

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.
Up-to-date data sheets and user manuals can be found in the download area on www.msr-24.com.
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www.msr-electronic.com



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 ec 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 GmbH, as well as to any other controllers or automation devices.



Garage



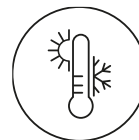
Tunnel



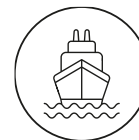
Food



Laboratory



Climate



Shipping



Hydrogen



Battery



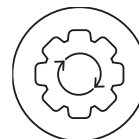
Biogas



Agriculture



Waste



Process



Gas storage

CERTIFICATES / FEATURES

- ATEX and IECEx certificates MSR-Electronic GmbH 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 ec” protection increased safety
- 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)
- Stainless steel housing (optional)
- IP66 protection with SplashGuard accessories (optional, see data sheet Accessories)

SPECIFICATIONS - GENERAL

ELECTRICAL		
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 ± 10 % (21.6–26.4 V AC)	
Power consumption (at 24 V DC)	3.3 W, 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 Ω and UE > 22 V = 500 Ω 4–20 mA = measuring range 2.4–4 mA = tolerable underrange 20–21.2 mA = tolerable overrange ≥ 21.2 mA= error overrange ≤ 2 mA = fault ≤ 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	
SENSOR ELEMENT (see also table SPECIFICATIONS - SENSOR ELEMENT)		
Gas type and measuring range	Combustible gases, see ORDERING INFORMATION	
Measuring principle	Catalytic (Pellistor, catalytic bead principle)	
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	
Sensor lifetime ¹ in air	> 5 years	
Poisoning	Pellistors can be poisoned by silicone-containing substances or other catalyst poisons up to complete loss of sensitivity.	
RECOMMENDED STORAGE CONDITIONS		
Storage temperature range ²	0 °C to +20 °C (32 °F to 68 °F)	
Storage time ³	Ca. 6 months	
Humidity range	20–90 % RH non-condensing	
Pressure range	90–110 kPa	
SENSOR HEAD SX1 HOUSING		
Material / colour	CrNi Stahl: 1.4404 / natural	
Dimensions (Ø x H)	30 x 61 mm (1.18 x 2.40 in.)	
Protection class	IP64, with SplashGuard accessories IP66	
Thread	External thread NPT ¾" ANSI/ B1.20.1	
PHYSICAL CHARACTERISTICS		
Housing	Type X1 and X3	Type stainless steel
Material	Aluminum pressure die-casting, epoxy coating	Stainless steel 1.4401
Colour	RAL 7032 (light grey)	Natural
Dimensions (W x H x D)	125 x 167 x 83 mm (4.92 x 6.57 x 3.27 in)	145 x 170 x 107 mm
Weight	Approx. 1.3 kg (2.87 lb)	Approx. 2.5 kg (5.51 lb)
Cable entry	1x resp. 3x ¾ in. (Ansi B1.20.1)	2x NPT ¾" (Ansi B1.20.1)
Protection class	Housing protection IP66 to IP68 (depending on the cable glands used)	
Mounting	Wall mounting (sensor head downwards)	
Wire connection	Spring-type terminal, 0.08–2.5 mm² (AWG 28–12)	
Wire length	Max. load 500 Ω (= wire resistance + controller input resistance)	

¹ Expected service life for normal ambient conditions.

² A deviating storage temperature can have a negative effect on sensitivity and service life.

³ If stocked for a longer period, we recommend checking the zero point and recalibrating if necessary.

ENVIRONMENTAL CONDITIONS (operation and explosion protection)		
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 ¹	90–110 kPa	
Air velocity	< 6 m/s	
APPROVALS AND EXAMINATIONS	PX2-1 (Zone 1)	PX2-2 (Zone 2)
EU Type Examination Certificate	BVS 15 ATEX E 129 X	
Electrical Explosion Protection ATEX	EN IEC 60079-0:2018; EN 60079-1:2014 (DEKRA Testing and Certification GmbH)	
IECEX Type Examination Certificate	IECEX BVS 16 0038X	
Electrical Explosion Protection	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 ec IIC T4 Gc -40 °C < Ta < +60 °C
ATEX Marking	II 2 G Ex db IIC T4 Gb	II 3G Ex ec IIC T4 Gc
Functional safety SIL2	Certificate: ZP/C029/21; DIN EN 61508-1;-2;-3:2011	
EMC test ²	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
Electrical Explosion Protection		EN/IEC 60079-0:2018 + EN/IEC 60079-7:2016 + A1:2018
UKCA Declaration of Conformity	UKCA_PX2-1_Zone1	
Certificates only housing		
Housing type 1 and type 3: FM Certificate of Compl. (3042541)	Class 3600, Class 3615, Class 3810, ANSI/NEMA 250. 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).	
Housing type stainless steel: FM Certif. of Conf. (FM18US0036U)	Class 2258-02 PROCESS CONTROL EQUIPMENT - For Hazardous Locations	
Housing type 1 and type 3: CSA Certif. of Compl. (2472857)	Class 4418-02 OUTLET BOXES AND FITTINGS – For Hazardous Locations	
Housing type stainless steel: CSA Certif. of Compl. (1717515)	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	

¹ The explosion protection test only covers the pressure range up to 110 kPa and the oxygen concentration up to 21 % vol.

² Not in conjunction with remote sensor head SSAX1

SPECIFICATIONS – SENSOR ELEMENT

Gas type	Ordering No.	Measuring range	Accuracy	Display resolution	Repeatability	t ₉₀ time	Reaction time	Zero-point variation	Drift in air	Relative gas density ¹	Calibration interval ²
	PX2-X-X-SX1-1-	% LEL / ppm	± % sig.	% LEL / ppm	< ± % sig.	≤ sec.	≤ sec.	± % LEL	< % / month	Air = 1	Months
CH ₄	P3400-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	30	5	0.5 (CH ₄)	2 (CH ₄)	0.56	12
LPG	P3402-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	n.d.	6
NH ₃	P3408-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	40	15	0.5 (CH ₄)	2 (CH ₄)	0.60	6
NH ₃	P3408-B	0–20 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	25	10	0.5 (CH ₄)	2 (CH ₄)	0.60	6
C ₂ H ₄	P3410-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	0.97	6
C ₆ H ₁₂	P3415-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	2.90	6
C ₂ H ₆	P3420-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	1.05	6
C ₂ H ₅ OH	P3425-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	1.59	6
C ₄ H ₈ O ₂	P3427-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	3.04	6
C ₆ H ₆	P3430-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	2.70	6
C ₆ H ₁₄	P3435-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	50	10	0.5 (CH ₄)	2 (CH ₄)	2.97	6
H ₂	P3440-A	0–100 % LEL	1 (CH ₄)	0.1	1 (CH ₄)	10	5	0.5 (CH ₄)	2 (CH ₄)	0.07	12
C ₆ H ₁₂ O ₂	P3448-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	4.01	6
CH ₃ OH	P3450-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	1.10	6
C ₄ H ₈ O	P3458-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	2.48	6
C ₄ H ₁₀	P3460-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	40	15	0.5 (CH ₄)	2 (CH ₄)	2.08	6
C ₄ H ₁₀ O	P3468-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	2.55	6
C ₈ H ₁₈	P3470-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	3.94	6
C ₅ H ₁₀	P3472-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	2.42	6
C ₃ H ₆ O ₂	P3473-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	2.56	6
C ₅ H ₁₂	P3475-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	2.49	6
C ₃ H ₈	P3480-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	40	15	0.5 (CH ₄)	2 (C ₃ H ₈)	1.55	12
C ₃ H ₈	P3480-B	0–30 % LEL	2 (C ₃ H ₈)	0.01	2 (C ₃ H ₈)	40	10	0.5 (C ₃ H ₈)	2 (C ₃ H ₈)	1.55	12
C ₃ H ₈	P3480-C	0–5000 ppm	2 (C ₃ H ₈)	1 (ppm)	2 (C ₃ H ₈)	40	10	0.5 (C ₃ H ₈)	2 (C ₃ H ₈)	1.55	12
C ₃ H ₆	P3481-B	0–30 % LEL	2 (C ₃ H ₆)	0.01	5 (C ₃ H ₆)	30	5	1.0 (C ₃ H ₆)	2 (C ₃ H ₆)	1.48	12
C ₃ H ₈ O	P3482-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	80	10	0.5 (CH ₄)	2 (CH ₄)	2.07	6
C ₃ H ₆ O	P3485-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	2.00	6
C ₇ H ₈	P3490-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	3.18	6
C ₇ H ₁₆	P3491-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	3.46	6
C ₄ H ₆	P3494-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	1.92	6
C ₉ H ₂₀	P3495-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	4.43	6
Petrol Vapours	P3496-A	0–100 % LEL	1 (CH ₄)	0.1	2 (CH ₄)	n.d.	10	0.5 (CH ₄)	2 (CH ₄)	n.d.	6

¹ 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

² Manufacturer-recommended calibration interval for normal environmental conditions.

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

PX2-	X-	X-	P34XX-X- 0X	GAS DETECTOR	
				01	Type 1: Alumin. die-cast housing 1x cable entry incl. 1x gland ¹
				03	Type 3: Alumin. die-cast housing 3x cable entry incl. 1x gland ¹
	1			04 ²	Remote sensor head SSAX1-1-P34XX-X-10-KX, housing type 1
	1			05 ²	Remote sensor head SSAX1-1-P34XX-X-10-KX, housing type 3
		1		06	Type stainless steel housing, 2x cable entry. incl. 1x gland ¹
				07 ²	Remote sensor head SSAX1-1-P34XX-X-10-KX, type stainless steel h. Version
SX1-	1-	P34XX-X	0	EXCHANGE HEAD ³	
				Gas type	Measuring range
		P3400-A		Methane, CH ₄	0–100 % LEL
		P3402-A		LPG	0–100 % LEL
		P3408-A ⁴		Ammonia, NH ₃	0–100 % LEL
		P3408-B ⁴		Ammonia, NH ₃	0–20 % LEL
		P3410-A		Ethylene, C ₂ H ₄	0–100 % LEL
		P3415-A		Cyclohexane, C ₆ H ₁₂	0–100 % LEL
		P3420-A		Ethane, C ₂ H ₆	0–100 % LEL
		P3425-A		Ethanol, C ₂ H ₅ OH	0–100 % LEL
		P3427-A		Ethyl acetate, C ₄ H ₈ O ₂	0–100 % LEL
		P3430-A		Benzene, C ₆ H ₆	0–100 % LEL
		P3435-A		n-hexane, C ₆ H ₁₄	0–100 % LEL
		P3440-A		Hydrogen, H ₂	0–100 % LEL
		P3448-A		Butyl acetate, C ₆ H ₁₂ O ₂	0–100 % LEL
		P3450-A		Methanol, CH ₃ OH	0–100 % LEL
		P3458-A		Methyl ethyl ketone, C ₄ H ₈ O	0–100 % LEL
		P3460-A		Iso/n-butane, C ₄ H ₁₀	0–100 % LEL
		P3468-A		Isobutyl alcohol, C ₄ H ₁₀ O	0–100 % LEL
		P3470-A		Octane, C ₈ H ₁₈	0–100 % LEL
		P3472-A		Cyclopentane, C ₅ H ₁₀	0–100 % LEL
		P3473-A		Methyl acetate, C ₃ H ₆ O ₂	0–100 % LEL
		P3475-A		Iso/n-pentane, C ₅ H ₁₂	0–100 % LEL
		P3480-A		Propane, C ₃ H ₈	0–100 % LEL
		P3480-B		Propane, C ₃ H ₈	0–30 % LEL
		P3480-C		Propane, C ₃ H ₈	0–5000 ppm
		P3481-B		Propene, C ₃ H ₆	0–30 % LEL
		P3482-A		Isopropyl alcohol, C ₃ H ₈ O	0–100 % LEL
		P3485-A		Acetone, C ₃ H ₆ O	0–100 % LEL
		P3490-A		Toluene, C ₇ H ₈	0–100 % LEL
		P3491-A		n-heptane, C ₇ H ₁₆	0–100 % LEL
		P3494-A		Butadiene, C ₄ H ₆	0–100 % LEL
		P3495-A		Nonane, C ₉ H ₂₀	0–100 % LEL
		P3496-A		Petrol vapours	0–100 % LEL
					Gas type/ Range
		0		Without LC Display	
		2		With LC Display	Display
	1			Zone 1 and 2	
	2			Zone 2	ATEX Zone

¹ 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.

² 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_Ext.

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

⁴ Only on request

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)

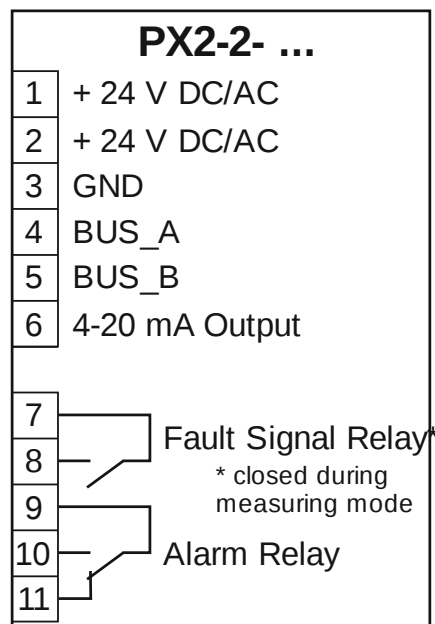
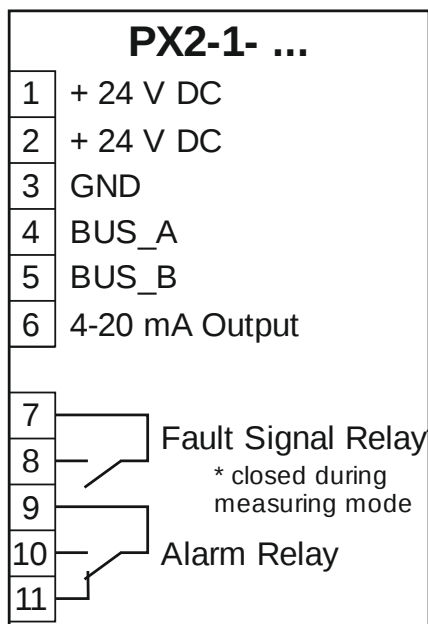
Magnetic pen for operation (order number: MSR_PEN_PX2)

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



FURTHER MEASURING PRINCIPLES



Infrared:

Methane (CH_4), propane (C_3H_8)

→ See data sheet DB_PX2_IR-Premium



MPS™:

Methane (CH_4), propane (C_3H_8), hydrogen (H_2)

→ See data sheet DB_PX2_MPS



Semiconductor:

Ammonia (NH_3),

→ See data sheet DB_PX2_Freon



Electrochemical:

Ammonia (NH_3), hydrogen (H_2)

→ See data sheet DB_PX2_Tox



Further information in the catalog: