

Technical Datasheet



µGard[®]2

MC2 Sensor Unit

with Infrared Sensor for CO₂, Methane or Propane
with Analog Output

DESCRIPTION

APPLICATION

FEATURES

SPECIFICATIONS

ORDERING INFORMATION

WIRING CONFIGURATION



Specifications subject to change without notice.

µGard[®] is a registered trademark of MSR-Electronic GmbH.
www.msr-electronic.de

■ All Products
■ Made
■ in Germany

DESCRIPTION

Exchangeable sensor unit including digital value processing, temperature compensation and self-control for the continuous monitoring of the ambient air to detect CO₂, Methane or Propane.

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 μ Gard[®]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 two open-collector outputs for horn (resettable) and warning lamp (option)
- Conformity to:
 - EN 378-1
 - EN 45544
 - 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 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 3.2–4 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	See Ordering Information
Sensor element	Infrared (NDIR)
Pressure range	Atmospheric $\pm 10 \%$ (interference + 1.5 % on reading per kPa)
Storage temperature	-40 °C to +70 °C (-40 °F to 158 °F)
Storage time	Max. 6 months
PHYSICAL	
Enclosure type L	Polycarbonate UL 94 V2
Enclosure colour	RAL 7032 (light grey)
Dimensions	(D 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 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 378-1; EN 45544 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)

MC2-	X-	I-S1164-X-	X-	L		
				L	Sensor housing 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 indication of readings and for operation, with two open-collector outputs for horn and warning and lamp (only in housing A or N)	Visualization
		I-S1164-B	Carbon dioxide CO ₂	0–5 Vol %		Gas type / Measuring range
		I-S1164-C	Carbon dioxide CO ₂	0–2 Vol %		
		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 sensor unit

EXAMPLE

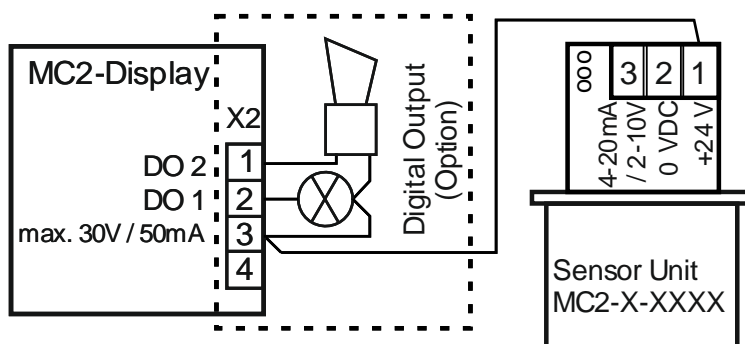
CO₂ sensor unit, measuring range 5 Vol %, with plastic housing type A; without display, sensor unit in plastic housing
Order number: MC2-A-I-S1164-B-0-L

ACCESSORY

Duct mounting kit
Order number: C2-Z2

Calibration adapter
Order number: C2-Z6

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.