

# EE800

## Room Sensor for CO<sub>2</sub>, Temperature and Relative Humidity

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

### Versatile

The EE800 combines CO<sub>2</sub>, 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 CO<sub>2</sub> sensor, which compensates for ageing effects, is highly insensitive to pollution and offers outstanding long term stability. A multiple point CO<sub>2</sub> and T factory adjustment procedure leads to excellent CO<sub>2</sub> 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 several colours and 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

#### CO<sub>2</sub>

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 <sub>63</sub> , typ.	110 s	
Temperature dependence, typ.	± (1 + CO <sub>2</sub> concentration [ppm] / 1000) ppm/°C (-20...45 °C) (-4...113 °F)	
Calibration interval <sup>1)</sup>	>5 years	

#### Temperature

Accuracy <sup>2)</sup> at 20 °C (68 °F)	±0.3 °C (±0.54 °F) RS485 interface or 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)

#### Dew point temperature<sup>3)</sup>

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 - 5 V / 0 - 10 V    -1 mA < IL < 1 mA  
4 - 20 mA                      R<sub>L</sub> < 500 Ohm

### Digital interface

Protocol                      RS485 (EE800 = 1 unit load)

Modbus RTU or BACnet MS/TP

## General

Power supply class III       24 V AC ±20 %    15 - 35 V DC<sup>4)</sup>

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 ±20 %

Peak: 150 mA at 15 - 35 V DC, 24 V AC ±20 %

Enclosure (polycarbonate)

US Version: UL94V-0 approved / EU Version: UL94HB approved

Protection rating

IP30

Display<sup>5)</sup>

LC display: alternating CO<sub>2</sub> / T / RH or Td

Electrical connection

Screw terminals max. 1.5 mm<sup>2</sup> (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

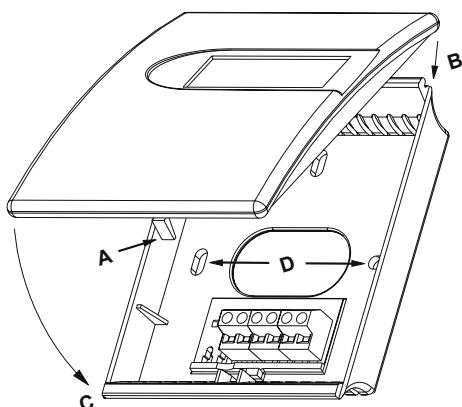
0...90 % RH (non condensing) / -20...60 °C (-4...140 °F)

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 CO<sub>2</sub> and T for Model M11 and CO<sub>2</sub>, 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

#### EU-Grey:

Front and back cover: anthracite grey RAL7016

#### EU-Silver:

Front and back cover: white aluminum RAL9006

## Ordering Guide

		EE800-			
		M11		M12	
Hardware Configuration	Model	CO <sub>2</sub> + T CO <sub>2</sub> + T + RH		HV1 HV2	
	CO <sub>2</sub> range	0...2000 ppm 0...5000 ppm			
	Output	0 - 5 V 0 - 10 V 4 - 20 mA RS485		A2 A3 A6	A2 A3 J3
	Enclosure design & colour	EU - Standard (RAL 9003 / RAL 7035) EU - Grey (RAL 7016) EU - Silver (RAL 9006) US (RAL 9003 / RAL 7035)		no code CH74 CH93 RG2	
	Display	No display Display without backlight		no code D1	
Setup - Analogue Outputs	Output 1	CO <sub>2</sub> scaling according to selected "CO <sub>2</sub> range" as above			
	Output 2	Temperature (°C) Temperature (°F)		no code MB2	no code MB2
	Scale 2 low	0 Value <sup>1)</sup>		no code SBLValue	no code SBLValue
	Scale 2 high	50 Value <sup>1)</sup>		no code SBHValue	no code SBHValue
	Output 3	Relative humidity (%) Dew point (°C) Dew point (°F) None			MC10 MC52 MC53 no code
	Scale 3 low	0 Value <sup>1)</sup>			no code SCLValue
	Scale 3 high	100 Value <sup>1)</sup>			no code SCHValue
	Setup - RS485	Protocol	Modbus RTU <sup>2)</sup> BACnet MS/TP <sup>3)</sup>		no code P3
Baud rate		9600		no code BD6	no code BD6
		19200		BD7	BD7
		38400		BD8	BD8
		57600 (for BACnet only) 76800 (for BACnet only) 115200 (for BACnet only)		BD9 BD10	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) Modbus RTU factory setting: Even Parity, Stopbits 1; Modbus Map and communication setting: See User Guide and Modbus Application Note at [www.epluse.com/EE800](http://www.epluse.com/EE800).

3) BACnet MS/TP: Product Implementation Conformance Statement (PICS) available at [www.epluse.com/EE800](http://www.epluse.com/EE800).

## Order Examples

### EE800-M11HV1A3CH74

Model: CO<sub>2</sub> + T  
 CO<sub>2</sub> Range: 0...2000 ppm  
 Output: 0 - 10 V  
 Enclosure design & Colour: EU - Grey RAL7016  
 Output 2: T (°C)  
 Temperature Scale: 0...50

### EE800-M12HV1A3MC52SCL-10SCH10

Model: CO<sub>2</sub> + T + RH  
 CO<sub>2</sub> 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: CO<sub>2</sub> + T + RH  
 CO<sub>2</sub> 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 (free download: [www.epluse.com/configurator](http://www.epluse.com/configurator))