

EE431

Duct / Immersion Temperature Sensor

The EE431 temperature sensor is used for air temperature measurement in heating, ventilation and air conditioning systems. It can be installed either with mounting flange or via external mounting holes at the enclosure (duct sensor). For temperature measurement in liquids the temperature sensor EE431 is mounted with an immersion well (immersion sensor). 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. The innovative IP65 housing and the mounting concept allow for fast and easy installation. The optional adapter EE-PCA and the free configuration software EE-PCS facilitate the adjustment and setup of the active temperature sensors.

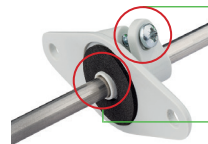


Features



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

Mounting flange



- Fixation via clamping**
 - » No direct screwing onto probe
 - » Inclined screw for easy installation
- Special sealing**
 - » Foam gasket for good tightness
 - » No scratching of probe due to alignment notch

Immersion well



- Innovative mounting spring**
 - » For securing the probe inside the well
 - » No fastening screw, no tools required

Typical Applications

Building automation
 Process and climate control
 Measurement in air and liquids



Technical Data

Active Output

Operating temperature	duct sensor (probe): -40 °C...+110 °C (-40 °F...+230 °F)
	immersion sensor (probe): -40 °C...+150 °C (-40 °F...+302 °F)
	electronics: -40 °C...+70 °C (-40 °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	Standard: ±0.3 °C (±0.54 °F) at 20 °C (68 °F)
	Optional (TT2): ±0.2 °C (±0.36 °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 (probe) -40 °C...+110 °C (-40 °F...+230 °F)
-40 °C...+150 °C (-40 °F...+302 °F) for immersion sensor with Pt and Ni T-sensors

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 mA¹⁾

T-Sensor connection two-wire

Electrical connection screw terminal, 2x max. 2.5 mm² (0.004 in²)

General

Insulation resistance (probe) > 100 MΩ at 20 °C (68 °F)

Response time τ₆₃ < 1 min, duct sensor at 3 m/s (590 ft/min) air velocity
< 30 s, immersion sensor in liquid water bath

Probe pipe material stainless steel (1.4571 / 316Ti)

Immersion well material brass (nickel-plated) or stainless steel (pipe: 1.4571 / 316Ti, turned part: 1.4404 / 316L)

pressure rating PN 15 bar (218 psi), brass
PN 25 bar (363 psi), stainless steel

permissible inflow velocity	m/s (ft/min)	50 mm (1.97")	100 mm (3.94")	135 mm (5.31")	285 mm (11.22")
brass	26 m/s (5118 ft/min)	12 m/s (2362 ft/min)	6 m/s (1181 ft/min)	1 m/s (197 ft/min)	
stainless steel	29 m/s (5708 ft/min)	15 m/s (2953 ft/min)	9 m/s (1771 ft/min)	2 m/s (394 ft/min)	

Enclosure material polycarbonate, UL94-V0 approved, T-range: -40 °C...+110 °C (-40 °F...+230 °F)

Protection class IP65 / NEMA 4

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

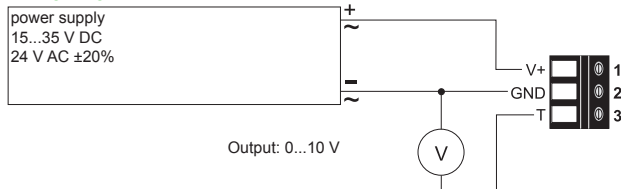
1) according technical data of the specific T-sensors

Connection Diagram

Active Output

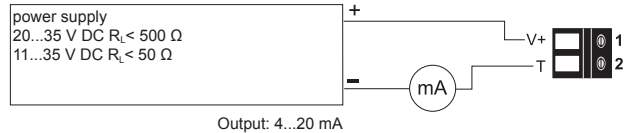
EE431-T3xx

power supply
15...35 V DC
24 V AC ±20%



EE431-T6xx

power supply
20...35 V DC R_L < 500 Ω
11...35 V DC R_L < 50 Ω



Passive Output

EE431-Txx

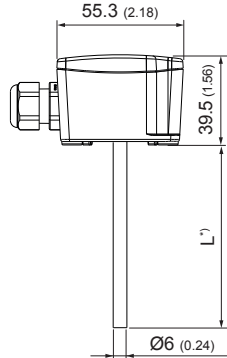
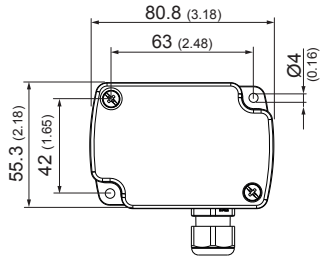


Scope of Supply

- EE431 Temperature sensor according to 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)

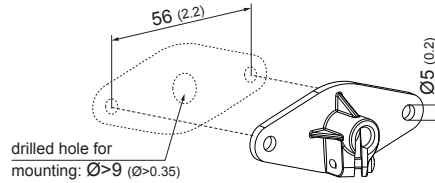
Dimensions in mm (inch)

Temperature Sensor



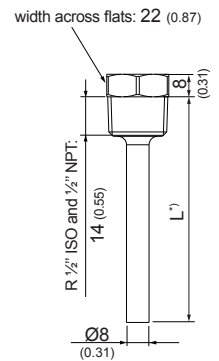
Mounting Accessories

Mounting flange



¹⁾ Length according to ordering guide

Immersion well



Ordering Guide

Position 1 - Temperature Sensor

MODEL	OUTPUT	PROBE LENGTH	TEMPERATURE TOLERANCE	SCALING ³⁾ (analogue output only)	UNIT (analogue output only)	
Temperature	(T) Analogue 0-10 V 4-20 mA	65 mm (2.56")	(CPO) ±0.3 (no code)	-40...60 (002)	°C (M)	
		115 mm (4.53")	(NPO) ±0.2 ²⁾ (TT2)	-20...80 (024)	°F (N)	
		150 mm (5.91")	(EPO)	0...50 (004)		
	T-Sensor passive¹⁾		300 mm (11.81")	(GPO)	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)					

EE431-

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

Position 2 - Mounting Accessories

For Duct Sensor:

- Mounting flange

HA401101

For Immersion Sensor:

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

Order Example

Passive Output

Position 1:

EE431-TxxLEPO

Model: Temperature
 Output: NTC10k B3950
 Probe Length: 150 mm (5.91")
 Temperature tolerance: ±0.3

Position 2:

HA400102

Immersion well - brass, R 1/2" ISO, 135 mm (5.31")

Active Output

Position 1:

EE431-T3xxCPO/004M

Model: Temperature
 Output: 0-10 V
 Probe Length: 65 mm (2.56")
 Temperature tolerance: ±0.3
 Scaling: 0...50
 Unit: °C

Position 2:

HA400201

Immersion well - stainless steel, R 1/2" ISO, 50 mm (1.97")

Accessories

Product configuration adapter	see data sheet EE-PCA
Product configuration software	EE-PCS (free download: www.epluse.com/configurator)
Power supply adapter	V03 (see data sheet Accessories)
Conduit adapter, M16x1.5 to 1/2"	HA011110