

**Fixed SILpoint 2 Gas Alarm Devices of the SP1 series with Ex db protection for Zone 1 and 2. SP2 series with Ex nA protection only for Zone 2. Designed for the continuous monitoring of the ambient air to detect combustible gases and vapours for use in the hazardous areas of zones 1 and/or 2 according to Directive 2014/34/EU.**

Microprocessor based gas sensor with 4–20 mA / RS485 Modbus output signal, alarm and fault relays (all SIL2 certified) for monitoring the ambient air to detect combustible gases and vapours by means of a catalytic sensor element (Pellistor).

The calibration of sensors without LCD display is carried out via the calibration device STL06-PGX2 or the PC software PCE06-PGX2. Sensors with LCD display have an integrated calibration routine that is started from the outside by a permanent magnet without opening the housing. In case of an alarm or failure the backlight of sensors with LCD display changes from green to red.

## Key Features

- ATEX and IEC Ex certificates
- Metrological test & SIL2 safety functions 4–20 mA, RS485 and relay (only Pellistors)
- **SP1 for zone 1 (and also suitable for zone 2):**
  - Type “Ex db” with flame-proof enclosure
- **SP2 for zone 2:**
  - Type “Ex nA” with flame-proof enclosure
- Enclosure: additional FM and CSA certificates for Class I, Div. 1
- Continuous monitoring
- Microprocessor with 12-bit converter resolution
- Self-monitoring system
- Easy calibration
- Calibration service by exchanging the sensor head
- Proportional 4–20 mA output
- Serial interface to the control center
- Reverse polarity protection
- Overload protection
- LCD display with status LEDs (optional)
- Alarm and fault signal relay (optional)



**SENSOR WITH ALARM**



**SENSOR WITHOUT DISPLAY**

## Application

The SILpoint sensor is used in industrial areas like oil/gas industry, biogas plants, petrochemical industry, power plants etc. in Ex-Zone 1 or 2 for detection of refrigerants and Freon gases. The SILpoint sensor is also suitable for commercial areas like refrigeration plants etc. With the 4–20 mA / RS485 Modbus output signal the sensor is suitable for connection to the Combi series, as well as to any other controllers or automation devices. As an option, the SILpoint sensor is also available with LCD display and relay output.

## GENERAL SPECIFICATIONS

ELECTRICAL	
Power supply SP1 series	20–28 V DC reverse polarity protected
Power supply SP2 series	20–28 V DC reverse polarity protected or 24 V AC $\pm$ 10 % (21.6–26.4 V AC)
Power consumption (at 24 V DC)	90 mA, max. 130 mA
Control unit	Microprocessor with 12-bit converter resolution
Digital filter	Averaging in order to increase the EMC immunity
Visual indications	3 LEDs for power, alarm and fault
Analog output signal (active)	Proportional, overload and short-circuit proof, load $\leq$ 500 $\Omega$ 4–20 mA = measuring range 3.0–4 mA = underrange > 20–21,2 mA = overrange 2 mA = fault > 21.8 mA = fault High
Serial output (optional)	Serial data bus
Faulty relay output (optional)	Max. 30 V AC/DC, 1 A
Alarm relay (optional)	Max. 30 V AC/DC, 1 A
LCD (optional)	2 x 16 characters, 3 status LEDs, 4 menu operating elements
SENSOR DATA	
Gas type and measuring range	See Ordering Information
Sensor element	Semiconductor sensor
Oxygen concentration	21 % (standard) 18 % minimum level
Stabilisation time	168 h
Warm-up time	300 s
Pressure range	Atmospheric $\pm$ 10 %
Storage time <sup>1</sup>	Max. 12 months
Poisoning	The sensitivity of semiconductor sensors can be affected by substances containing silicone and they may even lead to the complete poisoning. The sensors are also susceptible to poisoning by organic solvents.
SENSOR HEAD HOUSING	
Material	CrNi Stahl: 1.4404
Dimensions (d x H)	30 x 56 mm (1.18 x 2.20 in.)
Protection class	Gas inlet IP64, with option splash proof IP66 SplashGuard (on request)
Thread	External thread NPT $\frac{3}{4}$ " ANSI/ B1.20.1
PHYSICAL CHARACTERISTICS	
Enclosure P1 and P3 / colour	Aluminium pressure die-casting / light grey RAL 7032, epoxy coating
Dimensions (d x H) / weight	95 x 82 mm / approx. 1.3 kg
Protection class	Housing protection IP66 to IP68 (depending on the cable glands used)
Mounting	Wall mounting (sensor head downwards)
Cable entry	1x resp. 3x $\frac{3}{4}$ in. (Ansi B1.20.1)
Wire connection	Spring-type terminal, 0.08 to 2.5 mm <sup>2</sup> AWG 28–12
Wire length	Max. load 500 $\Omega$ (= wire resistance + controller input resistance)

## ENVIRONMENTAL CONDITIONS (OPERATION AND EXPLOSION PROTECTION)

<b>Humidity</b>	20 to 90% RH (not condensing)
<b>Operating temperature</b>	-25 °C to +60 °C (-13 °F to 140 °F), -20 °C to +60 °C (-4 °F to 140 °F) for display version
<b>Storage temperature</b>	-5 °C to +30 °C (23 °F to 86 °F)
<b>Pressure range<sup>2</sup></b>	800 to 1200 mbar (80 to 120 kPa)
<b>Air velocity</b>	< 6 m/sec.

<sup>1</sup> The explosion protection test only covers the pressure range up to 1100 mbar and the oxygen concentration up to 21 % vol.

MARKING / CERTIFICATES	SP1	SP2
<b>ATEX Marking</b>	II2G Ex db IIC T4 Gb, CE 0158	II3G Ex nA IIC T4 Gc
<b>EC-Type Examination Certificate</b>	BVS 15 ATEX E 129 X	
<b>Protection types</b>	EN 60079-0: 2012 and EN 60079-1: 2014 (Ex-db)	EN 60079-0: 2012 and EN 60079-15: 2011 (Ex-nA)
<b>Certificates</b>	IECEX 16.0038 X (electrical Ex protection), Ex d IEC 60079-0, -1	
<b>Directives</b>	Conformity to: EN 378, EN 45544-1	

## Certificates only housing

<b>FM Certificate</b>	<b>Class 3600, Class 3615, Class 3810, ANSI/NEMA 250.</b> Explosionproof for Class I, Division 1, Groups A, B, C and D; dust-ignition-proof for Class II, Division 1, Groups E, F and G, Class III, hazardous (classified) locations, in-doors and outdoors (type 4X).
<b>CSA Certificate</b>	2472857 / Class 2258-02 PROCESS CONTROL EQUIPMENT for hazardous locations Class I, Div. 1, Groups A, B, C and D; Class II, Div. 1, Groups E, F and G, Class III, Div. 1; Type 4X

## WARRANTY

	1 year on sensor (not if poisoned or overloaded), 2 years on device
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GAS TYPE	ORDERING NO.	MEASURING RANGE	REPEATABILITY	T90 TIME	TEMPERATURE RANGE	HUMIDITY RANGE (NON-CONDENSING)	LIFETIME IN AIR	RELATIVE GAS DENSITY	MOUNTING HEIGHT	CALIBRATION INTERVAL <sup>1</sup>
	PX2- SX1-	ppm	<± % sig.	≤ sec	°C	% RH	> months	Air = 1	(M)	Months
NH <sub>3</sub>	S2125-C	0-1000	20	90	-30 / +60	15-90	60	0.60	Ceiling	12
NH <sub>3</sub>	S2125-F	0-10,000	20	60	-30 / +60	15-90	60	0.60	Ceiling	12
Freons	S20XX-XX-X	20-2000	20	180	-30 / +60	15-90	60	> 1	Ceiling	12

<sup>1</sup> Manufacturer-recommended calibration interval for normal environmental conditions

No cross-sensitivity data is available for these sensors. It is well known that all semiconductor sensors are also sensitive to combustible gases, e.g. alcohols, etc.

All specifications were collected under optimal test conditions.

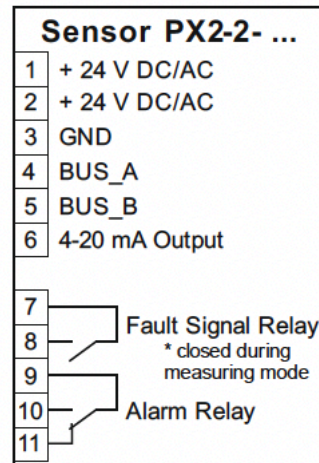
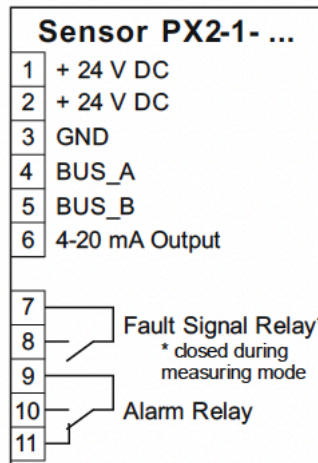
We confirm compliance with the minimum requirements of the applicable standard.

## OVERVIEW FREON TYPES

FREON GROUP	CODE	FREON TYPE	CALIBRATION GAS	GROUP	MEASURING RANGE	RELATIVE GAS DENSITY(AIR =1)
<b>FR02</b>	2061-01	R23	R23	HFC	2000 ppm	2.44
	2061-02	R508b	R23	HFC	2000 ppm	>1
<b>FR03</b>	2063-01	R1234yf	R1234yf	HFO	2000 ppm	4
	2063-02	R452a	R1234yf	HFO	2000 ppm	>1
	2063-03	R513a	R1234yf	HFO/HFC	2000 ppm	>1
	2063-04	R454c	R1234yf	HFO	2000 ppm	>1
	2063-05	R455a	R1234yf	HFO	2000 ppm	>1
	2063-06	R454b	R1234yf	HFO	2000 ppm	>1
<b>FR04</b>	2064-01	R123	R123	HCFC	2000 ppm	5.28
<b>FR06</b>	2070-01	R22	R22	HCFC	2000 ppm	3.03
	2070-02	R401a	R22	HCFC	2000 ppm	>1
	2070-03	R401b	R22	HCFC	2000 ppm	>1
	2070-04	R402a	R22	HCFC	2000 ppm	>1
	2070-05	R402b	R22	HCFC	2000 ppm	>1
	2070-06	R403a	R22	HCFC	2000 ppm	>1
	2070-07	R408a	R22	HCFC	2000 ppm	>1
	2070-08	R409a	R22	HCFC	2000 ppm	>1
	2070-09	R411a	R22	HFC	2000 ppm	>1
<b>FR07</b>	2077-01	R134a	R134a	HFC	2000 ppm	3.59
	2077-02	R407a	R134a	HFC	2000 ppm	>1
	2077-03	R416a	R134a	HFC	2000 ppm	>1
	2077-04	R417a	R134a	HFC	2000 ppm	>1
	2077-05	R422a	R134a	HFC	2000 ppm	>1
	2077-06	R422d	R134a	HFC	2000 ppm	>1
	2077-07	R427a	R134a	HFC	2000 ppm	>1
	2077-08	R437a	R134a	HFC	2000 ppm	>1
	2077-09	R438a	R134a	HFC	2000 ppm	>1
	2077-10	R449a	R134a	HFC	2000 ppm	>1
	2077-11	R407f	R134a	HFC	2000 ppm	>1
	2077-12	R450a	R134a	HFO	2000 ppm	>1
<b>FR08</b>	2080-01	R125	R407c	FC	2000 ppm	1.21
	2080-02	R32	R407c	FC	2000 ppm	1.82
	2080-03	R404a	R407c	HFC	2000 ppm	3.45
	2080-04	R407c	R407c	HFC	2000 ppm	>1
	2080-05	R410a	R407c	HFC	2000 ppm	>1
	2080-06	R434a	R407c	HFC	2000 ppm	>1
	2080-07	R507a	R407c	HFC	2000 ppm	>1
	2080-08	R448a	R407c	HFC	2000 ppm	>1
	2080-09	R452b	R407c	HFO	2000 ppm	>1
	2080-10	R143a	R407c	FC	2000 ppm	2.96

No cross-sensitivity data is available for these sensors. It is well known that all semiconductor sensors are also sensitive to combustible gases, e.g. alcohols, etc.

## ELECTRICAL CONNECTION



## ORDERING INFORMATION

PX2-SX1-	X-1-	X-	S20XX-XX-A-	XX	SENSOR
			S20XX-XX-A	P1	EXCHANGE HEAD <sup>1</sup>
				P3	Aluminum die-cast housing for 3x cable entries+ 1x gland Sensor housing
			Gas type	Measuring range	<b>Sensor housing</b>
			<b>S2061-01-A</b>	R23	20–2000 ppm
			<b>S2061-02-A</b>	R508b	20–2000 ppm
			<b>S2063-01-A</b>	R1234yf	20–2000 ppm
			<b>S2063-02-A</b>	R452a	20–2000 ppm
			<b>S2063-03-A</b>	R513a	20–2000 ppm
			<b>S2063-04-A</b>	R454c	20–2000 ppm
			<b>S2063-05-A</b>	R455a	20–2000 ppm
			<b>S2063-06-A</b>	R454b	20–2000 ppm
			<b>S2064-01-A</b>	R123	20–2000 ppm
			<b>S2070-01-A</b>	R22	20–2000 ppm
			<b>S2070-02-A</b>	R401a	20–2000 ppm
			<b>S2070-03-A</b>	R401b	20–2000 ppm
			<b>S2070-04-A</b>	R402a	20–2000 ppm
			<b>S2070-05-A</b>	R402b	20–2000 ppm
			<b>S2070-06-A</b>	R403a	20–2000 ppm
			<b>S2070-07-A</b>	R408a	20–2000 ppm
			<b>S2070-08-A</b>	R409a	20–2000 ppm
			<b>S2070-09-A</b>	R411a	20–2000 ppm
			<b>S2077-01-A</b>	R134a	20–2000 ppm
			<b>S2077-02-A</b>	R407a	20–2000 ppm
			<b>S2077-03-A</b>	R416a	20–2000 ppm
			<b>S2077-04-A</b>	R417a	20–2000 ppm
			<b>S2077-05-A</b>	R422a	20–2000 ppm
			<b>S2077-06-A</b>	R422d	20–2000 ppm
			<b>S2077-07-A</b>	R427a	20–2000 ppm
			<b>S2077-08-A</b>	R437a	20–2000 ppm
			<b>S2077-09-A</b>	R438a	20–2000 ppm
			<b>S2077-10-A</b>	R449a	20–2000 ppm
			<b>S2077-11-A</b>	R407f	20–2000 ppm
			<b>S2077-12-A</b>	R450a	20–2000 ppm
			<b>S2080-01-A</b>	R125	20–2000 ppm
			<b>S2080-02-A</b>	R32	20–2000 ppm
			<b>S2080-03-A</b>	R404a	20–2000 ppm
			<b>S2080-04-A</b>	R407c	20–2000 ppm
			<b>S2080-05-A</b>	R410a	20–2000 ppm
			<b>S2080-06-A</b>	R434a	20–2000 ppm
			<b>S2080-07-A</b>	R448a	20–2000 ppm
			<b>S2080-08-A</b>	R507a	20–2000 ppm
			<b>S2080-09-A</b>	R452b	20–2000 ppm
			<b>S2080-10-A</b>	R143a	20–2000 ppm
		<b>0</b>	Without options		
		<b>1</b>	Relay set (2)		
		<b>2</b>	LC Display		
		<b>3</b>	Relay set (2) and LC Display		
<b>1</b>	Zone 1 and 2				
<b>2</b>	Zone 2				
					<b>Gas type/ Measuring range</b>
					<b>Options</b>
					<b>ATEX Zone</b>

<sup>1</sup> The exchangeable sensor head is only to be used in connection with the SILpoint Gas Sensor. Otherwise it loses its ATEX Certification.

WatchGas SILpoint Freon E DS EN 17-12-21. v1.0 © 2021 WatchGas B.V.

WatchGas is dedicated to continuously improving its products. Therefore, the specifications and features mentioned in this datasheet are subject to change without prior notice.