

Gas Detection.



Technical Datasheet



PolyGard®2

MC2 Sensor

with Premium Infrared Sensor Element
for Methane, Propane, Carbon Dioxide or R32
with Analog Output

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Specifications subject to change without notice.

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DESCRIPTION

Premium infrared sensor including digital value processing, and integrated self-diagnosis for the continuous monitoring of the ambient air to detect certain gases.

The intelligent sensor unit MC2 includes a premium infrared sensor element and electronics with a measuring amplifier and a μ Controller as well as a module with a terminal for the analog output and the external power supply. The μ Processor converts the sensor's measuring signal into a linear 4–20 mA signal (or 2–10 V). All relevant data and measured values of the sensor are stored fail-safe in the internal memory of the μ Processor.

The IR measuring principle with integrated temperature compensation ensures highest accuracy, selectivity and reliability. The high-quality sensor element offers the best performance characteristics in terms of drift, stability and repeatability over a wide temperature, humidity and pressure range.

The maintenance of a device can be done either by simply exchanging the sensor or by using the integrated, comfortable calibration routine directly at the system.

APPLICATION

The PolyGard®2 Sensor MC2 is used to detect leakage of toxic, asphyxiating and combustible gases in the non-explosive areas when a an analog 4–20 mA (or 2–10 V) signal is required.

FEATURES

- Internal function control with integrated watchdog
- Easy maintenance and calibration by exchange of the sensor or by comfortable on-site calibration
- Highest accuracy, selectivity and reliability due to 2-channel reference measurement
- Low zero-point drift and high stability of the sensor signal
- Sensor with long life expectancy (> 10 Jahre)
- Very good poisoning immunity
- Hardware and software according to SIL compliant development process
- 4–20 mA (or 2–10 V) analog output with selectable signal output for special mode (fault, maintenance, service etc.)
- Reverse polarity protected, overload and short-circuit proof
- Fast reaction
- IP65 protection (when installed)

SPECIFICATIONS

ELECTRICAL	
Power supply	18–29 V DC, reverse-polarity protect.; 18–27 V AC (only for output signal 2–10 V)
Power consumption	75 mA, max. (1.8 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 and measuring range	See Ordering Information
Measuring principle	Infrared
Accuracy	$\pm 5 \%$
Repeatability	$< \pm 2 \%$ signal
Drift in air	$< 0.25 \%$ / month
Temperature range	-40 °C to +70 °C (-40 °F to 158 °F)
Humidity range	0–95 % RH non-condensing
Pressure range	70–130 kPa
Storage temperature range ¹	-40 °C to +70 °C (-40 °F to 158 °F)
Storage time ²	Ca. 6 months
Life time ³ in air	> 10 years
Calibration interval ⁴	12 months
Poisoning	IR sensors can show symptoms of poisoning due to contamination with oils and lubricants.
PHYSICAL	
Housing type P	Polycarbonate UL 94 V2
Housing colour	RAL 7032 (light grey)
Dimensions ($\varnothing \times H$)	24 x 22 mm (0.94 x 0.87 in.)
Weight	Ca. 30 g (0.066 lb)
Protection class	IP65
Mounting	Screw mounting, external thread M25 x 1.5 mm
Wire connection	Screw-type terminal, 0.25–1.3 mm ² , 3-pin
REGULATIONS	
Directives	EMC directives 2014/30/EU CE UKCA Compliance with: EN 378-1 EN 45544-1, -3 EN 50271 EN 61010-1:2010 ANSI/UL 61010-1 CAN/CSA-C22.2 No. 61010-1
Warranty	1 year on sensors (not if poisoned or overloaded)

¹ A deviating storage temperature can have a negative effect on sensitivity and service life.

² If stocked for a longer period, we recommend checking the zero point and recalibrating if necessary.

³ Expected service life for normal ambient conditions.

⁴ Manufacturer-recommended calibration intervals for normal environmental conditions

OPTIONS	
ENCLOSURE TYPE A	
Material / flammability classification	Polycarbonate UL 94 V2
Housing 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	Ca. 0,2 kg (0.4 lb)
Package volume	Ca. 4,5 l
Protection class	IP65
Mounting	Wall mounting
Pre-embossing for cable entry / sensor	6 x M20/M25
LC 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 (plus switching)

Gas type	Ordering No.	Measuring range	Display resolution	t ₉₀ time (plastic housing)	t ₉₀ time (stainless steel housing)	Zero-point variation	Relative Gas density ¹
	MC2-X-		% / ppm	≤ sec.	≤ sec.	± % LEL % vol % LFL	Air = 1
R32	I200-A	0-50 % LFL	0.01	80	210	2	1.82
CH ₄	I400-A	0-100 % LEL	0.1	55	150	2	0.56
CH ₄	I400-B	0-100 % vol	0.1	60	130	2	0.56
CO ₂	I464-B	0-5 % vol	0.001	60	150	n.d.	1.53
CO ₂	I464-C	0-2 % vol	0.001	60	150	n.d.	1.53
CO ₂	I464-D	0-5000 ppm	1	75	150	n.d.	1.53
CO ₂	I464-F	0-10 % vol	0.01	60	150	n.d.	1.53
C ₃ H ₈	I480-A	0-100 % LEL	0.1	100	230	2	1.55

¹ The recommended mounting height depends on the relative gas density of the type of gas to be monitored. Depending on the relative gas density (d), the following recommendation therefore applies:

- d ≤ 0.85: Mounting 0.3–0.5 m below the ceiling
- 0.85 < d < 1.15: Mounting at 1.2–1.8 m height
- d ≥ 1.15: Mounting 0.3–0.5 m above the floor

All specifications were collected under optimal test conditions.

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

ORDERING INFORMATION

MC2-	X-	IXXX-X-	X-	P		
				P	Sensor housing plastic Sensor housing	
				0	Without display	
				1	With display for indication of measurement values (only in housing A or N)	
				2	With display for indication of measurement values and operation, 2x open collector for horn and warning lamp (only housing A or N) Display	
					Gas type	
		I200-A			R32	Measuring range
		I400-A			Methane, CH ₄	0–50 % LFL
		I400-B²			Methane, CH ₄	0–100 % LEL
		I464-B			Methane, CH ₄	0–100 % vol
		I464-C			Carbon dioxide, CO ₂	0–5 % vol
		I464-D			Carbon dioxide, CO ₂	0–2 % vol
		I464-F			Carbon dioxide, CO ₂	0–5000 ppm
		I480-A			Propane, C ₃ H ₈	0–10 % vol
						Gas type/ Measuring range
				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	

* On request

EXAMPLE

CH₄ sensor, measuring range 0–100 % LEL with plastic housing type A without display (order number: MC2-A-I400-A-0-P)

ACCESSORY

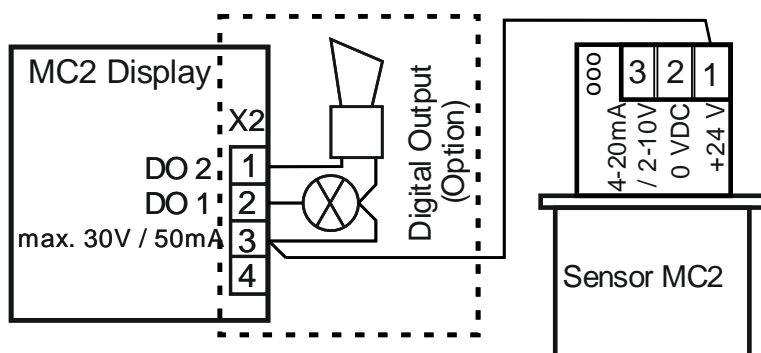
Sensor protection cap (order number: C2-Z1)

Duct mounting kit (order number: C2-Z2)

Calibration adapter (order number: C2-Z4, C2-Z4-A, C2-Z4-B, C2-Z4-C)

Splash protection SplashGuard (order number: C2-Z5)

WIRING CONFIGURATION



Note:

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

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