PolyGard® Transmitter ADT43-20XX

Transmitter for Refrigerant Gases
Serial No. _E_1108-004

User Manual

November, 2008

GAADT4320XX_E_1108

Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de

Specification subject to change without notice
Printed in Germany

Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de

Transmitter with Semi-conductor Sensor for Refrigerant Gases

1 Intended Use

The PolyGard® gas transmitter with digital processing of the measuring values and temperature compensation is used for the continuous monitoring of the ambient air to detect the presence of refrigerant gases. The main application consists in monitoring leakages in refrigeration plants with refrigerant gases (HFC or HCFC) as cooling agent for the compliance with the requirements according to EN 378.

The intended sites are all areas being directly connected to the public low voltage supply, e.g. residential, commercial and industrial ranges as well as small enterprises (according to EN50 082).

The PolyGard® ADT43 transmitter must not be used in potentially explosive atmospheres. The transmitter must only be used within environmental conditions specified in the Technical Data.

2 Functional Description

2.1 Control Mode

In addition to the analog output the transmitter is equipped with a serial interface RS-485 for the connection to the PolyGard® DGC-05 system.

Analog mode:

The analog output can be selected as current signal with (0)4-20 mA or as voltage signal (0)2-10 V.

DGC-05_Bus mode:

The transmitter can be connected to the PolyGard® DGC-05 system via the RS-485 interface. In this mode there is an analog input for the connection of an additional 4-20 mA transmitter. The two measuring values are transmitted via the RS-485 interface to the gas controller.

The cable topology for the RS-485 bus can be taken from the “Guidelines for wiring and commissioning of the DGC-05 hardware”.

The two control modes are available in parallel.

2.2 Sensor

A semi-conductor sensor is integrated in the ADT43. The ambient air being monitored diffuses through a metal grid into the sensor. The gas oxidises at the heated detector element (metallic oxide) and changes the conductivity in dependence of the gas concentration. This non-linear alteration of the conductivity is evaluated by the internal sensor electronics and linearised by the micro-processor. The temperature compensation is also integrated in the transmitter.

Oxidation processes lead by-and-by to an unwanted influence on the alteration of the conductivity. Therefore regular calibrations of zero-point (Zero) and gain are necessary.

Caution:

Certain substances and gases in the atmosphere being monitored can affect the sensitivity of the refrigerant gas sensor element and/or poison the sensor completely.

The following are currently known:

- Silicones.
- Corrosive substances, like H_2S, SO_x, Cl_2, HCl, etc. can lead to corrosion and damage of the sensor.
- Alkaline metals cause a considerable drift of the sensor.

Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de

3 Installation

Note: Avoid any force (e.g. by thumb) on the sensor element during operation or installation. Electronics can be destroyed by static electricity. Therefore, do not touch the equipment without a wrist strap connected to ground or without standing on a conductive floor (acc. to DIN EN100015).

3.1 Mounting Instructions

When choosing the mounting site please pay attention to the following:

- The mounting height depends on the gas type to be monitored.

  For gases and vapours with a density > air, the transmitter must be located near the ground.

  For gases and vapours with a density < air, the transmitter must be located at the highest point possible. Gas density and mounting height can be read from the table Overview Gases/ Data.
- Choose mounting location of the sensor according to the local regulations.
- Consider ventilation conditions! Do not mount the transmitter in the centre of the airflow (air passages, suction holes).
- Mount the transmitter at a location with minimum vibration and minimum variation in temperature (avoid direct sunlight).
- Avoid locations where water, oil etc. may influence proper operation and where mechanical damage might be possible.
- Provide adequate space around the sensor for maintenance and calibration work.

Duct mounting

- Mount only in a straight section of duct with minimum air vortex. Keep a minimum distance of 1 m (3,5 feet) from any curve or obstacle.
- Mount only in a duct system with a maximum air velocity of 10 m/s (2000 ft/min) or less.
- Mounting must be performed so that the probe openings are in line with the airflow.

3.2 Installation

- Open the cover. Unplug basic PCB carefully from the bottom part.
- Fix bottom part by screws vertically to the wall (terminal blocks to the ground).
- Plug in the basic PCB at X4 and X5 with care. Replace the cover.

Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de

4 Electrical Connection

Consider static electricity! See 3. Mounting

- Installation of the electrical wiring should only be performed by a trained specialist according to the connection diagram, without any power applied to conductors and according to the corresponding regulations!
- Avoid any influence of external interference by using shielded cables for the signal line, but do not connect the shield.
- Recommended cable anal. mode: J-Y(St)Y 2x2x0,8 LG (20 AWG), max. res. 73 Ω/km (20.8 Ω/1000 ft).
- Required cable for RS-485 mode: J-Y(St)Y 2x2x0,8 LG (20 AWG), max. res. 73 Ω/km (20.8 Ω/1000 ft)
- It is important to ensure that the wire shields or any bare wires do not short the mounted PCB.

4.1 Wiring Connection

- Open the cover. Unplug basic PCB carefully from terminal blocks at X4 and X5.
- Insert the cable, connect cable leads to terminal blocks. See fig. 1 and 2.
- Replug the PCB in the terminal blocks X4, X5. Replace cover.

5 Commissioning

Consider commissioning instructions at any exchange of sensor elements.

Only trained technicians should perform the following:

- Check mounting location.
- Select output signal form: Current or voltage, and starting point 0 or 20%. See fig. 4.
- Check power voltage.
- Check PCB ET03-002 for proper mounting at X4 and X5.
- Addressing of the transmitter in the DGC-05_Bus mode.
- Calibrate the transmitter (if not already factory-calibrated).

Required instruments for commissioning (calibration) of the transmitter:

- Test gas bottle with refrigerant test gas* in the range of 1000 ppm for measuring range of 0 – 2000 ppm or 100 ppm for measuring range 0 300 ppm.
- Gas pressure regulator with flow meter to control the gas flow to 300 ml/min.
- Calibration adapter with tube, (silicon-free, e.g. Viton). Calibration set AT 1110S02. See fig. 05.
- Digital voltmeter with range 0 – 10 VDC, accuracy 1%
- A small screwdriver.
- Calibration tool DGC-05 STL (only for calibration with service tool DGC-05).
- DGC-05_EasyConf configuration and calibration software incl. USB/RS-485 communication set (only for software calibration mode).

* Test gas R 22 or R134a, depending on the used sensor, see table Overview Gases/ Data.

Note:

Attention: Refrigerant calibration gas is toxic, never inhale the gas!
Symptoms: Dizziness, headache and nausea.
Procedure if exposed: Take the victim into fresh air at once, call a doctor.

Prior to calibration the sensor element must be fully stabilized by applying power voltage for at least 8 days without interruption.

. Please observe proper handling procedures for test gas bottles (regulations TRGS 220)!

Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de

5.1 Calibration

Depending on the version and the control mode there are three different possibilities to calibrate the transmitter:

Manual calibration

Manual calibration is only possible if the transmitter is equipped with the push-button “Zero” and the potentiometer “Gain” (= version for manual calibration).

Manual calibration is possible both in analog mode and in DGC-05_Bus mode.

In the DGC-05_Bus mode the jumper V-A has to be set before manual calibration. Only by doing so the control voltage is available at the test pins X6. Remove the jumper after calibration

Calibration with the Service Tool DGC-05

In the standard version (equipped with the communication connector X12) the transmitter is delivered for tool and/or software calibration.

Software calibration via PC with Software DGC05_EasyConf

In the standard version (equipped with the communication connector X12) calibration can also be done by means of the configuration and calibration software DGC05_EasyConf.

Software calibration is possible for both control modes.

5.2 Manual Calibration

5.2.1 Zero-point

The zero-point calibration of the sensor is not necessary, because the zero-point of the output signal has already been factory-calibrated.

5.2.2 Gain

- Connect digital voltmeter to pin “Bridge” (-) and ground (X4 pin 2). See fig. 3.
- Connect calibration adapter carefully to the sensor element.
- Apply calibration test gas 100 ppm or 1000 ppm (300 ml/min; 1 Bar (14.5 psi) ± 10%).
- Wait three minutes until the value is stable; adjust bridge voltage with potentiometer ”Zero” according to the table “Calibration”.
- Connect digital voltmeter to pin “Test”, then adjust test voltage with potentiometer ”Gain” according to the table “Calibration”.
- Remove calibration adapter with a careful light turn. Check the sensor for correct mounting!
- By limiting the gain factor, calibration will not be possible any more when the sensitivity of the sensor reaches a residual sensitivity of 30 %. Then the sensor has to be replaced.

Table Calibration

Starting point output signal	Measuring range/ calibration gas concentration (ppm)	Bridge voltage	Test voltage
= 0 % (0V or 0 mA)	300 /100	1667 mV	67 mV
= 20 % (2V or 4 mA)	300 /100	1667 mV	93 mV
= 0 % (0V or 0 mA)	2000 / 1000	3165 mV	100 mV
= 20 % (2V or 4 mA)	2000 / 1000	3165 mV	120 mV

Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de

5.3 Calibration with DGC-05 Service Tool

- Connect the DGC-05 Service Tool to the transmitter, open menu “Calibration”.
- Enter measuring range and test gas concentration.
- Do not perform zero-point calibration!
- Connect digital voltmeter to pin “Bridge” (-) and ground (X4 pin 2). See fig. 3.
- Connect calibration adapter carefully to the sensor element.
- Apply calibration test gas 100 ppm or 1000 ppm (300 ml/min; 1 Bar (14.5 psi) ± 10%).
- Wait three minutes until the value is stable, then adjust bridge voltage with potentiometer ”Zero” according to the table “Calibration” (= sensor calibration).
- Wait until the measuring value is stable, and then perform automatic gain calibration at the service tool (output signal calibration).
- Remove calibration adapter carefully by turning lightly. Check the sensor for correct mounting!

  By limiting the gain factor, calibration will not be possible any more when the sensitivity of the sensor reaches a residual sensitivity of 30 %. In this case the sensor has to be replaced.

Further information can be taken from the user manual of the DGC-05 Service Tool.

5.4 Calibration with DGC05_EasyConf

- Connect the PC via USB/RS-485 communication set to the transmitter, open menu “Calibration”.
- Enter measuring range and test gas concentration.
- Do not perform zero-point calibration!
- Connect digital voltmeter to pin “Bridge” (-) and ground (X4 pin 2). See fig. 3.
- Connect calibration adapter carefully to the sensor element.
- Apply calibration test gas 100 ppm or 1000 ppm (300 ml/min; 1 Bar (14.5 psi) ± 10%).
- Wait three minutes until the value is stable, then adjust bridge voltage with potentiometer ”Zero” according to the table “Calibration” (= sensor calibration).
- Wait until the measuring value is stable, and then perform automatic gain calibration in the menu (output signal calibration).
- Remove calibration adapter carefully by turning lightly. Check the sensor for correct mounting!

  By limiting the gain factor, calibration will not be possible any more when the sensitivity of the sensor reaches a residual sensitivity of 30 %. In this case the sensor has to be replaced.

Further information can be taken from the user manual of the DGC-05 Configuration and Calibration Software.

Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de

5.5 Addressing, only for DGC-05_Bus mode

In the DGC-05_Bus mode each transmitter gets its communication address.

In the standard version with the communication connector X12, addressing is done by means of the DGC-05 Service Tool or by the DGC-05 Configuration and Calibration Software. See user manual of the Service Tool or of the Configuration and Calibration Software.

In the manual addressing version which can be identified by the address switch being equipped, there is a maximum of 60 addresses to be selected. See fig. 3.

The jumper is responsible to define the address group and the switch to define the address according to the following table.

Switch position	Jumper pos. 01 = address	Jumper pos. 02 = address	Jumper pos. 03 = address	Jumper pos. 04 = address
0	inactive	inactive	inactive	inactive
1	01	16	31	46
2	02	17	32	47
3	03	18	33	48
4	04	19	34	49
5	05	20	35	50
6	06	21	36	51
7	07	22	37	52
8	08	23	38	53
9	09	24	39	54
A	10	25	40	55
B	11	26	41	56
C	12	27	42	57
D	13	28	43	58
E	14	29	44	59
F	15	30	45	60

5.6 Option Relay Output

The two relays are activated in dependence of the gas concentration. If the gas concentration exceeds the adjusted alarm threshold, the corresponding relay switches on. If the gas concentration falls below the threshold minus hysteresis, the relay switches off again.

The contact function for relay 2, NC (normally closed) or NO (normally open), can be selected via the jumper NO/NC. See fig 1 and 3. Relay 1 is equipped with a change-over contact.

Via the MODBus interface the two alarm thresholds and the hysteresis are freely adjustable at the PC within the measuring range. The procedure can be read from the user manual “MODBus Software”.

The following parameters are factory-set.

Alarm threshold 1 = Relay 1: 100 / 500 ppm
Alarm threshold 2 = Relay 2: 200 / 1000 ppm
Switching hysteresis: 25 / 100 ppm

Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de

6 Inspection and Service

6.1 Inspections

Inspection, service and calibration of the transmitters should be done by trained technicians and executed at regular intervals. We therefore recommend concluding a service contract with MSR or one of their authorized partners.

6.2 Calibration

(See section 5.1 and 5.2)

- At periodic intervals determined by the person responsible for the gas detection system (recommendation every 12 months).
- If in case of operational or climatic influences the sensitivity of the sensor falls below 30 % in operation, calibration will not be possible any more. Then the sensor has to be replaced.

6.3 Exchange of Sensor Element

Consider static electricity! See point 3.

Sensor has to be replaced completely including the electronics. The replacement electronics with the new sensor is already factory-calibrated.

- Unplug basic PCB ET03 carefully from the bottom part.
- Plug in the new PCB including the new sensor at terminals X4, X5.

7 Troubleshooting

7.1 Analog Mode

Trouble	Cause	Solution
Output signal < 3 mA / 1,5 V and/or control voltage < 30 mV only for starting signal 2V/4 mA	Jumper 0-20 % not set	Check jumper position
	Power voltage not applied	Measure tension at X4: Two-wire: Pin 1 (+) and 4 (-) Three-wire: Pin 1 (+) and 2 (-)
	PCB AT03 not plugged in correctly at X4 and X5	Replug PCB correctly
	Wire break	Check the wiring
Output signal > 22 mA /220 mV	Short-circuit	Check the wiring
Control voltage does not reach the calculated value	Sensor element not calibrated	Calibrate sensor element
	Sensor sensitivity < 30 %	Replace sensor element
No reaction of the output signal in spite of gas concentration	Power voltage not applied	Measure tension at X4
	Signal (Pin 4) not wired correctly	Check the wiring

Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de

7.2 DGC-05_Bus Mode

Trouble	Cause	Solution
Yellow LED not shining	Power voltage not applied	Measure tension at X4: Pin 1 (+) and 2 (-)
	PCB not plugged in correctly at X4/X5	Replug PCB correctly
	Wire break	Check wiring
Yellow LED not flashing	No communication at the transmitter	Transmitter not addressed, check bus wiring incl. topology and termination Voltage < 16 V
No control voltage at calibration	Jumper V-A not set	Set the jumper. Remove it after calibration!

8 Technical Data

General sensor performances	
Gas type	Refrigerant gases, see table Gases/ Data
Sensor element	Semi-conductor sensor
Measuring range	20 – 300 / 20 - 2000 ppm
Repeatability	± 20 %
Response time	t_{90} < 40 sec.
Oxygen concentration	21 % (standard) 18 % minimum level
Life expectancy	> 5 years/normal operating environment
Temperature range	- 10 °C to + 50 °C (14°F to 122 °F)
Humidity	5 – 95 % RH non condensing
Pressure range	Atmosphere ± 10 %
Storage temperature range	0 °C to 50 °C (32 °F to 122 °F)
Storage time	Max. 12 months
Mounting height	Depending on gas type
Electrical	
Power supply	16 - 28 VDC/AC, reverse polarity protected
Power consumption (without options)	40 mA, max. (1,00 VA)
Output signal	
Analog output signal Selectable: Current / tension Starting point 0 / 20 %	(0) 4 – 20 mA, load ≤ 500 Ω, (0) 2 - 10 V; load ≥ 50 k Ω proportional, overload and short-circuit proof
Serial interface	
Transceiver	RS 485 / 19200 Baud
Protocol, depending on version	MSR_DT05 or MOD_Bus
Physical	
Enclosure*	Stainless steel V2A
Enclosure colour*	Natural, brushed
Dimensions* (H x W x D)	113 x 135 x 45 mm /(5.35 x 4.5 x 1.8 in.)
Weight*	Approx. 0,5 kg (1.1 lbs.)
Protection class*	IP 55
Mounting*	Wall mounting, pillar mounting
Cable entry	Standard 1 x M 20
Wire connection	Screw-type terminal min. 0,25, to. 2,5 mm^2 24 to 14 AWG
Wire distance	Current signal ca. 500 m (1500 ft.) Voltage signal ca. 200 m (500 ft.)

* Data only for option "stainless steel", for further types see datasheet AT-DT Enclosure.

Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de

Guidelines	EMC Directive 2004 / 108 / EEC
	CE
Warranty	1 year on material (without sensor)
Options	
Relay output	
Alarm relay 1 (switch threshold 10 % LEL)	30 VAC/DC 0,5 A, potential-free, SPDT
Alarm relay 2 (switch threshold 20 % LEL)	30 VAC/DC 0,5 A, potential-free, SPNO/SPNC
Power consumption	30 mA, (max. 0,8 VA)
Warning buzzer	
Acoustic pressure	83 dB (distance 200 mm) (0.7 ft.)
Frequency	2,3 kHz
Power consumption	30 mA, (max. 0,8 VA)
LCD-Display	
LCD	Two lines, 16 characters each, not illuminated
Power consumption	10 mA, (max. 0,3 VA)
Heating	
Temperature controlled	3 °C ±2°C (37.5 °F ± 3,6 °F)
Ambient temperature	- 30 °C (- 22 °F)
Power supply	18 - 28 VDC/AC
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
Tension for external analog transmitter	24 VAC/DC depending on the power supply max. load 50 mA

8.1 Cross Sensitivity Data

Sensor	Gas	Formula	Reaction
TGS 830	Ethanol	C_2H_8O	< 1
TGS 832	Ethanol	C_2H_8O	< 1
SP42A	Ethanol	C_2H_8O	< 1
	Iso-butane	C_4H_{10}	< 1
	Methane	CH_4	<<1

Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de

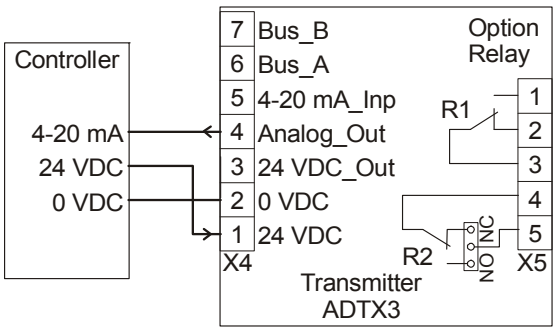
8.2 Table Overview of Gases/ Data

Gas type	ADT-43-...	Sensor type	Group	Measuring range	Calibration		Relative density (air =1)
					Gas (ppm)	Volt. (mV)	
R 22	2070	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	> air
R 401a	2071	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	> air
R 401b	2072	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	> air
R 401c	20XX	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	
R 402a	2073	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	> air
R 402b	2074	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	> air
R 403a	20XX	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	
R 403b	20XX	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	
R 405a	20XX	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	
R 406a	20XX	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	
R 408a	2075	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	> air
R 409a	2076	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	> air
R 409b	20XX	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	> air
R 411a	2067	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	> air
R 411b	20XX	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	> air
R 412a	20XX	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	> air
R 509a	20XX	TGS 830	HCFC	0–2000 ppm	R22 1000	3165	
R 134a	2077..1	SP42A	HFC	0–300 ppm	R134a 100	1665	> 1
	2077..2	TGS 832	HFC	0–2000 ppm	R134a 1000	3165	
R 404a	2078..1	SP42A	HFC	0–300 ppm	R134a 100	1665	3,45
	2078..2	TGS 832	HFC	0–2000 ppm	R134a 1000	3165	
R407a	20XX..1	SP42A	HFC	0–300 ppm	R134a 100	1665	
	20XX..2	TGS 832	HFC	0–2000 ppm	R134a 1000	3165	
R407b	20XX..1	SP42A	HFC	0–300 ppm	R134a 100	1665	
	20XX..2	TGS 832	HFC	0–2000 ppm	R134a 1000	3165	
R407c	20XX..1	SP42A	HFC	0–300 ppm	R134a 100	1665	
	20XX..2	TGS 832	HFC	0–2000 ppm	R134a 1000	3165	
R413a	20XX..1	SP42A	HFC	0–300 ppm	R134a 100	1665	
	20XX..2	TGS 832	HFC	0–2000 ppm	R134a 1000	3165	
R 416a	2079..1	SP42A	HFC	0–300 ppm	R134a 100	1665	> air
	2079..2	TGS 832	HFC	0–2000 ppm	R134a 1000	3165	
R417a	20XX..1	SP42A	HFC	0–300 ppm	R134a 100	1665	
	20XX..2	TGS 832	HFC	0–2000 ppm	R134a 1000	3165	
R 507	2069..1	SP42A	HFC	0–300 ppm	R134a 100	1665	3,45
	2069..2	TGS 832	HFC	0–2000 ppm	R134a 1000	3165	
R 410a	2068..1	SP42A	HFC	0–300 ppm	R134a 100	1665	2,3
	2068..2	TGS 832	HFC	0–2000 ppm	R134a 1000	3165	
R11	20XX	TGS 830	CFC	0-2000 ppm	XX	XX	
R12	20XX	TGS 830	CFC	0-2000 ppm	XX	XX	
R133	20XX	TGS 830	CFC	0-2000 ppm	XX	XX	

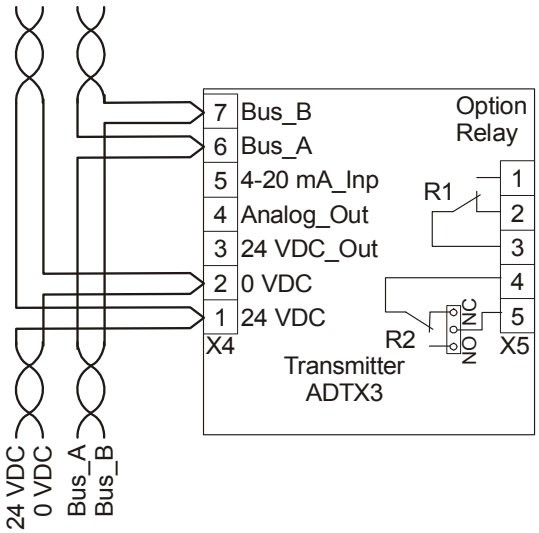
Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de

9 Figures

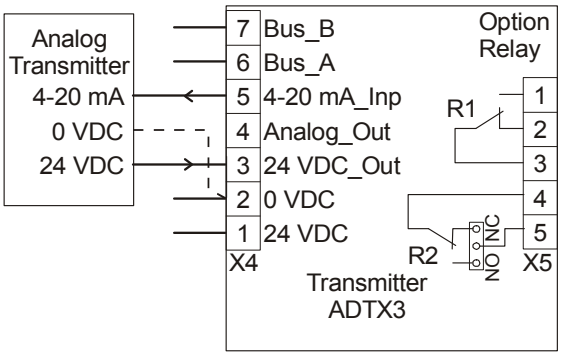
Application: Analog mode
Fig. 1



Application: DGC-05_Bus mode
Fig. 2



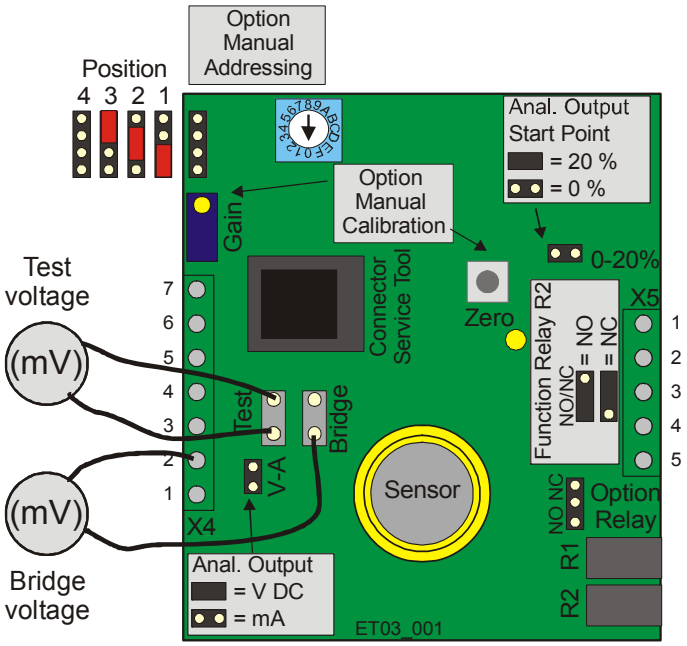
Connection field bus and tension



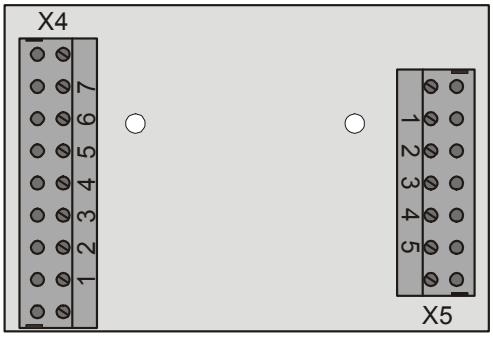
Connection analog transmitter
- Two- or three-wire connection, depending on transmitter type

Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de

PCB ADTX3
Fig. 3



Terminal block



Selection analog output signal
Fig. 4

Jumper 0- 20 %	Jumper V-A	Output signal
Not set	Not set	0 – 20 mA
Set	Not set	4 – 20 mA
Not set	Set	0 – 10 V
Set	Set	2 – 10 V

Calibration adapter
Fig. 6

Type: **Calibr-set-AT 1110S02**

Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de

10 Notes and General Information

It is important to read this user manual thoroughly and clearly in order to understand the information and instructions. The PolyGard® transmitters must be used within product specification capabilities. The appropriate operating and maintenance instructions and recommendations must be followed.

Due to on-going product development, MSR reserves the right to change specifications without notice. The information contained herein is based upon data considered to be accurate. However, no guarantee is expressed or implied regarding the accuracy of this data.

10.1 Intended Product Application

The PolyGard® transmitters are designed and manufactured for control applications and air quality compliance in commercial buildings and manufacturing plants (i.e. detection and automatic exhaust fan control for automotive maintenance facilities, enclosed parking garages, engine repair shops, warehouses with forklifts, fire stations, tunnels, etc.).

10.2 Installers' Responsibilities

It is the installer's responsibility to ensure that all PolyGard® transmitters are installed in compliance with all national and local codes and OSHA requirements. Installation should be implemented only by technicians familiar with proper installation techniques and with codes, standards and proper safety procedures for control installations and the latest edition of the National Electrical Code (ANSI/NFPA70). It is also essential to follow strictly all instructions as provided in the user manual.

10.3 Maintenance

It is recommended to check the PolyGard® transmitter regularly. Due to regular maintenance any performance deviations may easily be corrected. Re-calibration and part replacement in the field may be implemented by a qualified technician and with the appropriate tools. Alternatively, the easily removable plug-in transmitter card with the sensor may be returned for service to MSR-Electronic-GmbH.

10.4 Limited Warranty

MSR-Electronic-GmbH warrants the PolyGard® transmitters for a period of one (1) year from the date of shipment against defects in material or workmanship. Should any evidence of defects in material or workmanship occur during the warranty period, MSR-Electronic-GmbH will repair or replace the product at their own discretion, without charge.

This warranty does not apply to units that have been altered, had attempted repair, or been subject to abuse, accidental or otherwise. The warranty also does not apply to units in which the sensor element has been overexposed or gas poisoned. The above warranty is in lieu of all other express warranties, obligations or liabilities.

This warranty applies only to the PolyGard® transmitter. MSR-Electronic-GmbH shall not be liable for any incidental or consequential damages arising out of or related to the use of the PolyGard® transmitters.

Phone 0049(0)8531/9004-0 Fax: 0049(0)8531/9004-54
MSR-Electronic GmbH, Würdinger Str. 27, D 94060 Pocking www.msr-electronic.de