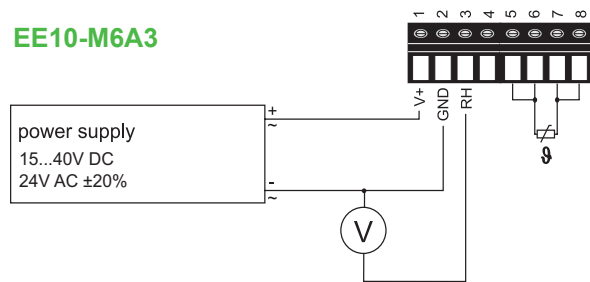
The accuracy statement includes the uncertainty of the factory calibration with an enhancement factor k=2 (2-times standard deviation). The accuracy was calculated in accordance with EA-4/02 and with regard to GUM (Guide to the Expression of Uncertainty in Measurement).

Connection Diagram

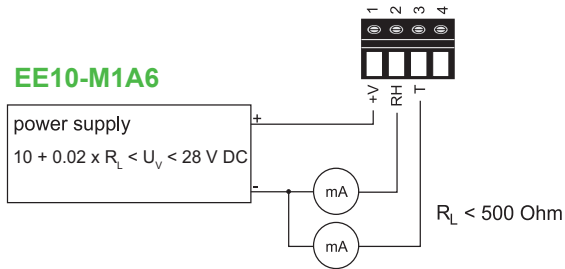
EE10-M1A3



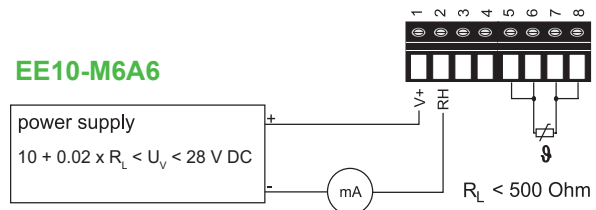
EE10-M6A3



EE10-M1A6

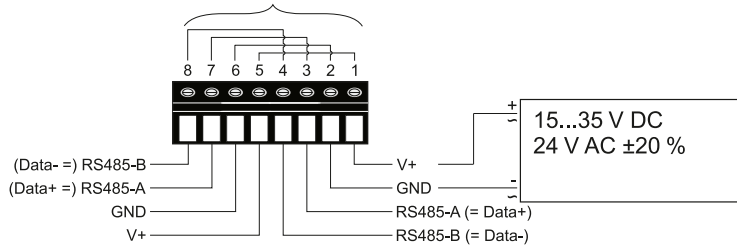


EE10-M6A6



EE10-M1J3

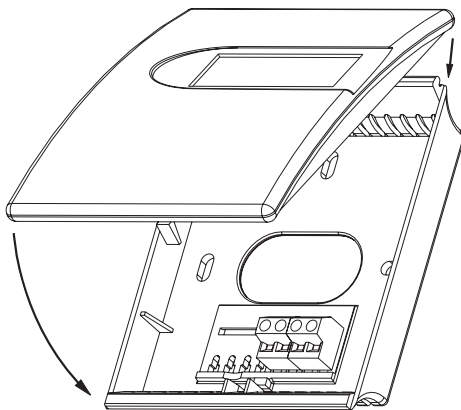
Connected on the electronics board.



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 to ordering guide
- Mounting materials
- Test report according to DIN EN10204 - 2.2
- Quick user guide (for digital output only)

Ordering Guide

			EE10-
	Model	Humidity + Temperature Humidity + Temperature passive	M1 M6
	Output	0-10 V 4-20 mA RS485	A3 A6 J3
	T-sensor passive¹⁾	none Pt 100 DIN A Pt 1000 DIN A NTC 10k ±1%, B _{25/100} = 3950K NTC 1.8k Ni1000, TK6180 NTC 10k ±0.5%, B _{25/50} = 3950K NTC 10k ±1%, B _{25/85} = 3435K	no code TP1 TP3 TP5 TP7 TP9 TP11 TP14
	Display	without display with display	no code D1
	Enclosure	EU-Standard (RAL9003 / RAL7035) EU-Grey (RAL7016) EU-Silver (RAL9006) US (RAL9003 / RAL7035)	no code CH74 CH93 RG2
Output Setup	Temperature Unit	T [°C] T [°F]	no code MB2
	Scale T low	0 value ²⁾	no code SBL value
	Scale T high	50 value ²⁾	no code SBH value
	Protocol	Modbus RTU ³⁾ BACnet MS/TP ⁴⁾	P1 P3
	Unit	metric-SI non-metric	no code U2
	Baud rate	9600 (usual for Modbus) 19200 38400 (usual for BACnet) 57600 ⁵⁾ 76800 ⁵⁾	BD5 BD6 BD7 BD8 BD9

- 1) Only with output A3 and A6. 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 Examples

EE10-M1A3D1

Model: Humidity + Temperature
 Output: 0-10 V
 T-sensor passive: none
 Display: with display
 Enclosure: EU-Standard (RAL9003 / RAL7035)
 Temperature Unit: °C
 Scale T low: 0 °C
 Scale T high: 50 °C

EE10-M1J3P3BD7

Model: Humidity + Temperature
 Output: RS485
 T-sensor passive: none
 Display: without display
 Enclosure: EU-Standard (RAL9003 / RAL7035)
 Protocol: BACnet MS/TP
 Unit: metric-SI
 Baud rate: 38400

EE10-M6A6TP3

Model: Humidity + Temp. passive
 Output: 4-20 mA
 T-sensor passive: Pt 1000 DIN A
 Display: without display
 Enclosure: EU-Standard (RAL9003 / RAL7035)