



µGard®2

## Sensor unit MC2 for combustible gases with analog output

Exchangeable sensor unit including digital value processing, temperature compensation 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 Pellistor sensor element including amplifier. The µController 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 µGard®2 Sensor MC2 is used for the detection of combustible gases in the non-Ex zone 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 µC of the sensor unit, therefore simple exchange uncalibrated <> calibrated
- High accuracy, selectivity and reliability
- Low zero point drift
- Long sensor life time
- Hardware & software according to SIL2 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
- Housing for integration of the sensor unit
- IP 65 version
- Conformity to
  - EN 50271
  - EN 61010-1
  - ANSI/UL 61010 1
  - CAN/CSA-C22.2 No. 61010-1



Exchangeable sensor unit



Option Housing "A"





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## Sensor unit MC2 for combustible gases with AO

### SPECIFICATIONS

#### Electrical

Power supply	16 – 29 V DC, reverse-polarity protected
Power consumption	70 mA, max. (1.7 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	Combustible gases, see Order Information
Sensor element	Pellistor (catalytic bead sensor)
Measuring range	0 – 100 % LEL
Accuracy	± 1 % LEL (CH <sub>4</sub> )
Resolution	0.2 % (CH <sub>4</sub> )
Repeatability	< 1 % sig. (CH <sub>4</sub> )
Response time t <sub>90</sub>	10 sec.
Zero point variation	0.5 % (CH <sub>4</sub> )
Long-term zero-point drift	< 0.3 % LEL / month (CH <sub>4</sub> )
Long-term sensitivity drift	< 1 % LEL / month (CH <sub>4</sub> )
Temperature range	-20 °C to +50 °C (-4 to 122 °F)
Humidity range	5 - 95 % RH not condensing
Pressure range	Atmospheric ± 20 %
Sensor life time	> 36 months / normal ambient conditions
Calibration interval <sup>1</sup>	6 months
Storage temperature range	+ 5 °C to + 30 °C (41 °F to 86 °F)
Storage time	6 months
Poisoning	The sensitivity of Pellistor sensors can be influenced by substances containing silicon compounds and even poisoned and destroyed by them.

#### Physical

Housing type 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 <sup>2</sup> , max. 1.3 mm <sup>2</sup> , 3-pin
<b>Directives</b>	EMC directives 2014/30/EU CE Compliance with: EN 61010-1:2010, ANSI/UL 61010-1 CAN/CSA-C22.2 No. 61010-1
<b>Warranty</b>	1 year on material (without sensor element)





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## ORDER INFORMATION

MC2- X P34XX-X

	Gas type	Measuring range	Gas density (air = 1)	Mounting height
P3485-A	Acetone, C <sub>3</sub> H <sub>6</sub> O	0 – 100 % LEL	2.00	Floor
P3405-A*	Acetylene, C <sub>2</sub> H <sub>2</sub>	0 – 100 % LEL	0.90	Ceiling
P3408-A*	Ammonia, NH <sub>3</sub>	0 – 100 % LEL	0.60	Ceiling
P3496-A	Petrol Vapours	0 – 100 % LEL	-	-
P3460-A	Butane, C <sub>4</sub> H <sub>10</sub>	0 – 100 % LEL	2.11	Floor
P3472-A*	Cyclopentane, C <sub>5</sub> H <sub>10</sub>	0 – 100 % LEL	-	Floor
P3427-A*	Ethyl acetate, C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	0 – 100 % LEL	3.04	Floor
P3425-A	Ethyl alcohol, C <sub>2</sub> H <sub>5</sub> OH	0 – 100 % LEL	1.59	Floor
P3410-A*	Ethylene, C <sub>2</sub> H <sub>4</sub>	0 – 100 % LEL	0.98	Ceiling!
P3491-A*	Heptane, C <sub>7</sub> H <sub>16</sub>	0 – 100 % LEL	3.46	Floor
P3435-A*	Hexane, C <sub>6</sub> H <sub>14</sub>	0 – 100 % LEL	2.98	Floor
P3476-A*	Isopentane, C <sub>5</sub> H <sub>12</sub>	0 – 100 % LEL	2.48	Floor
P3482-A*	Isopropyl alcohol, C <sub>3</sub> H <sub>8</sub> O	0 – 100 % LEL	2.08	Floor
P3498-A*	JP8	0 – 100 % LEL	-	-
P3402-A	LPG	0 – 100 % LEL	-	-
P3400-A	Methane, CH <sub>4</sub>	0 – 100 % LEL	0.55	Ceiling
P3450-A*	Methanol, CH <sub>3</sub> OH	0 – 100 % LEL	1.11	Floor
P3458-A*	Methyl ethyl ketone, C <sub>4</sub> H <sub>8</sub> O	0 – 100 % LEL	1.15	Floor
P3475-A*	Pentane, C <sub>5</sub> H <sub>12</sub>	0 – 100 % LEL	2.49	Floor
P3480-A	Propane, C <sub>3</sub> H <sub>8</sub>	0 – 100 % LEL	1.55	Floor
P3484-A*	Propyl alcohol, C <sub>3</sub> H <sub>8</sub> O	0 – 100 % LEL	2.08	Floor
P3490-A	Toluene, C <sub>7</sub> H <sub>8</sub>	0 – 100 % LEL	3.18	Floor
P3440-A	Hydrogen, H <sub>2</sub>	0 – 100 % LEL	0.07	Ceiling

### HOUSING FOR INTEGRATION OF THE SENSOR UNIT

- 0 Without housing
- A Plastic housing type A, 90 x 130 x 57 mm

\* only on request

### EXAMPLE

CH<sub>4</sub> Methane sensor unit, measuring range 0-100 % LEL with plastic housing type A

Order number: MC2-A-P3400-A

### WIRING CONFIGURATION

