

EE441

Strap-on Temperature Sensor

The EE441 strap-on sensor measures reliably the temperature (T) on round ducts and pipes and is optimized for heating systems (warm and cold water pipes) or solar collectors.

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, EE441 features a wide choice of sensing elements for passive T measurement.

Easy Installation

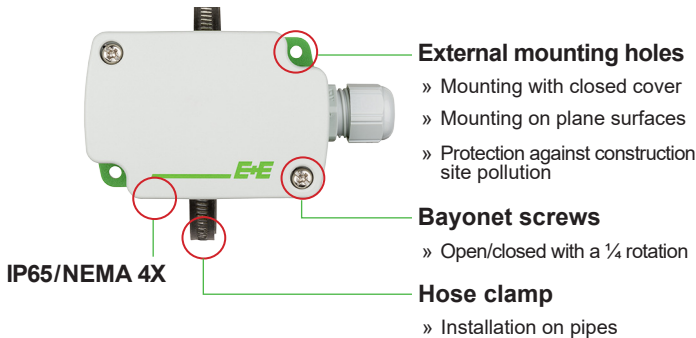
The compact enclosure and the stainless steel hose clamp allow for easy and fast installation on pipes with diameter from 25 to 175 mm (0.98"...6.89").

Configurable and Adjustable

An optional adapter and the free EE-PCS Product Configuration Software facilitate the setup and adjustment of the EE441.



Features



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

Bayonet screws
 » Open/closed with a ¼ rotation

Hose clamp
 » Installation on pipes






Aluminium contact surface
 » Very good thermal transfer
 » Fast response time

Test report according to
 DIN EN 10204-2.2



Technical Data

Active Output

Operating temperature	-40...+70 °C (-40...+158 °F)		
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 (EE441 = 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 _L < 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 FCC Part 15	EN 61326-2-3 ICES-003 Class B	Industrial environment  

Passive Output

Operating temperature (contact area)	-40...+110 °C (-40...+230 °F)			
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
	Ni1000 TK5000 DIN B	R ₀ : 1000 Ω	TC: 5000 ppm/K	DIN 43760
	Ni1000 TK6180 DIN B	R ₀ : 1000 Ω	TC: 6180 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/ee441

2) USA & Canada class 2 supply required, max. supply voltage 30 V DC

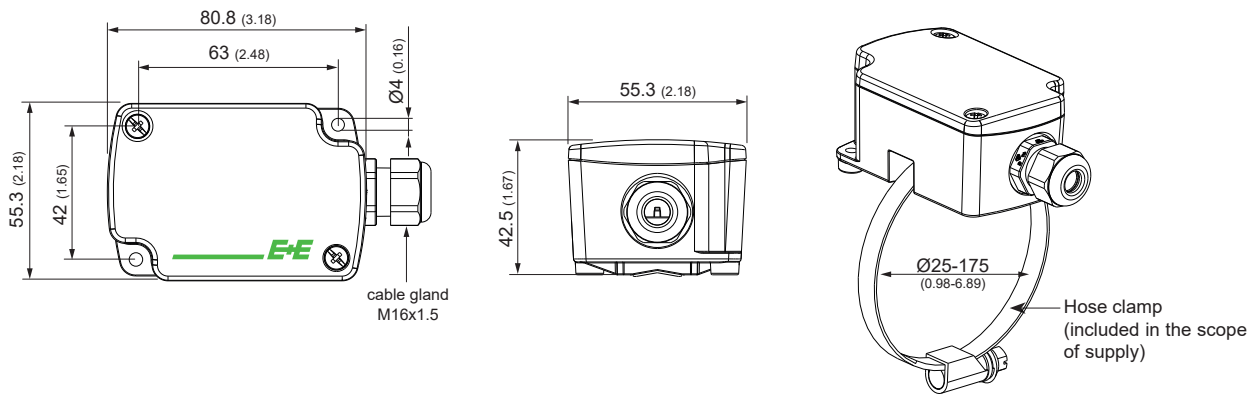
Measurement current typ.	< 1 mA (according technical data of the specific T sensing element)
T-sensor connection	2-wire

General

Insulation resistance	> 100 MΩ at 20 °C (68 °F)
Response time τ_{63}	< 1 min
Enclosure material	Polycarbonate, UL94 V-0 approved, T-range: -40...+110 °C (-40...+230 °F)
Protection rating	IP65/NEMA 4X
Cable gland	M16x1.5, UL94 V-2
Electrical connection	Screw terminal, max. 2.5 mm ² (0.004 in ²)
Hose clamp 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)



Ordering Guide

		EE441-		
		M3		M7
Hardware Configuration	Model	Active		
		Passive		
	Output	0 - 10 V	A3	
		4 - 20 mA	A6	
		RS485	J3	
	T-sensor passive ¹⁾	Pt100 DIN B		TP2
	(see www.epluse.com/R-T_Characteristics)	Pt1000 DIN B		TP4
		Ni1000, TK6180 DIN B		TP9
		Ni1000, TK5000 DIN B		TP19
Setup Outputs	Unit	°C	no code	
		°F	MA2	
	Scale T low	0	no code	
		Value (within working range)	SALValue	
	Scale T high	50	no code	
		Value (within working range)	SAHValue	
	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/ee441

3) Product Implementation Conformance Statement (PICS) available at www.epluse.com/ee441

4) Only for BACnet MS/TP

Order Example

EE441-M3J3P3BD7

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

EE441-M7TP19

Model: Passive
T-sensor passive: Ni1000, TK5000 DIN B

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