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.

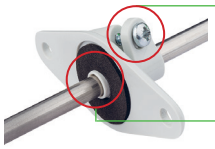
The optional adapter EE-PCA and the free configuration software EE-PCS facilitate the adjustment and setup of the active temperature sensors.

Features

External mounting holes
» Mounting with closed cover
» Protection against construction site pollution

Bayonet screws
» Open/closed with a ¼ rotation

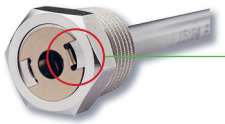
Mounting flange



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

CE RoHS compliant

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	±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 (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
NTC10k	R_{25}: 10 kΩ ± 0.5 %	$B_{25/85}$: 3989 K ($B_{25/50}$: 3950 K ± 1.0 %)	-
NTC1.8k	R_{25}: 1.8 kΩ ± 0.2 K	$B_{25/85}$: 3500 K ± 1.0 %	-
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
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 τ_{63}	< 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 ")	135 mm (5.31 ")	285 mm (11.22 ")
brass	26 m/s (5118 ft/min)	6 m/s (1181 ft/min)	1 m/s (197 ft/min)
stainless steel	29 m/s (5708 ft/min)	9 m/s (1771 ft/min)	2 m/s (394 ft/min)

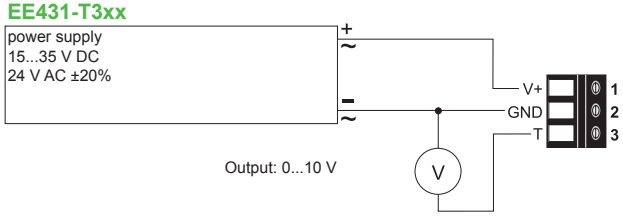
Enclosure material	polycarbonate, UL94-V0 approved, T-range: -40 °C...+110 °C (-40 °F...+230 °F)
Protection class	IP65 / NEMA 4
Cable gland	M16x1.5, UL94-V2
Storage temperature	-30 °C…+70 °C (-22 °F...+158 °F)
Working and storage humidity range	5 % rh...95 % rh, no condensation

1) according technical data of the specific T-sensors

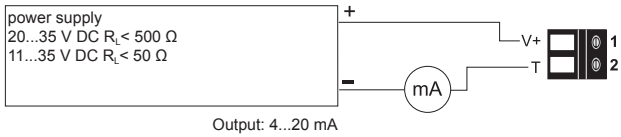
Connection Diagram

Active Output

EE431-T3xx



EE431-T6xx



Passive Output

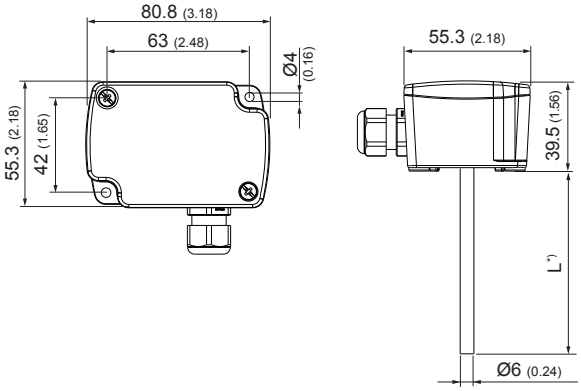
EE431-Txx

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)

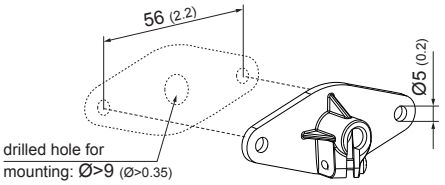
Dimensions in mm (inch)

Temperature Sensor



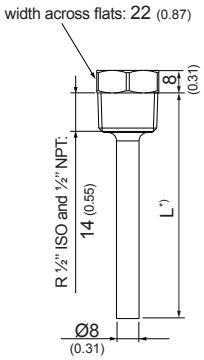
Mounting Accessories

Mounting flange



*) Length according to ordering guide

Immersion well



Ordering Guide

Position 1 - Temperature Sensor

MODEL		ANALOGUE OUTPUT		T-SENSOR PASSIVE[1]		PROBE LENGTH		SCALING[2] (analogue output only)		UNIT (analogue output only)	
Temperature	(T)	0-10 V	(3x)	Pt100 DIN B	(B)	65 mm (2.56 “)	(CPO)	-40...60	(002)	°C	(M)
		4-20 mA	(6x)	Pt1000 DIN B	(D)	150 mm (5.91 “)	(EPO)	-20...80	(024)	°F	(N)
		none	(xx)	NTC10k	(L)	300 mm (11.81 “)	(GPO)	0...50	(004)		
				NTC1.8k	(G)			0...100	(005)		
				Ni1000 TK6180 DIN B	(J)			32...212	(075)		
				Ni1000 TK5000 DIN B	(T)			-40...140	(083)		
				Analogue output	(x)						
EE431-											

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

2) other scaling upon request

Position 2 - Mounting Accessories

For Duct Sensor:

- Mounting flange HA401101

For Immersion Sensor:

IMMERSION WELL - THREAD: R ½” ISO			
Length	50 mm (1.97 “)	135 mm (5.31 “)	285 mm (11.22 “)
brass	HA400101	HA400102	HA400103
stainless steel	HA400201	HA400202	HA400203

IMMERSION WELL - THREAD: ½” NPT			
Length	50 mm (1.97 “)	135 mm (5.31 “)	285 mm (11.22 “)
brass	HA400111	HA400112	HA400113
stainless steel	HA400211	HA400212	HA400213

Order Example

Passive Output

Position 1:

EE431-TxxLEPO

Model:	Temperature
T-Sensor passive:	NTC10k
Probe Length:	150 mm (5.91 “)

Position 2:

HA400102

Immersion well - brass, R ½” ISO, 135 mm (5.31 “)

Active Output

Position 1:

EE431-T3xxCPO/004M

Model:	Temperature
Analogue Output:	0-10 V
Probe Length:	65 mm (2.56 “)
Scaling:	0...50 °C

Position 2:

HA400201

Immersion well - stainless steel, R ½” 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