

EE8915

CO₂ Sensor for Railway Applications

EE8915 measures reliably CO₂ concentration in harsh environment and complies with the relevant railway standards.

Outstanding Accuracy

A multiple point CO₂ and temperature (T) adjustment procedure leads to excellent CO₂ measurement accuracy over the entire T working range -40...+60 °C (-40...+140 °F).

Long Term Stability

The E+E dual wavelength non-dispersive infrared (NDIR) measurement principle compensates automatically for ageing effects and is highly insensitive to pollution.

Pressure and Temperature Compensation

The active compensation with on-board sensors leads to best CO₂ measurement accuracy independent of temperature, altitude or weather conditions.

Versatility

EE8915 is available for wall and duct mounting. The innovative design enables the combination of short response time and high protection class. The CO₂ measured data is available as voltage and current output signals.

Suitable for Demanding Applications

Due to the compliance with tough railway standards, the EE8915 stands for excellent performance even under challenging conditions in any process and climate control application.

User Configurable and Adjustable

The free EE-PCS Product Configuration Software facilitates the configuration and adjustment of the EE8915.



Features

Enclosure

- » IP65 protection class
- » UL94V-0 approved material
- » M12 connector or fix installed cable
- » Easy mounting without opening the device

Output configuration

- » Voltage and current output
- » User configurable and adjustable
- » USB service interface



Test report according
 DIN EN 10204-2.2

Measurement performance

- » E+E dual wavelength NDIR, auto calibration
- » T and p compensation with on-board sensors
- » CO₂ range 0...2000/5000/10000 ppm
- » T range -40...+60 °C (-40...+140 °F)
- » Short response time

Compliance with railway standards

- | | |
|---------------------|---|
| » EN 50155:2017 | Electronic equipment used on rolling stock |
| » EN 50121-1:2017 | Electromagnetic compatibility - general |
| » EN 50121-3-2:2016 | Electromagnetic compatibility - rolling stock |
| » EN 61373:2010 | Rolling stock equipment - shock and vibration tests |
| » EN 50125-1 | Environmental conditions for equipment - rolling stock and on-board equipment |
| » EN 45545-2 | Fire protection on railway vehicles |
| » EN 50306 | Railway rolling stock cables having special fire performance |

Technical Data

Measurands


CO₂

Measurement principle	Dual wavelength non-dispersive infrared technology (NDIR)
Measuring range	0...2 000 / 5000 / 10 000 ppm
Accuracy at 25 °C (77 °F) and 1013 mbar (14.7 psi)	0...2 000 ppm: < ± (50 ppm +2 % of mv) 0...5 000 ppm: < ± (50 ppm +3 % of mv) 0...10 000 ppm: < ± (100 ppm +5 % of mv) mv=measured value
Response time t ₆₃ (typ.)	Duct: < 100 s at 3 m/s (590 ft/min) air speed Wall: < 160 s
Temperature dependency (typ.)	± (1 + CO ₂ concentration [ppm] / 1000) ppm/°C, for -20...+45 °C (-4...+113 °F)
Residual pressure dependency ¹⁾	0.014% of mv / mbar (ref. to 1013 mbar), for -20...+45 °C (-4...+113 °F)
Measuring interval	Approx. 15 s

Outputs

CO ₂	0 - 5 V / 0 - 10 V -1 mA < I _L < 1 mA
	0 - 20 mA / 4 - 20 mA R _L < 500 Ohm

General

Power supply class III 	10 - 35 V DC ²⁾ 24 V DC nominal voltage U _n according to EN 50155
Current consumption (typ., @ 24 V supply)	Average: 10 mA + output current Peak: 105 mA for 0.3 s
Minimum air speed in the duct	1 m/s (196 ft/min)
Enclosure material	Polycarbonate, UL94 V-0 approved
Protection rating enclosure	IP65/NEMA 4X
Service interface	USB, Micro B
Electrical connection	Connector M12x1 or cable with flying leads, max. 2 m (6.56 ft)
Electromagnetic compatibility	Railway standard: EN 50121-3-2:2016 EN 50121-1:2017 EN 61326-1 EN 61326-2-3 Industrial Environment FCC Part 15 ICES-003 Class B
Working and storage conditions	-40...+60 °C (-40...+140 °F) 0...95 %RH (non-condensing)

¹⁾ The pressure dependency of a non-compensated CO₂ sensor is 0.14% of mv / mbar

²⁾ USA & Canada class 2 supply required, max. supply voltage 30 V DC



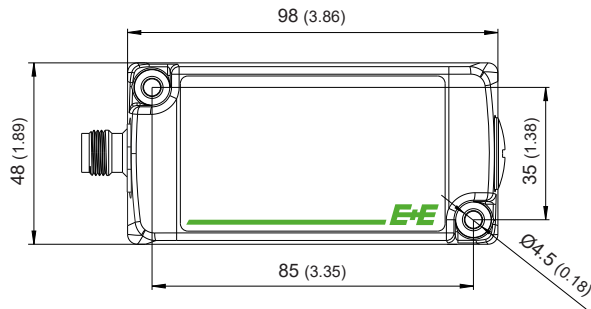
Compliance with Railway Standards

- » **EN 50155:2017** Electronic equipment used on rolling stock
- » **EN 50121-1:2017** Electromagnetic compatibility – general
- » **EN 50121-3-2:2016** Electromagnetic compatibility – rolling stock
- » **EN 61373:2010** Rolling stock equipment - shock and vibration tests
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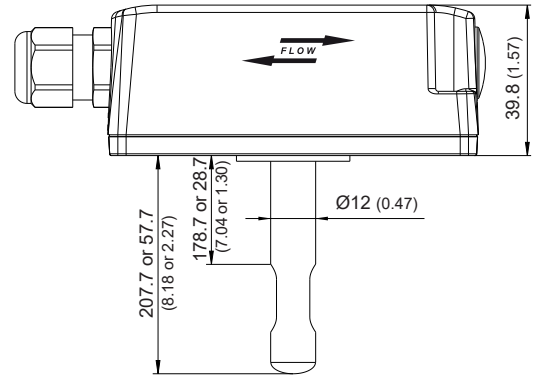
Dimensions

Values in mm (inch)

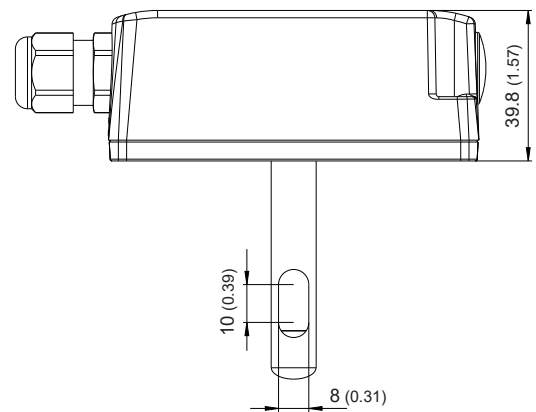
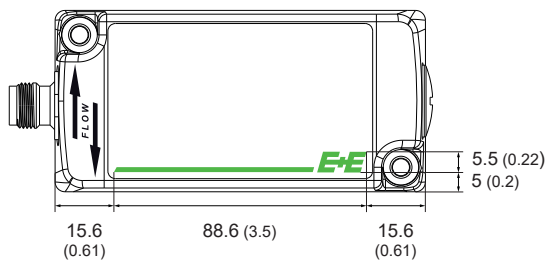
Wall mount (Type T1)



Duct mount (Type T2)



Duct mount with 90° rotated probe (Type T27)



Ordering Guide

		EE8915-	
		T1	T2
Hardware configuration	Model	Wall mount	
		Duct mount	T2
		Duct mount with 90° rotated probe	T27
	CO ₂ measuring range	0...2000 ppm	HV1
		0...5000 ppm	HV2
		0...10000 ppm	HV3
Connection		M12 plug	E4
		Cable	E8
Probe length		50 mm (1.97")	L50
		200 mm (7.87")	L200
Cable length (only for cable version E8)		0.5 m (1.64 ft)	KL50
		2 m (6.56 ft)	KL200
SW-Setup	Output ¹⁾	Output 1: 0 - 10 V, Output 2: 4 - 20 mA	GA7
		Output 1: 0 - 5 V, Output 2: 0 - 20 mA	GA11

1) EE8915 features simultaneously a voltage and a current output

Order Example

EE8915-T1HV2E8KL100GA7

Model: Wall mount
CO₂ measuring range: 0...5000 ppm
Connection: Cable
Cable length: 0.5 m (1.64 ft)
Output: Output 1: 0 - 10 V
Output 2: 4 - 20 mA

Accessories

Plastic mounting flange Ø12mm (0.47")		HA010202
M12 cable connector for self assembly, 5 pin		HA010708
Connection cable, 5 pin M12 socket - flying leads	1.5 m (3.3 ft)	HA010819
	5 m (16.4 ft)	HA010820
	10 m (32.8 ft)	HA010821
Protection cap for M12 female connector		HA010781
Protection cap for M12 male connector		HA010782