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+ Datasheet EE471

Temperature Sensor with Remote Probe



EE471

Temperature Sensor with Remote Probe

The EE471 temperature sensor with remote probe reliably measures the temperature (T) in applications with space restrictions and is optimized for building automation, HVAC and process control.

Analogue, Digital and Passive Outputs

The measured data of the temperature is available at the voltage or current output, as well as on the RS485 interface with Modbus RTU protocol. In addition, EE471 features sensing elements for passive T measurement.

Easy Installation

The design with remote probe is appropriate for installations where electronic shall be protected against high temperature or strong vibrations. Product specific information for the remote probe is printed all along the cable. The optionally available, innovative immersion well is suitable for measurement in liquids and allows the sensor to be replaced quickly and safely.

Configurable and Adjustable

An optional adapter and the free EE-PCS Product Configuration Software facilitates the setup and adjustment of the EE471.



EE471 temperature sensor with remote probe

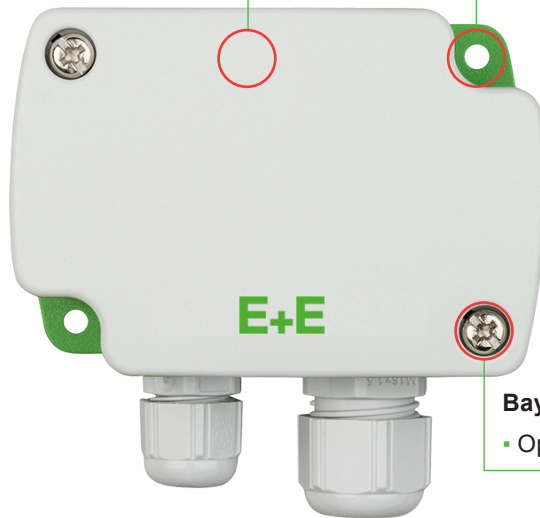
Features

Enclosure

- Protection rating: IP65/NEMA 4X
- PC (Polycarbonate)

External mounting holes

- Mounting with closed cover
- Protection against construction site pollution
- Easy and fast mounting



Bayonet screws

- Open/close with a ¼ rotation

Remote probe

Cable

- Product specific information



Star pressing

- Protection rating: IP67/NEMA 4

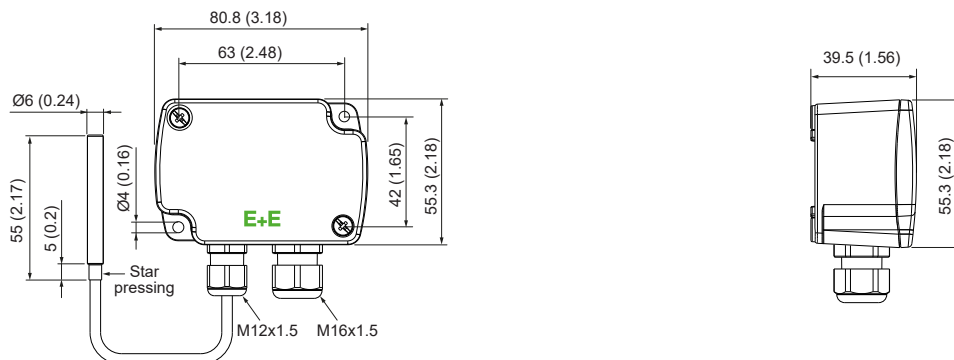
Test report

According to DIN EN 10204-2.2

Dimensions

Values in mm (inch)

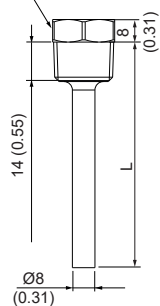
Enclosure



Immersion well

(not included in the scope of supply)

Width across flats: 22 (0.87)



Length (L) in mm	Length (L) in inch
50	1.97
100	3.94
135	5.31
285	11.22

Technical Data

Measurands

Temperature (T) - Active

Measuring range	Remote probe	-30 °C...+105 °C (-22...+221 °F)	
Accuracy @ 20 °C (68 °F)		±0,3 °C (±0.54 °F)	

Temperature (T) - Passive

Measuring range	-30 °C...+105 °C (-22...+221 °F)		
Sensor type	Nominal resistance	Sensitivity	Standard
Pt100 DIN B	R ₀ : 100 Ω	TC: 3,850 x 10 ⁻³ /°C	DIN EN 60751
Pt1000 DIN B	R ₀ : 1000 Ω	TC: 3,850 x 10 ⁻³ /°C	DIN EN 60751

Outputs

Analogue

Analogue output	0 - 10 V 4 - 20 mA (2-wire)	0 < I _L < 1 mA R _L ≤ 500 Ω	I _L = load current R _L = load resistance
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Digital




Digital interface	RS485 (EE471 = 1 Unit Load)
Protocol Factory settings Supported Baud rates Measured data types	Modbus RTU Baud rate see order information, parity even, 1 stop bit, Modbus address 66 9600, 19200 and 38400 FLOAT32 and INT16

T Sensor Passive

Sensor connection	2-wire connection, wire resistance see section "Additional Information"
Measuring current, typ.	<1 mA (according to technical data of the specific T sensing element)

Technical Data

General

Power supply class III  USA & Canada: Class 2 supply necessary, max. voltage 30 V DC for output RS485 and 0 - 10 V for output 4 - 20 mA	15 - 35 V DC or 24 V AC $\pm 20\%$ 10 V DC + $R_L \times 20 \text{ mA} < V+ < 35 \text{ V DC}$ R_L = load resistance
Current consumption, typ. Analogue RS485	5 mA (DC) / 12 mA _{rms} (AC) 3.5 mA (DC) / 12 mA _{rms} (AC)
Electrical connection	Screw terminals 2x max. 2.5 mm ² (AWG14)
Cable glands	M16x1.5 / M12x1.5 / UL94 V-2
Insulation resistance (remote probe) @20 °C (68 °F)	>100 MΩ
Response time t_{63} Duct sensor at 3 m/s (590 ft/min) air velocity Immersion sensor in liquid water bath	<1 min <30 s
Humidity working range	5...95 %RH, non-condensing
Temperature working range Remote probe Electronics	-30 °C...+105 °C (-22...+221 °F) -30 °C...+70 °C (-22...+158 °F)
Storage conditions	-30 °C...+70 °C (-22...+158 °F) 5...95 %RH, non-condensing
Material Enclosure Cable Sensor sleeve	Polycarbonate (PC), UL94 V-0 approved Polyvinylchloride (PVC) Stainless steel (1.4571 / 316Ti)
Protection rating Enclosure Remote probe	IP65/NEMA 4X IP67/NEMA 4
Electromagnetic compatibility	EN 61326-1 EN 61326-2-3 Industrial environment FCC Part15 Class A ICES-003 Class A
Conformity	 

Additional Information

Wire Resistance / Temperature Offset

(relevant only for passive output EE471-M7)

Probe cable length	Wire resistance	Temperature offset for Pt100*)
0.5 m (1.64 ft)	0.086 Ω	0.22 °C (0.396 °F)
2 m (6.56 ft)	0.344 Ω	0.88 °C (1.584 °F)
3 m (9.84 ft)	0.516 Ω	1.32 °C (2.376 °F)
5 m (16.4 ft)	0.860 Ω	2.2 °C (3.960 °F)
10 m (32.8 ft)	1.72 Ω	4.4 °C (7.920 °F)

*) For high-resistance T sensors ($R \geq 1000 \Omega$) the temperature offset is negligible.

Ordering Guide

Feature	Description	Code			
Hardware Configuration		EE471-			
	Model	Active	M3		
		Passive	M7		
	Output	0 - 10 V	A3		
		4 - 20 mA	A6		
		RS485	J3		
	T sensor passive ¹⁾ (R-T-characteristics see www.epluse.com/ee451)	Pt100 DIN B	TP2		
		Pt1000 DIN B	TP4		
	Probe cable length	0.5 m (1.6 ft)	K0.5		
		2 m (6.6 ft)	K2		
3 m (9.8 ft)		K3			
5 m (16.4 ft)		K5			
10 m (32.8 ft)		K10			
Software Setup - Outputs	Output (T) measurand	Temperature [°C]	No code		
		Temperature [°F]	MA2		
	Output (T) scaling low	0	No code		
		Value (within the working range)	SALValue		
	Output (T) scaling high	50	No code		
		Value (within the working range)	SAHValue		
	Protocol	Modbus RTU ²⁾		P1	
	Baud rate	9600		BD5	
		19200		BD6	
		38400		BD7	

1) Other passive sensor types are available on request from a minimum order quantity of 500 pcs.

2) Factory settings: Parity even, stop bit 1. Modbus Map and communication setting: see User Guide and Modbus Application Note at www.epluse.com/ee471.

Order Examples

EE471-M3J3K3P1BD5

Feature	Code	Description
Model	M3	Active
Output	J3	RS485
Probe cable length	K3	3 m (9.8 ft)
Protocol	P1	Modbus RTU
Baud rate	BD5	9600

EE471-M7TP4K5

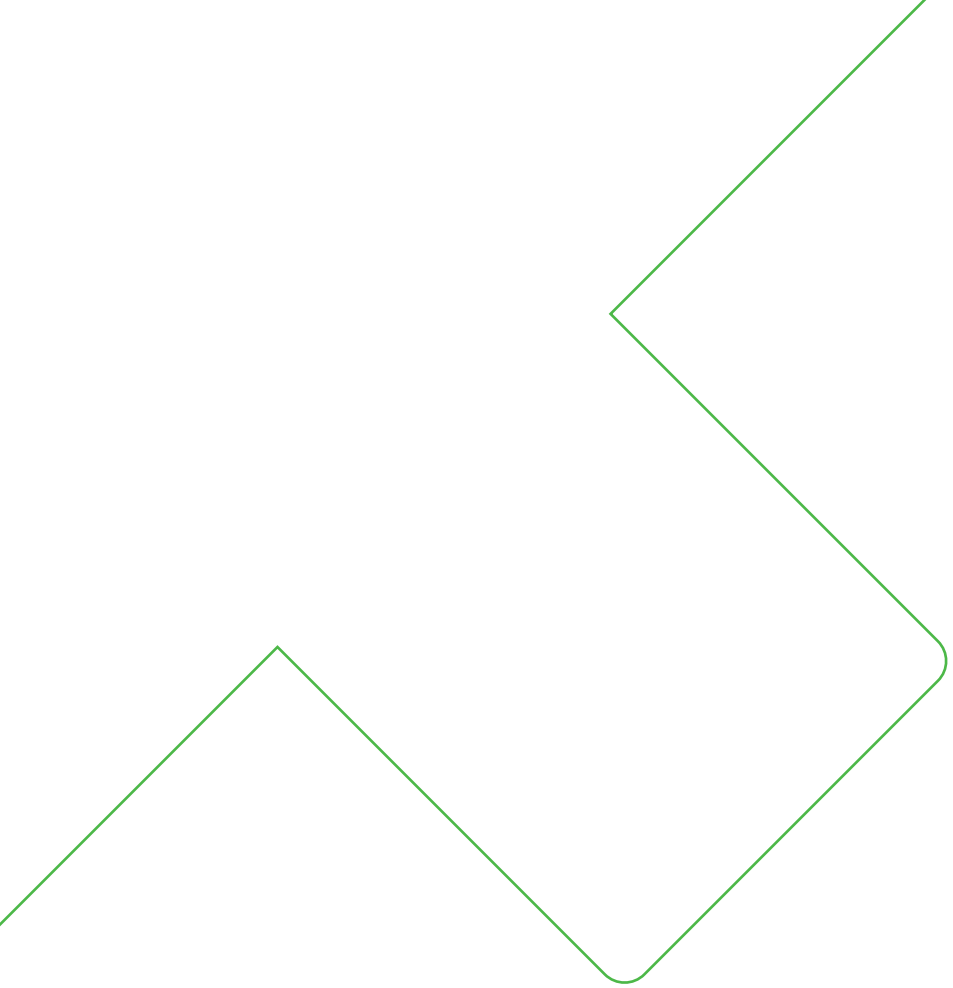
Feature	Code	Description
Model	M7	Passive
T sensor passive	TP4	Pt1000 DIN B
Probe cable length	K5	5 m (16.4 ft)

Accessories

For further information see datasheet [Accessories](#).

Description	Code				
Product configuration adapter for analogue output	See datasheet EE-PCA				
USB configuration adapter for digital output	HA011066				
E+E Product Configuration Software (free download: www.epluse.com/configurator)	EE-PCS				
Power supply adapter	V03				
Conduit Adapter, M16x1.5 auf 1/2"	HA011110				
Mounting flange	HA401101				
Cable gland (M12x1.5; -40...+100 °C (-40... +212 °F); UL94-V0)	HA403101				
Hose clamp (for pipe mounting of remote probe)	HA402101				
Hose clamp bundle, metal, 330 mm (13"), 5 pcs.	HA402102				
Immersion well - thread R 1/2" ISO ¹⁾	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 1/2" NPT ¹⁾	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

1) For further information see datasheet www.epluse.com/ee431.



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