

PERFECT SOLUTIONS FOR **GAS ALARM** SYSTEMS



Technical Datasheet



μGard®2

Sensor Unit MC2

with Semiconductor for Toxic Gases
with Analog Output

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Specifications subject to change without notice.
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■ All Products
■ Made
■ in Germany

DESCRIPTION

Exchangeable sensor unit including digital value processing and self-control for the continuous monitoring of the ambient air.

The sensor unit MC2 houses a module with μ Controller, analog output and power supply in addition to the semiconductor sensor element including amplifier. The μ Controller calculates a linear 4–20 mA (or 2–10 V) signal out of the measurement signal 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 μ Gard®2 Sensor MC2 with semiconductor sensor is used for the detection of toxic gases in a variety of applications when a typical 4–20 mA (or 2–10 V) signal is required.

FEATURES

- Digital measurement value processing
- Internal function control with integrated hardware watchdog
- Data / measured values in μ C of the sensor unit, therefore simple exchange uncalibrated <> calibrated
- Low zero-point drift
- Long sensor lifetime
- 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
- IP65 version
- Housing for integration of the sensor unit (option)
- Display (option)
- Display with two open-collector outputs for horn (resettable) and warning lamp (option)
- Conformity to:
 - EN 378
 - EN 45544-1
 - EN 61508-1-3
 - EN 61010-1
 - ANSI/UL 61010 1
 - CAN/CSA-C22.2 No. 61010-1
- Duct mounting kit (accessory)

SPECIFICATIONS

ELECTRICAL	
Power supply	16–29 V DC, reverse-polarity protect.; 18–27 V AC (only for output signal 2–10 V)
Power consumption	65 mA, max. (1.6 VA for 24 V)
Analog output signal	Proportional, overload and short-circuit proof, load 500 Ω for current signal, ≥ 50 kΩ for voltage signal 4–20 mA or 2–10 V = measuring range 3.2 < 4 mA or 1.6–2 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	Combustible gases, see Ordering Information
Sensor element	Semiconductor sensor
Pressure range	Atmospheric ± 10 %
Storage temperature range	0 °C to +50 °C (32 °F to 122 °F)
Storage time	Max. 12 months
Poisoning	The sensitivity of Semiconductor sensors can be influenced by substances containing silicon compounds and even poisoned and destroyed by them. The sensors are also susceptible to poisoning by organic solvents.
PHYSICAL	
Enclosure P (M25)	Polycarbonate: UL 94 V2
Colour	RAL 7032 (light grey)
Dimensions	(D x H) 24 x 22 mm (0.94 x 0.87 in.)
Weight	Ca. 30 g (0.066 lb)
Protection class	IP65 (only if mounted in housing type A, D or N)
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 EN 45544-1 EN 61508-1-3 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 T) 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)

Gas type	Ordering No.	Measuring range	Repeatability	t ₉₀ time	Temperature range	Humidity range (non-condensing)	Life time ¹ in air	Relative gas density	Mounting height	Calibration interval ¹
	MC2-	ppm	<± % sig.	≤ sec.	°C	% HR	>months	air = 1	(m)	months
C ₂ H ₄	S2189-A	20–2000	20	10	-30 / +60	15-90	60	0.97	1.5–1.8	12
NH ₃	S2125-C	0–1000	20	30	-30 / +60	15-90	60	0.60	Ceiling	12
NH ₃	S2125-F	0–10000	20	30	-30 / +60	15-90	60	0.60	Ceiling	12

¹ Manufacturer-recommended calibration interval for normal environmental conditions

All specifications were collected under optimal test conditions.

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

No cross-sensitivity data is available for these sensors. It is well known that all semiconductor sensors are also sensitive to combustible gases, e.g. alcohols, etc.

ORDERING INFORMATION

MC2-	X-	S2XXX-X-	X-	X	
			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
				Gas type	Measuring range
		S2189-A		Ethylene, C ₂ H ₄	20–2000 ppm
		S2125-C*		Ammonia, NH ₃	0–1000 ppm
		S2125-F*		Ammonia, NH ₃	0–10,000 ppm
				Gas type/	Measuring range
			0	Without housing	
			A	Plastic housing type A, 94 x 130 x 57 mm	
			5	Stainless steel housing type 5, 113 x 135 x 45 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 the integration of the sensor

*On request only

EXAMPLE

Ethylene sensor unit, measuring range 20–2000 ppm, in plastic housing type A, without display, sensor unit in plastic housing

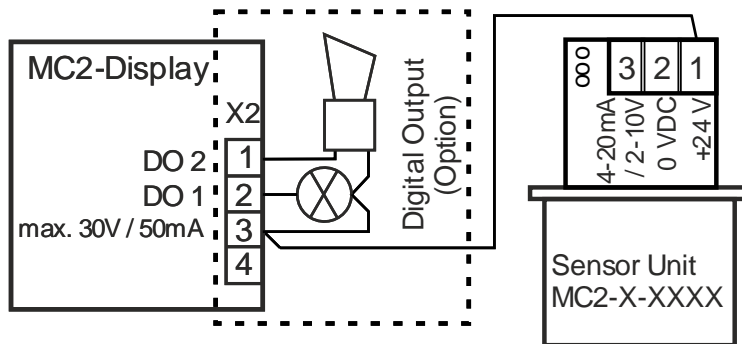
Ordering number: MC2-A-S2189-A-0-P

ACCESSORY

Duct mounting kit

Ordering number: C2-Z2

WIRING CONFIGURATION



Note:

The installation of the sensor unit MC2 directly on the MSC2, MGC2 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.