EE800

Room Sensor for CO_2, 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_2, 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_2 sensor, which compensates for ageing effects, is highly insensitive to pollution and offers outstanding long term stability. A multiple point CO_2 and T factory adjustment procedure leads to excellent CO_2 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

CO_2	
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 temperature[3]	
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

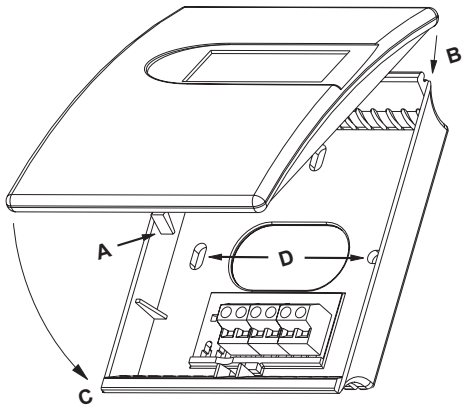
0...2000 / 5000 ppm	0 - 10 V	-1 mA < IL < 1 mA
	4 - 20 mA	R_L < 500 Ohm
Digital interface	RS485 (EE800 = 1 unit load)	
Protocol	Modbus RTU or BACnet MS/TP	
Factory settings	9 600 Baud, parity even, 1 stop bit, Modbus address 241	
Supported baud rates	9 600, 19 200, 38 400, 57 600, 76 800 and 115 200	
Data types for measured values	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	
Digital	Peak:	0.3 A for 0.3 s
	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 mm²(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_2 and T for Model M11 and CO_2, 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-			
Hardware Configuration	**Model**	CO_2 + T	M11		M12	
		CO_2 + T + RH				
	CO_2 range	0...2000 ppm	HV1			
		0...5000 ppm	HV2			
	Output	0 - 10 V	A3		A3	
		4 - 20 mA	A6			
		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]	SBL*Value*		SBL*Value*	
	Scale 2 high	50	no code		no code	
		Value[1]	SBH*Value*		SBH*Value*	
	Output 3	Relative humidity (%)			MC10	
		Dew point (°C)			MC52	
		Dew point (°F)			MC53	
		None			no code	
	Scale 3 low	0			no code	
		Value[1]			SCL*Value*	
	Scale 3 high	100			no code	
		Value[1]			SCH*Value*	
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:	CO_2 + T
CO_2 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:	CO_2 + T + RH
CO_2 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_2 + T + RH
CO_2 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	HA011066
Power supply adapter	V03
Product configuration software (free download: www.epluse.com/configurator)	EE-PCS