

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 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.



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



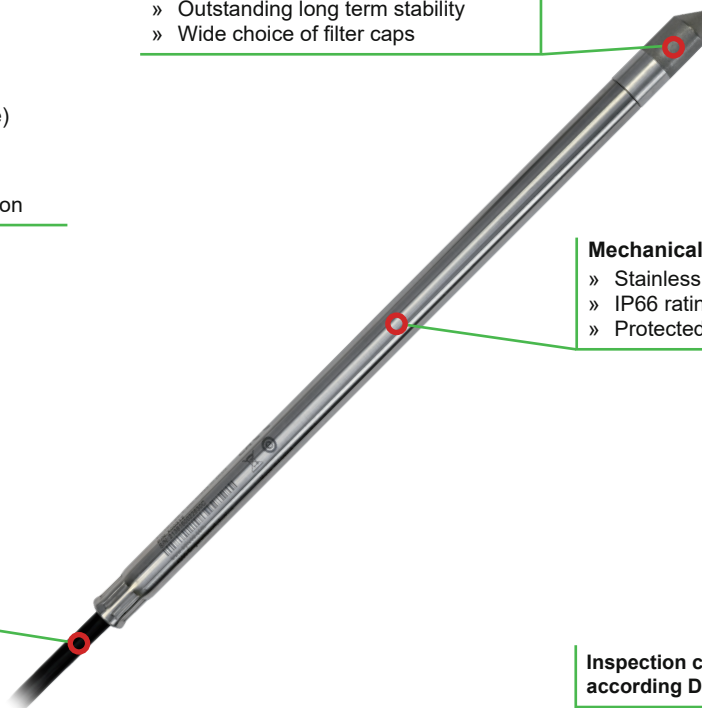
Mechanical construction

- » 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



Protective Sensor Coating

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

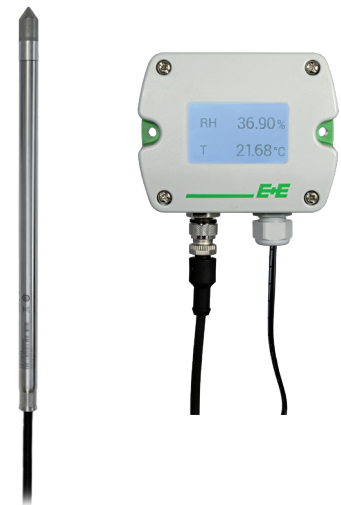
Sensor Leads Protection

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 humidity and temperature 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.



Technical Data

Measurands

Relative humidity

Measuring range 0...100 %RH

Response time t_{90}
 @ 20 °C (68 °F) <15 s

Accuracy¹⁾

Including hysteresis, non-linearity and repeatability

-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

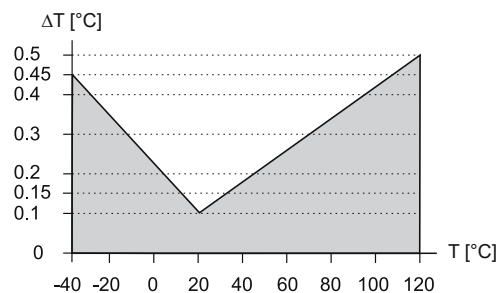
-40...120 °C (-40...248 °F) ±(1.5 + 0.015*mv) %RH

mv = measured value

Temperature

Measuring range -40...120 °C (-40...248 °F)

Accuracy¹⁾



Output

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

General

Power supply class III \triangleleft (EU) / class 2 (NA)	8 - 35 V DC ²⁾
Power consumption, typ.	40 mW (without termination resistor)
Electrical connection	M12x1, 4 poles
Protection rating	IP66
Probe material	Stainless steel 1.4404
Cable jacket ³⁾	HFS 125XL, black, oil and fuel resistant
Temperature working range	Probe: -40...120 °C (-40...248 °F) Cable: -40...120 °C (-40...248 °F) M12 connector: -25...90 °C (-13...194 °F)
Storage conditions	-40...80 °C (-40...176 °F), 0...95 %RH non-condensing
Electromagnetic compatibility	EN 61326-1 EN 61326-2-3 Industrial Environment FCC Part15 Class A ICES-003 Class A
Shock and vibration	Tested acc. to EN 60068-2-6 and EN 60068-2-27
Configuration and adjustment	PCS10 (Product Configuration Software, free download) and configuration adapter



1) Traceable to international standards, administrated by NIST, PTB, BEV...

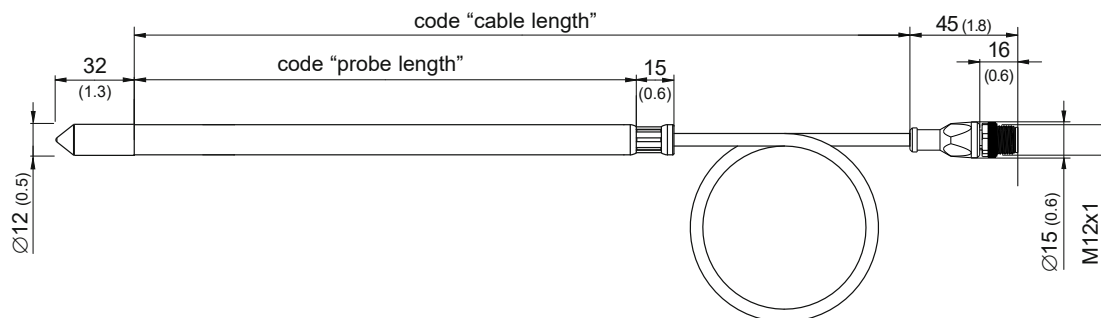
The accuracy statement includes the uncertainty of the factory calibration with an enhancement factor k=2 (2-times standard deviation). The accuracy was calculated in accordance with EA-4/02 and with regard to GUM (Guide to the Expression of Uncertainty in Measurement).

2) USA & Canada class 2 supply required, max. supply voltage 30 V DC

3) Please mind the mounting and installing instructions included in the user manual.

Dimensions

Values in mm (inch)



Ordering Guide

		HTP501-	
Configuration	Type	RH + T probe up to 120 °C (248 °F)	T4
	Filter	Metal grid with polycarbonate body	F3
		Stainless steel sintered	F4
		PTFE	F5
	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	With E+E proprietary coating	C1
With E+E proprietary coating and sensor leads protection		C3	

Ordering Example

HTP501-T4F4K2L200C1

Type:	RH + T Probe up to 120 °C
Filter:	Stainless steel sintered
Cable length:	2 m (6.6 ft)
Probe length:	200 mm (7.9")
Sensing element protection:	With E+E proprietary coating

Accessories

(for further information, see data sheet "Accessories")

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 female connector	HA010781
Protection cap M12 male connector	HA010782
Protection cap for 12 mm probe	HA010783
Drip water protection	HA010503