

Technical Datasheet



PolyGard®2

Sensor Cartridge SC2 for toxic gases

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Specifications subject to change without notice.
Up-to-date data sheets and user manuals can be found in the download area of www.msr-24.com.
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■ All Products
■ Made
■ in Germany

DESCRIPTION

Exchangeable sensor including digital value processing, temperature compensation and self-control for the continuous monitoring of the ambient air.

The Sensor Cartridge SC2 includes an electrochemical sensor element and an amplifier as well as a μ Controller for measured values processing. All relevant data and measured values of the sensor element are stored fail-safe in the μ Controller and transmitted digitally via the local bus to the Sensor Board SB2 or MSB2. The calibration management is also integrated in the μ Controller of the Sensor Cartridge.

Calibration is done either by simply replacing the Sensor Cartridge or by using the comfortable, integrated calibration routine directly at the system.

APPLICATION

The PolyGard®2 Sensor Cartridge SC2 is used for the detection of toxic gases and oxygen.

FEATURES

- Digital measurement value processing incl. temperature compensation
- Internal functional control with integrated Hardware Watchdog
- Data/measured values in μ C of Sensor Cartridge, therefore simple exchange of SC uncalibrated <> calibrated
- High accuracy, selectivity and reliability
- Low zero-point drift
- Sensor with long life expectancy
- Hardware and software according to SIL2 compliant development process
- Modular technology (plug-in and replaceable)
- Easy maintenance and calibration by exchange of the sensor cartridge or by comfortable on-site calibration
- Reverse polarity protected, overload and short-circuit proof
- IP65 version
- Conformity to:
 - EN 378
 - EN 45544-1
 - EN 50104 (for O₂)
 - EN 50545
 - EN 50271
 - EN 61010-1
 - ANSI/UL 61010 1
 - CAN/CSA-C22.2 No. 61010-1
- Duct mounting kit (accessory)

SPECIFICATIONS

ELECTRICAL	
Power supply	5 V DC from SB, reverse polarity protected
Power consumption:	10 mA, max. (0.05 VA)
Serial interface local bus	1-wire / 19200 Baud
SENSOR ELEMENT	
Gas type	See Ordering Information
Sensor element	Electrochemical
Pressure range	Atmospheric \pm 10 %
Storage temperature range ¹	0 °C to 20 °C (32°F to 68 °F)
Storage time	6 months
Poisoning	Electrochemical sensors are susceptible to poisoning by organic solvents and silicone vapours.
PHYSICAL	
Housing type P	Polycarbonate
Combustion	UL 94 V2
Housing colour	RAL 7032 (light grey)
Dimensions: Housing type P	(D x H) 24 x 22 mm (0.94 x 0.87 in.)
Weight	Ca. 30 g (0.07 lb)
Protection class	IP65
Mounting	Screw mounting
Connection type	3-pin connector
Cable length	110 mm (4.33 in.)
REGULATIONS	
Directives	EMC Directives 2014/30/EU CE
	Conformity to: EN 378 EN 45544-1 EN 50104 (for O ₂) EN 50545 EN 50271 EN 61010-1 ANSI/UL 61010 1 CAN/CSA-C22.2 No. 61010-1
Warranty	1 year on sensor (not if poisoned or overloaded), 2 years on device

¹ A higher storage temperature can have a negative effect on sensitivity and service life.

Gas type	Ordering No.	Measuring range	Accuracy		Display resolution	Repeatability	t90 time	Zero-point variation	Drift in air		Temperature range	Humidity range (non-condensing)	Life time ¹ in air	Relative Gas density ²	Calibration interval ¹
			± % sig.	ppm					Zero	Gain					
	SC2-	ppm	± % sig.	ppm	<± sig. %	≤ sec.	±ppm	< % signal/month		°C	% r. F.	> months	Air = 1	Month	
NH ₃	E1125-AX	0-100	5	0.1	10	40	5	1	1	-30 / +50	15-90	24	0.59	12	
NH ₃	E1125-BX	0-300	2	0.1	10	40	5	1	2	-30 / +50	15-90	24	0.59	12	
NH ₃	E1125-CX	0-500	3	0.1	10	40	5	1	2	-30 / +50	15-90	24	0.59	12	
NH ₃	E1125-DX	0-1000	3	1	10	40	10	1	2	-30 / +50	15-90	24	0.59	12	
NH ₃	E1125-EX	0-5000	2	1	10	40	50	1	2	-30 / +50	15-90	24	0.59	12	
Cl ₂	E1193-CX	0-10	n.d.	0.01	2	40	0.2	1	2	-20 / +50	15-90	24	2.4	6	
Cl ₂	E1193-DX	0-20	n.d.	0.01	2	40	0.2	1	2	-20 / +50	15-90	24	2.4	6	
HCl	E1186-DX	0-20	n.d.	0.01	5	60	0.5	n.d.	n.d.	-20 / +50	15-90	24	1.27	6	
HCN	E1183-BX	0-50	5	0.01	2	30	n.d.	n.d.	n.d.	-20 / +50	15-90	24	0.93	6	
HCN	E1183-CX	0-100	5	0.1	2	30	n.d.	n.d.	n.d.	-20 / +50	15-90	24	0.93	6	
ETO	E1199-AX	0-10	n.d.	0.01	5	140	1	n.d.	n.d.	+10 / +30	15-90	24	1.57	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	6	
CH ₂ O	E1185-BX	0-10	2	0.01	2	60	0.2	1	2	-10 / +50	15-90	36	1.09	6	
CO	E1110-CX	0-150	2	0.1	5	10	4	0.4	0.4	-20 / +65	10-95	72	0.97	12	
CO	E1110-EX	0-250	2	0.1	5	10	4	0.4	0.4	-20 / +65	10-95	72	0.97	12	
CO	E1110-FX	0-300	2	0.1	5	10	4	0.4	0.4	-20 / +65	10-95	72	0.97	12	
CO	E1110-HX	0-500	2	0.1	5	10	4	0.4	0.4	-20 / +65	10-95	72	0.97	12	
O ₃	E1190-AX	0-5	n.d.	0.001	5	30	0.15	1	2	-10 / +50	15-90	24	1.66	6	
O ₃	E1190-BX	0-10	n.d.	0.01	5	30	0.15	1	2	-10 / +50	15-90	24	1.66	6	
SO ₂	E1196-BX	0-20	2	0.01	2	30	0.1	1	2	-10 / +50	15-90	24	2.26	6	
H ₂ S	E1197-AX	0-50	3	0.01	2	30	0.5	1	2	-10 / +50	15-90	24	1.19	12	
H ₂ S	E1197-BX	0-100	2	0.1	2	40	1	1	2	-10 / +50	15-90	24	1.19	12	
H ₂ S	E1197-CX	0-200	2	0.1	2	40	2	1	2	-10 / +50	15-90	24	1.19	12	
H ₂ S	E1197-DX	0-500	n.d.	0.1	2	40	5	1	2	-10 / +50	15-90	24	1.19	12	
NO ₂	E1130-AX	0-10	5	0.01	2	25	0.2	1	2	-20 / +65	15-90	24	1.59	12	
NO ₂	E1130-BX	0-20	5	0.01	2	25	0.2	1	2	-20 / +65	15-90	24	1.59	12	
NO ₂	E1130-CX	0-30	5	0.01	2	25	0.2	1	2	-20 / +65	15-90	24	1.59	12	
NO ₂	E1130-EX	0-100	5	0.1	2	25	2	1	2	-20 / +65	15-90	24	1.59	12	
		Vol %													
O ₂	E1195-A2/3	0-25	2	0.01	--	15	--	--	0.3	-25 / +50	5-95	24/36		6/6	
O ₂	E1195-A5/7	0-25	2	0.01	--	15	--	--	0.3	-25 / +50	15-90	60/84		12/12	

¹ Manufacturer-recommended calibration interval for normal environmental conditions

² The sensor must be installed at the correct height depending on the relative gas density (d):
 d < 0.95: Mount on the ceiling
 0.95 < d < 1.05: Mount at a height of 1.5 – 1.8 m above floor
 d > 1.05: Mount at a height of 0.3 m above floor
 Exception NO₂: Mounting height for NO₂ sensors: 0.5 to 1.8 m above floor.

³ Exceeding the measuring range limit will include a risk of damaging the sensor element.

CROSS SENSITIVITY¹

Gas concentration of cross gas / reaction of sensor

Gas type	Ordering No.	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 sulfide, H ₂ S	Nitrogen dioxide NO ₂	Nitrogen monoxide, NO	Hydrogen, H ₂
	SC2-	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
HCl	E1186-DX	20/0		100/0	1000/0		100/0	20/31	20/-6	25/0	/0
HCN	E1183-XX ²			100/0	100/2		20/38	15/25	5/-12	35/0	100/2
ETO	E1199-AX		30/21		100/45						
C ₂ H ₄	E1189-CX				< 60%						
CH ₂ O	E1185-BX				10-18%						1-3%
CO	E1110-XX ²	2/0	2000/5			5000/0	50/0,5	25/0	50/-1	50/8	100/20
O ₃	E1190-XX ²	5/45/4	100/0		300/0		5/0		20/10	35/0	300/0
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-XX ²	1/1	100/0	500/0	400/0	5000/0	30/-0,6	20/-25		50/0	1000/0
O ₂	E1195-XX ²					5 Vol %					

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 sensitivity data valid for all measuring ranges of the sensor.

All specifications were collected under optimal test conditions.

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

