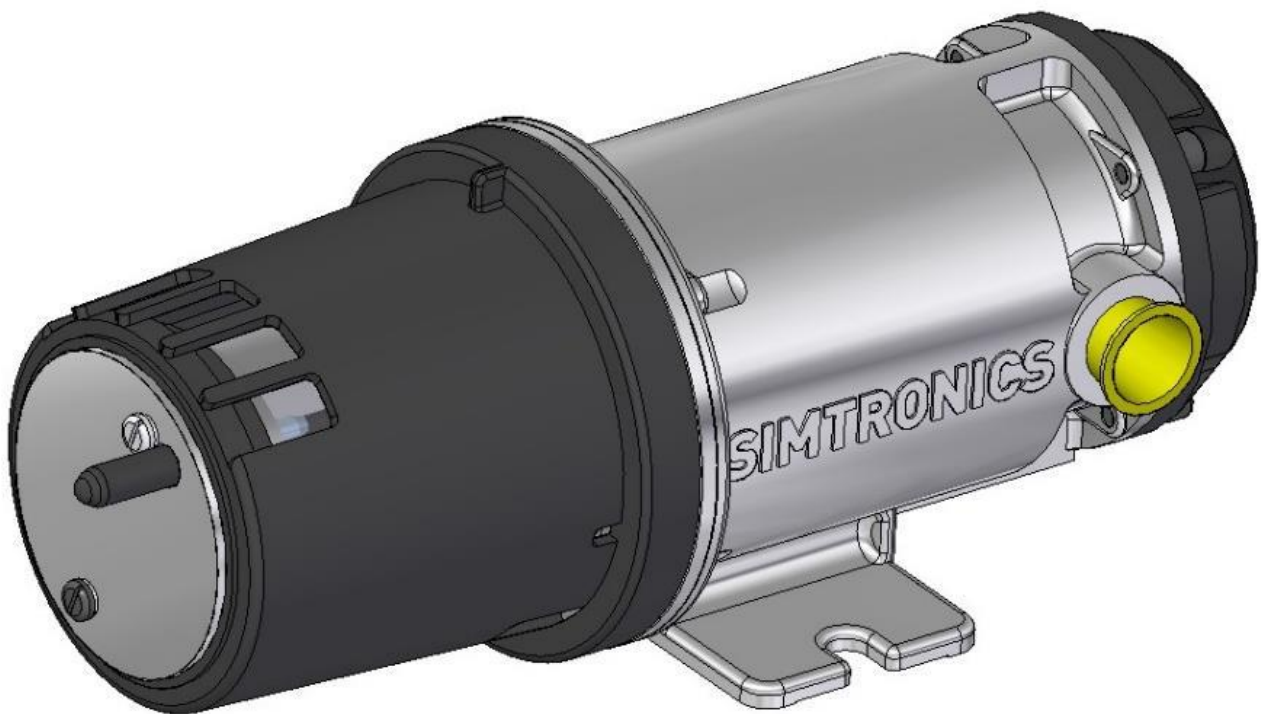


Operating Manual

Infrared Point Gas Detector GD10-P00



Thank you for choosing this SIMTRONICS instrument.

All of 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 SIMTRONICS A.S., hereinafter referred to as “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 SIMTRONICS, even though they may be involved in the sale of SIMTRONICS products.
- SIMTRONICS shall not be responsible for any direct or indirect damage, or any direct or indirect consequence, resulting from the sale and use of any of its products **UNLESS SUCH PRODUCTS HAVE BEEN SELECTED BY SIMTRONICS ACCORDING TO THE APPLICATION.**

Ownership clauses

- The drawings, specifications, and information herein contain confidential information that is the property of SIMTRONICS.
- This information shall not, either in whole or in part, by physical, electronic, or any other means whatsoever, be reproduced, copied, divulged, translated, or used as the basis for the manufacture or sale of SIMTRONICS equipment, or for any other reason **without the prior consent of SIMTRONICS.**

Warning

- This is not a contractual document. In the best interest of its customers and with the aim of improving performance, 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 SIMTRONICS by SIMTRONICS personnel or by personnel authorized by SIMTRONICS.

Important Information

- The modification of the material and the use of parts of an unspecified origin shall entail the cancellation of any form of warranty.
- The use of the unit has been projected for the applications specified in the technical characteristics. Exceeding the indicated values cannot in any case be authorized.
- SIMTRONICS recommends regular testing of fixed gas detection installations (read Chapter 6).

Warranty

- Under normal conditions of use and on return to the factory, parts and workmanship are guaranteed for 5 years, IR sources are guaranteed for 15 years.

Destruction of the equipment



European Union (and EEA) only. This symbol indicates that, in conformity with directive DEEE (2002/96/CE) and according to local regulations, this product may not be discarded together with household waste.

It must be disposed of in a collection area that is set aside for this purpose, for example at a site that is officially designated for the recycling of electrical and electronic equipment (EEE) or a point of exchange for authorized products in the event of the acquisition of a new product of the same type as before.

Table of contents

1	PRODUCT DESCRIPTION	7
2	TECHNICAL SPECIFICATIONS	9
3	INSTALLATION	11
3.1	Positioning	11
3.2	Fixing.....	11
3.3	Weather Protection.....	11
3.4	Duct or pipe mounting.....	13
3.5	External cable.....	15
3.6	Electrical connection.....	15
4	COMMISSIONING	17
4.1	Visual inspection.....	17
4.2	Power up.....	17
4.3	Checking system functions	17
5	OPERATION	19
5.1	Analogue Output Protocol.....	19
5.2	HART® Interface	19
6	MAINTENANCE	25
6.1	Cleaning of optical lens/mirror.....	25
6.2	Function test.....	25
6.3	Calibration test	26
6.4	Re-zero.....	26
6.5	Fault finding.....	28
7	SPECIFIC INSTRUCTIONS FOR USE IN EXPLOSIVE ATMOSPHERES AND OPERATIONAL SAFETY	29
8	DECLARATIONs OF CONFORMITY	31
9	PRODUCT CODING	35
10	ACCESSORIES AND SPARE PARTS	37
11	APPENDIX 1 - generic HART® COMMANDS	39

1 PRODUCT 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.

These infrared gas detectors differ from all other models, because they use solid-state infrared sources. The complete opto-mechanical design and construction is so stable that an ultra-fast speed of response can be achieved whilst providing unparalleled service life and detector stability, thus saving on maintenance and service costs.

We offer the longest combined detector and IR source warranty on the market.

Supplied with worldwide performance (CSA / ATEX) and hazardous area approvals.

Suitable for use in SIL 2 and SIL 3 systems.

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

- Presence of oxygen is not required for correct measurement, which makes the GD10P suitable even in an inert gas atmosphere.
- No possibility of poisoning of the detector since no chemical reaction occurs, i.e. silicon vapours and H₂S have no effect on the detector or the measurement.
- The gas flow rate 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:
- High reliability results in low test frequency and no calibration costs.

2 TECHNICAL SPECIFICATIONS

Version: 0-100%LEL Methane, 5 sec. response time.

(Specification for other types on request)

GENERAL

Detection method	IR-absorption, dual wavelength, dual path
IR-Source	Solid state IR source, 50Hz flash
Gases detected	Detector versions for several hydrocarbons as well as CO ₂ .
Self-test	Continuous
Calibration	Factory set, no field recalibration

PERFORMANCE

Lifetime stability ^(*)	±5% of full scale (FS) reading	
Accuracy ^(*)	±3% FS between 0-50 % reading	
	±5% FS between 50-100 % reading	
Response time	T20 = 1 sec.	(Optional 0.3 sec)
	T50 = 2.5 sec.	(Optional 0.7 sec)
	T90 = 6 sec.	(Optional 1.6 sec)
Start-up time ^(*)	Less than 60 sec., measuring 30 min. full specification	

(*) Refers to -20°C to + 45°C

DETECTOR WARNINGS

Early Dirty Optics	55% signal attenuation
Dirty Optics	70% signal attenuation
Detector failure	Main function fault or blocked optics.

OUTPUT SIGNAL

Standard	Current source 4 – 20 mA, max. load impedance 500 Ohm
Option	Current sink 4 – 20 mA
Maintenance	HART® interface

ELECTRICAL

Power supply	24 VDC, range 18-32 VDC
Power consumption	Approx. 3.5 W
Connection	3 wires (0.5mm ² - 1.5mm ²)
Cable entry	M20 Ex e cable gland

TEMPERATURE RANGE

Storage	-40°C to + 70°C (-40°F to +158°F)
Operating	-40°C to + 65°C (-40°F to +149°F)
Humidity (operation)	100% RH

HOUSING

Main compartment	Ex d IIC T6 Gb
Terminal comp.	Ex e
Protection category	IP66/IP67 DIN 40050
Housing material	Stainless steel SIS2343 (ASTM 316)
Weight	Approx. 2.9 kg (6.4 Lbs)
Dimensions	264L x 104W x 106H (mm) - 10.4 x 4.1 x 4.2 (inches)

WARRANTY

5 years full warranty on complete instrument

15 years warranty on the IR-sources

3 INSTALLATION



The area in which the detector may be installed must be in accordance with the certification of the detector and in accordance with the standards of the appropriate authority in the country concerned

3.1 Positioning

The detector 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.

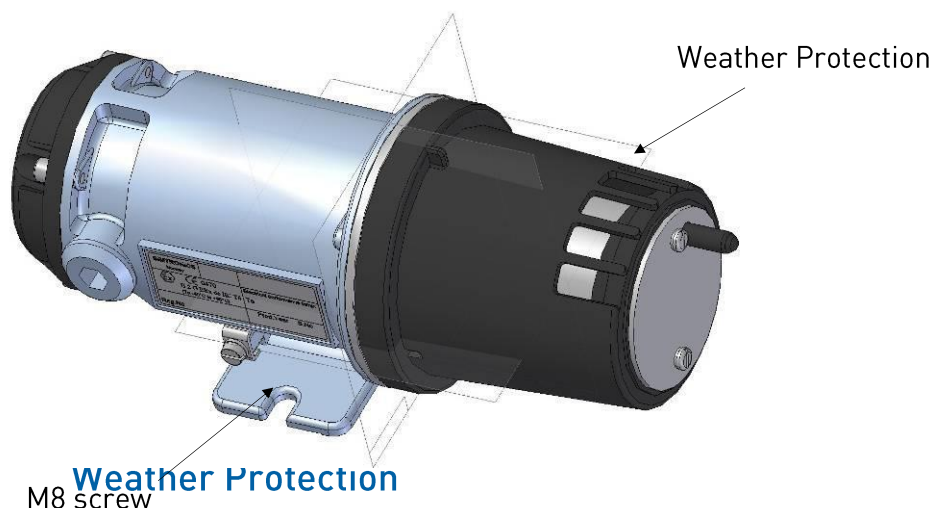
The detector should be mounted in a place where maintenance, i.e. cleaning of the optics, is easily performed.

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

The detector should NOT be mounted where it could be drenched by water.

3.2 Fixing

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 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.



3.3

Weather Protection



When the GD10P is mounted outdoors, the flow direction indicator must point upwards

See “Flow Direction Indicator” in Figure 2 below. 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

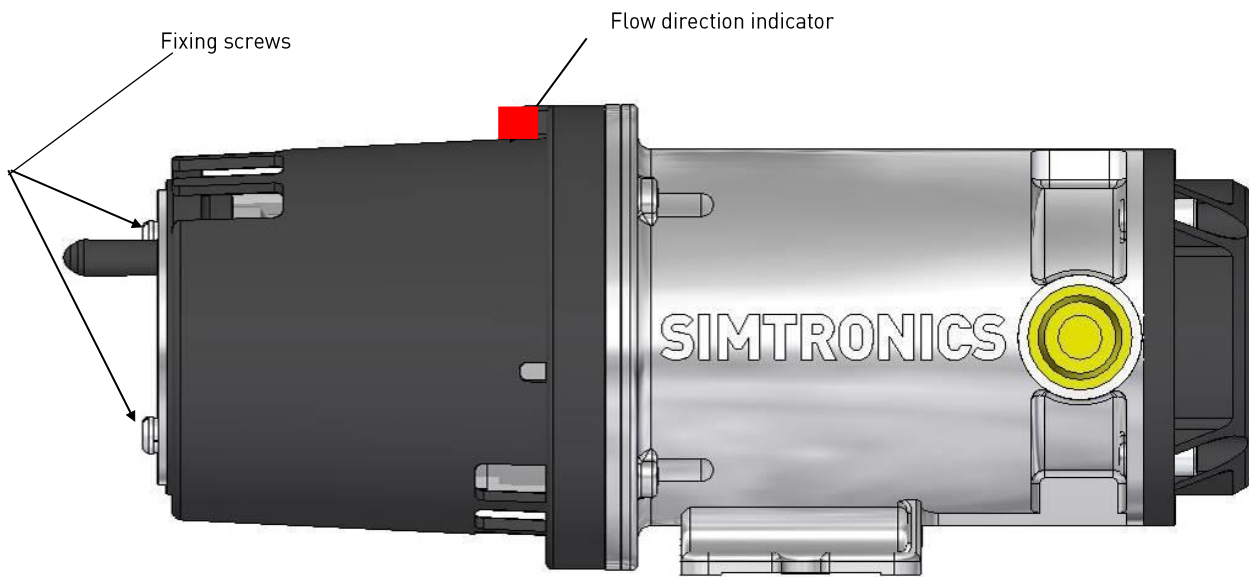


Figure 2 : Orientation of GD10P weather protection in relation to flow direction

3.4 Duct or pipe mounting

If installed in a ventilation duct or pipe, the mounting arrangement and accessories shown in Figure 3 and

Figure 4 should be used. The Duct Mounting Bracket shown in

Figure 3 allows the GD10P to be positioned in the core of the airflow in wide ducts or pipes.



Avoid direct light on lens and mirror if the GD10P is mounted without the Weather Protection.

In order to achieve minimum response time, the Weather Protection must be oriented with the flow direction indicator facing into the air flow. See Figure 2 and

Figure 4.

The sensor must be mounted in straight parts of the duct with undisturbed airflow. Avoid areas with possible turbulent flow e.g. immediately after sharp bends or junctions.

The kit includes a modified weather protection as well as piping for functional testing.

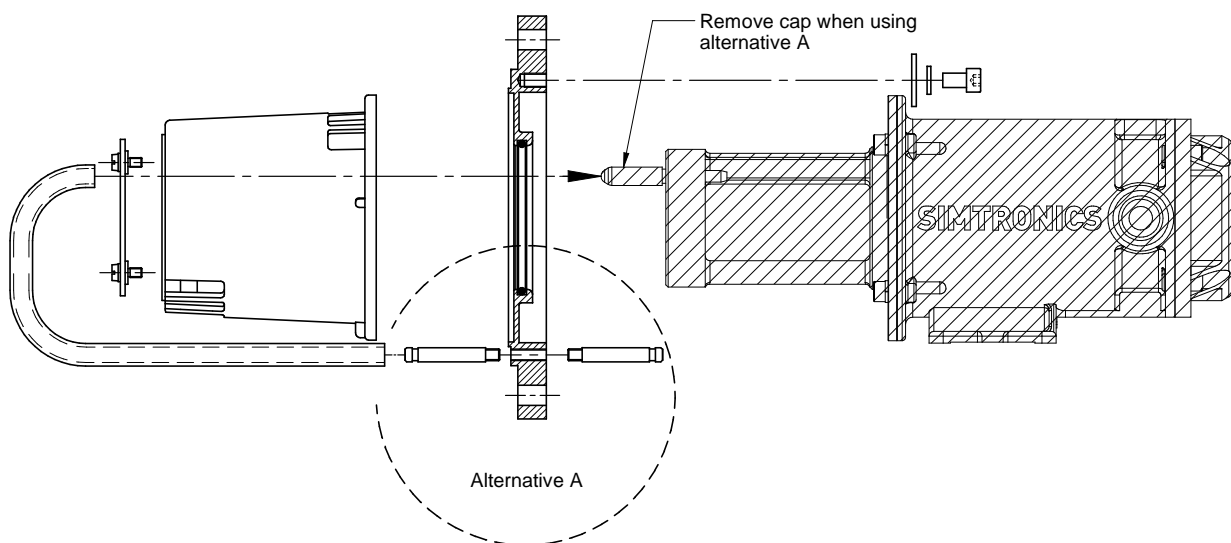


Figure 3: Exploded view, Duct Mount Flange Kit

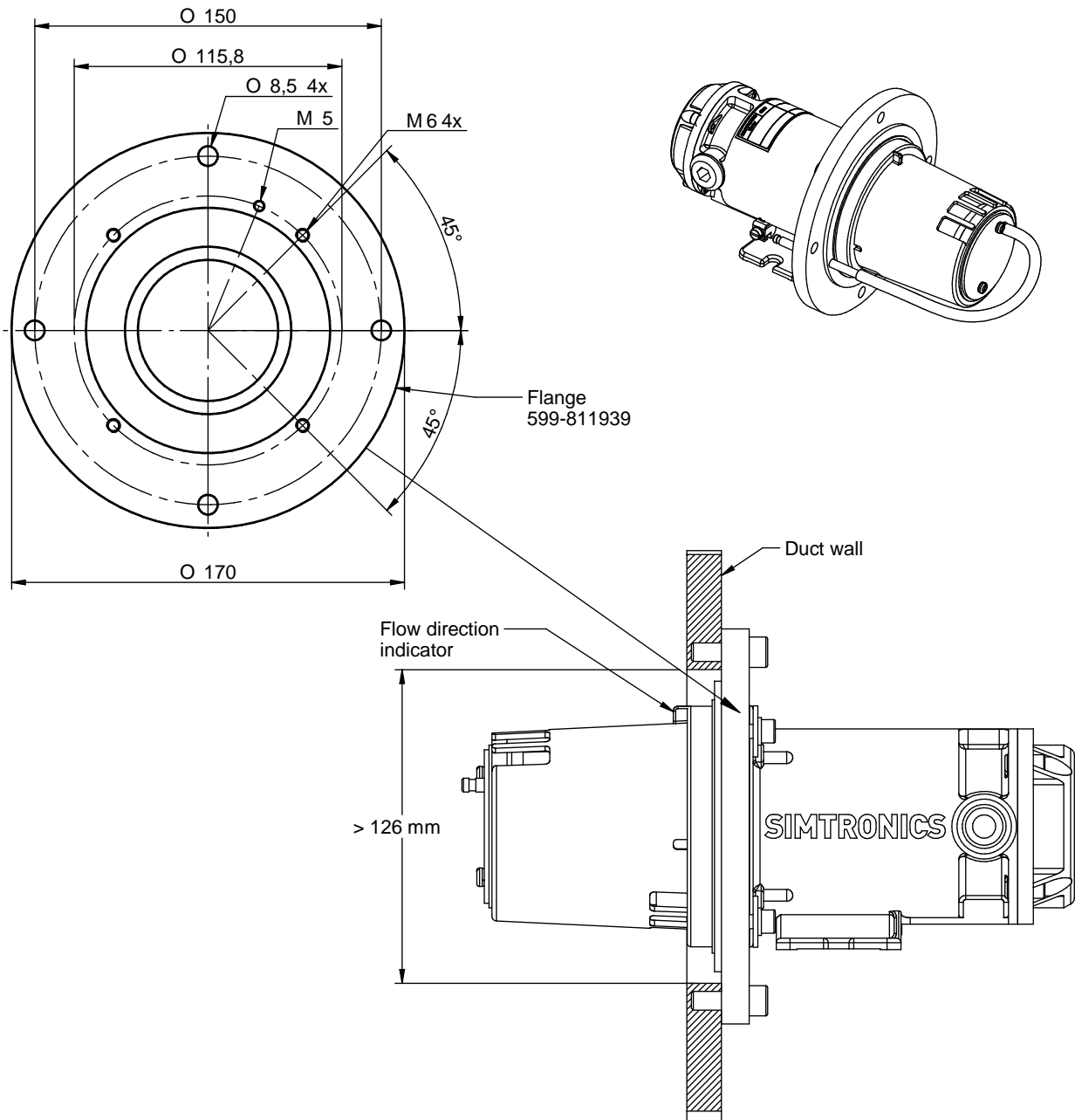


Figure 4: Ventilation duct or pipe mounting using Duct Mounting Flange Kit
(Refer to
Figure 3 for details)

3.5 External cable

The cable type must be chosen in accordance with applicable regulations.

The table below indicates maximum cable lengths (2-wire) restrictions due to voltage drop over the power supply cable.

Core size cable	0,5 mm ²	0,9-1 mm ²	1,5 mm ²
Maximum length (with a 24VDC power supply)	250m	500m	750m

3.6 Electrical connection

The terminal compartment is accessible by removing the circular terminal cover (loosen the four M5 screws).

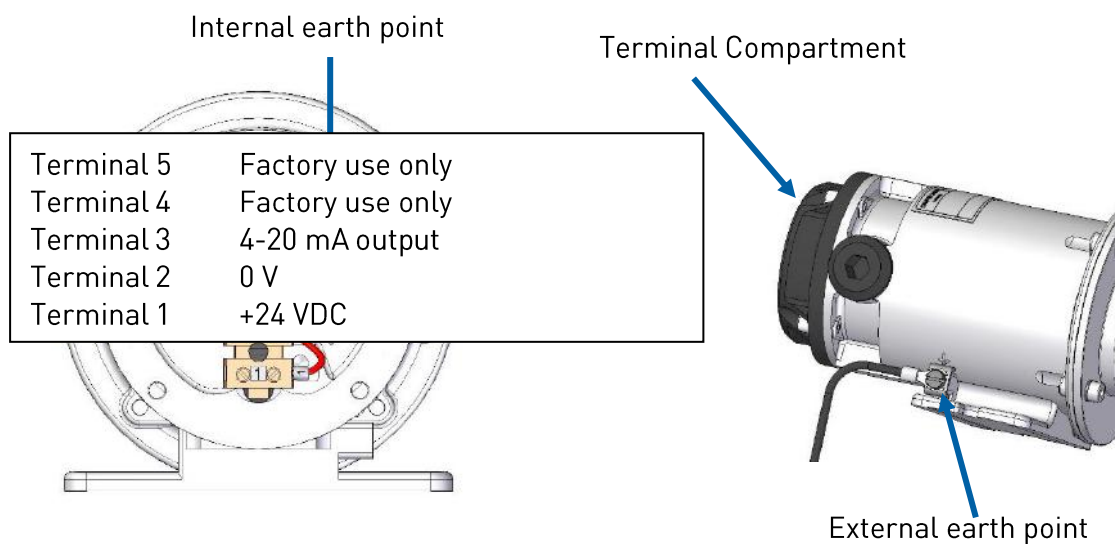


Figure 5: Terminal compartment

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.



The detector housing must be connected to local ground via the external earth point. The wire should be minimum 4 mm² (8 AWG) and as short as possible.

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.

4 COMMISSIONING

4.1 Visual inspection

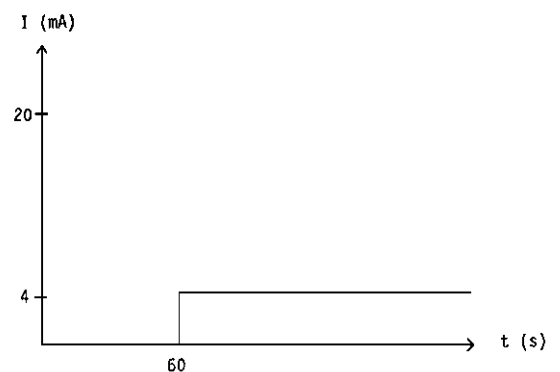
The following should be checked before initial powering up:

- The axis of the detector shall be horizontal,
- Correct cable gland installation,
- Electrical connection,
- Electrical grounding,
- Termination of cable shield,
- Orientation of the weather protection,
- All bolts and screws are tight.

Please refer to Chapter 3 "INSTALLATION" for details.

4.2 Power up

Ensure that system wiring and control system are in working order before powering the detector. The startup period takes about 60 seconds, a functional self-test is performed during this time. When the self-test is completed the detector turns over to measuring mode. The 4-20mA output will stay at 0mA during the 60 seconds startup period and 4mA (if no gas is present) in measuring mode. The graph on the left shows the reading of the 4-20mA analog output during startup period.



4.3 Checking system functions

The GD10P is factory calibrated, and does not require any adjustments before operation. A check prior to putting into service should however consist of:

1) Clean the optical surfaces

The detector may have been collecting dirt after being initially installed. It is thus crucial to clean the optical parts before testing the detector (refer to Paragraph 6.1 "Cleaning of optical lens/mirror").

2) Do a gas test

To make sure the detector works fine you should as a minimum do a function check as described in paragraph 6.2 "Function test".

Optionally you may do a full calibration test as described in paragraph 6.3 "Calibration test".

5 OPERATION

5.1 Analogue Output Protocol

Gas reading and fault signals are given through the 4-20mA current loop interface. The table below shows the analogue output level for the various conditions.

Condition	Analogue output	Comment
Normal gas reading	4 mA - 20 mA	4 mA = 0% of range 20 mA = 100% of range (or higher)
Early Dirty Optics Warning (55% signal reduction)	2 mA ^(*)	Detector will still output gas concentration if it is greater than 7 % of range (FS)
Dirty Optics Warning (70% signal reduction)	1 mA ^(*)	No detection
Detector Fault	< 0,5 mA ^(*)	No detection

^(*) Shows default factory settings. Can be configured via HART® terminal

5.2 HART® Interface

5.2.1 Introduction

Simtronics GD10P detector supports HART® version 7.

For proper operation between GD10P and the HART® communicator, a dedicated Device Descriptor (DD) should be loaded onto the communicator. If such DD is not present, the communicator will offer a proprietary generic interface, and the list of available functions may be limited and variable.

The proper DD for GD10P can be downloaded from HART® Foundation website www.hartcomm.org (select "Technologies" then click on « HART Product Registry & EDD Database » or contact us). The loading of the DD onto a specific communicator must be done according to the relevant user guide for that communicator.

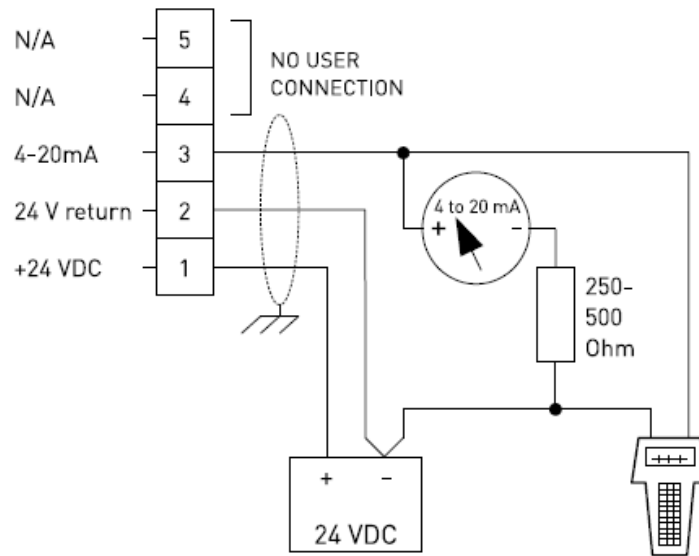


DD has no relevance for earlier versions of GD10 (the generic HART® devices). Customers having such detector should use generic codes as described in Appendix 1 on page 39.

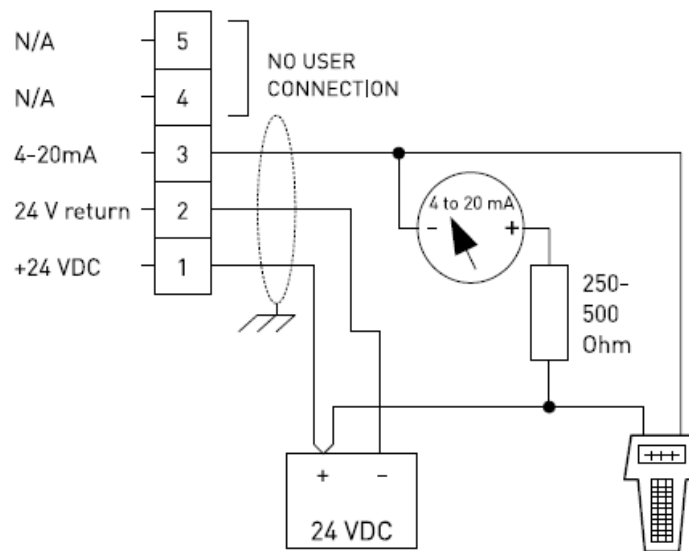
5.2.2 Connection

For access to the detectors HART® features, connect an industry standard HART® communicator as shown in the following figures depending on the type of analogue interface (source or sink).

Note that for the HART® communication to work properly, a minimum loop resistance is required in the current loop. The actual value of the serial resistance in the diagrams below may vary depending on the rest of the resistance in the loop.

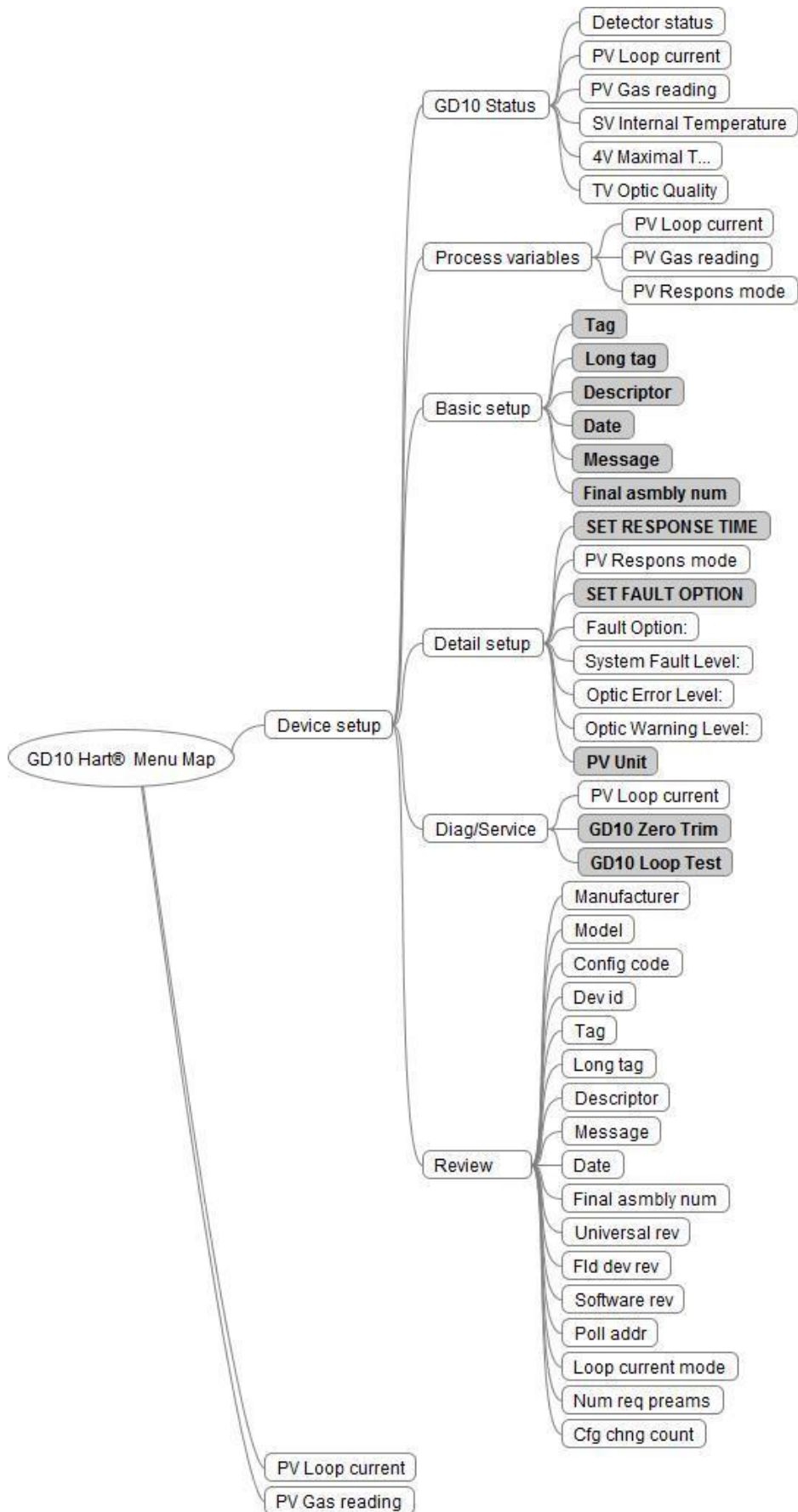


HART® terminal connection for source variant



HART® terminal connection for sink variant

5.2.3 HART® Menu Map



The menu map on the previous page, shows the complete list of available commands in the HART® interface of GD10. Most of the commands are only requests to read information from the detector. The commands shaded as grey with bold text gives the operator possibility to make changes to individual parameters, and these commands are described further in the following sections.

5.2.4 Detailed description of selected commands

When one of the following commands are activated, the operator is navigated to one or several data input screens where detailed data can be entered, or predefined options selected. Detailed navigation between the commands is not explained, as this is part of the user interface of the actual HART® communicator.

5.2.4.1 TAG (Basic setup)

The operator can write an alphanumeric text, max 8 characters. Default is "GD10".

5.2.4.2 Long tag (Basic setup)

The operator can write an alphanumeric text, max 32 characters. Default is empty.

5.2.4.3 Descriptor (Basic setup)

The operator can write an alphanumeric text, max 16 characters. Default is "SIMTRONICS A/S".

5.2.4.4 Date (Basic setup)

The operator can write a date on the format MM/DD/YY. Default is "**/**/**".

5.2.4.5 Message (Basic setup)

The operator can write an alphanumeric text, max 32 characters. Default is "SIMTRONICS A/S".

5.2.4.6 Final asmbly num (Basic setup)

The operator can write an alphanumeric text, max 8 characters. Default is "0".

5.2.4.7 SET RESPONSE TIME (Detailed setup)

The operator can choose between two response modes. Default is "5s".

5.2.4.8 SET FAULT OPTION (Detailed setup)

The operator can choose between three options according to the following table.

Option	Detector fault	Dirty Optics	Early Dirty Optics (see note 1)
OP0 (default settings)	<0.5 mA	1 mA	2 mA
OP1	1 mA	2 mA	3 mA
OP2 (User selectable)	1 (0 mA) 2 (1 mA) 3 (2 mA) 4 (3 mA)	1 (0 mA) 2 (1 mA) 3 (2 mA) 4 (3 mA)	1 (no warning) 2 (1 mA + pulsing) 3 (2 mA) 4 (3 mA)

Note 1: If in "Early Dirty Optics" state, the detector will switch to standard output level when gas reading is >7% of detection range.

After a reconfiguration, it is recommended to restart the detector and verify the new settings by simulating different alarm/warning states. A current meter may be used to read the level at the analogue output.

5.2.4.9 PV unit (Detailed setup)

The operator can choose between several measurement units. Default is "%LEL".

5.2.4.10 GD10 Zero Trim (Diag/Service)



This function should be activated by special trained operators. If zero trimming is not done in a controlled way, the performance of the detector can be reduced. Also, prior to launching this function, read the detailed descriptions in section 6.4.

When this function is activated, the operator gets on-line instructions on how to support the function. The analogue output will drop down to 1mA to indicate the on-going zeroing process, which takes about 3-4 minutes to complete. The analogue output returns to the actual zero (4mA) when zeroing process is completed. Zeroing will not take place if the ambient temperature is outside a specific temperature range (around 20 – 30 deg C). If the Zero level is not improved after the zeroing, the reason is that the zero drift is over the allowed limit for field trimming.

5.2.4.11 GD10 Loop Test (Diag/Service)

A fixed analogue output level can be used to test the analogue output loop. Such fixed analogue output level can be obtained with this function. The operator can choose one of the pre-set levels, or specify a user defined level.

6 MAINTENANCE

The GD10P has no user adjustable parts. It is not recommended to open the GD10P, as this will change the internal atmosphere, and the initial calibration could be affected. Opening the GD10P voids all warranty offered at the time of sale.

6.1 Cleaning of optical lens/mirror

Remove the weather protection by unscrewing the front cover plate (two screws), use a soft, clean tissue to rub off the contamination. The window and mirror are made of sapphire, which is highly resistant to scratching. Make sure that the whole optical surface is clean.



For difficult contaminants the mirror and lens can be cleaned with an equal-part mixture of isopropyl alcohol and water. Do not perform any testing of the detector before this solution has dried and residues have been wiped away.

6.2 Function test

In order to perform function test of the detector, a test gas can be applied through a 6 mm test nozzle on the front of the Weather Protection housing as shown in the figure and observe the effect on the detector 4-20mA analog output or through the control system.

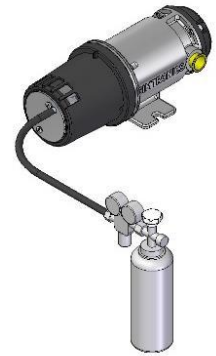
This is a simple test to verify the main function of the detector, please note the actual reading may be substantially lower than the calibration gas concentration due to leaks/ventilation of the weather protection. As long as the detector responds to the gas, the function of the detector is verified.

1) Clean the optical surfaces

2) Verify that the zero point (at no gas) is within the tolerance for the detector. Normal readings should be below 4.5mA

3) Apply gas as shown. If there is no air movement, a test gas flow of minimum four liters per minute will give approximately the same value as the test gas.

If there is an air movement of 0.5 m/sec., the test gas flow has to be increased (up to 20 liters per minute) to get a reasonable reading. Covering the ventilation grille will also help getting a higher reading. However, you may not be able to reach the actual gas concentration, any reading above 10% is OK.



6.3 Calibration test



A calibration test is not required to verify the correct function of the detector. Normal maintenance of the detector is covered by the simple function tests described in sections 6.1 and 6.2. The following calibration test is only applicable if it is required by regulations or in cases where you need to verify system performance during commissioning or similar thorough testing.

The GD10P detectors have a fixed calibration from the factory. A calibration test is thus just a test. There are no means to change the calibration on-site.

In order to perform calibration test, use a calibrated gas and apply it via a Sample Flow Housing (reg. no. 499-810874).

- 1) Remove the Weather Protection and clean the optical surfaces.
- 2) Attach the Sample Flow Housing. This is just press fit with two o-ring seals. Please note that the seals are not equally sized, so note the location of the test nozzle close to the detector housing.
- 3) Apply a certified test gas of approx. 50 % of GD10P calibrated range as shown in the drawing. The test gas should be the same as the target gas.

Gas flow should be approx. 1 liter/minute.



Wait approx. 2 min. to ensure that the Sample Flow Housing is completely filled with gas.

Read detector output or read output through the gas detection system. The reading should be within the tolerance of the detector plus the tolerance of the test gas. In practical terms this is the gas concentration +/- 10% of full scale.

6.4 Re-zero



This maintenance activity should only be carried out by special trained operators. If this is not done in a controlled and proper way, the performance of the detector can be reduced. Simtronics has no responsibility for faults introduced by on-site re-zeroing

The GD10 detector is calibrated and temperature tested in a controlled environment at the Simtronics factory. No further calibration is required during the life time of the product, as the zero point and calibration will stay inside the given tolerances. This implies that slight offsets from the zero point of 4.0mA (0%LEL) is to be expected and values up to 4.5mA at room temperature are within specification.

In some environments with excessive heat and/or vibration we have noticed that a higher percentage of the detectors develop an offset outside the specified tolerances. These detectors should normally be returned to the factory for service. An alternative is to do this re-zeroing on site with a dedicated hand held terminal, or HART® communicator.



Note that "on site" does not mean "in service". Before concluding that re-zero is necessary, proper cleaning of the detector should be done (even an invisible layer of oil on the lens or mirror can have negative impact on the zero-point reading). Then, before re-zeroing is conducted, the detector should be removed from the system and moved to a controlled environment in a workshop

6.4.1 Test of zero-point in the workshop

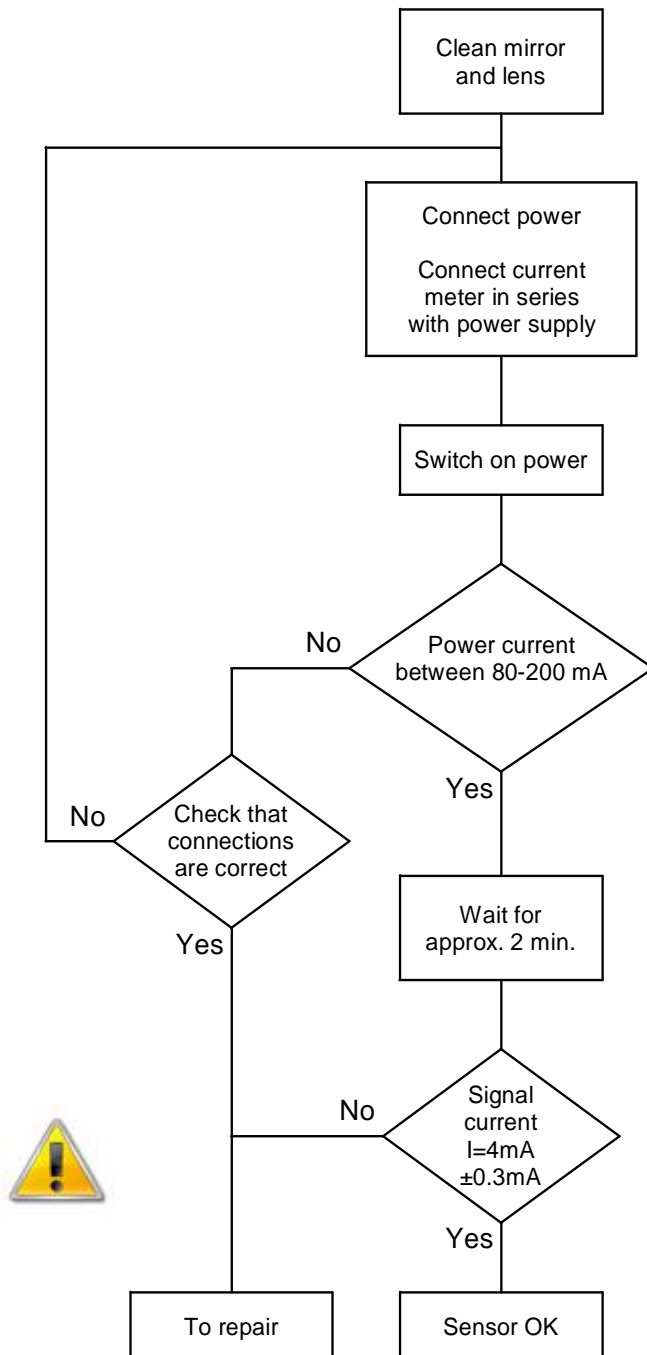
Prior to conducting a re-zero, a controlled checking of the zero level should be done with a sample flow housing and nitrogen test gas (clean instrument air may be used if nitrogen is unavailable).

- 1) Clean the sensor optics again, both mirror and lens.
- 2) Attach a Sample Flow housing (P/N 499-810874)
- 3) Connect the power supply and HART® terminal
- 4) Switch on power and wait approx. 2 minutes until the output has stabilized
- 5) Apply nitrogen gas to the Sample Flow housing
- 6) Read current loop output
- 7) If output is outside specification, then a re-zero may be applicable

6.4.2 Re-zeroing with HART® communicator

See section 5.2.4.10.

6.5 Fault finding



The internal microprocessor performs continuous self-testing of optical and electronic functions.

If a fatal error should occur in the electronics or optics, the processor will generate a 0mA output signal, indicating detector failure. The detector should then be checked according to flow chart on the left. Do not return the instrument to the supplier for repair if this test has not been performed.

If the IR transmission in the optical path is attenuated to 50-70% of its original value, the output signal will go down to Early Dirty Optics (see section 5.1 for further details).

If the IR transmission is further attenuated, the output signal will go down to Dirty Optics (fault). In this condition the detector will not detect gas (see section 5.1 for further details).

If the optics are contaminated, wipe them with a clean cloth and mild detergent according to instructions in section 6.1. The optics must be cleaned even if they appear not to be contaminated.

A signal output equal to 0 mA can be due to a power supply failure. Check first that voltage supply at detector terminal is between 18VDC and 32VDC.

Avoid direct light on lens and mirror if testing without the Weather Protection.

Ensure that no gas is present in the measuring chamber when testing.

7 SPECIFIC INSTRUCTIONS FOR USE IN EXPLOSIVE ATMOSPHERES AND OPERATIONAL SAFETY

General comments

GD10P gas detectors comply with the requirements of European Directive ATEX 2014/34/UE relating to gas explosive atmospheres.

The information described below must be taken into account and fulfilled by the site manager. Refer to ATEX 1999/92/EC European Directive on requirements for improving the safety and health of workers potentially at risk from explosive atmospheres.

Warnings

Do not open when energized. Read user manual (cable glands).

Cable Entries

Cable glands and accessories (plugs, adaptors, etc.) shall be flameproof certified “db” or “e” for use in gas explosive atmospheres and Ingress Protection will be greater or equal to IP 66. They shall be of M20x1.5 type according to ISO965-1 and ISO965-3 standards. Installation must comply with IEC/EN 60079-14 standard (current edition) and, if necessary, additional requirements of domestic or national regulations that apply to the place of installation. Cables used shall have an operating temperature range equal or greater than 80 °C.

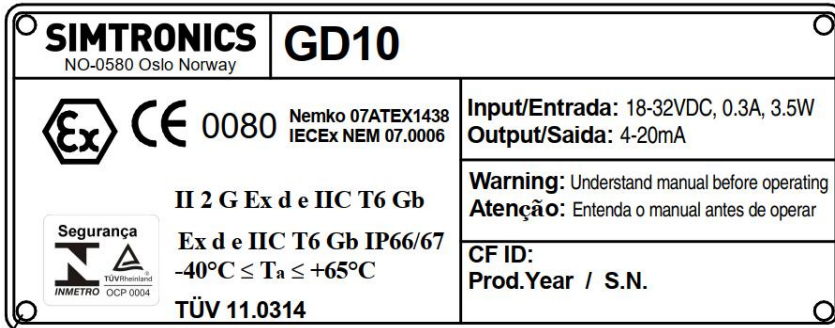
Installation

When the weather protection is mounted, the detector shall be installed horizontally with the flow direction indicator looking upward (see Figure 2 : Orientation of GD10P weather protection in relation to flow direction).

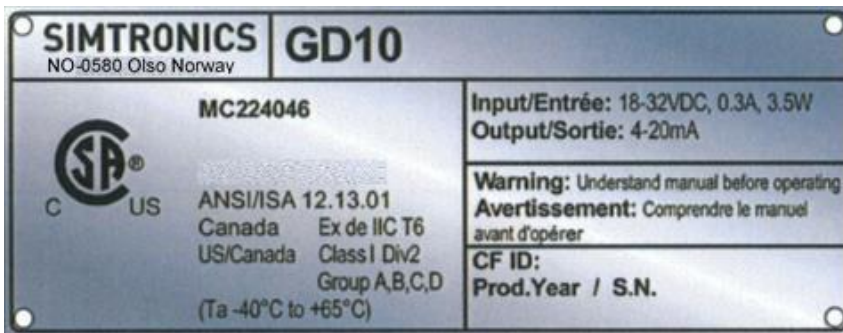
Marking

The GD10P identification labels are shown in the figures below.

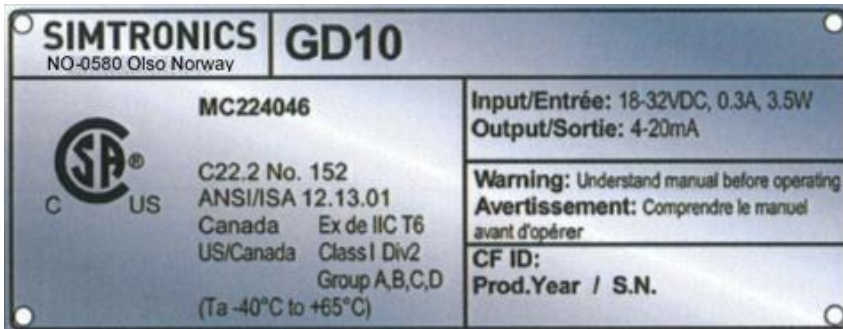
ATEX/IECEX/INMETRO markings (all variants)



CSA marking (CO₂ version)



CSA marking (combustible gases version)



8 DECLARATIONS OF CONFORMITY



EU Declaration of Conformity Déclaration UE de Conformité



Simtronics AS company, Kabelgaten 8, 0580 Oslo, Norway, declares that
La société Simtronics AS, Kabelgaten 8, 0580 Oslo, Norvège, atteste que les

Gas detectors GD10-P00 and GD10-PE0
Détecteurs de gaz GD10-P00 et GD10-PE0

comply with the requirements of the following European Directives:
sont conformes aux exigences des Directives Européennes suivantes:

I) Directive ATEX 2014/34/UE dated from 26/02/14: Explosive Atmospheres

Directive Européenne ATEX 2014/34/UE du 26/02/14: Atmosphères Explosives

Applied Standards **EN 60079-0:2012**
(Normes de référence appliquées) **EN 60079-1:2007 ('d')**

Note: the equipment is not impacted by the major changes of EN 60079-0:2012/A11:2013 harmonized version
(l'équipement n'est pas impacté par les modifications majeures de la version harmonisée EN 60079-0:2012/A11:2013)

the equipment is not impacted by the major changes of EN 60079-1:2014 harmonized version
(l'équipement n'est pas impacté par les modifications majeures de la version harmonisée EN 60079-1:2014)

EN 60079-29-1:07 Performance requirements of
detectors for flammable gases
*(Exigences d'aptitude à la fonction
des détecteurs de gaz inflammables)*

Harmonised applied Standards **EN 60079-7:2007 ('e')**
Normes harmonisées appliquées

EC type examination certificate: **Nemko 07ATEX1438**
Attestation CE de Type du matériel

Category (*catégorie*) / Marking (*marquage*):

GD10P detector **Ex II 2 G**
(modèle GD10P) **Ex d e IIC T6 Gb**
(-40°C ≤ Ta ≤ +65°C)

GD10PE detector **Ex II 2 G**
(modèle GD10PE) **Ex d e IIC T5/T6 Gb**
(-40°C ≤ Ta ≤ +85°/65°C)

Page 1 out of 2 (page 1 sur 2)

UE_ATEX_GD10P_rev11

	UE DECLARATION OF CONFORMITY TO TYPE FOR GD10P
	In accordance with the Marine Equipment Directive (MED) 2014/90/UE, as amended Product Serial Number:

Manufacturer's, or his authorized Representative's name & address:
SIMTRONICS AS – Kabelgaten 8 – 0580 OSLO - Norway.

Works' address: OLDHAM-SIMTRONICS- ZI EST – RUE ORFILA – CS 20417- 62027 ARRAS CEDEX

In compliance with Article 16 of the Council Directive 2014/90/UE, the Marine Equipment Directive, as amended. We declare under our sole responsibility that the products detailed below conform to type, as described in the EC Type Examination certificate:
MEDB0000029 rev 1, issued by DNV.GL (NB 0575) on 14 April 2016

Product Types: Gas Detector

Product Descriptions: IR Gas Detector GD10-P

Serial Number (S/N): See Head of document

We further declare also that these products have been marked for their identification in accordance with Article 9 of the Marine Equipment Directive, after having been duly authorized by the EC Notified Body, the identification number of whom is stated below.

Modules for Production conformity assessment, within which the EC Declaration of conformity is issued:
Module D - Production-Quality Assurance,
Quality System Approval Certificate N° SMS.MED2.D/93734/B.0, issued by Bureau Veritas (NB 2690) on 26 dec 2018

Limitation/Application:
The equipment are found to comply with following location/application dependent requirements:

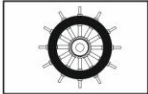
- EMC: Bridge and open deck zone (ref. IEC 60092-504 (2001) table 1 item 19-20)
- Enclosure: Open decks (IP56) (ref. IEC 60092-201 table 5)
- Vibration: General applications (ref. IEC 60092-504 (2001) table 1 item 10)
- Temperature: Location (-25°C to +65°C) (ref. IEC 60092-504 (2001) table 1 item 6-7), low temp. tested to -40°C, high temp. limited to +65°C due to EX-classification

REGULATIONS and STANDARDS complied with:

Annex A.1, item No. A.1/3.65 and Annex B, Module B in the Directive. SOLAS 74 as amended, Regulation II-2/4 and IMO FSS Code and IMO MSC.1/Circ.1370

EN 60079-29-1 (2007)
IEC 60092-504 (2001)
IEC 60533 (2015)

MARKING & IDENTIFICATION AFFIXED TO THE PRODUCTS:

 2690	Prod. Year : YYYY Serial Number : YY-XXXXX (The first 2 digits indicate the year of manufacture)
---------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------

Issued at ARRAS FRANCE, on .../.../.....

Michael Mobley
Gas and flame Detection Certification Manager

F2019-01/A

9 PRODUCT CODING

GD10-P00-A-B-00

A: Calibration Gas (a selection of most common variants)	
03DG	Ethylene, C ₂ H ₄ , 100 %LEL-1,
09DG	Propane, C ₃ H ₈ , 100 %LEL-1, 2.2%Vol
09EG	Propane, C ₃ H ₈ , 100 %LEL-2, 1.7%Vol
17BH	Methane, CH ₄ , 3 %Vol
17DG	Methane, CH ₄ , 100 %LEL-1, 5.0%Vol
17EG	Methane, CH ₄ , 100 %LEL-2, 4.4%Vol
18BG	Methane (Biogas), CH ₄ /CO ₂ , 100 %Vol
23AN	Carbon dioxide, CO ₂ , 10000 ppm
23BH	Carbon dioxide, CO ₂ , 3 %Vol
24BC	Carbon dioxide (Methane immune), CO ₂ , 5 %Vol
24BG	Carbon dioxide (Methane immune), CO ₂ , 100 %Vol


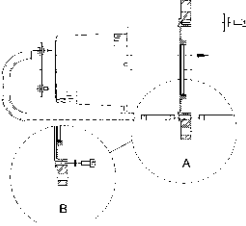
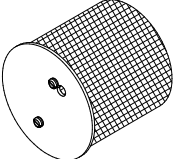
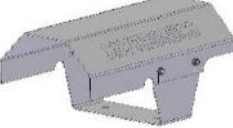
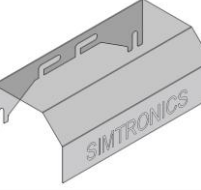

B: Configuration	
0**	Fixed default value
0	None
B	CSA
C	UL - Not used anymore
X	ATEX/IECEX/INMETRO
**H	4-20mA, source/HART®
**J	4-20mA, sink/HART®




Example :

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

GD10P, Methane, 0-100 %LEL CH₄ (5.0% vol.), ATEX/IECEX/INMETRO, 4-20mA source, HART®

10 ACCESSORIES AND SPARE PARTS

Accessories	Description	Part Number
	Sample Flow Housing: Airtight chamber for sampling systems. Also used for calibration test.	499-810874
	Duct Flange Tube Kit GD10	499-811938
	Mosquito Set Assy GD10P: Insect protection in stainless steel mesh. Slides on the outside of the standard weather protection.	499-813397
	Sun shade Assy GD10P for horizontal mounting: protects from direct sunlight or snow fall.	499-815712
	Sun shade for pipe mounting (horizontal or vertical pipe): protects from direct sunlight or snow fall. To be used with pipe mounting plate P/N 499-816867.	599-816841
	Pipe mounting plate. U-bolts are included.	499-816867

Spare Parts	Description	Part Number
	Weather Protection Kit GD10	499-810913
	Cap, cover for the gas test nozzle.	599-904176
	Rear cover kit, composite	499-816584

11 APPENDIX 1 - GENERIC HART® COMMANDS

Current Gas reading

Read Primary Variable (command #1), returns the current gas reading.

Detector Variables

“Read all dynamic Variables and Current” (Command #3), returns the following:

- “Secondary Variable”: Current internal temperature of the detector
- “Tertiary Variable”: Current strength of the optical transmission path
- “Fourth Variable”: Maximum temperature the detector has been exposed to

Detector Information

Through standard HART® Universal commands (detailed user interface vary from one HART® terminal to another), specific information may be written to the detector and read back from the detector. Information supported: Tag, Descriptor, Message, Date and Detector Serial Number.

Configure Detector Response Time

“Write Damping Value” function (command #34) is used to configure the detector response time. “Damping Value” = 1 turns the detector to Fast mode (1 second response time) and “Damping Value” = 5 turns the detector to Normal mode (5 second response time).

Zeroing

“Set Primary Variable Zero” function (command #43) is used when trimming of the zero level of the gas detector is required. When the Set Primary Variable Zero is activated, the analogue output is dropped down to 1mA to indicate the on-going zeroing process, which takes about 3 minutes to complete. The analogue output returns to the actual zero (4mA) when zeroing process is completed. If the Zero level is not improved after the zeroing, the reason is that the zero drift is over the allowed limit for field trimming.

Fixed Output

A fixed analogue output level can be used to test the analogue output loop. Such fixed analogue output level can be obtained with the function “Enter/Exit Fixed Current Mode” (command #40). The possible level that may be fixed at the output is in the range (0.5-3) mA and (5.5-20) mA.

Configuration of the fault levels

Reconfiguration of the fault levels can be made by writing a Hash Code to the detector via the command “Write Message” (command #17).

After reconfiguration, it is recommended to restart the detector and to check the new settings with an ammeter by simulating different alarm/warning states.

Hash Code	Detector fault	Early Dirty Optics (see note 1)	Dirty Optics
#WFO0000 (default settings)	<0.5 mA	2 mA	1 mA
#WFO1000	1 mA	3 mA	2 mA
#WFO2X ₂ X ₃ X ₄	X ₂ =0 (1 mA) X ₂ =1 (1 mA) X ₂ =2 (2 mA) X ₂ =3 (3 mA)	X ₃ =0 (alarm off) X ₃ =1 (1 mA + pulsing) X ₃ =2 (2 mA) X ₃ =3 (3 mA)	X ₄ =0 (0 mA) X ₄ =1 (1 mA) X ₄ =2 (2 mA) X ₄ =3 (3 mA)

Note 1: If in “Early Dirty Optics” state, the detector will switch to standard output level when gas reading is >7% of detection range.

Note 2: The “0” in “#WFO”, is the letter O, not the number 0.