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Datasheet EE451

**Wall Mounted Temperature Sensor
for Indoor and Outdoor**



EE451

Duct and Immersion Temperature Sensor

The EE451 wall mounted sensor reliably measures 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 at 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 temperature measurement.

Easy Installation

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

Configurable and Adjustable

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



EE451 temperature sensor with active output



EE451 temperature sensor with passive output

Features

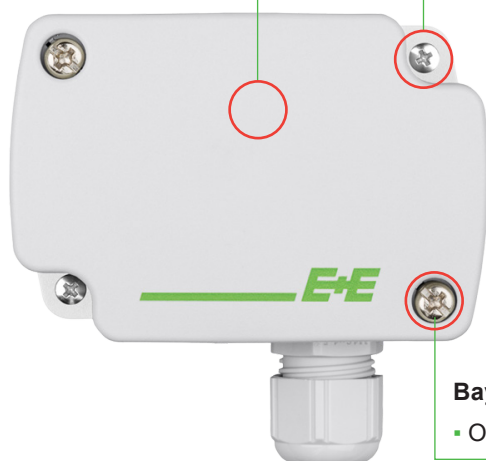
RoHS
compliant

Enclosure

- Protection rating: IP65/Nema 4X
- Polycarbonate (PC)

External mounting holes

- Mounting with closed cover
- Protection against construction site pollution
- Easy and fast mounting



Bayonet screws

- Open/close with a ¼ rotation



Mounting bracket

- Distance to wall for correct measurement of ambient temperature

Test report

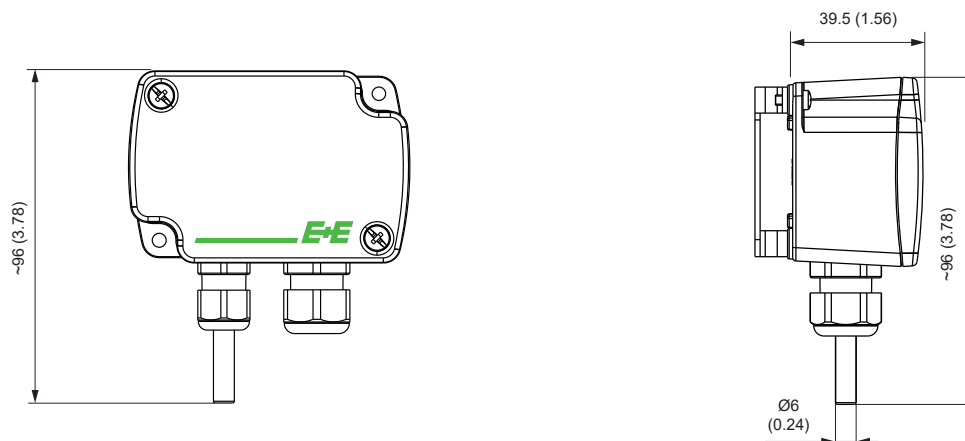
According to DIN EN 10204-2.2

Dimensions

Values in mm (inch)

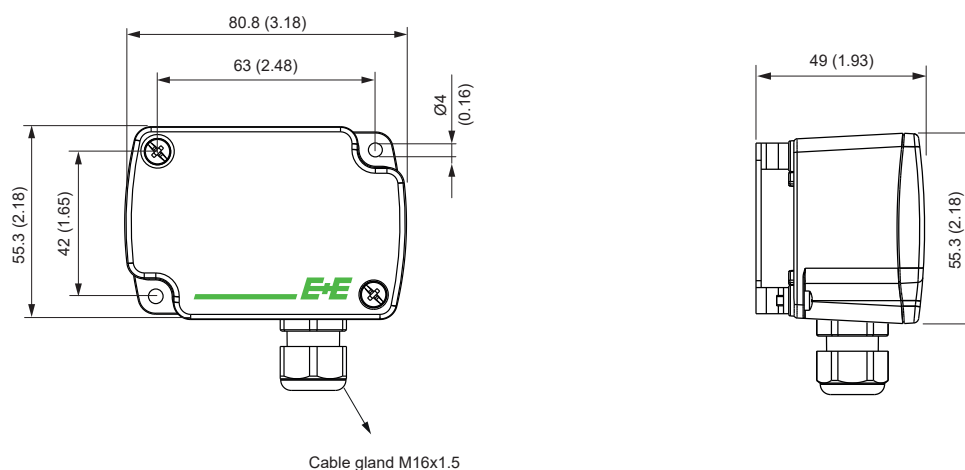
Active Output

(Mounting bracket included in the scope of supply)

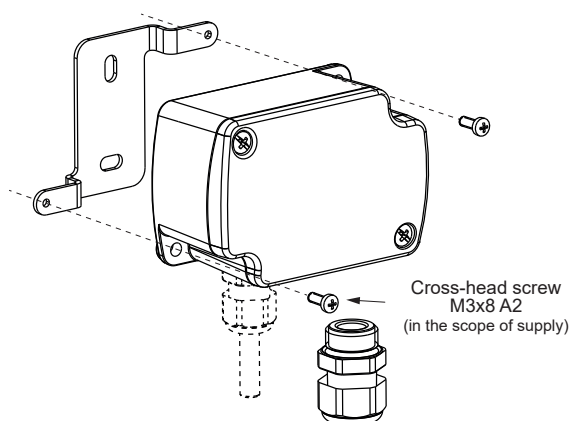


Passive Output

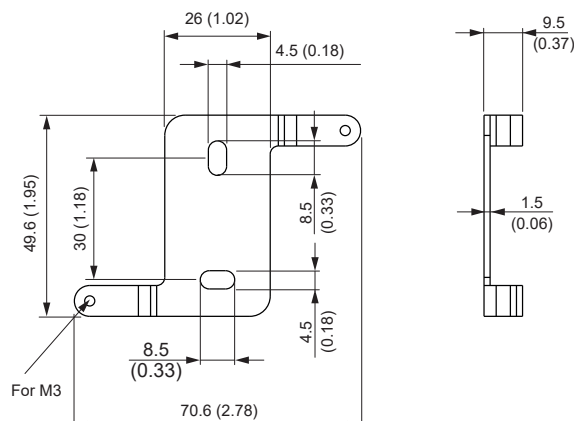
(Mounting bracket included in the scope of supply)



Mounting



Mounting Bracket



Technical Data

Measurands

Temperature (T) - Active

Measuring range	-40 °C...+70 °C (-40...+158 °F)
Accuracy @ 20 °C (68 °F)	±0.3 °C (±0.54 °F)

Temperature (T) - Passive

Measuring range	-40 °C...+70 °C (-40...+158 °F)			
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 %)	-	
NTC20k B4286	R ₂₅ : 20 kΩ ± 0.2 °C	B _{25/85} : 4286 K (B _{25/50} : 4286 K ± 1.0 %)	-	
Ni1000 TK6180 DIN B	R ₀ : 1000 Ω	TC: 6 180 ppm/K	DIN 43760	
Ni1000 TK5000 DIN B	R ₀ : 1000 Ω	TC: 5 000 ppm/K	DIN 43760	

Outputs

Analogue

Analogue output	0 - 10 V 4 - 20 mA (2-wire)	0 < I _L < 1 mA R _L ≤ 500 Ω	I _L = load current R _L = load resistance
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Digital

Digital interface	RS485 (EE451 = 1 Unit Load)
Protocol Factory settings Supported Baud rates Measured data types	Modbus RTU Baud rate see order information, parity even, 1 stop bit, Modbus address 66 9600, 19200 und 38400 FLOAT32 and INT16
Protocol Factory settings Supported Baud rates	BACnet MS/TP Baud rate see order information, BACnet address 66 9600, 19200, 38400, 57600, 76800 und 115200

T Sensor Passive

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

Technical Data

General

Power supply class III  USA & Canada: Class 2 supply necessary, max. voltage 30 V DC for output RS485 and 0 - 10 V for output 4 - 20 mA		15 - 35 V DC or 24 V AC $\pm 20\%$ $10\text{ V DC} + R_L \times 20\text{ mA} < V+ < 35\text{ V DC}$ $R_L = \text{load resistance}$
Current consumption, typ.	Analogue RS485	5 mA (DC) / 12 mA _{rms} (AC) 3.5 mA (DC) / 12 mA _{rms} (AC)
Electrical connection		Screw terminals max. 2.5 mm ² (AWG14)
Cable glands		M16x1.5/UL94 V-2
Humidity working range		5...95 %RH, non-condensing
Temperature working range		-40...+70 °C (-40...+158 °F)
Storage conditions		-30 °C...+70 °C (-22...+158 °F) 5...95 %RH, non-condensing
Mounting bracket material		Stainless steel (corr. 1.4301 / 304)
Enclosure	Material Protection rating	Polycarbonate (PC), UL94 V-0 approved IP65/NEMA 4X
Electromagnetic compatibility		EN 61326-1 EN 61326-2-3 Industrial environment FCC Part15 Class B ICES-003 Class B
Conformity		 

Ordering Guide

Feature	Description	Code	
Hardware Configuration		EE451-	
	Model	M3	
	Active		
	Passive		M7
	Output	A3	
	0 - 10 V		
	4 - 20 mA	A6	
	RS485	J3	
	T sensor passive ¹⁾ (R-T-characteristics see www.epluse.com/ee451)		TP2
	Pt100 DIN B		TP4
Software Setup - Outputs	Pt1000 DIN B		TP6
	NTC 20k, B4286		TP9
	Ni1000, TK6180 DIN B		TP11
	NTC 10k, B3950		TP19
	Ni1000, TK5000 DIN B		
	Output (T) measurand	No code	
	Temperature [°C]	MA2	
	Temperature [°F]		
	Output (T) scaling low	No code	
	0	SALValue	
	Value (within the working range)		
	Output (T) scaling high	No code	
	50	SAHValue	
	Value (within the working range)		
	Protocol		P1
	Modbus RTU ²⁾		P3
	BACnet MS/TP ³⁾		
	Baud rate		BD5
	9600		BD6
	19200		BD7
	38400		BD8
	57600 (for BACnet only)		BD9
	76800 (for BACnet only)		BD10
	115200 (for BACnet only)		

1) Other passive sensor types are available on request from a minimum order quantity of 100 pcs.

2) Factory settings: Parity even, stop bit 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.

Order Examples

EE451-M3J3P3BD7

Feature	Code	Description
Model	M3	Active
Output	J3	RS485
Protocol	P3	BACnet MS/TP
Baud rate	BD7	38400

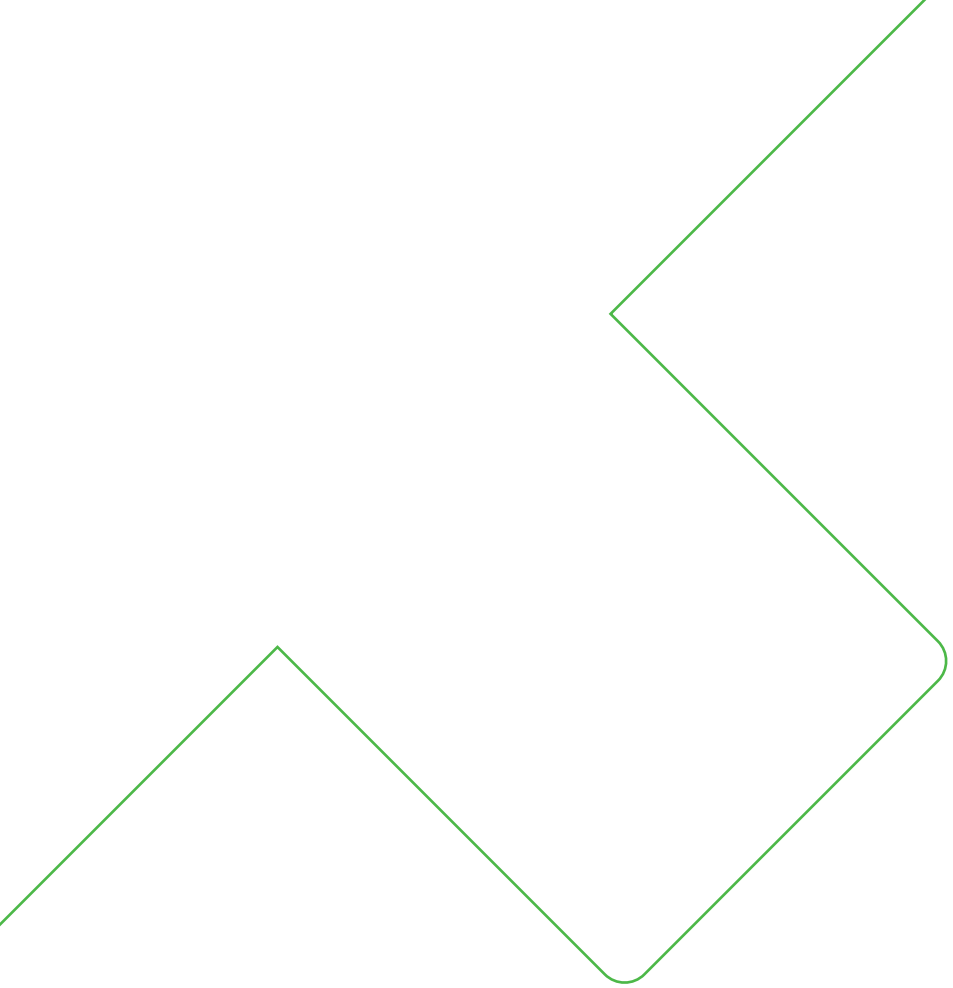
EE451-M7TP11

Feature	Code	Description
Model	M7	Passive
T sensor passive	TP11	NTC 10k, B3950

Accessories

For further information see datasheet [Accessories](#).

Description	Code
Product configuration adapter for analogue output	See datasheet EE-PCA
USB configuration adapter for digital output	HA011066
E+E Product Configuration Software (Free download: www.epluse.com/configurator)	EE-PCS
Power supply adapter	V03
Conduit Adapter, M16x1.5 auf 1/2"	HA011110



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