EE212-06

Modular Humidity / Temperature Sensor

The EE212 humidity (RH) and temperature (T) sensor with interchangeable sensing module is optimized for demanding climate control applications in most various industries.

Versatility

Besides the accurate RH and T measurement, the sensor calculates various humidity related parameters such as dew point temperature, absolute humidity and mixing ratio.

Outstanding Reliability with Patented Sensor Technology

The E+E sensing element with proprietary coating, the wide choice of filter caps and the IP65 / NEMA 4X enclosure ensure excellent long-term performance of EE212 even under challenging working conditions. Easy on-site replacement of the sensing module minimizes the down-time for maintenance purposes in heavily polluted or aggressive environment.

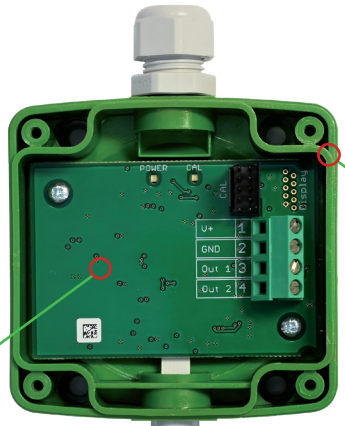
Interchangeable, Robust Sensing Module

The injection-moulded sensing module inside the sensing head is mechanically highly stable, easy to handle and requires no tools for replacement. The electronics inside the module is encapsulated and therefore best protected against condensation.

User Configurable and Adjustable

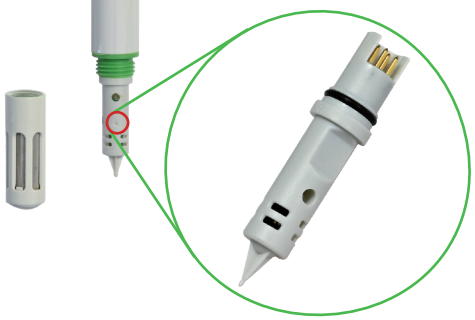
The free EE-PCS Product Configuration Software and an optional adapter cable facilitate EE212 configuration and adjustment.

Features



Enclosure
- » IP65 / NEMA 4X
- » Protection against contamination and condensation
- » Minimal installation costs
- » Type T13 compatible with radiation shield H010501

Electronics on the PCB backside
- » Optimum protection against mechanical damage during installation



EE212M calibrated sensing module
- » State-of-the-art E+E RH / T sensing element with proprietary coating and sealed solder pads
- » Patented sensor technology
- » High mechanical stability
- » Easy handling

Inspection certificate according DIN EN 10204-3.1
Test report according to DIN EN 10204-2.2

Protective Sensor Coating

The E+E proprietary sensor coating is a protective layer applied to the sensing elements, their leads and soldering points. The coating substantially extends sensor lifetime and ensures optimal measurement performance in corrosive environment (salts, off-shore applications). Additionally, it improves the sensors' long term stability in dusty, dirty or oily applications by preventing stray impedance caused by deposits on the active sensor surface or on the electrical connections.

Technical Data

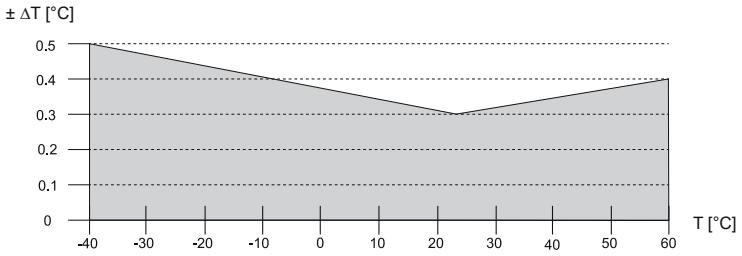
Measured values

Relative Humidity

Working range	0...100 %RH	
Accuracy[1] (incl. hysteresis, non-linearity and repeatability)		
@ 23 °C (73 °F)	±(1.5 + 0.005*mv) %RH	mv = measured value
-15...60 °C (5...140 °F)	±(1.8 + 0.007*mv) %RH	
-40...-15 °C (-40...5 °F)	Additional uncertainty ±0.125 %RH/°C[2]	

Temperature

Accuracy



Calculated parameters

		from		up to		unit	
Dew point temperature	Td	-40	(-40)	60	(140)	°C	(°F)
Frost point temperature	Tf	-40	(-40)	0	(32)	°C	(°F)
Wet bulb temperature	Tw	0	(32)	60	(140)	°C	(°F)
Water vapour partial pressure	e	0	(0)	200	(3)	mbar	(psi)
Mixing ratio	r	0	(0)	160	(1200)	g/kg	(gr/lb)
Absolute humidity	dv	0	(0)	150	(60)	g/m³	(gr/ft³)
Specific enthalpy	h	-40	(-10)	500	(200)	kJ/kg	(BTU/lb)

Outputs

Analogue output	0 - 10 V	-1 mA < I_L < 1 mA
	4 - 20 mA (2-wire)	250 ≤ R_L ≤ 500 Ω

General

Power supply class III [3]	
for 4 - 20 mA (2-wire)	24 V DC ±10 %
for 0 - 10 V	15 - 35 V DC or 24 V AC ±20 %
Current consumption at 24 V	
Voltage output	DC supply max. 12 mA
	AC supply max. 34 mA_{rms}
Current output	
2-wire	DC supply max. 40 mA
3-wire	DC supply typ. 33 mA
	AC supply typ. 65 mA_{rms}
Electrical connection	Screw terminals, max. 1.5 mm^2
Enclosure material	Polycarbonate, UL94HB
Protection rating	IP65 / NEMA 4X
Cable gland	M16 x 1.5

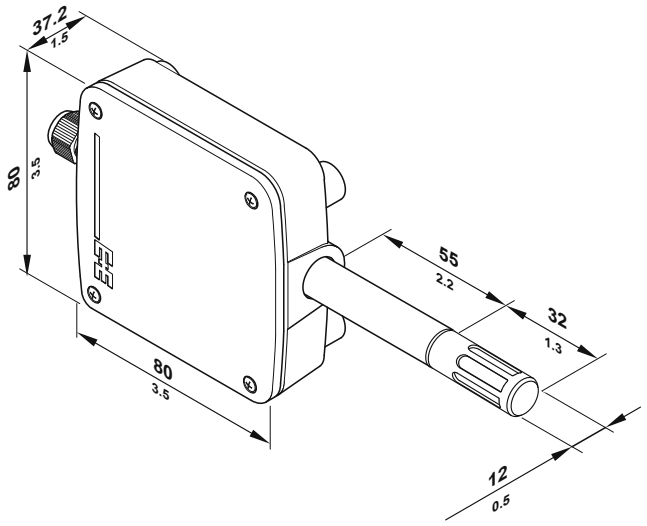
1) Traceable to international standards, administrated by NIST, PTB, BEV,... The accuracy statement includes the uncertainty of the factory calibration with an enhancement factor k=2 (2-times standard deviation). The accuracy was calculated in accordance with EA-4/02 and with regard to GUM (Guide to the Expression of Uncertainty in Measurement). At 24 V DC and RL=250 Ohm for A6 versions.
2) Deviating from -15 °C (5 °F)
3) USA & Canada class 2 supply required, max. supply voltage 30 V DC

Electromagnetic compatibility	EN 61326-1:2013 EN 61326-2-3:2013 Industrial Environment FCC Part15 Class A ICES-003 Class A	UK CA CE
Temperature range	Working: -40...60 °C (-40...140 °F) Storage: -40...60 °C (-40...140 °F)	

Dimensions

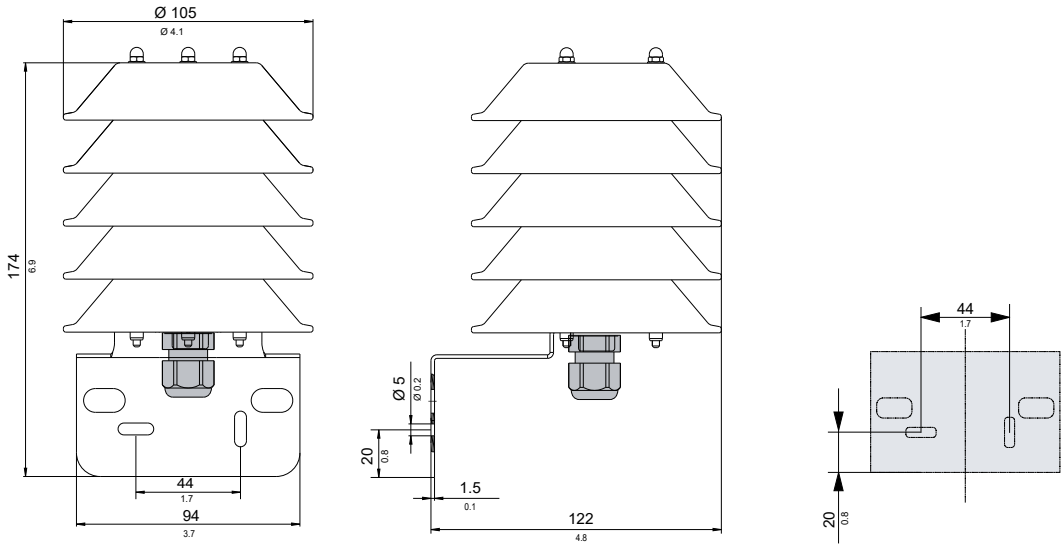
Values in mm (inch)

Type T13



Radiation Shield HA010501 for Type T13

(needs to be ordered separately)



Ordering Guide

			EE212-06
Hardware Config.	**Type**	Outdoor	T13
	Output	0 - 10 V	A3
		4 - 20 mA (2-wire)	A6
	Filter	Metal grid	F3
Setup Analogue Outputs	**Output 1**	Relative humidity RH [%]	no code
		Temperature T [°C]	MA1
		Temperature T [°F]	MA2
		Other measurand (xx see measurand code below)	Mxx
	Scaling 1 low	0	no code
		Value	SAL*Value*
	Scaling 1 high	100	no code
		Value	SAH*Value*
	Output 2	Temperature T [°C]	no code
		Temperature T [°F]	MB2
		Other measurand (xx see measurand code below)	MBxx
	Scaling 2 low	-40	no code
		Value	SBL*Value*
	Scaling 2 high	60	no code
		Value	SBH*Value*

Measurand Code

For Output 1 and 2 in the Ordering Guide

Please note: no mix of SI/US units allowed

Measurand code		MAxx / MBxx
Temperature T	[°C]	1
	[°F]	2
Relative humidity	[%]	10
Water vapor partial pressure e	[mbar]	50
	[psi]	51
Dew point temperature Td	[°C]	52
	[°F]	53
Wet bulb temperature Tw	[°C]	54
	[°F]	55

Measurand code		MAxx / MBxx
Absolute humidity dv	[g/m^3]	56
	[gr/ft^3]	57
Mixing ratio r	[g/kg]	60
	[gr/lb]	61
Specific enthalpy h	[kJ/kg]	62
	[BTU/lb]	64
Frost point temperature Tf	[°C]	65
	[°F]	66

Order Example

EE212-06-T13A6F3SBL-10SBH50

Type:	Outdoor
Output:	4 - 20 mA
Filter:	Metal grid
Output 1:	Relative humidity [%]
Scaling 1:	Low: 0 %RH
	High: 100 %RH
Output 2:	Temperature [°C]
Scaling 2:	Low: -10 °C
	High: 50 °C

Ordering Guide EE212M Sensing Module (Spare Part)

			EE212M-
	Packaging	Single packed	PK4
		Multipackage (Tray)[1)]	PK6

1) Minimum order quantity: 10 pcs

Order Examples Sensing Module

EE212M-PK4
Packaging: Single packed

Accessories

(For further Information, see datasheet "Accessories")

USB Configuration Adapter	HA011066
Product Configuration Software	EE-PCS (free download: www.epluse.com/configurator)
Radiation shield for EE212 Outdoor (Type T13)	HA010501
Power supply adapter	V03
Protection cap for 12 mm probe	HA010783