

Gas Detection.



Technical Datasheet



PolyGard®2

MC2 Sensor

with Semiconductor Sensor Element
for Toxic Gases
with Analog Output

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Specifications subject to change without notice.
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DESCRIPTION

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

The intelligent MC2 Sensor for detection of toxic gases includes a semiconductor 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 maintenance of the 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 to detect a leakage of toxic gases in a variety of applications when an analog 4–20 mA (or 2–10 V) signal is required.



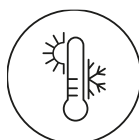
Food



Beverage
dispensing



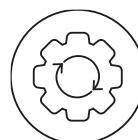
Laboratory



Climate



Agriculture



Process



Gas storage

FEATURES

- Internal function control with integrated watchdog
- Easy maintenance and calibration by exchange of the sensor unit or by comfortable on-site calibration
- Low zero-point drift
- Sensor with long life expectancy
- 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
- IP65 protection (when installed)

SPECIFICATIONS

ELECTRICAL	
Power supply	18–29 V DC, reverse-polarity protection; 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	Semiconductor
Repeatability	$< \pm 20 \%$ signal
Temperature range	-30 °C to +60 °C (-22 °F to +140 °F)
Humidity range	15–90 % RH non-condensing
Pressure range	90–110 kPa
Life time ¹ in air	> 5 years
Calibration interval ²	12 months
Poisoning	Semiconductor sensors can be poisoned by silicone-containing substances or other catalyst poisons, up to complete loss of sensitivity. Their sensitivity is irreversibly impaired by halogen-containing compounds.
RECOMMENDED STORAGE CONDITIONS	
Storage temperature range ³	0 °C to +50 °C (32 °F to +122 °F)
Storage time ⁴	Ca. 12 months
Humidity range	15–90 % RH non-condensing
Pressure range	90–110 kPa
PHYSICAL	
Housing type P	Polycarbonate UL 94 V2
Housing colour	Similar to RAL 7035 (light grey)
Dimensions (Ø x 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 Compliance with: EN 378 EN IEC 62990-1 Type SM 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 Expected service life for normal ambient conditions.

² Manufacturer-recommended calibration intervals for normal environmental conditions

³ A deviating storage temperature can have a negative effect on sensitivity and service life.

⁴ If stocked for a longer period, we recommend checking the zero point and recalibrating if necessary.

OPTIONS	
HOUSING TYPE A	
Material / flammability classification	Polycarbonate / UL 94 V2
Housing colour	Similar to RAL 7035 (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
DISPLAY	
LC Display	2 lines, 16 characters each, monochrome
Temperature range	-20 °C to +60 °C (-4 °F to 140 °F)
OPEN-COLLECTOR	
Transistor output (2)	For horn (resettable) and warning lamp
Switching capacity	24 V DC / 50 mA (+ switching)

Gas type	Order No.	Measuring range	t ₉₀ time	Reaction time	Relative gas density ¹
	MC2-X-	ppm	≤ sec.	≤ sec.	Air = 1
NH ₃	S2125-C	0–1000	30	10	0.60
NH ₃	S2125-F	0–10,000	30	5	0.60
C ₂ H ₄	S2189-A	20–2000	10	5	0.97

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

Semiconductor sensors that have been exposed to an increased gas concentration (> ½ full scale value) during normal measuring operation must be replaced without fail.

All specifications were collected under optimal test conditions.

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

The T 021 (DGVU-I-213-056) and T 023 (DGVU-I-213-057) as well as T 055 leaflets must be observed.

ORDERING INFORMATION

MC2-	X-	S2XXX-X-	X-	P	
			P	Sensor housing plastic	Sensor housing
			0	Without display	
			1	With display for indication of measurement values (only housing A/N)	
			2	With display for values & operation, 2x open collector for horn & warning lamp (only housing A / N)	Display
		S2125-C*	Gas type	Measuring range	
			Ammonia, NH ₃	0–1000 ppm	
		S2125-F*	Ammonia, NH ₃	0–10,000 ppm	Gas type/ Measuring range
		S2189-A	Ethylene, C ₂ H ₄	20–2000 ppm	
		0	Without housing		
		A	Plastic housing type A, 94 x 130 x 57 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

C₂H₄ sensor, measuring range 20–2000 ppm, with plastic housing type A without display
(order number: MC2-A-S2189-A-0-P)

ACCESSORY

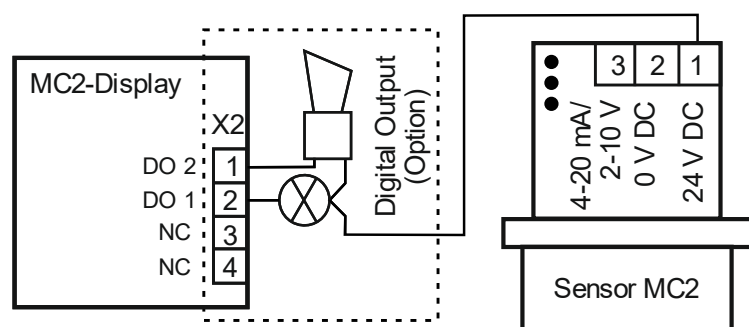
Sensor protection cap (order number: C2-Z1)

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.

FURTHER MEASURING PRINCIPLES

**Electrochemical:**

Ammonia (NH_3), ethylene (C_2H_4)

→ See data sheet DB_MC2_Tox

**Catalytic:**

Ammonia (NH_3), ethylene (C_2H_4)

→ See data sheet DB_MC2_Ex



Documents



Catalog



YouTube