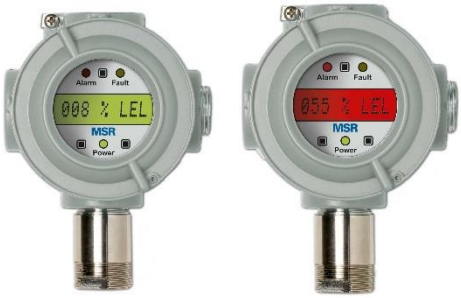
PolyXeta®2

Sensor for Freon & refrigerant gases, zone 1, PX2-1
Sensor for Freon & refrigerant gases, zone 2, PX2-2

Microprocessor based gas sensor with 4 – 20 mA / RS485-Modbus output signal, alarm and fault relays for monitoring the ambient air to detect refrigerant and Freon gases and vapours by means of a semiconductor sensor element. 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 a fault, the backlight of the sensors with LCD display changes from green to red.

Sensor, zone 1, without display



Sensor, zone 1, with LCD display

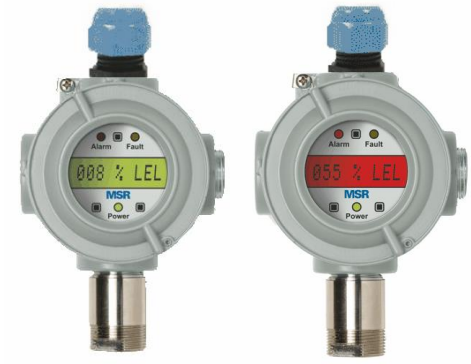
APPLICATION

The PolyXeta®2 sensor is used in industrial areas like oil/gas industry, biogas plants, petrochemical industry, power plants etc. in Ex-Zone 1 or 2. The PolyXeta®2 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 PolyGard®2 gas controller series by MSR-Electronic, as well as to any other controllers or automation devices. Optionally, the PolyXeta®2 sensor is also available with LCD display and relay output.

FEATURES

- ATEX and IEC Ex certificates MSR-Electronic for electrical Ex protection
- **PX2-1 for zone 1 (and also suitable for zone 2):**
  - Type “Ex d” with flame-proof enclosure
- **PX2-2 for zone 2:**
  - Type “Ex n” type of protection
- Enclosure: additional CSA certificate 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, zone 2, without display



Sensor, zone 2, with LCD display

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SPECIFICATIONS

ELECTRICAL		
Power supply	20 – 28 V DC, verpolungssicher	
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	2 LEDs for operation, alarm and communication	
Analog output signal (active)	Proportional, overload and short-circuit proof, load ≤ 500 Ω	
	4 – 20 mA = measuring range	3.0 < 4 mA = underrange
	> 20 – 21.2 mA = overrange	2 mA = fault, > 21.8 mA = fault High
Serial interface	Serial data bus	
Fault relay (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	Refrigerant gases & Freons	
Sensor element	Semiconductor sensor	
Measuring range	20 – 2000 ppm	
Response time t_{90}	$t_{90} \leq 40$ s	
Oxygen concentration	21 % (standard) 18 % minimum level	
Repeatability	± 20 %	
Life expectancy	> 5 years/ normal operating environment	
Poisoning	The sensitivity of semiconductor sensors can be affected by substances containing silicone and they may even lead to the complete poisoning.	
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 IP65 (on request)	
Thread	External thread NPT ¾“ ANSI/ B1.20.1	
ENVIRONMENTAL CONDITIONS		
Humidity	20 to 90% RH (not condensing)	
Operating temperature	-25 °C to +60 °C (-13 °F to 140 °F), -20 °C to +60 °C (-4 °F to 140 °F) for display version	
Storage temperature	-5 °C to +30 °C	
Pressure range	800 to 1200 mbar (80 to 120 kPa)	
Air velocity	< 6 m/sec.	
PHYSICAL CHARACTERISTICS		
Enclosure P1 & P3 / colour	Aluminium pressure die-casting / light grey RAL 7032, epoxy coating	
Additional CSA approval, only zone 1	Explosion proof Class I, Div 1, Groups A, B, C and D	
Dimensions (d x H) / weight	95 x 82 mm / ca. 1.3 kg (2.87 lb.)	
Protection class	Housing protection IP66 to IP68 (depending on the cable glands used)	
Mounting	Wall mounting (sensor head downwards)	
Cable entry	1 x resp. 3 x ¾ in. (Ansi B1.20.1)	
Wire connection	Spring-type terminal, 0.08 to 2.5 mm², AWG 28 - 12	
Wire length	Max. load 500 Ω, (= wire resistance + controller input resistance)	
	PX2-1	**PX2-2**
ATEX MARKING	Ⓔx II2G Ex db IIC T4 Gb, CE 0158,	Ⓔx II3G Ex nA IIC T4 Gc
EC-type examination certificate	BVS 15 ATEX E 129 X (electrical Ex protection) Ex d EN60079-0, -1	Electrical Ex protection: Ex n EN60079-15
CERTIFICATES	IECEx 16.0038 X (electrical Ex protection) Ex d IEC 60079-0, -1	----------
CERTIFICATES	CSA Certificate Class I, Div. 1 (only enclosure)	
Directives	Conformity to: EN 378, EN 45544-1	
WARRANTY	1 year on sensor (not if poisoned or overloaded), 2 years on device	

All specifications were collected under optimal test conditions

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OVERVIEW FREON GAS TYPES

MSR Freon group	MSR code	Freon type	Calibration gas	Group	Measuring range	Relative gas density (air =1)
FR02	2061-01	R23	R23	HFC	2000 ppm	2.4
	2061-02	R508b	R23	HFC	2000 ppm	> Air
FR03	2063-01	R1234yf	R1234yf	HFO	2000 ppm	> Air
	2063-02	R452a	R1234yf	HFO	2000 ppm	> 1
	2063-03	R513a	R1234yf	HCFC	2000 ppm	> Air
	2063-04	R454c	R1234yf	HFO	2000 ppm	> Air
	2063-05	R454a	R1234yf	HFO	2000 ppm	> Air
	2063-06	R454b	R1234yf	HFO	2000 ppm	> Air
	2063-07	R1234ze	R1234yf	HFO	2000 ppm	> Air
FR04	2064-01	R123	R123	HCFC	2000 ppm	> Air
	2064-02	1233zd	R123	HCFC	2000 ppm	> Air
FR06	2070-01	R22	R22	HCFC	2000 ppm	3
	2070-02	R401a	R22	HCFC	2000 ppm	> Air
	2070-03	R401b	R22	HCFC	2000 ppm	> Air
	2070-04	R402a	R22	HCFC	2000 ppm	> Air
	2070-05	R402b	R22	HCFC	2000 ppm	> Air
	2070-06	R403a	R22	HCFC	2000 ppm	> Air
	2070-07	R408a	R22	HCFC	2000 ppm	> Air
	2070-08	R409a	R22	HCFC	2000 ppm	> Air
	2070-09	R411a	R22	HFC	2000 ppm	> Air
FR07	2077-01	R134a	R134a	HFC	2000 ppm	> Air
	2077-02	R407a	R134a	HFC	2000 ppm	> Air
	2077-03	R416a	R134a	HFC	2000 ppm	> Air
	2077-04	R417a	R134a	HFC	2000 ppm	> Air
	2077-05	R422a	R134a	HFC	2000 ppm	> Air
	2077-06	R422d	R134a	HFC	2000 ppm	> Air
	2077-07	R427a	R134a	HFC	2000 ppm	> Air
	2077-08	R437a	R134a	HFC	2000 ppm	> Air
	2077-09	R438a	R134a	HFC	2000 ppm	> Air
	2077-10	R449a	R134a	HFC	2000 ppm	> Air
	2077-11	R407f	R134a	HFC	2000 ppm	> Air
	2077-12	R450a	R134a	HFO	2000 ppm	> Air
FR08	2080-01	R125	R407c	HFC	2000 ppm	4.2
	2080-02	R32	R407c	CFC	2000 ppm	1.8
	2080-03	R404a	R407c	HFC	2000 ppm	3.45
	2080-04	R407c	R407c	HFC	2000 ppm	> 1
	2080-05	R410a	R407c	HFC	2000 ppm	2.3
	2080-06	R434a	R407c	HFC	2000 ppm	> Air
	2080-07	R507a	R407c	HFC	2000 ppm	3.45
	2080-08	R448a	R407c	HFO	2000 ppm	1.55
	2080-09	R452b	R407c	HFO	2000 ppm	> Air
	2080-10	R143b	R407c	HFO	2000 ppm	> Air

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.

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ORDERING INFORMATION

Sensor PX2-X- **X** **-S20XX-XX-A-** **XX**

Exchange head[1] SX1-1- **-S20XX-XX-A**

P1 Aluminum die-cast housing for one cable entry
P3 Aluminum die-cast housing for three cable entries

OPTIONS

Without option	0
Relay set (2)	1
LCD display	2
Relay set (2) + LCD display	3

Zone 1	1
Zone 2	2

	GAS TYPE	Sensor type	Measuring range
S2061-01-A	R23	Semiconductor	20 – 2000 ppm
S2061-02-A	R508b	Semiconductor	20 – 2000 ppm
S2063-01-A	R1234yf	Semiconductor	20 – 2000 ppm
S2063-02-A	R452a	Semiconductor	20 – 2000 ppm
S2063-03-A	R513a	Semiconductor	20 – 2000 ppm
S2063-04-A	R454c	Semiconductor	20 – 2000 ppm
S2063-05-A	R454a	Semiconductor	20 – 2000 ppm
S2063-06-A	R454b	Semiconductor	20 – 2000 ppm
S2063-07-A	R1234ze	Semiconductor	20 – 2000 ppm
S2064-01-A	R123	Semiconductor	20 – 2000 ppm
S2064-02-A	1233zd	Semiconductor	20 – 2000 ppm
S2070-01-A	R22	Semiconductor	20 – 2000 ppm
S2070-02-A	R401a	Semiconductor	20 – 2000 ppm
S2070-03-A	R401b	Semiconductor	20 – 2000 ppm
S2070-04-A	R402a	Semiconductor	20 – 2000 ppm
S2070-05-A	R402b	Semiconductor	20 – 2000 ppm
S2070-06-A	R403a	Semiconductor	20 – 2000 ppm
S2070-07-A	R408a	Semiconductor	20 – 2000 ppm
S2070-08-A	R409a	Semiconductor	20 – 2000 ppm
S2070-09-A	R411a	Semiconductor	20 – 2000 ppm
S2077-01-A	R134a	Semiconductor	20 – 2000 ppm
S2077-02-A	R407a	Semiconductor	20 – 2000 ppm
S2077-03-A	R416a	Semiconductor	20 – 2000 ppm
S2077-04-A	R417a	Semiconductor	20 – 2000 ppm
S2077-05-A	R422a	Semiconductor	20 – 2000 ppm
S2077-06-A	R422d	Semiconductor	20 – 2000 ppm
S2077-07-A	R427a	Semiconductor	20 – 2000 ppm
S2077-08-A	R437a	Semiconductor	20 – 2000 ppm
S2077-09-A	R438a	Semiconductor	20 – 2000 ppm
S2077-10-A	R449a	Semiconductor	20 – 2000 ppm
S2077-11-A	R407f	Semiconductor	20 – 2000 ppm
S2077-12-A	R450a	Semiconductor	20 – 2000 ppm
S2080-01-A	R125	Semiconductor	20 – 2000 ppm
S2080-02-A	R32	Semiconductor	20 – 2000 ppm
S2080-03-A	R404a	Semiconductor	20 – 2000 ppm
S2080-04-A	R407c	Semiconductor	20 – 2000 ppm
S2080-05-A	R410a	Semiconductor	20 – 2000 ppm
S2080-06-A	R434a	Semiconductor	20 – 2000 ppm
S2080-07-A	R507a	Semiconductor	20 – 2000 ppm
S2080-08-A	R448a	Semiconductor	20 – 2000 ppm
S2080-09-A	R452b	Semiconductor	20 – 2000 ppm
S2080-10-A	R143b	Semiconductor	20 – 2000 ppm

[1] The exchangeable sensor head is only to be used in connection with the PolyXeta®2 Gas Sensor. Otherwise it loses its ATEX Certification.

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ELECTRICAL CONNECTION