



PolyGard®2

Sensor Cartridge SC2 for toxic gases

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 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 Sensor Cartridge, therefore simple exchange of SC uncalibrated <> calibrated
- High accuracy, selectivity and reliability
- Low zero point drift
- Sensor with long life expectancy
- Hardware & 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
- IP 65 version
- Conformity to
 - EN 50271
 - EN 61010-1
 - ANSI/UL 61010 1
 - CAN/CSA-C22.2 Nr. 61010-1
 - EN 50104 (for O₂)
 - EN 45544
 - EN 50545
 - EN 378
- Duct mounting kit (accessory)



Sensor Cartridge in plastic housing without cable extension



Sensor Cartridge in plastic housing with cable extension 5 m





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SPECIFICATIONS

Electrical

Power supply	5 V DC from SB/MSB2, 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	+5 °C to +65 °C (+41 °F to +147 °F)
Storage time	6 months

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	IP 65
Mounting	Screw mounting
Connection type	3-pin connector
Cable length	110 mm (4.33 in.)

Directives

EMC directives 2014/30/EU
CE
Conformity to:
EN 50271
EN 61010-1:2010
ANSI/UL 61010-1
CAN/CSA-C22.2 No. 61010-1
EN 50104 (for O₂)
EN 45544
EN 50545
EN 378

Warranty

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





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SPECIFICATIONS - SENSOR CARTRIDGE (SC2) / SENSOR ELEMENT

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
								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	10	1	1	-30 / +50	15-90	24	0.59	12
NH ₃	E1125-BX	0-300	2	0.1	10	40	50	1	2	-30 / +50	15-90	24	0.59	12
NH ₃	E1125-CX	0-500	3	0.1	10	40	50	1	2	-30 / +50	15-90	24	0.59	12
NH ₃	E1125-DX	0-1000	3	1	10	40	50	1	2	-30 / +50	15-90	24	0.59	12
NH ₃	E1125-EX	0-5000	2	1	10	40	100	1	2	-30 / +50	15-90	24	0.59	12
Cl ₂	E1193-BX	0-5	n.d.	0.001	2	40	0.2	1	2	-20 / +50	15-90	24	2.4	6
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
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
CH ₂ O	E1185-BX	0-10	0.5	0.001	2	60	0.2	1	2	-10 / +50	15-90	36	1.09	6
CO	E1110-BX	0-100	3	0.1	5	10	4	0.4	0.4	-20 / +65	10-95	72	0.97	12
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	12
O ₃	E1190-BX	0-10	n.d.	0.01	5	30	0.15	1	2	-10 / +50	15-90	24	1.66	12
SO ₂	E1196-BX	0-20	2	0.01	2	30	0.1	1	2	-10 / +50	15-90	24	2.26	12
H ₂ S	E1197-AX	0-50	3	0.01	2	30	0.1	1	2	-10 / +50	15-90	24	1.19	12
H ₂ S	E1197-BX	0-100	2	0.1	2	40	0.1	1	2	-10 / +50	15-90	24	1.19	12
H ₂ S	E1197-CX	0-200	2	0.1	2	40	0.1	1	2	-10 / +50	15-90	24	1.19	12
H ₂ S	E1197-DX	0-500	n.d.	0.1	2	40	0.1	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	0,2	1	2	-20 / +65	15-90	24	1.59	12
			Vol %											
O ₂	E1195-A 2/3/5/7	0-25	2	0.01	--	15	--	--	0.3	-25 / +50	5-95	24 / 36 60 / 84		6 / 6 / 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!





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CROSS SENSITIVITY¹ - SENSOR CARTRIDGE (SC2) / 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
	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
HCN	E1183-XX ²			100/0	100/2		20/38	15/25	5/-12	35/0	100/2
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					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.

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





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ORDERING INFORMATION

SC2- **E11XX-XX** **X- XX**

- 00** Without cable extension (standard)
XX With cable extension: 01, 02, 03, 04, 05 ... 15 max. (length in m)
P Sensor housing plastic
S Sensor housing stainless steel

	Gas type	Sensor type	Measuring range
E1125-AX	Ammonia, NH ₃	Electrochemical	0 – 100 ppm
E1125-BX	Ammonia, NH ₃	Electrochemical	0 – 300 ppm
E1125-CX	Ammonia, NH ₃	Electrochemical	0 – 500 ppm
E1125-DX	Ammonia, NH ₃	Electrochemical	0 – 1000 ppm
E1125-EX	Ammonia, NH ₃	Electrochemical	0 – 5000 ppm
E1193-BX	Chlorine, Cl ₂	Electrochemical	0 – 5 ppm
E1193-CX	Chlorine, Cl ₂	Electrochemical	0 – 10 ppm
E1193-DX	Chlorine, Cl ₂	Electrochemical	0 – 20 ppm
E1183-BX	Hydrogen cyanide, HCN	Electrochemical	0 – 50 ppm
E1183-CX	Hydrogen cyanide, HCN	Electrochemical	0 – 100 ppm
E1189-CX*	Ethylene, C ₂ H ₄	Electrochemical	0 – 200 ppm
E1185-BX	Formaldehyde, CH ₂ O	Electrochemical	0 – 10 ppm
E1110-BX	Carbon monoxide, CO	Electrochemical	0 – 100 ppm
E1110-CX	Carbon monoxide, CO	Electrochemical	0 – 150 ppm
E1110-EX	Carbon monoxide, CO	Electrochemical	0 – 250 ppm
E1110-FX	Carbon monoxide, CO	Electrochemical	0 – 300 ppm
E1110-HX	Carbon monoxide, CO	Electrochemical	0 – 500 ppm
E1190-AX	Ozone, O ₃	Electrochemical	0 – 5 ppm
E1190-BX	Ozone, O ₃	Electrochemical	0 – 10 ppm
E1187-AX*	Phosphine, PH ₃	Electrochemical	0 – 5 ppm
E1196-BX	Sulphur dioxide, SO ₂	Electrochemical	0 – 20 ppm
E1197-AX	Hydrogen sulphide, H ₂ S	Electrochemical	0 – 50 ppm
E1197-BX	Hydrogen sulphide, H ₂ S	Electrochemical	0 – 100 ppm
E1197-CX	Hydrogen sulphide, H ₂ S	Electrochemical	0 – 200 ppm
E1197-DX	Hydrogen sulphide, H ₂ S	Electrochemical	0 – 500 ppm
E1188-AX*	Silane, SiH ₄	Electrochemical	0 – 50 ppm
E1130-AX	Nitrogen dioxide, NO ₂	Electrochemical	0 – 10 ppm
E1130-BX	Nitrogen dioxide, NO ₂	Electrochemical	0 – 20 ppm
E1130-CX	Nitrogen dioxide, NO ₂	Electrochemical	0 – 30 ppm
E1130-EX*	Nitrogen dioxide, NO ₂	Electrochemical	0 – 100 ppm
E1195-A2	Oxygen, O ₂ , 2 years	Electrochemical	0 – 25 Vol. %
E1195-A3	Oxygen, O ₂ , 3 years	Electrochemical	0 – 25 Vol. %
E1195-A5	Oxygen, O ₂ , 5 years	Electrochemical	0 – 25 Vol. %
E1195-A7	Oxygen, O ₂ , 7 years	Electrochemical	0 – 25 Vol. %

* only on request

EXAMPLE

CO Sensor Cartridge, plastic housing without cable extension, measuring range 300 ppm,
Order number: SC2-E1110-FX-P-00

ACCESSORY

Duct mounting kit
Order number: C2-Z2

