E+E

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technology.

Datasheet EE07

Interchangeable Humidity and Temperature Probe with Digital Interface

www.epluse.com

EE07

Interchangeable Humidity and Temperature Probe with Digital Interface

The EE07 is designed for accurate humidity (RH) and temperature (T) measurement in demanding climate control and OEM applications. It is available with polycarbonate or stainless steel enclosure, as well as for T measurement only. Furthermore, it features an optimised version for minimal power consumption, ideal for battery-powered measurement devices.

Measurement Performance

The high-end E+E humidity sensing element, manufactured using state-of-the-art thin film technology, offers outstanding measurement accuracy. With a wide T working range and excellent T compensation, the EE07 is suitable for both indoor and outdoor use. The excellent RH and T accuracy of the probe makes it ideal for use in meteorology with the optional radiation shield.

Long-Term Stability

The E+E proprietary coating in combination with the wide choice of filter caps protects the RH sensing element from corrosion and dirt. This ensures best long-term stability even in harsh environment.

Digital Interface

The measured values are available on the serial E2 interface. The M12 connector allows for EE07 replacement within seconds.

Adjustable

The user can perform the RH and T adjustment of the probe with an optional adapter.

RH / T or T polycarbonate probe with membrane filter

RH / T stainless steel probe with metal-grid filter

T stainless steel probe

Features

RH / T probe head

- RH sensing element protected by E+E proprietary coating
- Outstanding long term stability
- Wide choice of filter caps

Measurement performance

- Outstanding RH and T accuracy
- Measuring range from -40 °C (-40 °F) up to +80 °C (+176 °F)
- Temperature compensation
- Very low power consumption

Mechanical construction

- IP65 protection rating
- Polycarbonate or stainless steel enclosure

Output and connection

- E2 interface
- M12x1 connector, 4-poles
- Pluggable and interchangeable
- Adjustable via optional adapter

Inspection certificate

according to DIN EN 10204-3.1

Features

Protective Sensor Coating

The E+E proprietary sensor coating is a protective layer applied to the active surface of the sensing element. The coating substantially extends sensor lifetime and ensures optimal measurement performance in corrosive environment (salts, off-shore applications). Additionally, it improves the sensors' long term stability in dusty, dirty or oily applications by preventing stray impedance caused by deposits on the active sensor surface.

Accredited Traceable Calibration Certificate

Internationally recognised certificates for the calibration of measuring instruments from accredited laboratories document the traceability of the measurements to the International System of Units (SI). The E+E Elektronik calibration laboratory offers two levels of traceable calibrations.

- As a Designated Institute (DI) of the Republic of Austria, the E+E calibration laboratory maintains Austria's national measurement standards for humidity, dew point temperature, air velocity and CO_2. This authorises the E+E calibration laboratory to issue calibration certificates at the level of a National Metrological Institute (NMI).
- The E+E calibration laboratory is accredited by Akkreditierung Austria in accordance with DIN EN ISO/IEC 17025 with the identification number 0608. This allows the laboratory to issue ISO 17025 certificates for the measurands humidity, temperature, dew point temperature, air velocity, flow, pressure and CO_2.

Visit www.eplusecal.com for detailed information on calibration and to enquire a certificate of accredited traceable calibration for the EE07 from the Designated Institute.

ISO 9001 Calibration Certificate

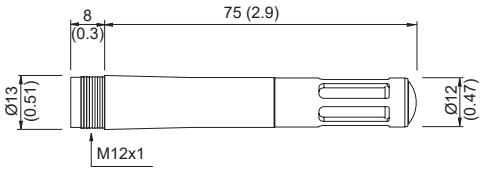
An ISO 9001 calibration certificate documents the comparative measurement of a device against high quality reference equipment (factory level standard). The comparison is performed in accordance with internal procedures that comply with ISO 9001 and provides information on the specimen's measuring accuracy. The reference equipment is traceable to national standards, however, the calibration process is not accredited. Therefore, an ISO 9001 calibration is neither traceable nor internationally comparable.

Visit www.epluse.com/iso9001cal for detailed information on calibration and to enquire an ISO 9001 calibration certificate.

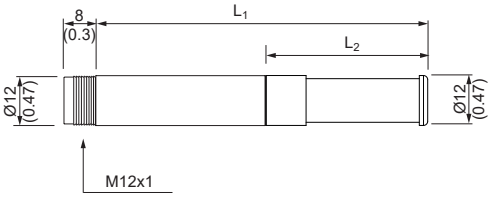
Dimensions

Values in mm (inch)

EE07-M1Fx

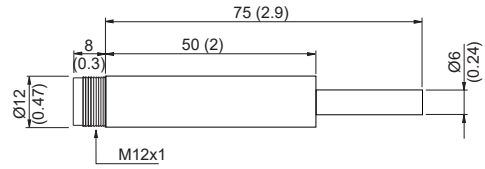


EE07-M1HS2x



Filter	L_1	L_2
Metal grid	79.5 mm (3.13")	38.5 mm (1.52")
H_2O_2	73.5 mm (2.89")	33 mm (1.3")

EE07-M3HS2x

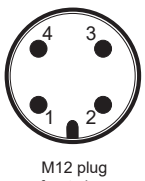


Electrical Connection

⚠ WARNING

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.

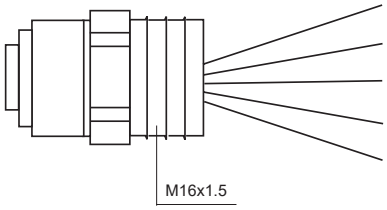
EE07



M12 plug
front view

Pin	Description
1	GND
2	V+
3	DATA
4	CLOCK

M12x1 flange coupling socket with 50 mm (2") free cable ends (HA010705)



Color	Description
Brown	GND
White	V+
Blue	DATA
Black	CLOCK
Grey	Shielding

Technical Data

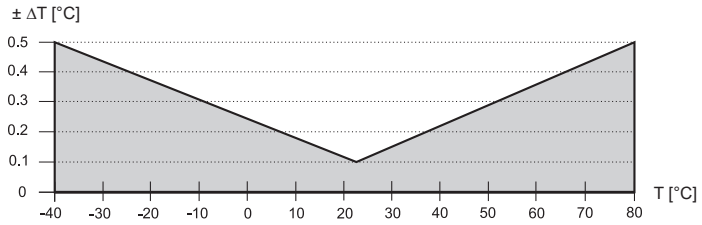
Measurands

Relative Humidity (RH)

Measuring range	0...100 %RH, non condensing
Accuracy[1] (incl. hysteresis, non-linearity and repeatability) @ 23 °C (73 °F) 0...90 %RH 90...100 %RH	 ±2 %RH ±3 %RH
Temperature dependency	<(0.025 + 0.0003 x RH) x (T - 23 °C) (73 °F)
Supply voltage dependency for option AF4 and V+ < 3.3 V DC, typ.	-0.0026 %RH/mV

1) Traceable to international standards, administrated by NIST, PTB, BEV,...
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).

Temperature (T)

Measuring range	-40...+80 °C (-40...+176 °F)
Accuracy	

Output

Digital

Digital interface	E2 interface[1]

1) For further support literature refer to www.epluse.com/ee07.

Technical Data

General

Power supply class III USA & Canada: Class 2 supply necessary		
	Standard	3.8 V DC - 5.5 V DC
	Option AF4	2.7 V DC - 5.5 V DC
Current consumption, typ.		
	Standard	< 1.5 mA
	Option AF4	< 6 µA in sleep mode 1.5 - 2.5 mA during measurement (150 ms) Average: <200 µA at sampling rate = 1 s
Voltage level digital interface		Max. 3.5 V DC, ≤V+ for option AF4
Electrical connection		M12x1, 4 poles
Humidity working range	**With coating**	0…100 %RH, non-condensing
	Without coating	0...95 %RH, non-condensing
Temperature range		-40...80 °C (-40...176 °F)
Storage conditions		-40...80 °C (-40...176 °F) 0...95 %RH, non-condensing
Maximum cable length (Depends on the bus frequency)		30 m (98.4 ft)
Enclosure		
	Material	Polycarbonate or stainless steel
	Protection rating, probe body	IP65
Electromagnetic compatibility[1)]		EN 61326-1 EN 61326-2-3 Basic environment FCC Part15 Class B ICES-003 Class B
Conformity		CE UKCA

1) No protection against surge.

Ordering Guide

	Feature	Description	Code			
			EE07-			
Hardware Configuration	**Model**	RH + T	M1			
		T			M3	
	Enclosure material	PC (Polycarbonate)	No code		No code	
		Stainless steel		HS2		HS2
	Filter	Membrane, polycarbonate body	F2		F2	
		Metal grid, polycarbonate body	F3			
		PTFE (Polytetrafluoroethylene)	F5			
		Stainless steel - metal grid (up to 180 °C / 356 °F)		F9		
		Catalytic for H_2O_2 sterilisation	F12	F12		
	Sensing element protection	Without	No code			
		E+E proprietary coating	C1			
	Additional function	Without	No code		No code	
		Energy saving	AF4		AF4	
	Accredited Traceable Calibration Certificate in accordance with DIN EN ISO/IEC 17025		see www.eplusecal.com			
	ISO 9001 Calibration Certificate		see www.epluse.com/iso9001cal			

Order Examples

EE07-M1F2C1

Feature	Code	Description
Model	**M1**	RH + T
Enclosure material	**No code**	PC (Polycarbonate)
Filter	**F2**	Membrane, polycarbonate body
Sensing element protection	**C1**	E+E proprietary coating
Additional function	**No code**	Without

EE07-M1HS2F12C1AF4

Feature	Code	Description
Model	**M1**	RH + T
Enclosure material	**HS2**	Stainless steel
Filter	**F12**	Catalytic for H_2O_2 sterilisation
Sensing element protection	**C1**	E+E proprietary coating
Additional function	**AF4**	Energy saving

Scope of Supply

- EE07 probe according to ordering guide
- Inspection certificate according to DIN EN 10204-3.1

Accessories

For further information see datasheet Accessories.

Description	Code
Flange socket, M12x1 ←→ 50 mm (1.97") stranded wire, 5 poles, M16x1 screw-in thread	**HA010705**
Sensor connection cable, shielded, 5 poles, M12x1 socket ←→ wire ferrules, 10 m (32.8 ft) **1.5 m (4.9 ft)** **5 m (16.4 ft)** **10 m (32.8 ft)**	 **HA010819** **HA010820** **HA010821**
Radiation shield with clamp ring M20x1.5	**HA010502**
Protection cap for M12 socket	**HA010781**
Protection cap for M12 plug	**HA010782**
Configuration adapter	**See datasheet EE-PCA**

Company Headquarters &
Production Site

E+E Elektronik Ges.m.b.H.
Langwiesen 7
4209 Engerwitzdorf | Austria
T +43 7235 605-0
F +43 7235 605-8
info@epluse.com
www.epluse.com

Subsidiaries

E+E Sensor Technology (Shanghai) Co., Ltd.
T +86 21 6117 6129
info@epluse.cn

E+E Elektronik France SARL
T +33 4 74 72 35 82
info.fr@epluse.com

E+E Elektronik Deutschland GmbH
T +49 6171 69411-0
info.de@epluse.com

E+E Elektronik India Private Limited
T +91 990 440 5400
info.in@epluse.com

E+E Elektronik Italia S.r.l.
T +39 02 2707 86 36
info.it@epluse.com

E+E Elektronik Korea Ltd.
T +82 31 732 6050
info.kr@epluse.com

E+E Elektronik Corporation
T +1 847 490 0520
info.us@epluse.com

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