EE850

CO_2, Humidity and Temperature Transmitter for Duct Mounting

The EE850 combines CO_2, relative humidity (RH) and temperature (T) in an innovative enclosure and it is ideal for demand controlled ventilation and building automation. Due to the CO_2 measuring range up to 10000 ppm and T working range -20...+60 °C (-4...+140 °F), the EE850 can be employed also in demanding climate and process control.

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. The RH sensing element is protected against dust, dirt and corrosion by the E+E proprietary coating.

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

Installed into a duct, a small amount of air flows through the divided probe to the CO_2 sensing cell located inside the transmitter enclosure and back into the duct. The RH and T sensing elements are placed inside the probe.

The CO_2, RH and T measured data as well as the calculated dew point temperature (Td) are available on various analogue outputs. Additionally, the EE850 features an optional passive T output. An optional adapter and the free EE-PCS configuration software facilitate easy configuration and adjustment of the EE850.

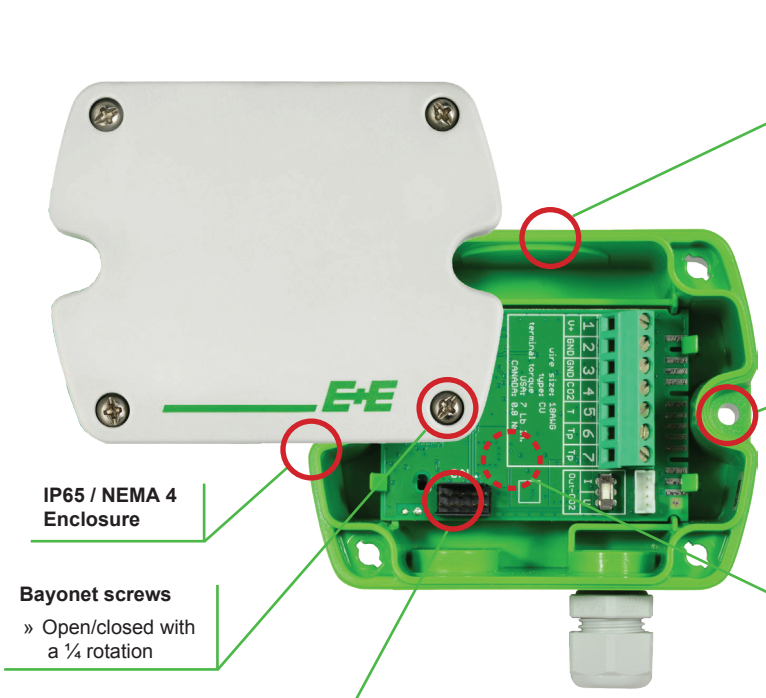
Typical Applications

Building automation
Demand controlled ventilation
Climate and process control

Key Features

CO_2 autocalibration for outstanding long-term stability
Temperature compensation
Excellent resistance to pollution

Features



Appropriate for US mounting requirements
» Knockout for ½" conduit fitting

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

IP65 / NEMA 4 Enclosure

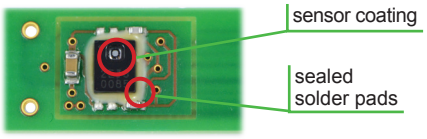
Bayonet screws
» Open/closed with a ¼ rotation

Service interface for configuration and adjustment

Electronics on the underside of the PCB
» Optimum protection against mechanical damage during installation

Protective Sensor Coating

The E+E proprietary sensor coating is a hygroscopic layer applied to the active surface of the RH sensing element. The coating extends substantially the life-time and the measurement performance of the E+E sensor in corrosive environment.
Additionally, it improves the sensor's long term stability in dusty and dirty applications by preventing stray impedances caused by deposits on the active sensor surface.



EEH210 RH and T digital sensor, located inside the sensing probe.

Technical Data

Measuring Values

CO_2

Measurement principle	dual wavelength non-dispersive infrared technology (NDIR)
Measuring range	0...2000 / 5000 / 10000 ppm
Accuracy at 25 °C (77 °F) and 1013 mbar (14.7 psi)	0...2000 ppm: < ± (50 ppm +2% of measured value) 0...5000 ppm: < ± (50 ppm +3% of measured value) 0...10000 ppm: < ± (100 ppm +5% of measured value)
Response time τ_{63}	< 100 seconds at 3 m/s (590 ft/min) air speed in the duct
Temperature dependency -20...45 °C (-4...113 °F)	typ. ± (1 + CO_2 concentration [ppm] / 1000) ppm/°C
Calibration interval [1]	> 5 years
Measuring interval	approx. 15 seconds

Temperature

Working range	-20...+60 °C (-4...+140 °F); see ordering guide for scaling
Accuracy at 20 °C (68 °F)	±0.3 °C (±0.54 °F)
Response time τ_{63}	< 50 seconds

Relative Humidity

Working range	0...95 % RH
Accuracy at 20 °C	± 3 % RH (20...80 % RH)
Response time τ_{63}	< 10 seconds

Outputs

Analogue Output

CO_2: 0...2000 / 5000 / 10000 ppm	0 - 5 V / 0 - 10 V 4 - 20 mA	-1 mA < I_L < 1 mA R_L < 500 Ohm
T scale: according ordering guide **RH** scale: 0-100 % RH	0 - 5 V / 0 - 10 V	-1 mA < I_L < 1 mA

Passive T Output

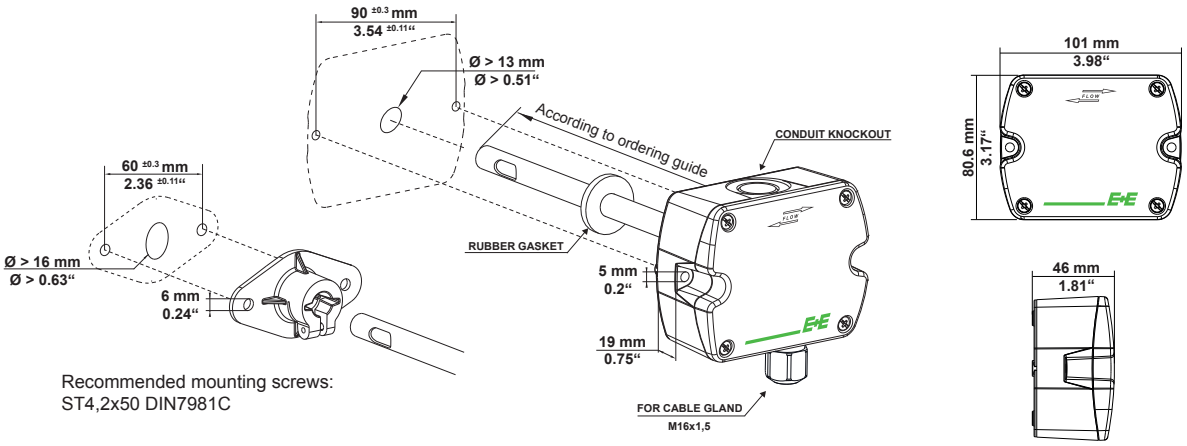
2-wire	T sensor type according ordering guide
Wire resistance (terminal - sensor)	typ. 0.4 Ohm

General

Power supply (Class III)	24 V AC/DC ± 20 %	15 - 35 V DC
Current consumption average	typ. 15 mA + output current	
peak	max. 350 mA for 0.3 seconds	
Minimum air speed in the duct	1 m/s (196 ft/min)	
Enclosure material	polycarbonate, UL94V-0 approved	
Protection class	enclosure: IP65 / NEMA 4 probe: IP20	
Cable gland	M16 x 1.5	
Electrical connection	screw terminals max. 2.5 mm² (AWG 14)	
Electromagnetic compatibility	EN61326-1 EN61326-2-3 Industrial Environment FCC Part 15 ICES-003 ClassB	
Working and storage conditions	-20...+60 °C (-4...+140 °F)	0...95 % RH (non-condensing)

1) under normal operating conditions

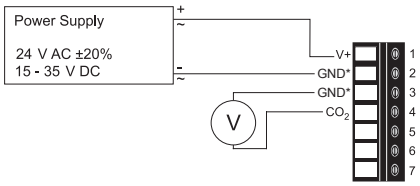
Dimensions (mm/inch)



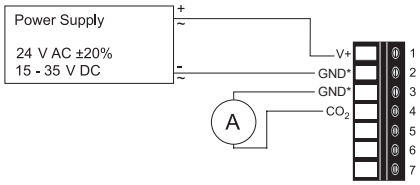
Recommended mounting screws:
ST4,2x50 DIN7981C

Connection Diagram

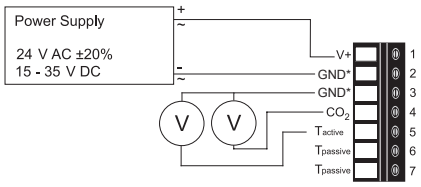
EE850-M10 / voltage output



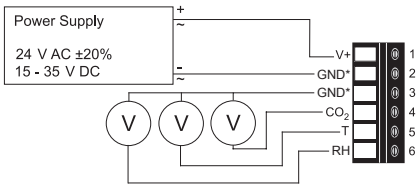
EE850-M10 / current output



EE850-M11 / voltage output



EE850-M12 / voltage output



* **Very important:** for failure-free operation and performance according to the specs the supply GND and the measurement GND must be wired separately.

Scope of Supply

- EE850 transmitter according ordering guide
- Cable gland
- Mounting flange + seal
- Mounting materials
- Test report according to DIN EN10204 - 2.2

Accessories (see data sheet „Accessories“)

Configuration adapter cable	HA011066
E+E Product configuration software	EE-PCS (free download: www.epluse.com/EE850)
Power supply adapter	V03

Support Literature

www.epluse.com/EE850

Ordering Guide

		EE850-		
Model	CO_2	M10		
	CO_2 + T		M11	
	CO_2 + T + RH			M12
CO_2 range	0...2000 ppm	no code	no code	no code
	0...5000 ppm	HR5000	HR5000	HR5000
	0...10000 ppm	HR1	HR1	HR1
Output	0-5 V	A2	A2	A2
	0-10 V	A3	A3	A3
	4-20 mA (only for M10)	A6		
T sensor passive [1]	Pt1000A		TP3	
	NTC10k		TP5	
	Ni1000, TK6180		TP9	
Probe length	50 mm (only for M10)	L50		
	200 mm	no code	no code	no code
Temperature	T [°C]		no code	no code
	T [°F]		MB2	MB2
Scale T low	0		no code	no code
	value [2]		SBL value	SBL value
Scale T high	50		no code	no code
	value [2]		SBH value	SBH value
Relative humidity / dew point	RH [%]			no code
	Td [°C]			MC52
	Td [°F]			MC53
Scale RH/Td low	0			no code
	value [2]			SCL value
Scale RH/Td high	100			no code
	value [2]			SCH value

1) T-Sensor details see www.epluse.com/R-T_Characteristics.
2) Within the range -40...100 °C (-40...212 °F), span between the high and the low value ≥ 20 °C (36 °F)

Ordering Examples

EE850-M12HR5000A3MB2SBL32SBH140

Model:	CO_2 + T + RH
CO_2 range:	0...5000 ppm
Output:	0-10 V
Probe length:	200 mm
Temperature:	T °F
Scale T low:	32 °F
Scale T high:	140 °F
RH/Td:	RH
Scale RH/Td low:	0 %
Scale RH/T high:	100 %

EE850-M10A6L50

Model:	CO_2
CO_2 range:	0...2000 ppm
Output:	4-20 mA
Probe length:	50 mm