

PolyXeta®2



Sensor for combustible gases in zone 1, PX2-1

Sensor for combustible gases in zone 2, PX2-2

Microprocessor based gas sensor with 4 – 20 mA / RS485-Modbus output signal, alarm and fault relays (all SIL2 certified) for monitoring the ambient air to detect combustible gases and vapors within the lower explosive limit (LEL) by means of a catalytic sensor element (pellistor) or an infrared sensor element. The calibration of sensors without LCD display is carried out via the calibration device STL06-PGX2 or the PC software PCE06-PGX2. Sensors with LCD display have an integrated calibration routine that is started from the outside by a permanent magnet without opening the housing. In case of an alarm or a fault, the backlight of the sensors with LCD display changes from green to red.



Sensor, zone 1, without display

APPLICATION

The PolyXeta®2 sensor is used in industrial areas like oil/gas industry, biogas plants, petrochemical industry, power plants etc. in Ex-Zone 1 or 2. The PolyXeta®2 sensor is also suitable for commercial areas like gas transfer stations etc. With the 4 – 20 mA / RS485-ModBus output signal the sensor is suitable for connection to the PolyGard®2 gas controller series by MSR-Electronic, as well as to any other controllers or automation devices. Optionally, the PolyXeta®2 sensor is also available with LCD display and relay output.



Sensor, zone 1, with LCD display

FEATURES

- ATEX and IEC Ex certificates MSR-Electronic for electrical Ex protection
- ATEX metrological test & SIL2 safety functions 4 – 20 mA, RS485 and relay
- **PX2-1 for zone 1 (and also suitable for zone 2):**
 - Type “Ex d” with flame-proof enclosure
- **PX2-2 for zone 2:**
 - Type “Ex n” with flame-proof enclosure
- Enclosure: additional CSA certificate for Class I, Div. 1
- Continuous monitoring
- Microprocessor with 12 bit converter resolution
- Self-monitoring system
- Easy calibration
- Calibration service by exchanging the sensor head
- Proportional 4 – 20 mA output
- Serial interface to the control center
- Reverse polarity protection
- Overload protection
- LCD display with status LEDs (optional)
- Alarm and fault signal relay (optional)



Sensor, zone 2, without display



Sensor, zone 2, with LCD display



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Sensor for combustible gases PX2

SPECIFICATIONS

ELECTRICAL

| | | |
|--------------------------------|--|--------------------------------------|
| Power supply | 20 – 28 V DC, verpolungssicher | |
| Power consumption (at 24 V DC) | 90 mA, max. 130 mA | |
| Control unit | Microprocessor with 12 bit converter resolution | |
| Digital filter | Averaging in order to increase the EMC immunity | |
| Visual indications | 2 LEDs for operation, alarm and communication | |
| Analog output signal (active) | Proportional, overload and short-circuit proof, load ≤ 500 Ω | |
| | 4 – 20 mA = measuring range | 3.0 < 4 mA = underrange |
| | > 20 – 21.2 mA = overrange | 2 mA = fault, > 21.8 mA = fault High |
| Serial interface | Serial data bus | |
| Fault relay (optional) | Max. 30 V AC/DC, 1 A | |
| Alarm relay (optional) | Max. 30 V AC/DC, 1 A | |
| LCD (optional) | 2 x 16 characters, 3 status LEDs, 4 menu operating elements | |

SENSOR DATA

| | | |
|------------------------|---|--|
| Gas type | Combustible gases | |
| Sensor element | Pellistor | Infrared |
| Measuring range | See Ordering Information | |
| Response time t_{90} | ≤ 20 sec. for CH ₄ | < 30 sec. |
| Accuracy | ± 1 % of measuring range (CH ₄) | +/- 3 % for < 50 % of range +/- 5 % for > 50 % of range |
| Repeatability | ± 2 % of measuring range | 0.1 % of range |
| Stabilization time | 300 sec. | 60 sec. |
| Warm-up time | Measuring mode after 120 sec. | 60 sec. |

SENSOR HEAD HOUSING

| | |
|--------------------|--|
| Material | CrNi Stahl: 1.4404 |
| Dimensions (d x H) | 30 x 56 mm (1.18 x 2.20 in.) |
| Protection class | Gas inlet IP64, with option splash-proof IP65 (on request) |
| Thread | External thread NPT ¼" ANSI/ B1.20.1 |

ENVIRONMENTAL CONDITIONS

| | |
|-----------------------|---|
| Humidity | 20 to 90% RH (not condensing) |
| Operating temperature | -25 °C to +60 °C (-13 °F to 140 °F), -20 °C to +60 °C (-4 °F to 140 °F) for display version |
| Storage temperature | -5 °C to +30 °C |
| Pressure range | 800 to 1200 mbar (80 to 120 kPa) |
| Air velocity | < 6 m/sec. |

PHYSICAL CHARACTERISTICS

| | |
|--------------------------------------|--|
| Enclosure P1 & P3 / colour | Aluminium pressure die-casting / light grey RAL 7032, epoxy coating |
| Additional CSA approval, only zone 1 | Explosion proof Class I, Div 1, Groups A, B, C and D |
| Dimensions (d x H) / weight | 95 x 82 mm / ca. 1.3 kg (2.87 lb.) |
| Protection class | Housing protection IP66 to IP68 (depending on the cable glands used) |
| Mounting | Wall mounting (sensor head downwards) |
| Cable entry | 1 x resp. 3 x ¼ in. (Ansi B1.20.1) |
| Wire connection | Spring-type terminal, 0.08 to 2.5 mm ² , AWG 28 - 12 |
| Wire length | Max. load 500 Ω, (= wire resistance + controller input resistance) |

ATEX MARKING

| | | |
|---------------------------------|---|--|
| | PX2-1 | PX2-2 |
| EC-type examination certificate | Ex II 2G Ex db IIC T4 Gb, CE 0158, BVS 15 ATEX E 129 X (electrical Ex protection) Ex d EN60079-0, -1 | Ex II 3G Ex n IIC T4 Gc Electrical Ex protection: Ex n EN60079-15 |
| CERTIFICATES | IECEX 16.0038 X (electrical Ex protection) Ex d IEC 60079-0, -1 | ----- |

CERTIFICATES

| | | |
|-----------------|---|--|
| CERTIFICATES | Functional safety (SIL2) (not for infrared sensors) EN 50402, EN 61508-1, -2, -3, EN 50271 CSA Certificate Class I, Div. 1 (only enclosure) | |
| Pending | Metrological approval: (pending) EN 60079-29-1 for Ex gases | |
| WARRANTY | 1 year on sensor (not if poisoned or overloaded), 2 years on device | |



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ORDERING INFORMATION

Sensor **PX2-X- X -XXXXX-A- XX**

Exchange head¹ **SX1-1- -XXXXX-A**

P1 Aluminum die-cast housing for one cable entry
P3 Aluminum die-cast housing for three cable entries

OPTIONS

- Without option **0**
- Relay set (2) **1**
- LCD display **2**
- Relay set (2) + LCD display **3**

- Zone 1 **1**
- Zone 2 **2**

| | | GASTYPE | | Sensor type | Measuring range | |
|--|----------|------------------|---------------------|---|------------------------|-------------|
| | 0 | P3400-A* | Methane | CH ₄ | Pellistor | 0-100 % LEL |
| | 1 | P3402-A* | LPG | | Pellistor | 0-100 % LEL |
| | 2 | P3408-A** | Ammonia | NH ₃ | Pellistor | 0-100 % LEL |
| | 3 | P3410-A* | Ethylene | C ₂ H ₄ | Pellistor | 0-100 % LEL |
| | | P3415-A** | Cyclohexane | C ₆ H ₁₂ | Pellistor | 0-100 % LEL |
| | | P3420-A* | Ethane | C ₂ H ₆ | Pellistor | 0-100 % LEL |
| | | P3425-A** | Ethyl Alcohol | C ₂ H ₅ OH | Pellistor | 0-100 % LEL |
| | | P3427-A* | Ethyl Acetate | C ₄ H ₈ O ₂ | Pellistor | 0-100 % LEL |
| | | P3430-A** | Benzene | C ₆ H ₆ | Pellistor | 0-100 % LEL |
| | | P3435-A* | n-Hexane | C ₆ H ₁₄ | Pellistor | 0-100 % LEL |
| | | P3440-A* | Hydrogen | H ₂ | Pellistor | 0-100 % LEL |
| | | P3448-A** | Butyl Acetate | C ₆ H ₁₂ O ₂ | Pellistor | 0-100 % LEL |
| | | P3450-A** | Methanol | CH ₃ OH | Pellistor | 0-100 % LEL |
| | | P3458-A** | Methyl Ethyl Ketone | C ₄ H ₈ O | Pellistor | 0-100 % LEL |
| | | P3460-A* | Iso/n-Butane | C ₄ H ₁₀ | Pellistor | 0-100 % LEL |
| | | P3468-A** | Isobutyl Alcohol | C ₄ H ₁₀ O | Pellistor | 0-100 % LEL |
| | | P3472-A** | Cyclopentan | C ₅ H ₁₀ | Pellistor | 0-100 % LEL |
| | | P3473-A** | Methyl Acetate | C ₃ H ₆ O ₂ | Pellistor | 0-100 % LEL |
| | | P3475-A* | Iso/n-Pentane | C ₅ H ₁₂ | Pellistor | 0-100 % LEL |
| | | P3480-A* | Propane | C ₃ H ₈ | Pellistor | 0-100 % LEL |
| | | P3480-B** | Propane | C ₃ H ₈ | Pellistor | 0-30 % LEL |
| | | P3482-A* | Isopropyl Alcohol | C ₃ H ₈ O | Pellistor | 0-100 % LEL |
| | | P3484-A** | Propyl Alcohol | C ₃ H ₈ O | Pellistor | 0-100 % LEL |
| | | P3485-A* | Acetone | C ₃ H ₆ O | Pellistor | 0-100 % LEL |
| | | P3490-A* | Toluene | C ₇ H ₈ | Pellistor | 0-100 % LEL |
| | | P3491-A** | n-Heptane | C ₇ H ₁₆ | Pellistor | 0-100 % LEL |
| | | P3496-A** | Petrol Vapours | | Pellistor | 0-100 % LEL |
| | | I3400-A** | Methane | CH ₄ | Infrared | 0-100 % LEL |
| | | I3480-A** | Propane | C ₃ H ₈ | Infrared | 0-100 % LEL |

* Metrological testing according to EN 60079-29-1 by DEKRA EXAM
 ** Testing by the manufacturer (manufacturer's declaration of conformity)

¹ The exchangeable sensor head is only to be used in connection with the PolyXeta®2 Gas Sensor. Otherwise it loses its ATEX Certification.



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ELECTRICAL CONNECTION

