# EE451

Wall Mounted Temperature Sensor for Indoor and Outdoor

E+E sensors EE451 are used for temperature measurement in heating, ventilation and air conditioning systems enabling weather-dependent temperature regulation.

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 enclosure concept (IP65) with a mounting bracket allows for easy installation and unbiased detection of ambient temperature.

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

EE451

Active Type   **Passive Type**
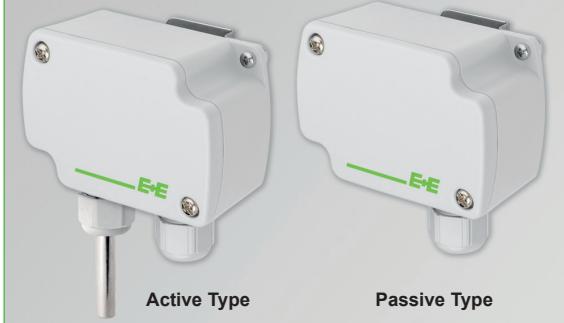
Features

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

Bayonet screws
» Open/closed with a ¼ rotation

Mounting bracket
» Distance to wall for correct measurement of ambient temperature

CE   **RoHS** compliant

Technical Data

Active Output

Sensing element	Pt1000 (class A, DIN EN60751)
Output	0-10 V $\qquad$ -1 mA < I_L < 1 mA
	4-20 mA (two-wire) $\qquad$ R_L < 500 Ω
Accuracy	±0.3 °C (±0.54 °F) at 20 °C (68 °F)
Supply voltage (Class III)	
$\quad$ for 0-10 V	15-35 V DC or 24 V AC ±20%
$\quad$ for 4-20 mA	10 V DC + R_L x 20 mA < V+ < 35 V DC
Current demand	DC: typ. 5 mA $\qquad$ AC: typ. 12 mA_{eff}
Electromagnetic compatibility	EN61326-1, EN61326-2-3
	industrial environment

Passive Output

Types of T-Sensors	(see table below)

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

1) according technical data of the specific T-sensors

General

Operating temperature	-40 °C…+70 °C (-40 °F...+158 °F)
Enclosure material	polycarbonate, UL94-V0 approved
Protection class	IP65 / NEMA 4
Cable gland	M16x1.5, UL94-V2
Mounting bracket material	stainless steel (corr. 1.4301 / 304)
Storage temperature	-30 °C…+70 °C (-22 °F...+158 °F)
Storage humidity range	5 % rh...95 % rh, no condensation

## Dimensions in mm (inch)

Housing passive type

Housing active type

80.8 (3.18)
63 (2.48)
Ø4 (0.16)
55.3 (2.18)
42 (1.65)

~96 (3.78)

55.3 (2.18)
49 (1.93)

~96 (3.78)
Ø6 (0.24)
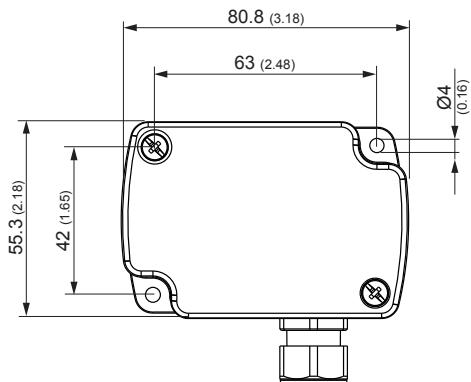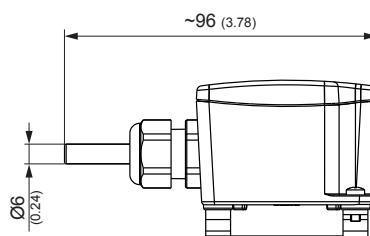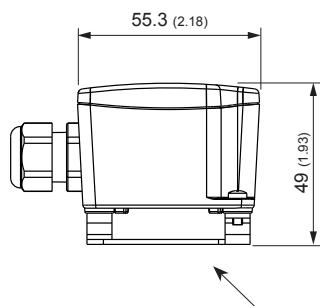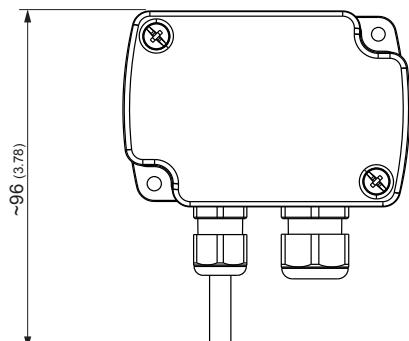
mounting bracket (included in the scope of supply)

Mounting

Mounting Bracket

cross-head screw M3x8 A2
(within the scope of supply)

26 (1.02)
4.5 (0.18)
9.5 (0.37)
49.6 (1.95)
30 (1.18)
4 (0.16)
1.5 (0.06)
4.5 (0.18)
4 (0.16)
M3
70.6 (2.78)
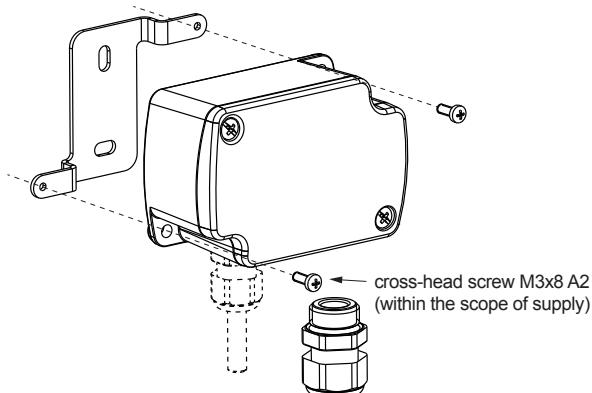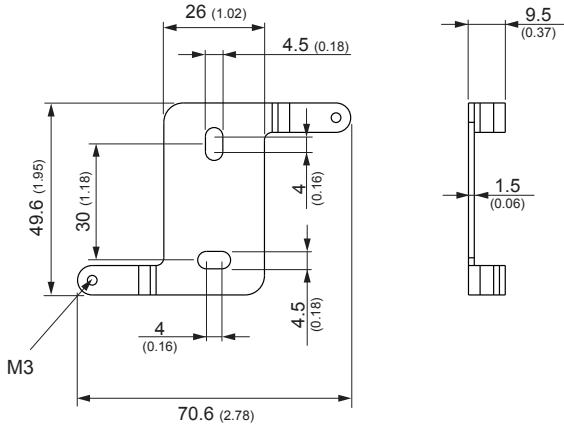
Connection Diagram

Active Output

EE451-T3xx

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

V+ — 1
GND — 2
T — 3

Output: 0...10 V

EE451-T6xx

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

V+ — 1
T — 2

Output: 4...20 mA
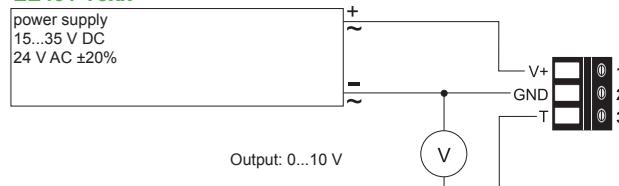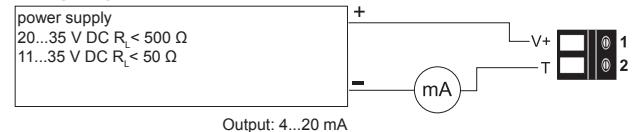
Passive Output

EE451-Txx

Scope of Supply

- EE451 Temperature sensor according to ordering guide
- Cable gland
- Mounting bracket
- 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		DESIGN		SCALING[2] (analogue output only)		UNIT (analogue output only)	
Temperature	(T)	**Analogue**		Standard	(PO)	-40...60	(002)	°C	(M)
		0-10 V	(3xx)			-30...70	(008)	°F	(N)
		4-20 mA	(6xx)			0...50	(004)		
		T-Sensor passive[1]				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)						
EE451-									

1) T-Sensor details see www.epluse.com/R-T_Characteristics
2) other scaling upon request

Order Example

Passive Output

EE451-TxxLPO

Model:	Temperature
Output:	NTC10k B3950
Design:	Standard

Active Output

EE451-T3xxPO/008M

Model:	Temperature
Output:	0-10 V
Design:	Standard
Scaling:	-30...70
Unit:	°C

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