

# EE871

## Modbus CO<sub>2</sub> Probe for Demanding OEM Applications

The E+E CO<sub>2</sub> probe EE871 is designed for use in harsh, demanding OEM applications. A multiple point CO<sub>2</sub> and temperature adjustment procedure leads to excellent CO<sub>2</sub> measurement accuracy over the entire temperature working range, ideal for use in agriculture or outdoors. EE871 incorporates the dual wavelength NDIR CO<sub>2</sub> sensor, which automatically compensates for ageing effects, is highly insensitive to pollution and provides outstanding long term stability.

The IP65 enclosure and replaceable PTFE filter offer excellent protection in harsh, polluted environments. The compact size, the M12 connector and the optional mounting flange allow for fast probe installation or replacement.

The measured data range of up to 10000ppm is available on both the Modbus and the E2 digital interface versions.

An optional kit facilitates easy configuration and adjustment of EE871. The measurement interval can be set according to the application requirements, by this the average current consumption can be reduced to 120µA for battery-operated devices.



**EE871**

### Typical Applications

- Greenhouses
- Fruit and vegetable storage
- Stables
- Hatchers and Incubators
- Data loggers and hand helds

### Key Features

- Autocalibration
- Outstanding long-term stability
- Temperature compensation
- Very low current consumption
- IP65 enclosure
- Easy installation

### Technical Data

#### Measured values

CO <sub>2</sub>	
Measuring principle	E+E dual wavelength non-dispersive infrared technology (NDIR)
Measurement range	0...2000 / 5000 / 10000ppm
Accuracy at 25°C and 1013mbar <sup>1)</sup> (77°F...14,69psi)	0...2000ppm: < ± (50ppm +2% from the measured value) 0...5000ppm: < ± (50ppm +3% from the measured value) 0...10000ppm: < ± (100ppm +5% from the measured value)
Response time t <sub>90</sub>	105s with measured data averaging (smooth output) 60s without measured data averaging
Temperature dependency	typ. 1ppm CO <sub>2</sub> /°C (-20...45°C) (-4...113°F)
Measurement interval	adjustable from 15s to 1h (Factory setting 15s)

#### General

Digital interface	Modbus or E2 (details: <a href="http://www.epluse.com">www.epluse.com</a> )
Supply voltage	4.75 - 7.5V DC
Average current consumption <sup>2)</sup>	120µA (at 1h measurement interval)...4.3mA (at 15sec. measurement interval)
Current peak	max. 350mA for 0.05s
Housing / Protection class	Plastic PC / Housing IP65
Electrical connection	Connector M12 x 1
Cable length E2 interface	max. 10m (32.8ft)
Electromagnetic compatibility (Industrial environment)	EN61326-1 EN61326-2-3
Operating conditions	-40...60°C (-40...140°F) 0...100% RH (non-condensing) 85...110kPa (12,33...15,95psi)
Storage conditions	-40...60°C (-40...140°F) 0...100% RH (non-condensing) 70...110kPa (10,15...15,95psi)

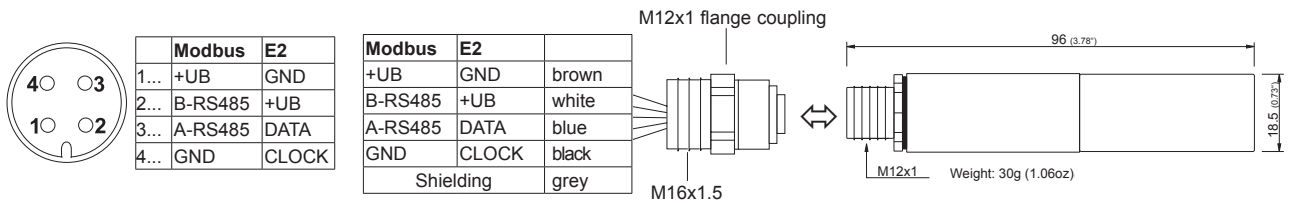
<sup>1)</sup> For averaging output

<sup>2)</sup> The average current consumption depends on the measurement interval



## Connection

## Dimensions (mm)



## Modbus Map

The measured values are saved as a 32Bit *float* value from 0x2D to 0x30. The factory setting for the Slave-ID is 246 as an *integer* 16Bit value. This ID can be customised in the register 0x00 (permitted values 1 - 247).

### FLOAT (read register):

Register address	Communication address	Parameter name
30046	0x2D	CO <sub>2</sub> Response time = 60s
30048	0x2F	CO <sub>2</sub> Response time = 105s

### INTEGER (write register):

Register address	Communication address	Parameter name
60001	0x00	Slave-ID
60002	0x01	RS485 Setting
60003	0x02	Measuring time interval

For Modbus protocol setting please see Application Note ([www.epluse.com/EE871](http://www.epluse.com/EE871)).

## Ordering Information

## Order Example

MEASUREMENT RANGE	TYPE	OUTPUT	FILTER
0...2000ppm (02)	CO <sub>2</sub> (C)	E2 interface (2)	PTFE-Filter (E)
0...5000ppm (05)		RS485* (3)	
0...10000ppm (10)			

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### \*Interface parameters - RS485

PROTOCOL	BAUDRATE	PARITY	STOPBITS
Modbus (1)	9600 (A)	odd (O)	1 stopbit (1)
	19200 (B)	even (E)	2 stopbits (2)
	38400 (C)	no parity (N)	

EE871-02C3E-1AE2

Measurement range: 0...2000ppm  
 Type: CO<sub>2</sub>  
 Output: RS485  
 Filter: PTFE-Filter

Protocol: Modbus  
 Baudrate: 9600  
 Parity: even  
 Stopbits: 2

## Accessories (For further information, see data sheet "Accessories")

Mounting flange	HA010212
M12x1 flanged coupling with 50mm (1,97") stranded wire	HA010705
Modbus configuration adapter	HA011012
E2 Test and configuration adapter	HA011010
E+E Product configuration software	EE-PCS (Download: <a href="http://www.epluse.com/Configurator">www.epluse.com/Configurator</a> )
Connecting cable	HA0108xx
T-Coupler M12 - M12	HA030204
M12 Connector for self assembly	HA010707
PTFE Filter	HA010116

## Support Literature

[www.epluse.com/EE871](http://www.epluse.com/EE871)