USER'S GUIDE

EE850 – CO_2, Humidity and Temperature Transmitter for Duct Mounting

GENERAL

The EE850 transmitters are designed for the measurement of carbon dioxide (CO_2), relative humidity (RH) and temperature (T) in HVAC applications. It 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.
For use in special applications do not hesitate to contact E+E Elektronik or a local distributor.

Following models and output versions are available:

	0-5 V	0-10 V	4-20 mA	T sensor passive
CO_2 (EE850-M10)	✓	✓	✓	
CO_2 + T (EE850-M11)	✓	✓		✓optional
CO_2 + T + RH (EE850-M12)	✓	✓		

CAUTION

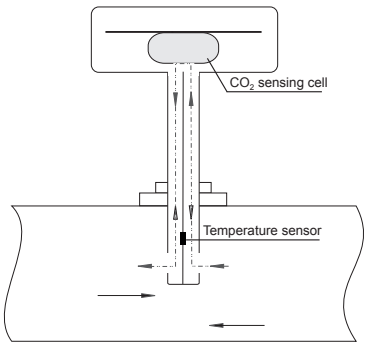
The transmitter shall not be exposed to extreme mechanical or thermal stress.
This device is not appropriate for safety, emergency stop or other critical applications where device malfunction or failure could cause injury to humans and other living beings.

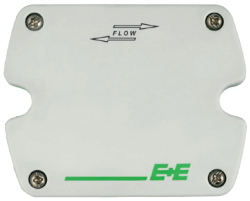
OPERATION PRINCIPLE

Installed into a duct, a small amount of air will flow through the divided probe into the EE850 transmitter housing, where the CO_2 sensing cell is located, and back into the duct. The RH and T sensing elements are placed inside the probe.

Very important
For accurate measurement the cover of EE850 as well as the cable outlet – cable glad or conduit adapter - must be tightly closed. This is essential for avoiding ingress of air other than from the duct into the EE850 enclosure, which would falsify the measurement.

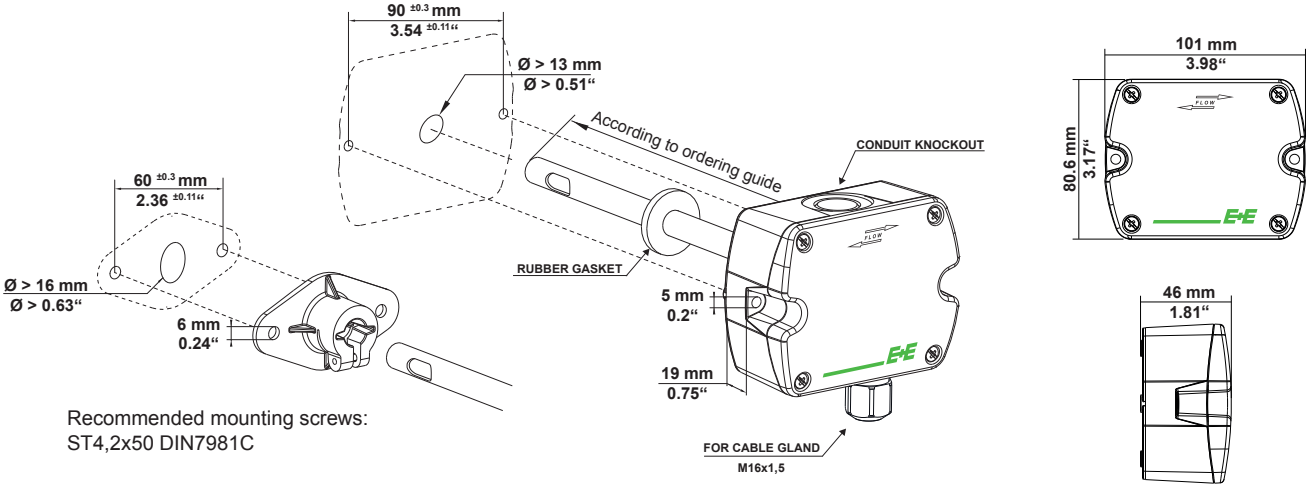
The direction of the air flow in the duct shall correspond to the direction indicated with arrows on the cover of EE850.





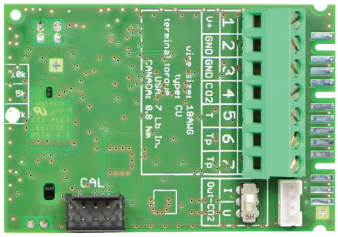
INSTALLATION

EE850 with conduit connection for the North American market: Use a flat screwdriver carefully to break open the plastic knockout at the marked location, in order to avoid damaging the electronics inside the enclosure. The conduit adapter is not included in the scope of supply.

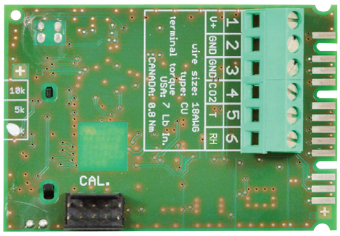


Recommended mounting screws:
ST4,2x50 DIN7981C

CONNECTION DIAGRAMS

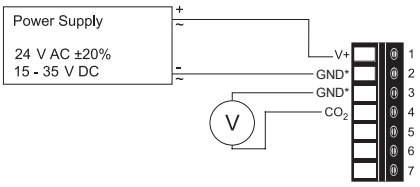


EE850-M10 and EE850-M11

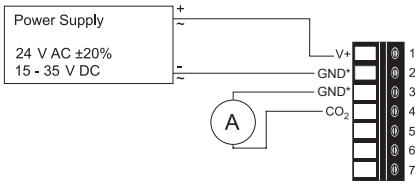


EE850-M12

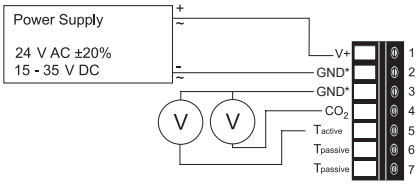
EE850-M10 / voltage output



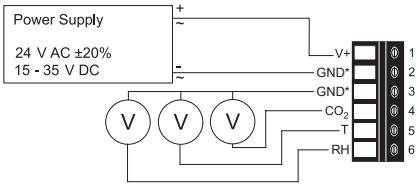
EE850-M10 / current output



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.

TECHNICAL DATA

(Modification rights reserved)

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	
Current consumption 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 mm^2 (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)

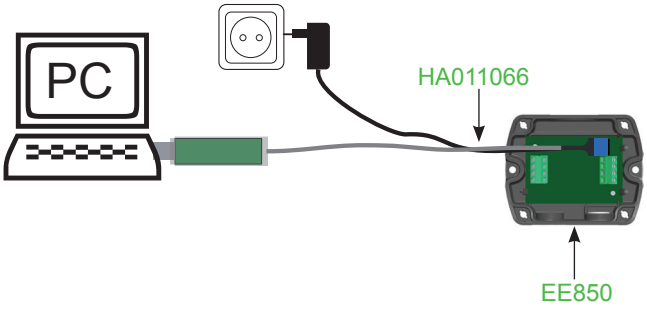
1) under normal operating conditions

SETUP AND ADJUSTMENT

The EE850 transmitter is ready to use and does not require any configuration by the user. The factory setup of EE850 corresponds to the type number ordered. For ordering guide please see data sheet at www.epluse.com/EE850.

If needed, the user can change the factory setup by using the optional Product Configuration Cable (HA011066) and the Product Configuration Software (EE-PCS). One can change the CO_2 output signal, the scaling of the outputs and perform CO_2, RH and T adjustment/calibration.

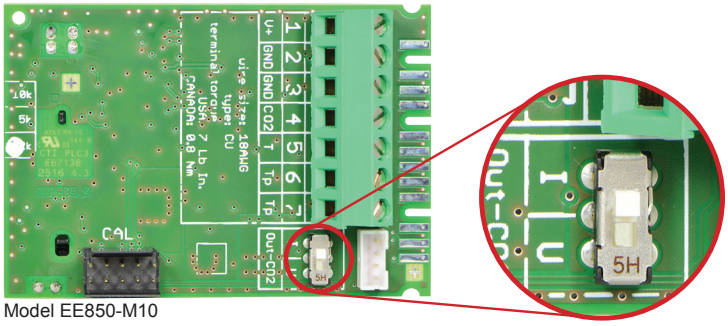
Note: The EE850 must not have any additional power supply when using the Configuration Adapter Cable (HA011066).



MODEL EE850-M10:

Changing the CO_2 output signal:
The output signal can be changed from voltage to current or vice-versa.

Set the output signal selection switch to I for current 4 - 20 mA output or to U for voltage 0 - 10 V output. The original CO_2 output range does not change and the calibration data remains valid.



Model EE850-M10

Example:
Factory setup: voltage output (U), output scale: 0 - 10 V = 0...5000 ppm
User setup (after setting the output signal selection switch to I): current output (I), output scale: 4 - 20 mA = 0...5000 ppm.

MODELS EE850-M11 and EE850-M12:

Changing the CO_2 and T output scale:
The scaling of the output can be changed by using Product Configuration Cable (HA011066) and Product Configuration Software (EE-PCS).

Example:

The initial scaling of the outputs is:	*The output scale after the change is:*
CO_2: 0 - 10 V = 0...5000 ppm	*CO_2: 0 - 10 V = 400...4000 ppm*
T: 0 - 10 V = 0...50 °C	*T: 0 - 10 V = 40...100 °F*
RH: 0 - 10 V = 0...100 % RH	*Td: 0 - 10 V = -20...40 °C*

Important:
- After changing the factory setup (output signal and/or output scale) the original type number on the EE850 identification label loses its validity; it does not match any longer the device setup.
- The return to factory setup function of EE-PCS restores the original adjustment/calibration of the device, but does not affect the user setup for output signal and output scale.

The Product Configuration Software (EE-PCS) is available for free download at www.epluse.com/configurator.

SCOPE OF SUPPLY

- EE850 transmitter according ordering guide
- Cable gland
- Mounting flange + seal
- Mounting materials
- Two self-adhesive labels for configuration changes (see user guide at www.epluse.com/relabeling)
- Test report according to DIN EN10204 - 2.2

EMC note USA (FCC):

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

EMC note Canada (ICES-003):

CAN ICES-3 (A) / NMB-3 (A)

INFORMATION **+43 7235 605 0 / info@epluse.com**

Langwiesen 7 • A-4209 Engerwitzdorf
Tel: +43 7235 605-0 • Fax: +43 7235 605-8
info@epluse.com • www.epluse.com

LG Linz Fn 165761 t • UID-Nr. ATU44043101
Place of Jurisdiction: A-4020 Linz • DVR0962759