Gas Detection.

MSR ELECTRONIC

Technical Datasheet

PolyXeta®2

Gas Detector PX2 with Metrological Test for Zone 1 and 2

for combustible gases or oxygen

All Products Made in Germany

DESCRIPTION

Fixed PolyXeta®2 Gas Detectors with tested measuring function for explosion protection

of the PX2-1 series with Ex db protection for Zone 1 (and 2)

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

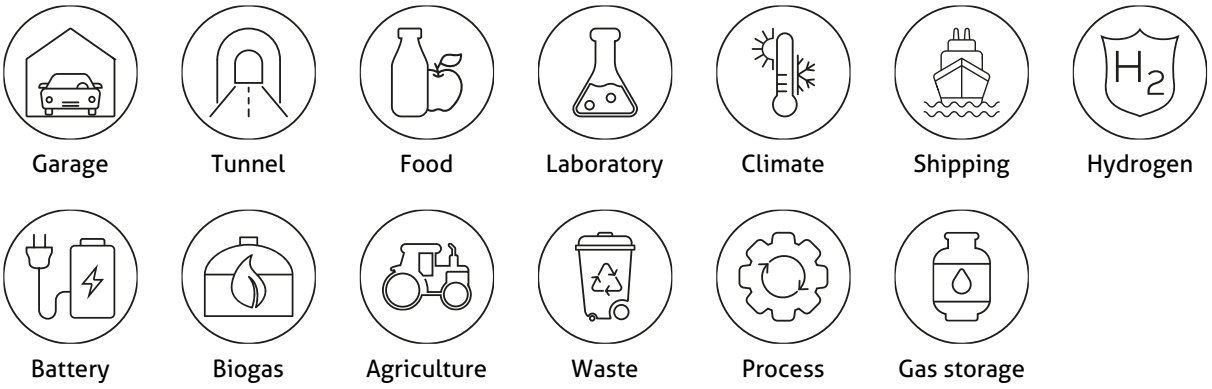
Microprocessor based gas detector with 4–20 mA / RS-485 Modbus output signal, alarm and fault relays (all SIL2 certified) for monitoring the ambient air to detect combustible gases and vapours or oxygen. Optionally, the PolyXeta®2 gas detector is also available with LC display.

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 with tested measuring function is used in industrial areas like oil/gas industry, biogas plants, petrochemical industry, power plants etc. in Ex Zone 1 where the highest demands are placed on reliability and accuracy. 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.



CERTIFICATES / FEATURES

- ATEX and IECEx certificates MSR-Electronic GmbH for electrical Ex protection
- Approved Measuring Function for the Explosion Protection by DEKRA Testing and Certification GmbH
- 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
- 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)
- 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 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	**Combustible gases**	**Oxygen**
Measuring range	0–100 % LEL	0–25 % vol
Measuring principle	Pellistor (catalytic bead) sensor	Electrochemical
Stabilization time	24 h	
Warm-up time	300 s	≤ 60 s
Temperature range	-30 °C to +60 °C (-22 °F to 140 °F) (see also ENVIRONMENTAL CONDITIONS)	-40 °C to +55 °C (-40 °F to 131 °F)
Humidity range	0–95 % RH not condensing	5–95 % not condensing
Pressure range	90–110 kPa	80–120 kPa
Expected sensor lifetime	5 years / normal ambient conditions	2 years / normal ambient conditions
Poisoning	Pellistors can be poisoned by silicone-containing substances or other catalyst poisons up to complete loss of sensitivity.	Electrochemical sensors are susceptible to poisoning by organic solvents.
RECOMMENDED STORAGE CONDITIONS		
Storage temperature range[1]	0 °C to +20 °C (32 °F to 68 °F)	
Storage time[2]	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		
Enclosure X1 and X3 / colour	Aluminum pressure die-casting / pebble 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 ¾ in. (Ansi B1.20.1)	
Wire connection	Spring-type terminal, 0.08–2.5 mm² (AWG 28–12)	

[1] A deviating storage temperature can have a negative effect on sensitivity and service life.
[2] 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 • With display	 -25 to +60 °C (-13°F to 140 °F) for combustible gases -25 °C to +55 °C (-13 °F to 131 °F), short-term up to +60 °C (140 °F) for oxygen -20 °C to +60 °C (-4 °F to 140 °F)
Pressure range[1]	90–110 kPa
Air velocity	< 6 m/s
APPROVALS AND EXAMINATIONS	
EU Type Examination Certificate Electrical Explosion Protection ATEX	BVS 15 ATEX E 129 X[2] EN IEC 60079-0:2018; EN 60079-1:2014
EU Type Examination Certificate with Measuring Function for Explosion Protection for Combustible Gases and oxygen (inertisation)	BVS 15 ATEX E 129 X[2] EN 60079-29-1:2023; EN 50271:2018, EN 50104:2024
Type Examination Certificate Measurement of oxygen deficiency and enrichment	PFG 19 G 003 X[2] EN 50104:2024; EN 50271:2018
IECEx Type Examination Certificate Electrical Explosion Protection	IECEx BVS 16 0038X[2] IEC 60079-0:2017; IEC 60079-1:2014-06
Type of Protection	Ex db IIC T4 Gb -40 °C < Ta < +60 °C
ATEX Marking	II 2 G Ex db IIC T4 Gb
Functional safety SIL2	Certificate: ZP/C029/21; DIN EN 61508-1;-2;-3:2011
EMC test	Certificate: PR 18 03 53984 001 EN 50270-2015 Interference immunity & emission: Type 2 (industrial sector)
EU Declaration of Conformity	CE_PX2-1_Zone1
Certificates only housing	
FM Certificate	**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).
CSA Certificate	**2472857 / Class 2258-02** 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

[1] The explosion protection test only covers the pressure range up to 110 kPa and the oxygen concentration up to 21 % vol.
[2] DEKRA Testing and Certification GmbH

SPECIFICATIONS – SENSOR ELEMENT

Gas type	Ordering No.	Measuring range[1]	Accuracy	Display resolution	Repeatability	t_{90} time	Reaction time	Zero-point variation	Drift in air	Relative gas density[1]	Calibration interval[2]
	PX2-1-X-SX1-1-	% LEL/ % vol	± % sig.	% LEL/ % vol	< ± % sig.	≤ sec.	≤ sec.	± % LEL	< % sig. /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
C_6H_{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_3H_8	P3480-A	0–100 % LEL	1 (CH_4)	0.1	2 (CH_4)	40	15	0.5 (CH_4)	2 (CH_4)	1.55	6
C_3H_8O	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
O_2	E1195-A2	0–25 % vol	2	0.01 % vol	n.d.	40	10	n.d.	0.4	1.11	6

[1] Exceeding the measuring range limit will include a risk of damaging the sensor element
[2] 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
[3] 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.
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

Metrological Approval by DEKRA Testing and Certification GmbH.

PX2-1-X-XXXXX-A(2)-0X **GAS DETECTOR**

0X	With Metrological Approval	
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]	**Version**

SX1-1-XXXXX-A(2)-1 **EXCHANGE HEAD[2]**

	Gas type	Measuring range	
P3400-A	Methane, CH_4	0–100 % LEL	
P3435-A	n-Hexane, C_6H_{14}	0–100 % LEL	
P3440-A	Hydrogen, H_2	0–100 % LEL	
P3480-A	Propane, C_3H_8	0–100 % LEL	
P3482-A	Isopropyl alcohol, C_3H_8O	0–100 % LEL	**Gas type/ Range**
E1195-A2	Oxygen – 2 years, O_2	0–25 % vol	

1[3]	Without LC Display	
3	With LC Display	**Display**

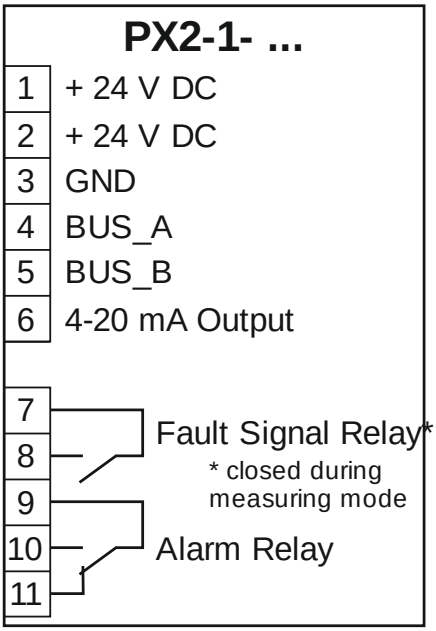
1	Zone 1	**ATEX Zone**

[1] Included cable gland for PX2-1 with Ex d approval (Zone 1) in metal.
[2]. The exchangeable sensor head is only to be used in connection with the PolyXeta®2 Gas Detector. Otherwise, it loses its ATEX / Metrological Approval.
[3] For use in potentially explosive atmospheres with measuring function, the version with display unit must be used.

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



Documents

Catalog

YouTube