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# **+ Datasheet EE8915**

**CO<sub>2</sub> Sensor for Railway Applications**



# EE8915

## CO<sub>2</sub> Sensor for Railway Applications

EE8915 measures reliably CO<sub>2</sub> concentration in harsh environment and complies with the relevant railway standards.

### Outstanding Accuracy and Long-Term Stability

A multiple point CO<sub>2</sub> and temperature (T) adjustment procedure leads to excellent CO<sub>2</sub> measurement accuracy over the entire T working range -40...+60 °C (-40...+140 °F).

The active compensation with on-board sensors leads to best CO<sub>2</sub> measurement accuracy independently of weather conditions, altitude or temperature. The E+E dual wavelength non-dispersive infrared (NDIR) measurement principle compensates automatically for ageing effects and is highly insensitive to pollution.

### Versatile and Suitable for Demanding Applications

EE8915 is available for wall and duct mounting. The innovative design enables the combination of short response time and high protection class. The CO<sub>2</sub> measured data is available as voltage and current output signals.

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.

### Configurable and Adjustable

The free EE-PCS product configuration software and the USB connection enable particularly user-friendly configuration and adjustment.



EE8915 wall mount with M12-plug



EE8915 duct mount with fix installed cable

# Features

## Output configuration

- Voltage and current output
- M12 connector or fix installed cable
- User configurable and adjustable
- USB configuration interface

## Enclosure

- IP65 protection rating
- UL94 V-0 approved material
- Easy mounting without opening the device



## Measurement performance

- E+E dual wavelength NDIR auto calibration
- T and p compensation with on-board sensors
- CO<sub>2</sub> range 0...2000/5000/10000 ppm
- T range -40...+60 °C (-40...+140 °F)
- Short response time

## Test report according

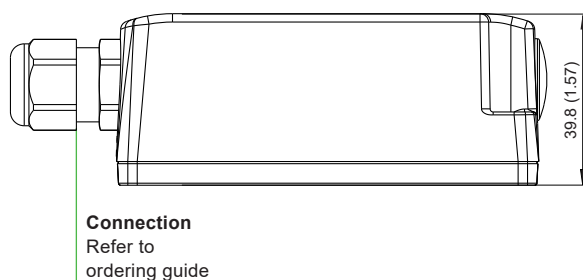
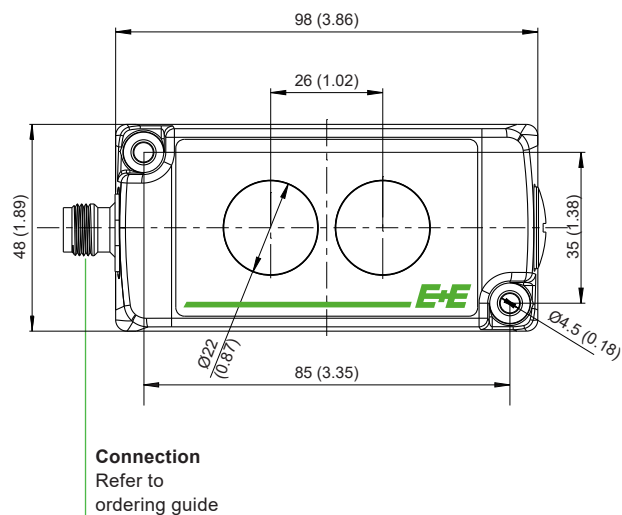
According to DIN EN 10204-2.2

# Dimensions

Values in mm (inch)

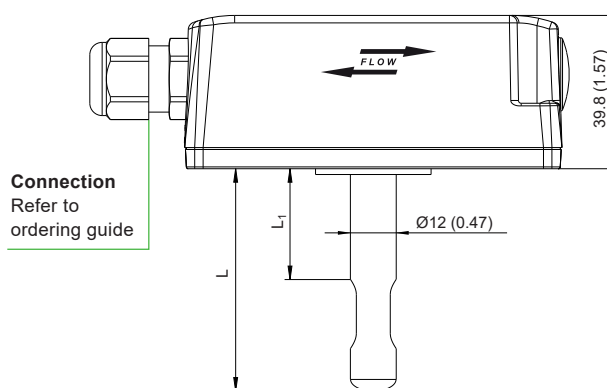
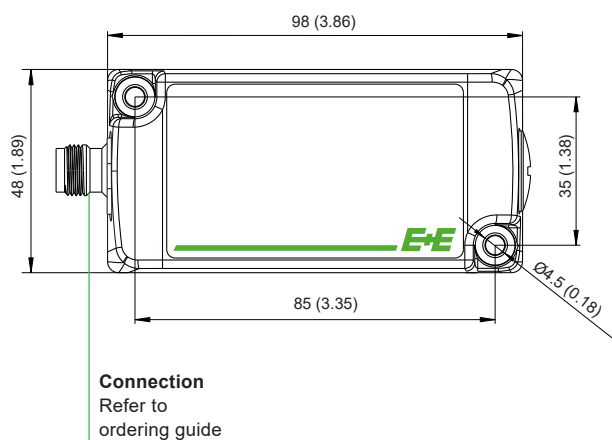
## Wall mount

Type:T1



## Duct mount

Type:T2



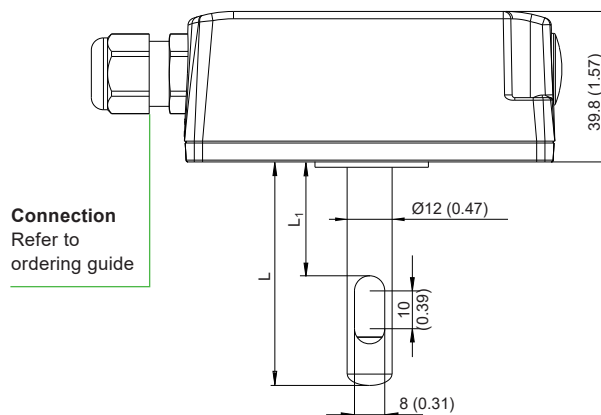
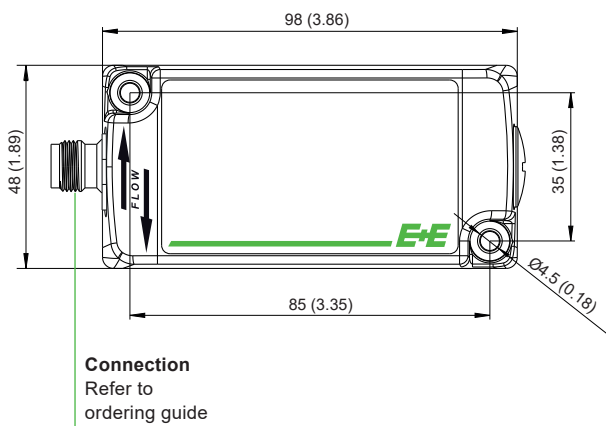
L in mm (inch)	L <sub>1</sub> in mm (inch)
207.7 (8.18)	178.7 (7.04)
57.7 (2.27)	28.7 (1.30)

# Dimensions

Values in mm (inch)

Duct mount with 90° rotated probe

Type:T27



L in mm (inch)	L <sub>1</sub> in mm (inch)
207.7 (8.18)	178.7 (7.04)
57.7 (2.27)	28.7 (1.30)

# Technical Data

## Measurands

### CO<sub>2</sub>

<b>Measurement principle</b>	Dual wavelength non-dispersive infrared technology (NDIR)		
<b>Measurement range</b>	0...2 000 / 5 000 / 10 000 ppm		
<b>Accuracy</b> @ 25 °C (77 °F) and 1 013 mbar (14.7 psi)	<b>0...2 000 ppm</b> <b>0...5 000 ppm</b> <b>0...10 000 ppm</b>	$< \pm(50 \text{ ppm} + 2 \% \text{ of mv})$ $< \pm(50 \text{ ppm} + 3 \% \text{ of mv})$ $< \pm(50 \text{ ppm} + 5 \% \text{ of mv})$	mv = measured value
<b>Temperature dependency, typ.</b> , in the range of -20...45 °C (-4...113 °F)	$\pm(1 + \text{mv} / 1 000) \text{ ppm}/^\circ\text{C}$ $\pm 0.556 \cdot (1 + \text{mv} / 1 000) \text{ ppm}/^\circ\text{F}$		mv = measured value
<b>Residual pressure dependency<sup>1)</sup></b> in the range of -20...45 °C (-4...113 °F), related to 1 013 mbar	0.014 % of mv/mbar 0.965 % of mv/psi		mv = measured value
<b>Response time t<sub>63</sub>, typ.</b>	<b>Duct mount</b> <b>Wall mount</b>	<100 s at 3 m/s (590 ft/min) air speed <160 s	
<b>Measuring interval</b>	15 s		

1) Pressure dependence of a sensor without pressure correction: 0.14 % mv/mbar.




## Outputs

### Analogue

CO <sub>2</sub> <sup>1)</sup>	0 - 5 V or 0 - 10 V and 0 - 20 mA or 4 - 20 mA	-1 mA < I <sub>L</sub> < 1 mA R <sub>L</sub> ≤ 500 Ω	I <sub>L</sub> = load current R <sub>L</sub> = load resistor
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1) Voltage and current output signals are available simultaneously.

## General

<b>Power supply</b> class III  USA & Canada: Class 2 supply necessary, max. voltage 30 V DC	10 - 35 V DC 24 V DC nominal voltage Un according to EN 50155		
<b>Current consumption, typ.</b> @ 24 V DC/AC	<b>Average</b>	10 mA + output current 105 mA for 0.3 s	
<b>Minimum air speed in the duct</b>	1 m/s (196 ft/min)		
<b>Electrical connection</b>	Connector M12x1 or cable with flying leads, max. 2 m (6.56 ft)		
<b>Working and storage conditions</b>	-40...+60 °C (-40...+140 °F) 0...95 %RH, non-condensing		
<b>Enclosure</b>	<b>Material</b> <b>Protection rating</b>	Polycarbonate, UL94 V-0 approved IP65/NEMA 4X	
<b>Electromagnetic compatibility</b>	Railway standard: EN 50121-3-2:2016 EN 50121-1:2017 EN 61326-1 EN 61326-2-3 Industrial environment FCC Part15 Class B ICES-003 Class B		
<b>Conformity</b>	 		
<b>Configuration and adjustment</b>	<b>Software</b> <b>Interface</b>	EE-PCS Product Configuration Software (free download: <a href="http://www.epluse.com/configurator">www.epluse.com/configurator</a> ) USB, micro B	

# Technical Data

## 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 stuck on - board equipment
- EN 45545-2 Fire protection on railway vehicles
- EN 50306 Railway rolling stock cables having special fire performance

# Ordering Guide

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

# Order Example

**EE8915-T1HV2E8KL50GA7**

Feature	Code	Description
Type	<b>T1</b>	Wall mount
CO <sub>2</sub> measuring range	<b>HV2</b>	0...5000 ppm
Electrical connection	<b>E8</b>	Cable
Cable length	<b>KL50</b>	0.5 m (1.64 ft)
Output	<b>GA7</b>	Output 1: 0 - 10 V Output 2: 4 - 20 mA

# Accessories

For further information see datasheet [Accessories](#).

Description	Code
Plastic mounting flange Ø12mm (0.47")	HA010202
M12 cable connector for self assembly, 5 pin	HA010708
Connection cable M12x1 Socket 5 Poles / Free Cable Ends	
1.5 m	HA010819
5 m	HA010820
10 m	HA010821
Protection cap for M12 socket	HA010781
Protection cap for M12 plug	HA010782

Temp | Humidity | Pressure | Differential Pressure | Vacuum | Gases | Particle | Air Flow  
 Moisture | Dissolved Oxygen | Radiation | Air Quality | Light / Lux | Distance | Vibration

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