

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) 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 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

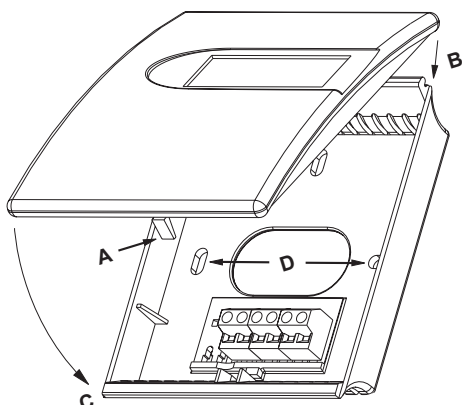
Power supply class III  ⁴⁾	24 V AC ±20 %	15 - 35 V DC	
Current consumption, typ.			
Analogue	14 mA + output current		
	Peak: 0.3 A for 0.3 s		
Digital	Bias: 11 mA at 15 - 35 V DC		
	30 mA at 24 V AC ±20 %		
	Peak: 150 mA at 15 - 35 V DC, 24 V AC ±20 %		
Enclosure (polycarbonate)	US Version: UL94 V-0 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

Ordering Guide

		EE800-				
		M11		M12		
Hardware Configuration	Model	CO ₂ + T		CO ₂ + T + RH		
	CO ₂ range	0...2000 ppm		0...5000 ppm		
	Output	0 - 10 V	A3	A3		
		4 - 20 mA	A6		J3	
		RS485		J3	J3	
Enclosure design & colour	EU - Standard (RAL 9003 / RAL 7035)	no code				
	US (RAL 9003 / RAL 7035)	RG2				
Display	No display	no code				
	Display without backlight	D1				
Setup - Analogue Outputs	Output 1	CO ₂ scaling according to selected "CO ₂ range" as above				
	Output 2	Temperature (°C)	no code		no code	
		Temperature (°F)	MB2		MB2	
	Scale 2 low	0	no code		no code	
		Value ¹⁾	SBLValue		SBLValue	
	Scale 2 high	50	no code		no code	
		Value ¹⁾	SBHValue		SBHValue	
	Output 3	Relative humidity (%)			MC10	
		Dew point (°C)			MC52	
		Dew point (°F)			MC53	
	None			no code		
Scale 3 low	0			no code		
	Value ¹⁾			SCLValue		
Scale 3 high	100			no code		
	Value ¹⁾			SCHValue		
Setup - RS485	Protocol	Modbus RTU		P1	P1	
		BACnet MS/TP ²⁾		P3	P3	
	Baud rate		9600	no code		no code
			19200	BD6		BD6
			38400	BD7		BD7
			57600 (for BACnet only)	BD8		BD8
			76800 (for BACnet only)	BD9		BD9
	115200 (for BACnet only)	BD10		BD10		
Units	Metric (SI)	no code		no code		
	Non-metric US/GB	U2		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 www.epluse.com/ee800.

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
 (free download: www.epluse.com/configurator)

HA011066
 V03
 EE-PCS