

EE800

HVAC Room Transmitter for CO₂, Temperature and Relative Humidity

EE800 combines CO₂, temperature (T) and relative humidity (RH) measurement in one device with modern design. Additionally, it calculates the dewpoint temperature (Td).

The EE800 incorporates the E+E dual wavelength NDIR CO₂ sensor, which compensates for ageing effects, is highly insensitive to pollution and offers outstanding long term stability. A multiple point CO₂ and T factory adjustment procedure leads to excellent CO₂ measurement accuracy over the entire T working range.

EE800 with analogue outputs features an optional passive T sensor, while at EE800 with RS485 additional physical quantities are available on the Modbus RTU and BACnet MS/TP interface: absolute humidity, mixing ratio, enthalpy, frost point temperature and water vapor partial pressure.

The snap-on enclosure saves installation costs and it is available in two sizes according to regional standards. An optional USB configuration adapter facilitates easy setup and adjustment of EE800.



EE800

Typical Applications

Demand controlled ventilation
 Heating, ventilation and air conditioning
 Building management

Key Features

CO₂ autocalibration
 Modbus, BACnet or analogue outputs
 Outstanding long-term stability
 Temperature compensation
 Optional passive T output
 Easy installation

Technical Data

Measured values

CO₂

Measurement principle	Dual Wavelength Non-Dispersive Infrared Technology (NDIR)
Working range	0...2000 / 5000 ppm
Accuracy at 25 °C (77 °F) and 1013 mbar	0...2000 ppm: < ± (50 ppm +2 % of measuring value) 0...5000 ppm: < ± (50 ppm +3 % of measuring value)
Response time τ ₆₃	typ. 110 s
Temperature dependence	typ. ± (1 + CO ₂ concentration [ppm] / 1000) ppm/°C (-20...45 °C) (-4...113 °F)
Calibration interval ¹⁾	>5 years

Temperature

Accuracy ²⁾ at 20 °C (68 °F)	±0.3 °C (±0.54 °F) RS485 digital interface; ±0.3 °C (±0.54 °F) voltage output / ±0.7 °C (±1.26 °F) current output
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Relative Humidity

Working range	10...90 % RH
Accuracy at 20 °C (68 °F)	±3 % RH (30...70 % RH) ±5 % (10...90 % RH)

Calculated values

Dewpoint temperature³⁾

Working range	-30...55 °C (-22...131 °F)
Accuracy	< ±2 °C (3.6 °F) for T - Td < 25 °C (45 °F) < ±3 °C (5.4 °F) for T - Td < 30 °C (54 °F)

Outputs

Analogue

0...2000 / 5000 ppm	0-5 V / 0-10 V	-1 mA < IL < 1 mA
4-20 mA	R _L < 500 Ohm	

Digital Interface

RS485 with max. 32 devices on one bus

Protocol

Modbus RTU or BACnet MS/TP

Temperature passive

please see ordering guide (only in combination with analogue outputs)

1) Under normal operating conditions.

2) U_v = 24 V DC and R_L = 250 Ω for version with current output

3) Additional calculated physical quantities available only on the Modbus and BACnet interface: absolute humidity, mixing ratio, enthalpy, frost point temperature and water vapor partial pressure.

General

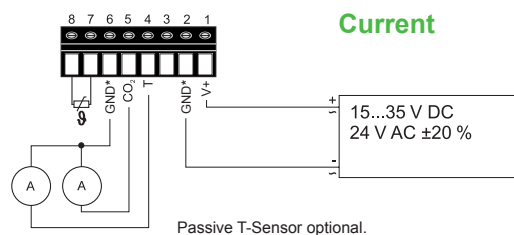
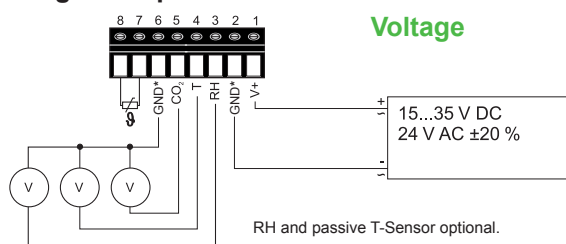
Supply voltage	24 V AC ±20 % 15-35 V DC
Current consumption	
Analogue	typ. 14 mA + output current; peak 0.3 A for 0.3 s
Digital	bias: typ. 11 mA at 15...35 V DC typ. 30 mA at 24 V AC ±20 % peak: 150mA at 15...35 V DC, 24 V AC ±20 %
Housing (polycarbonate)	US Version: UL94V-0 approved / EU Version: UL94HB approved
Protection class	IP30
Display ⁴⁾	LC display: alternating CO ₂ / T / RH or Td
Electrical connection	screw terminals max. 1.5 mm ² (AWG16)
Electromagnetic compatibility	EN61326-1 EN61326-2-3
FCC Part 15	ICES-003 ClassB
Working / Storage T-range	0...90 % RH (non condensing) / -20...60 °C (-4...140 °F)



- 4) Analogue outputs: The display shows the physical quantities selected for the outputs.
Digital interface: The display shows CO₂ and T for Model M11 and CO₂, T, and RH for Model M12

Connection Diagram

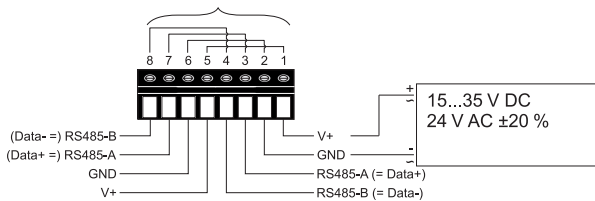
Analogue Output



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

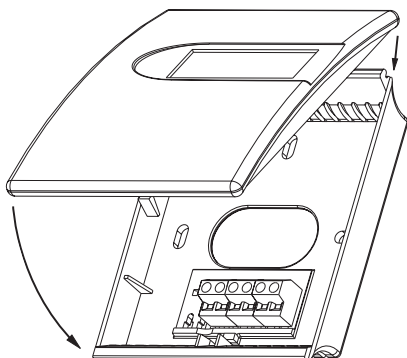
Digital Interface

Connection on the electronics board.



Screw terminals appropriate for daisy-chain wiring

Housing



Housing colour:

Standard (EU & US):

Front cover:	Signal white	RAL 9003
Back cover:	Light grey	RAL 7035

Optional (only EU):

Front and back cover	Grey (Anthracite grey RAL 7016)
	Silver (White aluminum RAL 9006)

EU:

W x H x D = 85 x 100 x 26 mm (3.3 x 3.9 x 1")

US:

W x H x D = 85 x 136 x 26 mm (3.3 x 5.4 x 1")

Ordering Guide

		EE800	
Hardware Configuration	Model	CO ₂ + T CO ₂ + T + RH	
	CO ₂ Range	0 - 2000 ppm 0 - 5000 ppm	
	Output	0-5 V 0-10 V 4-20 mA ¹⁾ RS485	
	T-Sensor passive ²⁾	none Pt100A Pt1000A NTC 10k Ni1000 Tk6180	
	Housing design & colour	EU - Standard (RAL 9003 / RAL 7035) EU - Grey (RAL 7016) EU - Silver (RAL 9006) US (RAL 9003 / RAL 7035)	
	Display	none yes	
Setup - Analogue outputs	Output 1 CO ₂	Scaling according to selected "CO ₂ Range" as above	
	Output 2 Temperature	T (°C) T (°F)	
	Scale 2 low	0 <i>value</i> ³⁾	
	Scale 2 high	50 <i>value</i> ³⁾	
	Output 3 Measurands	Relative Humidity (% RH) Dew Point (°C) Dew Point (°F) none	
	Scale 3 low	0 <i>value</i> ³⁾	
	Scale 3 high	100 <i>value</i> ³⁾	
	Setup - Digital output	Protocol	Modbus RTU ⁴⁾ BACnet MS/TP ⁵⁾
Baud rate		9600 19200 38400 57600 ⁶⁾ 76800 ⁶⁾	
Parity (Modbus)		no parity odd even	
Stopbit (Modbus)		1 stopbit 2 stopbits	
Unit		metric-SI non-metric	
			M11 M12 no code HR5000 A2 A3 A6 J3 no code TP1 TP3 TP5 TP9 no code CH74 CH93 RG2 no code D1 no code MB2 no code SBL <i>value</i> no code SBH <i>value</i> MC10 MC52 MC53 no code no code SCL <i>value</i> no code SCH <i>value</i> no code P3 no code BD6 BD7 BD8 BD9 PY0 no code PY2 no code BT2 no code U2

1) not with M12

2) not with J3 / T-Sensor details see www.epluse.com/R-T_Characteristics

3) Within working range. For scaling beyond working range limits please contact the E+E sales representative.

4) Modbus Map and setup instructions: See User Guide and Modbus Application Note at www.epluse.com/EE800

5) Product Implementation Conformance Statement (PICS) available at www.epluse.com/EE800

6) Only for BACnet

Order Example

EE800-M11A3CH74

Model: CO₂ + T
 CO₂ Range: 0 - 2000 ppm
 Output: 0-10 V
 Housing design & colour: EU - Grey RAL7016
 Output 2 Temperature: T (°C)
 Temperature Scale: 0...50

EE800-M12A3MC52SCL-10SCH10

Model: CO₂ + T + RH
 CO₂ Range: 0 - 2000 ppm
 Output: 0-10 V
 Housing design & colour: EU - Standard RAL9003 / RAL7035
 Output 2 Temperature: T (°C)
 Temperature Scale: 0...50
 Output 3: Dew Point (°C)
 Dew Point Scale: -10...10

EE800-M12HR5000J3RG2D1P3BD8PY2BT2U2

Model: CO₂ + T + RH
 CO₂ Range: 0 - 5000 ppm
 Digital output: RS485
 Housing design & colour: US RAL9003 / RAL7035
 Display: yes
 Protocol: BACnet
 Baud rate: 57600
 Parity: even
 Stopbit: 2
 Unit: non-metric

Scope of supply

- EE800 Transmitter according to ordering guide
- Mounting materials
- Test report according to DIN EN10204 - 2.2
- Quick Guide - EE800 with digital interface (only for EE800 with RS485 interface)

Accessories (see data sheet „Accessories“)

USB configuration adapter
Product configuration software

HA011066

EE-PCS (free download: www.epluse.com/configurator)