

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. 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 colours 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.



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, typ.	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 (2-wire)	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	

General

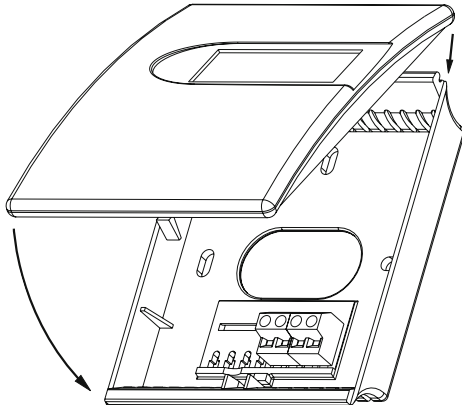
Voltage supply (U _v), class III 	15 - 40 V DC ²⁾ or 24 V AC ±20%	
0 - 10 V	10 + 0.02 x R _L < U _v < 28 V DC (R _L < 500 Ohm)	
4 - 20 mA	15 - 35 V DC ²⁾ or 24 V AC ±20%	
RS485		
Current consumption, typ.		
Analogue (0 - 10 V, 4 - 20 mA)	DC supply: 4 mA / AC supply: 15 mA _{rms}	
Digital (RS485)	DC supply: 9 mA / AC supply: 20 mA _{rms}	
Electrical connection	Screw terminals max. 1.5 mm ² (AWG 16)	
Enclosure (polycarbonate)	US Version: UL94V-0 approved / EU Version: UL94HB approved	
Protection rating	IP30	
Display	Humidity / Temperature alternating	
Electromagnetic compatibility	EN 61326-1	EN 61326-2-3 Industrial Environment
	FCC Part 15	ICES-003 Class B
		
Temperature working range	-5...55 °C (23...131 °F)	
Temperature storage range	-25...60 °C (-13...140 °F)	

1) Traceable to international 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).

2) USA & Canada: class 2 supply required, max. supply voltage 30 V

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 EN 10204-2.2
- Quick user guide (for digital output only)

Ordering Guide

			EE10-	
	Model	Humidity + Temperature	M1	
	Output	0 - 10 V	A3	
		4 - 20 mA RS485	A6 J3	
	Display	Without display	no code	
		With display	D1	
Enclosure	EU-Standard (RAL9003/RAL7035)		no code	
	EU-Grey (RAL7016)		CH74	
	EU-Silver (RAL9006)		CH93	
	US (RAL9003/RAL7035)		RG2	
Output Setup	Temperature Unit	T [°C]	no code	
		T [°F]	MB2	
	Scale T low	0	no code	
		Value ¹⁾	SBLValue	
	Scale T high	50	no code	
		Value ¹⁾	SBHValue	
	Protocol	Modbus RTU ²⁾		P1
		BACnet MS/TP ³⁾		P3
	Unit	Metric (SI)		no code
		Non-metric US/GB		U2
Baud rate	9600 (usual for Modbus)		BD5	
	19200		BD6	
	38400 (usual for BACnet)		BD7	
	57600 ⁴⁾		BD8	
	76800 ⁴⁾		BD9	

1) -5 °C (23 °F) < Scale T low < 20 °C (68 °F).

2) Factory setting: Even Parity, Stopbits 1.

3) Factory setting: No Parity, Stopbits 1.

4) Only for BACnet MS/TP

25 °C (77 °F) < Scale T high < 55 °C (131 °F). Scale T high – Scale T low > 20 °C (68 °F).

Modbus Map see User Guide at www.epluse.com/ee10

Product Implementation Conformance Statement (PICS) available at www.epluse.com/ee10

Order Examples

EE10-M1A3D1

Model:	Humidity + Temperature
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-M1J3P3BD7

Model:	Humidity + Temperature
Output:	RS485
Display:	Without display
Enclosure:	EU-Standard (RAL9003/RAL7035)
Protocol:	BACnet MS/TP
Unit:	Metric (SI)
Baud rate:	38400