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Datasheet TES201

Room Sensor for Temperature



TES201

Room Temperature Sensor

The TES201 accurately measures room temperature (T) in residential and commercial HVAC systems.

Outputs and Digital Interface

The measured data is available either on the analogue output or on the RS485 interface with Modbus RTU.

Functional Design, Cost-saving Installation

The elegant enclosure is available in two sizes according to regional standards and features an optional display. With its innovative design of sensor positioning, the effect of false air ingress is minimized. The back cover contains just the push-in spring terminals and can be mounted and wired without the front cover containing the electronics. Thus, the active part of the device is not exposed to construction site pollution and can be simply snapped onto the back cover right before commissioning. Besides, the active part can be replaced without tools within seconds.

Configuration

The digital version with RS485 interface can be set up and configured via PC with the free PCS10 Product Configuration Software and an optional configuration adapter.



TES201 in US format with display



TES201 in US format with display

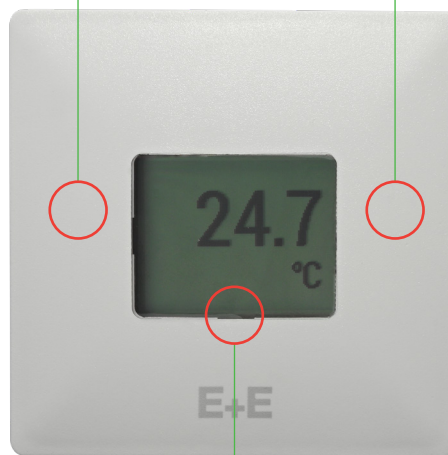
Features

Measurement performance

- High T accuracy
- Excellent long term stability
- State-of-the-art E+E T sensing element
 - Patented sensor technology

Enclosure and connection

- Innovative design avoids false air ingress
- Time saving installation and wiring
 - Snap-on without tools
 - Push-in spring terminals
 - All electronics inside the front cover
- Smooth cover surface
 - Dust repellent
 - Easy cleaning
- EU and US format
- UL94HB approved enclosure material



Outputs

- Analogue output
 - 0 – 10 V
 - 4 – 20 mA
- RS485 interface with Modbus RTU
- Large graphic display

Inspection certificate

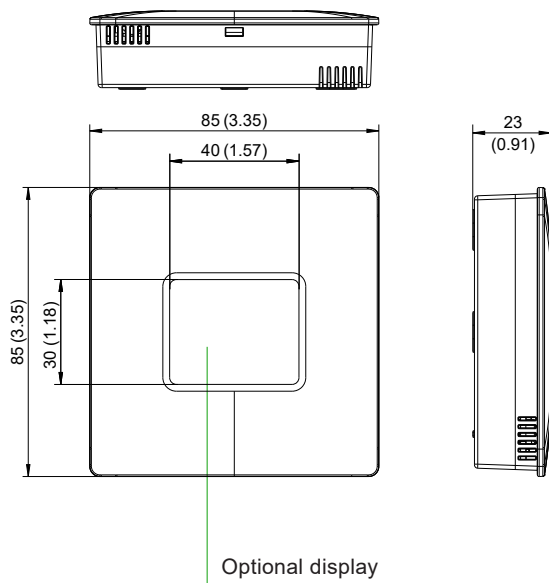
According to DIN EN 10204-3.1
available via [E+E Certificate Service](#)

Dimensions

Values in mm (inch)

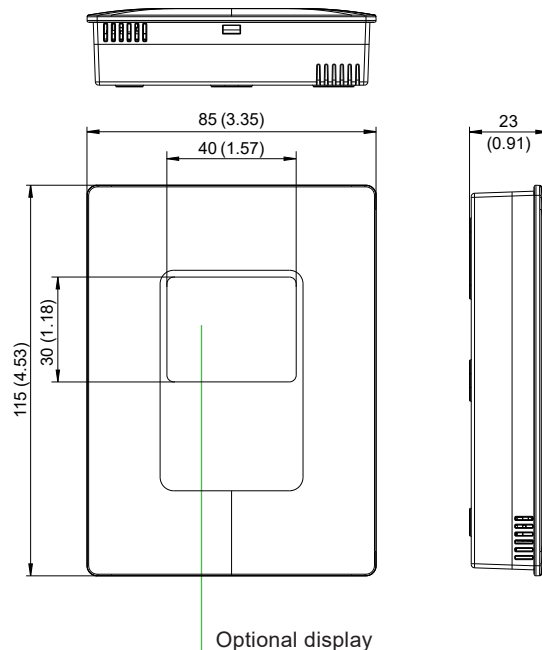
Enclosure

EU format



Enclosure

US format



Technical Data

Measurands

Temperature (T)

Measuring range	-30...+60 °C (-22...+140 °F)
Accuracy ¹⁾	0- 10 V, RS485 4 - 20 mA ±0.25 °C (±0.45 °F) ±0.38 °C (±0.68 °F)
Temperature dependency of electronics, typ.	0.006 K/K
Factory calibration uncertainty ²⁾ @ 23 °C (73 °F)	±0.1 °C (±0.18 °F)

1) Defined @ 23 °C (73 °F) against E+E calibration reference. With supply voltage 24 V DC, 0.2 m/s (39. 4 ft/min) medium flow and load resistor 250 Ω for version with current output.

2) Defined with an enhancement factor k=2, corresponding to a confidence level of 95 %.

Technical Data

Outputs

Analogue

T: acc. to ordering guide	0 - 10 V 4 - 20 mA (2-wire)	-1 mA < I _L < 1 mA R _L < 500 Ω	I _L = load current R _L = load resistance
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Digital

Digital interface	RS485 (TES201 = 1 unit load)
Protocol	Modbus RTU
Factory settings	Baud rate see ordering guide, parity even, 1 stop bit, Modbus address 45
Supported Baud rates ¹⁾	9600, 19200 and 38400
Measured data type	FLOAT32 and INT16

1) Ex works: see ordering guide.

General

Power supply class III  USA & Canada: Class 2 supply necessary, max. voltage 30 V DC	0 - 10 V, RS485 4 - 20 mA (2-wire)			15 - 35 V DC or 24 V AC ±20 % 10 + 0.02 x R _L < V+ < 35 V DC (R _L < 500 Ω)	R _L = load resistance
Current consumption , typ.		@ 24 V DC	@ 24 V AC		
	0 - 10 V	6 mA	14 mA _{rms}		
	4 - 20 mA	Acc. to output current			
	RS485	5 mA	12 mA _{rms}		
Electrical connection	Push-in spring terminals max. 1.5 mm ² (AWG 16)				
Display	1.8" LCD, dot-matrix, 1 line, visible area 38 x 31 mm (1.5" x 1.2")				
Humidity range	Operation	0...100 %RH non-condensing			
	Storage	0...95 %RH non-condensing			
Temperature range, operation and storage	without display	-30...+60 °C (-22...+140 °F)			
	with display	-20...+60 °C (-4...+140 °F)			
Enclosure	Material	PC (Polycarbonate), RAL 9003 (signal white), UL94 HB approved			
	Protection rating	IP30			
Electromagnetic compatibility	EN 61326-1	EN 61326-2-3	Industrial environment		
	FCC Part15 Class B	ICES-003 Class B			
Shock and vibration	Tested according to EN 60068-2-64 and EN 60068-2-27				
Conformity	 				
Configuration ¹⁾	PCS10 Product Configuration Software (free download) and optional configuration adapter				

1) With digital versions only.

Ordering Guide

Feature		Description	Code	
Hardware Configuration			TES201-	
	Model	T	M3	
	Output	0 - 10 V	A3	
		4 - 20 mA (2-wire)	A6	
		RS485		J3
	Display	Without display	No code	
		Display	D1	
	Design	EU format	No code	
		US format	RG2	
Setup Analogue	Output measurand	Temperature [°C]	No code	
		Temperature [°F]	MA2	
	Output scaling low	0	No code	
		Value ¹⁾	SALValue	
	Output scaling high	50	No code	
		Value ¹⁾	SAHValue	
Setup Digital	Protocol	Modbus RTU ²⁾		P1
	Baud rate	9600		BD5
		19200		BD6
		38400		BD7
	Units	Metric (SI)		No code
		Non-metric US/GB		U2

1) -35 °C (-31 °F) ≤ T scaling low < 20 °C (68 °F), 25 °C (77 °F) < T scaling high ≤ 70 °C (158 °F), T scaling high - T scaling low ≥ 20 °C (36 °F).

2) Factory setting: Parity even, 1 stop bit. Modbus Map see User Manual at www.epluse.com/tes201.

Order Examples

TES201-M3A6RG2

Feature	Code	Description
Model	M3	T
Output	A6	4 - 20 mA (2-wire)
Display	No code	Without display
Design	RG2	US format
Output measurand	No code	Temperature [°C]
Output scaling low	No code	0
Output scaling high	No code	50

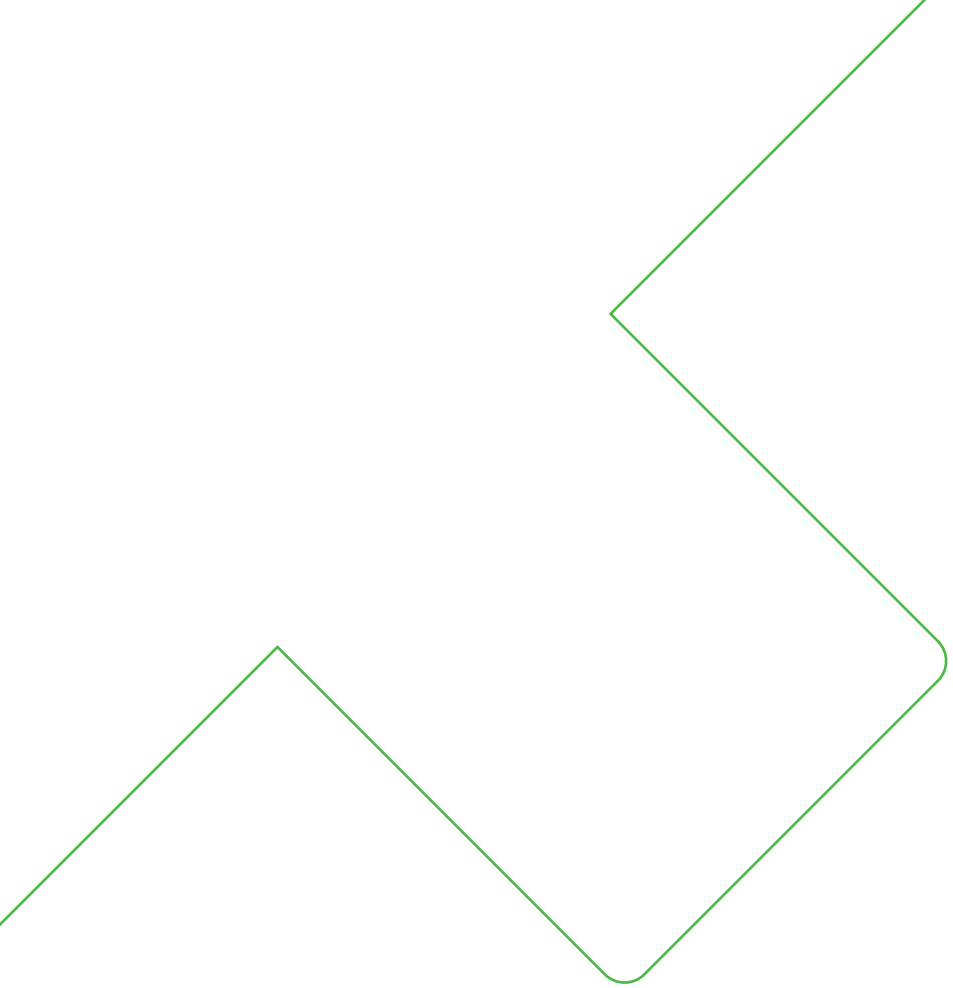
TES201-M3J3D1P1BD5

Feature	Code	Description
Model	M3	T
Output	J3	RS485
Display	D1	Display
Design	No code	EU format
Protocol	P1	Modbus RTU
Baud rate	BD5	9600
Units	No code	Metric (SI)

Accessories

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

Description	Code
E+E Product Configuration Software (Free download from www.epluse.com/pcs10)	PCS10
USB Configuration Adapter for TES201 digital	HA011066



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