

MANUFACTURER DOCUMENT PACKAGE

# Manufacturer's Manual

Reference package for procurement and maintenance review

SIMTRONICS

**GD10-P00-17DG-0XH-00**

FIXED GAS DETECTOR

Used with the applicable fixed gas detector configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Teledyne Oldham Simtronics GD10-P00 operating manual 850-811250

Thank you for choosing this TELEDYNE OLDHAM SIMTRONICS instrument.

All the necessary actions have been taken in order to ensure your complete satisfaction with this equipment.

It is important that you read this entire manual carefully and thoroughly.

## Limitation of Liability

The Company TELEDYNE OLDHAM SIMTRONICS S.A.S., hereinafter referred to as “TELEDYNE OLDHAM SIMTRONICS” throughout this document, shall not be held responsible for any damage to the equipment or for any physical injury or death resulting in whole or in part from the inappropriate use or installation of the equipment, non-compliance with any and all instructions, warnings, standards and/or regulations in force.

No business, person or legal entity may assume responsibility on behalf of TELEDYNE OLDHAM SIMTRONICS, even though they may be involved in the sale of TELEDYNE OLDHAM SIMTRONICS products.

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## Ownership clauses

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## Warning

This is not a contractual document. In the best interest of its customers and with the aim of improving performance, TELEDYNE OLDHAM SIMTRONICS reserves the right to alter the technical features of its equipment without prior notice.

**READ THESE INSTRUCTIONS CAREFULLY BEFORE THE FIRST USAGE:** these instructions should be read by all persons who have or will have responsibility for the use, maintenance, or repair of the instrument.

This instrument shall only be deemed to be in conformance with the published performance if used, maintained, and repaired in accordance with the instructions of TELEDYNE OLDHAM SIMTRONICS by TELEDYNE OLDHAM SIMTRONICS personnel or by personnel authorized by TELEDYNE OLDHAM SIMTRONICS.

# 1. Product description

The GD10P/PE is a detector based on non dispersive infrared (NDIR) gas detection technology.

Compared with catalytic sensors, the GD10P and GD10PE has the following advantages:

- Presence of oxygen is not required for correct measurement, which makes the GD10P/PE suitable even in an inert gas atmosphere.
- No possibility of poisoning of the detector since no chemical reaction occurs, i.e. silicon vapors and H<sub>2</sub>S have no effect on the detector or the measurement.
- The gas velocity has no influence on accuracy.
- There are no saturation effects which could lead to false measurements. Thus, the detector is capable of measuring gas concentrations up to 100% vol.
- The detector has a continuous self-test function and reports dirty optics and fault conditions to the control system.
- Total system costs can be dramatically reduced with the GD10P/PE:
- High reliability results in low test frequency and practically no calibration costs.

GD10P and GD10PE are sensitive to absorption bands related to carbon - hydrogen bonds.

As a result, all molecules with this type of bond are susceptible to detection. The intensity of this absorption line is, however, significantly dependent on the molecule under consideration.

In general, the larger the molecule is, the greater the absorption strength will be, and so the better it is detected.

There is therefore some measurement interference between hydrocarbon vapor compounds since their absorption bands share some spectral regions.

The level of interference depends on the relative position of these absorption bands, relative to the working range of the interference filter.

## 1.1 GD10P Description

The GD10P has been designed with features that provide an effective response to the detection of gas hazards in a wide range of industrial environments from boiler plant rooms to offshore petrochemical installations.

The GD10P infrared gas detectors use solid-state infrared sources. The complete opto-mechanical design and construction is so stable that an ultra-fast speed of response

## GD10-P00 and GD10-PE0

INFRARED POINT GAS DETECTOR  
OPERATING MANUAL

### MAINTENANCE

HART® interface

### ELECTRICAL

Power supply 24 VDC, range 18-32 VDC

Power consumption Approx. 3.5 W

#### GD10P (NON-UL)

- Connection: 3 wires (0.5mm<sup>2</sup> - 1.5mm<sup>2</sup>) + 2 wires RS485 (factory use)
- Cable entry: M20 Ex e cable gland

#### GD10P (UL)

- Connection: 5 wires flying leads (22AWG) for wiring into termination box
- Cable conduit connection: 1 x 3/4" NPT (Male) or 1 x 1/2" NPT (Female)

### ENVIRONMENT

#### Storage

Temperature: -40°C to + 70°C (-40°F to +158°F)

Duration: 2 years in clean atmosphere

Pressure: 1013 hPa +/- 20%

Humidity: 100% relative humidity (RH) uncondensed

#### Operating

Temperature: -40°C to + 60°C (-40°F to +140°F) <sup>(5)</sup>

Humidity (operation) 100% relative humidity (RH)  
uncondensed

Pressure (operation) 1013 hPa +/- 20% <sup>(6)</sup>

### HOUSING

- GD10P (NON-UL)

Main compartment Ex db IIC T6 Gb

Terminal compartment Ex eb

Protection category IP66/IP67 EN/IEC 60529 and ABNT NBR IEC 60529 <sup>(7)</sup>

- GD10P (UL)

UL rating Class I Div 1, Group C&D

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<sup>5</sup> Temperature limits for hazardous location and performance certifications

<sup>6</sup> Pressure limits for performance and explosion protection certifications. Pressure impacts measure as described in section 1.4 :  
elevation can be taken into account, please see section 6.4.16

<sup>7</sup> IP ratings does not mean that the equipment will detect gas during or after exposure to the defined conditions. It is  
also recommended to use the weather protection.

## 4. Installation



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Installation shall be in accordance with the standards in force, classification of the zone, and in conformity with standard EN/IEC 60079-14, the editions in force, or with other national and/or local standards.

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### 4.1 Positioning

Both GD10P and GD10PE detectors should be mounted where gas leakage is most likely to occur. To detect methane, which is lighter than air, inside an enclosed area the detector should be mounted high in the area to be protected or immediately above potential leakage sites.

To detect gases heavier than air, e.g. propane, the detector should be mounted below the potential leakage site.

The detector should be mounted in a place where maintenance, i.e. cleaning of the optics, is easily performed.

The detector may be mounted in areas where no oxygen is present.

The detector may be mounted in areas with strong airflow

The detector can be mounted where it could be drenched by water.

However, immersion has its limits. It assumes that the cable glands have been correctly mounted.

Furthermore, the detector will trigger an optical fault. After immersion, the detector will require cleaning because of the possible traces caused by immersion on the optical parts.

Finally, it is also important to check that the gas inlet tube is properly covered so that there is nothing getting inside.

Please note that the 4 holes in each end of the GD10PE weather protection are for water drainage and should not be blocked.



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Air velocity limits: none <sup>(15)</sup>

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<sup>15</sup> Taking into account the principle of detection, a pressure variation will proportionally influence the measurement compared to the calibration one (1013HPa).

## 4.2 GD10P Fixing<sup>16</sup>

The detector is mounted by means of a projecting mounting leg using two M8 screws and washers, or by means of the Duct Mounting Flange Kit (4 x M8 screws). The detector should preferably be mounted so that the longitudinal axis of the detector is horizontal. This will prevent accumulation of water and dust on the optics. The Weather Protection must always be oriented correctly for optimal performance.

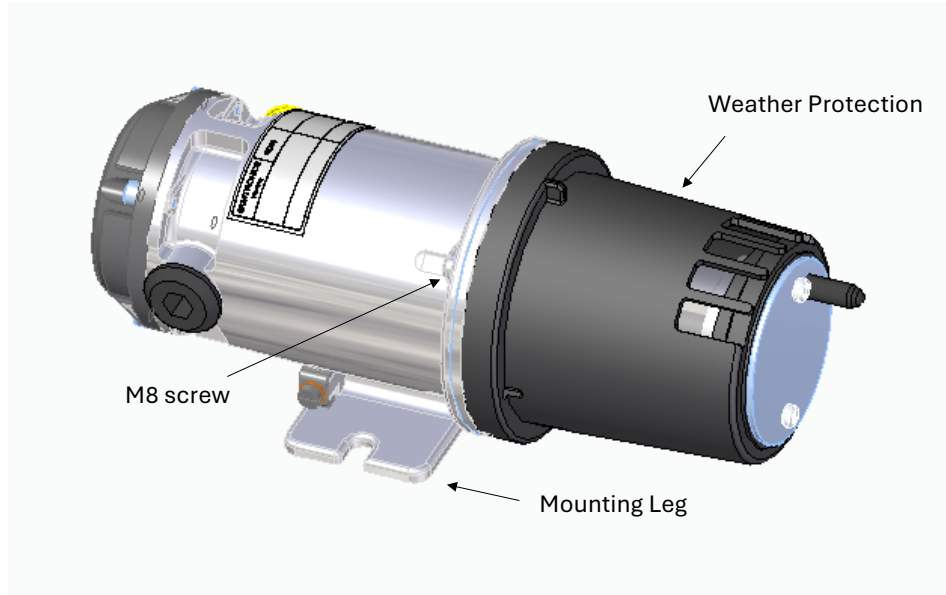


Figure 1: GD10P mounting

## 4.3 GD10P Weather Protection<sup>17</sup>



When the GD10P is mounted outdoors, the flow direction indicator (see Figure 2 below) must point upwards.

Orientation of the Weather Protection is performed as follows:

- Use a screwdriver to loosen the two screws on the Weather Protection
- Rotate the Weather Protection to correct position
- Tighten the screw with a torque of max. 0.5 Nm

<sup>16</sup> Applicable to all GD10P and GD10PE versions (UL and NON-UL)

<sup>17</sup> Applicable to all GD10P and GD10PE versions (UL and NON-UL)

- |              |                  |
|--------------|------------------|
| • Terminal 5 | Factory use only |
| • Terminal 4 | Factory use only |
| • Terminal 3 | 4-20 mA output   |
| • Terminal 2 | 0 V              |
| • Terminal 1 | +24 VDC          |

For GD10P and GD10PE (NON-UL), the installation wiring enters the terminal compartment via a single M20 Ex e cable gland, which can be mounted on either side of the compartment. The unused entry is blanked with an Ex e cover.

GD10P and GD10PE (UL) must be supplied through a Class 2 power supply.



The detector housing must be connected to local ground via the external earth point. The wire should be minimum 4 mm<sup>2</sup> (8 AWG) and as short as possible.

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The shield of the cable should be connected at both sides (at detector side and at the controller). The shield must be terminated to local ground via the cable gland at the detector and must not enter the terminal compartment.