E E ELEKTRONIK EE08 High Precision Humidity and Temperature Probe User Manual

E E ELEKTRONIK EE08 High Precision Humidity and Temperature Probe User Manual

Contents

General

This user manual serves for ensuring proper handling and optimal functioning of the device. The user manual

shall be read before commissioning the equipment and it shall be provided to all staff involved in transport, installation, operation, maintenance and repair. The user manual may not be used for the purposes of competition without the written consent of E+E Elektronik® and may not be forwarded to third parties. Copies may be made for internal purposes. All information, technical data and diagrams included in these instructions are based on the information available at the time of writing.

Disclaimer

The manufacturer or his authorized agent can be only be held liable in case of willful or gross negligence. In any case, the scope of liability is limited to the corresponding amount of the order issued to the manufacturer. The manufacturer assumes no liability for damages incurred due to failure to comply with the applicable regulations, operating instructions or the specified operating conditions. Consequential damages are excluded from the liability.

Explanation of Symbols

This symbol indicates safety information.

It is essential that all safety information is strictly observed. Failure to comply with this information can lead to personal injuries or damage to property. E+E Elektronik® assumes no liability if this happens.

This symbol indicates instructions.

The instructions shall be observed in order to reach optimal performance of the device.

Safety instructions

General Safety Instructions

- The device and mainly the filter cap shall not be exposed to unnecessary mechanical stress.
- When replacing the filter cap make sure not to touch the sensing elements.
- The device must be operated with the filter cap on at all times.
- For sensor cleaning please see “Cleaning Instructions” at **www.epluse.com/ee08.**
- nstallation, electrical connection, maintenance and commissioning shall be performed by qualified personnel only.
- se the EE08 only as intended and observe all technical specifications.
- Do not use EE08 in explosive atmosphere or for measurement of aggressive gases.
- his device is not appropriate for safety, emergency stop or other critical applications where device malfunction or failure could cause injury to human beings.

Intended Use

The EE08 is intended for the humidity (RH) and temperature (T) measurement in applications that require accurate measurement over wide RH and T ranges. It must not be applied in hazardous environment with agressive or flammable gases or in explosive areas. For use outdoors and/or in meteorolgy, optional radiation shields are available. Please refer to chapter 3 Product Description. The use of the EE08 in any other way than described in this manual bears a safety risk for people and the entire measurement installation and is therefore not allowed. The manufacturer cannot be held responsible for damages as a result of incorrect handling, installation, and maintenance of the equipment. In order to avoid damage to the instrument or health hazards, the measuring equipment must never be
manipulated with tools that are not specifically described in this manual. The sensor may only be utilized in accordance with the conditions defined in the technical data.
Otherwise, measurement inaccuracies will occur and equipment failures cannot be ruled out. The steps recommended by the manufacturer for installation, inspections and maintenance work must be observed and carried out for the safety of the user and for the functionality of the equipment.

Unauthorized product modification leads to loss of all warranty claims. This may be accomplished only with an explicit permission of E+E Elektronik®!

Mounting, Start-up and Operation

The EE08 humidity and temperature probe has been produced under state of the art manufacturing conditions, has been thoroughly tested and has left the factory after fulfilling all safety criteria. The manufacturer has taken all precautions to ensure safe operation of the device. The user must ensure that the device is set up and installed in a manner that does not have a negative effect on its safe use. The user is responsible for observing all applicable safety guidelines, local and international, with respect to safe installation and operation on the device. This user manual contains information and warnings that must be observed by the user in order to ensure safe operation.

- ⚠ Mounting, start-up, operation and maintenance of the device may be performed by qualified staff only. Such staff must be authorized by the operator of the facility to carry out the mentioned activities.
- The qualified staff must have read and understood this user manual and must follow the instructions contained within.
- All process and electrical connections shall be thoroughly checked by authorized staff before putting the device into operation.
- Do not install or start-up a device supposed to be faulty. Make sure that such devices are not accidentally used by marking them clearly as faulty.
- faulty device may only be investigated and possibly repaired by qualified, trained and authorized staff. If the fault cannot be fixed, the device shall be removed from the process.
- Service operations other than described in this user manual may only be performed by the manufacturer.

Environmental Aspects

ℹ Products from E+E Elektronik® are developed and manufactured observing of all relevant requirements with respect to environment protection. Please observe local regulations for the device disposal.

For disposal, the individual components of the device must be separated according to local recycling regulations. The electronics shall be disposed of correctly as electronics waste.

Scope of Supply

- EE08 probe according to ordering guide
- Inspection certificate according to DIN EN10204-3.

Product Description

General

The EE08 is a probe for the highly accurate measurement of humidity (RH) and temperature (T) over wide RH and T ranges of 0…100 % RH and -40…80 °C (-40…176 °F).

Typical application fields of the probe are

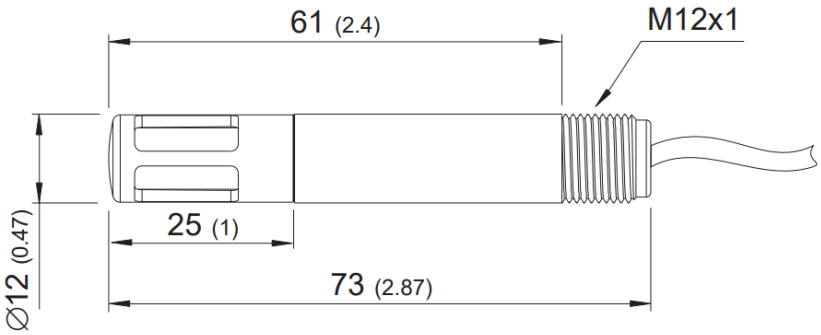
- Meteorology / weather stations
- Humidity / temperature data logging
- Incubators
- Fermentation chambers
- Green houses
- Snow machines
- Dry storage facilities

There are two types of probe, the EE08 with cable (type E8) up to 5 m (16.4 ft) length and the EE08 with connector (type E11). For the latter, connection cables with length 1.5 / 3 / 5 / 10 m (5 / 10 / 16.4 / 32.8 ft) are available as accessory.

For outdoor operation the use of an appropriate radiation shield is of paramount importance. The EE08 is compatible with rotational symmetric radiation shields which protect it against rain, snow and overheating caused by direct sunlight (available as accessory HA010502, suitable for type E8 and HA010506, suitable for type E11).

Dimensions

- EE08 with cable (Type E8) EE08-MxE8xxx



- EE08 with connector (Type E11) EE08-MxE11xxx

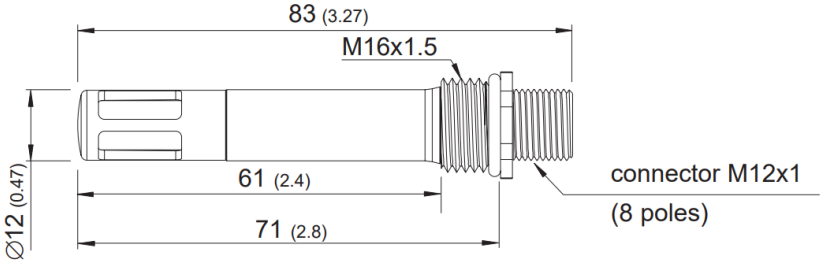
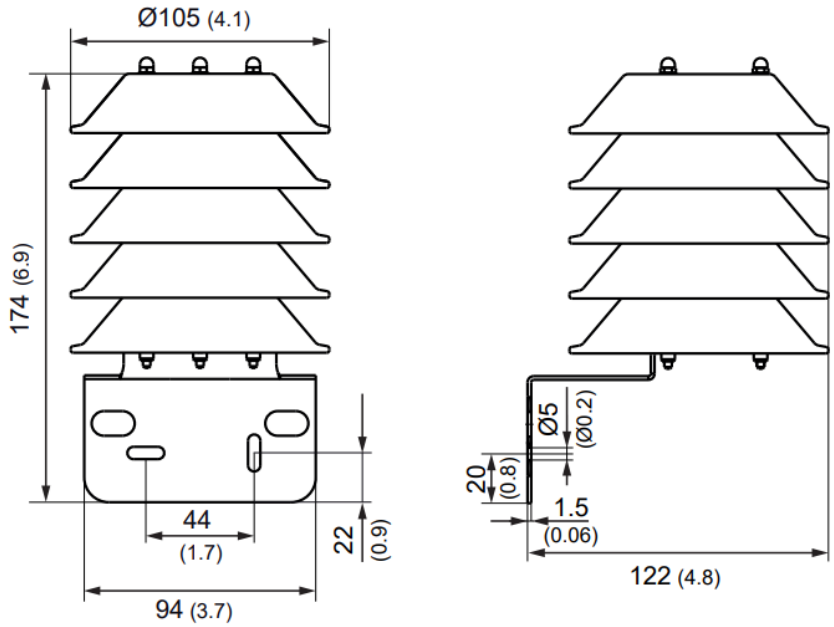


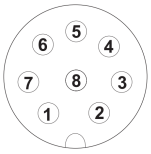
Fig. 1 Dimensions of EE08 in mm (inch)

Fig. 2 Dimensions of optional radiation shields HA010502 and HA010506 in mm (inch)



Electrical Connection

EE08 with cable:		**EE08-M1xE8xxx T active**	**EE08-M6xE8xxx T passive, 4 wire**
GND		pink	pink
T-out		grey	not connected (grey)
RH-out		yellow	yellow
SCL	} E2-interface	green	green
SDA		brown	brown
+UB		red	red
T-passive		not connected (white)	white, black
T-passive		not connected (blue)	blue, violet

EE08 with connector:		**EE08-MxE11xxxT active / passive, 2 wire**		**Assignment of M12 connection cable(HA010322, HA010323, HA010324, HA01 0325)**
	1	T passive**1)**		white
	2	SDA	} E2-interface	brown
	3	SCL		green
	4	RH out		yellow
	5	T out		grey
	6	GND		pink
	7	T passive**1)**		blue
	8	+UB		red

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.

Ground connection:
A low impedance connection between the shield of the connection cable and the ground potential is important for the flawless operation of the EE08.

E2 Voltage Level:
Please observe an E2 voltage level of 3.3 V / ±0.1 V on the data lines.

Installation

The follwing mounting types are possible:

- Wall mount with the help of a mounting clip, available as accessory HA010211.
- Outdoor operation with radiation shield: wall mount or pole mount. Please mind the mounting instructions included in the manuals of HA010502 and HA010506.

Maintenance

The use in dirty, dusty, polluted environment might arise the need for cleaning the sensing head and replacing the filter cap. In such a case please see the Cleaning Instructions at **www.epluse.com/ee08**.

Do not touch the humidity sensor!

Calibration / Adjustment

Definitions

- Calibration documents the accuracy of a measurement device. The device under test (specimen) is compared with the reference and the deviations are documented in a calibration certificate. During the calibration, the specimen is not changed or improved in any way.
- Adjustment improves the measurement accuracy of a device. The specimen is compared with the reference and brought in line with it. An adjustment can be followed by a calibration which documents the accuracy of the adjusted specimen.

To carry out a one point or a two point calibration / adjustment, the E2 / RS232 converter (available as an accessory, order code HA011005) and the EE-PCS Product Configuration Software are necessary. The EE-PCS is freely available at **www.epluse.com/ee08**.

Accessories / Spare Parts

M12 connection cable for type E11, length 1.5 m (5 ft)	HA010322
M12 connection cable for type E11, length 3 m (10 ft)	HA010323
M12 connection cable for type E11, length 5 m (16.4 ft)	HA010324
M12 connection cable for type E11, length 10 m (32.8 ft)	HA010325
Radiation shield for Type E8	HA010502
Radiation shield for Type E11	HA010506
Wall mounting clip Ø12 mm	HA010211
Protection cap for Ø12 mm probe	HA010783
M12 female socket with wires	HA010703
M12 female cable connector assembly possible	HA010704
Metal grid filter	HA010113
Cconfiguration cable	HA011005
EE-PCS	free download at **www.epluse.com/ee08**

Technical Data

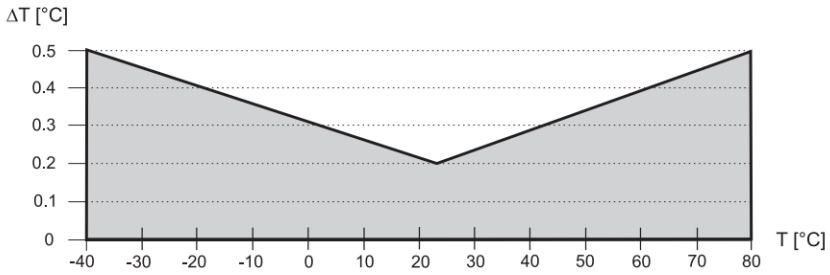
Measurands
Relative Humidity
Measuring range

Accuracy at 23 °C (73 °F) for RH ≤ 90 % ±2 % RH
and nominal voltage1) for RH > 90 % ±3 % RH

Temperature dependence, typ. 0.03 % RH/°C (0.02 % RH/°F)

Temperature
Measuring range

Accuracy
at nominal voltage1)



Outputs Analogue 0 – 1 V / 0 – 2.5 V / 0 – 5 V / 0 – 10 V -0.2mA < IL < 0.2 mA Digital interface

General
Supply voltage for output 0 – 1 V / 0 – 2.5 V V1: 4.5 – 15 V DC V2: 7 – 30 V DC for output 0 – 5 V V2: 7 – 30 V DC for output 0 – 10 V V2: 12 – 30 V DC

Current consumption, typ. < 1.3 mA Electrical connection M12x1, 8 poles Cable PVC 8 x 0.14 mm² (M1 models) Cable PVC 10 x 0.14 mm² (M6 models)

Filter Metal grid Protection rating IP65 Enclosure material Polycarbonate Electromagnetic compatibility EN 61326-1 EN 61326-2-3 Industrial Environment FCC Part15 Class B ICES-003 Class B

Operating and storage conditions -40…80 °C (-40…176 °F) 0…100 % RH (operation) 0…95 % RH, non-condensing (storage)

1. 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); nominal voltage V1 = 12 V DC, V2 = 24 V DC
2. E2 Voltage Level = 3.3 V / ±0.1 V, for further support literature refer to www.epluse.com/ee08.

E+E Elektronik Ges.m.b.H. does not accept warranty and liability claims neither upon this publication nor in case of improper treatment of the described products. The document may contain technical inaccuracies and typographical errors. The content will be revised on a regular basis. These changes will be implemented in later versions. The described products can be improved and changed at any time without prior notice.

USA

FCC notice

This device has been tested and found to comply with the conditions for a category B device according to part 15 of the FCC rules and regulations. These conditions were designed to provide adequate protection against EMI in a residential environment. This device generates, uses and can radiate high-frequency energy. If it is not installed and used in accordance with the operating instructions, it may cause electromagnetic interference to radio communications. However there is no guarantee that electromagnetic interference will not occur in a particular installation. If the device does cause electromagnetic interference to radio or television reception (this can be determined by turning the device off and on), the user is advised to remedy the interference with the following measures

- Reorient or relocate the receiving antenna.
- Increase the distance between the device and receiver.
- Connect the device to a different circuit to that of the receiver.
- Consult the dealer or an experienced radio/TV technician.

Caution:
Any changes to the device not expressly approved by an EMI representative could void the user‘s authority to operate this device

CANADA
ICES-003 notification:
This category B device complies with Canadian standard ICES-003.

Documents / Resources

	E E ELEKTRONIK EE08 High Precision Humidity and Temperature Probe [pdf] User Manual EE08 High Precision Humidity and Temperature Probe, EE08, High Precision Humidity and Temperature Probe, Humidity and Temperature Probe, Temperature Probe

References

- E+E High Precision Humidity and Temperature Probe