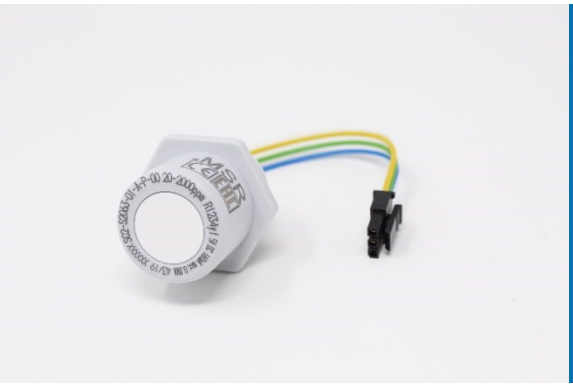
Gas Detection.

Technical Datasheet



PolyGard®2

Sensor SC2

with Semiconductor Sensor Element
for Freon Gases / Refrigerants
in LEL Range (LFL)

All Products Made in Germany

DESCRIPTION

Semiconductor sensor including digital value processing and self-control for the continuous monitoring of the ambient air to detect low-flammable refrigerants in the combustible range.

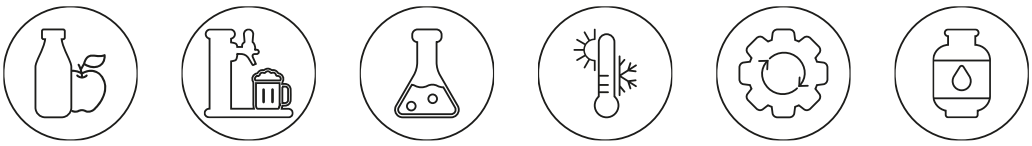
The intelligent SC2 Sensor for detection of low-flammable refrigerants includes a semiconductor sensor element and electronics with a measuring amplifier and a µController for the digital processing of the measured values. All relevant data and measured values of the sensor are stored fail-safe in the internal memory of the µProcessor and are transmitted digitally to the Board (SB2, WSB2, MSC2, MSB2) via the MSR local bus.

The measured value display of the sensors is in % LEL (in this case, the unit "% LFL", which is customary in this trade, is synonymous with LEL).

The maintenance of a device can be done either by simply exchanging the sensor or by using the integrated, comfortable calibration routine directly at the system.

APPLICATION

The PolyGard®2 SC2 Sensor is used for the detection of low-flammable gases of the refrigerant class A2L.



Food | Beverage dispensing | Laboratory | Climate | Process | Gas storage

FEATURES

- Digital measurement value processing
- Internal functional control with integrated Watchdog
- Easy maintenance and calibration by exchange of the sensor or by comfortable on-site calibration
- Low zero-point drift
- Sensor with long life expectancy
- Hardware and software according to SIL compliant development process
- Reverse polarity protected, overload and short-circuit proof
- IP65 protection (when installed)

SPECIFICATIONS

ELECTRICAL		
Power supply	5 V DC from Board (SB2/WSB2/MSC2/MSB2), reverse polarity protected	
Power consumption	160 mA, max. (0.8 VA)	
Serial interface local bus	1-wire / 19200 Baud	
SENSOR ELEMENT		
Gas type	See Ordering Information	
Measuring principle	Semiconductor	
Measuring range	0–50 % LEL	
Repeatability	< ± 20 % signal	
t_{90} time	t_{90} ≤ 150 s (plastic housing), t_{90} ≤ 180 s (stainless steel housing)	
Reaction time	**Plastic housing** ≤ 10 s (R454b) ≤ 15 s (R32, R1234yf) ≤ 35 s (R455a, R1234ze)	**Stainless steel housing** ≤ 60 s
Temperature range	-30 °C to +60 °C (-22 °F to +140 °F)	
Humidity range	15–90 % RH non-condensing	
Pressure range	90–110 kPa	
Life time[1] in air	> 5 years	
Calibration interval[2]	12 months	
Poisoning	Semiconductor sensors can be poisoned by silicone-containing substances or other catalyst poisons, up to complete loss of sensitivity. Their sensitivity is irreversibly impaired by halogen-containing compounds.	
RECOMMENDED STORAGE CONDITIONS		
Storage temperature range[3]	0 °C to +50 °C (32 °F to +122 °F)	
Storage time[4]	Ca. 12 months	
Humidity range	15–90 % RH non-condensing	
Pressure range	90–110 kPa	
PHYSICAL		
Housing	**Plastic**	**Stainless steel**
Material	Polycarbonate	CrNi steel: 1.4404
Flammability classification	UL 94 V2	-
Housing colour	Similar to RAL 7035 (light grey)	Natural
Dimensions (Ø x H)	Type P: 24 x 22 mm (0.94 x 0.87 in.) Type L: 24 x 30 mm (0.94 x 1.18 in.)	Type S: 30 x 61 mm (1.18 x 2.40 in.)
Weight	Ca. 30 g	Ca. 150 g
Protection class	IP65	IP64
Mounting	Screw mounting, external thread M25 x 1.5 mm	Screw mounting, external thread NPT ¾" ANSI/ B1.20.1 / M30 x 1,5 mm
Connection type	3-pin connector	
Cable length	Standard: Ca. 150 mm (5.91 in.) Cable extension (5, 10 and 15 m)	Cable extension (5, 10 and 15 m)
REGULATIONS		
Directives (only in connection with the Sensor-Boards from MSR)	EMC Directives 2014/30/EU CE Conformity to: EN 378 EN 14624 EN IEC 62990-1 Type SM EN 50271 EN 61010-1:2010 ANSI/UL 61010-1 CAN/CSA-C22.2 No. 61010-1	
Warranty	1 year on sensors (not if poisoned or overloaded)	

[1] Expected service life for normal ambient conditions.
[2] Manufacturer-recommended calibration intervals for normal environmental conditions
[3] A deviating storage temperature can have a negative effect on sensitivity and service life.
[4] If stocked for a longer period, we recommend checking the zero point and recalibrating if necessary.

Semiconductor sensors that have been exposed to an increased gas concentration (> ½ full scale value) during normal measuring operation must be replaced without fail.

All specifications were collected under optimal test conditions.
We confirm compliance with the minimum requirements of the applicable standard.
The T 021 (DGVU-I-213-056) and T 023 (DGVU-I-213-057) as well as T 055 leaflets must be observed.

OVERVIEW FREON GASES

MSR Freon Group	MSR Code	Freon type	Calibration gas	Group	Relative gas density[1] Air =1
%LFL	2020-01	R32	R32	HFC	1.82
	2020-02	R455a	R455a	CFC/HFO	3.46
	2020-03	R454b	R454b	HFO	2.50
	2020-04	R1234yf	R1234yf	HFO	4.00
	2020-05	R1234ze	R1234ze	HFO	4.00

[1] The recommended mounting height depends on the relative gas density of the type of gas to be monitored. Depending on the relative gas density (d), the following recommendation therefore applies:

d ≤ 0.85:	Mounting 0.3–0.5 m below the ceiling
0.85 < d < 1.15:	Mounting at 1.2–1.8 m height
d ≥ 1.15:	Mounting 0.3–0.5 m above the floor

ORDERING INFORMATION

SC2- **S2020-0X-A-** **X-** **X**

00	Without cable extension (standard)	
XX[1]	With cable extension: Cable length: 05, 10, 15 (in m)	**Cable length**
P	Sensor housing plastic (standard)	
L	Sensor housing plastic long (only with cable extension)	
S	Sensor housing stainless steel (only with cable extension)	**Sensor housing**

	Gas type	Measuring range	
S2020-01-A	R32	0–50 % LEL	
S2020-02-A	R455a	0–50 % LEL	
S2020-03-A	R454b	0–50 % LEL	
S2020-04-A	R1234yf	0–50 % LEL	**Gas type/ Measuring range**
S2020-05-A[2]	R1234ze	0–50 % LEL	

[1] Cable extension only in combination with sensor housing plastic type L or sensor housing stainless steel type S
[2] Not in combination with stainless steel sensor housing

EXAMPLE

R32 sensor LFL, measuring range 0–50 % LEL, sensor in plastic housing type P without cable extension (order number: SC2-S2020-01-A-P-00)

ACCESSORY

Sensor protection cap (order number: C2-Z1)
Duct mounting kit (order number: C2-Z2)
Calibration adapter (order number: C2-Z4, C2-Z4-A, C2-Z4-B, C2-Z4-C)
Splash protection SplashGuard (order number: C2-Z5)
Remote-Kit (order number:C2-Z11-XX)

FURTHER MEASURING PRINCIPLES

Infrared:
R32
➔ See data sheet DB_SC2_IR_Premium

MPS™:
R32
➔ See data sheet DB_SC2_MPS

Semiconductor/Freon:
R32, R455a, R454b, R1234yf, R1234ze
➔ See data sheet DB_SC2_Freon

Documents

Catalog

YouTube