

PolyGard® Ammonia NH₃ Transmitter ADTX3 1120/25

DESCRIPTION

NH₃ transmitter including digital measurement value processing and temperature compensation for the continuous monitoring of the ambient air to detect ammonia concentrations. A comfortable calibration routine with selective access release is integrated in the transmitter. The ADT-03 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 detecting leakages in refrigeration plants with ammonia as refrigerant, and also within a wide range of commercial and industrial applications. Due to the standard analog signal and the RS-485 serial interface the NH₃ transmitter is compatible to the PolyGard gas controller series MGC and DGC by MSR-E as well as to any other controllers or automation systems.



Standard enclosure

FEATURES

- Digital measurement value processing 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 - 10 V analog signal output selectable
- Serial interface RS-485
- IP 65 protected
- Manual calibration via potentiometer (option)
- Manual addressing for RS-485 mode (option)
- 4 – 20 mA analog input for an external transmitter (option)
- Relay output (option)
- Integrated buzzer (option)
- LCD display (option)
- Heating (option)
- Duct mounted (option)

SPECIFICATIONS

General sensor performances

Gas type	Ammonia (NH ₃)
Sensor element	Electrochemical, diffusion
Measuring range	0 - 300 ppm / 0 - 1000 ppm
Pressure range	Atmosphere ± 15 %
Humidity	15 – 90 % RH non condensing
Storage temperature range	5 °C to 20 °C (41 °F to 68 °F)
Storage time	Max. 3 months

Type ADT-53-1120

Accuracy	4 ppm
Repeatability	< 3 % of reading
Zero-point	0 ppm ± 16 ppm
Long-term output drift	< 5% signal loss/6 months
Response time	t ₉₀ < 35 sec.
Temperature range	-10 °C to + 40 °C (14 °F to 104 °F)
Life expectancy	> 2 years/normal operating environment
Cross sensitivity*	Concentration Reaction
Carbon monoxide; CO	300 ppm 0 ppm
Hydrogen H ₂	200 ppm 0 ppm
Sulphur dioxide SO ₂	20 ppm - 7 ppm
Hydrogen sulphide H ₂ S	20 ppm 7 ppm
Nitrate monoxide NO	20 ppm - 1 ppm
Nitrogen dioxide NO ₂	20 ppm - 20 ppm
Chlorine Cl ₂	20 ppm - 55 ppm
Carbon dioxide CO ₂	2 % vol 0 ppm

Type ADT-63-1125

Accuracy	< 15 ppm
Repeatability	< 5 % of reading
Zero-point	0 ppm ± 15 ppm
Long-term sensitivity output drift	< 10% signal loss/6 months
Response time	t ₉₀ < 120 sec.; t ₅₀ < 20 sec.
Temperature range	-40 °C to + 10 °C (-40 °F to 50 °F)
Life expectancy	> 18 months/normal operating environment
Cross sensitivity*	Concentration Reaction
Carbon monoxide; CO	100 ppm 95 ppm
Hydrogen H ₂	3000 ppm 3000 ppm
Sulphur dioxide SO ₂	20 ppm 5 ppm
Hydrogen sulphide H ₂ S	20 ppm 40 ppm
Phosphates	300 ppm 0 ppm
Nitrogen dioxide NO ₂	10 ppm 0 ppm
Chlorine Cl ₂	5 ppm 0 ppm
Hydrogen chloride HCl	10 ppm 0 ppm
Carbon dioxide CO ₂	0,5 % vol 0 ppm
Alcohols	1000 ppm yes
Amines	--- yes
Arsines	0,2 ppm 0 ppm

* Die 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.

GAS ALARM SYSTEMS

Electrical

Power supply	18 - 28 VDC/AC, reverse polarity protected
Power consumption (without options)	22 mA, max. (0,6 VA)

Output signal

Analog output signal	(0) 4 – 20 mA, load $\leq 500 \Omega$,
Selectable: Current / tension	(0) 2 - 10 V; load $\geq 50 \text{ k} \Omega$
Starting point 0 / 20 %	proportional, overload and short-circuit proof

Serial interface

Transceiver	RS 485 / 19200 Baud
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Physical

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 Voltage signal ca. 200 m

Guidelines

EMC Directive 89/336/EEG
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)

Warning buzzer

Acoustic pressure	85 dB (distance 300 mm)
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)

Heating

Temperature controlled	$3 \text{ }^\circ\text{C} \pm 2^\circ\text{C}$ ($37,4 \text{ }^\circ\text{F} \pm 3,6 \text{ }^\circ\text{F}$)
Ambient temperature	- 40 $^\circ\text{C}$ (-40 $^\circ\text{F}$)
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 200Ω
Tension for external analog transmitter	24 VDC max. load 50 mA

* For other housing versions see data sheet „AT-DT Enclosures“

ORDERING INFORMATION

ADT-X3-112X-X-XXXXXXXXXX

Options

1XXXXXXXX	Relay output
X1XXXXXXXX	Warning buzzer integrated
XX1XXXXXXXX	Heating
XXX1XXXXX	RS-485 protocol for DGC-05 series
XXX2XXXXX	RS-485 protocol ModBUS
XXX3XXXXX	RS-485 protocol customers' specifications
XXXX1XXX	Calibration/ addressing mode tool
XXXX2XXX	Manual calibration
XXXX3XXX	Manual addressing
XXXX4XXX	Manual calibration / addressing
XXXXX1XX	LCD display
XXXXXX1X	4 - 20 mA analog input
XXXXXXX1	Factory calibration 0 - 300 ppm
XXXXXXX2	Factory calibration 0 - 1000 ppm

Housing²

A	Plastics
B	Duct mounting
2	Steel sheet, galvanised
5	Stainless steel

Temperature range

0	-10 °C to + 40 °C (14 °F to 104 °F)
5	- 40 °C to + 10 °C (-40 °F to 50 °F)

² See datasheet „PolyGard AT/DT Enclosures“

Example: Ammonia transmitter, temperature range -10 °C to 40 °C, stainless steel housing, calibration tool, measuring range 0- 300 ppm

Ordering number: ADT-53-1120-5-XXXXX1XX1

CONNECTION DIAGRAM

