Gas Detection.

Technical Datasheet

PolyXeta®2

Gas Detector PX2 for Zone 1 and Zone 2

with Premium Infrared Sensor Element

DESCRIPTION

APPLICATION

CERTIFICATES / FEATURES

SPECIFICATIONS – GENERAL

SPECIFICATIONS – SENSOR ELEMENT

ORDERING INFORMATION

ELECTRICAL CONNECTION

FURTHER MEASURING PRINCIPLES

All Products Made in Germany

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 ec 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.

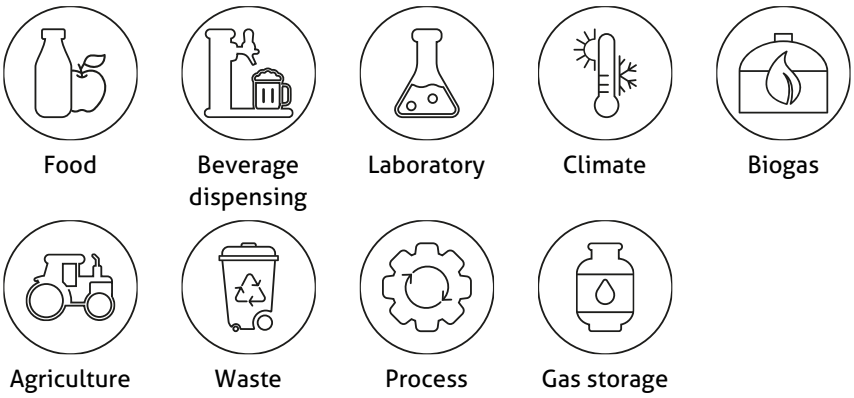
Microprocessor based gas detector with 4–20 mA / RS-485-Modbus output signal, alarm and fault relays for monitoring the ambient air to detect certain gases and vapours by means of a high-quality infrared sensor element. The IR measuring principle with integrated temperature compensation ensures highest 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® 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 ec" protection increased safety
- 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)
- 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, 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 Ω and UE > 22 V = 500 Ω 4–20 mA = measuring range 3.3–4 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 (SPNC)	Max. 30 V AC/DC, 1 A	
Alarm relay (SPDT)	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	See ORDERING INFORMATION	
Measuring principle	Infrared	
Accuracy	± 5 %	
Repeatability	< ± 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	
Life time[1] in air	> 10 years	
Calibration interval[2]	12 months	
Stabilisation time	1 h	
Warm-up time	30 s	
RECOMMENDED STORAGE CONDITIONS		
Storage temperature range[3]	0 °C to +20 °C (32 °F to 68 °F)	
Storage time[4]	Ca. 6 months	
Humidity range	20–90 % RH non-condensing	
Pressure range	90–110 kPa	
SX1 SENSOR HEAD 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 accessory SplashGuard splash protection IP66	
Thread	External thread NPT ¾" ANSI B1.20.1	
PHYSICAL CHARACTERISTICS		
Housing	**Type 1, type 2 and type 3**	**Type stainless steel**
Material	Aluminum pressure die-casting, epoxy coating	Stainless steel 1.4401
Colour	RAL 7032 (pebble grey)	Natural
Dimensions (W x H x D)	Type 1 and 3: 125 x 167 x 83 mm (4.92 x 6.57 x 3.27 in) Type 2: 145 x 170 x 107 mm (5.71 x 6.70 x 4.21 in)	145 x 170 x 107 mm
Weight	Approx. 1.3 kg (2.87 lb) / 1,6 kg (3.53 lb)	Approx. 2.5 kg (5.51 lb)
Cable entry	1x, 2x or 3x NPT 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	

[1] Expected service life for normal ambient conditions.
[2] Manufacturer-recommended calibration intervals for normal environmental conditions
[3] A deviating storage temperature can have a negative effect on sensitivity and service life.
[4] 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	 -40 °C to +60 °C (-40 to 140 °F) -20 °C to +60 °C (-4 °F to 140 °F)	
Pressure range[1]	80–120 kPa	
Air velocity	< 6 m/s	
APPROVALS AND EXAMINATIONS	PX2-1 (Zone 1)	PX2-2 (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 ec IIC T4 Gc -40 °C < Ta < +60 °C
ATEX Marking	II 2 G Ex db IIC T4 Gb	II 3 G Ex ec IIC T4 Gc
EU Declaration of Conformity Electrical Explosion Protection	CE_PX2-1_Zone1	CE_PX2-2_Zone2 EN IEC 60079-0:2018 + EN IEC 60079-7:2016 + A1:2018
EMC Test[2]	Certificate: PR 18 03 53984 001 EN 50270-2015 Interference immunity & emission: Type 2 (industrial sector)	
Certificates (only housing)		
Housing type 1 and type 3: FM Certificate of Compl. (3042541) Housing type stainless steel / type 2: FM Certif. of Conf. (FM18US0036U)	**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 1 and type 3: CSA Certif. of Compl. (2472857) Housing type stainless steel / type 2: CSA Certif. of Compl. (1717515)	**Class 2258-02** PROCESS CONTROL EQUIPMENT - For Hazardous Locations **Class 4418-02** OUTLET BOXES AND FITTINGS – 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	
CONFORMITY TO		
Refrigerant monitoring	EN 378-1: 2018; EN 14624: 2020; EN IEC 62990-1:2023 Type SM	
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	Order No.	Measuring range	Display resolution	t_{90} time	Reaction time	Zero-point variation	Relative gas density[1]
	PX2-X-X-SX1-1-		% / ppm	≤ sec.	≤ sec.	± % LEL / % vol	Air = 1
R32	I200-A	0–50 % LEL	0.01	210	10	2	1.82
CH_4	I400-A	0–100 % LEL	0.1	150	10	2	0.56
CH_4	I400-B	0–100 % vol	0.1	130	10	2	0.56
CO_2	I464-B	0–5 % vol	0.001	150	10	n.d.	1.53
CO_2	I464-C	0–2 % vol	0.001	150	10	n.d.	1.53
CO_2	I464-D	0–5000 ppm	1	150	10	n.d.	1.53
CO_2	I464-F	0–10 % vol	0.01	150	10	n.d.	1.53
C_3H_8	I480-A	0–100 % LEL	0.1	230	10	2	1.55

[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

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-**	**IXXX-X-**	**0X**	**DETECTOR**	
				01[1]	Type 1: Aluminum die-cast housing, 1x cable entry	
				03[1]	Type 3: Aluminum die-cast housing, 3x cable entry	
	1			**04**[2]	Remote sensor head SSAX1-1-IXXX-X-10-K5, housing type 1	
	1			**05**[2]	Remote sensor head SSAX1-1-IXXX-X-10-K5, housing type 3	
				06[1]	Type stainless steel housing, 2x cable entry	
	1			**07**[2]	Remote sensor head SSAX1-1-IXXX-X-10-K5, type stainless steel housing	
				08[1]	Type 2: Aluminum die-cast XL housing, 2x cable entry	
	1			**09**[2]	Remote sensor head SSAX1-1 IXXX-X10-K5, housing type 2	**Version**
SX1-	**1-**		**IXXX-X-**	**0**	**EXCHANGE HEAD**[3]	

	Gas type	Measuring range	
I200-A	R32	0–50 % LEL	
I400-A	Methane, CH_4	0–100 % LEL	
I400-B	Methane, CH_4	0–100 % vol	
I464-B	Carbon dioxide, CO_2	0–5 % vol	
I464-C	Carbon dioxide, CO_2	0–2 % vol	
I464-D	Carbon dioxide, CO_2	0–5000 ppm	
I464-F	Carbon dioxide, CO_2	0-10 % vol	**Gas type/ Range**
I480-A	Propane, C_3H_8	0–100 % LEL	

	0 Without LC Display	
	2 With LC Display	**Display**
1 Zone 1 and 2		
2 Zone 2		**ATEX Zone**

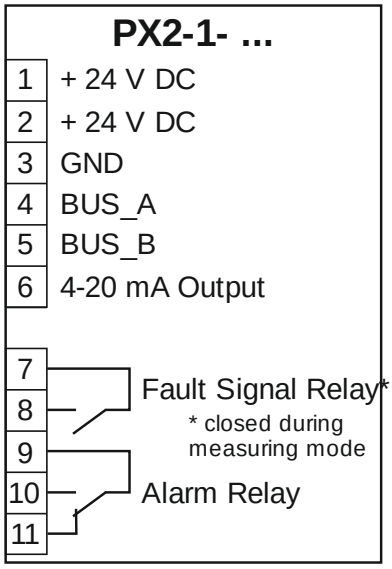
[1] Including one cable gland for PX2-1 with Ex d approval (Zone 1) in metal (-40 °C to +60 °C)„ for PX2-2 with Ex e approval (Zone 2) in plastic (-20 °C to +60 °C).

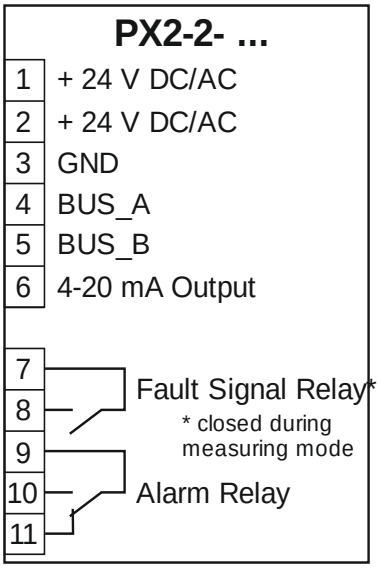
[2] Instead of the fixed sensor head SX1, the PX2-1 (only type Zone 1) is supplied with a remote sensor head SSAX1, which must be ordered separately in addition. For ordering information and sensor data see datasheet DB_SSAX1_IR_Premium.

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

Accessories	Order number
Calibration adapter	CAL01-PX2
Stainless steel splash guard	SG-PX2
ATEX metal cable gland (Ex d) for zone 1 and 2, temperature range: -40 °C to +60 °C	ZU-PX2-CG-SN
ATEX plastic cable gland (Ex e) for zone 2, temperature range: -20 °C to +60 °C	ZU-PX2-CG-PL
Magnetic pen for operation	MSR_PEN_PX2
Sensor Head Protection	ZU-PX2-SHP-20
Service-Tool for display, calibration, addressing and parameter changes	STL06-PGX2-XX
PC-Software set for display, calibration, addressing and parameter changes	PCE06-PGX2-XX-X

ELECTRICAL CONNECTION





FURTHER MEASURING PRINCIPLES

MPS™:
Methane (CH_4), propane (C_3H_8), R32
➔ See data sheet DB_PX2_MPS

Semiconductor/Freon:
R32
➔ See data sheet DB_PX2_Freon

Catalytic:
Methane (CH_4), propane (C_3H_8)
➔ See data sheet DB_PX2_Ex

Documents

Catalog

YouTube