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 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_2

Measurement principle	Dual Wavelength Non-Dispersive Infrared Technology (NDIR)
Working 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 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)

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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 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 ±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 ±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 class	IP30	
Display[4]	LC display: alternating CO_2 / T / RH or Td	
Electrical connection	screw terminals max. 1.5 mm² (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)	

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4) 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
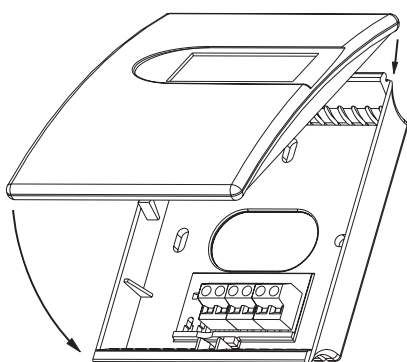
Dimensions:

<u>EU:</u> W x H x D = 85 x 100 x 26 mm (3.3 x 3.9 x 1")
<u>US:</u> W x H x D = 85 x 136 x 26 mm (3.3 x 5.4 x 1")

Colours:

<u>EU-Standard, US:</u>
Front cover: signal white RAL9003
Back cover: light grey RAL7035

<u>EU-Grey:</u>
Front and back cover: anthracite grey RAL7016

<u>EU-Silver:</u>
Front and back cover: white aluminum RAL9006

Ordering Guide

			EE800-			
			M11		**M12**	
Hardware Configuration	Model	CO_2 + T CO_2 + T + RH	M11		M12	
	CO_2 range	0 - 2000 ppm 0 - 5000 ppm	HV1 HV2			
	Output	0-5 V 0-10 V 4-20 mA RS485	A2 A3 A6	J3	A2 A3	J3
	T-Sensor passive (see www.epluse.com/R-T_Characteristics)	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_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 (% RH) dew point (°C) dew point (°F) none	MC10 MC52 MC53 no code		MC10 MC52 MC53 no code	
	Scale 3 low	0 value[1]	no code SCL value		no code SCL value	
	Scale 3 high	100 value[1]	no code SCH value		no code SCH value	
Setup - RS485	Protocol	Modbus RTU[2] BACnet MS/TP[3]		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.
3) Factory setting: No Parity, Stopbits 1; Product Implementation Conformance Statement (PICS) available at www.epluse.com/ee800.

Order Examples

EE800-M11HV1A3CH74
Model:	CO_2 + T
CO_2 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_2 + T + RH
CO_2 Range:	0 - 2000 ppm
Output:	0-10 V
Enclosure design & colour:	EU - Standard RAL9003 / RAL 7035
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 / RAL 7035
Display:	yes
Protocol:	BACnet
Baud rate:	57600
Unit:	non-metric

Accessories (see data sheet „Accessories")

USB configuration adapter	HA011066
Power supply adapter	V03 (see data sheet Accessories)
Product configuration software	EE-PCS (free download: www.epluse.com/configurator)