

DESCRIPTION

The sensor cartridge SC2 includes a high performance sensing element (electrochemical for toxic gases and pellistor type for combustible gases), and an amplifier as well as a microprocessor. All important data and measured values of the sensor element are stored fail-safe in the module and transmitted digitally via the local bus to the transmitter or controller.

The calibration management is also integrated in the microprocessor of the sensor cartridge. Calibration is done either by simply swapping the sensor cartridge or by using the user friendly, integrated calibration routine directly at the system.

Sensor cartridges are factory calibrated and quality tested for immediate field installation and operation.

APPLICATION

The PolyGard®2 X-Change Sensor Cartridge is used for the detection of toxic gases, oxygen and combustible gases.

FEATURES

- *Digital measurement value processing including temperature compensation*
- *Internal diagnostics including integrated hardware watchdog*
- *Data / measured values in 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 SIL 2 compliant development process*
- *Modular technology (plug-in and replaceable)*
- *X-Change, easy maintenance and calibration by exchange of the sensor cartridge or by user friendly on-site calibration*
- *Reverse polarity protected, overload and short-circuit proof*

PolyGard®2 SC2



- UL 2075 Listed
- EMC Directives 2014/30/EU
- CE
- 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
- City of Los Angeles Approved

SPECIFICATIONS

Electrical

Power consumption

- toxic gases & oxygen 2 mA, max. per sensor
- infrared (CO₂)* 70 mA, max. per sensor;
* *Incompatible with DR6 module*
- combustible gases 50 mA, max. per sensor

Sensor Performance

See *Sensor Performance Table*;
see also *Ordering Information*

Sensor element

- toxic gases & oxygen Electrochemical
- infrared (CO₂)* Infrared (NDIR);
* *Incompatible with DR6 module*
- combustible gases Pellistor (catalytic bead sensor)

Pressure range

Atmospheric ± 20%

Storage temperature

32°F to 68°F (0°C to 20°C)

Storage time

6 months

Sensor coverage

See *Ordering Information*;
max. sq ft, affected by static and dynamic variables

Physical

- material M25, Polycarbonate
- conforms to UL94 V-2, fire retardant
- color Light gray
- protection NEMA 4X (IP65)
- installation Screw mounting
- Dimensions (D x H) 0.94 x 0.87 in (24 x 22 mm)
- Connection type 3-pin connector
- Weight 0.07 lb (30 g)
- Certified to** UL 2075 Listed,
NRTL performance tested
for model SC2-E1110-E
- Conforms to** EMC Directives 2014/30/EU
CE
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
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Warranty

12 months normal exposure for sensor element

ACCESSORIES

Duct Mounting Kit

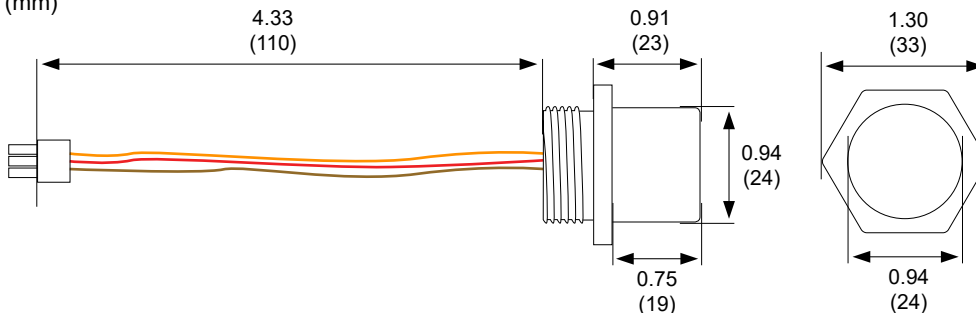
- flow rate **PG2-DUCTKIT**
Min. 3.1 mph (5000 m/h),
max. 12.4 mph (20,000 m/h)
- air duct diameter Min. 3.94 in. (0.1 m),
max. 39.37 in. (1.0 m)
- length of sampling tube 9.84 in. (250 mm), adaptable
- hose length 2 x 39.37 in. (1000 mm)

Calibration Kits

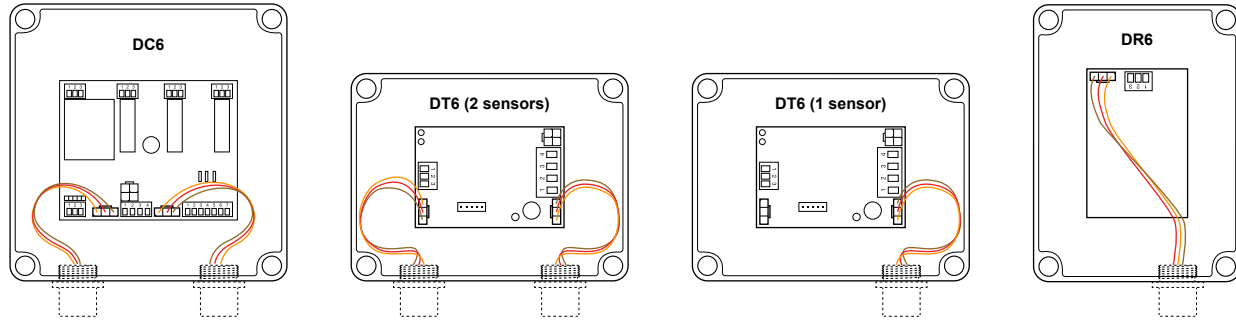
- carbon monoxide **CALKIT-PG2-CO**
Sensor calibration adapter
w/ tube and cup, 500 mL/min.
regulator, 17L 200 ppm carbon
monoxide, 17L 99.99% nitrogen,
carrying case
- combustible gases **CALKIT-PG2-COMB**
Sensor calibration adapter
w/ tube and cup, 150 mL/min.
regulator, 17L 2.5% methane,
17L 99.99% nitrogen,
carrying case
- nitrogen dioxide **CALKIT-PG2-NO2**
Sensor calibration adapter
w/ tube and cup, 500 mL/min.
regulator (stainless steel),
70L 10 ppm nitrogen dioxide,
70L 99.99% nitrogen,
carrying case
- carbon monoxide & nitrogen dioxide **CALKIT-PG2-CO-NO2**
Sensor calibration adapter
w/ tube and cup, 500 mL/min.
regulator (for CO), 500 mL/
min. regulator (stainless steel,
for NO₂), 17L 200 ppm carbon
monoxide, 70L 99.99% nitrogen,
70L 10 ppm nitrogen dioxide,
and (2) carrying cases

DIMENSIONS

inches (mm)



WIRING CONFIGURATION



SENSOR PERFORMANCE TABLE – TOXIC GAS AND OXYGEN, INFRARED SENSORS

Part Number	Molecular Formula	Measuring Range	Accuracy	Resolution	Repeatability	Response Time	Zero Point Variation	Long Term Drift		Working Temperature	Humidity Range (non-condensing)	Sensor Life Expectancy ¹ , Normal Conditions	Relative Gas Density	Mounting Height	Calibration Interval ¹
								Zero	Gain						
TOXIC GASES AND OXYGEN															
		ppm	< ± % sig.	ppm	< ± % sig.	t90 < sec.	± ppm	< % signal/ mo.		°F	% RH	> mo.	Air = 1	ft	mo.
E1110-E	CO	0-250	3	0.5	5	50	4	0.4	0.4	-4/149	10-95	72	0.97	5-6	12
E1110-F	CO	0-300	3	0.5	5	50	4	0.4	0.4	-4/149	10-95	72	0.97	5-6	12
E1130-A	NO ₂	0-10	0.5	0.1	2	25	0.2	1	2	-4/149	15-90	24	1.59	5-6	12
E1130-B	NO ₂	0-20	0.5	0.1	2	25	0.2	1	2	-4/149	15-90	24	1.59	5-6	12
E1130-C	NO ₂	0-30	0.5	0.1	2	25	0.2	1	2	-4/149	15-90	24	1.59	5-6	12
E1130-D	NO ₂	0-500	20	2	2	25	0.2	1	2	-4/149	15-90	24	1.59	5-6	12
E1125-C	NH ₃	0-300	30	2	10	120	50	1	2	-22/122	15-90	24	0.59	Ceiling	12
E1125-D	NH ₃	0-1000	30	4	10	120	50	1	2	-22/122	15-90	24	0.59	Ceiling	12
E1193-C	Cl ₂	0-10	0.1	0.1	2	90	0.2	1	2	-4/122	15-90	24	2.4	Floor	6
E1183-C	HCN	0-100	0.2	0.1	2	20	1	1	2	-4/122	15-90	24	0.93	Ceiling	6
E1189-C	C ₂ H ₄	0-200	1.0	0.3	1	60	4	1	3	-4/122	15-90	24	0.97	5-6	12
E1185-B	CH ₂ O	0-10	0.5	0.01	2	50	0.2	1	2	14/122	15-90	36	1.09	Floor	6
E1190-A	O ₃	0-5	0.1	0.05	5	60	0.15	1	2	14/122	15-90	24	1.66	Floor	12
E1196-B	SO ₂	0-20	0.2	0.2	2	20	0.1	1	2	14/122	15-90	24	2.26	Floor	12
E1197-A	H ₂ S	0-50	0.2	0.1	2	60	0.1	1	2	14/122	15-90	24	1.19	Floor	12
		% Vol													
E1195-A	O ₂	0-25	0.5	0.05	--	15	--	--	0.3	-13/122	5-95	24	--	5-6	6
INFRARED SENSORS (Incompatible with DR6 module)															
		% Vol													
I1164-B	CO ₂	0-5	< 10% ²	--	--	100	--	--	--	31/104	0-95	180	1.67	5-6	60
I1164-C	CO ₂	0-2	< 10% ²	--	--	100	--	--	--	31/104	0-95	180	1.67	5-6	60

¹ Manufacturer-recommended calibration interval for normal environmental conditions

² of Reading

SENSOR PERFORMANCE TABLE – COMBUSTIBLE GAS SENSORS

Part Number	Molecular Formula	Measuring Range	Accuracy	Resolution	Repeatability	Response Time	Zero Point Variation	Long Term Drift		Working Temperature	Humidity Range (non-condensing)	Sensor Life Expectancy ¹ , Normal Conditions	Relative Gas Density	Mounting Height	Calibration Interval ¹
								Zero	Gain						
COMBUSTIBLE GASES ²															
		% LEL	< % sig. (CH ₄)	%LEL	< % sig. (CH ₄)	t90 < sec.	% (CH ₄)	< % LEL / mo. (CH ₄)		°F	% RH	> mo.	Air = 1	ft	mo.
P3485-A	C ₃ H ₆ O	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.00	Floor	6
P3408-A	NH ₃	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	0.60	Ceiling	6
P3496-A	vapors	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	-	-	6
P3460-A	C ₄ H ₁₀	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.11	Floor	6
P3472-A	C ₅ H ₁₀	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	-	Floor	6
P3427-A	C ₄ H ₈ O ₂	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	3.04	Floor	6
P3425-A	C ₂ H ₅ OH	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.59	Floor	6
P3410-A	C ₂ H ₄	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	0.98	Ceiling	6
P3491-A	C ₇ H ₁₆	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	3.46	Floor	6
P3435-A	C ₆ H ₁₄	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.98	Floor	6
P3476-A	C ₅ H ₁₂	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.48	Floor	6
P3482-A	C ₃ H ₈ O	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.08	Floor	6
P3402-A	LPG	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	-	-	6
P3400-A	CH ₄	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	0.55	Ceiling	6
P3450-A	CH ₃ OH	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.11	Floor	6
P3458-A	C ₄ H ₈ O	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.15	Floor	6
P3475-A	C ₅ H ₁₂	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.49	Floor	6
P3480-A	C ₃ H ₈	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.55	Floor	6
P3484-A	C ₃ H ₈ O	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.08	Floor	6
P3490-A	C ₇ H ₈	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	3.18	Floor	6
P3440-A	H ₂	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	0.07	Ceiling	6
		ppm	< % sig. (C ₃ H ₈)	ppm	< % sig. (C ₃ H ₈)										
P3480-C	C ₃ H ₈	0-5000	2	1	2	15	0.5	0.3	1	-4/122	5-95	36	1.55	Floor	6

¹ Manufacturer-recommended calibration interval for normal environmental conditions

² The sensitivity of Pellistor sensors can be influenced by substances containing silicon compounds and even poisoned/destroyed by them.

ORDERING INFORMATION

SC2 - XXXXX-X

Gas Sensor & Range					
#	TOXIC GASES AND OXYGEN			Coverage Area (ft ²), Max.	Mounting Height (ft)
E1110-E	Carbon Monoxide	CO	0-250 ppm	7,500	5-6
E1110-F	Carbon Monoxide	CO	0-300 ppm	7,500	5-6
E1130-A	Nitrogen Dioxide	NO ₂	0-10 ppm	7,500	5-6
E1130-B	Nitrogen Dioxide	NO ₂	0-20 ppm	7,500	5-6
E1130-C	Nitrogen Dioxide	NO ₂	0-30 ppm	7,500	5-6
E1130-D	Nitrogen Dioxide	NO ₂	0-500 ppm	7,500	5-6
E1125-C	Ammonia	NH ₃	0-300 ppm	4,000	Ceiling
E1125-D	Ammonia	NH ₃	0-1000 ppm	4,000	Ceiling
E1193-C	Chlorine	Cl ₂	0-10 ppm	Near Source	Floor
E1183-C	Hydrogen Cyanide	HCN	0-100 ppm	Near Source	Ceiling
E1189-C	Ethylene	C ₂ H ₄	0-200 ppm	5,000	5-6
E1185-B	Formaldehyde	CH ₂ O	0-10 ppm	Contact Rep	Floor
E1190-A	Ozone	O ₃	0-5 ppm	5,000	Floor
E1195-A	Oxygen	O ₂	0-25 Vol%	5,000	5-6
E1196-B	Sulfur Dioxide	SO ₂	0-20 ppm	5,000	Floor
E1197-A	Hydrogen Sulfide	H ₂ S	0-50 ppm	5,000	Floor
#	INFRARED SENSORS <i>(Incompatible with DR6 module)</i>			Coverage Area (ft ²), Max.	Mounting Height (ft)
I1164-B	Carbon Dioxide	CO ₂	0-5 Vol%	7,500	5-6
I1164-C	Carbon Dioxide	CO ₂	0-2 Vol%	7,500	5-6
#	COMBUSTIBLE GASES			Coverage Area (ft ²), Max.	Mounting Height (ft)
P3485-A	Acetone	C ₃ H ₆ O	0-100% LEL	4,000	Floor
P3408-A	Ammonia	NH ₃	0-100% LEL	4,000	Ceiling
P3496-A	Gasoline Vapors	-	0-100% LEL	4,000	-
P3460-A	Butane	C ₄ H ₁₀	0-100% LEL	4,000	Floor
P3472-A	Cyclopentane	C ₅ H ₁₀	0-100% LEL	4,000	Floor
P3427-A	Ethyl Acetate	C ₄ H ₈ O ₂	0-100% LEL	4,000	Floor
P3425-A	Ethyl Alcohol	C ₂ H ₅ OH	0-100% LEL	4,000	Floor
P3410-A	Ethylene	C ₂ H ₄	0-100% LEL	4,000	Ceiling
P3491-A	Heptane	C ₇ H ₁₆	0-100% LEL	4,000	Floor
P3435-A	Hexane	C ₆ H ₁₄	0-100% LEL	4,000	Floor
P3476-A	Isopentane	C ₅ H ₁₂	0-100% LEL	4,000	Floor
P3482-A	Isopropyl Alcohol	C ₃ H ₈ O	0-100% LEL	4,000	Floor
P3402-A	LPG	-	0-100% LEL	4,000	-
P3400-A	Methane	CH ₄	0-100% LEL	4,000	Ceiling
P3450-A	Methanol	CH ₃ OH	0-100% LEL	4,000	Floor
P3458-A	Methyl Ethyl Ketone	C ₄ H ₈ O	0-100% LEL	4,000	Floor
P3475-A	Pentane	C ₅ H ₁₂	0-100% LEL	4,000	Floor
P3480-A	Propane	C ₃ H ₈	0-100% LEL	4,000	Floor
P3480-C	Propane	C ₃ H ₈	0-5000 ppm	4,000	Floor
P3484-A	Propyl Alcohol	C ₃ H ₈ O	0-100% LEL	4,000	Floor
P3490-A	Toluene	C ₇ H ₈	0-100% LEL	4,000	Floor
P3440-A	Hydrogen	H ₂	0-100% LEL	4,000	Ceiling

Example, ordering part number:

SC2-E1110-E

Configuration includes:

- X-Change Replacement Sensor:
 - Carbon Monoxide, 0-250 ppm

ACCESSORIES

PG2-DUCTKIT	(1) Duct mounting kit for SC2 / AT6 sensor
CALKIT-PG2-CO	Carbon monoxide calibration kit for SC2 / AT6 sensors
CALKIT-PG2-COMB	Combustible calibration kit for SC2 / AT6 sensors
CALKIT-PG2-NO2	Nitrogen dioxide calibration kit for SC2 / AT6 sensors
CALKIT-PG2-CO-NO2	CO & NO2 calibration kit for SC2 / AT6 sensors