

# 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 and Passive Outputs, Digital interface, Display

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.

### 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
-----------------------------------------	-------------------------------------------------------------------------------------------

#### 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       $R_L < 500 \text{ Ohm}$

### Digital interface

RS485 with max. 32 unit load devices on one bus

### Protocol

Modbus RTU or BACnet MS/TP

### Temperature passive

according to ordering guide

## General

Supply voltage      24 V AC  $\pm 20 \%$       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  $\pm 20 \%$

peak:      150 mA at 15...35 V DC, 24 V AC  $\pm 20 \%$

Enclosure (polycarbonate)      US Version: UL94V-0 approved / EU Version: UL94HB approved

Protection class      IP30

### Display<sup>4)</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      EN61326-1      EN61326-2-3

FCC Part 15      ICES-003 ClassB



### Test report

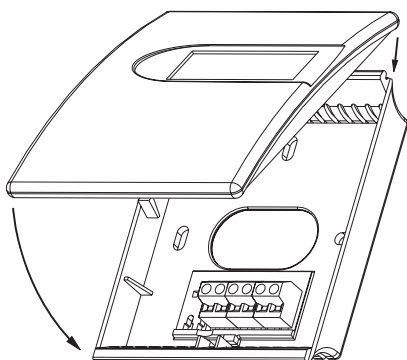
according to DIN EN10204 - 2.2

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 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	J3	A2 A3	J3
	T-Sensor passive (see <a href="http://www.epluse.com/R-T_Characteristics">www.epluse.com/R-T_Characteristics</a> )	none Pt100A Pt1000A NTC 10k Ni1000 Tk6180	no code TP1 TP3 TP5 TP9		no code TP1 TP3 TP5 TP9	
	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	none yes	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 <i>value</i> <sup>1)</sup>	no code SBL <i>value</i>		no code SBL <i>value</i>	
	Scale 2 high	50 <i>value</i> <sup>1)</sup>	no code SBH <i>value</i>		no code SBH <i>value</i>	
	Output 3	relative humidity (% RH) dew point (°C) dew point (°F) none	MC10 MC52 MC53 no code		MC10 MC52 MC53 no code	
	Scale 3 low	0 <i>value</i> <sup>1)</sup>	no code SCL <i>value</i>		no code SCL <i>value</i>	
	Scale 3 high	100 <i>value</i> <sup>1)</sup>	no code SCH <i>value</i>		no code SCH <i>value</i>	
Setup - RS485	Protocol	Modbus RTU <sup>2)</sup> BACnet MS/TP <sup>3)</sup>		no code P3		no code P3
	Baud rate	9600 19200 38400 57600 (for BACnet only) 76800 (for BACnet only)		no code BD6 BD7 BD8 BD9		no code BD6 BD7 BD8 BD9
	Unit	metric-SI non-metric		no code U2		no code U2

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

2) 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) Factory setting: No Parity, Stopbits 1; 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: yes  
Protocol: BACnet  
Baud rate: 57600  
Unit: non-metric

## Accessories (see data sheet „Accessories“)

USB configuration adapter  
Power supply adapter  
Product configuration software

HA011066

V03 (see data sheet Accessories)

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