

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.



EE210

Features

Appropriate for US mounting requirements

- » Knockout for 1/2" conduit fitting

External mounting holes

- » Mounting with closed cover
- » Electronics protected against construction site pollution
- » Easy and fast mounting

Electronics on the underside of the PCB

- » Optimum protection against mechanical damage during installation

Bayonet Screws

- » Open/closed with a 1/4 rotation

Cast Electronics

- » Mechanical protection
- » Condensation-resistant

E+E Humidity sensor HCT01

- » Long-term stability
- » Protected RH sensor surface
- » Protected solder pads
- » Tested according to automotive standard AEC-Q200

Display

- » Selectable display layout
- » Measurands freely selectable

Smooth cover surface

- » No accumulation of dust in protruding edges

IP65 / NEMA 4 Enclosure

Watertight cable outlet

Applications

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



BACnet is a registered trademark of ASHRAE. ASHRAE does not endorse, approve or test products for compliance with ASHRAE standards. Compliance of listed products to the requirements of ASHRAE Standard 135 is the responsibility of BACnet International (BI). BTL is a registered trademark of BI.

Technical Data

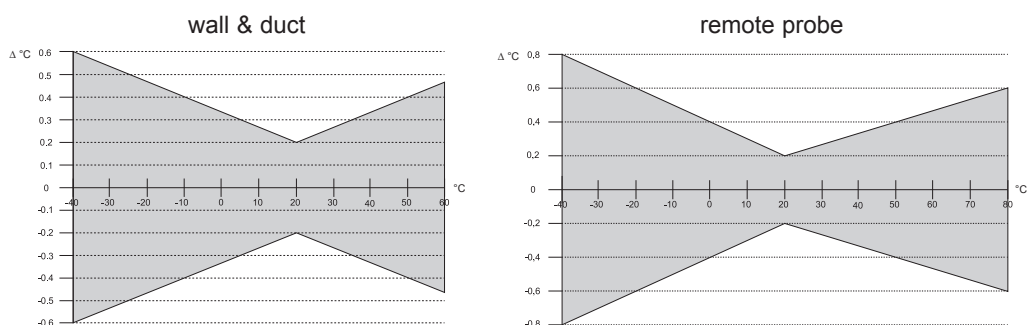
Measured Values

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	



Outputs

Analog output (RH: 0...100%; T: see ordering guide)	0-5 V / 0-10 V -1 mA < I _L < 1 mA 4-20 mA (two-wire) R _L ≤ 500 Ohm
Digital output	RS485 (BACnet MS/TP or Modbus RTU), max. 32 EE210 in one bus

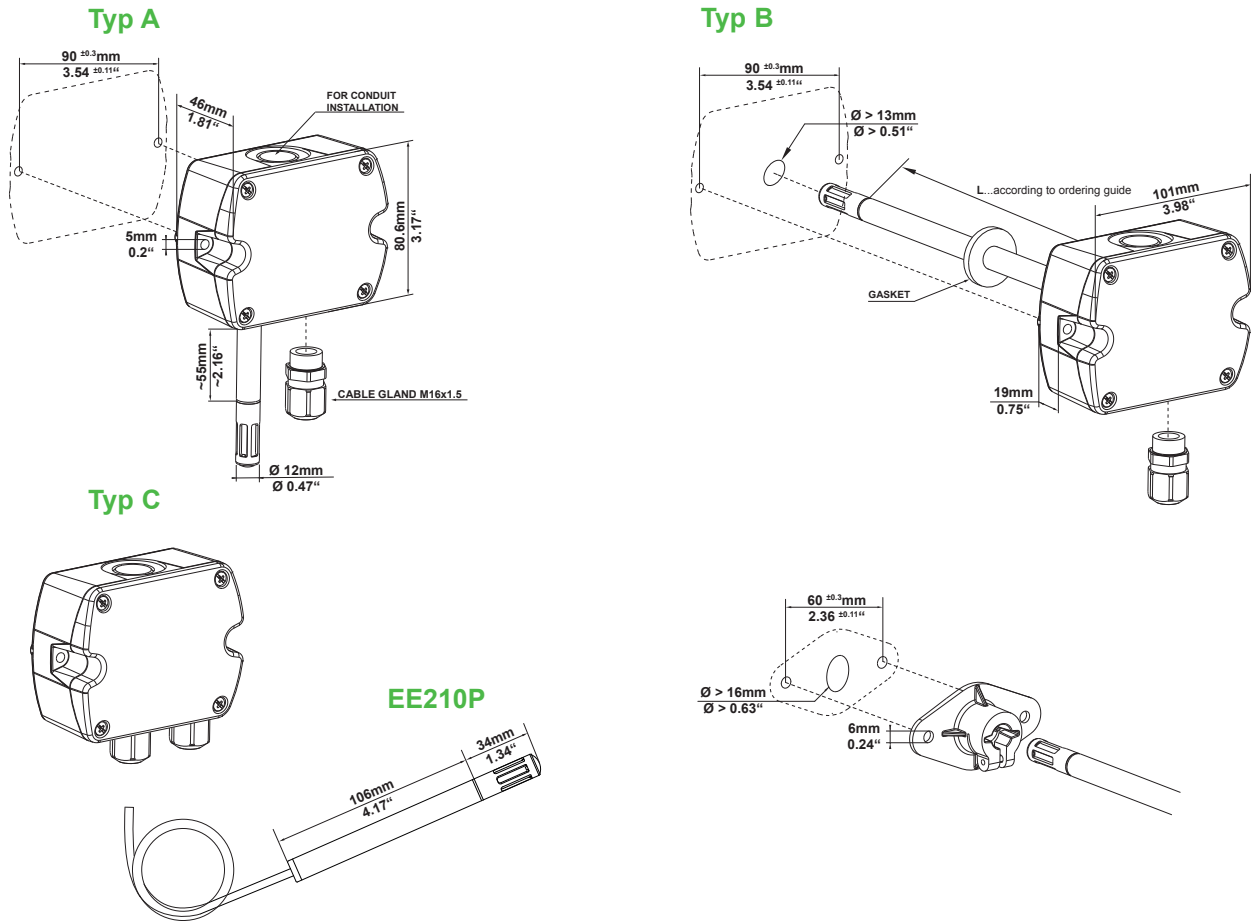
General

Power supply for 0-5 V / 0-10 V / RS485 for 4-20 mA	15 - 35V DC ¹⁾ or 24V AC ±20% 10V + R _L x 20 mA < V ₊ < 30V 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 mm ²
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 mm ² , Length: 1.5 or 3m (4.9 or 9.8ft)
Sensor protection	E+E Coating
Electromagnetic compatibility Industrial Environment	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)



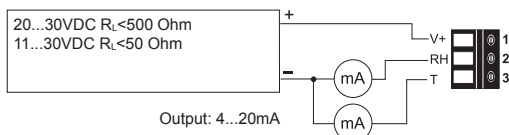
1) USA & Canada: class 2 supply required, max. supply voltage 30V

Dimensions (mm/inch)

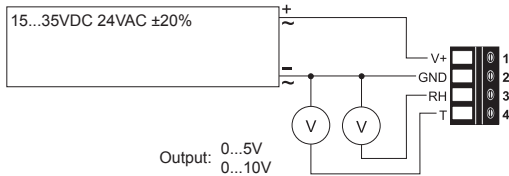


Connection Diagram

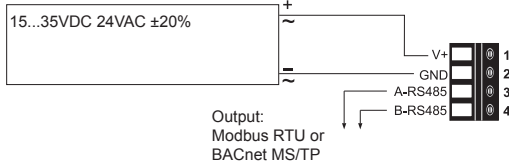
EE210-HT6



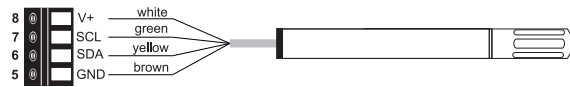
EE210-HT3



EE210-HTx3



EE210P (for EE210-HT6 Type C)



Ordering Guide

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

Analogue outputs setup

OUTPUT 1	SCALING 1 ⁶⁾	OUTPUT 2	SCALING 2 ⁶⁾	UNIT
relative humidity ⁵⁾	(Uw) -40...60 (002)	relative humidity ⁵⁾	(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 ⁵⁾	(Ex) 32...122 (076)	water vapour partial pressure ⁵⁾	(Ex) 32...122 (076)	
mixing ratio ⁵⁾	(Rx) -40...140 (083)	mixing ratio ⁵⁾	(Rx) -40...140 (083)	
absolute humidity ⁵⁾	(DV)	absolute humidity ⁵⁾	(DV)	
specific enthalpy ⁵⁾	(Hx)	specific enthalpy ⁵⁾	(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 38400 57600 ⁹⁾ 76800 ⁹⁾ 115200 ⁹⁾	(B) even (E) (C) no parity (N) (D) (E) (F)	2 stopbit (2)	non-metric (N)

Remote probe for EE210 Type C:

MODEL	CABLE LENGTH	FILTER
humidity + temperature	(HT) 1.5 m (4.9 ft) 3 m (9.8 ft)	(C) membrane (B) (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...425g/kg	0...2900gr/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.epluse.com/EE210

8) Product Implementation conformance Statement (PICS) available at www.epluse.com/EE210

9) Only for BACnet

Order Examples

Type A and B

EE210-HT3xPAxxB-UwTx005M

Model: Humidity+Temperature Transmitter
 Analog output: 0-10V
 Housing: standard
 Type: wall mount
 Display: none
 Filter: membrane

Output scaling 1: relative humidity
 Scaling 1: 0...100% RH
 Output scaling 2: temperature
 Scaling 2: 0...100°C
 Unit: metric

Type C

Position 1:

EE210-HT6xPCxx-UwTx005M

Model: Humidity+Temperature Basic Device
 Analog output: 4-20mA
 Housing: standard
 Type: remote probe (Pos. 2)
 Display: none

Output scaling 1: relative humidity
 Scaling 1: 0...100% RH
 Output scaling 2: temperature
 Scaling 2: 0...100°C
 Unit: metric

Position 2:

EE210P-HTCB

Model: Humidity+Temperature Probe
 Cable length: 1.5 m
 Filter: membrane

Accessories

Product configuration adapter
 Product configuration software
 Power supply adapter

see data sheet EE-PCA

EE-PCS (free download: www.epluse.com/EE210)

V03 (see data sheet Accessories)