

## PolyGard® Ethylene C<sub>2</sub>H<sub>4</sub> Transmitter ADT53 1189

### DESCRIPTION

C<sub>2</sub>H<sub>4</sub> transmitter including digital measurement value processing and temperature compensation for the continuous monitoring of the ambient air to detect ethylene concentrations. Integrated in the transmitter there is a comfortable calibration routine with selective access release. The ADT-53 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 monitoring ethylene concentrations caused by the maturation of fruits during transportation or storage. Due to the standard output signal and the RS-485 interface the C<sub>2</sub>H<sub>4</sub> 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.



Standard enclosure

### 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 AT transmitter (optional)
- Relay output (optional)
- Integrated buzzer (optional)
- LCD display (optional)
- Heating (optional)
- Duct mounting (optional)

## SPECIFICATIONS

|                                       |   |
|---------------------------------------|---|
| <b>General sensor performance</b>     |   |
| Detected gas                          | Ethylene (C <sub>2</sub> H <sub>4</sub> )   |
| Sensor element                        | Electrochemical, diffusion  |
| Measuring range                       | 0 - 10 ppm (factory set)<br>adjustable from 0 - 5 to 0 - 10 ppm                           |
| Temperature range                     | -20 °C to + 50 °C (-4 °F to 122 °F)   |
| 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                       | 1,5 to 1,8 m (5 to 6 ft.)   |
| Accuracy                              | 0,1 ppm   |
| Repeatability                         | < 1 % of reading  |
| Long-term output drift                | < 5% signal loss/year   |
| Zero-point range                      | 0 + 1 ppm   |
| Response time                         | t <sub>90</sub> < 60 sec.   |
| Sensor life expectancy                | > 2 years/normal operating environment  |
| Cross sensitivity <sup>1</sup>        | Reaction (%)  |
| Carbon monoxide; CO                   | > 60  |
| <b>Electrical</b>                     |   |
| Power supply                          | 18 - 28 VDC/AC, reverse polarity protected<br>(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)  |
| <b>Output signal</b>                  |   |
| 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  |
| <b>Serial interface</b>               |   |
| Transceiver                           | RS 485 / 19200 Baud (9600 at Mod_Bus)   |
| Protocol                              | Depending on version  |
| <b>Physical characteristics</b>       |   |
| Enclosure Plastic Type A <sup>2</sup> | 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 <sup>2</sup> (24 AWG) max. 2.5 mm <sup>2</sup> (14 AWG) |
| Wire distance                         | Current signal ca. 500 m (1500 ft.)<br>Voltage signal ca. 200 m (600 ft.)                 |
| <b>Guidelines</b>                     |   |
|                                       | EMC Directive 2004 / 108 / EEC<br>CE  |
| <b>Warranty</b>                       |   |
|                                       | 1 year on material (without sensor)   |

<sup>1</sup> 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.

<sup>2</sup> For further enclosure types see datasheet AT-DT Enclosure.

# GAS ALARM SYSTEMS

## 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,<br>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, 16 characters each |
| Power consumption | 10 mA, max. 0,3 VA            |

### Heating

|                        |                              |
|------------------------|------------------------------|
| Temperature controlled | 3 °C ±2°C (37,4 °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,<br>input resistance 200 Ω |
| Power supply for external transmitter | 24 VDC max. load 50 mA  |

## ORDERING INFORMATION

**ADT-53-1189-X-XXXXXXXXXX**

### Version

|             |                                     |
|-------------|-------------------------------------|
| 1XXXXXXXX   | Relay output                        |
| X1XXXXXXXX  | Buzzer int.                         |
| XX1XXXXXXXX | Heating                             |
| XXX1XXXXX   | RS - 485 protocol for DGC-05 series |
| XXX2XXXXX   | RS - 485 protocol Modbus            |
| XXX3XXXXX   | RS - 485 protocol customer-specific |
| XXX1XXXX    | Calibration/ addressing mode tool   |
| XXX2XXXX    | Manual calibration                  |
| XXX3XXXX    | Manual addressing                   |
| XXX4XXXX    | Manual calibration/ addressing      |
| XXX1XX      | LCD display                         |
| XXXXXX1X    | 4 - 20 mA analog input              |
| XXXXXX1     | Factory calibration 0 – 10 ppm      |
| XXXXXX2     | Factory calibration 0 – 5 ppm       |

### Enclosure<sup>3</sup>

|   |                   |
|---|-------------------|
| A | Plastic enclosure |
| B | Duct mounting     |
| 2 | Steel, galvanised |
| 5 | Stainless steel   |

<sup>3</sup> See datasheet "PolyGard AT/DT Enclosure"

**Example:** Ethylene transmitter, stainless steel housing, manual calibration, measuring range 0- 10 ppm

**Ordering No.:** ADT-53-1189-5-XXXXX2XX1

## CONNECTING DIAGRAM

