EE451

Wall Mounted Temperature Sensor for Indoor and Outdoor

The EE451 wall mounted sensor measures reliably the temperature (T) indoors and outdoors, is optimized for building automation, HVAC, process control and enables weather-dependent temperature regulation.

Active Type Passive Type

Analogue, Digital and Passive Outputs
The T measured data 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, EE451 features a wide choice of sensing elements for passive T measurement.

Easy Installation
The compact and robust enclosure allows for easy and fast installation and unbiased detection of ambient temperature.

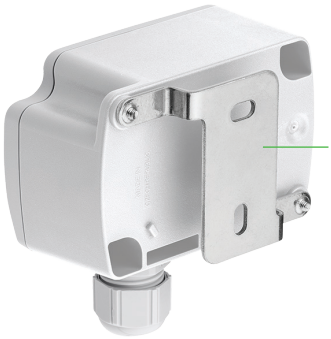
Configurable and Adjustable
An optional adapter and the free EE-PC Product Configuration Software facilitate the setup and adjustment of the EE451.

Features

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

Bayonet screws
» Open/closed with a ¼ rotation

IP65 / NEMA 4



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

Test report according to DIN EN 10204 – 2.2

CE RoHS compliant

Technical Data

Active Output

Sensing element	Pt1000 class A, DIN EN60751		
Analogue output	0-10 V	-1 mA < I_L < 1 mA	
	4-20 mA (two-wire)	R_L < 500 Ω	R_L= load resistance
Digital interface	RS485 with max. 32 unit load devices on one bus		
Protocol	Modbus RTU or BACnet MS/TP		
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	EN61326-1, EN61326-2-3 industrial environment		

Passive Output

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
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

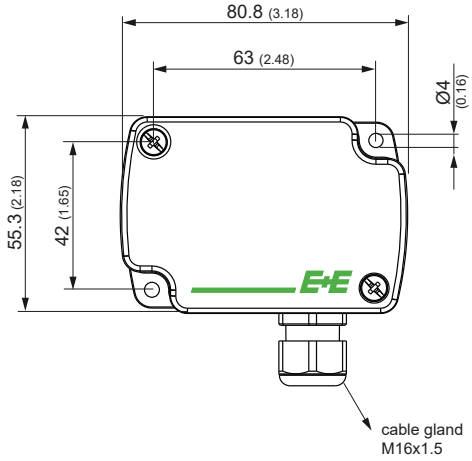
Measurement current	typ. < 1 mA (according technical data of the specific T-sensing element)
T-Sensor connection	two-wire

General

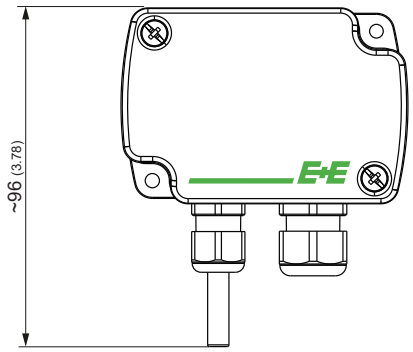
Operating temperature	-40…+70 °C (-40...+158 °F)
Enclosure material	polycarbonate, UL94-V0 approved
Protection class	IP65 / NEMA 4
Cable gland	M16x1.5, UL94-V2
Electrical connection	screw terminal, max. 2.5 mm² (0.004 in²)
Mounting bracket material	stainless steel (corr. 1.4301 / 304)
Storage temperature	-30…+70 °C (-22...+158 °F)
Working and storage humidity	5...95 % RH, non condensing

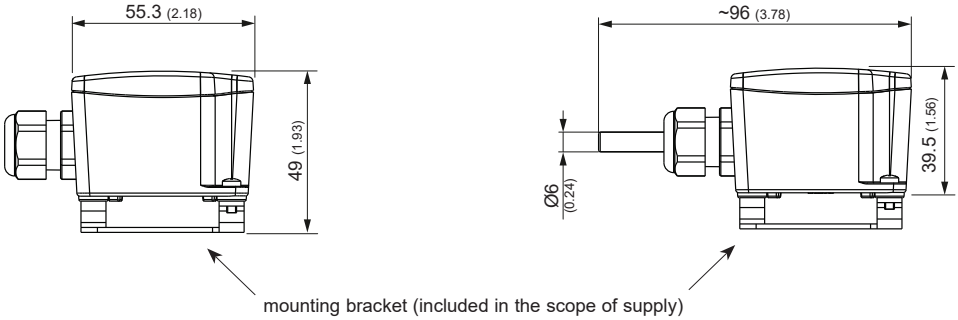
Dimensions mm (inch)

Passive output

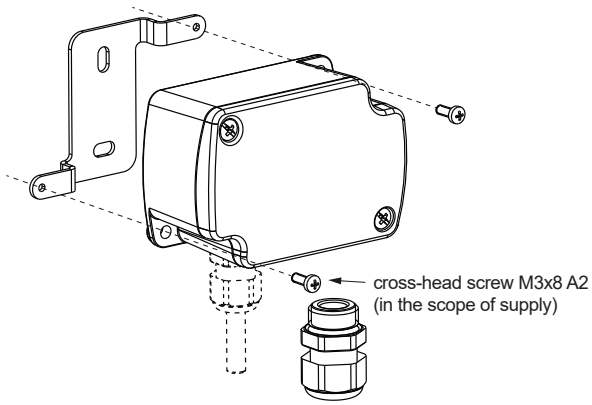


Active output

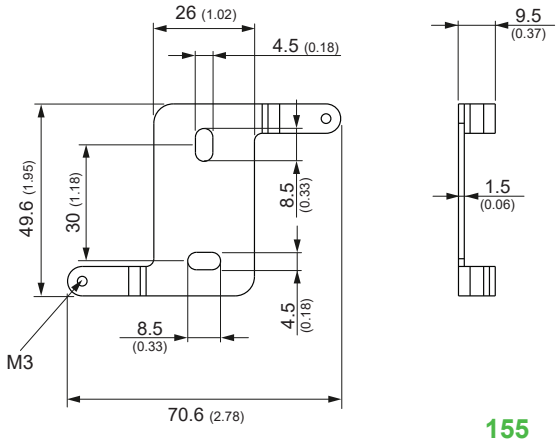




Mounting



Mounting Bracket



Ordering Guide

			EE451-		
Hardware Configuration	**Model**	active	M3		
		passive			M7
	Output	0-10 V	A3		
		4-20 mA	A6		
		RS485		J3	
	T-sensor passive (see www.epluse.com/R-T_Characteristics)	Pt100 DIN B			TP2
		Pt1000 DIN B			TP4
		NTC 1.8k			TP7
		Ni1000, TK6180 DIN B			TP9
		NTC 10k, B3950			TP11
		KTY81-210			TP13
		NTC 10k, B3435			TP14
		Ni1000, TK5000 DIN B			TP19
		NTC 2.2k			TP21
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[1]		P1	
		BACnet MS/TP[2]		P3	
	Baud rate	9.600		BD5	
		19.200		BD6	
		38.400		BD7	
		57.600[3]		BD8	
		76.800[3]		BD9	

1) Factory setting: Even parity, Stopbits 1. Modbus Map and communication setting: see User Guide and Modbus Application Note at www.epluse.com/ee451
2) Factory setting: No parity, Stopbits 1. Product Implementation Conformance Statement (PICS) available at www.epluse.com/ee451
3) Only for BACnet MS/TP

Order Example

EE451-M3J3P3BD7

Model:	active
Output:	RS485
Protocol:	BACnet MS/TP
Baud rate:	38.400

EE451-M7TP11

Model:	passive
T-sensor passive:	NTC 10K, B3950

Accessories

Product configuration adapter	
- for analogue output	see data sheet EE-PCA
- for digital output - USB configuration adapter	HA011066
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