PERFECT SOLUTIONS FOR **GAS ALARM** SYSTEMS

Technical Datasheet

PolyXeta®2

Sensor PX2-1 (Zone 1 und 2)
Sensor PX2-2 (Zone 2)

for Freon Gases and Refrigerants

DESCRIPTION

APPLICATION

FEATURES

SPECIFICATIONS

OVERVIEW FREON TYPES

ORDER INFORMATION

ELECTRICAL CONNECTION

YouTube Video

MSR-Electronic GmbH | Buergermeister-Schoenbauer-Str. 13 | D-94060 Pocking

DESCRIPTION

Fixed PolyXeta®2 Gas Alarm Devices of the

PX2-1 series with Ex db protection, for Zone 1 and 2
PX2-2 series with Ex nA protection, only for Zone 2

for continuous monitoring of the ambient air to detect Freon gases and refrigerants in higher concentration range for use in the hazardous areas of zones 1 and 2 according to Directive 2014/34/EU.

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.

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 for detection of refrigerants and Freon gases. 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. As an option, the PolyXeta®2 sensor is also available with LC display and relay output.

FEATURES

- ATEX and IEC Ex certificates MSR-Electronic for electrical Ex protection
- **PX2-1 for zone 1 (and suitable for zone 2):**
  - Type "Ex db" with flame-proof enclosure
- **PX2-2 for zone 2:**
  - Type "Ex nA" 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)

SPECIFICATIONS

ELECTRICAL	
Power supply	20–28 V DC
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 and Freons
Sensor element	Semiconductor sensor
Measuring range	See Ordering Information
Response time	t_{90} ≤ 150 s (R134a); t_{50} ≤ 50 s (R134a)
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 by organic solvents; 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
Expected lifetime[1]	Max. 6 months
Pressure range	800 to 1200 mbar (80 to 120 kPa)
Air velocity	< 6 m/sec.
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 / 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
Cable length	Max. charge 500 Ω (= wire resistance + input resistance Controller)

[1] We recommend recalibrating the devices if stocked for a longer period (>8 weeks).

ATEX MARKING	PX2-1	PX2-2
ATEX Marking	⟨Ex⟩II2G Ex db IIC T4 Gb, CE 0158	⟨Ex⟩II3G Ex nA IIC T4 Gc
EC-type examination certificate	BVS 15 ATEX E 129 X	----------
Declaration of Conformity	----------	CE_PX2_2_Zone2_1808
Protection types	EN 60079-0: 2012 and EN 60079-1: 2014 (Ex-db)	EN 60079-0: 2012 and EN 60079-15: 2011 (Ex-nA)
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.
We confirm compliance with the minimum requirements of the applicable standard.

OVERVIEW FREON 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
	2063-05	R455a	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
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
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	HFC	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.

The sensors are susceptible to poisoning by organic solvents and silicone vapours.

ORDER INFORMATION

PX2-SX1-	X-	X-	S20XX-XX-A-	XX	**SENSOR**
	1-		S20XX-XX-A		**EXCHANGE HEAD**[1]

P1	Aluminium die-cast housing for one cable entry	
P3	Aluminium die-cast housing for three cable entries	**Sensor housing**

	Gas type	Measuring range	
S2061-01-A	R23	20–2000 ppm	
S2061-02-A	R508b	20–2000 ppm	
S2063-01-A	R1234yf	20–2000 ppm	
S2063-02-A	R452a	20–2000 ppm	
S2063-05-A	R455a	20–2000 ppm	
S2063-06-A	R454b	20–2000 ppm	
S2063-07-A	R1234ze	20–2000 ppm	
S2064-01-A	R123	20–2000 ppm	
S2070-01-A	R22	20–2000 ppm	
S2070-02-A	R401a	20–2000 ppm	
S2070-03-A	R401b	20–2000 ppm	
S2070-04-A	R402a	20–2000 ppm	
S2070-05-A	R402b	20–2000 ppm	
S2070-06-A	R403a	20–2000 ppm	
S2070-07-A	R408a	20–2000 ppm	
S2070-08-A	R409a	20–2000 ppm	
S2070-09-A	R411a	20–2000 ppm	
S2077-01-A	R134a	20–2000 ppm	
S2077-02-A	R407a	20–2000 ppm	
S2077-03-A	R416a	20–2000 ppm	
S2077-04-A	R417a	20–2000 ppm	
S2077-05-A	R422a	20–2000 ppm	
S2077-06-A	R422d	20–2000 ppm	
S2077-07-A	R427a	20–2000 ppm	
S2077-08-A	R437a	20–2000 ppm	
S2077-09-A	R438a	20–2000 ppm	
S2077-10-A	R449a	20–2000 ppm	
S2077-11-A	R407f	20–2000 ppm	
S2080-01-A	R125	20–2000 ppm	
S2080-02-A	R32	20–2000 ppm	
S2080-03-A	R404a	20–2000 ppm	
S2080-04-A	R407c	20–2000 ppm	
S2080-05-A	R410a	20–2000 ppm	
S2080-06-A	R434a	20–2000 ppm	
S2080-07-A	R507a	20–2000 ppm	
S2080-08-A	R448a	20–2000 ppm	
S2080-09-A	R452b	20–2000 ppm	**Gas type/Measuring range**
S2080-10-A	R143b	20–2000 ppm	

0	Without options	
1	Relay set (2)	
2	LC Display	
3	Relay set (2) and LC Display	**Options**

1	Zone 1 and 2	
2	Zone 2	**ATEX Zone**

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

PX2- SX2-	X-	X-	S2125-X- S2125-X	XX	**SENSOR** **EXCHANGE HEAD**[1]
				P1	Aluminium die-cast housing for one cable entry
				P3	Aluminium die-cast housing for three cable entries **Sensor housing**
				Gas type	**Measuring range**
			S2125-C*	R717 Ammonia NH_3	0–1000 ppm **Gas type/Measuring**
			S2125-F*	R717 AmmoniakNH_3	0–10,000 ppm **range**
		0	Without options		
		1	Relay set (2)		
		2	LC Display		
		3	Relay set (2) and LC Display		**Options**
	1		Zone 1 and 2		
	2		Zone 2		**ATEX-Zone**

* On request

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

ELECTRICAL CONNECTION