

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®2 Sensor is used for the detection of CO₂ 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 μ C 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:
 - EN 378-1
 - EN 45544-1, -3
 - EN 61010-1
 - ANSI/UL 61010 1
 - CAN/CSA-C22.2 No. 61010-1

SPECIFICATIONS

ELECTRICAL	
Power supply	18–29 V DC, reverse-polarity protected; 18–27 V AC (only for output signal 2–10 V)
Power consumption	40 mA, max. (1.0 VA for 24 V)
Analog output signal	Proportional, overload and short-circuit proof, load $\leq 500 \Omega$ for current signal, $\geq 50 \text{ k}\Omega$ 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
SENSOR ELEMENT	
Gas type	See Ordering Information
Sensor element	Infrared (NDIR)
Pressure range	90–110 kPa (interference + 1.6 % on reading per kPa)
Storage temperature	-40 °C to +70 °C (-40 °F to 158 °F)
Storage time ¹	Ca. 6 months
PHYSICAL	
Enclosure type L	Polycarbonate UL 94 V2
Enclosure colour	RAL 7032 (light grey)
Dimensions (Ø x H)	24 x 30 mm (0.94 x 1.18 in.)
Weight	Ca. 30 g (0.066 lb)
Protection class	IP65 (only if mounted in housing type A, D)
Mounting	Screw mounting M25
Wire connection	Screw-type terminal min. 0.25 mm ² , max. 1.3 mm ² , 3-pin
REGULATIONS	
Directives	EMC directives 2014/30/EU CE Compliance with: EN 378-1 EN 45544-1, -3 EN 61010-1:2010 ANSI/UL 61010-1 CAN/CSA-C22.2 No. 61010-1
Warranty	1 year on sensor (not if poisoned or overloaded), 2 years on device
OPTIONS	
ENCLOSURE A	
Enclosure A for integration of sensor unit	Polycarbonate UL 94 V2
Enclosure colour	RAL 7032 (light grey)
Dimensions (B x H x D)	94 x 130 x 57 mm (3.7 x 5.1 x 2.2 in.)
Weight / package volume	Ca. 0,2 kg (0.4 lb) / ca. 4,5 l
Protection class	IP65
Mounting	Wall mounting
Pre-embossing for cable entry / sensor unit	6 x M20/M25
LCD-DISPLAY	
LCD	2 lines, 16 characters each, monochrome
OPEN-COLLECTOR	
Transistor output (2)	For horn (resettable) and warning lamp
Switching capacity	24 V DC / 50 mA (+ switching)

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		Drift per year ³	Temperature range	Humidity range (non-condensing)	Life time ¹ in air	Relative Gas density	Calibration interval ²
				±% sig.	<± % sig.			± % LEL	±% sig.						
	MC2-		%	±% sig.	<± % sig.	≤	sec.	± % LEL	±% sig.	±% sig.	°C	% RH	> years	Air = 1	Months
CH ₄	S400-A	0–100 % LEL	0.1	4	5	90	4	n.d.	n.d.	n.d.	-30 / +60	0–95	5	0.56	12
C ₃ H ₈	S480-A	0–100 % LEL	0.1	4	5	90	4	n.d.	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	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	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	3	-35 / +50	0–85	15	1.53	60

¹ Expected service life for normal ambient conditions.

² Manufacturer-recommended calibration interval for normal ambient conditions.

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

All specifications were collected under optimal test conditions.

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

ORDERING INFORMATION

MC2-	X-	S4XX-X-	X-	L	
				L	Sensor housing plastic long & 2 nd gas inlet Sensor housing
				0	Without display
				1	With display for indication of readings (only in housing A or N)
				2	With display for values and operation, 2x open collector for horn and warning lamp (only housing A/N) Display
					Gas type
		S400-A			Methane, CH ₄ Measuring range
		S480-A			0–100 % LEL Gas type/ Measuring range
					0–100 % LEL
				0	Without housing
				A	Plastic housing type A, 94 x 130 x 57 mm
				5*	Stainless steel housing type 5, 110 x 132 x 42.5 mm
				D	Plastic housing type D, 94 x 65 x 57 mm
				N	Plastic housing type N, 80 x 82 x 55 mm 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

