Gas Detection.



Technical Datasheet



PolyGard®2

MC2 Sensor

with Infrared Sensor Element for Methane, Propane or CO₂ with Analog Output

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Specifications subject to change without notice.

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DESCRIPTION

Exchangeable sensor unit including digital value processing, temperature compensation and self-control for the continuous monitoring of the ambient air to detect Methane, Propane or CO₂.

In addition to the infrared sensor there is a module integrated in the sensor unit with μ Controller, analog output and power supply. The IR measurement principle with integrated temperature compensation ensures highest accuracy, selectivity and reliability despite the long calibration interval. The μ Controller calculates a linear 4–20 mA (or 2–10 V) signal out of the measurement signal of the IR sensor and also stores all relevant measured values and data of the sensor element.

Calibration is done either by simply replacing the sensor unit or by using the comfortable, integrated calibration routine directly at the system.

APPLICATION

The PolyGard $^{\circ}$ 2 Sensor is used for the detection of CO $_{2}$ leakages for example in dispensing and refrigeration systems and for detection of methane, propane in non-Ex zones .

FEATURES

- Digital measurement value processing incl. temperature compensation
- Data / measured values in μC of the sensor unit, therefore simple exchange uncalibrated <> calibrated
- High accuracy, selectivity and reliability
- Low zero-point drift
- Sensor lifetime > 15 years (CO₂)
- Software according to SIL compliant development process
- Easy maintenance and calibration by exchange of the sensor unit or by comfortable on-site calibration
- 4-20 mA (or 2-10 V) analog output with selectable signal output for special mode, fault etc.
- Reverse polarity protected, overload and short-circuit proof
- Integrated heating down to -35 °C
- Housing for integration of the sensor unit (option)
- IP65 version
- Display (option)
- Display with 2 open-collector outputs for horn (resettable) and warning lamp (option)
- Duct mounting kit (accessory)
- Conformity to:
 - o EN 378-1
 - o EN 45544-1, -3
 - o EN 61010-1
 - o ANSI/UL 61010 1
 - o CAN/CSA-C22.2 No. 61010-1



SPECIFICATIONS

18–29 V DC, reverse-polarity protected;
18-27 V AC (only for output signal 2-10 V)
40 mA, max. (1.0 VA for 24 V)
Proportional, overload and short-circuit proof,
load \leq 500 Ω for current signal, \geq 50 k Ω for voltage signal
4–20 mA or 2–10 V = measuring range
3–4 mA or 1.5–2 V = underrange
> 20–21.2 mA or 10–10.6 V = overrange
2 mA or 1 V = fault
> 21.8 mA or 10.9 V = fault High
Can Oudaring Information
See Ordering Information
Infrared (NDIR)
90–110 kPa (interference + 1.6 % on reading per kPa)
-40 °C to +70 °C (-40 °F to 158 °F) Ca. 6 months
Cd. O IIIOIILIIS
Polycarbonate UL 94 V2
RAL 7032 (light grey)
24 x 30 mm (0.94 x 1.18 in.)
Ca. 30 g (0.066 lb)
IP65 (only if mounted in housing type A, D)
Screw mounting M25
Screw-type terminal min. 0.25 mm², max. 1.3 mm², 3-pin
Screw type termination. 0.25 min , max. 1.5 min ,5 pin
EMC directives 2014/30/EU
CE
Compliance with:
EN 378-1
EN 45544-1, -3
EN 61010-1:2010
ANSI/UL 61010-1
ANDI/OF OTOTO-1
CAN/CSA-C22.2 No. 61010-1
CAN/CSA-C22.2 No. 61010-1 1 year on sensor (not if poisoned or overloaded),
CAN/CSA-C22.2 No. 61010-1 1 year on sensor (not if poisoned or overloaded), 2 years on device
CAN/CSA-C22.2 No. 61010-1 1 year on sensor (not if poisoned or overloaded), 2 years on device Polycarbonate UL 94 V2
CAN/CSA-C22.2 No. 61010-1 1 year on sensor (not if poisoned or overloaded), 2 years on device Polycarbonate UL 94 V2 RAL 7032 (light grey)
CAN/CSA-C22.2 No. 61010-1 1 year on sensor (not if poisoned or overloaded), 2 years on device Polycarbonate UL 94 V2 RAL 7032 (light grey) 94 x 130 x 57 mm (3.7 x 5.1 x 2.2 in.)
CAN/CSA-C22.2 No. 61010-1 1 year on sensor (not if poisoned or overloaded), 2 years on device Polycarbonate UL 94 V2 RAL 7032 (light grey) 94 x 130 x 57 mm (3.7 x 5.1 x 2.2 in.) Ca. 0,2 kg (0.4 lb) / ca. 4,5 l
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CAN/CSA-C22.2 No. 61010-1 1 year on sensor (not if poisoned or overloaded), 2 years on device Polycarbonate UL 94 V2 RAL 7032 (light grey) 94 x 130 x 57 mm (3.7 x 5.1 x 2.2 in.) Ca. 0,2 kg (0.4 lb) / ca. 4,5 l IP65 Wall mounting 6 x M20/M25

¹ If stocked for a longer period, we recommend checking the zero point and recalibrating if necessary.



Gas type	Ordering No.	Measuring range	Display resolution	Accuracy - gain	Repeatability	t ₉₀ time	Zero-point variation	Fresh air Drift	Gain year ³	Temperature range	Humidity range (non-condensing)	Life time ¹ in air	Relative Gas density	Calibration interval ²
	MC2-		%	±% sig.	<± % sig.	≤ sec.			±% sig.	°C	% RH	> years	Air = 1	Months
CH ₄	S400-A	0-100 % LEL	0.1	4	5	90	4	n.d.	n.d.	-30 / +60	0-95	5	0.56	12
C_3H_8	S480-A	0-100 % LEL	0.1	4	5	90	4	n.d.	n.d.	-30 / +60	0–95	5	1.55	12
CO_2	I-S1164-B	0–5 % vol	0.001	10	5	90	n.d.	10	3	-35 / +50	0–85	15	1.53	60
CO_2	I-S1164-C	0–2 % vol	0.001	10	5	90	n.d.	10	3	-35 / +50	0–85	15	1.53	60
CO ₂	I-S1164-E	0–20,000 ppm	10	10	5	90	n.d.	10	3	-35 / +50	0–85	15	1.53	60

¹Expected service life for normal ambient conditions.

All specifications were collected under optimal test conditions.

We confirm compliance with the minimum requirements of the applicable standard.

ORDERINGING INFORMATION

MC2-	Х-	S4XX-X-	X- L L Sensor housi	Sensor housing		
			Without displayWith display forWith display for warning lamp (or			
		S400-A	Gas type Methane, CH₄	Measuring range 0–100 % LEL	Gas type/	
		S480-A	Propane, C ₃ H ₈	0–100 % LEL	Measuring range	
	0 A 5* D	Without I Plastic ho Stainless Plastic ho Plastic ho	Housing for integration of the sensor unit			

^{*} On request

EXAMPLE

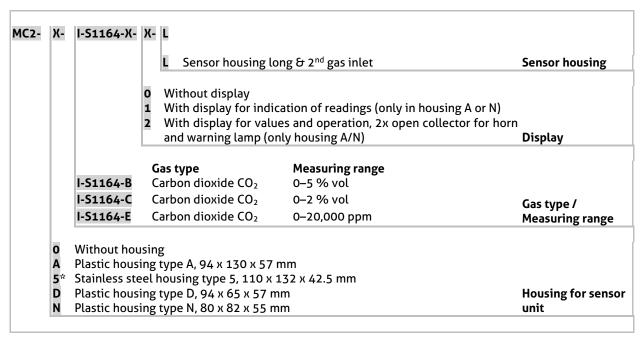
CH₄ Methane sensor unit with infrared element, measuring range 0–100 % LEL, with plastic housing type A, without display, sensor unit in plastic housing L

Ordering number: MC2-A-S400-A-0-L

² Manufacturer-recommended calibration interval for normal ambient conditions.

³ Measured under laboratory conditions (constant environmental influences). Deviations may occur depending on the application.





^{*} On request

EXAMPLE

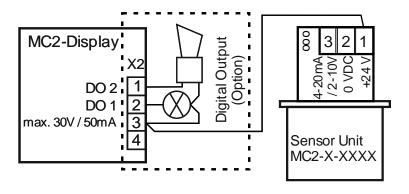
CO₂ sensor unit, measuring range 5 % vol, with plastic housing type A; without display, sensor unit in plastic housing Order number: MC2-A-I-S1164-B-O-L

ACCESSORY

Duct mounting kit
Order number: C2-Z2
Calibration adapter

Order number: C2-Z6

WIRING CONFIGURATION



Note:

The installation of the sensor unit MC2 directly on the MSC2 or MSB2 housing isn't possible, only external connection with separate housing!

For 4–20 mA output signal you have to remove the resistor between pin 2 and pin 3.