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.

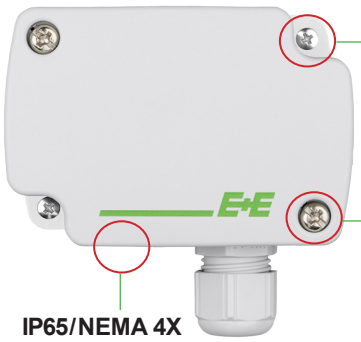
Analogue, Digital and Passive Outputs
The measured data of the temperature is available on the voltage or current output, as well as on the RS485 interface with Modbus RTU or BACnet MS/TP protocol. In addition, EE451 features a wide choice of sensing elements for passive T measurement.

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

Active Type | Passive Type

Configurable and Adjustable
An optional adapter and the free EE-PCS 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 4X

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

Test report according to DIN EN 10204-2.2

RoHS compliant

Technical Data

Active Output

Sensing element	Pt1000 class A, DIN EN 60751		
Analogue output	0 - 10 V	-1 mA < I_L < 1 mA	
	4 - 20 mA (2-wire)	R_L < 500 Ω	R_L= load resistance
Digital interface	RS485 (EE451 = 1 unit load)		
Protocol	Modbus RTU or BACnet MS/TP		
Default settings	Baud rate 9600[1], parity even, 1 stop bit, Modbus adress 66		
Accuracy	±0.3 °C (±0.54 °F) at 20 °C (68 °F)		
Supply voltage (Class III) [2]	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	EN 61326-1	EN 61326-2-3	Industrial environment
	FCC Part 15	ICES-003 Class B	

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
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	-
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

1) Supported baud rates: 9 600, 19 200, 38 400, 57 600, 76 800 and 115 200; find more details about communication setting in the User Manual and the Modbus. Application Note at www.epluse.com/ee451
2) USA & Canada class 2 supply required, max. supply voltage 30 V DC

Measurement current, typ.	< 1 mA (according technical data of the specific T-sensing element)
T-Sensor connection	2-wire

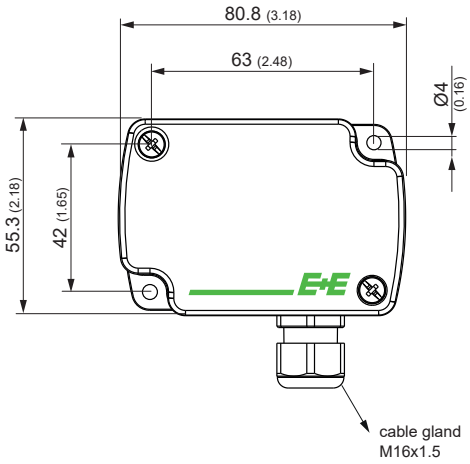
General

Operating temperature	-40…+70 °C (-40...+158 °F)
Enclosure material	Polycarbonate, UL94 V-0 approved
Protection rating	IP65 / NEMA 4X
Cable gland	M16x1.5, UL94 V-2
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)

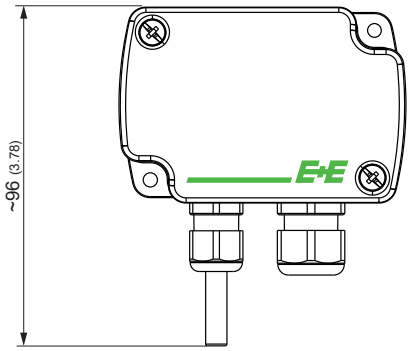
Dimensions

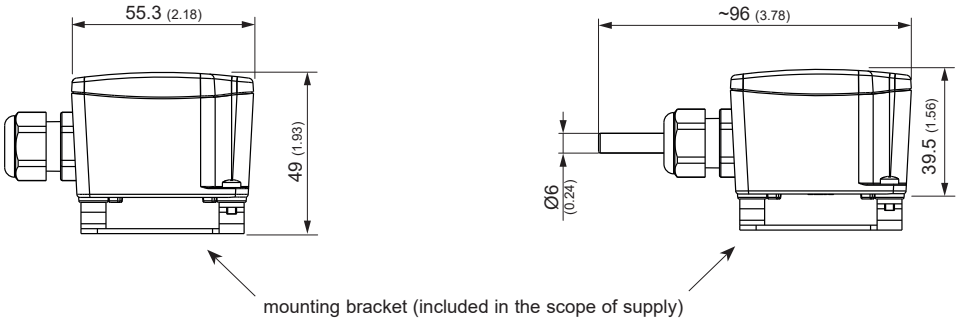
Values in mm (inch)

Passive output

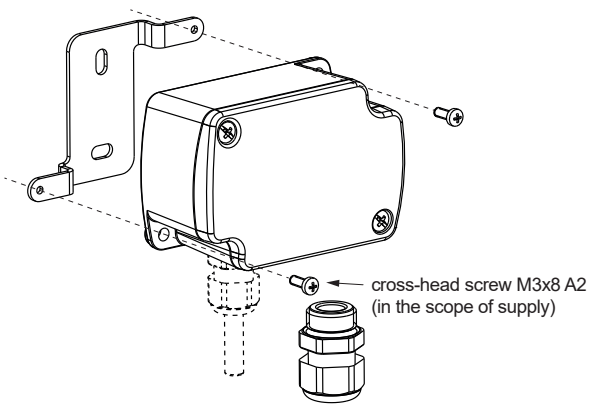


Active output

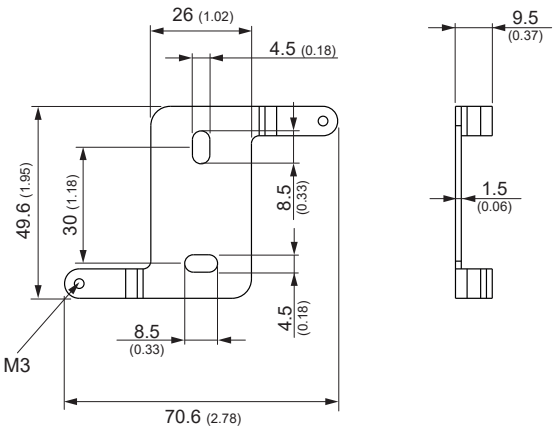




Mounting



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[1] (see www.epluse.com/R-T_Characteristics)	Pt100 DIN B			TP2
		Pt1000 DIN B			TP4
		Ni1000, TK6180 DIN B			TP9
		NTC 10k, B3950			TP11
		NTC 10k, B3435			TP14
		Ni1000, TK5000 DIN B			TP19
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[2]		P1	
		BACnet MS/TP[3]		P3	
	Baud rate	9600		BD5	
		19200		BD6	
		38400		BD7	
		57600[4]		BD8	
		76800[4]		BD9	
		115200[4]		BD10	

1) Other passive sensor types are available on request from a minimum order quantity of 100 pcs.
2) Factory setting: Even parity, Stopbits 1. Modbus Map and communication setting: see User Guide and Modbus Application Note at www.epluse.com/ee451
3) Product Implementation Conformance Statement (PICS) available at www.epluse.com/ee451
4) Only for BACnet MS/TP

Order Example

EE451-M3J3P3BD7

Model:	Active
Output:	RS485
Protocol:	BACnet MS/TP
Baud rate:	38400

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