

PolyGard® Nitrogen Dioxide NO₂ Transmitter ADT23 1130

DESCRIPTION

NO₂ transmitter including digital measurement value processing and temperature compensation for the continuous monitoring of the ambient air to detect nitrogen oxide concentrations. Integrated in the transmitter there is a comfortable calibration routine with selective access release. The ADT-X3 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 the detection of nitrogen dioxide within a wide range of industrial and commercial applications such as underground garages, engine repair shops, tunnels, engine test benches, shelters and loading bays with diesel-engined vehicles. Due to the standard output signal and the RS-485 interface the NO₂ transmitter is compatible to the PolyGard Gas Controller series MGC and DGC by MSR-E as well as to any other electronic control or automation system.

FEATURES

- Digital processing of the measurement values incl. temperature compensation
- Continuous monitoring
- Low zero point drift
- Good stability to poisoning
- Long-life sensor
- Modular plug-in technology
- Easy maintenance
- Comfortable calibration with selective access release
- 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 an external 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	Nitrogen dioxide (NO ₂)	
Sensor element	Electrochemical, diffusion	
Measuring range	0 - 20 ppm (factory set) adjustable from 0 - 10 to 0 - 20 ppm	
Temperature range	-10 °C to + 50 °C (14 °F to 122°F) w/o heating	
Pressure range	Atmospheric ± 15 %	
Humidity range	15 – 90 % RH non-condensing	
Storage temperature	5 °C to 30 °C (41 °F to 86 °F)	
Storage time	Max. 3 months	
Mounting height	0.6 to 0.8 m (2 to 2.5 ft.)	
Accuracy	0.2 ppm	
Repeatability	< 2 % of reading	
Long-term output drift	< 12% signal loss/year	
Response time	t ₉₀ < 25 sec.	
Sensor life expectancy	> 4 years/normal operating environment	
Cross sensitivity ¹	Concentration (ppm)	Reaction (ppm)
Ammonia;	100	0
Chlorine; Cl ₂	1	1
Carbon dioxide; CO ₂	5,000	0
Carbon monoxide; CO	400	0
Ethyl alcohol; C ₂ H ₅ OH	100	0
Ethyl acetate; CH ₃ COOC ₂ H ₅	100	< 0.5
Ethylene, C ₂ H ₄	500	0
Hydrogen, H ₂	1000	0
Nitrogen oxide, NO	50	0
Hydrogen sulphide; H ₂ S	20	-25
Sulphur dioxide, SO ₂	30	-0.6
Toluene; C ₇ H ₈	50	<1.5

Electrical

Power supply 18 - 28 VDC/AC, reverse polarity protected
(for 2- wire mode only VDC)

Power consumption (without options)

- Analog mode 22 mA, max. (0.6 VA)
- Bus mode 12 mA, max. (0.3 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)
Protocol Depending on version

GAS ALARM SYSTEMS

Physical characteristics

Enclosure Plastic Type A ²	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

1 year on material (without sensor)

Options

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
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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, 16 characters each
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 (37.4 °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. load 50 mA

¹ The table doesn't claim to be complete. Other gases, too, can have an influence on the sensitivity. The mentioned cross sensitivity data are only reference values valid for new sensors.

² For further enclosure types see datasheet ADT Enclosure.

ORDERING INFORMATION

ADT-23-1130-X-XXXXXXXXXX

Version

1XXXXXXXX	Relay output ²
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 customer-specific
XXXXX1XXX	Calibration/ addressing mode tool
XXXXX2XXX	Manual calibration
XXXXX3XXX	Manual addressing
XXXXX4XXX	Manual calibration/ addressing
XXXXXX1XX	LCD display ³
XXXXXX2XX	LED status display ^{2,3}
XXXXXXX1X	4 - 20 mA analog input
XXXXXXXX1	Factory calibration 0 – 20 ppm
XXXXXXXX2	Factory calibration 0 – 10 ppm

Enclosure¹

A	Plastic enclosure
B	Duct mounting
5	Stainless steel

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: Nitrogen dioxide transmitter, stainless steel housing, calibration tool, measuring range 0- 20 ppm

Ordering No.: ADT-23-1130-5-000001001

CONNECTING DIAGRAM

