



PolyGard®2

Sensor Cartridge SC2 for toxic gases and oxygen

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)





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SPECIFICATIONS

Electrical

Power supply	5 V DC from SB/MSB2, reverse polarity protected
Power consumption:	50 mA, max. (0.25 VA)
Serial interface local bus	1-wire / 19200 Baud

Sensor element

Gas type	See Ordering Information
Sensor element	Electrochemical
Pressure range	Atmospheric \pm 20 %
Storage temperature range	+5 °C to +30 °C (+41 °F to +86 °F)
Storage time	6 months

Physical

Housing M25	Polycarbonate
Combustion	UL 94 V2
Housing colour	RAL 7032 (light grey)
Dimensions: M25 housing	(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)

Warranty

1 year on material (without sensor element)





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SPECIFICATIONS - SENSOR CARTRIDGE (SC2) / SENSOR ELEMENT

Ordering No.	Measuring range	Accuracy	Resolution	Repeatability	t90 Time	Zero-point variation	Drift		Temperature range	Humidity range (non-condensing)	Life time ¹	Relative gas density	Mounting height	Calibration interval ¹
							Zero	Gain						
SC2-	ppm	± ppm	ppm	<± % sig.	≤ sec.	±ppm	< % signal/month		°C	% RH.	> months	Air = 1	(m)	Months
E1125-A	0-100	10	2	10	90	10	1	1	-30 / +50	15-90	24	0.59	Ceiling	12
E1125-B	0-300	30	4	10	120	50	1	2	-30 / +50	15-90	24	0.59	Ceiling	12
E1125-C	0-500	30	4	10	120	50	1	2	-30 / +50	15-90	24	0.59	Ceiling	12
E1125-D	0-1000	30	4	10	120	50	1	2	-30 / +50	15-90	24	0.59	Ceiling	12
E1193-B	0-5	0.1	0.1	2	90	0.2	1	2	-20 / +50	15-90	24	2.4	Floor	6
E1193-C	0-10	0.1	0.1	2	90	0.2	1	2	-20 / +50	15-90	24	2.4	Floor	6
E1193-D	0-20	0.1	0.1	2	90	0.2	1	2	-20 / +50	15-90	24	2.4	Floor	6
E1181-A	0-1	0.05	0.03	4	120	0.1	1	1	-20 / +40	15-90	24	3.09	Floor	6
E1183-C	0-100	0.2	0.1	2	20	1	1	2	-10 / +45	15-90	24	0.93	Ceiling	6
E1189-C	0-200	1.0	0.3	1	60	4	1	3	-20 / +50	15-90	24	0.97	1.5-1.8	12
E1198-A	0-1	0.05	0.02	2	80	0.1	1	4	-10 / +40	15-90	18	1.31	Floor	6
E1185-B	0-10	0.5	0.01	2	50	0.2	1	2	-10 / +45	15-90	36	1.09	Floor	6
E1110-C	0-150	3	0.5	5	50	4	0.4	0.4	-15 / +50	10-95	72	0.97	1.5-1.8	12
E1110-E	0-250	3	0.5	5	50	4	0.4	0.4	-15 / +50	10-95	72	0.97	1.5-1.8	12
E1110-F	0-300	3	0.5	5	50	4	0.4	0.4	-15 / +50	10-95	72	0.97	1.5-1.8	12
E1110-H	0-500	3	0.5	5	50	4	0.4	0.4	-15 / +50	10-95	72	0.97	1.5-1.8	12
E1190-A	0-5	0.1	0.05	5	60	0.15	1	2	-10 / +45	15-90	24	1.66	Floor	12
E1187-A	0-5	0.05	0.03	2	25	0.06	1	2	-10 / +45	15-90	24	1.18	Floor	12
E1196-B	0-20	0.2	0.2	2	20	0.1	1	2	-10 / +45	15-90	24	2.26	Floor	12
E1197-A	0-50	0.2	0.1	2	60	0.1	1	2	-10 / +50	15-90	24	1.19	Floor	12
E1188-A	0-50	0.2	0.1	2	60	1	2	2	-10 / +45	15-90	24	1.16	Floor	12
E1130-A	0-10	0.5	0.1	2	25	0.2	1	2	-20 / +50	15-90	24	1.59	1.5-1.8	12
E1130-B	0-20	0.5	0.1	2	25	0.2	1	2	-20 / +50	15-90	24	1.59	1.5-1.8	12
E1130-C	0-30	0.5	0.1	2	25	0.2	1	2	-20 / +50	15-90	24	1.59	1.5-1.8	12
E1130-D	0-500	20	2	2	25	0.2	1	2	-20 / +50	15-90	24	1.59	1.5-1.8	12
E1129-A	0-10	0.15	0.1	2	45	0.5	1	2	-10 / +50	15-90	36	1.04	1.5-1.8	12
E1129-B	0-20	0.15	0.1	2	45	0.5	1	2	-10 / +50	15-90	36	1.04	1.5-1.8	12
E1129-C	0-100	0.15	0.1	2	45	0.5	1	2	-10 / +50	15-90	36	1.04	1.5-1.8	12
E1129-D	0-1000	20	2	2	45	24	1	2	-10 / +50	15-90	36	1.04	1.5-1.8	12
	Vol %													
E1195-A	0-25	0.5	0.05	--	15	--	--	0.3	-10 / +50	5-95	24 / 36		1.5-1.8	24
E1195-B	0-21	0.5	0.05	--	15	--	--	0.3	-10 / +50	5-95	24 / 36		1.5-1.8	24

¹ Manufacturer-recommended calibration interval for normal environmental conditions





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CROSS SENSITIVITY¹ - SENSOR CARTRIDGE (SC2) / SENSOR ELEMENT

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
SC2-		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
E1125-A		10/0	100/0	100/0	200/0	5000/0	10/<10	10/<20	20/<2	20/0	1000/-10
E1125-B		10/0	100/0	100/0	200/0	5000/0	10/<12	10/<30	20/0	20/0	1000/-150
E1125-C		10/0	100/0	100/0	200/0	5000/0	10/<12	10/<30	20/0	20/0	1000/-150
E1125-D		10/0	100/0	100/0	200/0	5000/0	10/<12	10/<30	20/0	20/0	1000/-150
E1193-X ²					300/0		5/0		20/20	35/0	300/0
E1181-A	1000/0	1/0.3			100/0	500/0		20/0	10 /4	100/0	3000/0
E1183-C				100/0	100 /2		20/38	15/25	5/-12	35/0	100 /2
E1189-C					< 60%						
E1198-A	1000/0	1/1.4			100/0	5000/0	20/-0.2	1/-2	10/8		1000/0
E1185-B					10-18%						1-3%
E1110-X ²		2/0	2000/5			5000/0	50/0.5	25/0	50/-1	50/8	100/20
E1190-A		5/45/4	100/0		300/0		5/0		20/10	35/0	300/0
E1187-A					100/0		100/25	34/8	100/-30	100/0	100/0
E1196-B			100/0		100/1			10/0	100/-125	100/0	100/1
E1197-A					100/2		100/20		5/1	35/2	100/20
E1188-A					200/0		5/1	5/8			200/0
E1130-X ²		1/1	100/0	500/0	400/0	5000/0	30/-0.6	20/-25		50/0	1000/0
E1129-A		10/15			400/0	5Vol%/0	20/3	20/30	50/5		400/0
E1129-B		10/15			400/0	5Vol%/0	20/3	20/30	50/5		400/0
E1129-C		10/15			400/0	5Vol%/0	20/3	20/30	50/5		400/0
E1129-D					300/0		5/0	15/<5	20/<5		300/0
E1195-X 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.





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ORDERING INFORMATION

SC2-	E11XX-X	Gas type	Sensor type	Measuring range
	E1125-A	Ammonia, NH ₃	Electrochemical	0 – 100 ppm
	E1125-B	Ammonia, NH ₃	Electrochemical	0 – 300 ppm
	E1125-C	Ammonia, NH ₃	Electrochemical	0 – 500 ppm
	E1125-D	Ammonia, NH ₃	Electrochemical	0 – 1000 ppm
	E1193-B*	Chlorine, Cl ₂	Electrochemical	0 – 5 ppm
	E1193-C*	Chlorine, Cl ₂	Electrochemical	0 – 10 ppm
	E1193-D*	Chlorine, Cl ₂	Electrochemical	0 – 20 ppm
	E1181-A*	Chlorine dioxide, ClO ₂	Electrochemical	0 – 1 ppm
	E1183-C*	Hydrogen cyanide, HCN	Electrochemical	0 – 100 ppm
	E1189-C*	Ethylene, C ₂ H ₄	Electrochemical	0 – 200 ppm
	E1198-A*	Fluorine, F ₂	Electrochemical	0 – 1 ppm
	E1185-B	Formaldehyde, CH ₂ O	Electrochemical	0 – 10 ppm
	E1110-C	Carbon monoxide, CO	Electrochemical	0 – 150 ppm
	E1110-E	Carbon monoxide, CO	Electrochemical	0 – 250 ppm
	E1110-F	Carbon monoxide, CO	Electrochemical	0 – 300 ppm
	E1110-H	Carbon monoxide, CO	Electrochemical	0 – 500 ppm
	E1190-A*	Ozone, O ₃	Electrochemical	0 – 5 ppm
	E1187-A*	Phosphine, PH ₃	Electrochemical	0 – 5 ppm
	E1196-B*	Sulphur dioxide, SO ₂	Electrochemical	0 – 20 ppm
	E1197-A*	Hydrogen sulphide, H ₂ S	Electrochemical	0 – 50 ppm
	E1188-A*	Silane, SiH ₄	Electrochemical	0 – 50 ppm
	E1130-A	Nitrogen dioxide, NO ₂	Electrochemical	0 – 10 ppm
	E1130-B	Nitrogen dioxide, NO ₂	Electrochemical	0 – 20 ppm
	E1130-C	Nitrogen dioxide, NO ₂	Electrochemical	0 – 30 ppm
	E1130-D*	Nitrogen dioxide, NO ₂	Electrochemical	0 – 500 ppm
	E1129-A*	Nitrogen monoxide, NO	Electrochemical	0 – 10 ppm
	E1129-B*	Nitrogen monoxide, NO	Electrochemical	0 – 20 ppm
	E1129-C	Nitrogen monoxide, NO	Electrochemical	0 – 100 ppm
	E1129-D*	Nitrogen monoxide, NO	Electrochemical	0 – 1000 ppm
	E1195-A-2	Oxygen, O ₂ , 2 years	Electrochemical	0 – 25 Vol. %
	E1195-A-3	Oxygen, O ₂ , 3 years	Electrochemical	0 – 25 Vol. %
	E1195-B-2	Oxygen, O ₂ , 2 years	Electrochemical	0 – 21 Vol. %
	E1195-B-3	Oxygen, O ₂ , 3 years	Electrochemical	0 – 21 Vol. %

* only on request

EXAMPLE

CO Sensor Cartridge, measuring range 300 ppm

Order number: SC2-E1110-F

