



PolyGard®

Refrigerant Gas Transmitter ADT-43-20XX with Semi-conductor Sensor

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. Two 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:



Standard Housing

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
- Manual addressing for RS-485 mode (option)
- 4 – 20 mA analog input for external transmitter (option)
- 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)





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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 V DC/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 kΩ
Starting point 0 / 20 %	proportional, overload and short-circuit proof

Serial interface

Transceiver	RS 485 / 19200 Baud (9600 for Mod_Bus)
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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 2014/30/EU
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.





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Options

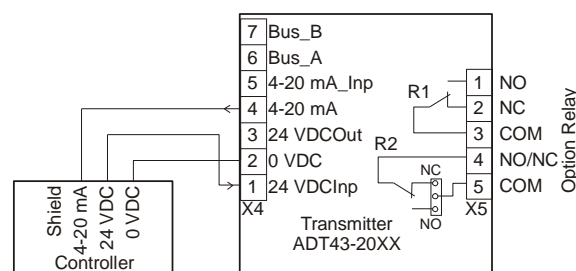
Relay output	
Alarm relay 1	30 V AC/DC, 0.5 A, potential-free, SPDT
Alarm relay 2	30 V AC/DC, 0.5 A, potential-free, SPNO/SPNC
Power consumption	30 mA, (max 0.8 VA)
Warning buzzer	
Acoustic pressure	85 dB (distance 300 mm) (1 ft.)
Frequency	3.5 kHz
Power consumption	30 mA, (max 0.8 VA)
LCD display	
LCD	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 V DC max. charge 50 mA

OVERVIEW FREON 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
R 12	CFC	2000 ppm	4.26
R 417a	HFC	2000 ppm	> air
R 23	HFC	2000 ppm	2.4
R 452a	HFO	2000 ppm	> 1

* Other refrigerant gases on request

CONNECTION DIAGRAM





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ORDERING INFORMATION

ADT-43-20 XX- X- XXXXXXXXXX

Version

- 1XXXXXXXXX Relay output²
- X1XXXXXXXXX Warning buzzer int.
- X2XXXXXXXXX Flashlight (LED)
- X3XXXXXXXXX Warning buzzer and flashlight
- XX1XXXXXXXXX Heating
- XXXX1XXXXX RS - 485 protocol for DGC-05 series
- XXXX2XXXXX RS - 485 protocol for ModBUS
- XXXX3XXXXX RS - 485 protocol for customers' specifications
- XXXXX2XXXX Manual calibration
- XXXXX4XXXX Manual calibration / addressing
- XXXXX5XXXX Manual calibration / tool addressing
- XXXXXX1XX LCD display³
- XXXXXX2XX LED status display^{2,3}
- XXXXXX1X 4 - 20 mA analog-input
- XXXXXXX1 Factory calibration 20 – 300 ppm
- XXXXXXX2 Factory calibration 20 – 2000 ppm

Enclosure¹

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

Refrigerant gas type⁴

- 2061 R 23
- 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
- 2059 R 12
- 2084 R 417a
- 2087 R 452a

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

⁴ The sensors partially have a cross-sensitivity to other gases due to the measuring principle. More information on request.

EXAMPLE

Refrigerant gas transmitter R134a, stainless steel housing, manual calibration / tool addressing, range 20- 2000 ppm

Order Number: ADT-43-2077-5-000005002

