

Gas Detection.



## Technical Datasheet



### PolyXeta®2 Gas Detector PX2 for Zone 1 and 2 for combustible gases

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PX2 YouTube Video

Specifications subject to change without notice.

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## DESCRIPTION

### Fixed PolyXeta®2 Gas Detectors of the

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

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

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

Microprocessor based gas detector with 4–20 mA / RS-485 Modbus output signal, alarm and fault relays (all SIL2 certified) for monitoring the ambient air to detect combustible gases and vapours by means of a catalytic sensor element (Pellistor). 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 failure the backlight of gas 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 Ex-Zone 1 (PX2-1) and/or 2 (PX2-2). The PolyXeta®2 gas detector is also suitable for commercial areas like e.g. gas transfer stations etc., and for use on ships, shipyards and offshore platforms etc.

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

## CERTIFICATES / FEATURES

- ATEX and IECEx certificates MSR-Electronic for electrical Ex protection
- SIL2 safety functions 4–20 mA, RS-485 and relay
- **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 certificates for Class I, Div. 1
  
- Continuous self-monitoring
- Microprocessor with 12-bit converter resolution
- Reverse polarity protection
- Overload protection
- Easy calibration
- Calibration service by exchanging the sensor head
- Proportional 4–20 mA output
- Serial interface to the control centre
- Alarm and fault signal relay
- LCD 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)	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 2,4–4 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</b>	
Gas type and measuring range	Combustible gases, see ORDERING INFORMATION
Sensor element	Pellistor (catalytic bead) sensor
Stabilization time	24 h
Warm-up time	300 s
Temperature range	-30 °C to +60 °C (-22 °F to 140 °F) see also ENVIRONMENTAL CONDITIONS
Humidity range	0–95 % RH not condensing
Pressure range	90–110 kPa
Storage temperature range	0 °C to +20 °C (32 °F to 68 °F)
Storage time <sup>2</sup>	Ca. 6 months
Expected sensor lifetime	60 months / normal ambient conditions
Poisoning	Sensitivity of Pellistor sensors can be influenced by substances containing silicon compounds and even poisoned and destroyed by them. They are also susceptible to poisoning by organic solvents.
<b>SENSOR HEAD SX1 HOUSING</b>	
Material / Colour	CrNi Stahl: 1.4404 / natural
Dimensions ( $\varnothing$ x H)	30 x 56 mm (1.18 x 2.20 in.)
Protection class	IP64, with SplashGuard accessories 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 ( $\varnothing$ x D) / weight	95 x 82 mm / approx. 1.3 kg
Protection class	Housing protection IP66 to IP68 (depending on the cable glands used)
Mounting	Wall mounting (sensor head downwards)
Cable entry	1x resp. 3x $\frac{3}{4}$ in. (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>3</sup>	90–110 kPa
Air velocity	< 6 m/s

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

<sup>2</sup> We recommend performing a functional test and if necessary, recalibrating the devices if stocked for a longer period (> 8 weeks).

<sup>3</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	PX2-2 <sup>1</sup>
EU Type Examination Certificate	BVS 15 ATEX E 129 X Supplement 2	
Electrical Explosion Protection ATEX	EN IEC 60079-0:2018; EN 60079-1:2014	
IECEX Type Examination Certificate	IECEX BVS 16 0038X	
Electrical Explosion Protection	IEC 60079-0:2017; IEC 60079-1:2014-06	
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 3G Ex nR IIC T4 Gc
Functional safety SIL2	Certificate: ZP/C029/21; DIN EN 61508-1;-2;-3:2011	
EMC test <sup>1</sup>	Certificate PR 18 03 53984 001 EN 50270-2015 Interference immunity & emission: Type 2 (industrial sector)	
EU Declaration of Conformity	CE_PX2-1_Zone1	CE_PX2-2_Zone2
<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	

#### WARRANTY

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	Accuracy	Display resolution	Repeatability	t <sub>90</sub> time	Zero-point variation	Drift in air		Relative gas density <sup>1</sup>	Calibration interval <sup>2</sup>
								Zero	Gain		
	PX2-X-SX1-	% LEL/ ppm	± % sig.	% LEL / ppm	< ± % sig.	≤ sec.	± % LEL	< % signal/month		Air = 1	Mont hs
CH <sub>4</sub>	P3400-A	0–100 % LEL	1 (CH <sub>4</sub> )	0.1	2 (CH <sub>4</sub> )	28	0.5 (CH <sub>4</sub> )	0.5 (CH <sub>4</sub> )	2 (CH <sub>4</sub> )	0.56	6
NH <sub>3</sub>	P3408-A	0–100 % LEL	1 (CH <sub>4</sub> )	0.1	2 (CH <sub>4</sub> )	40	0.5 (CH <sub>4</sub> )	0.5 (CH <sub>4</sub> )	2 (CH <sub>4</sub> )	0.60	6
NH <sub>3</sub>	P3408-B	0–20 % LEL	1 (CH <sub>4</sub> )	0.1	2 (CH <sub>4</sub> )	25	0.5 (CH <sub>4</sub> )	0.5 (CH <sub>4</sub> )	2 (CH <sub>4</sub> )	0.60	6
H <sub>2</sub>	P3440-A	0–100 % LEL	1 (CH <sub>4</sub> )	0.1	1 (CH <sub>4</sub> )	30	0.5 (CH <sub>4</sub> )	0.5 (CH <sub>4</sub> )	2 (CH <sub>4</sub> )	0.07	6
C <sub>3</sub> H <sub>8</sub>	P3480-A	0–100 % LEL	1 (CH <sub>4</sub> )	0.1	2 (CH <sub>4</sub> )	37	0.5 (CH <sub>4</sub> )	0.5 (CH <sub>4</sub> )	2 (CH <sub>4</sub> )	1.55	6
C <sub>3</sub> H <sub>8</sub>	P3480-B	0–30 % LEL	2 (C <sub>3</sub> H <sub>8</sub> )	0.01	2 (C <sub>3</sub> H <sub>8</sub> )	40	0.5 (C <sub>3</sub> H <sub>8</sub> )	n.d. (> 3% C <sub>4</sub> H <sub>10</sub> )	2 (C <sub>3</sub> H <sub>8</sub> )	1.55	6
C <sub>3</sub> H <sub>8</sub>	P3480-C	0–5000 ppm	2 (C <sub>3</sub> H <sub>8</sub> )	1 (ppm)	2 (C <sub>3</sub> H <sub>8</sub> )	40	0.5 (C <sub>3</sub> H <sub>8</sub> )	n.d. (> 3% C <sub>4</sub> H <sub>10</sub> )	2 (C <sub>3</sub> H <sub>8</sub> )	1.55	6
C <sub>2</sub> H <sub>4</sub>	P3410-A	0–100 % LEL	1 (CH <sub>4</sub> )	0.1	2 (CH <sub>4</sub> )	n.d.	0.5 (CH <sub>4</sub> )	0.5 (CH <sub>4</sub> )	2 (CH <sub>4</sub> )	0.97	6
C <sub>2</sub> H <sub>6</sub>	P3420-A	0–100 % LEL	1 (CH <sub>4</sub> )	0.1	2 (CH <sub>4</sub> )	n.d.	0.5 (CH <sub>4</sub> )	0.5 (CH <sub>4</sub> )	2 (CH <sub>4</sub> )	1.05	6
All others	PXXXX-A	0–100 % LEL	1 (CH <sub>4</sub> )	0.1	2 (CH <sub>4</sub> )	n.d.	0.5 (CH <sub>4</sub> )	0.5 (CH <sub>4</sub> )	2 (CH <sub>4</sub> )	>1.10	6

<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 < 0.90: mounting 0.3–0.5 m below the ceiling  
0.90 < d < 1.10: mounting at 1.2–1.8 m height  
d > 1.10: mounting 0.3–0.5 m above the floor

<sup>2</sup> Manufacturer-recommended calibration intervals for normal environmental conditions.

All specifications were collected under optimal test conditions.

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

## ORDERING INFORMATION

<b>PX2-</b>	<b>X-</b>	<b>X-</b>	<b>P34XX-X-</b>	<b>0X</b>	<b>GAS 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-P34XX-X-10-KX, housing type 1	
	<b>1</b>			<b>05</b> <sup>2</sup>	Remote sensor head SSAX1-1-P34XX-X-10-KX, housing type 3	<b>Options</b>
<b>SX1-</b>	<b>1-</b>		<b>P34XX-X</b>	<b>0</b>	<b>EXCHANGE HEAD<sup>3</sup></b>	
					<b>Gas type</b>	<b>Measuring range</b>
			<b>P3400-A</b>		Methane, CH <sub>4</sub>	0–100 % LEL
			<b>P3402-A</b>		LPG	0–100 % LEL
			<b>P3408-A<sup>4</sup></b>		Ammonia, NH <sub>3</sub>	0–100 % LEL
			<b>P3408-B<sup>4</sup></b>		Ammonia, NH <sub>3</sub>	0–20 % LEL
			<b>P3410-A</b>		Ethylene, C <sub>2</sub> H <sub>4</sub>	0–100 % LEL
			<b>P3415-A</b>		Cyclohexane, C <sub>6</sub> H <sub>12</sub>	0–100 % LEL
			<b>P3420-A</b>		Ethane, C <sub>2</sub> H <sub>6</sub>	0–100 % LEL
			<b>P3425-A</b>		Ethyl alcohol, C <sub>2</sub> H <sub>5</sub> OH	0–100 % LEL
			<b>P3427-A</b>		Ethyl acetate, C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	0–100 % LEL
			<b>P3430-A</b>		Benzene, C <sub>6</sub> H <sub>6</sub>	0–100 % LEL
			<b>P3435-A</b>		n-Hexane, C <sub>6</sub> H <sub>14</sub>	0–100 % LEL
			<b>P3440-A</b>		Hydrogen, H <sub>2</sub>	0–100 % LEL
			<b>P3448-A</b>		Butyl acetate, C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	0–100 % LEL
			<b>P3450-A</b>		Methanol, CH <sub>3</sub> OH	0–100 % LEL
			<b>P3458-A</b>		Methyl ethyl ketone, C <sub>4</sub> H <sub>8</sub> O	0–100 % LEL
			<b>P3460-A</b>		Iso/n-Butane, C <sub>4</sub> H <sub>10</sub>	0–100 % LEL
			<b>P3468-A</b>		Isobutyl alcohol, C <sub>4</sub> H <sub>10</sub> O	0–100 % LEL
			<b>P3470-A</b>		Octane, C <sub>8</sub> H <sub>18</sub>	0–100 % LEL
			<b>P3472-A</b>		Cyclopentane, C <sub>5</sub> H <sub>10</sub>	0–100 % LEL
			<b>P3473-A</b>		Methyl acetate, C <sub>3</sub> H <sub>6</sub> O <sub>2</sub>	0–100 % LEL
			<b>P3475-A</b>		Iso/n-Pentane, C <sub>5</sub> H <sub>12</sub>	0–100 % LEL
			<b>P3480-A</b>		Propane, C <sub>3</sub> H <sub>8</sub>	0–100 % LEL
			<b>P3480-B</b>		Propane, C <sub>3</sub> H <sub>8</sub>	0–30 % LEL
			<b>P3480-C</b>		Propane, C <sub>3</sub> H <sub>8</sub>	0–5000 ppm
			<b>P3482-A</b>		Isopropyl alcohol, C <sub>3</sub> H <sub>8</sub> O	0–100 % LEL
			<b>P3485-A</b>		Acetone, C <sub>3</sub> H <sub>6</sub> O	0–100 % LEL
			<b>P3490-A</b>		Toluene, C <sub>7</sub> H <sub>8</sub>	0–100 % LEL
			<b>P3491-A</b>		n-Heptane, C <sub>7</sub> H <sub>16</sub>	0–100 % LEL
			<b>P3494-A</b>		Butadiene, C <sub>4</sub> H <sub>6</sub>	0–100 % LEL
			<b>P3495-A</b>		Nonane, C <sub>9</sub> H <sub>20</sub>	0–100 % LEL
			<b>P3496-A</b>		Petrol Vapours	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.

<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 Approval.

<sup>4</sup> Only on request

### ACCESSORIES

Metal cable gland (Ex d) for zone 1 and 2  
**Order Number: ZU-PX2-CG-SN**

Plastic cable gland (Ex e) for zone 2  
**Order Number: ZU-PX2-CG-PL**

### ELECTRICAL CONNECTION

