EE100Ex

Intrinsically Safe Humidity and Temperature Sensor

The EE100Ex intrinsically safe sensor measures reliably relative humidity (RH) and temperature (T) in explosion hazard areas. It complies with the ATEX (Europe) and IECEx (international) classifications for application in gas up to Zone 1.

Measurement Performance

With its very robust sensing head, the proprietary sensor protection and encapsulated measurement electronics inside the probe, the EE100Ex stands for best accuracy and long term stability over the working range 0…100 % RH and -40…60 °C (-40...140 °F).

Reliable in Harsh Environment

The entire device can be placed in explosion hazardous area. Due to the rugged metal IP65 enclosure and the choice of filter caps, the EE100Ex performs reliably in a wide range of demanding applications such as utility tunnels, hazardous storage rooms or pharmaceutical industries.

Power Supply and Outputs

The device can be powered by any intrinsically safe power source or via Zener barriers. Beside RH and T, the EE100Ex calculates the dew point (Td) and frost point (Tf) temperature. The measured data is available on two galvanic isolated 4…20 mA, 2-wire outputs.

Typical Applications

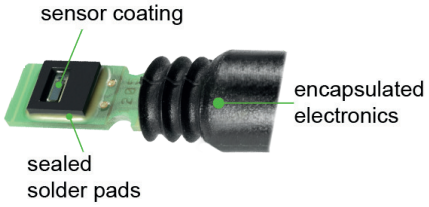
Explosive, hazardous storage rooms
Utility tunnels
Pharmaceutical industry

Features

Approved for gas installation in Zone 1
Robust sensing head
IP 65 aluminum enclosure
Inspection certificate according to DIN EN 10204 - 3.1

Protective Sensor Coating

The E+E proprietary sensor coating is a permeable layer applied to the active surface of the RH sensing element. The coating extends substantially the life-time and the measurement performance of the E+E sensor in corrosive environment. Additionally, it improves the long term stability in dusty and dirty applications by preventing stray impedances caused by deposits on the active sensor surface.



Ex - Classifications

Europe (ATEX)

Certificate:	TPS 19 ATEX 038892 0008 X by TÜV SÜD Product Service GmbH
Safety data:	U_i = 28V; I_i = 100mA; P_i = 700mW; C_i = 2.2nF; L_i ≈ 0mH
Ex-Designation:	II 2G Ex ia IIB T4 Gb

International (IECEx)

Certificate:	IECEx TPS 18.0014 X by TÜV SÜD Product Service GmbH
Safety data:	U_i = 28 Vdc; I_i = 100mA; P_i = 700mW; C_i = 2.2nF; L_i ≈ 0mH
Ex-Designation:	Ex ia IIB T4 Ta = -40°C to 60°C Gb

Technical Data

Measurands

Relative Humidity

Measurement range	0...100 % RH		
Accuracy[1]	20...30 °C (68...86 °F)	RH ≤ 90 %	±2 % RH
(incl. hysteresis, non-linearity and repeatability)	20...30 °C (68...86 °F)	RH > 90 %	±3 % RH
	-20...40 °C (-4...104 °F)		±3 % RH

Temperature

Measurement range	-40...60 °C (-40...140 °F)
Accuracy at 20 °C (68 °F)	±0.2 °C (±0.36 °F)
Calculated parameters[2]	Dew point temperature [Td] Frost point temperature [Tf]

Output

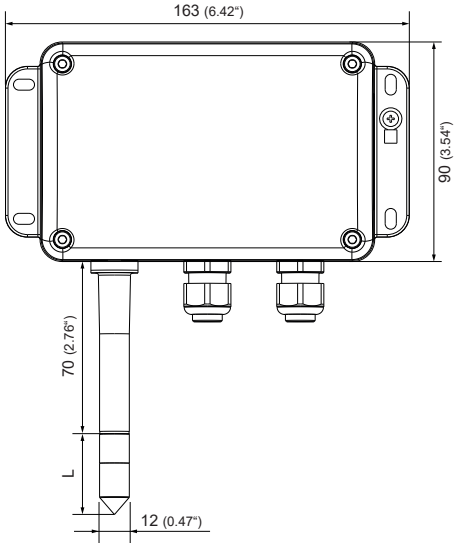
Analogue outputs	2 x 4...20 mA, 2-wire, configurable

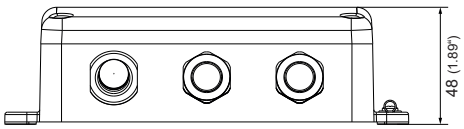
General

Supply voltage U_V	
From intrinsically safety barrier	11 V + R_L * 0.02 A < Uv < 28 V DC (R_L = load resistor)
Safety factors	Ui=28V; Ii=100mA; Pi=700mW; Ci = 2.2nF; Li ≈ 0mH
Electrical connection	Screw terminals, max. 1.5 mm²
Cable glands	M16 x 1.5, brass, nickel plated
Protection class	IP65
Temperature ranges	
Operation	-40...60 °C (-40...140 °F)
Storage	-20...60 °C (-4...140 °F)
Material	
Enclosure	Aluminium (Al Si9 Cu3)
Probe	ABS
Safety area installation	EPL:Gb (Gas - Zone 1)
Ex Certificates	ATEX II 2G Ex ia IIB T4 Gb IECEx Ex ia IIB T4 Ta = -40°C to 60°C Gb
Electromagnetic compatibility according	EN61326-1 EN61326-2-3 Industrial Environment

1) Traceable to intern. 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) For the accuracy please use "E+E humidity calculator" or refer to document "Principles of humidity measurement", available on www.epluse.com

Dimensions in mm (inches)





L = filter cap	Length in mm
Membrane filter	34 (1.4")
Stainless steel sinter filter	33 (1.3")
PTFE filter	33 (1.3")

Ordering Guide

			EE100Ex-
Hardware	**Type**	wall mount	**T1**
	Filter	membrane	**F2**
		stainless steel sintered	**F4**
		PTFE	**F5**
	Electrical connection	one cable gland M16 x 1.5	**E29**
		two cable gland M16 x 1.5	**E22**
	Ex-Approval	ATEX and IECEx	**EX8**
Software	**Measurand output 1**[1)]	relative humidity RH [%]	**MA10**
		temperature T [°C]	**MA1**
		temperature T [°F]	**MA2**
		dew point Td [°C]	**MA52**
		dew point Td [°F]	**MA53**
		frost point Tf [°C]	**MA65**
		frost point Tf [°F]	**MA66**
	Scaling out 1 low	value	**SAL value**
	Scaling out 1 high	value	**SAH value**
	Measurand output 2	relative humidity RH [%]	**MB10**
		temperature T [°C]	**MB1**
		temperature T [°F]	**MB2**
		dew point Td [°C]	**MB52**
		dew point Td [°F]	**MB53**
		frost point Tf [°C]	**MB65**
		frost point Tf [°F]	**MB66**
	Scaling out 2 low	value	**SBL value**
	Scaling out 2 high	value	**SBH value**

1) Assign the most relevant measurand parameter to output 1. Output 1 must always be connected.

Order Example

EE100Ex-T1F2E22EX8MA10SAL0SAH100MB1SBL0SBH50

Type:	wall mount
Filter:	membrane
Electrical Connection:	two cable glands M16 x 1.5
Ex-Approval:	ATEX and IECEx
Measurand output 1:	relative humidity RH [%]
Scaling out 1 low:	0
Scaling out 1 high:	100
Measurand output 2:	temperature [°C]
Scaling out 2 low:	0
Scaling out 2 high:	50

Accessories

Sealing plug for unused cable glands	HA011402
Protection cap for 12 mm probe	HA010783