E+E

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Datasheet EE074

Temperature Probe with Modbus RTU

Modbus

www.epluse.com

EE074

Temperature Probe with Modbus RTU

The EE074 is used for highly accurate temperature measurement of liquid and gaseous media. The probe is optimised for demanding process and climate control, as required in the food and pharmaceutical industries, in clean rooms and in agriculture.

Robust and Reliable

The high IP68 protection rating, the stainless steel enclosure as well as the encapsulated electronics ensure outstanding measuring performance even under harsh and condensing ambient conditions.

Installation and Mounting

The electrical connection is made via an M12x1 plug. Communication via Modbus RTU enables easy readout of the measured values. Accessories provide a great variety of mounting options. For example, the immersion well with the innovative mounting spring is suitable for measurement in liquids and allows quick and safe sensor replacement. A selection of flanges facilitate installation in various applications.

Configuration and Adjustment

With the free PCS10 configuration software and an optional configuration adapter, configuration and adjustment of the EE074 is possible via PC.

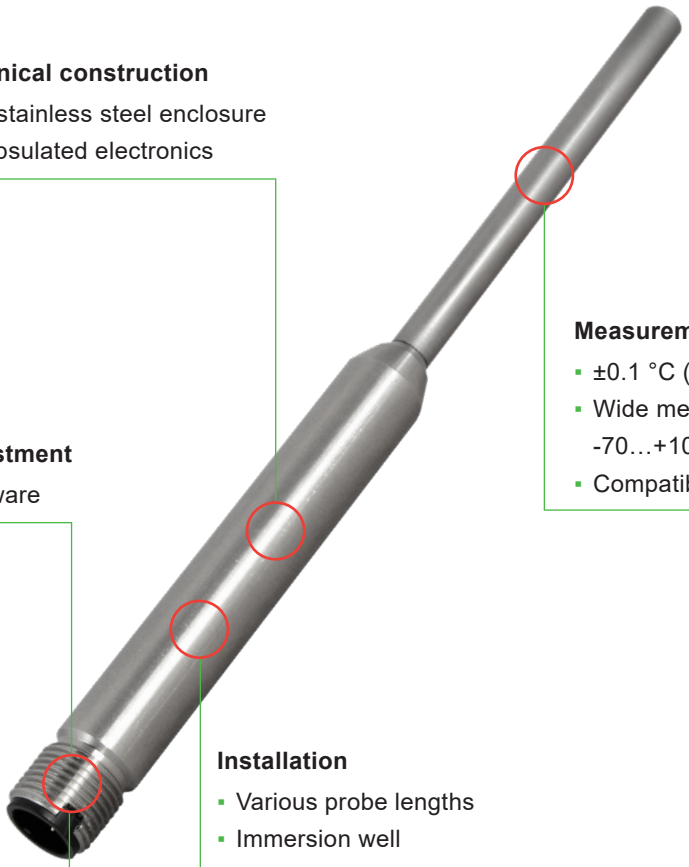
EE074 temperature probe

Features

Mechanical construction
- IP68 stainless steel enclosure
- Encapsulated electronics

Measurement performance
- ±0.1 °C (±0.18 °F) accuracy
- Wide measuring range
  -70…+105 °C (-94...+221 °F)
- Compatible with dry block calibrators

Configuration and adjustment
- Free configuration software



Installation
- Various probe lengths
- Immersion well
- Wall mounting clip

Connection
- RS485 with Modbus RTU
- M12x1 connector

Immersion well (optional)
- Up to PN 25 (363 psi) bar

Innovative mounting spring
- For mounting the probe in the immersion well
- No fastening screw, no tools required

Inspection certificate

According to DIN EN 10204-3.1

Features

E+E Modular Sensor Platform

The EE074 is compatible with the Sigma 05 host device of the E+E Modular Sensor Platform. Together they become a versatile, modular plug-and-play T sensor with analogue outputs and optional display. Besides the EE074, the Sigma 05 can also accommodate other E+E intelligent sensing probes. See www.epluse.com/sigma05 for further details.

Sigma 05 with EE074

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 traceable calibrations.
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 EE074 from the E+E Elektronik calibration laboratory.

ISO 9001 Calibration Certificate

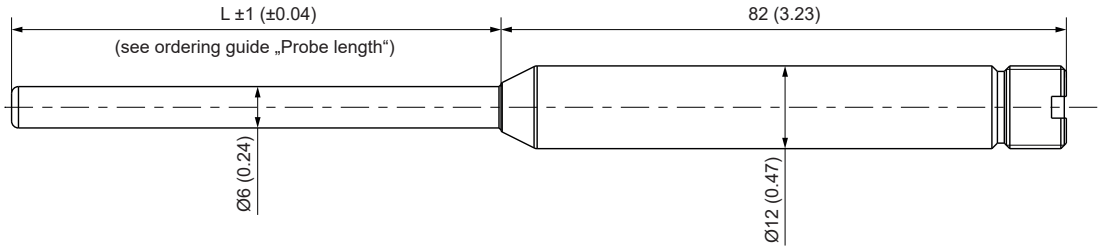
An ISO 9001 calibration certificate documents the comparative measurement of a device against high quality reference equipment (factory level standard). The comparison is performed in accordance with internal procedures that comply with ISO 9001 and provides information on the specimen's measuring accuracy. 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.

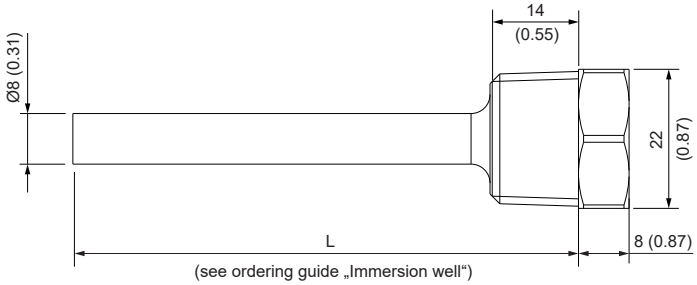
Dimensions

Values in mm (inch)

Temperature Probe



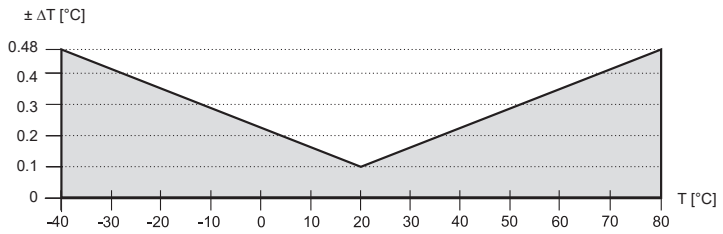
Immersion Well (Optional)



Technical Data

Measurands

Temperature (T)

Measuring range	**Probe**[1]	-40…+80 °C (-40... +176 °F)
Accuracy[2] incl. hysteresis, non-linearity, temperature dependency of electronics and repeatability		
Response time t_{63}, typ.	**In air @ 3.0 m/s** **In liquid**	75 s 21 s
Measuring interval		1 s

1) Extended temperature measuring range -70...+105 °C at the probe tip of version EE074-L305.
2) Traceable to international standards, administrated by NIST, PTB, BEV, ...
The accuracy statement includes the uncertainty of the factory calibration with an coverage 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).The accuracy is defined at a 24 V DC supply, 9 600 Baud, without termination resistor and a polling interval of ≥1 second. For the accurate measurement in air, please observe the installation note in the User Manual.

Technical Data

Outputs

Digital

Digital interface	RS485 (EE074 = 1 unit load)
Protocol **Factory settings** **Supported Baud rates** **Measured data types**	Modbus RTU 9600 Baud, parity even, 1 stop bit, Modbus address 233 9600, 19200, 38400, 57600 FLOAT32 and INT16

1) Modbus map and communication settings: see User Manual and Modbus application note at www.epluse.com/ee074.

General

Power supply class III USA & Canada: Class 2 supply necessary	10 - 28 V DC
Current consumption, typ.	3 mA
Electrical connection	M12x1, 5 poles, stainless steel
Humidity working range	0…100 %RH
Temperature working range **Probe**[1)] **Electronics**	 -40…+80 °C (-40...+176 °F) -40…+80 °C (-40...+176 °F)
Storage conditions	-40...+80 °C (-40...+176 °F) 0...90 %RH
Enclosure material	Stainless steel 1.4404 (AISI 316L)
Protection rating **Probe** **Electrical connection**[2)]	IP68 IP67
Electromagnetic compatibility	EN 61326-1 EN 61326-2-3 Industrial environment FCC Part15 Class B ICES-003 Class B
Conformity	CE UKCA
Configuration and adjustment	PCS10 Product Configuration Software (free download) and configuration adapter

1) Extended temperature working range -70...+105 °C at the probe tip of version EE074-L305.
2) The IP67 protection rating applies when plugged into an appropiate M12x1 socket.

Mounting Accessories (Optional)

Immersion Well

Material		Brass nickel-plated Stainless steel (tube: 1.4571 / 316Ti, mounting thread: 1.4404 / 316L)			
Pressure rating	**Brass** **Stainless steel**	PN 15 bar (218 psi) PN 25 bar (363 psi)			
Max. flow speed					
		50 mm (1.97")	**100 mm (3.94")**	**135 mm (5.31")**	**285 mm (11.22")**
	Brass	26 m/s	12 m/s	6 m/s	1 m/s
	Stainless steel	29 m/s	15 m/s	9 m/s	2 m/s

Ordering Guide

	Feature	Description	Code
Hardware			EE074-
	Probe length	71.5 mm (2.82")	L70
		156.5 mm (6.16")	L155
		306.5 mm (12.07")	L305
	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 Example

EE074-L305

Feature	Code	Description
Probe length	L305	306.5 mm (12.07")

Accessories

For further information see datasheet Accessories.

Description		Code			
E+E Product Configuration Software (Free download: www.epluse.com/pcs10)		PCS10			
Modbus configuration adapter, M12 4 poles ←→ USB		HA011018			
Sensor connection cable, shielded, 5 poles, M12x1 socket ←→ wire ferrules	1.5 m (4.9 ft) 5 m (16.4 ft) 10 m (32.8 ft)	HA010819 HA010820 HA010821			
Y-style splitter, M12x1, 1 plug ←→ 2 sockets, 5 poles		HA030204			
Connector, M12x1 socket, 4 poles, for self assembly		HA010707			
Protection cap for M12 socket		HA010781			
Protection cap for M12 plug		HA010782			
Plastic mounting flange for probes with Ø6 mm (0.24"), with alignment notch		HA401101			
Stainless steel mounting flange Ø12 mm (0.47")		HA010201			
Wall mounting clip Ø12 mm (0.47")		HA010211			
Immersion well - thread R ½" ISO	Length in mm (inch)	50 (1.97")	100 (3.94")	135 (5.31")	285 (11.22")
	Brass	HA400101	HA400104	HA400102	HA400103
	Stainless steel	HA400201	HA400204	HA400202	HA400203
Immersion well - thread ½" NPT	Length in mm (inch)	50 (1.97")	100 (3.94")	135 (5.31")	285 (11.22")
	Brass	HA400111	HA400114	HA400112	HA400113
	Stainless steel	HA400211	HA400214	HA400212	HA400213

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datasheet_EE074 | Version v1.6 | 07-2025

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