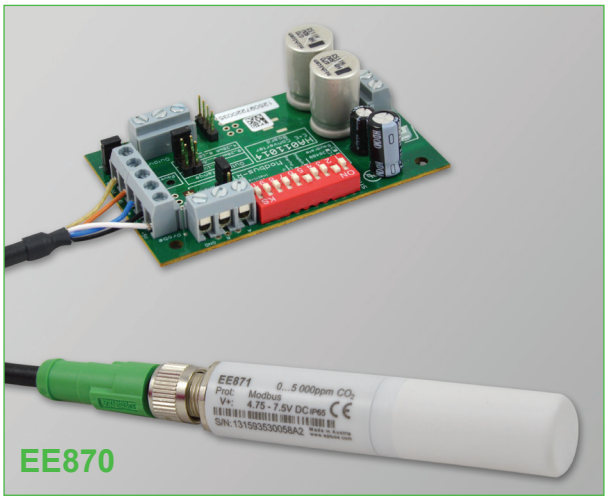
EE870

Modular CO_2 Transmitter for Demanding Applications

The modular E+E CO_2 transmitter EE870 is designed for easy integration into OEM equipment for demanding applications. EE870 consists of a CO_2 sensing probe, a conversion board and a connection cable.



The interchangeable CO_2 probe incorporates the 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 temperature adjustment leads to excellent measurement accuracy over the entire temperature working range, ideal for use in agriculture and outdoors.

The IP65 enclosure of probe and the replaceable filter offer excellent protection in harsh, polluted environment. With a special filter cap, the probe can be employed in applications with periodical H_2O_2 sterilization. The compact size, the M12 connector and the optional mounting flange allow for fast probe installation, replacement or removal during the cleaning of the site, for instance a stable or an incubator. With the optional radiation shield, the probe can be also installed outdoors.

The measured data range of up to 5 % CO_2 (50,000 ppm) is available on the analog outputs of the conversion board. Several voltage and current ranges can be selected with jumpers. Additionally, the data is available on the Modbus RTU interface, which can be configured by the user with DIP switches on the board. An optional kit facilitates easy configuration and adjustment of the probe.

Typical Applications

Greenhouses and livestock barns
Fruit and vegetable storage
Hatchers and incubators
Outdoor CO_2 monitoring
Pharma, Biotech (H_2O_2 sterilization)

Key Features

Auto-calibration
Outstanding long-term stability
Temperature compensation
Interchangeable probe
Analogue and Modbus RTU outputs

Technical Data

Digital CO_2 Probe EE871

Measuring principle	Dual wavelength (non-dispersive infrared technology) NDIR	
Measurement range / Accuracy at 25 °C and 1013 mbar[1] (77 °F...14,69 psi)	0...2000 ppm:	< ± (50 ppm + 2 % from the measured value)
	0...5000 ppm:	< ± (50 ppm + 3 % from the measured value)
	0...10,000 ppm:	< ± (100 ppm + 5 % from the measured value)
	0...3 %: 0...5 %:	< ± (1,5 % from full scale + 2 % from the measured value)
Response time t_{63}	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: 0...10,000 ppm:	typ. ± (1 + CO_2 concentration [ppm] / 1000) ppm/°C
	0...3 %: 0...5 %:	typ. -0,3 % from the measured value/°C
Housing / Protection class	Plastic PC / Housing IP65	
Cable length	max. 10 m (32 ft)	
Electromagnetic compatibility (Industrial enviroment)	EN61326-1 EN61326-2-3	CE

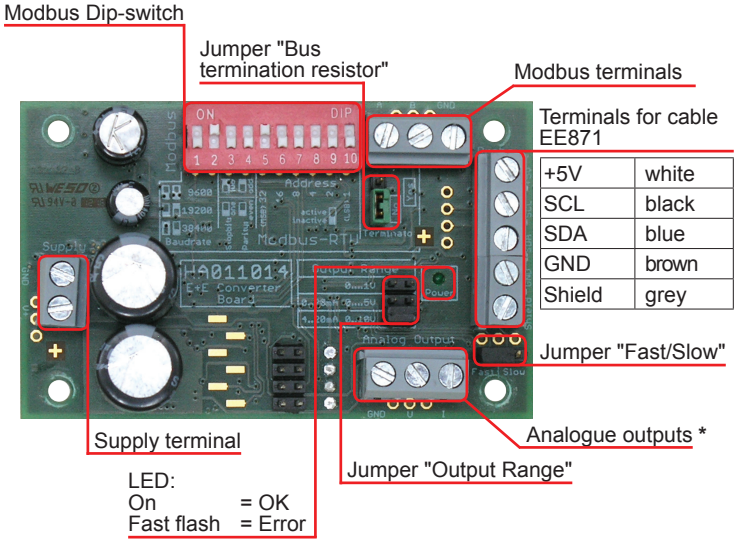
Conversion Board

Supply voltage	10-35 V DC / 10-28.8 V AC
Supply current	120 mA at 24 V DC / 300 mA at 10 V DC
Protection class	IP00

1) For averaging output

Electrical connection	screw terminal size: 2.5 mm²		
Analog outputs	0-1 V; 0-5 V; 0-10 V	-1 mA < I_L < 1 mA	
selectable by jumpers	0-20 mA; 4-20 mA	R_L < 500 Ohm	
Resolution	12 bit		
Response time t_{90}	60 s or 105 s selectable by jumpers		
Modbus RTU	setup with dip-switches (see operation manual)		
Temperature dependence	Voltage: typ. ±0.2 mV/°C (0 – 1V) typ. ±0.5 mV/°C (0 – 5V) typ: ±0.6 mV/°C (0 – 10V)		
	Current: typ. ±1 µA / °C		
EE870 Operating conditions	-40...60 °C (-40...140 °F)	0...100 % RH (not condensating)	85...110 kPa (12.33...15.95 psi)
EE870 Storage condition	-40...60 °C (-40...140 °F)	0...100 % RH (not condensating)	70...110 kPa (10.15...15.95 psi)

Connection

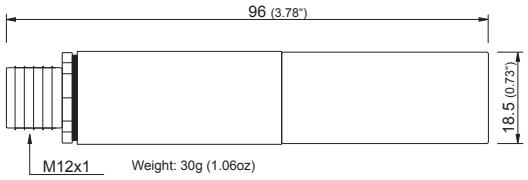


+5V	white
SCL	black
SDA	blue
GND	brown
Shield	grey

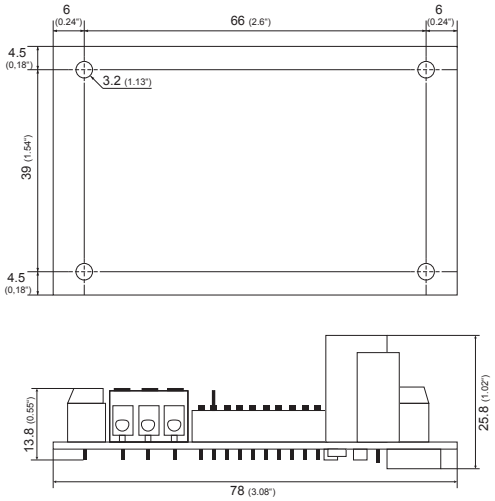
Very important:
for failure-free operation and performance according to the specs the supply GND and the measurement GND must be wired separately.

Dimensions (mm/inch)

Digital CO_2 Probe EE871



Conversion Board



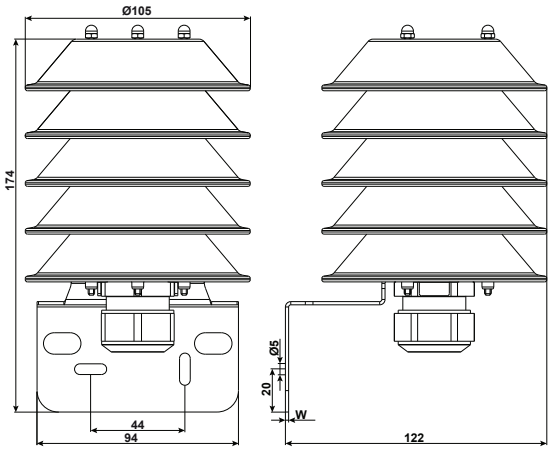
Scope of Supply

- EE871 probe according to ordering guide
- Test report according to DIN EN10204 - 2.2 for EE871
- Conversion board HA011014
- Connecting cable HA0108xx
- Operation manual
- Test report according to DIN EN10204 - 2.2 for conversion board

Operation outdoors

For outdoor applications, the probe of EE870 must be used with the radiation shield order no. HA010507, which protects the device against rain, snow, ice, and solar radiation. The convertor board must protected IP65 (NEMA4) or better.


EE871 with radiation shield



Ordering Guide

		EE870
CO_2 range	0...2000 ppm	HR2000
	0...5000 ppm	HR5000
	0...10,000 ppm	HR1
	0...3 %	HR3
	0...5 %	HR5
Filter cap	PTFE	no code
	H_2O_2	F12
Cable length	1 m	no code
	2 m	KL200
	5 m	KL500
	10 m	KL1000

Ordering Example

EE870-HR2000KL500

CO_2 range:	0...2000 ppm
Filter cap:	PTFE
Cable length:	5 m

EE870-HR5F12

CO_2 range:	0...5 %
Filter cap:	H_2O_2
Cable length:	1 m

Accessories (see data sheet "Accessories")

Replacement probe EE871-HRxJ2	see data sheet EE871
Cable M12 - flying leads (1 m (39.37") / 2 m (78.74") / 5 m (196.85") / 10 m (393.70"))	HA0108**09**/**10**/**11**/**12**
Mounting flange for probe	HA010212
Radiation shield	HA010507
PTFE Filter cap	HA010116
H_2O_2 Filter cap	HA010122
Protection cap for the M12 cable socket	HA010781
Protection cap for the M12 probe plug	HA010782

Support Literature

www.epluse.com/EE870