

Gas Detection.



## Technical Datasheet



### PolyXeta®2 Gas Detector PX2 for Zone 1 and Zone 2 with Premium Infrared Sensor Element

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PX2 YouTube Video

Specifications subject to change without notice.  
Up-to-date data sheets and user manuals can be found in the download area on [www.msr-24.com](http://www.msr-24.com).  
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## DESCRIPTION

### Fixed PolyXeta®2 Gas Alarm Devices of the

**PX2-1 series with Ex db protection for zones 1 and 2**

**PX2-2 series with Ex nR protection only for zone 2**

**for continuous monitoring of the ambient air to detect certain gases and vapours for use in the hazardous areas of zones 1 and 2 according to Directive 2014/34/EU.**

Microprocessor based gas detector with 4–20 mA / RS-485-Modbus output signal, alarm and fault relays for monitoring the ambient air to detect certain gases and vapours by means of a high-quality infrared sensor element. The IR measuring principle with integrated temperature compensation ensures highest accuracy, selectivity and reliability. The sensor is optimally designed for industrial applications and therefore offers the best performance characteristics in terms of drift, stability and repeatability. Optionally, the PolyXeta®2 gas detector is also available with LC display.

The calibration of gas detectors without LC display is carried out via the calibration device STL06-PGX2 or the PC software PCE06-PGX2. Gas detectors with LC 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 detectors with LC display changes from green to red.

## APPLICATION

The PolyXeta®2 gas detector PX2 is used in industrial areas like oil/gas industry, biogas plants, petrochemical industry, power plants etc. in in Ex-Zone 1 (PX2-1) and/or 2 (PX2-2). The PolyXeta®2 gas detector is also suitable for commercial areas like gas transfer stations etc.

With the 4–20 mA / RS-485-Modbus output signal the detector is suitable for connection to the PolyGard®2 gas controller series by MSR-Electronic GmbH, as well as to any other controllers or automation devices.

## CERTIFICATES / FEATURES

- ATEX and IECEx certificates MSR-Electronic GmbH for electrical Ex protection
- **PX2-1 for zone 1 (and also suitable for zone 2):**
  - Type "Ex db" protection flame-proof enclosure
- **PX2-2 for zone 2:**
  - Type "Ex nR" protection
- Enclosure: Additional FM and CSA certificate for Class I, Div. 1
  
- Continuous self-monitoring
- Microprocessor with 12-bit converter resolution
- Sensor with long service life (> 10 years)
- Integrated temperature and humidity compensation and multi-point calibration
- Easy maintenance and calibration by replacing the sensor or by convenient on-site calibration
- Highest accuracy and selectivity due to 2-channel reference measurement
- Very high resistance to poisoning
- Resistant to shocks and vibrations (shock-resistant)
- Reverse polarity protection, overload protection
- Proportional 4–20 mA output
- Serial interface to the control centre
- Alarm and fault signal relay
- LC display with status LEDs (optional)
- Connection of SSAX1 sensor head as an alternative to SX1 (optional)
- IP66 protection with SplashGuard accessories (optional, see data sheet Accessories)

## SPECIFICATIONS - GENERAL

<b>ELECTRICAL</b>	
Power supply PX2-1 series	20–28 V DC reverse polarity protected
Power supply PX2-2 series	20–28 V DC reverse polarity protected or 24 V AC $\pm$ 10 % (21.6–26.4 V AC)
Power consumption (at 24 V DC)	3.3 W, 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	3 LEDs for power, alarm and fault
Analog output signal (active)	Proportional, overload and short-circuit proof, Max. load for UE > 20 V = 350 $\Omega$ and UE > 22 V = 500 $\Omega$ 4–20 mA = measuring range 3.3–4 mA = tolerable underrange 20–21.2 mA = tolerable overrange $\geq$ 21.2 mA = error overrange $\leq$ 2 mA = fault $\leq$ 1 mA = processor or voltage breakdown
Serial interface	Serial data bus
Fault relay	Max. 30 V AC/DC, 1 A
Alarm relay	Max. 30 V AC/DC, 1 A
LCD (optional)	2 x 16 characters, 3 status LEDs, 4 menu operating elements
<b>SENSOR ELEMENT (see also table SPECIFICATIONS - SENSOR ELEMENT)</b>	
Gas type and measuring range	See ORDERING INFORMATION
Measuring principle	Infrared
Accuracy	$\pm$ 5 %
Repeatability	$< \pm$ 2 % signal
Drift in air	$<$ 0.25 % / month
Temperature range	-40 °C to +60 °C (-40 °F to 140 °F), see also ENVIRONMENTAL CONDITIONS
Humidity range	0–95 % RH (not condensing)
Pressure range	70–130 kPa
Storage temperature range <sup>1</sup>	-40 °C to +60 °C (-40 °F to 140 °F)
Storage time <sup>2</sup>	Ca. 6 months
Life time <sup>3</sup> in air	$>$ 10 years
Calibration interval <sup>4</sup>	12 months
Stabilisation time	1 h
Warm-up time	30 s
<b>SX1 SENSOR HEAD HOUSING</b>	
Material / colour	CrNi Stahl: 1.4404 / natural
Dimensions ( $\varnothing$ x H)	30 x 61 mm (1.18 x 2.40 in.)
Protection class	IP64, with accessory SplashGuard splash protection IP66
Thread	External thread NPT $\frac{3}{4}$ " ANSI B1.20.1
<b>PHYSICAL CHARACTERISTICS</b>	
Enclosure X1 and X3 / colour	Aluminum pressure die-casting / light grey RAL 7032, epoxy coating
Dimensions (W x H x D) / weight	125 x 167 x 83 mm (4.92 x 6.57 x 3.27 in.) / approx. 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	1x resp. 3x NPT $\frac{3}{4}$ " ANSI B1.20.1
Wire connection	Spring-type terminal, 0.08–2.5 mm <sup>2</sup> , AWG 28–12
Wire length	Max. load 500 $\Omega$ , (= wire resistance + controller input resistance)
<b>ENVIRONMENTAL CONDITIONS (operation and explosion protection)</b>	
Temperature	
• Explosion protection	-40 °C to +60 °C (-40 to 140 °F)
• With display	-20 °C to +60 °C (-4 °F to 140 °F)
Pressure range <sup>5</sup>	80–120 kPa
Air velocity	$<$ 6 m/s

<sup>1</sup> A deviating storage temperature can have a negative effect on sensitivity and service life.

<sup>2</sup> If stocked for a longer period, we recommend checking the zero point and recalibrating if necessary.

<sup>3</sup> Expected service life for normal ambient conditions.

<sup>4</sup> Manufacturer-recommended calibration intervals for normal environmental conditions

<sup>5</sup> The explosion protection test only covers the pressure range up to 110 kPa and the oxygen concentration up to 21 % vol.

APPROVALS AND EXAMINATIONS	PX2-1 (Zone 1)	PX2-2 <sup>1</sup> (Zone 2)
EU Type Examination Certificate Electrical Explosion Protection ATEX	BVS 15 ATEX E 129 X EN IEC 60079-0:2018; EN 60079-1:2014 (DEKRA Testing and Certification GmbH)	
IECEX Type Examination Certificate Electrical Explosion Protection	IECEX BVS 16 0038X IEC 60079-0:2017; IEC 60079-1:2014-06 (DEKRA Testing and Certification GmbH)	
Type of Protection	Ex db IIC T4 Gb -40 °C < Ta < +60 °C	Ex nR IIC T4 Gc -40 °C < Ta < +60 °C
ATEX Marking	II 2 G Ex db IIC T4 Gb	II 3 G Ex nR IIC T4 Gc
EU Declaration of Conformity	CE_PX2-1_Zone1	CE_PX2-2_Zone2
UKCA Declaration of Conformity	UKCA_PX2-1_Zone1	
EMC Test <sup>1</sup>	Certificate PR 18 03 53984 001 EN 50270-2015 Interference immunity & emission: Type 2 (industrial sector)	
<b>Certificates (only housing)</b>		
FM Certificate	<b>Class 3600, Class 3615, Class 3810, ANSI/NEMA 250.</b> Explosionproof for Class I, Division 1, Groups A, B, C and D; dust-ignition-proof for Class II, Division 1, Groups E, F and G, Class III, hazardous (classified) locations, indoors and outdoors (type 4X).	
CSA Certificate	<b>2472857 / Class 2258-02</b> PROCESS CONTROL EQUIPMENT for hazardous locations Class I, Div. 1, Groups A, B, C and D; Class II, Div. 1, Groups E, F and G, Class III, Div. 1; Type 4X	
<b>CONFORMITY TO</b>		
Refrigerant monitoring	EN 378-1: 2018; EN 14624: 2020; EN 45544-1, -3: 2015	
<b>WARRANTY</b>		
	1 year on sensor (not if poisoned or overloaded), 2 years on device	

<sup>1</sup> Not in conjunction with remote sensor head SSAX1

## SPECIFICATIONS – SENSOR ELEMENT

Gas type	Ordering No.	Measuring range	Display resolution	t <sub>90</sub> time	Reaction time	Zero-point variation	Relative gas density <sup>1</sup>
	PX2-X-X-SX1-1- I200-A	0–50 % LEL	% / ppm	≤ sec.	≤ sec.	± % LEL / % vol	Air = 1
R32	I200-A	0–50 % LEL	0.01	210	10	2	1.82
CH <sub>4</sub>	I400-A	0–100 % LEL	0.1	150	10	2	0.56
CH <sub>4</sub>	I400-B	0–100 % vol	0.1	130	10	2	0.56
CO <sub>2</sub>	I464-B	0–5 % vol	0.001	150	10	n.d.	1.53
CO <sub>2</sub>	I464-C	0–2 % vol	0.001	150	10	n.d.	1.53
CO <sub>2</sub>	I464-D	0–5000 ppm	1	150	10	n.d.	1.53
CO <sub>2</sub>	I464-F	0–10 % vol	0.01	150	10	n.d.	1.53
C <sub>3</sub> H <sub>8</sub>	I480-A	0–100 % LEL	0.1	230	10	2	1.55

<sup>1</sup> The recommended mounting height depends on the relative gas density of the type of gas to be monitored. Depending on the relative gas density (d), the following recommendation therefore applies:

d ≤ 0,85:	Mounting 0.3–0.5 m below the ceiling
0,85 < d < 1,15:	Mounting at 1.2–1.8 m height
d ≥ 1,15:	Mounting 0.3–0.5 m above the floor

All specifications were collected under optimal test conditions.

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

The T 021 (DGVU-I-213-056) and T 023 (DGVU-I-213-057) as well as T 055 leaflets must be observed.

## ORDERING INFORMATION

<b>PX2-</b>	<b>X-</b>	<b>X-</b>	<b>IXXX-X-</b>	<b>0X</b>	<b>DETECTOR</b>	
				<b>01</b>	Type 1: Alumin. die-cast housing 1x cable entry incl. 1x gland <sup>1</sup>	
				<b>03</b>	Type 3: Alumin. die-cast housing 3x cable entry incl. 1x gland <sup>1</sup>	
	<b>1-</b>			<b>04</b> <sup>2</sup>	Remote sensor head SSAX1-1-IXXX-X-10-K5, housing type 1	
	<b>1-</b>			<b>05</b> <sup>2</sup>	Remote sensor head SSAX1-1-IXXX-X-10-K5, housing type 3	<b>Version</b>
<b>SX1-</b>	<b>1-</b>		<b>IXXX-X-</b>	<b>0</b>	<b>EXCHANGE HEAD<sup>3</sup></b>	
					<b>Gas type</b>	<b>Measuring range</b>
			<b>I200-A</b>		R32	0–50 % LEL
			<b>I400-A</b>		Methane, CH <sub>4</sub>	0–100 % LEL
			<b>I400-B</b>		Methane, CH <sub>4</sub>	0–100 % vol
			<b>I464-B</b>		Carbon dioxide, CO <sub>2</sub>	0–5 % vol
			<b>I464-C</b>		Carbon dioxide, CO <sub>2</sub>	0–2 % vol
			<b>I464-D</b>		Carbon dioxide, CO <sub>2</sub>	0–5000 ppm
			<b>I464-F</b>		Carbon dioxide, CO <sub>2</sub>	0-10 % vol
			<b>I480-A</b>		Propane, C <sub>3</sub> H <sub>8</sub>	0–100 % LEL
						<b>Gas type/ Range</b>
				<b>0</b>	Without LC Display	
				<b>2</b>	With LC Display	<b>Display</b>
	<b>1</b>				Zone 1 and 2	
	<b>2</b>				Zone 2	<b>ATEX Zone</b>

<sup>1</sup> Included cable gland for PX2-1 with Ex d approval (Zone 1) in metal, for PX2-2 with Ex e approval (Zone 2) in plastic.

<sup>2</sup> Instead of the fixed sensor head SX1, the PX2-1 (only type Zone 1) is supplied with a remote sensor head SSAX1, which must be ordered separately in addition. For ordering information and sensor data see datasheet DB\_SSAX1\_IR\_Premium.

<sup>3</sup> The exchangeable sensor head is only to be used in connection with the PolyXeta®2 Gas Detector. Otherwise, it loses its ATEX Certification.

### ACCESSORIES

Calibration adapter (order number: CAL01-PX2)

Stainless steel splash guard (order number: SG-PX2)

ATEX metal cable gland (Ex d) for zone 1 and 2 (order number: ZU-PX2-CG-SN)

ATEX plastic cable gland (Ex e) for zone 2 (order number: ZU-PX2-CG-PL)

Magnetic pen for operation (order number: MSR\_PEN\_PX2)

Sensor Head Protection (order number: ZU-PX2-SHP-20)

Service-Tool for display, calibration, addressing and parameter changes (order number: STL06-PGX2-XX)

PC-Software set for display, calibration, addressing and parameter changes (order number: PCE06-PGX2-XX-X)

## ELECTRICAL CONNECTION

