E+E

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technology.

Datasheet HTP501

Digital Humidity and Temperature Probe up to 120 °C (248 °F)

Modbus

www.epluse.com

HTP501

Digital Humidity and Temperature Probe up to 120 °C (248 °F)

The HTP501 is ideal for reliable and cost effective measurement of relative humidity (RH) and temperature (T) in demanding industrial process control applications. Besides the measurement of RH and T, the HTP501 calculates all humidity related physical quantities like dew point temperature (Td), absolute humidity (dv) or mixing ratio (r).

Outstanding Measurement Performance

The probe employs a high end E+E humidity sensing element which stands for high RH measurement accuracy over the entire T working range -40...120 °C (-40...248 °F). The E+E proprietary coating of the sensing element leads to exceptional long term stability even in harsh environment.

Versatile and Robust

With its stainless steel probe, protected electronics, IP66 rating and filter caps choice, the HTP501 is suitable for a wide range of demanding applications.

RS485 Interface

The measured data is available on the RS485 interface with Modbus RTU protocol via flexible high temperature cable with moulded M12 connector.

Configurable and Adjustable

The free PCS10 Product Configuration Software and the optional adapter facilitate the setup and adjustment of the HTP501.

HTP501

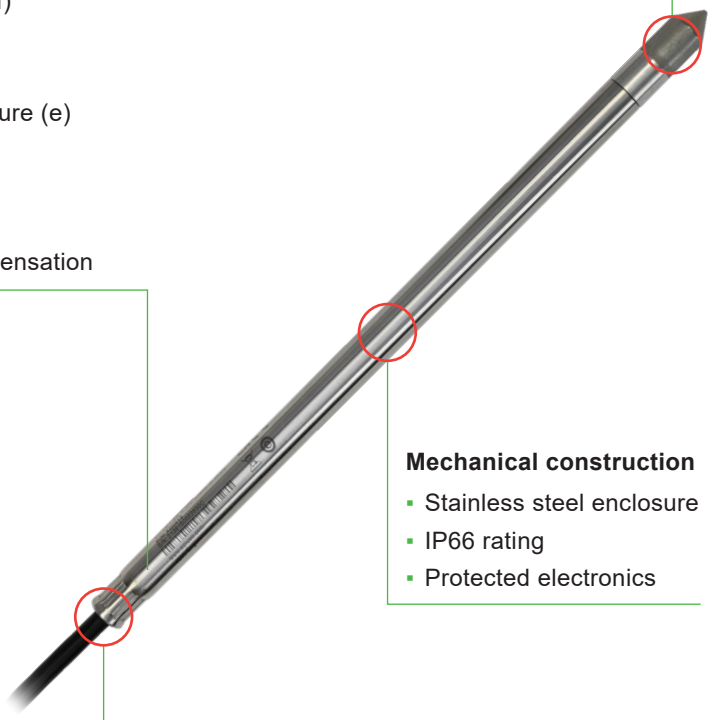
Features

Measurement Performance

- High RH / T accuracy
- Wide T range: - 40...120 °C (- 40...248 °F)
- Temperature compensation
- Calculated parameters
  - Dew point temperature (Td)
  - Frost point temperature (Tf)
  - Wet bulb temperature (Tw)
  - Ice bulb temperature (Ti)
  - Water vapour partial pressure (e)
  - Mixing ratio (r)
  - Absolute humidity (dv)
  - Specific enthalpy (h)
- Configurable pressure compensation

RH and T sensing head

- Very robust
- Protected by E+E proprietary coating
- Optional sensor leads protection
- Outstanding long term stability
- Wide choice of filter caps



Mechanical construction

- Stainless steel enclosure
- IP66 rating
- Protected electronics

Interface and connection

- RS485 with Modbus RTU
- Moulded M12x1 connector
- Flexible high temperature cable
- User configurable and adjustable
- Free configuration software

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 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.

Sensor Leads Protection

In certain very aggressive applications, the combination of sensor coating and additional protection of the sensing element leads can significantly extend the service life of the sensor. Please contact your E+E representative for details.

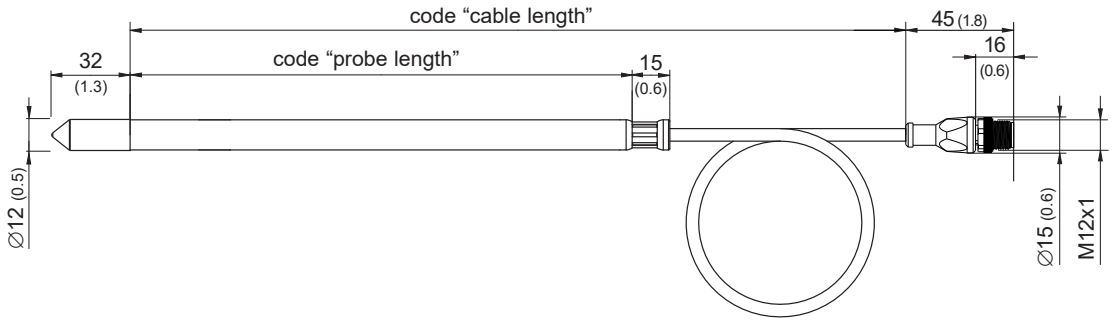
E+E Modular Sensor Platform

The HTP501 is compatible with the Sigma 05 host device of the E+E Modular Sensor Platform. Together they become a versatile, plug-and-play RH/T sensor with interchangeable probe, analogue outputs and optional display. Besides HTP501, Sigma 05 accommodates also other E+E intelligent sensing probes.
See www.epluse.com/sigma05 for further details.

Sigma 05 with HTP501

Dimensions

Values in mm (inch)



Technical Data

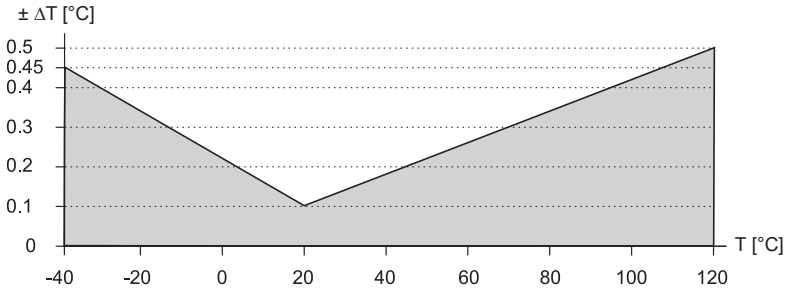
Measurands

Relative humidity (RH)

Measuring range	0...100 %RH		
Accuracy[1]			
-15...+40 °C (5…104 °F)	(RH ≤ 90 %)	±(1.3 + 0.003*mv) %RH	
-15...+40 °C (5…104 °F)	(RH > 90 %)	±2.3 RH	
-25...+70 °C (-13…+158 °F)		±(1.4 + 0.01*mv) %RH	
-40...120 °C (-40…+248 °F)		±(1.5 + 0.015*mv) %RH	mv = measured value
Response time t_{90} @ 20 °C (68 °F)	<15 s		

1) Including hysteresis, non-linearity and repeatability
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...+120 °C (- 40...+248 °F)
Accuracy[1]	

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).

Output

Digital

Digital interface	RS485 (HTP501 = 1 unit load)
Protocol **Default settings** **Supported baud rates** **Data types for measured values**	Modbus RTU Baud rate 9600, parity even, 1 stop bit, Modbus address 69 9600, 19200, 38400, 57600, 76800 and 115200 FLOAT32 and INT16

General

Power supply class III USA & Canada: Class 2 supply necessary, max. voltage 30 V DC	8 - 35 V DC
Power consumption, typ.	40 mW (without termination resistor)
Electrical connection	M12x1, 4 poles
Temperature working range **Probe** **Cable** **M12 connector**	 -40...+120 °C (-40...+248 °F) -40...+120 °C (-40...+248 °F) -25...+90 °C (-13...+194 °F)
Storage conditions	-40...+80 °C (-40...+176 °F), 0...95 %RH non-condensing
Probe material	Stainless steel 1.4404
Cable jacket Please mind the mounting and installing instructions included in the user manual.	HFS 125XL, black, oil and fuel resistant
Protection rating	IP66
Elektromagnetic compability	EN 61326-1 EN 61326-2-3 Industrial Environment FCC Part15 Class A ICES-003 Class A
Shock and vibration	Tested acc. to EN 60068-2-64 and EN 60068-2-27
Conformity	CE UKCA
Configuration and adjustment	PCS10 Product Configuration Software (free download from www.epluse.com/pcs10) and configuration adapter

Ordering Guide

	Feature	Description	Code	
Konfiguration			HTP501-	
	Type	RH + T probe up to 120 °C (248 °F)	T4	
	Filter	Metal grid, polycarbonate body	F3	
		Stainless steel sintered	F4	F4
		PTFE (Polytetrafluoroethylene)	F5	
	Probe cable length	2 m (6.6 ft)	K2	
		5 m (16.4 ft)	K5	
		10 m (32.8 ft)	K10	
	Probe length	200 mm (7.9")	L200	
		400 mm (15.7")	L400	
	Sensing element protection	E+E proprietary coating	C1	
		E+E proprietary coating and sensor leads protection		C3

Order Example

HTP501-T4F4K2L200C1

Features	Code	Description
Type	**T4**	RH + T Probe up to 120 °C
Filter	**F4**	Stainless steel sintered
Cable length	**K2**	2 m (6.6 ft)
Probe length	**L200**	200 mm (7.9")
Sensing element protection	**C1**	E+E proprietary coating

Accessories

For further information see datasheet Accessories.

Accessories	Code
Modbus configuration adapter	**HA011018**
E+E Product Configuration Software (Free download: www.epluse.com/pcs10)	**PCS10**
M12 cable connector for self assembly, 4 pole	**HA010707**
Stainless steel mounting flange	**HA010201**
Stainless steel wall mounting clip	**HA010225**
T-coupler M12 - M12	**HA030204**
Protection cap M12 socket connector	**HA010781**
Protection cap M12 plug connector	**HA010782**
Protection cap for Ø12 mm probe	**HA010783**
Drip water protection	**HA010503**

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