

EE160

HVAC Humidity and Temperature Sensor

The EE160 is optimized for cost effective, accurate measurement of relative humidity (RH) and temperature (T) in building automation.

Reliable

Best long-term stability even in polluted or aggressive environment is ensured by the encapsulated measurement electronics inside the probe and E+E proprietary protection of the sensing element.

Versatile

The measured data is available on two voltage or current (2-wire) outputs, or on the RS485 interface with BACnet MS/TP or Modbus RTU protocol. Additionally, the EE160 features a passive T output.

Functional Design

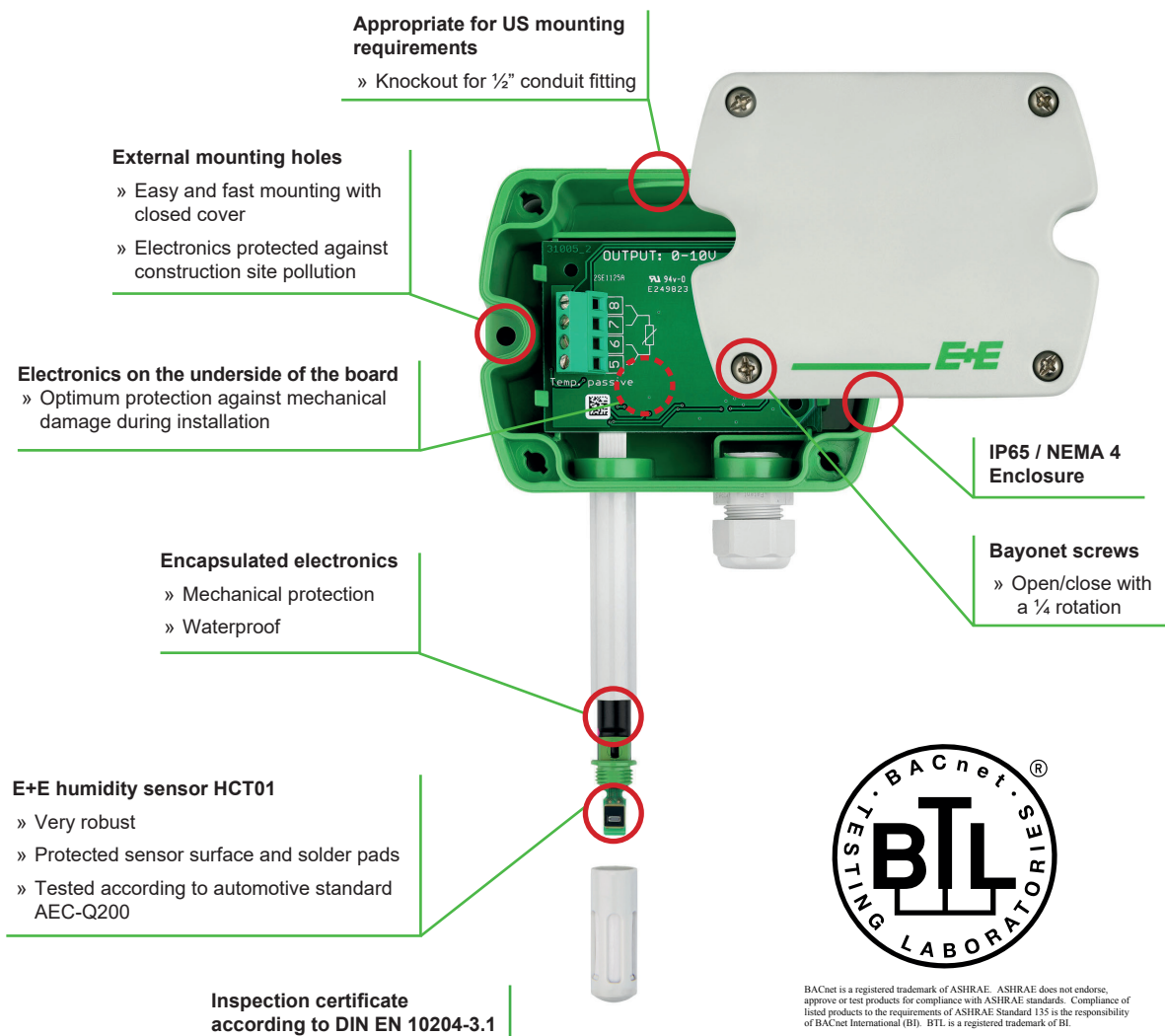
EE160 is available for wall or duct mount. The IP65 / NEMA 4 enclosure minimizes installation costs and provides outstanding protection against contamination and condensation.

Comfortable Configuration and Adjustment

With an optional configuration adapter and the free EE-PCS Product Configuration Software, the user can set the RS485 interface parameters, the output scaling and perform one or two point adjustment for RH and T.

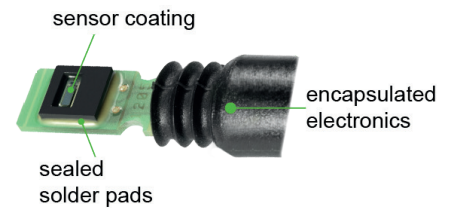


Features



Protective Sensor Coating

The E+E proprietary sensor coating is a hygroscopic layer applied to the HCT01 humidity sensing element. The coating substantially extends sensor life-time and ensures optimal measurement performance in corrosive environment (salts, off-shore applications). Additionally, it improves the long term stability in dusty, dirty or oily applications by preventing stray impedances caused by deposits on the active sensor surface or on the electrical connections.



Technical Data

Measurands

Relative humidity

Accuracy ¹⁾ at 20 °C	±2.5 % RH
Temperature dependency, typ.	±0.03 % RH/°C

Temperature

Accuracy at 20 °C	±0.3 °C (±0.54 °F)
-------------------	--------------------

Outputs

Analogue output	0 - 10 V	0 < I _L < 1 mA or
(RH: 0...100%; T: see ordering guide)	4 - 20 mA (2-wire)	R _L < 500 Ohm

Digital interface	RS485 (EE160 = 1 unit load)
Protocol	Modbus RTU or BACnet MS/TP

Passive T-sensor	4-wire connection, see ordering guide
-------------------------	---------------------------------------

General

Sensing element	E+E HCT01 with E+E proprietary coating
-----------------	--

Power supply	15 - 35 V DC or 24 V AC ±20 %
for 0 - 10 V / RS485	10 V + R _L x 20 mA < U _v < 35 V DC
for 4 - 20 mA	

Current consumption, typ.		4 - 20 mA output	0 - 10 V output	RS485
	24V DC supply	max. 40 mA	5 mA	5 mA
	24V AC supply	-	13 mA _{rms}	15 mA _{rms}

Connection	Screw terminals, max. 1.5 mm ²
------------	---

Housing material	Polycarbonate, UL94V-0 approved
------------------	---------------------------------

Protection class	IP65 / NEMA 4
------------------	---------------

Cable gland	M16x1.5
-------------	---------

Electromagnetic compatibility	EN 61326-1
	EN 61326-2-3



Working range	-40...60 °C (-40...140 °F) / 10...95 % RH
---------------	---

Storage conditions	-20...60 °C (-4...140 °F) / 10...90 % RH, non-condensing
--------------------	--

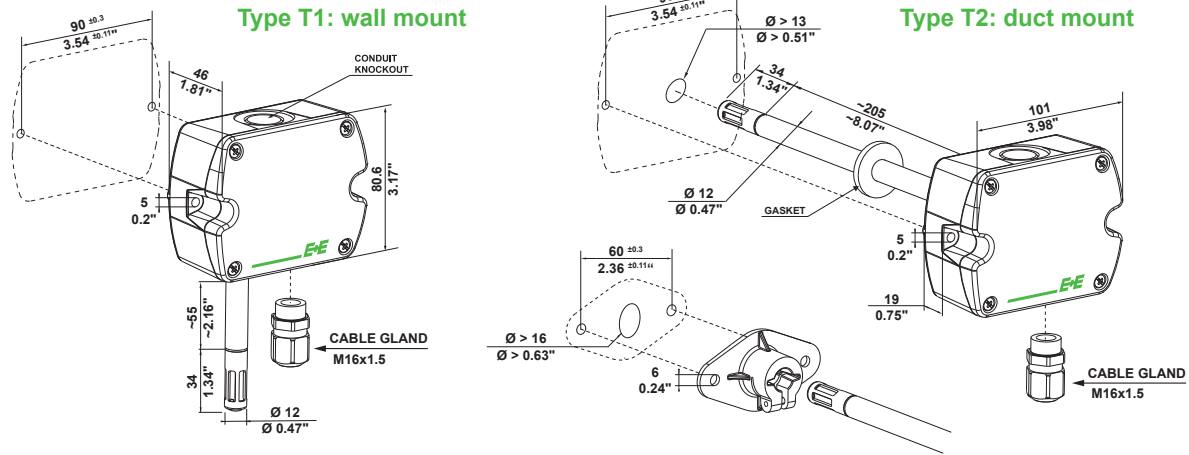
1) Traceable to international standards, administrated by NIST, PTB, BEV,...

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).

Dimensions

Values in mm (inch)



Ordering Guide

		EE160-			
Hardware configuration	Model	RH + T RH + T + T passive	M1	M8	M1
	Type	Wall mount Duct mount	T1 T2		
	Output	0 - 10 V 4 - 20 mA RS485	A3 A6		J3
	T sensor passive ¹⁾	Pt100 DIN A Pt1000 DIN A NTC10k Ni1000, TK6180	TP1 TP3 TP5 TP9		
	Filter	Membrane	no code		
	Setup analogue outputs	Relative humidity	RH, 0...100 %RH	no code	
Temperature ²⁾		T [°C] T [°F]	no code MB2		
Scale T low		-40 Value	no code SBLValue		
Scale T high		60 Value	no code SBHValue		
Setup RS485		Protocol	Modbus RTU ³⁾ BACnet MS/TP ⁴⁾	P1 P3	
	Baud rate	9600 19200 38400 57600 ⁵⁾ 76800 ⁵⁾	BD5 BD6 BD7 BD8 BD9		
	Units ²⁾	Metric (SI) Non-metric (US/GB)	no code U2		

- 1) With Model M8 only / T sensor. Details see www.epluse.com/R-T_Characteristics.
- 2) Can not be changed with EE-PCS.
- 3) Modbus map and configuration guide see user manual or Modbus application note at www.epluse.com/ee160.
- 4) Product Implementation Conformance Statement (PICS) available at www.epluse.com/ee160.
- 5) For BACnet MS/TP only.

Order Examples

EE160-M8T1A6TP1SBL-10SBH50

Model: RH + T + T passive
Type: Wall mount
Output: 4 - 20 mA
Passive T Sensor: Pt100 DIN A
Filter: Membrane
Output RH: 0...100 %RH
Output T: T [°C]
Scale T low: -10
Scale T high: 50

EE160-M1T2J3P1BD5U2

Model: RH + T
Type: Duct mount
Output: RS485
Filter: Membrane
Protocol: Modbus RTU
Baudrate: 9600
Units: Non-metric

Accessories (see data sheet „Accessories“)

Product configuration software
Power supply adapter
Protection cap for 12 mm probe
USB configuration adapter for EE160-M1TxJ3 (RS485)
Product configuration adapter for EE160-MxTxAx (analogue output)

EE-PCS (free download: www.epluse.com/EE160)
V03
HA010783
HA011066
see datasheet EE-PCA