

Technical Datasheet



μGard[®] 2

Axxx Sensor

with Electrochemical Sensor Element
for Toxic Gases
with Analog Output

DESCRIPTION

APPLICATION

FEATURES

SPECIFICATIONS

CROSS SENSITIVITY

ORDERING INFORMATION

WIRING CONFIGURATION

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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 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.

The sensor unit A_{xx} houses a module with μ Controller, analog output and power supply in addition to the electro-chemical sensor element including amplifier. The μ Controller calculates a linear 4–0 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 A_{xxx} is used for the detection of toxic gases or for oxygen monitoring when a typical 4–20 mA (or 2–10 V) signal is required.

FEATURES

- Digital measurement value processing incl. temperature compensation
- Internal function control with integrated hardware watchdog
- Data / measured values in μ C of the sensor unit, therefore simple exchange uncalibrated <> calibrated
- High accuracy, selectivity and reliability
- Low zero-point drift
- Long sensor lifetime
- Hardware & 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
- IP65 version
- Housing for integration of the sensor unit (option)
- Display (option)
- Display with 2 open-collector outputs for horn (resettable) and warning lamp (option)
- Conformity to:
 - EN 378
 - EN 45544-1, -3
 - EN 50104 (for O₂)
 - EN 50271
 - EN 50545
 - EN 61010-1
 - ANSI/UL 61010 1
 - CAN/CSA-C22.2 No. 61010-1
- Duct mounting kit (accessory)

SPECIFICATIONS

ELECTRICAL	
Power supply	18–29 V DC, reverse-polarity protect.; 18–27 V AC (only for output signal 2–10 V)
Power consumption	23 mA, max. (0.6 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	See Ordering Information
Sensor element	Electrochemical
Pressure range	90–110 kPa
Storage temperature range ¹	0 °C to 20 °C (32°F to 68 °F) or 5 °C to 20 °C (41°F to 68 °F) for NH ₃ , CO, NO ₂ , O ₂
Storage time ²	Ca. 6 months
Poisoning	Electrochemical sensors are susceptible to poisoning by organic solvents and silicone vapours.
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)
Mounting	Screw mounting / M25
Wire connection	Screw-type terminal min. 0.25 mm ² , max. 1.3 mm ² , 3-pin, 24–16 AWG
REGULATIONS	
Directives (only in connection with the MSR Sensor-Boards)	EMC directives 2014/30/EU, CE Compliance with: EN 378 EN 45544-1, -3 EN 50104 (for O ₂) EN 50271 EN 50545 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	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	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)

¹ A higher 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.

CROSS SENSITIVITY¹

Gas concentration of cross gas / reaction of sensor

Gas type	Ordering No.	Chlorine, Cl ₂	Ethanol, C ₂ H ₆ O	Ethylene, C ₂ H ₄	Carbon monoxide, CO	Carbon dioxide, CO ₂	Sulphur dioxide, SO ₂	Hydrogen sulphide, H ₂ S	Nitrogen dioxide NO ₂	Nitrogen monoxide, NO	Hydrogen, H ₂
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
CO		2/0	2000/5			5000/0	50/0,5	25/0	50/-1	50/8	100/20
NH ₃		10/0	100/0	100/0	200/0	5000/0	10/<10	10/<20	20/<2	20/0	1000/-10
NH ₃		10/0	100/0	100/0	200/0	5000/0	10/<12	10/<30	20/0	20/0	1000/-150
NH ₃		10/0	100/0	100/0	200/0	5000/0	10/<12	10/<30	20/0	20/0	1000/-150
NH ₃		10/0	100/0	100/0	200/0	5000/0	10/<12	10/<30	20/0	20/0	1000/-150
NH ₃		10/0	100/0	100/0	200/0	5000/0	10/<12	10/<30	20/0	20/0	1000/-150
NO ₂		1/1	100/0	500/0	400/0	5000/0	30/-0.6	20/-25		50/0	1000/0
HCN				100/0	100/2		20/38	15/25	5/-12	35/0	100/2
CH ₂ O					10-18 %						1-3 %
HCl		20/0		100/0	1000/0		100/0	20/31	20/-6	25/0	/0
C ₂ H ₄					< 60 %						
O ₃		5/45/4	100/0		300/0		5/0		20/10	35/0	300/0
Cl ₂					300/0		5/0		20/20	35/0	300/0
O ₂						5 % vol					
SO ₂			100/0		100/1			10/0	100/-125	100/0	100/1
H ₂ S					100/2		100/20		5/1	35/2	100/20
ETO			30/21		100/45						

¹ The table does not claim to be complete. Other gases, too, can have an influence on the sensitivity. The mentioned cross sensitivity data are only reference values valid for new sensors.

² Cross sensitivity data valid for all measuring ranges of the sensor.

All specifications were collected under optimal test conditions.

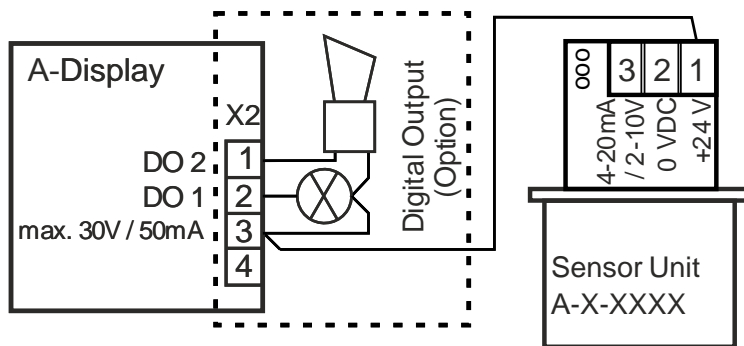
We confirm compliance with the minimum requirements of the applicable standard.

ACCESSORY

Duct mounting kit

Ordering number: C2-Z2

WIRING CONFIGURATION



Note:

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