

Low Power OEM Humidity / Temperature Transmitter with modbus interface

The digital humidity / temperature transmitter HLX071 is optimized for the flexible use in bus applications. The standard modbus RTU protocol is implemented on the RS485 interface. The modbus transmitter HLX071 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.

By this HLX071 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.



HLX071

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

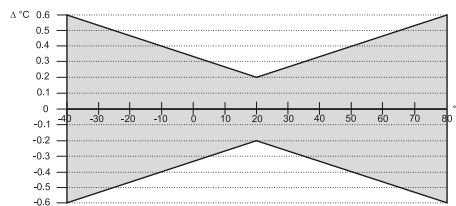
Sensor element
Digital output (2 wire)¹⁾
Working range
Accuracy incl. hysteresis and nonlinearity
Temperature dependence

HCT01-00D
output value: 0.00...100.00% RH
0...100% RH
±2% RH (0...90% RH) ±3% RH (90...100% RH)
< (0.025 + 0.0003 x RH) [% rH/°C]

Temperature

Sensor element
Digital output (2 wire)¹⁾
Accuracy:
±0.2°C at 20°C
±0.6°C at the end of scale

Pt1000 (tolerance class B, DIN EN 60751)
output value: -40.00...+80.00°C (-40...176°F)



General

Supply voltage
Current consumption
Max. current pulse during power-up)
(with serial resistance 100 Ohm)
Response Time
Output load

4 - 18V DC
typ. 0.2mA (at a measuring rate of 1 sec. and without communication)
at UB 7V: I_{max} 60mA <10mA after 350µs
at UB 12V: I_{max} 110mA <10mA after 400µs
< 300ms

Interface / Bus
Interface setting
Housing
Sensor protection
Electromagnetic compatibility ²⁾

no bus termination
no pullup or pulldown resistor } within probe
RS485 / Modbus in slavemode
9600 baud, 8 data bits, 1 stop bit, even parity
polycarbonat / IP65
membrane filter, PTFE filter, metal grid filter (polycarbonate)
EN61326-1
EN61326-2-3

Temperature range

working temperature: -40...80°C (-40...176°F)

Max. cable length

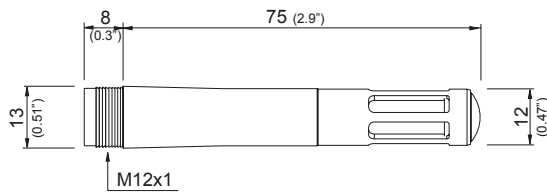
storage temperature: -40...80°C (-40...140°F)
100m (328,1ft)

1) Modbus protocol

2) Module is not protected against surge

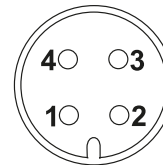


Housing Dimensions (mm)



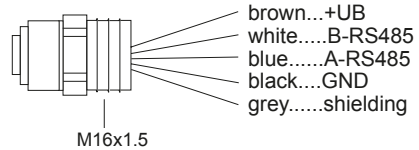
Connection Diagram

HLX071:



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

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



Modbus Map

The measured values are saved as a 32Bit *float* value from 0x19 to 0x25 and as 16Bit *signed integer* between 0x27 and 0x2D. 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 adresse | Protocol adresse | Parameter name |
|------------------|------------------|---------------------|
| 30026 | 19 | Temperature [°C] |
| 30028 | 1B | Temperature [°F] |
| 30030 | 1D | Rel Humidity [%] |
| 30032 | 1F | Abs Humidity [g/m³] |
| 30034 | 21 | Dew Point [°C] |
| 30036 | 23 | Dew Point [°F] |
| 30038 | 25 | Mixing ratio [g/kg] |

INTEGER:*

| Register adresse | Protocol adresse | Parameter name |
|------------------|------------------|---------------------|
| 30040 | 27 | Temperature [°C] |
| 30041 | 28 | Temperature [°F] |
| 30042 | 29 | Rel Humidity [%] |
| 30043 | 2A | Abs Humidity [g/m³] |
| 30044 | 2B | Dew Point [°C] |
| 30045 | 2C | Dew Point [°F] |
| 30046 | 2D | Mixing ratio [g/kg] |

INTEGER:

| Register adresse | Protocol adresse | Parameter name |
|------------------|------------------|----------------|
| 40001 | 00 | Slave-ID |

* Values are stored with a scaling of 1:100 (e.g.: 2550 is equivalent to 25.5°C)

The serial number is located as a 128Bit value from 0x1D.

Ordering Guide

| MODEL | HOUSING | FILTER | BAUD RATE | PARITY | STOPBITS |
|-------------------------------|------------------|--------------------------------------|-----------|---------------|----------------|
| Humidity and Temperature (HT) | polycarbonat (P) | membrane filter (B) | 9600 (A) | odd (O) | 1 stopbit (1) |
| | | metal grid filter (polycarbonat) (C) | 19200 (B) | even (E) | 2 stopbits (2) |
| | | PTFE - filter (E) | 38400 (C) | no parity (N) | |
| HLX071- | | | | | |

Accessories

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

Order Example

HLX071- HTPBA01

- Model: humidity & temperature
- Housing: polycarbonat
- Filter: membrane filter
- Configuration: baud rate 9600, even parity, 1 stopbit