

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 ¹⁾ 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

Accuracy ¹⁾ 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	0-10 V	-1 mA < I _L < 1 mA
(RH: 0...100 % RH / T: see ordering guide)	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	

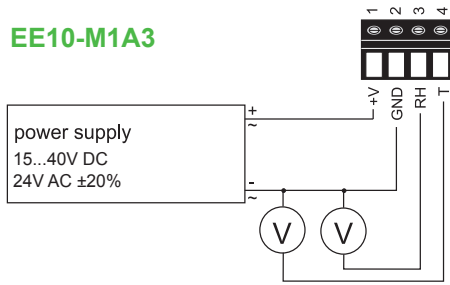
General

Voltage supply (U _v)	15 - 40 V DC or 24 V AC ±20%	
0 - 10 V	10 + 0.02 x R _L < U _v < 28 V DC (R _L < 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 _{eff}	
Analogue (0-10 V, 4-20 mA)	for DC supply: typ. 9 mA / for AC supply: typ. 20 mA _{eff}	
Digital (RS485)	screw terminals max. 1.5 mm ² (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)	

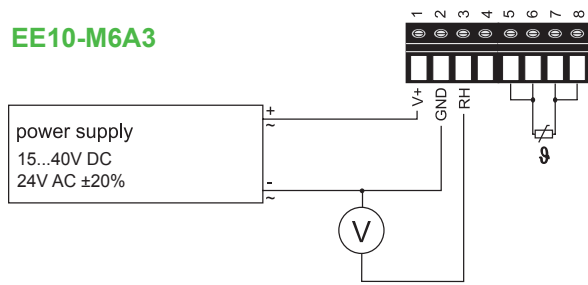
1) Traceable to intern. standards, administrated by NIST, PTB, BEV...
The accuracy statement includes the uncertainty of the factory calibration with an enhancement factor k=2 (2-times standard deviation). The accuracy was calculated in accordance with EA-4/02 and with regard to GUM (Guide to the Expression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

Connection Diagram

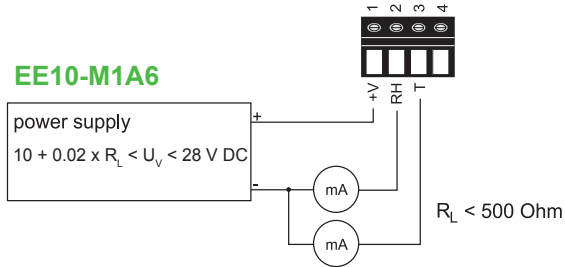
EE10-M1A3



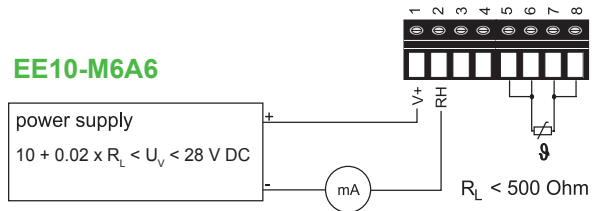
EE10-M6A3



EE10-M1A6

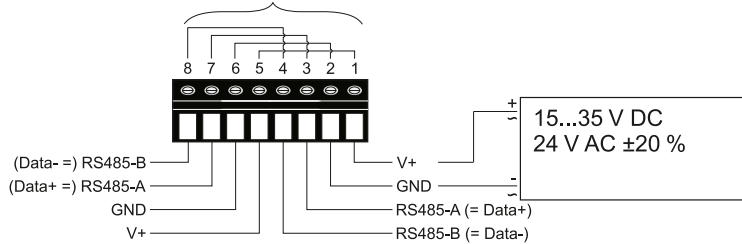


EE10-M6A6



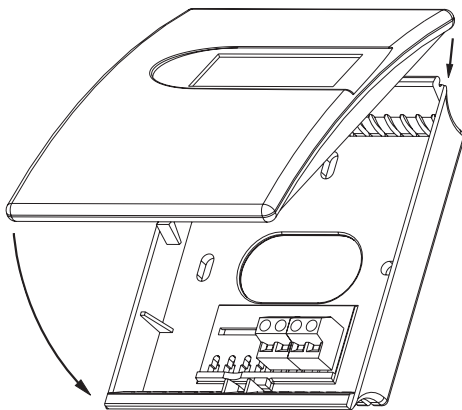
EE10-M1J3

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-	
	Model	Humidity + Temperature	M1	
		Humidity + Temperature passive ¹⁾	M6	
	Output	0-10 V	A3	
		4-20 mA	A6	
		RS485	J3	
	T-sensor passive¹⁾	none	no code	
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		
Display	without display	no code		
	with display	D1		
	EU-Standard (RAL9003 / RAL7035)	no code		
Enclosure	EU-Grey (RAL7016)	CH74		
	EU-Silver (RAL9006)	CH93		
	US (RAL9003 / RAL7035)	RG2		
Output Setup	Analogue M1A3, M1A6	Temperature Unit	T [°C] T [°F]	no code MB2
		Scale T low	0 value ²⁾	no code SBL value
	Digital J3	Scale T high	50 value ²⁾	no code SBH value
		Protocol	Modbus RTU ³⁾ BACnet MS/TP ⁴⁾	no code P3
	Unit	metric-SI	no code	
		non-metric	U2	
		Baud rate	9600 (usual for Modbus) 19200	no code BD6
			38400 (usual for BACnet) 57600 ⁵⁾ 76800 ⁵⁾	BD7 BD8 BD9

1) Not with RS485 output (J3) / T-Sensor details see www.epluse.com/R-T_Characteristics

2) The output scale must include 20...25 °C (max. range -5...55 °C (23...131 °F), min. difference between low and high 20 °C / 36 °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-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