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# + Datasheet HTP501

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



# HTP 501

## 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.



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HTP501

# Features

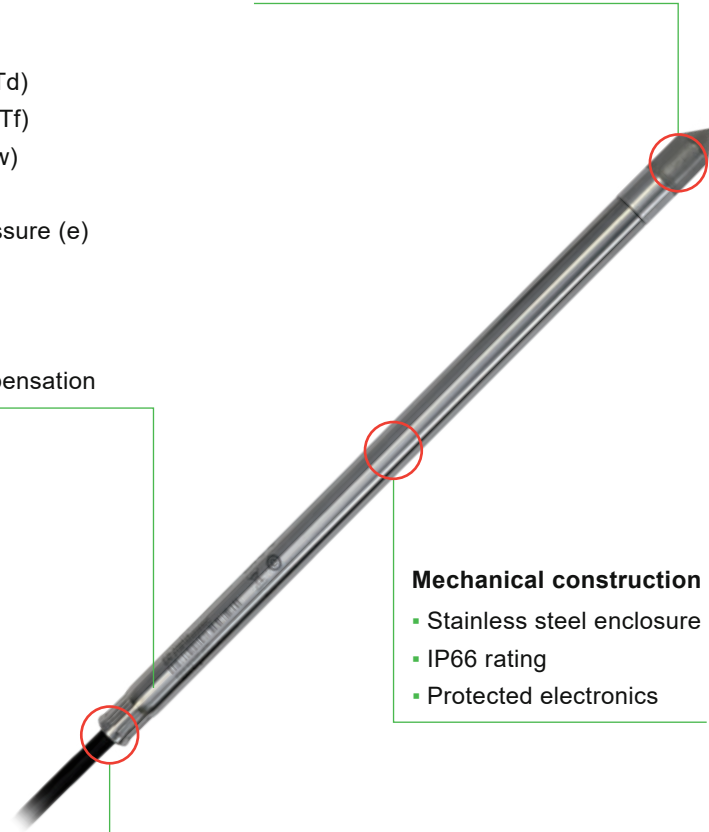


## Measurement Performance

- 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.

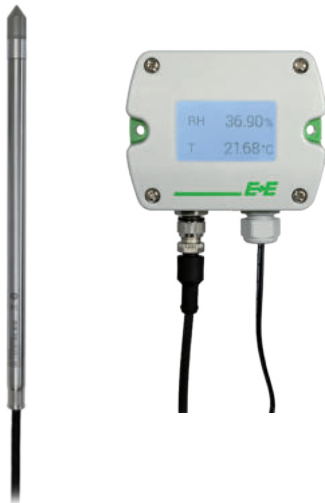
## Sensor Leads Protection

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](http://www.epluse.com/sigma05) for further details.

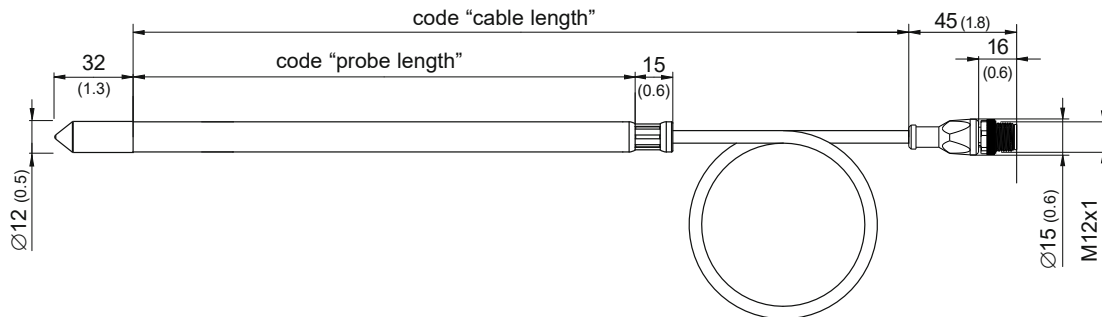


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Sigma 05 with HTP501

# Dimensions

Values in mm (inch)



# Technical Data

## Measurands

### Relative humidity (RH)

<b>Measuring range</b>	0...100 %RH	
<b>Accuracy<sup>1)</sup></b>	-15...+40 °C (5...104 °F) -15...+40 °C (5...104 °F) -25...+70 °C (-13...+158 °F) -40...120 °C (-40...+248 °F)	(RH ≤ 90 %) ±(1.3 + 0.003*mv) %RH (RH > 90 %) ±2.3 RH ±(1.4 + 0.01*mv) %RH ±(1.5 + 0.015*mv) %RH
<b>Response time t<sub>90</sub></b> @ 20 °C (68 °F)	<15 s	

mv = measured value

- 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)

<b>Measuring range</b>	-40...+120 °C (- 40...+248 °F)
<b>Accuracy<sup>1)</sup></b>	




- 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

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

### General

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

# Ordering Guide

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

# Order Example

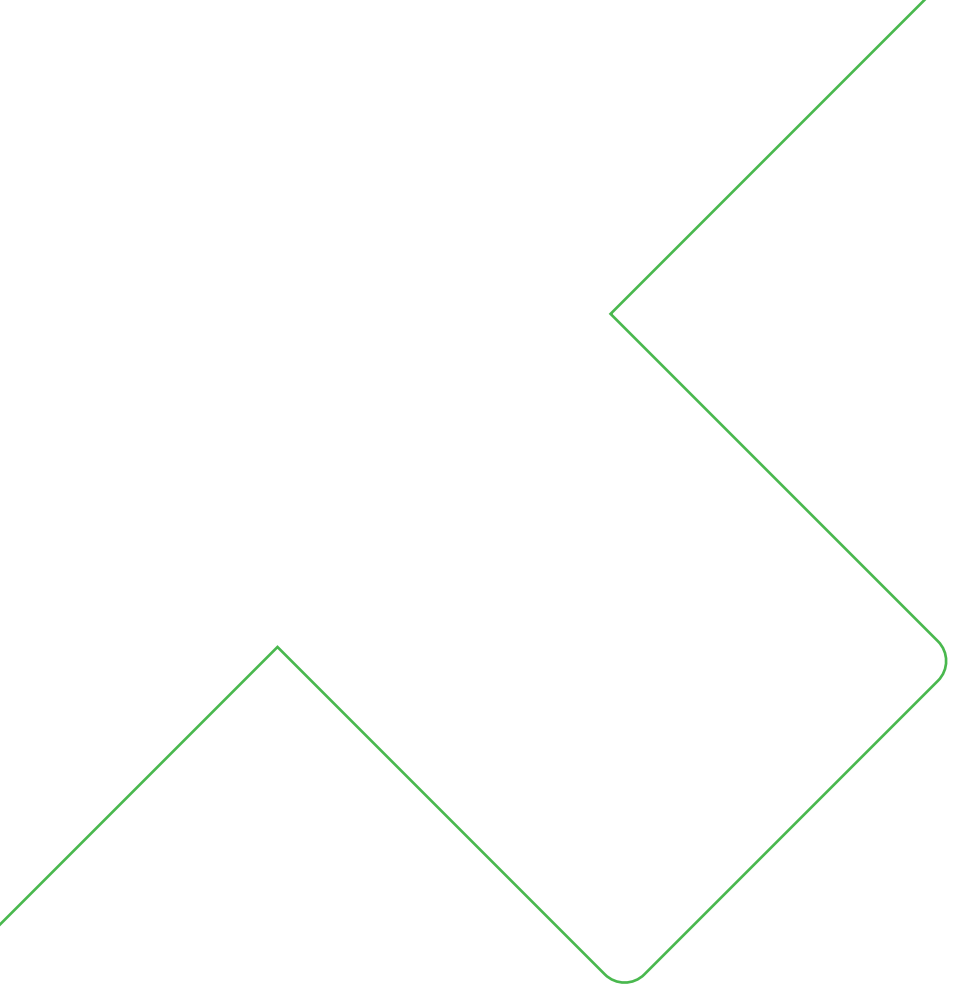
## HTP501-T4F4K2L200C1

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: <a href="http://www.epluse.com/pcs10">www.epluse.com/pcs10</a> )	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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Version v1.1 | 09-2022  
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