

EE471

Temperature Sensor with Remote Probe

The EE471 temperature sensor with remote probe measures reliably 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 on the voltage or current output, as well as on the RS485 interface with Modbus RTU or BACnet MS/TP 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.

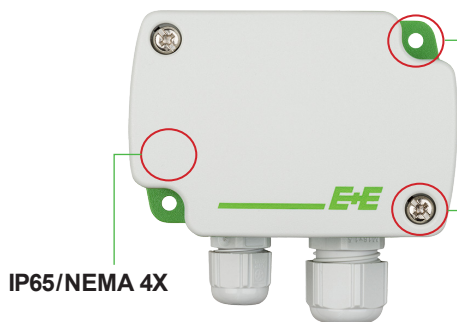
The innovative immersion well is suitable for measurement in liquids and allows the sensor to be replaced quickly and safely.

Configurable and Adjustable

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



Features



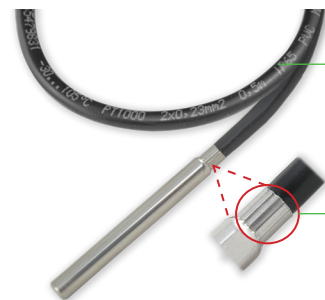
External mounting holes

- » Mounting with closed cover
- » Protection against construction site pollution

Bayonet screws

- » Open/closed with a ¼ rotation

IP65/NEMA 4X



Product-specific information


IP67 cable outlet
(star pressing of the sensor sleeve)

Test report according to
 DIN EN 10204-2.2



Technical Data

Active Output

Operating temperature	Remote probe:	-30...+105 °C (-22...+221 °F)	
	Electronics:	-30...+70 °C (-22...+158 °F)	
Sensing element	Pt1000 class A, DIN EN 60751		
Analogue output	0 - 10 V	-1 mA < I _L < 1 mA	
	4 - 20 mA (2-wire)	R _L < 500 Ω	R _L = load resistance
Digital interface	RS485 (EE471 = 1 unit load)		
Protocol	Modbus RTU or BACnet MS/TP		
Default settings	Baud rate 9600 ¹⁾ , parity even, 1 stop bit, Modbus adress 66		
Accuracy	±0.3 °C (±0.54 °F) at 20 °C (68 °F)		
Supply voltage (Class III) 	15 - 35 V DC or 24 V AC ±20%	for RS485 and 0 - 10 V output	
	10 V DC + R _L x 20 mA < V ₊ < 35 V DC	for 4 - 20 mA output	
Current demand, typ.	analogue	5 mA (DC) / 12 mA _{eff} (AC)	
	RS485	3.5 mA (DC) / 12 mA _{eff} (AC)	
Electromagnetic compatibility	EN 61326-1	EN 61326-2-3	Industrial environment
	FCC Part 15	ICES-003 Class B	

1) Supported baud rates: 9 600, 19 200, 38 400, 57 600, 76 800 and 115 200; find more details about communication setting in the User Manual and the Modbus Application Note at www.epluse.com/ee471

2) USA & Canada class 2 supply required, max. supply voltage 30 V DC



Passive Output

Operating temperature	-30...+105 °C (-22...+221 °F)			
T sensing elements	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
Measurement current typ.	< 1 mA (according technical data of the specific T-sensing element)			
T sensor connection	2-wire, wire resistance see additional information below			

General

Insulation resistance (remote probe)	> 100 MΩ at 20 °C (68 °F)
Response time τ ₆₃	< 1 min, at 3 m/s (590 ft/min) air velocity < 30 s, with immersion well in liquid water bath
Sensor sleeve material	Stainless steel (1.4571 / 316Ti)
Cable material	PVC
Electrical connection	Screw terminal, 2x max. 2.5 mm ² (0.004 in ²)
Enclosure material	Polycarbonate, UL94 V-0 approved
Protection rating	IP65/NEMA 4X (enclosure), IP67/NEMA 4X (remote probe)
Cable gland	M16x1.5, M12x1.5, UL94 V-2
Storage temperature	-30...+70 °C (-22...+158 °F)
Working and storage humidity	5...95 %RH (non condensing)

Additional Information

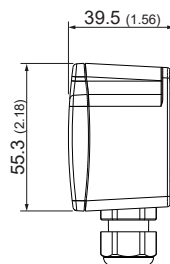
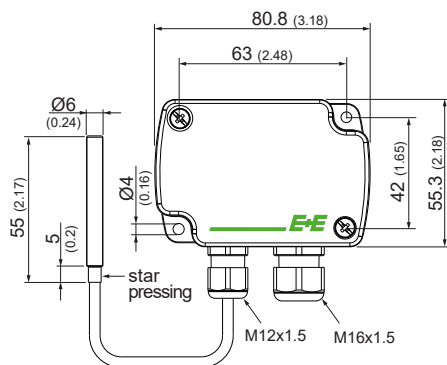
Wire Resistance / Temperature Offset (relevant only for passive output EE471-M7)

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)

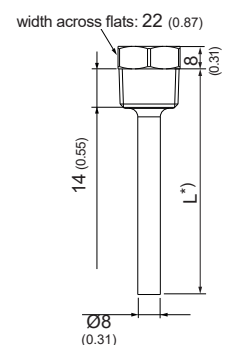
*) For high-resistance T sensors (R ≥ 1000 Ω) the temperature offset is negligible.

Dimensions

Values in mm (inch)



Immersion well



*) According to ordering guide

Ordering Guide

Position 1 - Temperature Sensor

		EE471-		
		M3		M7
Hardware Configuration	Model	Active		
		Passive		
	Output	0 - 10 V	A3	
		4 - 20 mA	A6	
		RS485	J3	
	T sensor passive¹⁾ (see www.epluse.com/R-T_Characteristics)	Pt100 DIN B		TP2
		Pt1000 DIN B		TP4
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	
Setup Outputs	Unit	°C	no code	
		°F	MA2	
	Scale T low	0	no code	
		Value (within working range)	SAL Value	
	Scale T high	50	no code	
		Value (within working range)	SAH Value	
	Protocol	Modbus RTU ²⁾		P1
		BACnet MS/TP ³⁾		P3
Baud rate		9.600		BD5
		19.200		BD6
		38.400		BD7
		57.600 ⁴⁾		BD8
		76.800 ⁴⁾		BD9
	115.200 ⁴⁾		BD10	

1) Other passive sensor types are available on request from a minimum order quantity of 100 pcs

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

3) Product Implementation Conformance Statement (PICS) available at www.epluse.com/ee471

4) Only for BACnet MS/TP

Position 2 - Mounting Accessories

Plastic mounting flange HA401101

Immersion well: R½" ISO:

Length (L)	50 mm (1.97")	100 mm (3.94")	135 mm (5.31")	285 mm (11.22")
Brass	HA400101	HA400104	HA400102	HA400103
Stainless steel	HA400201	HA400204	HA400202	HA400203

Immersion well: ½" NPT:

Length (L)	50 mm (1.97")	100 mm (3.94")	135 mm (5.31")	285 mm (11.22")
Brass	HA400111	HA400114	HA400112	HA400113
Stainless steel	HA400211	HA400214	HA400212	HA400213

Order Example

EE471-M3J3K3P3BD7

Model: Active
 Output: RS485
 Cable length: 3 m (9.8 ft)
 Protocol: BACnet MS/TP
 Baud rate: 38400

EE471-M7TP4K5

Model: Passive
 T sensor passive: Pt1000 DIN B
 Cable length: 5 m (16.4 ft)

Accessories

Product configuration adapter

- for analogue output
- for digital output - USB configuration adapter

see data sheet EE-PCA

HA011066

EE-PCS

Product configuration software

(free download: www.epluse.com/configurator)

Power supply adapter

(see data sheet Accessories)

V03

Conduit adapter, M16x1.5 to 1/2

HA011110

Cable gland (M12x1.5, -40 °C...+100 °C / -40 °F... +212 °F, UL94 V-0)

HA403101

Hose clamp (for pipe mounting of remote probe)

HA402101

For further information please see datasheet EE441.

Mounting with Immersion Well

For further information please see datasheet EE431.



1. The spring inside the well must be removed and replaced by a standard M12x1.5 cable gland (not included in the scope of supply).
2. Insert the remote cable sensor and fix it by fastening the cable gland.

Please observe the operating temperature range of the cable gland!