E+E

your partner
in sensor
technology.

Datasheet EE8915

CO_2 Sensor for Railway Applications



www.epluse.com

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 and Long-Term Stability

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).
The active compensation with on-board sensors leads to best CO_2 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_2 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

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Features

Enclosure

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

Output configuration

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



Measurement performance

- E+E dual wavelength NDIR auto calibration
- T and p compensation with on-board sensors
- CO_2 range 0...2 000 / 5 000 / 10 000 ppm
- T range -40...+60 °C (-40...+140 °F)
- Short response time

Test report according

According to DIN EN 10204-2.2

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Features

Accredited Traceable Calibration Certificate

Internationally recognised certificates for the calibration of measuring instruments from accredited laboratories document the traceability of the measurements to the International System of Units (SI). The E+E Elektronik calibration laboratory offers two levels of traceable calibrations.

- As a Designated Institute (DI) of the Republic of Austria, the E+E calibration laboratory maintains Austria's national measurement standards for humidity, dew point temperature, air velocity and CO_2. This authorises the E+E calibration laboratory to issue calibration certificates at the level of a National Metrological Institute (NMI).
- The E+E calibration laboratory is accredited by Akkreditierung Austria in accordance with DIN EN ISO/IEC 17025 with the identification number 0608. This allows the laboratory to issue ISO 17025 certificates for the measurands humidity, temperature, dew point temperature, air velocity, flow, pressure and CO_2.

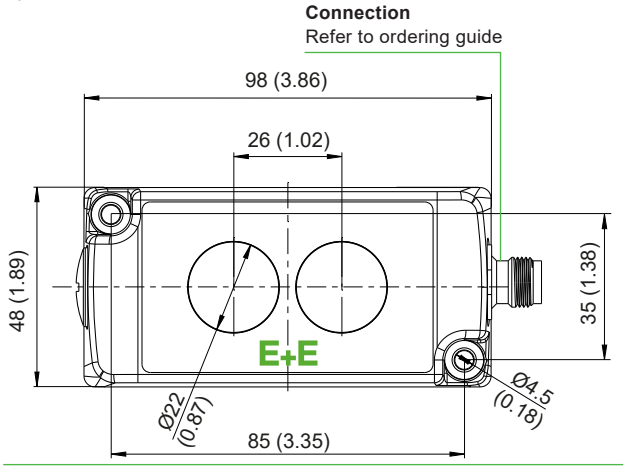
Visit www.epluseca l.com for detailed information on calibration and to enquire a certificate of accredited traceable calibration for the EE8915 from the Designated Institute.

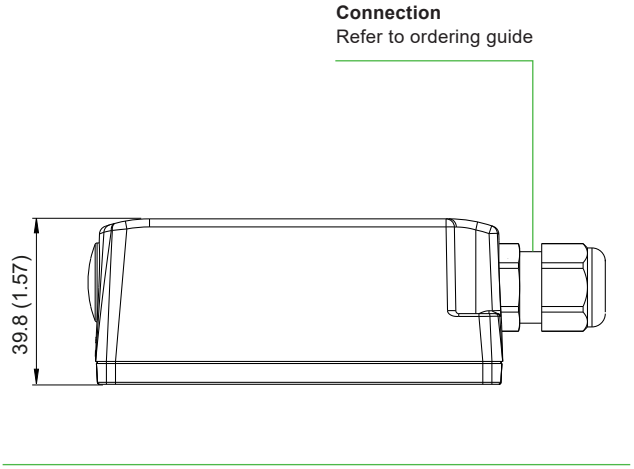
Dimensions

Values in mm (inch)

Wall mount

Type T1





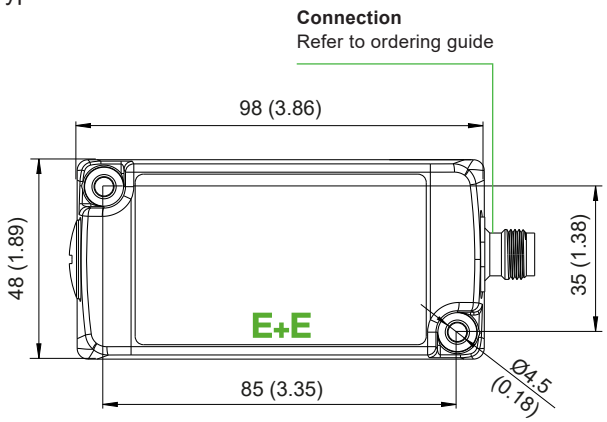
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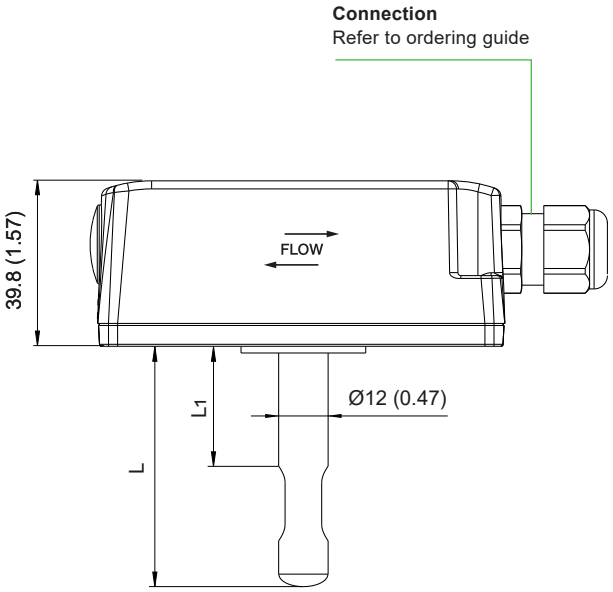
Dimensions

Values in mm (inch)

Duct mount

Type T2

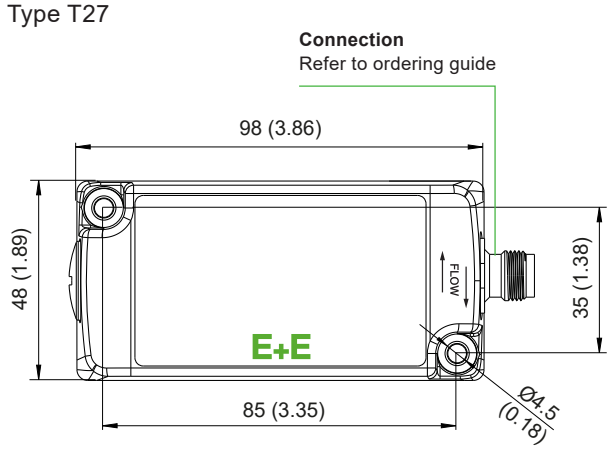


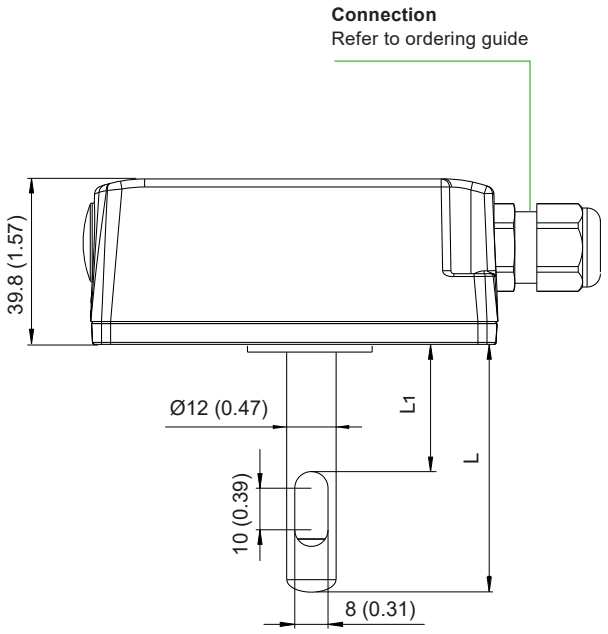


L in mm (inch)	L_1 in mm (inch)
207.7 (8.18)	178.7 (7.04)
57.7 (2.27)	28.7 (1.30)

Duct mount with 90° rotated probe

Type T27





L in mm (inch)	L_1 in mm (inch)
207.7 (8.18)	178.7 (7.04)
57.7 (2.27)	28.7 (1.30)

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Technical Data

Measurands

CO_2

Measurement principle	Dual wavelength non-dispersive infrared technology (NDIR)	
Measurement range	0...2 000 / 5 000 / 10 000 ppm	
Accuracy @ 25 °C (77 °F) and 1 013 mbar (14.7 psi) **0...2 000 ppm** **0...5 000 ppm** **0...10 000 ppm**	 < ±(50 ppm +2 % of mv) < ±(50 ppm +3 % of mv) < ±(100 ppm +5 % of mv)	 mv = measured value
Temperature dependency, typ., in the range of -20...45 °C (-4...113 °F)	±(1 + mv / 1 000) ppm/°C ±0.556*(1 + mv / 1 000) ppm/°F	mv = measured value
Residual pressure dependency[1)] 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
Response time t_{63}, typ. **Duct mount** **Wall mount**	<100 s at 3 m/s (590 ft/min) air speed <160 s	
Measuring intervall	15 s	

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

Outputs

Analogue

CO_2[1)]	0 - 5 V or 0 - 10 V and 0 - 20 mA or 4 - 20 mA	-1 mA < I_L < 1 mA R_L ≤ 500 Ω	I_L = load current R_L = load resistor

1) Voltage and current output signals are simultaneously available.

General

Power supply class III USA & Canada: Class 2 supply necessary, max. voltage 30 V DC	10 - 35 V DC 24 V DC nominal voltage U_n according to EN 50155	
Current consumption, typ. **Average** @ 24 V DC/AC **Peak**	10 mA + output current 105 mA for 0.3 s	
Minimum air speed in the duct	1 m/s (196 ft/min)	
Electrical connection	Connector M12x1 or cable with flying leads, max. 2 m (6.56 ft)	
Working and storage conditions	-40...+60 °C (-40...+140 °F) 0...95 %RH, non-condensing	
Enclosure **Material** **Protection rating**	 Polycarbonate, UL94 V-0 approved IP65 / NEMA 4X	
Electromagnetic compatibility	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	
Conformity	CE UKCA	
Configuration and adjustment **Software** **Interface**	EE-PCS Product Configuration Software (free download: www.epluse.com/configurator) Micro USB	

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Technical Data

Compliance with Railway Standards

- EN 50155:2021 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	
				EE8915-	
Hardware Configuration	Type	Wall mount		T1	
		Duct mount			T2
		Duct mount with 90° rotated probe			T27
	CO_2 measuring range	0...2 000 ppm		HV1	
		0...5 000 ppm		HV2	
		0...10 000 ppm		HV3	
	Electrical connection	M12 plug		E4	
		Cable		E8	
	Probe length	50 mm (1.97“)			L50
		200 mm (7.87”)			L200
	Cable length[1)]	0.5 m (1.64 ft)		KL50	
		2 m (6.56 ft)		KL200	
SW Setup	Output[2)]	Output 1: 0 - 10 V	Output 2: 4 - 20 mA	GA7	
		Output 1: 0 - 5 V	Output 2: 0 - 20 mA	GA11	
	Accredited Traceable Calibration Certificate in accordance with DIN EN ISO/IEC 17025			see www.eplusecal.com	

1) For cable version E8 only.
2) Voltage and current output signals are simultaneously available.

Order Example

EE8915-T1HV2E8KL50GA7

Feature	Code	Description
Type	T1	Wall mount
CO_2 measuring range	HV2	0...5 000 ppm
Electrical connection	E8	Cable
Cable length	KL50	0.5 m (1.64 ft)
Output	GA7	Output 1: 0 - 10 V Output 2: 4 - 20 mA

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Accessories

For further information refer to the Accessories datasheet.

Description	Code
Plastic mounting flange, Ø12 mm (0.47"), RAL7035	HA010202
Connector, M12x1 socket, 5 poles, for self assembly	HA010708
Sensor connection cable, shielded, 5 poles, M12x1 socket ←→ wire ferrules 1.5 m (4.9 ft) 5 m (16.4 ft) 10 m (32.8 ft)	 HA010819 HA010820 HA010821
Protection cap for M12 socket	HA010781
Protection cap for M12 plug	HA010782

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