+Quick Guide

HTP501 - Humidity/Temperature Probe with Modbus RTU

E+E

your partner
in sensor
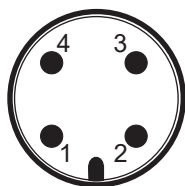technology.

> **ℹ PLEASE NOTE**

Find this document and further product information on our website at www.epluse.com/htp501.

Electrical Connection

> **⚠ WARNING**

Incorrect installation, wiring or power supply may cause overheating and therefore personal injuries or damage to property.
For correct cabling of the device, always observe the presented wiring diagram for the product version used.
The manufacturer cannot be held responsible for personal injuries or damage to property as a result of incorrect handling, installation, wiring, power supply and maintenance of the device.

Pin number	Function
1	Supply voltage 24 V DC class III ◁Ⅲ▷ (Europe) / class 2 (North America)
2	RS485 B (D-)
3	GND
4	RS485 A (D+)

M12 device plug
front view

Installation

> **ℹ PLEASE NOTE**

For accurate measurement it is essential that the temperature of the probe body and the sensing head is the same as the temperature of the air to measure. Avoid mounting the HTP501 in a way which creates temperature gradients along the probe.
- The device and mainly the sensing head shall not be exposed to extreme mechanical stress.
- The device must be operated with the filter cap on at all times. Do not touch the sensing element inside the sensing head.
- While replacing the filter cap (because of pollution for instance) against an original E+E spare one, please take very good care not to touch the sensing elements.
- For pressure-tight installations with type T10, all related information in the HTP501 manual must be observed (please see www.epluse.com/htp501).

Modbus Register Map

FLOAT 32

Parameter	Unit	Register number[1) [DEC]	Register address[2) [HEX]
Read register: function code 0x03 / 0x04			
Temperature	°C	1003	3EA
	°F	1005	3EC
	°K	1009	3F0
Relative humidity RH, Uw	%RH	1021	3FC
Water vapour partial pressure e	mbar	1101	44C
	psi	1103	44E
Dew point temperature Td	°C	1105	450
	°F	1107	452
	°K	1147	47A
Wet bulb temperature Tw	°C	1109	454
	°F	1111	456
	°K	1145	478
Absolute humidity dv	g/m^3	1113	458
	gr/ft^3	1115	45A
Mixing ratio r	g/kg	1121	460
	gr/lb	1123	462
Specific enthalpy h	[kJ/kg]	1125	464
	[ft lbf/lb/kg]	1127	466
	[BTU/lb]	1129	468
Frost point temperature Tf	°C	1131	46A
	°F	1133	46C
	°K	1149	47C
Ice bulb temperature Ti	°C	1237	4D4
	°F	1239	4D6
	°K	1241	4D8

Modbus Setup

	Factory settings	User selectable values (via PCS10)
Baud rate	9 600	9 600, 19 200, 38 400, 57 600, 76 800, 115 200
Data bits	8	8
Parity	Even	None, odd, even
Stop bits	1	1, 2
Modbus address	69	1...247

> ℹ️ **PLEASE NOTE**
>
> Customer specific factory settings deviating from the above are indicated directly on the probe.
> Example: Modbus RTU (19 200 8-E-1 ID: 40)
> Baud rate ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯ Modbus address
> Data bits
> Parity
> Stop bit

The recommended settings for multiple devices in a Modbus RTU network are 9600, 8, Even, 1. The HTP501 represents 1 unit load in a Modbus network.

Device address, baud rate, parity and stop bits can be set via:
- PCS10 Product Configuration Software and the the appropriate configuration cable HA011018.
  The PCS10 can be downloaded free of charge from www.epluse.com/pcs10.
- Modbus protocol in the register 1 (0x00) and 2 (0x01).
  See Application Note Modbus AN0103 (available at www.epluse.com/htp501).

The serial number in ASCII format is located in read-only register 1 - 8 (16 bits per address). The firmware version is located in register 9 (bit 15...8 = major release; bit 7...0 = minor release). The sensor name is located in register 10 (0x09).

Communication settings (INT16)

Parameter	Register number[1] [Dec]	Register address[2] [Hex]	Size[3]
Write register: function code 0x06			
Modbus address[4]	1	00	1
Modbus protocol settings[4]	2	01	1

Device information (INT16)

Parameter	Register number[1] [Dec]	Register address[2] [Hex]	Size[3]
Read register: function code 0x03 / 0x04			
Serial number (as ASCII)	1	00	8
Firmware version	9	08	1
Sensor name (as ASCII)	10	09	8
Device status (bit decoded)	602	259	1

Application Parameter (FLOAT32)

Parameter	Register number[1] [Dec]	Register address[2] [Hex]	Size[3]
Read and write register: Read function code 0x03 / Write function code 0x04			
Air pressure[5]	5001	1388	1

1) Register number (decimal) starts from 1.
2) Register address (hexadecimal) starts from 0.
3) Number of registers
4) For Modbus address and protocol settings see Application Note Modbus AN0103 (available at www.epluse.com/htp501).
5) Ambient pressure in mbar, with 2 decimal digits (e.g. 1 008.25), default value 1 013.25 mbar.

Approval

DNV (Det Norske Veritas) maritime type approval.

For the scope of approval, please refer to the User Manual, chapter 9.4 DNV Type Approval.

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