

Anexo 2: Características técnicas del sensor de humedad



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EE210

Humidity and Temperature Transmitter for Demanding Climate Control Applications

The EE210 transmitter by E+E Elektronik meets the highest requirements in demanding climate control applications. Besides highly accurate measurement of relative humidity and temperature, EE210 calculates dew point temperature, absolute humidity and mixing ratio.

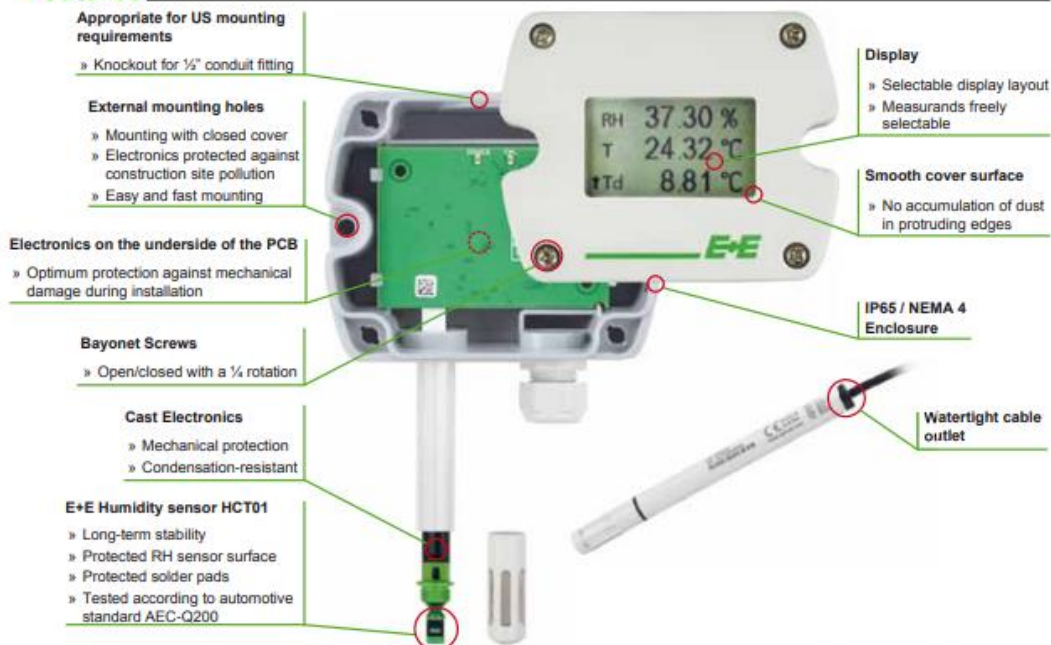
EE210 is available as wall or duct mounted as well as with remote probe. The enclosure minimizes installation costs and provides outstanding protection against contamination and condensation. All measured and calculated values are available on the BACnet MS/TP or Modbus RTU interface; two of the measured and calculated values are available on the analogue voltage or current outputs, while up to three values can be shown simultaneously on the optional display.

Excellent performance of EE210 in polluted, aggressive environment is ensured by the combination of completely protective encapsulated measurement electronics inside the sensing probe and the long-term stable HCT01 sensor with E+E proprietary coating.

With an optional configuration kit the user can set the Modbus interface parameters, the output scaling and perform one or two point adjustment for humidity and temperature.



Features



Applications

- agriculture
- stables, incubators, hatcheries
- green houses
- storage rooms, cooling chambers
- indoor pools
- demanding climate control



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Technical Data

Measured Values

Relative Humidity (RH)

Sensor E+E Sensor HCT01-00D

Working range 0...100% RH

RH accuracy (incl. hysteresis, non-linearity and repeatability)

Wall & duct version:

-15...40°C (5...104°F)	≤90% RH	±(1.3 + 0.003*measured value) % RH
-15...40°C (5...104°F)	>90% RH	± 2.3% RH
-40...60°C (0...140°F)		±(1.5 + 0.015*measured value) % RH

Remote probe version

at 20°C (68°F)

±2.5% RH

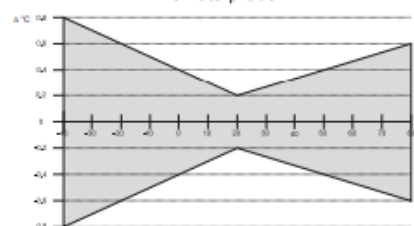
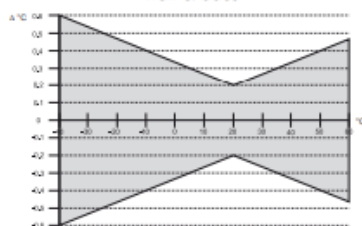
Temperature (T)

Sensor Pt1000 (tolerance class B, DIN EN 60751) integrated in HCT01

T-accuracy

wall & duct

remote probe



Outputs

Analog output

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

0-5 V / 0-10 V

-1 mA < I < 1 mA

4-20 mA (two-wire)

$R_L \leq 500 \Omega$

Digital output

RS485 (BACnet MS/TP or Modbus RTU), max. 32 EE210 in one bus

General

Power supply

for 0-5 V / 0-10 V / RS485

15 - 35V DC¹⁾ or 24V AC ±20%

for 4-20 mA

10V + $R_L \times 20 \text{ mA} < V+ < 30V \text{ DC}$

Current consumption

Voltage output

DC supply typ. 3.3mA; with display typ. 3.6mA

AC supply typ. 34mA; with display typ. 37mA

Current output

DC supply max. 40mA

Digital interface

DC supply typ. 5mA; with display typ. 19mA

AC supply typ. 52mA; with display typ. 118mA

Display

1, 2 or 3 lines, user configurable

Connection

Screw terminals, max. 1.5 mm²

Housing material

Polycarbonate, UL94V-0 (with Display UL94HB) approved

Protection class

IP65 / NEMA 4

Cable gland

M16 x 1.5

Probe cable (type C)

PVC, Ø 4.3mm, 4 x 0.25 mm², Length: 1.5 or 3m (4.9 or 9.8ft)

Sensor protection

E+E Coating

Electromagnetic compatibility

EN61326-1 EN61326-2-3



Temperature ranges

Operating: -40...60°C (-40...140°F) (-40...80°C for remote probe EE210P)

Storage: -40...60°C (-40...140°F)

Temperature ranges with display

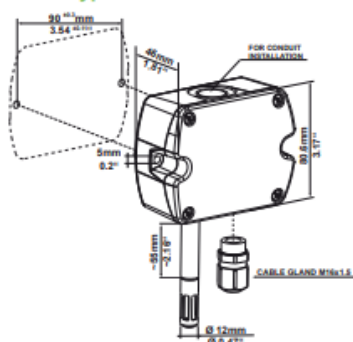
Operating: -20...50°C (-4...122°F) (-40...80°C for remote probe EE210P)

Storage: -20...60°C (-4...140°F)

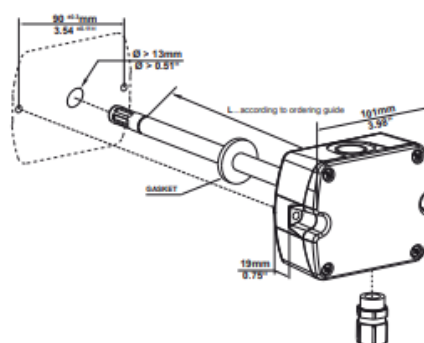
¹ USA & Canada: class 2 supply required, max. supply voltage 30V

Dimensions (mm/inch)

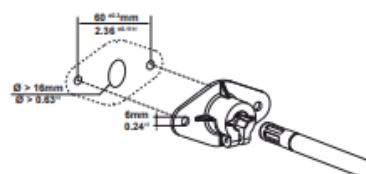
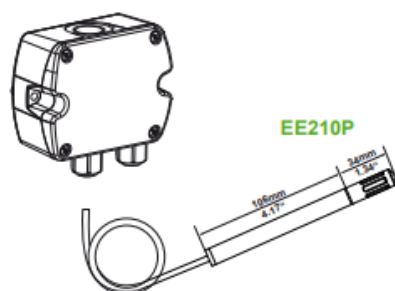
Typ A



Typ B

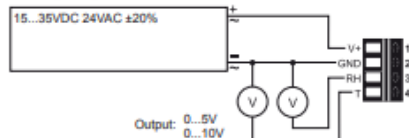


Typ C

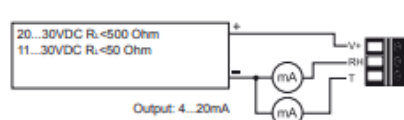


Connection Diagram

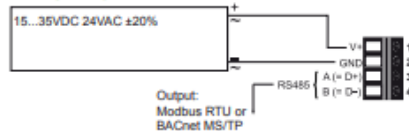
EE210-HT3



EE210-HT6



EE210-HTx3



EE210P remote probe (for HT6/HTx3)



Ordering Guide

MODEL	ANALOGUE ¹⁾	DIGITAL ¹⁾	HOUSING	TYPE	PROBE LENGTH ²⁾	DISPLAY ⁴⁾	FILTER (Type A and B)
humidity + (HT)	0-5V (2)	RS485 (3)	standard (P)	wall mount (A)	50mm (1.97") (B)	display (D)	membrane (B)
temperature	0-10V (3)	none (x)		duct mount (B)	200mm (7.87") (F)	none (x)	stainless steel sintered (D)
	4-20mA (6)			remote probe (C) ²⁾	Type A and C (x)		for type C (x)
	none (x)						
EE210-							

Analogue outputs setup

OUTPUT 1	SCALING 1 ⁵⁾	OUTPUT 2	SCALING 2 ⁵⁾	UNIT
relative humidity ⁶⁾ (Uw)	-40...60 (002)	relative humidity ⁶⁾ (Uw)	-40...60 (002)	metric (M)
temperature (Tx)	-10...50 (003)	temperature (Tx)	-10...50 (003)	non-metric (N)
dew point temperature (TD)	0...50 (004)	dew point temperature (TD)	0...50 (004)	
frost point temperature (TF)	0...100 (005)	frost point temperature (TF)	0...100 (005)	
water vapour partial pressure ⁶⁾ (Ex)	32...122 (076)	water vapour partial pressure ⁶⁾ (Ex)	32...122 (076)	
mixing ratio ⁶⁾ (Rx)	-40...140 (083)	mixing ratio ⁶⁾ (Rx)	-40...140 (083)	
absolute humidity ⁶⁾ (DV)		absolute humidity ⁶⁾ (DV)		
specific enthalpy ⁶⁾ (Hx)		specific enthalpy ⁶⁾ (Hx)		

Digital output setup⁷⁾

PROTOCOL	BAUDRATE	PARITY	STOPBITS	UNIT
Modbus RTU ⁷⁾ (1)	9600 (A)	odd (O)	1 stopbit (1)	metric (M)
BACnet MS/TP ⁸⁾ (3)	19200 (B)	even (E)	2 stopbit (2)	non-metric (N)
	38400 (C)	no parity (N)		
	57600 ⁹⁾ (D)			
	76800 ⁹⁾ (E)			
	115200 ⁹⁾ (F)			

Remote probe for EE210 Type C:

MODEL	CABLE LENGTH	FILTER
humidity + temperature (HT)	1.5 m (4.9 ft) (C)	membrane (B)
	3 m (9.8 ft) (E)	stainless steel sintered (D)
EE210P-		

1) A combination of analog and digital version is not possible.

2) The EE210P probe has to be ordered as separate position; available for 4-20mA and RS485 versions.

3) Selectable probe length only for duct mount version available; see dimensions.

4) Factory setup:

For analogue output versions the display shows the measurands selected for output 1 and output 2.

For digital output versions the display shows RH and T.

5) Factory Scaling

relative humidity	0...100% RH	
water vapour partial pressure	0...200mbar	0...3psi
mixing ratio	0...400g/kg	0...2800gr/lb
absolute humidity	0...150g/m ³	0...60gr/ft ³
specific enthalpy	0...400kJ/kg	0...200BTU/lb

6) For Tx, TD und TF: other scaling upon request!

7) Modbus Map and setup instructions:

See User Guide and Modbus Application Note at www.eplus.com/EE210

8) Product Implementation Conformance Statement (PICS) available at www.eplus.com/EE210

9) Only for BACnet

