EE071

Low Power OEM Humidity / Temperature Transmitter with modbus interface

The digital humidity / temperature transmitter EE071 is optimized for the flexible use in bus applications. The standard modbus RTU protocol is implemented on the RS485 interface. The modbus transmitter EE071 is extremely energy efficient and also ideal for use in battery-powered devices.

Calibration data and all other measurement features like linearization and temperature compensation are stored in the electronic inside the probe.

EE071

By this EE071 is interchangeable and the plug connection allows replacement within seconds. The humidity and temperature measured values as well as the calculated variables dew point and mixing ratio is available on the bus interface.

Typical Applications

battery powered equipment
data loggers
handheld meters

Features

highest accuracy
extreme low power consumption
calculated dew point and mixing ratio
**replaced within seconds**
digital output

Technical Data

Measuring values

Relative Humidity

Sensor element	HCT01-00D
Digital output (2 wire)[1]	output value: 0.00...100.00% RH
Working range	0...100% RH
Accuracy incl. hysteresis and nonlinearity	±2% RH (0...90% RH) ±3% RH (90...100% RH)
Temperature dependence	< (0.025 + 0.0003 x RH) [% rH/°C]

Temperature

Sensor element	Pt1000 (tolerance class B, DIN EN 60751)
Digital output (2 wire)[1]	output value: -40.00...+80.00°C (-40...176°F)

Accuracy:
+0.2°C at 20°C
+0.6°C at the end of scale
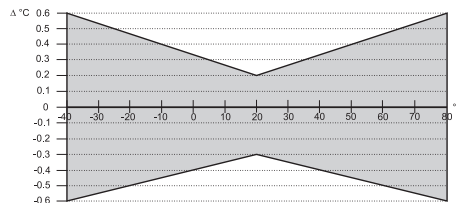
General

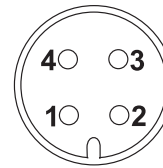|	
Supply voltage	4 - 22V DC
Current consumption	typ. 0.2mA (at a measuring rate of 1 sec. and without communication)
Max. current pulse during power-up)	at UB 7V: I_{max} 60mA <10mA after 350μs
(with serial resistance 100 Ohm)	at UB 12V: I_{max} 110mA <10mA after 400μs
Response Time	< 300ms
Output load	no bus termination } within probe no pullup or pulldown resistor
Interface / Bus	RS485 / Modbus in slavemode
Interface setting	9600 baud, 8 data bits, 1 stop bit, even parity
Housing	polycarbonat / IP65
Sensor protection	membrane filter, PTFE filter, metal grid filter (polycarbonate)
Electromagnetic compatibility [2]	EN61326-1 EN61326-2-3
Temperature range	working temperature: -40...80°C (-40...176°F) storage temperature: -40...80°C (-40...140°F)
Max. cable length	100m (328,1ft)

CE

1) Modbus protocol

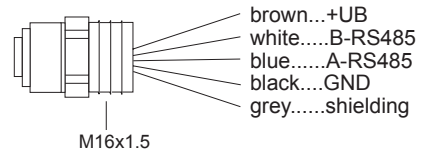2) Module is not protected against surge

Housing Dimensions (mm)

8 (0.3")
75 (2.9")
13 (0.51")
12 (0.47")
M12x1
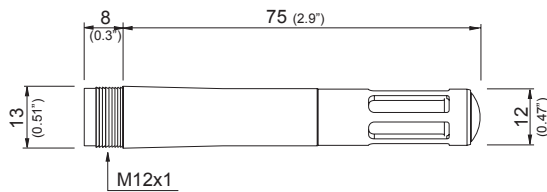
Connection Diagram

EE071:

4 ○ ○ 3
1 ○ ○ 2

1...+UB
2...B-RS485
3...A-RS485
4...GND

M12x1 flange coupling with 50mm (2") litz wire (HA010705):

brown...+UB
white.....B-RS485
blue......A-RS485
black....GND
grey......shielding

M16x1.5

Modbus Map

The measured values are saved as a 32Bit *float* value from 0x08 to 0x14 and
as 16Bit *signed integer* between 0x16 and 0x1C.
The factory setting for the Slave-ID is 247 as an *integer* 16Bit value.
This ID can be customised in the register 0x00 (value margin 1 - 247 permitted).

FLOAT:

Register address	Protocol address	Parameter name	
30009	08	Temperature	[°C]
3000B	0A	Temperature	[°F]
3000D	0C	Rel Humidity	[%]
3000F	0E	Abs Humidity	[%]
30011	10	Dew Point	[°C]
30013	12	Dew Point	[°F]
30014	14	Mixing ratio	[g/kg]

INTEGER:*

Register address	Protocol address	Parameter name	
30017	16	Temperature	[°C]
30018	17	Temperature	[°F]
30019	18	Rel Humidity	[%]
30020	19	Abs Humidity	[%]
3001B	1A	Dew Point	[°C]
3001C	1B	Dew Point	[°F]
3001D	1C	Mixing ratio	[g/kg]

* Values are stored with a scaling of 1:100
(e.g.: 2550 is equivalent to 25,5°C)

INTEGER:

Register address	Protocol address	Parameter name
40001	00	Slave-ID

The serial number is located as a128Bit value from 0x1D.

Ordering Guide

MODEL		HOUSING		FILTER	
Humidity and Temperature	(HT)	polycarbonat	(P)	membrane filter	(B)
				metal grid filter (polycarbonat)	(C)
				metal grid filter (stainless steel)	(D)

EE071-

Accessories

- M12x1 flange coupling with 50mm (2") litz wire (HA010705)
- filter caps (HA0101xx)

Order Example

EE071-HTPB

Model: humidity & temperature
Housing: polycarbonat
Filter: membrane filter