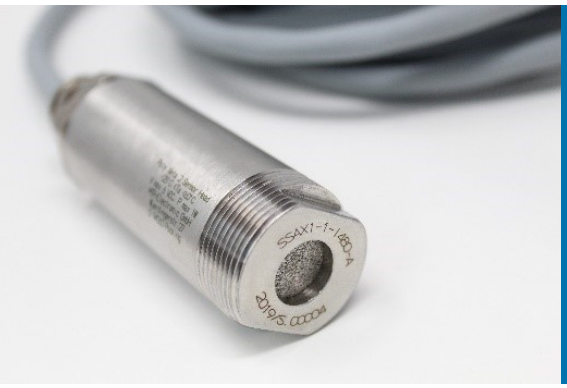
Gas Detection.

Technical Datasheet



PolyXeta®2

Sensor Head SSAX1-1 for Zone 1 and 2

with Catalytic Sensor Element
for Combustible Gases

DESCRIPTION

APPLICATION

CERTIFICATES / FEATURES

SPECIFICATIONS – GENERAL

SPECIFICATIONS – SENSOR ELEMENT

ORDERING INFORMATION

FURTHER MEASURING PRINCIPLES

All Products Made in Germany

DESCRIPTION

Sensor head with local bus interface and cable for remote connection to the PX2 gas detector series or the series MSC2, MSB2 and WSB2.

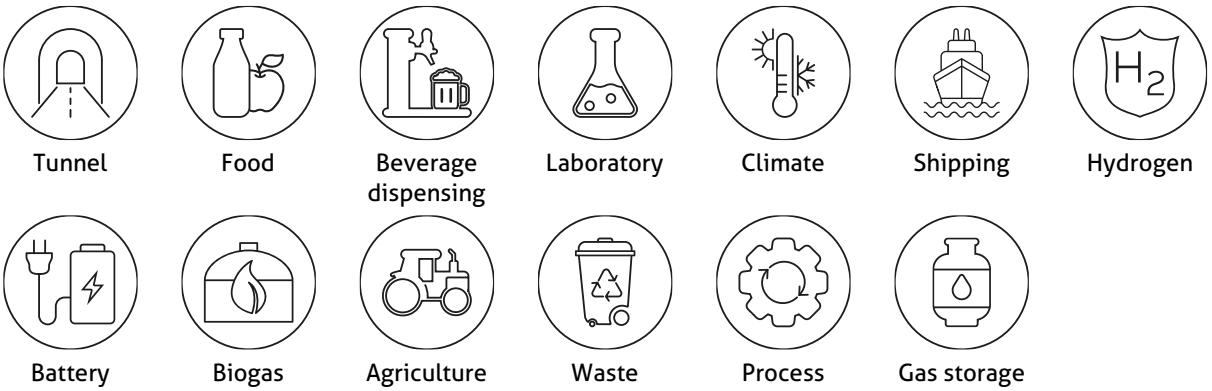
In addition to the catalytic sensor element (Pellistor) and the measuring amplifier, the sensor head contains a µController for processing the measured values. All relevant data and measured values of the sensor element are stored fail-safe in the µController and are transmitted digitally via the local bus to the PX2//MSC2/MSB2/WSB2. Calibration management is also integrated in the µController of the sensor head.

Calibration can be performed by simply changing the sensor head or by the integrated, convenient calibration routine directly at the system.

APPLICATION

The PolyXeta®2 SSAX1 sensor head is used to monitor leaks in enclosed spaces classified as ATEX Zone 1 or Zone 2, and also for use on ships, shipyards and offshore platforms etc.

Note:
MSC2, MSB2 and WSB2 are not suitable for installation in hazardous areas!



CERTIFICATES / FEATURES

- ATEX and IEC Ex certificates MSR-Electronic GmbH for electrical explosion protection
- **SSAX1-1 for Zone 1 (can also be used in Zone 2):**
  - Type "Ex db" protection flame-proof enclosure
- MED Certificate and TA Certificate: Approval according to Marine Equipment Directive 2014/90/EU by DNV

- Continuous self-monitoring
- Microprocessor with 12-bit converter resolution
- Low zero-point drift
- Sensor with long service life
- High accuracy and reliability
- Reverse polarity protection
- Overload protection
- Easy calibration
- Calibration service by exchanging the sensor head

SPECIFICATIONS - GENERAL

ELECTRICAL	
Power supply	5 VDC ± 3 %: external limitation to 5.6 V with Z diode, > 2 W, required
Power consumption (at 24 V DC)	1 W, 200 mA, external limitation with 250 mA fuse (not resettable) required
INTERFACE	
Serial interface	1-wire / 19200 baud; MSR local bus protocol
SENSOR ELEMENT (see also table SPECIFICATIONS – SENSOR ELEMENT)	
Gas type and measuring range	See ORDERING INFORMATION
Measuring principle	Catalytic (Pellistor, catalytic bead principle)
Temperature range	-30 °C to +60 °C (-22 °F to 140 °F) see also ENVIRONM. CONDITIONS
Humidity range	0–95 % RH non-condensing
Pressure range	90–110 kPa
Sensor lifetime[1] in air	> 5 years
Run-in time	24 h
Warm-up time	300 s
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	0–95 % RH non-condensing
Pressure range	90–110 kPa
SENSOR HEAD HOUSING	
Material / colour	CrNi Stahl: 1.4404 / natural
Dimensions (Ø x H)	30 x 89 mm (+ ca. 27 mm for cable gland)
Weight	Ca. 0,25 kg
Protection class	IP64, with SplashGuard accessories IP66
Installation	Vertical, gas inlet downwards
Cable gland, mounted	M25, Ex db approval
Max. tensile load	150 N
Cable with plug, factory assembled	Length 5 m, 10 m or 15 m 3-pin standard plug for local bus version
Cable type	Li-YCY-10x 0,34 diameter min. 7,2 mm
ENVIRONMENTAL CONDITIONS (operation and explosion protection)	
Temperature range Operation	-30 °C to +60 °C (-22 °F to 140 °F)
Temperature range Explosion Protect.	-40 °C to +60 °C (-40 to 140 °F)
Pressure range[4]	90–110 kPa
Air velocity	< 6 m/s
APPROVALS AND EXAMINATIONS	
EU Type Examination Certificate	BVS 19 ATEX E 055 X Supplement 1[5]
Electrical Explosion Protection ATEX	EN IEC 60079-0:2018; EN 60079-1:2014
IECEx Type Examination Certificate	IECEx_BVS_19.0052X[6]
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
ATEX Marking	II 2 G Ex db IIC T4 Gb
EU Declaration of Conformity	CE_SSAX1
MED Certificate	MEDB00007CE, Notified Body 0098
TA Certificate	TAA000032C
WARRANTY	
	1 year on sensors (not if poisoned or overloaded)

[1] Expected service life under 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.
[4]The explosion protection test only covers the pressure range up to 110 kPa and the oxygen concentration up to 21 % vol.
[5] DEKRA Testing and Certification GmbH

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	Calibration interval[2]
	SSAX1-1-	% 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_2H_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_6H_{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_2H_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_2H_5OH	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
$C_4H_8O_2$	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_6H_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_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
$C_6H_{12}O_2$	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_3OH	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_4H_8O	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_4H_{10}	P3460-A	0–100 % LEL	2(CH_4)	0,1	2 (C_4H_{10})	30	5	0.5 (C_3H_8)	2 (C_3H_8)	2.08	12
$C_4H_{10}O$	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_8H_{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_5H_{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
$C_3H_6O_2$	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_5H_{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_3H_8	P3480-A	0–100 % LEL	1 (CH_4)	0.1	2 (CH_4)	40	15	0.5 (CH_4)	2 (C_3H_8)	1.55	12[3]
C_3H_8	P3480-B	0–30 % LEL	2 (C_3H_8)	0.01	2 (C_3H_8)	40	10	0.5 (C_3H_8)	2 (C_3H_8)	1.55	12
C_3H_8	P3480-C	0–5000 ppm	2 (C_3H_8)	1 (ppm)	2 (C_3H_8)	40	10	0.5 (C_3H_8)	2 (C_3H_8)	1.55	12
C_3H_6	P3481-B	0–30 % UEG	2 (C_3H_6)	0.01	5 (C_3H_6)	30	5	1.0 (C_3H_6)	2 (C_3H_6)	1.48	12
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
C_3H_6O	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_7H_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_7H_{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_8H_{10}	P3493-A	0-100 % LEL	1 (CH_4)	0,1	2 (CH_4)	n.d.	10	0.5 (CH_4)	2 (CH_4)	3.67	6
C_4H_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_9H_{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 intervals for normal environmental conditions

[3] For variants with marine approval (in conjunction with the PX2-1 gas detector), the calibration interval for C_3H_8 is 6 months.

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 the T 055 leaflets must be observed.

ORDERING INFORMATION

SSAX1- 1- P34XX-X- 10- KX(X)

K5	**Cable length 5 meters (standard)**	
K10	Cable length 10 meters	
K15	Cable length 15 meters	**Cable length**
10	Local bus interface with 3-pin standard connector	**Connector**

	Gas type	Measuring	
P3400-A*⚙	Methane, CH_4	0–100 % LEL	
P3402-A	LPG	0–100 % LEL	
P3408-A[1]	Ammonia, NH_3	0–100 % LEL	
P3408-B[1]	Ammonia, NH_3	0–20 % LEL	
P3410-A	Ethylene, C_2H_4	0–100 % LEL	
P3415-A	Cyclohexane, C_6H_{12}	0–100 % LEL	
P3420-A	Ethane, C_2H_6	0–100 % LEL	
P3425-A	Ethanol, C_2H_5OH	0–100 % LEL	
P3427-A	Ethyl acetate, $C_4H_8O_2$	0–100 % LEL	
P3430-A	Benzene, C_6H_6	0–100 % LEL	
P3435-A*⚙	n-Hexane, C_6H_{14}	0–100 % LEL	
P3440-A*⚙	Hydrogen, H_2	0–100 % LEL	
P3448-A	Butyl acetate, $C_6H_{12}O_2$	0–100 % LEL	
P3450-A	Methanol, CH_3OH	0–100 % LEL	
P3458-A	Methyl ethyl ketone, C_4H_8O	0–100 % LEL	
P3460-A	Iso/n-Butane, C_4H_{10}	0–100 % LEL	
P3468-A	Isobutyl alcohol, $C_4H_{10}O$	0–100 % LEL	
P3470-A	Octane, C_8H_{18}	0–100 % LEL	
P3472-A	Cyclopentane, C_5H_{10}	0–100 % LEL	
P3473-A	Methyl acetate, $C_3H_6O_2$	0–100 % LEL	
P3475-A	Iso/n-Pentane, C_5H_{12}	0–100 % LEL	
P3480-A*⚙	Propane, C_3H_8	0–100 % LEL	
P3480-B	Propane, C_3H_8	0–30 % LEL	
P3480-C	Propane, C_3H_8	0–5000 ppm	
P3481-B	Propene, C_3H_6	0–30 % LEL	
P3482-A*⚙	Isopropyl alcohol, C_3H_8O	0–100 % LEL	
P3485-A	Acetone, C_3H_6O	0–100 % LEL	
P3490-A	Toluene, C_7H_8	0–100 % LEL	
P3491-A	n-Heptane, C_7H_{16}	0–100 % LEL	
P3493-A	Xylene, C_8H_{10}	0–100 % LEL	
P3494-A	Butadiene, C_4H_6	0–100 % LEL	
P3495-A	Nonane, C_9H_{20}	0–100 % LEL	**Gas type/ Measuring range**
P3496-A	Petrol Vapours	0–100 % LEL	

1	Zone 1	**ATEX zone**

* The sensor head series SX1 identical in construction is tested for measuring function by DEKRA Testing and Certification GmbH according to EN 60079-29-1.
⚙ Approval according to Marine Equipment Directive 2014/90/EU by DNV, in connection with the PX2-1 Gas Detector.

[1] Only on request

ACCESSORIES

Sensor protection cap (order number: ZU_PX2_SHP-20)
Mounting kit for wall installation (order number: Mounting Kit)
Calibration adapter (order number: Cal01-PX2)
Stainless steel splash protection SplashGuard (order number: SG-PX2)

FURTHER MEASURING PRINCIPLES

Infrared:
Methane (CH_4), propane (C_3H_8)
➔ See data sheet DB_SSAX1_IR_Premium and data sheet DB_SSAX1_IR (only zone 2)

MPS™:
Methane (CH_4), propane (C_3H_8), hydrogen (H_2)
➔ See data sheet DB_SSAX1_MPS

Electrochemical:
Ammonia (NH_3), hydrogen (H_2)
➔ See data sheet DB_SSAX1_Tox

Documents

Catalog

YouTube