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Datasheet HTP201

Humidity and Temperature Probe with Analogue Outputs

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HTP201

Humidity and Temperature Probe with Analogue Outputs

With its outstanding price performance ratio, HTP201 is the perfect solution for cost effective and reliable measurement of relative humidity (RH) and temperature (T) in most various industries.

Outstanding Measurement Performance with Patented Sensor Technology

The E+E RH/T sensing element with proprietary protection and sealed solder pads ensures excellent long-term performance of the HTP201 over the entire working range and even in dusty and dirty environment. Innovative PCB design inside the probe reduces self-heating relevantly.

Versatility and Robustness

Excellent protection against external influences is ensured by the combination of completely encapsulated electronics and the long-term stable E+E RH/T sensing element. Its IP65 stainless steel or polycarbonate enclosure and integrated cable or a threaded connector make it a versatile probe tackling even challenging applications.

Analogue Outputs

The RH and T measured data is available on two analogue outputs for voltage (0 - 1 V, 0 - 5 V or 0 - 10 V) or current (4 - 20 mA). In addition, the HTP201 has a passive T output (4-wire), a wide temperature and supply voltage range, making it a universally applicable probe.

HTP201 voltage version with stainless steel enclosure and stainless steel sinter filter

HTP201 current version with cable, polycarbonat enclosure and metal grid filter

Measurement performance

- High RH / T accuracy
- Excellent long term stability
- Wide T range: - 40...+80 °C (- 40...+176 °F)
- T compensation
- Very low self-heating

Mechanical construction

- Stainless steel or polycarbonate enclosure
- Encapsulated electronics
- IP65

E+E RH / T sensing element

- Protected by E+E proprietary coating
- Patented sensor technology
- Sealed solder pads
- Very robust

Outputs

- Two analogue outputs
- 0 - 1 / 5 / 10 V
- 4 - 20 mA
- T passive output optional

Connection

- M12x1 Connector
- Flexible cable with
  1.5 / 3 / 5 m (4.9 / 9.8 / 16.4 ft)

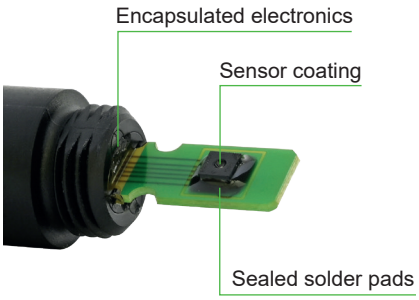
Inspection certificate

According DIN EN 10204-3.1

Features

Protective Sensor Coating

The E+E proprietary sensor coating is a protective layer applied to the active surface of the sensing element. 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.



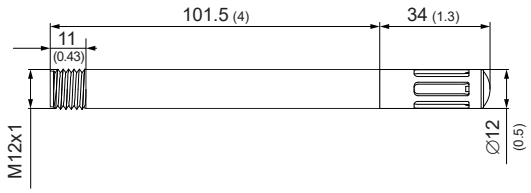
Sensing head with sensor coating and underfiller

Dimensions

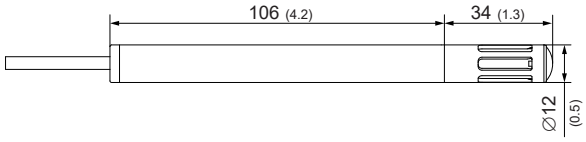
Values in mm (inch)

Voltage versions

With connector (Type E9)

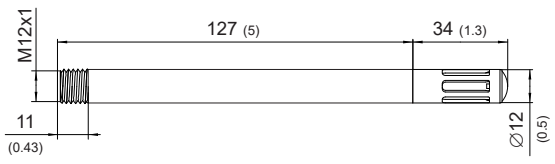


With cable (Type E8)

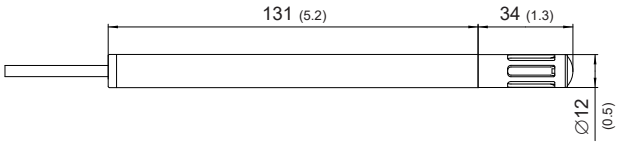


Current versions

With connector (Type E9)



With cable (Type E8)



Technical Data

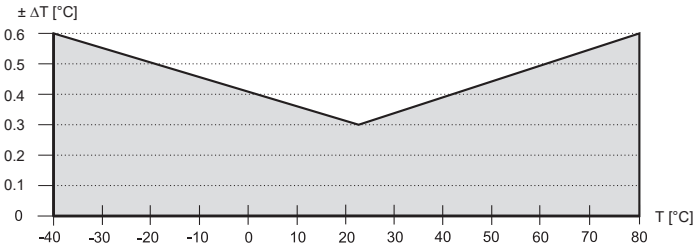
Measurands

Relative humidity (RH)

Measuring range	0...100 %RH
Accuracy[1)] @ 24 V DC, air velocity >0.2 m/s (>39 ft/min), incl. hysteresis, non-linearity and repeatability, current version R_L=250 Ω	
23 °C (0…100 %RH)	±2.5 %RH
0…40 °C (0…100 %RH)	±3 %RH
-20…80 °C (0…100 %RH)	±4 %RH
-40…-20 °C (0…100 %RH)	±5 %RH

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).

Temperature (T)

Measuring range	-40...+80 °C (-40...+176 °F)
Accuracy Incl. hysteresis, non-linearity and repeatability	

Outputs

Analogue

RH 0...100 % **T -40...+60/80 °C** (see ordering guide)			
Output	0 - 1 V	(-0.1 mA < I_L < 0.1 mA)	
Output	0 - 5 V	(-0.2 mA < I_L < 0.2 mA)	
Output	0 - 10 V	(-1.0 mA < I_L < 1.0 mA)	I_L = load current
Output	4 - 20 mA (2-wire)	R_L ≤ 500 Ω	R_L= load resistance

T Sensor Passive

With Model M6 only (RH + T passive)	4-wire-connection, T sensor according to ordering guide

Technical Data

General

Power supply class III USA & Canada: Class 2 supply necessary, max. voltage 30 V DC	
Output 0 - 1 V	3.6 - 30 V DC
Output 0 - 5 V	10 - 30 V DC
Output 0 - 10 V	15 - 30 V DC
Output 4 - 20 mA	9 V + R_L * 20 mA < V+ < 28 V DC — R_L= load resistance
Current consumption, typ.	
Voltage versions	1.5 mA
Current versions	According to output current
Electrical connection	
Plug versions	Plug M12x1, 4 poles
Cable versions	Cable 1.5 m (4.9 ft) / 3 m (9.8 ft) / 5 m (16.4 ft), PVC Ø4.3 mm, 4 x 0.25 mm² for RH + T with voltage output Ø4.3 mm, 3 x 0.25 mm² for RH + T with current output Ø4.8 mm, 6 x 0.14 mm² for RH + T passive with current output
Storage conditions	-40...+80 °C (-40...+176 °F) 0...95 %RH, non-condensing
Material	
Enclosure	Polycarbonate (PC) or stainless steel 1.4404
Probe cable (cable versions)	Polyvinyl chloride (PVC)
Protection rating	IP65
Electromagnetic compatibility[1)]	EN 61326-1 EN 61326-2-3 Industrial environment FCC Part15 Class B ICES-003 Class B
Shock and vibration	Tested according to EN 60068-2-64 and EN 60068-2-27
Conformity	CE UKCA

1) Analogue output 0 - 1 V is not protected against surge.

Ordering Guide

	Feature	Description	Code		
			HTP201-		
Hardware configuration	Model	RH + T	M1		-
		RH + T passive	-		M6
	Enclosure	Polycarbonate (PC)	No code		
		Stainless steel	HS2	-	-
	Analogue output	0 - 1 V	A1	-	-
		0 - 5 V	A2	-	-
		0 - 10 V	A3	-	-
		4 - 20 mA	-	A6	A6
	T sensor passive	Pt100 DIN A	-	-	TP1
		Pt1000 DIN A	-	-	TP3
		NTC10k, B3950 K	-	-	TP5
	Filter	Membrane, polycarbonate body	No code		
		Metal grid, polycarbonate body	F3		
		Stainless steel sintered	F4		
		Stainless steel - metal grid	F9	-	-
	Electrical connection	Cable	E8		
		M12 connector, 4 poles	E9		-
	Connection cable length[1)]	1.5 m (4.9 ft)	KL150		
		3 m (9.8 ft)	KL300		
		5 m (16.4 ft)	KL500		
T scale	T scaling low	-40 °C	No code		
	T scaling high	60 °C	No code		
		80 °C	SBH80		

1) Only in combination with the cable version

Order Example

HTP201-M1A3E8KL150

Feature	Code	Description
Model	M1	RH + T
Enclosure	No code	Polycarbonate (PC)
Analogue output	A3	0 - 10 V
Filter	No code	Membrane, polycarbonate body
Electrical connection	E8	Cable
Connection cable length	KL150	1.5 m (4.9 ft)
T scaling low	No code	-40 °C
T scaling high	No code	60 °C

Order Example

HTP201-M1HS2A1F9E9SBH80

Feature	Code	Description
Model	**M1**	RH + T
Enclosure	**HS2**	Stainless steel
Analogue output	**A1**	0 - 1 V
Filter	**F9**	Stainless steel - metal grid
Electrical connection	**E9**	M12 connector, 4 poles
T scaling low	**No code**	-40 °C
T scaling high	**SBH80**	80 °C

Accessories

For further information see datasheet Accessories.

Accessories	Code
M12x1 connector, 4 pole socket, for self assembly	**HA010707**
Connection cable, 5 pole, M12x1 plug / socket, shielded, 2 m (6.6 ft) / 5 m (16.4 ft) /10 m (32.8 ft)	**HA010816/HA010817/HA010818**
Connection cable, 5 pole, M12x1 socket / free ends, shielded, 1.5 m (4.9 ft) / 5 m (16.4 ft) / 10 m (32.8 ft)	**HA010819/HA010820/HA010821**
Plastic mounting flange Ø12 mm (0.47") black	**HA010214**
Stainless steel flange Ø12 mm	**HA010201**
Wall mounting clip Ø12 mm (0.47")	**HA010211**
Stainless steel wall mounting clip Ø12 mm (0.47")	**HA010225**
Protection cap for Ø12 mm (0.47") probe	**HA010783**
Radiation shield with fixed clamping ring (M20x1.5)	**HA010502**

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