

# 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	
Accuracy <sup>1)</sup> at 20 °C (68 °F) and U <sub>v</sub> =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

Accuracy <sup>1)</sup> at 20 °C (68 °F) and U <sub>v</sub> =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

<b>Analogue</b>	0-10 V	-1 mA < I <sub>L</sub> < 1 mA
(RH: 0...100 % RH / T: see ordering guide)	4-20 mA (two wires)	R <sub>L</sub> < (U <sub>v</sub> -10)/0.02 < 500 Ohm
<b>Digital Interface</b>	RS485 with max. 32 devices on one bus	
Protocol	Modbus RTU or BACnet MS/TP	
<b>Temperature passive</b>	please see ordering guide	

#### General

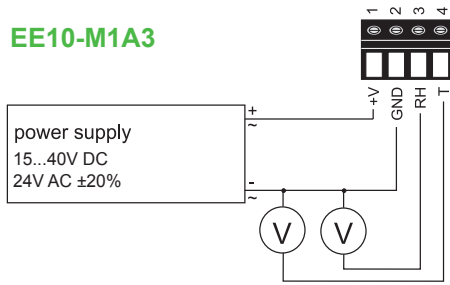
Voltage supply (U <sub>v</sub> )	15 - 40 V DC or 24 V AC ±20%	
0 - 10 V	10 + 0.02 x R <sub>L</sub> < U <sub>v</sub> < 28 V DC (R <sub>L</sub> < 500 Ohm)	
4 - 20 mA	15 - 35 V DC or 24 V AC ±20%	
RS485		
Current consumption	for DC supply: typ. 4 mA / for AC supply: typ. 15 mA <sub>eff</sub>	
Analogue (0-10 V, 4-20 mA)	for DC supply: typ. 9 mA / for AC supply: typ. 20 mA <sub>eff</sub>	
Digital (RS485)	screw terminals max. 1.5 mm <sup>2</sup> (AWG 16)	
Electrical connection	US Version: UL94V-0 approved / EU Version: UL94HB approved	
Housing (polycarbonate)	IP30	
Protection class	for EE10-M1 Humidity / Temperature alternating	
Display	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)	



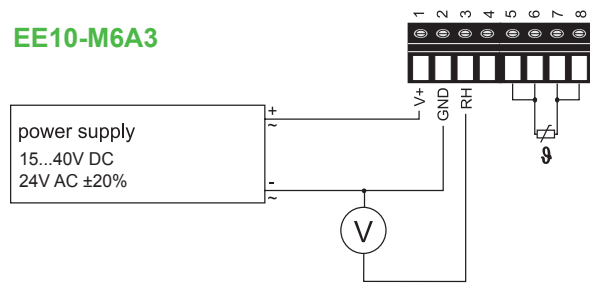
1) Traceable to intern. standards, administrated by NIST, PTB, BEV...  
 The accuracy statement includes the uncertainty of the factory calibration with an enhancement factor k=2 (2-times standard deviation). The accuracy was calculated in accordance with EA-4/02 and with regard to GUM (Guide to the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

## Connection Diagram

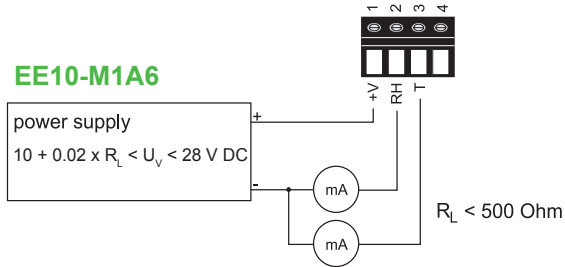
**EE10-M1A3**



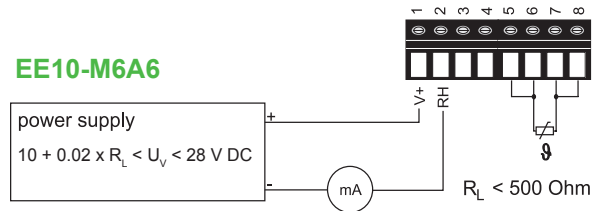
**EE10-M6A3**



**EE10-M1A6**

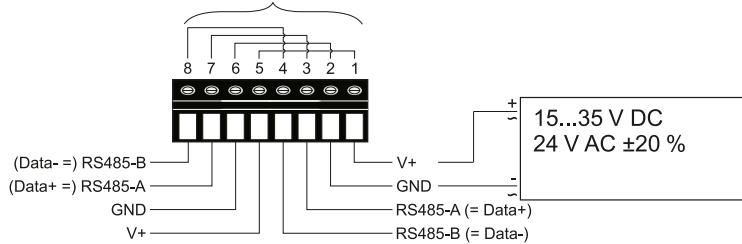


**EE10-M6A6**



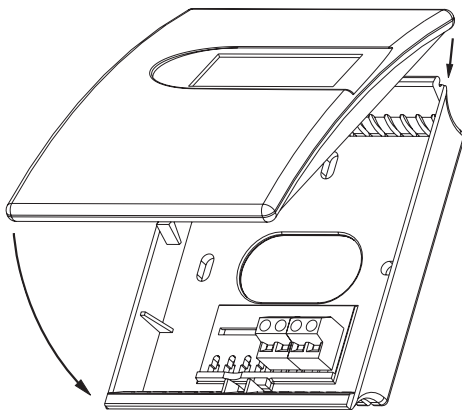
**EE10-M1J3**

Connected on the electronics board.



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

1) Only with output A3 and A6. T sensor details at [www.epluse.com/R-T\\_Characteristics](http://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](http://www.epluse.com/ee10)  
 4) Factory setting: No Parity, Stopbits 1. Product Implementation Conformance Statement (PICS) available at [www.epluse.com/ee10](http://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-M6A6TP3

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

### 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