EE871
Modbus CO2 Probe for Demanding OEM Applications

The E+E CO_2 probe EE871 is designed for use in harsh, demanding OEM applications. A multiple point CO_2 and temperature adjustment procedure leads to excellent CO_2 measurement accuracy over the entire temperature working range, ideal for use in agriculture or outdoors. EE871 incorporates the dual wavelength NDIR CO_2 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_2

Measuring principle	E+E dual wavelength non-dispersive infrared technology (NDIR)
Measurement range	0...2000 / 5000 / 10000ppm
Accuracy at 25°C and 1013mbar [1] (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_{90}	105s with measured data averaging (smooth output)
	60s without measured data averaging
Temperature dependency	typ. 1ppm CO_2/°C (-20...45°C) (-4...113°F)
Measurement interval	adjustable from 15s to 1h (Factory setting 15s)

General

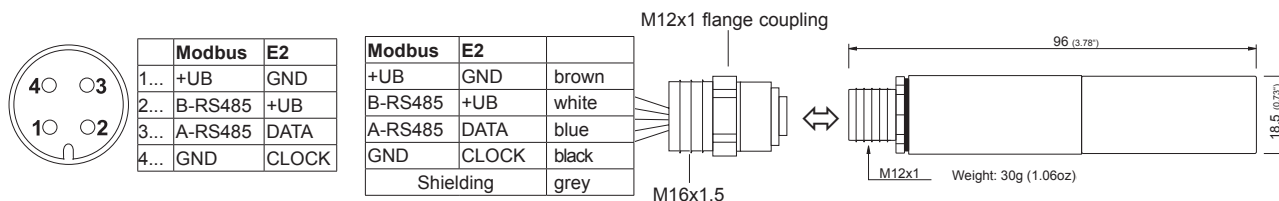|	
Digital interface	Modbus or E2 (details: www.epluse.com)
Supply voltage	4.75 - 7.5V DC
Average current consumption [2]	120μA (at 1h measurement interval)...4.3mA (at 15sec. measurement interval)
Current peak	max. 350mA for 0.05s
Housing / Protection class	Plastic PC / Housing IP65
Electrical connection	Connector M12 x 1
Cable length E2 interface	max. 10m (32.8ft)
Electromagnetic compatibility (Industrial enviroment)	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)

CE

1) For averaging output
2) The average current consumption depends on the measurement interval

Connection

	Modbus	E2
1...	+UB	GND
2...	B-RS485	+UB
3...	A-RS485	DATA
4...	GND	CLOCK

Dimensions (mm)

Modbus	E2	
+UB	GND	brown
B-RS485	+UB	white
A-RS485	DATA	blue
GND	CLOCK	black
Shielding		grey

M12x1 flange coupling

M16x1.5

96 (3.78")

18.5 (0.73")

M12x1   Weight: 30g (1.06oz)

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_2 Response time = 60s
30048	0x2F	CO_2 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).

Ordering Information

MEASUREMENT RANGE		TYPE		OUTPUT		FILTER	
0...2000ppm	(02)	CO_2	(C)	E2 interface	(2)	PTFE-Filter	(E)
0...5000ppm	(05)			RS485*	(3)		
0...10000ppm	(10)						
EE871-							

*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)		

Order Example

EE871-02C3E-1AE2

Measurement range:	0...2000ppm
Type:	CO_2
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: www.epluse.com/Configurator)
Connecting cable	HA0108xx
T-Coupler M12 - M12	HA030204
M12 Connector for self assembly	HA010707
PTFE Filter	HA010116

Support Literature

www.epluse.com/EE871