

EE471

Temperature Sensor with Remote Probe

EE471 sensors with separate housing are used for temperature measurement in applications with space restrictions or where the electronics must be protected against high temperature or strong vibrations. In addition to active outputs 0-10 V or 4-20 mA various types of sensing elements such as Pt1000, NTC10k or Ni1000 are available for passive temperature measurement. Due to an innovative cable outlet and housing concept a high protection class is provided. Product-specific information for the remote probe is printed all along the cable. The optional adapter EE-PCA and the free configuration software EE-PCS facilitate the adjustment and setup of the active temperature sensors.



Features



- External mounting holes**
- » Mounting with closed cover
 - » Protection against construction site pollution
- Bayonet screws**
- » Open/closed with a ¼ rotation



- Product-specific information**
- IP67 cable outlet**
(star pressing of the sensor sleeve)



Technical Data

Active Output

Operating temperature	remote probe: -30 °C...+105 °C (-22 °F...+221 °F) electronics: -30 °C... +70 °C (-22 °F...+158 °F)
Sensing element	Pt1000 (class A, DIN EN60751)
Output	0-10 V -1 mA < I _L < 1 mA 4-20 mA (two-wire) R _L < 500 Ω
Accuracy	±0.3 °C (±0.54 °F) at 20 °C (68 °F)
Supply voltage (Class III)	for 0-10 V 15-35 V DC or 24 V AC ±20% for 4-20 mA 10 V DC + R _L x 20 mA < V+ < 35 V DC
Current demand	DC: typ. 5 mA AC: typ. 12 mA _{eff}
Electromagnetic compatibility	EN61326-1, EN61326-2-3 industrial environment

Passive Output

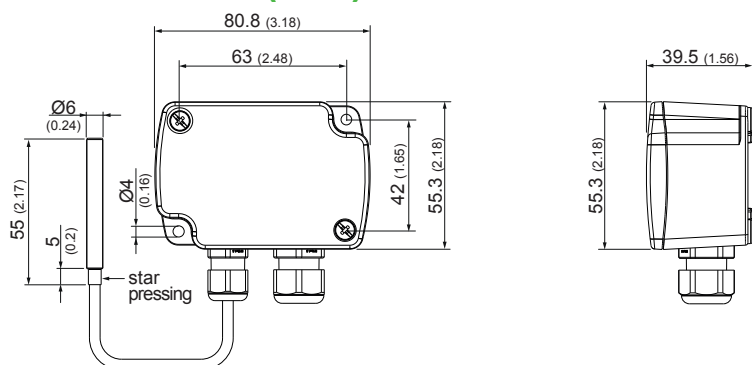
Operating temperature	-30 °C...+105 °C (-22 °F...+221 °F)			
Types of T-Sensors	Sensor Type	Nominal Resistance	Sensitivity	Standard
	Pt100 DIN B	R ₀ : 100 Ω	TC: 3.850 x 10 ⁻³ /°C	DIN EN 60751
	Pt1000 DIN B	R ₀ : 1000 Ω	TC: 3.850 x 10 ⁻³ /°C	DIN EN 60751
	NTC1.8k	R ₂₅ : 1.8 kΩ ± 0.2 K	B _{25/85} : 3500 K ± 1.0 %	-
	NTC2.2k	R ₂₅ : 2.252 kΩ ± 0.2 K	B _{25/85} : 3977 K ± 0.3 %	-
	NTC10k B3950	R ₂₅ : 10 kΩ ± 0.5 %	B _{25/85} : 3989 K (B _{25/50} : 3950 K ± 1.0 %)	-
	NTC10k B3435	R ₂₅ : 10 kΩ ± 1 %	B _{25/85} : 3435 K	-
	KTY81-210	R ₂₅ : 1980-2020 Ω	-	-
	Ni1000 TK6180 DIN B	R ₀ : 1000 Ω	TC: 6180 ppm/K	DIN 43760
	Ni1000 TK5000 DIN B	R ₀ : 1000 Ω	TC: 5000 ppm/K	DIN 43760
Measurement current	typ. < 1 mA ¹⁾			
T-Sensor connection	two-wire, wire resistance see additional information below			
Electrical connection	screw terminal, 2x max. 2.5 mm ² (0.004 in ²)			

¹⁾ according technical data of the specific T-sensors

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
Enclosure material	polycarbonate, UL94-V0 approved
Protection class	IP65 / NEMA 4 (enclosure), IP67 / NEMA 4 (remote probe)
Cable gland	M16x1.5, UL94-V2
Storage temperature	-30 °C...+70 °C (-22 °F...+158 °F)
Working and storage humidity range	5 % rh...95 % rh, no condensation

Dimensions in mm (inch)

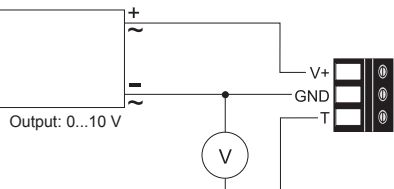


Connection Diagram

Active Output

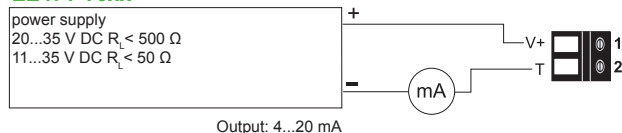
EE471-T3xx

power supply
15...35 V DC
24 V AC $\pm 20\%$



EE471-T6xx

power supply
20...35 V DC $R_L < 500 \Omega$
11...35 V DC $R_L < 50 \Omega$



Passive Output

EE471-Txx



Additional Information

Wire Resistance / Temperature Offset

(Only relevant for passive output!)

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 (3.96 °F)

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

Scope of Supply

- EE471 Temperature sensor according ordering guide
- Cable gland
- Two self-adhesive labels for configuration changes (see user guide at www.epluse.com/relabeling)
- Test report according to DIN EN10204 - 2.2 (for active output only)

Ordering Guide

MODEL	OUTPUT	CABLE MATERIAL	CABLE LENGTH	DESIGN	SCALING ³⁾ (analogue output only)	UNIT (analogue output only)
Temperature (T)	Analogue	PVC (A)	0.5 m (1.6 ft) (A)	Standard (PO)	-40...60 (002)	°C (M)
	0-10 V (3xx)		2 m (6.6 ft) (D)		-20...80 (024)	°F (N)
	4-20 mA (6xx)		3 m (9.8 ft) (E)		0...50 (004)	
	T-Sensor passive¹⁾		5 m (16.4 ft) ²⁾ (G)		0...100 (005)	
	Pt100 DIN B (xxB)				32...212 (075)	
	Pt1000 DIN B (xxD)				-40...140 (083)	
	NTC1.8k (xxG)					
	NTC2.2k (xxV)					
	NTC10k B3950 (xxL)					
	NTC10k B3435 (xxO)					
KTY81-210 (xxN)						
Ni1000 TK6180 DIN B (xxJ)						
Ni1000 TK5000 DIN B (xxT)						
EE471-						

1) T-Sensor details see www.epluse.com/R-T_Characteristics

2) Only available for analogue output (0-10 V or 4-20 mA)

3) other scaling upon request

Order Example

Passive Output

EE471-TxxDADPO

Model: Temperature
 Output: Pt1000 DIN B
 Cable Material: PVC
 Cable Length: 2 m (6.6 ft)
 Design: Standard

Active Output

EE471-T3xxAEPO/024M

Model: Temperature
 Output: 0-10 V
 Cable Material: PVC
 Cable Length: 3 m (9.8 ft)
 Design: Standard
 Scaling: -20...80
 Unit: °C

Accessories

Product configuration adapter
 Product configuration software
 Power supply adapter
 Conduit adapter, M16x1.5 to 1/2"

see data sheet [EE-PCA](#)
[EE-PCS](#) (free download: www.epluse.com/configurator)
[V03](#) (see data sheet Accessories)
[HA011110](#)

Mounting

Immersion well - Thread: R 1/2" ISO

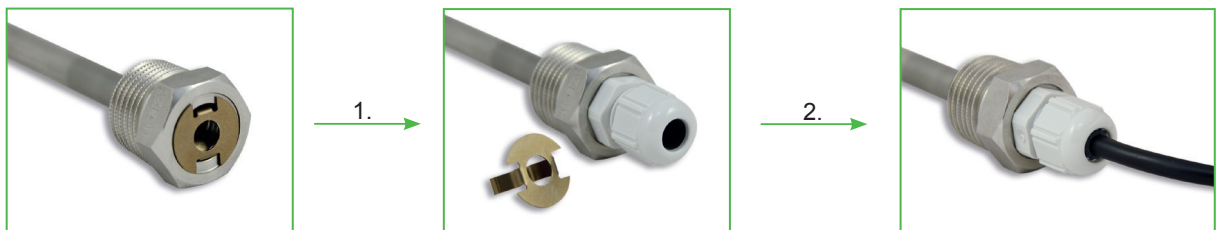
Length	50 mm (1.97")	100 mm (3.94")	135 mm (5.31")	285 mm (11.22")
brass	HA400101	HA400104	HA400102	HA400103
stainless steel	HA400201	HA400204	HA400202	HA400203

Immersion well - Thread: 1/2" NPT

Length	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

For further information please see datasheet EE431.

Mounting with immersion well:



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!

Cable gland (M12x1.5, -40 °C...+100 °C / -40 °F...+212 °F, UL94-V0) [HA403101](#)

Hose clamp (for pipe mounting of remote probe) [HA402101](#)

For further information please see datasheet EE441.