

EE800

Room Sensor for CO₂, Temperature and Relative Humidity

The EE800 is optimized for demand controlled ventilation and building automation in residential and commercial applications.

Versatile

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

Outstanding Measurement Performance

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.

Analogue Outputs, Digital Interface, Display

EE800 features analogue outputs or RS485 interface. At the EE800 with RS485 additional physical quantities are available via Modbus RTU or BACnet MS/TP: absolute humidity, mixing ratio, enthalpy, frost point temperature and water vapor partial pressure. The optional display shows the measured values alternately.

Easy Installation and Maintenance

The EE800 enclosure is available in two sizes according to regional standards.

The snap-on design facilitates the replacement of the active front part within seconds while the wiring remains intact. Furthermore, it makes possible to wire the device without exposing the electronics to construction site pollution.

Configurable and Adjustable

An optional USB configuration adapter and the free EE-PCS Product Configuration Software facilitate easy setup and adjustment of EE800.



Technical Data

Measurands

CO₂

Measurement principle	Dual wavelength non-dispersive infrared technology (NDIR)	
Measuring range	0...2000 / 5000 ppm	
Accuracy at 25 °C (77 °F)	0...2000 ppm: < ± (50 ppm +2 % of measuring value)	
and 1013 mbar	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 interface or voltage output
	±0.7 °C (±1.26 °F) current output

Relative humidity

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

Dew point 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)	

1) Under normal operating conditions

2) For supply voltage 24 V DC. Load resistor 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

Outputs


Analogue

0...2000 / 5000 ppm	0 - 10 V	-1 mA < IL < 1 mA
	4 - 20 mA	$R_L < 500 \text{ Ohm}$

Digital interface

Protocol	RS485 (EE800 = 1 unit load)
Factory settings	Modbus RTU or BACnet MS/TP
Supported baud rates	9 600 Baud, parity even, 1 stop bit, Modbus address 241
Data types for measured values	9 600, 19 200, 38 400, 57 600, 76 800 and 115 200
	FLOAT 32 bit

General

Power supply class III  ⁴⁾	24 V AC $\pm 20 \%$	15 - 35 V DC
Current consumption, typ.		
Analogue	14 mA + output current	
	Peak: 0.3 A for 0.3 s	
Digital	Bias: 11 mA at 15 - 35 V DC	
	30 mA at 24 V AC $\pm 20 \%$	
	Peak: 150 mA at 15 - 35 V DC, 24 V AC $\pm 20 \%$	
Enclosure (polycarbonate)	US Version: UL94 V-0 approved / EU Version: UL94HB approved	
Protection rating	IP30	
Display ⁵⁾	LC display: alternating CO ₂ / T / RH or Td	
Electrical connection	Screw terminals max. 1.5 mm ² (AWG16)	
Electromagnetic compatibility	EN 61326-1	EN 61326-2-3
	FCC Part 15	ICES-003 Class B
Test report	According to DIN EN 10204-2.2	
Working / storage T range	0...90 % RH non-condensing / -20...60 °C (-4...140 °F)	

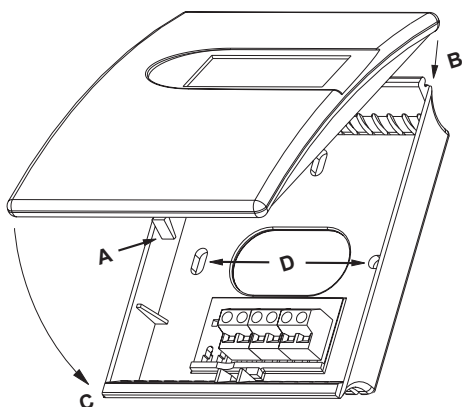
4) USA & Canada: class 2 supply required, max. supply voltage 30 V

5) 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



Enclosure



Dimensions:

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")

Colours:

EU-Standard, US:

Front cover: signal white RAL9003

Back cover: light grey RAL7035



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Ordering Guide

			EE800-			
Hardware Configuration	Model	CO ₂ + T CO ₂ + T + RH	M11		M12	
	CO ₂ range	0...2000 ppm 0...5000 ppm	HV1		HV2	
	Output	0 - 10 V 4 - 20 mA RS485	A3 A6	J3	A3	J3
	Enclosure design & colour	EU - Standard (RAL 9003 / RAL 7035) US (RAL 9003 / RAL 7035)	no code RG2			
	Display	No display Display without backlight	no code D1			
Setup - Analogue Outputs	Output 1	CO ₂ scaling according to selected "CO ₂ range" as above				
	Output 2	Temperature (°C) Temperature (°F)	no code MB2		no code MB2	
	Scale 2 low	0 Value ¹⁾	no code SBL Value		no code SBL Value	
	Scale 2 high	50 Value ¹⁾	no code SBH Value		no code SBH Value	
	Output 3	Relative humidity (%) Dew point (°C) Dew point (°F) None			MC10 MC52 MC53 no code	
	Scale 3 low	0 Value ¹⁾			no code SCL Value	
	Scale 3 high	100 Value ¹⁾			no code SCH Value	
Setup - RS485	Protocol	Modbus RTU BACnet MS/TP ²⁾		P1 P3		P1 P3
	Baud rate	9600 19200 38400 57600 (for BACnet only) 76800 (for BACnet only) 115200 (for BACnet only)		no code BD6 BD7 BD8 BD9 BD10		no code BD6 BD7 BD8 BD9 BD10
	Units	Metric (SI) Non-metric US/GB		no code U2		no code U2

- 1) Within working range. For scaling beyond working range limits please contact the E+E sales representative.
2) BACnet MS/TP: Product Implementation Conformance Statement (PICS) available at

Order Examples

EE800-M11HV1A3

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

EE800-M12HV1A3MC52SCL-10SCH10

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

EE800-M12HV2J3RG2D1P3BD8U2

Model: CO₂ + T + RH
CO₂ Range: 0...5000 ppm
Digital output: RS485
Enclosure design & colour: US RAL9003/RAL7035
Display: With backlight
Protocol: BACnet
Baud rate: 57600
Units: Non-metric US/GB

Accessories

(for further information, see datasheet "Accessories")

USB configuration adapter
Power supply adapter
Product configuration software

HA011066
V03
EE-PCS