

PolyXeta®2

Sensor for toxic gases in zone 1, PX2-1

Sensor for toxic gases in zone 2, PX2-2



Microprocessor based gas sensor with 4 – 20 mA / RS485 Modbus output signal, alarm and fault relays (all SIL2 certified) for monitoring the ambient air to detect oxygen and toxic gases and vapors by means of an electrochemical sensor element (el.ch.). The calibration of sensors without LCD display is carried out via the calibration device STL06-PGX2 or the PC software PCE06-PGX2. Sensors with LCD 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 sensors with LCD display changes from green to red.

APPLICATION

The PolyXeta®2 sensor is used in industrial areas like oil/gas industry, biogas plants, petrochemical industry, power plants etc. in Ex-Zone 1. The PolyXeta®2 sensor is also suitable for commercial areas like gas transfer stations etc. With the 4 – 20 mA / RS485-ModBus output signal the sensor is suitable for connection to the PolyGard®2 gas controller series by MSR-Electronic, as well as to any other controllers or automation devices. Optionally, the PolyXeta®2 sensor is also available with LCD display and relay output.

FEATURES

- ATEX and IEC Ex certificates MSR-Electronic for electrical Ex protection
- Metrological test & SIL2 safety functions 4 – 20 mA, RS485 and relay
- Enclosure: additional CSA certificate for Class I, Div. 1
- **PX2-1 for zone 1 (and also suitable for zone 2):**
 - Type “Ex d” with flame-proof enclosure
- **PX2-2 for zone 2:**
 - Type “Ex n” with flame-proof enclosure
- Enclosure: additional CSA certificate for Class I, Div. 1
- Continuous monitoring
- Microprocessor with 12 bit converter resolution
- Self-monitoring system
- Easy calibration
- Calibration service by exchanging the sensor head
- Proportional 4 – 20 mA output
- Serial interface to the control center
- Reverse polarity protection
- Overload protection
- LCD display with status LEDs (optional)
- Alarm and fault signal relay (optional)



Sensor, zone 1, without display



Sensor, zone 1, with LCD-display



Sensor, zone 2, without display



Sensor, zone 2, with LCD display



MSR-Electronic GmbH ::: Würdinger Str. 27 + 27a ::: 94060 Pocking ::: Germany

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

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PolyXeta®2



Sensor for toxic gases PX2

SPECIFICATONS

ELECTRICAL

Power supply	20 – 28 V DC
Power consumption (at 24 V DC)	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	2 LEDs operation, alarm and communication
Analog output signal (active)	Proportional, overload and short-circuit proof, load ≤ 500 Ω 4 – 20 mA = measuring range 3.0 < 4 mA = underrange > 20 – 21,2 mA = overrange 2 mA = fault > 21.8 mA = fault High
Serial interface	Serial data bus
Fault relay (optional)	Max. 30 V AC/DC, 1 A
Alarm relay (optional)	Max. 30 V AC/DC, 1 A
LCD (optional)	2 x 16 characters, 3 status LEDs, 4 menu operating elements

SENSOR DATA

Gas type	Toxic gases & oxygen
Sensor element	Electrochemical
Measuring range	See Ordering Information
Sensor data	See Tables
Stabilization time	300 sec.
Warm-up time	Measuring mode after 120 sec.

SENSOR HEAD HOUSING

Material	CrNi Stahl: 1.4404
Dimensions (d x H)	30 x 56 mm (1.18 x 2.20 in.)
Protection class	Gas inlet IP64, with option splash-proof IP65 (on request)
Thread	External thread NPT ¼" ANSI/ B1.20.1

ENVIRONMENTAL CONDITIONS

Humidity	20 to 90% RH (not condensing)
Operating temperature	-25 °C to +60 °C, -20 °C to +60 °C (-4 °F to 140 °F) for display version
Storage temperature	-5 °C to +30 °C
Pressure range	800 to 1200 mbar (80 to 120 kPa)
Air velocity	< 6 m/sec.

PHYSICAL CHARACTERISTICS

Enclosure P1 & P3 / colour	Aluminium pressure die-casting / light grey RAL 7032, epoxy coating
Additional CSA approval, only zone 1	Explosion proof Class I, Div 1, Groups A, B, C and D
Dimensions (d x H) / 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	1 x resp. 3 x ¼ in. (Ansi B1.20.1)
Wire connection	Spring-type terminal, 0.08 to 2.5 mm² AWG 28 - 12
Wire length	Max. load 500 Ω (= wire resistance + controller input resistance)

ATEX MARKING

	PX2-1	PX2-2
EC-type examination certificate	Ex II2G Ex db IIC T4 Gb, CE 0158, BVS 15 ATEX E 129 X (electrical Ex protection) Ex d EN60079-0, -1	Ex II3G Ex nA IIC T4 Gc Electrical Ex protection: Ex n EN60079-15
CERTIFICATES	IECEx 16.0038 X (electrical Ex protection) Ex d IEC 60079-0, -1	-----

CERTIFICATES

Functional safety (SIL2)

EN 50402, EN 61508-1, -2, -3, EN 50271

CSA Certificate Class I, Div. 1 (only enclosure)

Pending	Metrological approval: (pending) EN 60079-29-1
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WARRANTY

1 year on sensor (not if poisoned or overloaded), 2 years on device

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



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SPECIFICATIONS - SENSOR ELEMENT

Gas type	Ordering No.	Measuring range	Accuracy	Display Resolution	Repeatability	t90 Time	Zero-point variation	Drift in ari		Temperature range	Humidity (non-range condensing)	Life time ¹ in air	Relative gas density	Mounting height	Calibration interval ¹
								Zero	Gain						
	SX1-	ppm	± % Sign.	ppm	<± % sig.	≤ sec.	±ppm	< % signal/month		°C	% RH.	> months	Air = 1	(m)	Months
NH ₃	E1125-AX	0-100	5	0.1	10	40	5	1	1	-30 / +50	15-90	24	0.59	Ceiling	12
NH ₃	E1125-BX	0-300	2	0.1	10	40	5	1	2	-30 / +50	15-90	24	0.59	Ceiling	12
NH ₃	E1125-DX	0-1000	3	0.1	10	40	10	1	2	-30 / +50	15-90	24	0.59	Ceiling	12
NH ₃	E1125-EX	0-5000	2	1	10	40	50	1	2	-30 / +50	15-90	24	0.59	Ceiling	12
Cl ₂	E1193-BX	0-5	n.d.	0.001	2	40	0.2	1	2	-20 / +50	15-90	24	2.4	Floor	6
Cl ₂	E1193-DX	0-20	n.d.	0.01	2	40	0.2	1	2	-20 / +50	15-90	24	2.4	Floor	6
C ₂ H ₄	E1189-CX	0-200	n.d.	0.1	2	120	-2/+8	n.d.	n.d.	-20 / +50	15-90	24	0.97	1.5-1.8	6
CO	E1110-BX	0-100	2	0.1	5	10	4	0.4	0.4	-15 / +50	10-95	72	0.97	1.5-1.8	12
CO	E1110-CX	0-150	2	0.1	5	10	4	0.4	0.4	-15 / +50	10-95	72	0.97	1.5-1.8	12
CO	E1110-EX	0-250	2	0.1	5	10	4	0.4	0.4	-15 / +50	10-95	72	0.97	1.5-1.8	12
CO	E1110-FX	0-300	2	0.1	5	10	4	0.4	0.4	-15 / +50	10-95	72	0.97	1.5-1.8	12
CO	E1110-HX	0-500	2	0.1	5	10	4	0.4	0.4	-15 / +50	10-95	72	0.97	1.5-1.8	12
SO ₂	E1196-BX	0-20	2	0.01	2	30	0.1	1	2	-10 / +45	15-90	24	2.26	Floor	12
H ₂ S	E1197-AX	0-50	3	0.01	2	30	0.5	1	2	-10 / +50	15-90	24	1.19	Floor	12
H ₂ S	E1197-BX	0-100	2	0.1	2	40	1	1	2	-10 / +50	15-90	24	1.19	Floor	12
H ₂ S	E1197-CX	0-200	2	0.1	2	40	2	1	2	-10 / +50	15-90	24	1.19	Floor	12
H ₂ S	E1197-DX	0-500	n.d.	0.1	2	40	5	1	2	-10 / +50	15-90	24	1.19	Floor	12
NO ₂	E1130-EX	0-100	5	0.1	2	25	2	1	2	-20 / +50	15-90	24	1.59	1.5-1.8	12
Vol %															
O ₂	E1195-A 2/3/5/7	0-25	2	0.01	--	15	--	--	0.3	-10 / 50	5-95	24/36/ 60/84		1.5-1.8	6/6/ 12/12

¹ Manufacturer-recommended calibration interval for normal environmental conditions

CROSS SENSITIVITY¹ - SENSOR ELEMENT

Gas type	Ordering No.	Alcohols	Chlorine, Cl ₂	Ethanol, C ₂ H ₆ O	Ethylene, C ₂ H ₄	Carbon monoxide, CO	Carbon dioxide, CO ₂	Sulphur dioxide, SO ₂	Hydrogen sulphide, H ₂ S	Nitrogen dioxide NO ₂	Nitrogen monoxide, NO	Hydrogen, H ₂
	SX1-		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
NH ₃	E1125-AX		10/0	100/0	100/0	200/0	5000/0	10/<10	10/<20	20/<2	20/0	1000/-10
NH ₃	E1125-BX		10/0	100/0	100/0	200/0	5000/0	10/<12	10/<30	20/0	20/0	1000/-150
NH ₃	E1125-CX		10/0	100/0	100/0	200/0	5000/0	10/<12	10/<30	20/0	20/0	1000/-150
NH ₃	E1125-DX		10/0	100/0	100/0	200/0	5000/0	10/<12	10/<30	20/0	20/0	1000/-150
NH ₃	E1125-EX		10/0	100/0	100/0	200/0	5000/0	10/<12	10/<30	20/0	20/0	1000/-150
Cl ₂	E1193-XX ²					300/0		5/0		20/20	35/0	300/0
C ₂ H ₄	E1189-CX					< 60%						
CO	E1110-XX ²		2/0	2000/5			5000/0	50/0,5	25/0	50/-1	50/8	100/20
SO ₂	E1196-BX			100/0		100/1			10/0	100/-125	100/0	100/1
H ₂ S	E1197-XX ²					100/2		100/20		5/1	35/2	100/20
NO ₂	E1130-EX		1/1	100/0	500/0	400/0	5000/0	30/-0,6	20/-25		50/0	1000/0
O ₂	E1195-XX ²						5Vol%/					

Illustration: Gas concentration of cross gas / reaction of sensor

¹ The table doesn't claim to be complete. Other gases, too, can have an influence on the sensitivity. The mentioned cross sensitivity data are only reference values valid for new sensors.

² Cross sensitivities valid for all measuring ranges of the sensor.

All specifications were collected under optimal test conditions.



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ORDERING INFORMATION

Sensor **PX2-X- X -XXXXX-XX- XX**

Exchange head¹ **SX1-1- -XXXXX-XX**

P1 Aluminum die-cast housing for one cable entry
P3 Aluminum die-cast housing for three cable entries

OPTIONS

Without option **0**

Relay-set (2) **1**

LCD display **2**

Relay set (2) + LCD display **3**

Zone 1 **1**

Zone 2 **2**

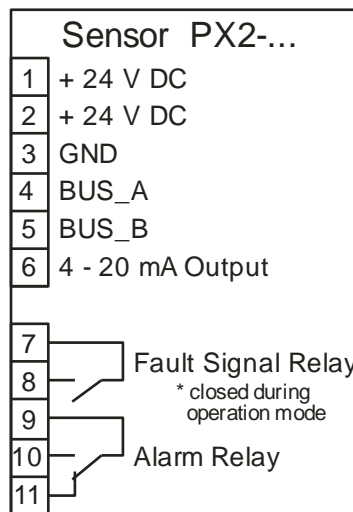
GAS TYPE

				Sensor type	Measuring range
0	E1110-BX	Carbon monoxide	CO	El. Chem.	0-100 ppm
1	E1110-CX	Carbon monoxide	CO	El. Chem.	0-150 ppm
2	E1110-EX	Carbon monoxide	CO	El. Chem.	0-250 ppm
3	E1110-FX	Carbon monoxide	CO	El. Chem.	0-300 ppm
	E1110-HX	Carbon monoxide	CO	El. Chem.	0-500 ppm
	E1125-AX	Ammonia	NH ₃	El. Chem.	0-100 ppm
	E1125-BX	Ammonia	NH ₃	El. Chem.	0-300 ppm
	E1125-CX	Ammonia	NH ₃	El. Chem.	0-500 ppm
	E1125-DX	Ammonia	NH ₃	El. Chem.	0-1000 ppm
	E1125-EX	Ammonia	NH ₃	El. Chem.	0-5000 ppm
	E1189-CX*	Ethylene	C ₂ H ₄	El. Chem.	0-200 ppm
	E1193-BX*	Chlorine	Cl ₂	El. Chem.	0-5 ppm
	E1193-DX*	Chlorine	Cl ₂	El. Chem.	0-20 ppm
	E1196-BX	Sulphur dioxide	SO ₂	El. Chem.	0-20 ppm
	E1197-AX	Hydrogen sulphide	H ₂ S	El. Chem.	0-50 ppm
	E1197-BX	Hydrogen sulphide	H ₂ S	El. Chem.	0-100 ppm
	E1197-CX	Hydrogen sulphide	H ₂ S	El. Chem.	0-200 ppm
	E1197-DX	Hydrogen sulphide	H ₂ S	El. Chem.	0-500 ppm
	E1130-EX	Nitrogen dioxide	NO ₂	El. Chem.	0-100 ppm
	E1195-A2	Oxygen, 2 years	O ₂	El. Chem.	0-25 vol%
	E1195-A3	Oxygen, 3 years	O ₂	El. Chem.	0-25 vol%
	E1195-A5*	Oxygen, 5 years	O ₂	El. Chem.	0-25 vol%
	E1195-A7*	Oxygen, 7 years	O ₂	El. Chem.	0-25 vol%

* only on request

¹ The exchangeable sensor head is only to be used in connection with the PolyXeta®2 Gas Sensor. Otherwise it loses its ATEX Certification.

ELECTRICAL CONNECTION



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