EE8915

CO_2 Sensor for Railway Applications

EE8915 measures reliably CO_2 concentration in harsh environment and complies with the relevant railway standards.

Outstanding Accuracy
A multiple point CO_2 and temperature (T) adjustment procedure leads to excellent CO_2 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 CO_2 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 CO_2 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
» CO_2 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

CO_2

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 CO_2 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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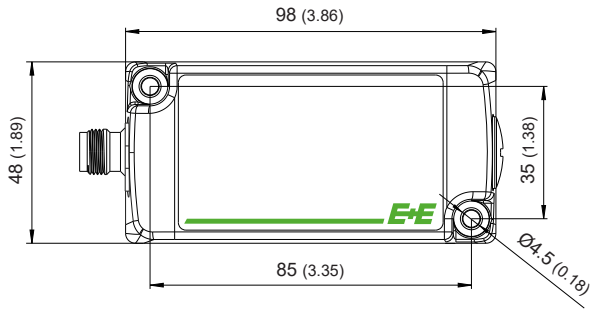
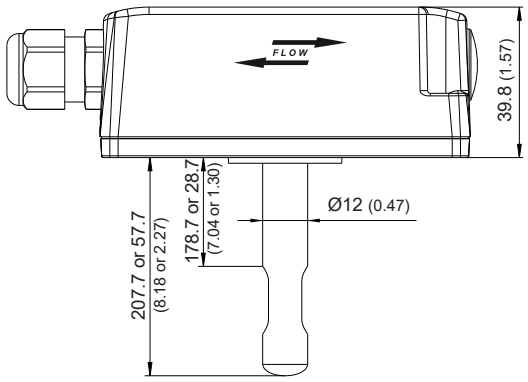
Dimensions

Values in mm (inch)

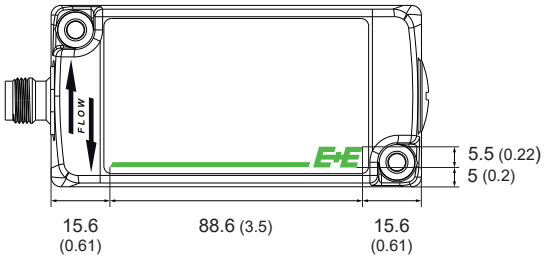
Wall mount (Type T1)

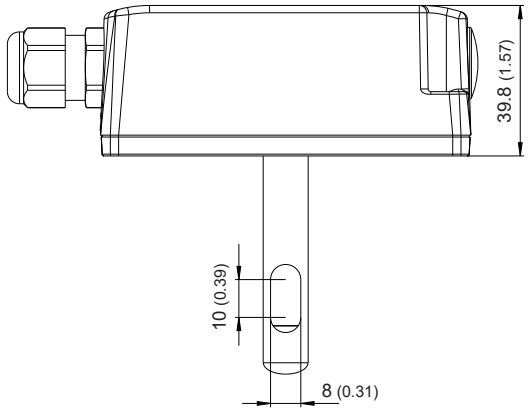


Duct mount (Type T2)



Duct mount with 90° rotated probe (Type T27)





Ordering Guide

			EE8915-	
Hardware configuration	**Model**	Wall mount	T1	
		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
CO_2 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