

PolyGard® Refrigerant Gas Transmitter ADT43 20XX with Semi-conductor Sensor

DESCRIPTION

Refrigerant gas transmitter with semi-conductor sensor for monitoring leakages of cooling agents like HFC (hydrofluorocarbon) or HCFC (hydrochlorofluorocarbon). The semi-conductor typical, non-linear signal is translated into a linear, temperature-compensated output signal. A comfortable calibration routine is integrated in the transmitter. The ADT-43 possesses a standard analog output (0) 4- 20 mA or (0) 2– 10 V DC, and an RS-485 interface. 2 relays with adjustable switching thresholds are available as an option.

APPLICATION

For leak detection in cooling systems with refrigerant gases as cooling agents (HCFC and HFC), such as cold-storage depots, ventilation systems, breweries, ice rinks etc. to assure the compliance with the requirements according to EN 378-3. Due to the standard output signal and the RS-485 interface, the refrigerant gas transmitter is compatible to the PolyGard Gas Controller series by MSR-E as well as to any other electronic control or automation system.

FEATURES

- Digital measurement value processing incl. temperature compensation.
- Linear output signal
- Continuous monitoring
- Low zero point drift
- Good stability to poisoning
- Semi-conductor sensor with long life-time
- Modular plug-in technology
- Comfortable calibration
- Reverse polarity protected, overload and short-circuit proof
- (0) 4 - 20 mA / (0) 2 – 10V analog signal output, selectable
- Serial interface RS-485
- IP65 protected
- Manual calibration via potentiometer (option)
- Manual addressing for RS-485 mode (option)
- 4 – 20 mA analog input for external AT transmitter (optional)
- Approved according to EN 61010-1; ANSI/UL 61010 1; CAN/CSA-C22.2 No. 61010-1
- Relay output (optional)
- Integrated buzzer (optional)
- LED flashlight (optional)
- LCD display (optional)
- LED status display (optional)
- Heating (optional)
- Duct mounting (optional)



Standard enclosure



SPECIFICATIONS

General sensor performance

| | |
|-----------------------------|---|
| Detected gas | Refrigerant gases |
| Sensor element | Semi-conductor sensor |
| Measuring range | 20 - 300 ppm/ 20 - 2000 ppm |
| Repeatability | ± 20 % |
| Response time | $t_{90} < 40$ sec. |
| Oxygen concentration | 21 % (standard) 18 % minimum level |
| Humidity | 5 – 95 % RH non-condensing |
| Operating temperature | -10 °C to 50 °C (14 °F to 122 °F) w/o heating |
| Storage temperature | 0 °C to 50 °C (32 °F to 122 °F) |
| Pressure range | 800 – 1100 hPa |
| Storage time | Max. 12 months |
| Life expectancy | > 5 years/ normal operating environment |
| Recommended mounting height | Depending on gas type |

Electrical

| | |
|-------------------------------------|--|
| Power supply | 16 - 28 VDC/AC, (reverse polarity protected) |
| Power consumption (without options) | 60 mA, max. (1.45 VA) |

Output signal

| | |
|-------------------------------|--|
| Analog output signal | (0) 4 – 20 mA, load ≤ 500 Ω, |
| Selectable: Current / tension | (0) 2 - 10 V, load ≥ 50 k Ω |
| Starting point 0 / 20 % | proportional, overload and short-circuit proof |

Serial interface

| | |
|-------------|---------------------------------------|
| Transceiver | RS 485 / 19200 Baud (9600 at Mod_Bus) |
|-------------|---------------------------------------|

Physical characteristics

| | |
|---------------------------|--|
| Enclosure Plastic Type A* | Polycarbonate |
| Flammability | UL 94 V2 |
| Enclosure color* | RAL 7032 (light grey) |
| Dimensions (W x H x D) | 94 x 130 x 57 mm (3.7 x 5.12 x 2.24 inch.) |
| Weight | Approx. 0.5 kg (1.1 lbs.) |
| Protection class | IP 65 |
| Installation | Wall mounting |
| Cable entry | Standard 1 x M 20 |
| Wire connection | Screw type terminal, min. 0.25 mm ² (24 AWG) max. 2.5 mm ² (14 AWG) |
| Wire distance | Current signal: ca. 500 m (1500 ft) Voltage signal: ca. 200 m (600 ft.) |

Guidelines

EMC Directives 2004/108/EC
EN 61010-1:2010
ANSI/UL 61010-1
CAN/CSA-C22.2 No. 61010-1
CE

Warranty

One year on material (without sensor)

*For further enclosure types see datasheet ADT Enclosure.

GAS ALARM SYSTEMS

Options

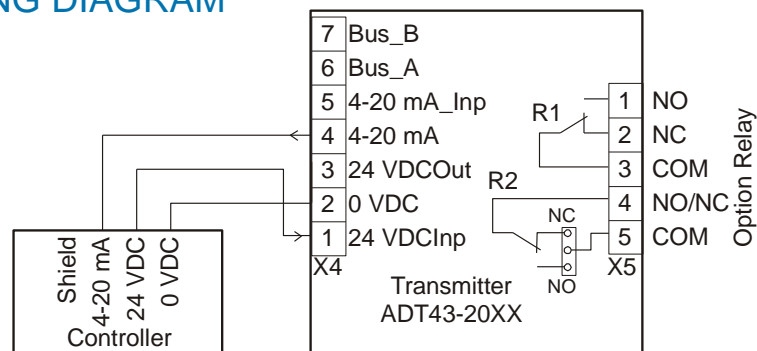
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|---------------------------------------|--|
| Relay output | |
| Alarm relay 1 | 30 VAC/DC, 0.5 A, potential-free, SPDT |
| Alarm relay 2 | 30 VAC/DC, 0.5 A, potential-free, SPNO/SPNC |
| Power consumption | 30 mA, (max 0.8 VA) |
| Warning buzzer | |
| Acoustic pressure | 85 dB (distance 300 mm) (1 ft) |
| Frequency | 3.5 kHz |
| Power consumption | 30 mA, (max 0.8 VA) |
| LCD display | |
| LCD | Two lines, each 16 characters |
| Power consumption | 10 mA, (max 0.3 VA) |
| LED display | |
| Green-yellow-red | Supply, low alarm, high alarm |
| Power consumption | 10 mA, (max. 0.3 VA) |
| Heating | |
| Temperature controlled | 3 °C ±2°C (37.5 °F ± 3.6 °F) |
| Ambient temperature | - 40 °C (- 40 °F) |
| Power consumption | 0.3 A; 7.5 VA |
| Analog input | |
| Only for RS-485 mode | 4 – 20 mA overload and short-circuit proof, input resistance 200 Ω |
| Power supply for external transmitter | 24 VDC max. charge 50 mA |

OVERVIEW REFRIGERANT GAS TYPES

| Gas Type* | Group | Measuring range | Relative gas density (air =1) |
|-----------|-------|--------------------|-------------------------------|
| R 22 | HCFC | 2000 ppm | 3 |
| R 401a | HCFC | 2000 ppm | > air |
| R 401b | HCFC | 2000 ppm | > air |
| R 402a | HCFC | 2000 ppm | > air |
| R 402b | HCFC | 2000 ppm | > air |
| R 408a | HCFC | 2000 ppm | > air |
| R 409a | HCFC | 2000 ppm | > air |
| R 123 | HCFC | 2000 ppm | > air |
| R 134a | HFC | 300 ppm / 2000 ppm | > 1 |
| R 404a | HFC | 300 ppm / 2000 ppm | 3.45 |
| R 416a | HFC | 300 ppm / 2000 ppm | > air |
| R 407c | HFC | 300 ppm / 2000 ppm | > 1 |
| R 507 | HFC | 300 ppm / 2000 ppm | 3.45 |
| R 410a | HFC | 300 ppm / 2000 ppm | 2.3 |
| R 411a | HFC | 300 ppm / 2000 ppm | > air |

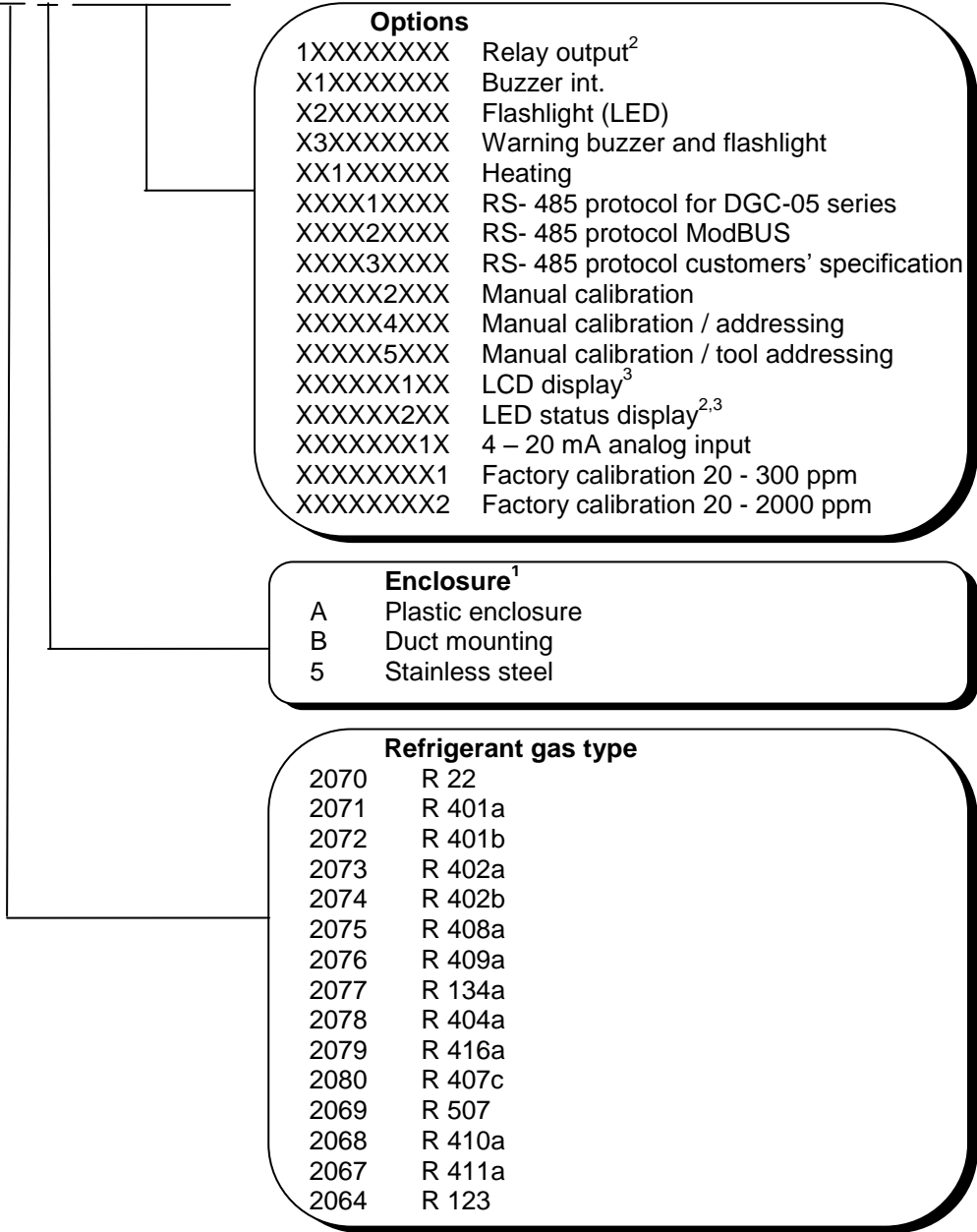
* Other refrigerant gases on request

CONNECTING DIAGRAM



ORDERING INFORMATION

ADT-43-20XX-X-XXXXXXXXXX



Options

- 1XXXXXXXX Relay output²
- X1XXXXXXXX Buzzer int.
- X2XXXXXXXX Flashlight (LED)
- X3XXXXXXXX Warning buzzer and flashlight
- XX1XXXXXXXX Heating
- XXXX1XXXX RS- 485 protocol for DGC-05 series
- XXXX2XXXX RS- 485 protocol ModBUS
- XXXX3XXXX RS- 485 protocol customers' specification
- XXXXX2XXX Manual calibration
- XXXXX4XXX Manual calibration / addressing
- XXXXX5XXX Manual calibration / tool addressing
- XXXXXX1XX LCD display³
- XXXXXX2XX LED status display^{2,3}
- XXXXXXXX1X 4 – 20 mA analog input
- XXXXXXXXX1 Factory calibration 20 - 300 ppm
- XXXXXXXXX2 Factory calibration 20 - 2000 ppm

Enclosure¹

- A Plastic enclosure
- B Duct mounting
- 5 Stainless steel

Refrigerant gas type

- 2070 R 22
- 2071 R 401a
- 2072 R 401b
- 2073 R 402a
- 2074 R 402b
- 2075 R 408a
- 2076 R 409a
- 2077 R 134a
- 2078 R 404a
- 2079 R 416a
- 2080 R 407c
- 2069 R 507
- 2068 R 410a
- 2067 R 411a
- 2064 R 123

¹ See Data sheet "PolyGard ADT Enclosure"

² Please indicate thresholds for low and high alarm when ordering.

³ Not in connection with stainless steel housing, not in connection with option Relay or RS-485 interface

Example: Refrigerant gas transmitter, R134a, stainless housing, manual calibration/ tool addressing, factory calibration 20 - 2000 ppm

Ordering No.: ADT-43-2077-5-XXXXX5XX2

