

EE871

Digital CO₂ Probe for Demanding Applications

The E+E CO₂ probe EE871 is designed for use in harsh, demanding OEM applications. A multiple point CO₂ and temperature adjustment procedure leads to excellent CO₂ measurement accuracy over the entire temperature working range, ideal for use in agriculture or outdoors. EE871 incorporates the dual wavelength NDIR CO₂ sensor, which automatically compensates for ageing effects and is highly insensitive to pollution.

The IP65 enclosure and the replaceable PTFE filter offer excellent protection in harsh, polluted environment. The compact size, the M12 connector and the optional mounting flange allow for fast probe installation or replacement. With the optional radiation shield, EE871 can be also used outdoors.

The measured data range of up to 5 % CO₂ (50,000 ppm) is available on E2 digital interface and up to 1 % CO₂ (10,000 ppm) is available on Modbus RTU interface.



EE871

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 120 µA for battery-operated devices.

Typical Applications

- Greenhouses and livestock barns
- Fruit and vegetable storage
- Hatchers and incubators
- Outdoor CO₂ monitoring
- Data loggers and handhelds

Key Features

- Auto-calibration
- Outstanding long-term stability
- Temperature compensation
- Very low current consumption
- IP65 enclosure
- Modbus RTU or E2 interface

Technical Data

Measured values

CO₂

Measuring principle	Dual wavelength (non-dispersive infrared technology) NDIR
Measurement range	0...2000 ppm: < ± (50 ppm + 2 % from the measured value)
Accuracy at 25 °C and 1013 mbar ¹⁾ (77 °F...14,69 psi)	0...5000 ppm: < ± (50 ppm + 3 % from the measured value) 0...10,000 ppm: < ± (100 ppm + 5 % from the measured value)
	0...3 %: < ± (1,5 % from full scale + 2 % from the measured value)
	0...5 %:
Response time t ₉₀	105 s with measured data averaging (smooth output) 60 s without measured data averaging
Temperature dependency (-20...45 °C) (-4...113 °F)	0...2000 ppm: 0...5000 ppm: typ. ± (1 + CO ₂ concentration [ppm] / 1000) ppm/°C 0...10,000 ppm: 0...3 %: 0...5 %: typ. -0,3 % from the measured value/°C
Measurement interval	adjustable from 15 s to 1 h (Factory setting: 15 s)

General

Digital interface	Modbus RTU or E2 (details: www.epluse.com)
Supply voltage	4.75 - 7.5 VDC

1) For averaging output

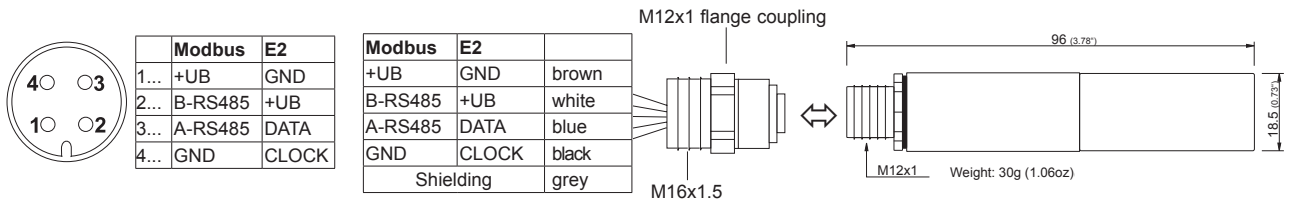
Average current consumption ²⁾	120 µA (at 1 h measurement interval)...4.3 mA (at 15 sec. measurement interval)
Current peak	max. 350 mA for 0.05 s
Housing / Protection class	Plastic PC / Housing IP65
Electrical connection	Connector M12 x 1
Cable length E2 interface	max. 10 m (32.8 ft)
Electromagnetic compatibility	EN61326-1
(Industrial environment)	EN61326-2-3
Operating conditions	-40...60 °C (-40...140 °F) 0...100 % RH (non-condensing) 85...110 kPa (12,33...15,95 psi)
Storage conditions	-40...60 °C (-40...140 °F) 0...100 % RH (non-condensing) 70...110 kPa (10,15...15,95 psi)



2) The average current consumption depends on the measurement interval

Connection

Dimensions (mm/inch)



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):

Coil / Register Numbers	Data-Addresses	Parameter name
30046	0x2D	CO ₂ Response time = 60s
30048	0x2F	CO ₂ Response time = 105s

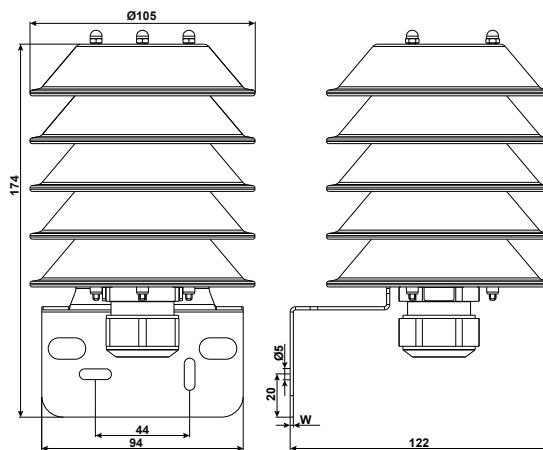
INTEGER (write register):

Coil / Register Numbers	Data-Addresses	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).

Operation outdoors

For outdoor applications EE871 must be used with the radiation shield order no. HA010507, which protects the device against rain, snow, ice, and solar radiation.



Scope of Supply

- EE871 probe according to ordering guide
- Test report according to DIN EN10204 - 2.2

Ordering Guide

		EE871
Hardware	CO ₂ Range	HR2000 HR5000 HR1 HR3 HR5
	Digital Output	J2 no code
Software ¹⁾	Baudrate	no code BD6 BD7
	Parity	PY0 no code PY2
	Stopbits	no code BT2

1) Only for Modbus RTU

Ordering Example

EE871-HR5J2

CO₂ range: 0...5 %
 Digital Output: E2 Interface

EE871-HR2000PY2BT2

CO₂ range: 0...2000 ppm
 Digital Output: Modbus RTU
 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 (Download: www.epluse.com/Configurator)	EE-PCS
Connecting cable M12 - flying leads (1.5 m (59.06") / 5 m (196.85") / 10 m (393.70"))	HA010819/20/21
T-Coupler M12 - M12	HA030204
M12 Connector for self assembly	HA010707
PTFE filter cap	HA010116
Radiation shield	HA010507
Protection cap for the M12 cable socket	HA010781
Protection cap for the M12 plug of EE871	HA010782

Support Literature

www.epluse.com/EE871

YOUR PARTNER IN SENSOR TECHNOLOGY

E+E
ELEKTRONIK®
Ges.m.b.H.



JLC International, Inc.
Phone: 215-340-2650
Fax: 215-340-3670

958 Town Center, New Britain, PA 18901
jlcusa@jlcinternational.com
www.jlcinternational.com