

# User Manual

## EE820 – CO<sub>2</sub> Sensor for Demanding Applications

Find this document and further product information on our website at [www.epluse.com/ee820](http://www.epluse.com/ee820).

### SCOPE OF SUPPLY

- EE820 Sensor according to ordering guide
- Mounting set (screws and rowl plugs / screw anchors)
- Cable gland (only for EE820-HVxxxE1xxx with cable gland)
- M12x1 cable connector for self assembly (only for option AC2)
- Test report according to DIN EN 10204-2.2

### ACCESSORIES / SPARE PARTS

#### ACCESSORIES (see datasheet "Accessories"):

USB configuration adapter	HA011066
Product configuration software	EE-PCS (free download: <a href="http://www.epluse.com/ee820">www.epluse.com/ee820</a> )
EE820-FAC Forced air circulation module, without cover	HA011302
M12x1 cable connector for self assembly	HA010707
Connection cable M12x1 socket - flying leads	
• 1.5 m (3.3 ft)	HA010819
• 5 m (16.4 ft)	HA010820
• 10 m (32.8 ft)	HA010821
Protective cap for female M12 connectors	HA010781
Protective cap for male M12 connectors	HA010782
Power supply adapter	V03

#### SPARE PARTS:

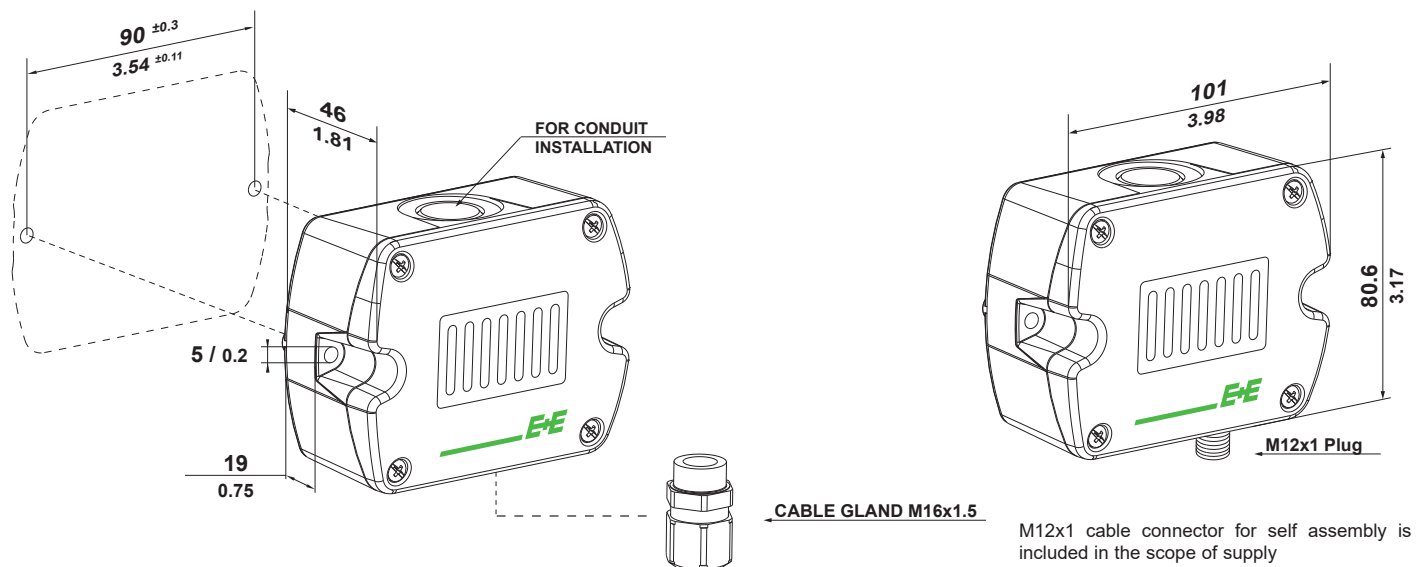
**EE820-COVER** Cover complete with filter and mounting screw (HA011303)

### CAUTION

- The sensor shall not be exposed to extreme mechanical or thermal stress.
- For use in polluted, dirty environment is essential to close tightly the sensor cover as well as the cable glad or conduit adapter in order to avoid pollution ingress into the enclosure.
- This device is not appropriate for safety, emergency stop or other critical applications where device malfunction or failure could cause injury to human beings.

### DIMENSIONS

VALUES IN MM / INCH



**EE820 with M12 plug** does not require any wiring inside the device. The external mounting holes allow the device to be mounted without opening the front cover. The mating M12x1 cable plug for self assembly is included in the scope of supply. Please see EE820 data sheet for optional M12 plugs and cables.

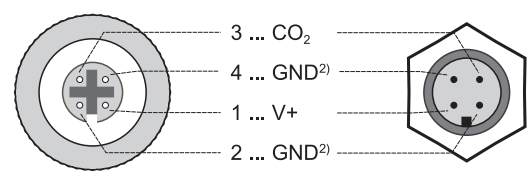
**EE820 with cable gland:** Use a matching wrench to install the cable gland (in the scope of supply) onto the EE820 enclosure.

**EE820 with conduit connection** for the North American market: use a flat screwdriver to knock open the blind, carefully, in order to avoid damaging the electronics inside the enclosure. The conduit adapter is not included in the scope of supply. The M16x1.5 opening for the cable gland shall be tightly closed using the blind plug included in the scope of supply.

## ELECTRICAL CONNECTION

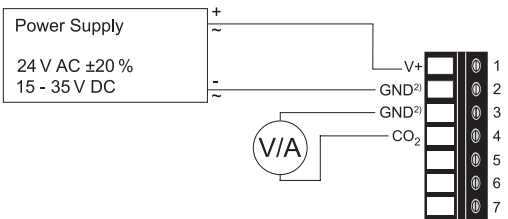
**Important note:**  
The manufacturer cannot be held responsible for personal injuries or damage to property as a result of incorrect handling, installation, wiring, power supply and maintenance of the device.

### EE820 WITH M12 PLUG<sup>1)</sup>



- 1) M12x1 cable connector for self assembly is included in the scope of supply
- 2) **Very important:** for failure-free operation and performance according to the specs the supply GND and the measurement GND must be wired separately.

### EE820 WITH CABLE GLAND



## TECHNICAL DATA


### Measurands

Measurement principle	Dual wavelength non-dispersive infrared technology (NDIR)		
Measuring range	0...2000 / 5000 / 10000 ppm		
Accuracy at 25 °C (77 °F) and 1013 mbar (14.7 psi)	0...2000 ppm:	< ± (50 ppm + 2 % of mv)	mv = measured value
	0...5000 ppm:	< ± (50 ppm + 3 % of mv)	
	0...10000 ppm:	< ± (100 ppm + 5 % of mv)	
Response time $t_{63}$ , typ.	300 s		
Temperature dependency, typ.	± (1 + CO <sub>2</sub> concentration [ppm] / 1000) ppm/°C (-20...45 °C) (-4...113 °F)		
Sample rate	Approx. 15 s		

### Output

<b>Analogue</b>			
0...2000 / 5000 / 10000 ppm	0 - 10 V	-1mA < I <sub>L</sub> < 1 mA	
	4 - 20 mA	R <sub>L</sub> < 500 Ω	R <sub>L</sub> = load resistance

### General

Power supply class III  <sup>1)</sup>	24 V AC ±20%	15 - 35 V DC
Current consumption, typ.	15 mA + output current	
Current peak, max.	350 mA for 0.3 s (analogue output)	
Warm up time <sup>2)</sup>	< 5 min	
Enclosure material	Polycarbonate, UL94 V-0 approved	

Protection rating	IP54			UK CA	CE
Electrical connection	Screw terminals 2.5 mm <sup>2</sup> or M12 plug				
Electromagnetic compatibility	EN 61326-1 FCC Part 15	EN 61326-2-3 ICES-003 Class B	Industrial Environment		
Working conditions	-20...60 °C (-4...140 °F)	0...100 %RH (non-condensing)			
Storage conditions	-20...60 °C (-4...140 °F)	0...95 %RH (non-condensing)			

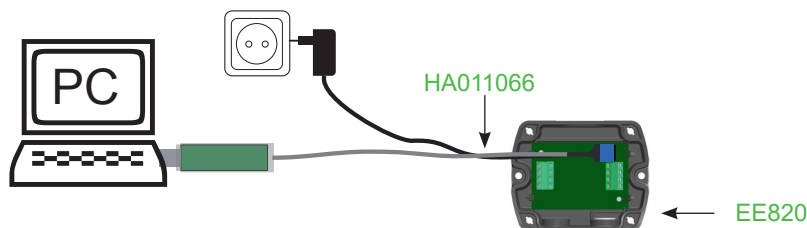
- 1) USA & Canada class 2 supply required, max. supply voltage 30 V DC
- 2) For performance according to specification

## SETUP AND ADJUSTMENT

The EE820 is ready to use and does not require any configuration by the user. The factory setup of EE820 corresponds to the type number ordered. For ordering guide please see data sheet at [www.epluse.com/ee820](http://www.epluse.com/ee820).

If needed, the user can change the factory setup by using the optional USB Configuration Adapter (HA011066) and the Product Configuration Software EE-PCS (available for free download at [www.epluse.com/configurator](http://www.epluse.com/configurator)). One can change CO<sub>2</sub> output signal, scaling of the outputs, digital settings and perform CO<sub>2</sub> adjustment/calibration.

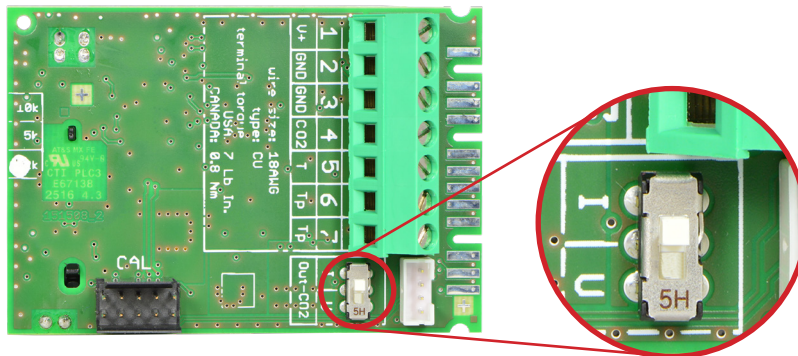
Note: The EE820 must not be connected to any additional power supply when using the USB Configuration Adapter (HA011066).



### CHANGING THE ANALOGUE OUTPUT SIGNAL:

The output signal can be changed from voltage to current or vice versa.

Set the output signal selection switch to I for current 4 - 20 mA output or to U for voltage 0 - 10 V output. The original CO<sub>2</sub> output range does not change and the calibration data remains valid.



### Example:

*Factory setup: voltage output (U), output scale: 0 - 10 V = 0 - 5000 ppm*

*User setup (after setting the output signal selection switch to I): current output (I), output scale: 4 - 20 mA = 0 - 5000 ppm.*

### CHANGING THE OUTPUT SCALE:

The scaling of the output can be changed by using the USB Configuration Adapter (HA011066) and EE-PCS.

### Example:

*The initial scaling of the output is 4 - 20 mA = 0 - 5000 ppm.*

*The output scale after the change can be 4 - 20 mA = 400 - 4000 ppm.*

### Important:

- After changing the factory setup (output signal and/or output scale) the original type number on the EE820 identification label loses its validity; it does not match any longer the device setup.
- The return to factory setup function of EE-PCS restores the original adjustment/calibration of the device, but does not affect the user setup for output signal and output scale.

## MAINTENANCE

Even in case of use in dirty and dusty environment, the electronics of EE820 are very well protected by the enclosure and the filter on the front cover. Do not attempt in any way to clean the inside of the device.

In case of dirt deposits on the exterior of the device, this can be cleaned by weeping it gently with a soft, light wet cloth. The enclosure must be closed during the cleaning. Do not use solvent-based cleaning agents; these might affect the enclosure and the labels. Do not attempt to clean the filter on the front cover, as it would only lead to its faster clogging.

In a polluted environment, the filter on the EE820 front cover might get clogged in a long run. Longer response time indicates a clogged filter. In such case the entire front cover shall be replaced by an original new one (see section Spare Parts).

Protection filters caps for M12 connector are available to preserve the contacts of plug/socket in case of temporary removing of sensor (see section accessories / spare parts).

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### USA FCC notice:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the installation manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which thereceiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**CANADIAN**  
**ICES-003 Issue 5:**  
CAN ICES-3 B / NMB-3 B

## INFORMATION

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