

USER'S GUIDE

EE071 - Humidity and Temperature Probe with Modbus Interface

GENERAL

The EE071 probe is designed for the measurement of humidity and temperature in OEM applications. It incorporates the E+E humidity and temperature sensor HCT01, which is very well protected against environmental influences.

For use in special applications do not hesitate to contact E+E Elektronik or a local distributor.

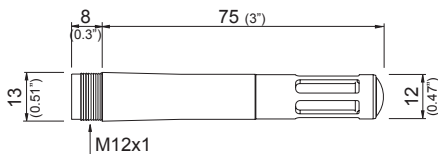
CAUTION

For accurate measurement it is essential that the temperature of the probe and the sensing head is the same as the temperature of the air to measure. Avoid mounting the EE071 transmitter in a way which creates temperature gradients along the probe.

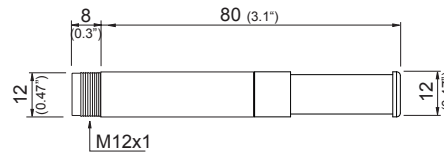
- The device and mainly the sensing head shall not be exposed to extreme mechanical stress.
- The device must be operated with the filter cap on at all times. Do not touch the sensors inside the sensing head.
- While replacing the filter cap (because of pollution for instance) against an original E+E spare one please take very good care to not touch the sensors.

DIMENSIONS

polycarbonate housing - EE071-HTPx

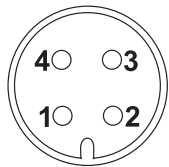


metal housing - EE071-HTMx



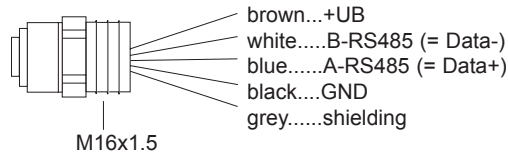
CONNECTION DIAGRAM

EE071:



- 1...+UB
- 2...B-RS485 (= Data-)
- 3...A-RS485 (= Data+)
- 4...GND

M12x1 flange (HA010705, Accessories)



Important:

The metal enclosure of EE071-HTM shall not be connected to the ground (electrical isolation necessary). Alternatively, the GND of the EE071 power supply shall be connected to the earth potential.

MODBUS MAP

Instructions for Modbus-Protocol-Setup please see Application Note AN0103 (www.epluse.com/EE071).

- The EE071 can be used in Modbus networks with max. 32 units.
- The bus termination can be realized with 120 Ohm resistor (not included in the scope of supply)
- For proper function the power supply must be strong enough to ensure supply voltage within the specified range (see technical data) at any time and at all devices in the bus. This is particularly relevant when using long and thin cables which can cause high voltage drop.

Factory setting:

Slave-ID 247; Baudrate 9600, Parity even, Stopbit 1

32Bit FLOAT (read register):

Coil / Register Numbers	Data-Addresses	Parameter name
30026	0x19	Temperature [°C]
30028	0x1B	Temperature [°F]
30030	0x1D	Rel Humidity [%]
30032	0x1F	Abs Humidity [g/m³]
30034	0x21	Dew Point [°C]
30036	0x23	Dew Point [°F]
30038	0x25	Mixing ratio [g/kg]

16Bit INTEGER (read register):*

Coil / Register Numbers	Data-Addresses	Parameter name
30040	0x27	Temperature [°C]
30041	0x28	Temperature [°F]
30042	0x29	Rel Humidity [%]
30043	0x2A	Abs Humidity [g/m³]
30044	0x2B	Dew Point [°C]
30045	0x2C	Dew Point [°F]
30046	0x2D	Mixing ratio [g/kg]

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

16Bit INTEGER (write register):

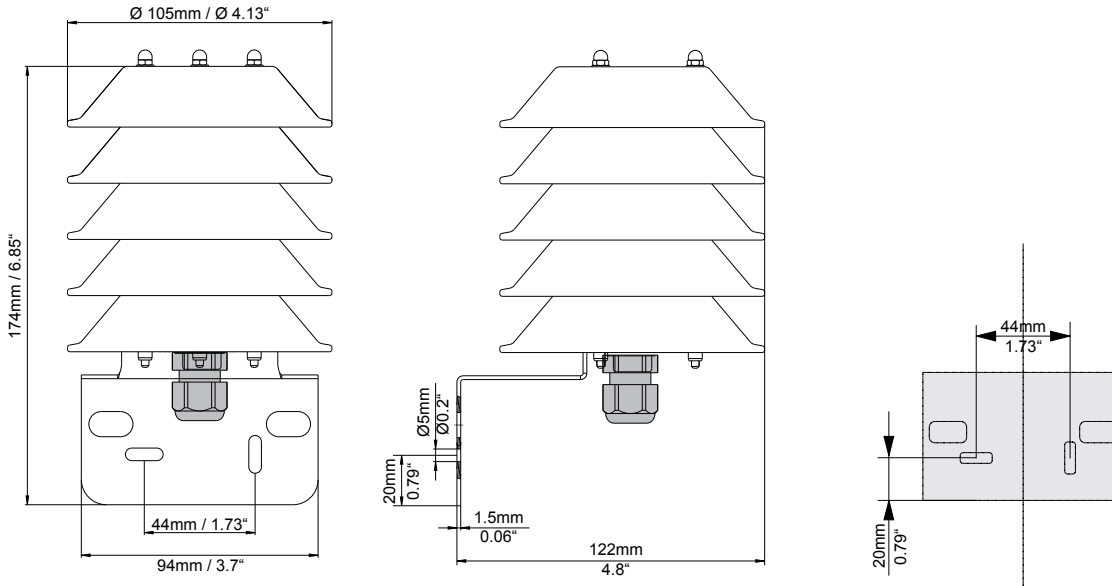
Coil / Register Numbers	Data-Addresses	Parameter name
60001	0x00	Slave-ID

32Bit FLOAT (read & write register):

Coil / Register Numbers	Data-Addresses	Parameter name
5001	0x1388	Air pressure

OUTDOOR USE

For outdoor applications EE071 must be used with the optional radiation shield HA010502.



TECHNICAL DATA

(Modification rights reserved)

Measuring values

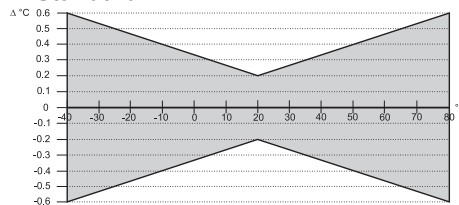
Relative Humidity

Sensor element	HCT01-00D
Modbus output range	0.00...100.00% 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]

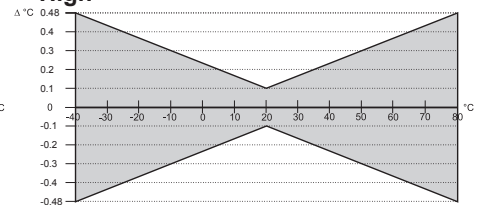
Temperature

Sensor	Pt1000
Modbus output range	-40.00...+80.00°C (-40...176°F)
Accuracy:	

Standard



High



General

Supply voltage ^{1) 2)}	4 - 28V DC
Current consumption	typ. 0.4mA at a measuring rate of 1 sec.
Current pulse during power-up (with serial resistance 100 Ohm)	at UB 7V: I _{max} 60mA; current draw drops below 10mA within 350µs at UB 12V: I _{max} 110mA; current draw drops below 10mA within 400µs
Warmup Time after Power-Up	max. 800ms
Interface / Bus	RS485 / Modbus in slavemode
Housing / Protection class	polycarbonate or stainless steel / IP65
Electromagnetic compatibility ³⁾	EN613226-1 EN61326-2-3 Industrial environment FCC Part 15 Class B ICES-003 Issue 5 Class B
Working and storage temperature	-40...80°C (-40...176°F)
Max. cable length	100m (328.1ft)

1) For bus operation with terminal resistor (120Ω) min. UB: 4,5V DC

2) No terminal, pull-up or pull-down resistor integrated in the probe

3) EE071 is not protected against voltage spikes (surge)

SETUP AND ADJUSTMENT

The EE071 probe is ready to use and does not require any configuration by the user. The factory setup of EE071 corresponds to the type number ordered (Ordering guide please see data sheet at www.epluse.com/EE071).

If needed, the user can change the factory setup by using the optional Modbus Configuration Adapter HA011012 (see data sheet „Accessories“ at www.epluse.com/EE071) and the E+E Product Configuration Software EE-PCS (free download from www.epluse.com/configurator). One can set the Slave-ID and the Modbus parameter (baud rate, parity and stop bits) and perform an offset, one or two point adjustment for humidity and temperature.



SCOPE OF SUPPLY

- EE071 probe according to ordering guide
- Inspection certificate according to DIN EN10204 - 3.1

MAINTENANCE

When employed in dusty, polluted environment:

- The filter cap shall be replaced as needed with an E+E original one. A polluted filter cap causes longer response time of the device.

CLEANING OF THE SENSING HEAD

- Use in polluted environment might arise the need for cleaning the sensing head and replacing the filter cap. In such a case please see "Cleaning Instructions" at www.epluse.com/EE071.

CALIBRATION AND ADJUSTMENT

Depending on the application and the requirements of certain industries, there might arise the need for periodical humidity calibration (comparison with a reference) or adjustment (bringing the device in line with a reference).

- Calibration and adjustment at E+E Elektronik
Calibration and/or adjustment can be performed in the E+E Elektronik calibration laboratory. For information on the E+E capabilities in ISO or accredited calibration please see www.kalibrierdienst.at.
- Calibration and adjustment by the user
Calibrated salt solutions, please see „Calibration Kit - User Guide“ at www.epluse.com/EE071.

USA FCC notice:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the installation manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which thereceiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CANADIAN ICES-003 Issue 5:

CAN ICES-3 B / NMB-3 B

INFORMATION

+43 7235 605 0 / info@epluse.com

Langwiesen 7 • A-4209 Engerwitzdorf, Austria
Tel: +43 7235 605-0 • Fax: +43 7235 605-8
info@epluse.com • www.epluse.com

LG Linz Fn 165761 t • UID-Nr. ATU44043101
Place of Jurisdiction: A-4020 Linz • DVR0962759

