

µGard®2

Sensor unit MC2 with analog output, with semi-conductor sensor for toxic gases

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 µController, analog output and power supply in addition to the semiconductor sensor element including amplifier. The µController calculates a linear 4 – 20 mA (or 2 – 10 V) signal out of the measurement signal of the 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 µGard®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 µC of the sensor unit, therefore simple exchange uncalibrated
- Low zero-point drift
- Long sensor life time
- Easy maintenance and calibration by exchange of the sensor unit or by comfortable on-site
- 4 – 20 mA (or 2 – 10 V) analog output with selectable signal output for special mode, fault
- Reverse polarity protected, overload and short-circuit proof
- Housing for integration of the sensor unit
- IP 65 version
- Display (option)
- Display with two open-collector outputs for horn (resettable) and warning lamp (option)
- Conformity to
 - EN 61508-1-3
 - EN 61010-1
 - ANSI/UL 61010 1
 - CAN/CSA-C22.2 No. 61010-1
 - EN 378
 - EN 45544-1
- Duct mounting kit (accessory)



Exchangeable sensor unit in plastic housing



Option housing "A" with sensor unit in plastic housing



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Sensor unit MC2, AO & semi-cond. for toxic gases



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 Ohm for current signal, ≥ 50 kOhm 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 performance

Gas type	See Order Information
Sensor element	Semiconductor sensor
Pressure range	Atmospheric ± 10 %
Storage temperature range	0 °C to +50 °C (32 °F to 122 °F)
Storage time	12 months

Physical

Housing A for integration of the sensor unit	Polycarbonate UL 94 V2
Enclosure colour	RAL 7032 (light grey)
Dimensions (W x H x D)	94 x 130 x 57 mm (3.7 x 5.1 x 2.2 in.)
Weight	Ca. 0.2 kg
Packaging volume	Ca. 4.5 l
Protection class	IP 65
Mounting	Wall mounting
Pre-embossed entries for cable / sensor unit	6 x M20/M25
Enclosure M25	Polycarbonate UL 94 V2
Enclosure 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	IP 65
Mounting	Screw mounting / M25
Wire connection	Screw-type terminal min. 0.25 mm ² , max. 1.3 mm ² , 3-pin

Directives

EMC directives 2014/30/EU
CE
Compliance with:
EN 378
EN 61508-1-3
EN 61010-1:2010,
ANSI/UL 61010-1
CAN/CSA-C22.2 No. 61010-1
EN 45544-1

Warranty	1 year on sensor (not if poisoned or overloaded), 2 years on device
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Options

LCD Display	
LCD	Two lines, 16 characters each, monochrome
Open-collector (transistor) output (2)	For horn (resettable) and warning lamp
Switching capacity	24 V DC / 50 mA (+ switching)

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.

The sensitivity of Pellistor sensors can be influenced by substances containing silicon compounds and even poisoned and destroyed by them.

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



MSR-Electronic GmbH ::: Würdinger Str. 27 & 27A ::: 94060 Pocking ::: Germany

Specifications subject to change without notice.

Up-to-date data sheets and user manuals can be found in the download area of www.msr-24.com.

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SPECIFICATIONS - SENSOR CARTRIDGE (SC2) / SENSOR ELEMENT

Gas type	Ordering No.	Measuring range	Display resolution	Repeatability	t90 Time	Temperature range	Humidity range (non-condensing)	Life time ¹ in air	Relative gas density	Mounting height	Calibration interval ¹
	MC2-	ppm	ppm	<± % sig.	≤ sec.	°C	% RH.	> months	Air = 1	(m)	Months
C ₂ H ₄	S2189-A	20-2000	1	20	10	-35 / +50	15-90	5	0,97	1.5-1.8	12
NH ₃	S2125-C	0-1000	1	10	30	-35 / +50	15-90	5	0,59	Ceiling	12
NH ₃	S2125-F	0-10.000	1	10	30	-35 / +50	15-90	5	0,59	Ceiling	12

All specifications were collected under optimal test conditions.

ORDER INFORMATION

MC2- **X** **S2XXX-X** - **X** - **X**

- P** Sensor housing plastic
- S** Sensor housing stainless steel
- 0** Without display
- 1** With display for indication of measurement values (only in housing A or N)
- 2** With display for values & operation, 2x open-collector for horn & warning lamp (only housing A / N)

Gas type	Sensor type	Measuring range
S2189-A Ethylene, C ₂ H ₄	Semiconductor	20 – 2000 ppm
S2125-C Ammonia, NH ₃	Semiconductor	0 – 1000 ppm
S2125-F Ammonia, NH ₃	Semiconductor	0 – 10.000 ppm

- 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

EXAMPLE

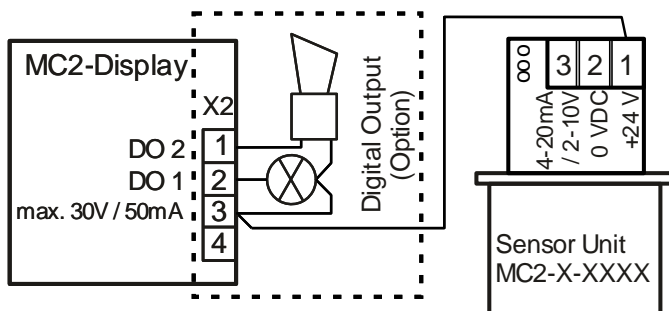
Ethylene sensor unit, measuring range 20 - 2000 ppm, in plastic housing type A, without display, sensor unit in plastic housing

Order number: **MC2-A-S2189-A-0-P**

ACCESSORY: Duct mounting kit

Order number: **C2-Z2**

WIRING CONFIGURATION (including options)



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.

