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Datasheet EE850

CO_2 and Temperature Sensor for Duct Mounting

Modbus

www.epluse.com

EE850

CO_2 and Temperature Sensor for Duct Mounting

The EE850 combines CO_2 and temperature (T) measurement in an innovative enclosure. It is ideal for demand controlled ventilation and building automation. With a CO_2 measuring range of up to 10 000 ppm and a T working range of -20...+60 °C (-4...+140 °F), the EE850 can be employed also in demanding climate and process control applications.

Long-Term Stability

The EE850 incorporates the E+E dual wavelength NDIR CO_2 sensor, which compensates for ageing effects, is highly insensitive to pollution and offers outstanding long term stability.

High Measurement Accuracy

A multiple point CO_2 and T factory adjustment procedure leads to excellent CO_2 measurement accuracy over the entire T working range.

Functional Design

Installed into a duct, a small amount of air flows through the divided probe to the CO_2 sensing cell located inside the sensor enclosure and back into the duct. The T sensing element is placed inside the probe. The functional enclosure facilitates easy and fast mounting of the sensor with closed cover.

Analogue, Digital and Passive T Outputs

The CO_2 and T measured data is available on analogue outputs. Additionally, the RS485 interface supplies all values via Modbus RTU protocol.

Easy Configuration and Adjustment

An optional stick and the free PCS10 Product Configuration Software facilitate the configuration and adjustment of the EE850.

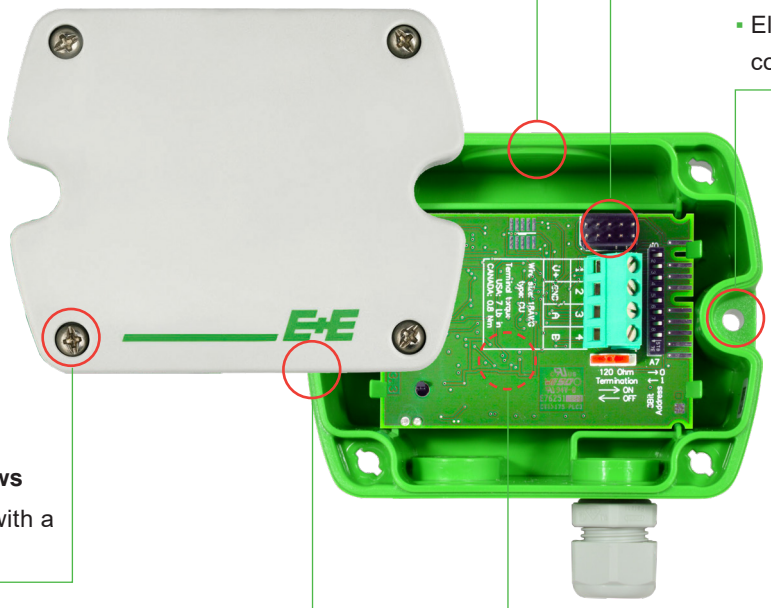
EE850 duct mount

Features

Knockout for ½" conduit-fitting (US)

Service interface
- Configuration and adjustment

External mounting holes
- Easy and fast mounting with closed cover
- Electronics protected against construction site pollution



Bayonet screws
- Open / close with a ¼ rotation

Enclosure
- IP65 / NEMA 4X

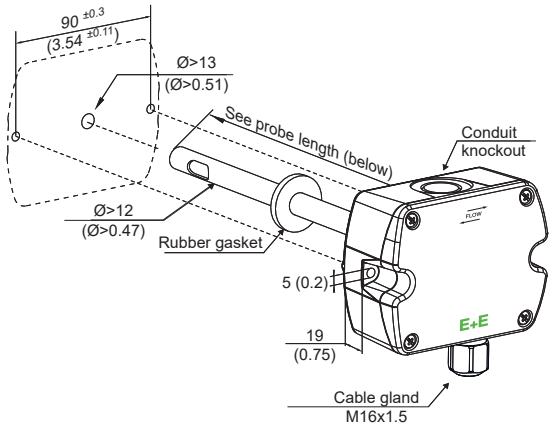
Electronics
- CO_2 auto-calibration
- Temperature compensation
- Excellent resistance to pollution
- Optimum protection against mechanical damage during installation

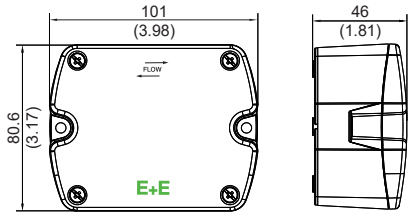
Test report

According to DIN EN 10204-2.2

Dimensions

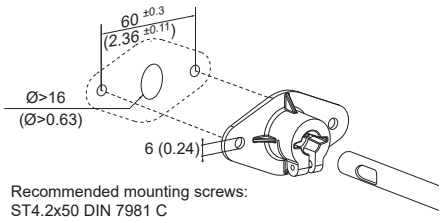
Values in mm (inch)





Mounting flange

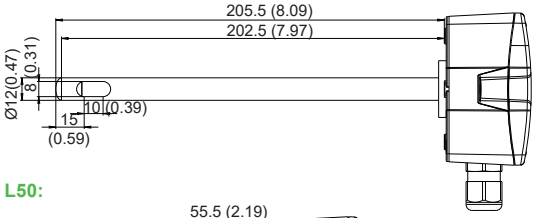
(Included in the scope of supply)



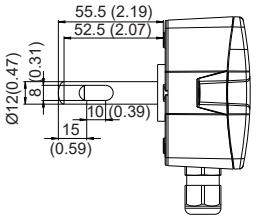
Recommended mounting screws:
ST4.2x50 DIN 7981 C

Probe length

L200:



L50:



Technical Data

Measurands

CO_2

Measurement principle	Dual wavelength non-dispersive infrared technology (NDIR)
Measuring range	0...2 000 / 10 000 ppm
Accuracy @ 25 °C (77 °F) and 1 013 mbar (14.7 psi) **0...2 000 ppm** **0...10 000 ppm**	 < ±(50 ppm +2 % of measured value) < ±(100 ppm +5 % of measured value)
Temperature dependency, typ. in the range of -20...+45 °C (-4...+113 °F)	±(1+ CO_2 concentration [ppm] / 1 000) ppm/°C ± 0.556 * (1+ CO_2 concentration [ppm] / 1 000) ppm/°F
Response time t_{63}, typ.	<100 s at 3 m/s (590 ft/min) air speed in the duct
Measuring interval	Approx. 15 s
Calibration interval Recommended under normal operating conditions in building automation.	>5 years

Temperature (T)

Measuring range	-20...+60 °C (-4...+140 °F)
Accuracy @ 20 °C (68 °F)	±0.3 °C (±0.5 °F)
Response time t_{63}	<50 s

Outputs

Analogue

T: according to ordering guide	0 - 10 V	-1 mA < I_L < 1 mA	I_L = load current
CO_2 **0...2 000 / 10 000 ppm**	0 - 10 V 4 - 20 mA	-1 mA < I_L < 1 mA R_L < 500 Ω	 R_L = load resistance

T sensor passive

2-wire-connection	T sensor type according to order code, see ordering guide
Wire resistance (terminal - sensor), typ.	0.4 Ω

Digital

Digital Interface	RS485 (EE850 = 1/10 unit load)
Protocol **Factory settings** **Supported Baud rates** **Measured data types**	Modbus RTU Baud rate acc. to order code, parity even, 1 stop bit, Modbus address 67 9 600, 19 200 und 38 400 FLOAT32 and INT16

Technical Data

General

Power supply class III USA & Canada: Class 2 supply necessary, max. voltage 30 V DC		24 V AC ±20 % 15 - 35 V DC
Current consumption, typ.		15 mA + output current
Peak current, max..		350 mA for 0.3 s (analogue output) 150 mA for 0.3 s (RS485 interface)
Minimum air speed in the duct, min.		1 m/s (196 ft/min)
Electrical connection		Screw terminals max. 2.5 mm^2 (AWG 14)
Cable gland		M16x1.5
Working and storage conditions		-20...+60 °C (-4...+140 °F) 0...95 %RH, non-condensing
Enclosure material		Polycarbonate (PC), UL94 V-0 approved
Protection rating	**Enclosure** **Probe**	IP65 / NEMA 4X IP20
Electromagnetic compatibility		EN 61326-1 EN 61326-2-3 Industrial environment FCC Part15 Class A ICES-003 Class A
Conformity		EN 45545-2 (HL3) CE UKCA
Configuration and adjustment		PCS10 Product Configuration Software (free download) and USB-C configuration stick

Ordering Guide

	Feature	Description	Code	
			EE850-	
Hardware Configuration	**Model**	CO_2	M10	
		CO_2 + T		M11
	CO_2 measuring range	0...2 000 ppm	HV1	
		0...10 000 ppm	HV3	
	Output	0 - 10 V	A3	A3
		4 - 20 mA	A6	
		RS485	J3	J3
	T sensor passive[1]	Without T sensor		No code
		Pt1000 DIN A		TP3
	Probe length	50 mm (1.97")	L50	
		200 mm (7.87")	No code	No code
Setup Analogue Outputs[1]	**Output 2 measurand**	Temperature T [°C]		No code
		Temperature T [°F]		MB2
	Output 2 scaling low	0		No code
		Value - within the range -20...60 °C		SBL*Value*
	Output 2 scaling high	50		No code
		Value - within the range -20...60 °C		SBH*Value*
Setup RS485[3]	**Protocol**	Modbus RTU[2]	P1	
	Baud rate	9 600	BD5	
		19 200	BD6	
		38 400	BD7	

1) Not with RS485 output (J3) or 50 mm probe length (L50) / T-Sensor details see www.epluse.com/R-T_Characteristics.
2) Factory setting: Parity even, 1 stop bit; Modbus Map and communication setting: See User Manual and Modbus Application Note at www.epluse.com/ee850.
3) Not with analogue output A3 und A6.

Order Example

EE850-M11HV3J3P1BD6

Feature	Code	Description
Model	**M11**	CO_2 + T
CO_2 measuring range	**HV3**	0...10 000 ppm
Output	**J3**	Digital interface RS485
T sensor passive	**No code**	Without T sensor
Probe length	**No code**	200 mm (7.87")
Protocol	**P1**	Modbus RTU
Baud rate	**BD6**	19 200

EE850-M10HV1A6L50

Feature	Code	Description
Model	**M10**	CO_2
CO_2 measuring range	**HV1**	0...2 000 ppm
Output	**A6**	4 - 20 mA
Probe length	**L50**	50 mm (1.97")

Accessories

For further information see datasheet “Accessories”.

Accessories	Code
USB-C configuration stick	**HA011070**
E+E Product Configuration Software (Free download: www.epluse.com/pcs10)	**PCS10**
Power supply adapter	**V03**

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