

Simrad GD10P

Extended On-site Maintenance

This procedure covers maintenance of GD10P gas detectors with the aid of a handheld terminal (re-zeroing tool). Please also refer to the standard operating manual (P3359E).



TERMS FOR USING THE HAND-HELD TERMINAL IN FIRST LINE SERVICE.

Preamble

The GD10P detector is calibrated and temperature tested in a controlled environment at our factory in Oslo, Norway. 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.

Training

The hand held terminal shall be used by personnel trained specifically by Simrad staff only. Training may be done during a survey on site as on-the-job training (preferred), or at our factory in Oslo.

Reporting

A reporting scheme is to be agreed upon. All re-zeroing should be reported, either for each detector, or a monthly report. This is needed for the service log for each detector.

Re-zeroing

We do not recommend re-zeroing of detectors with less than 5.0 mA (6% offset) at room temperature. The actual re-zeroing shall be done in a controlled environment with a temperature of 20 – 25 degC, following the procedure for field re-zeroing of GD10P.

Responsibility

Simrad Optronics ASA has no responsibility for faults introduced by the on site re-zeroing.

TEST OF ZERO POINT WHEN GD10P IS CONNECTED TO A SYSTEM

1. Read zero point value on the system display
If zero point is too high, clean lens and mirror as follows:
2. Remove the Weather Protection unit by loosening the two screws on the circular front plate.
3. Clean lens and mirror using soap water (e.g. a dishwashing liquid mixed with water. Isopropanol is also recommended). Rinse and dry with a clean, soft paper towel. Take care to clean the lens and mirror circumference. Clean lens and mirror even if they appear to be clean in case there is an invisible layer of oil on the glass surface.
4. Mount the Weather Protection unit.
5. Wait approx. 20 minutes, letting the reading stabilise.
Read zero point value. If the zero point is within specification; OK.
If zero point still is too high, the sensor must be decoupled from the system and tested at the instrument shop according to the following approved procedure: "Test of zero point at GD10 instrument shop".

TEST OF ZERO POINT AT GD10 INSTRUMENT SHOP

Required equipment

Power supply 24 VDC / 0.3 A
Digital voltmeter / amperemeter
Sample Flow housing GD10 reg.no. 499-810874.8
Nitrogen gas

1. Remove the sensor from the system.
2. Place the sensor in a clean room where measuring equipment and nitrogen gas are available. Clean instrument air may be used if nitrogen is unavailable.
3. Clean the sensor optics again, both mirror and lens.
4. Hook up the sensor as shown in fig. 1. (Note: Establish whether the sensor has sink or source output).
5. Mount Sample Flow housing with gas hose as shown in fig. 2.
6. Switch on power to the sensor and wait for approx. 2 minutes until the output has stabilized.
7. Apply nitrogen gas to the Sample Flow housing.
8. Read the milliampmeter.
9. If output is outside sensor specification, then a re-zero is applicable.

In some cases, you may also have to ventilate the detector housing.

VENTING THE HOUSING

- 1) Turn off power.
- 2) Remove Sample Flow housing.
- 3) Clean the sensor around the flame-proof joint marked with an A in fig. 3. This procedure prevents dirt from entering the interior of the sensor during reassembly.
- 4) Unscrew the 4 screws marked B in fig. 4.

NOTE: The red seal on two of the screws must be broken.

- 5) Place the sensor right in front of you on a bench, place one hand on the housing and one hand on the front nose. Continue by pulling carefully apart.

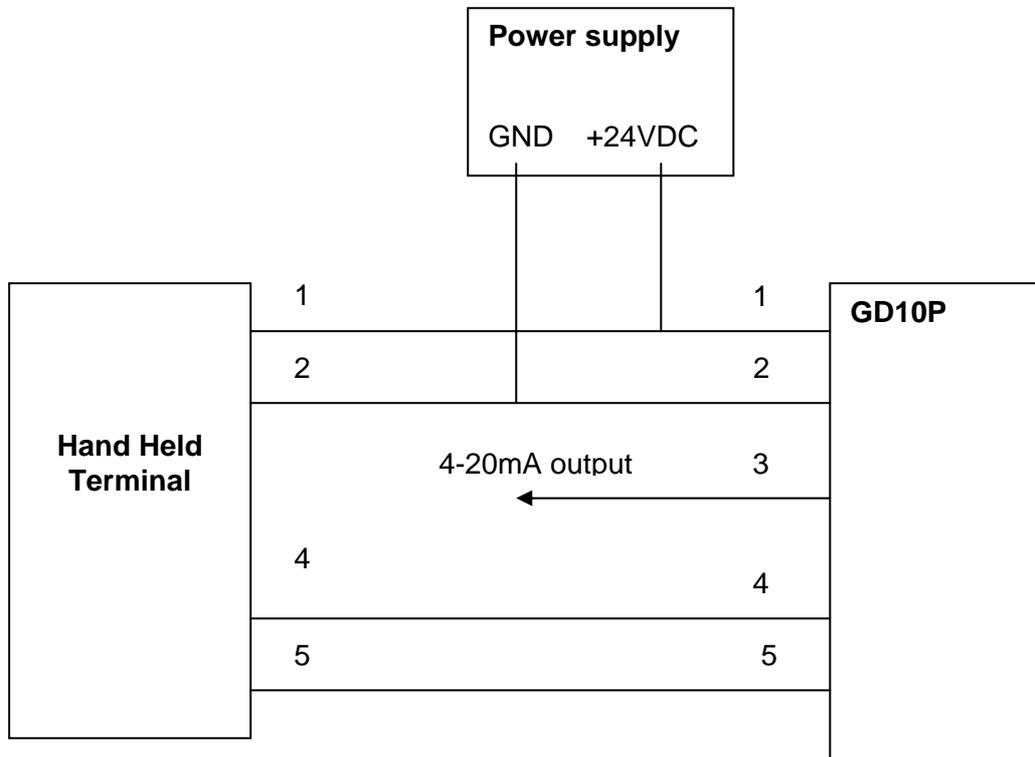
NOTE: The flame-proof joint has very fine tolerances. Consequently, to avoid that the two parts become stuck, it is crucial to pull them straight apart without bending.

- 6) Check the O-ring for possible damage. Replace if necessary.
- 7) Let the sensor stay open for approx. 30 sec. and flutter a sheet of paper for air circulation.
- 8) Reassemble the parts using the four screws and washers that were removed. Torque: approx. 300 cNm.

Note: Ensure that the plastic screen covering the electronics is not squeezed in the flame-proof joint.

- 9) Point 14 to 16 must be performed quickly within a few minutes (max. 5 minutes) to avoid the desiccator inside the sensor starting to absorb humidity. You may also replace the desiccator (white bag).
- 10) Check that the lens and mirror surface are clean. If not, clean according to procedure.
- 11) Mount Sample Flow housing.
- 12) Connect an ohmmeter between terminal list 2 and the sensor chassis (ref. fig. 5). Ensure that there is no connection. If there is connection, contact Simrad Optronics ASA.
- 13) Repeat point 5, 6, 7 and 8 above (Test of zero point).
- 14) If sensor still does not meet specifications, perform a zero calibration using the hand-held terminal.
- 15) Fill in the Inspection Report data sheet (appendix). It is important that the opening of the detector is reported, as this normally voids the warranty.

RE-ZEROING USING THE HAND-HELD TERMINAL



If GD10P zero point is outside specifications after the zero point test procedure, the sensor can be re-zeroed using the GD10P hand held terminal.

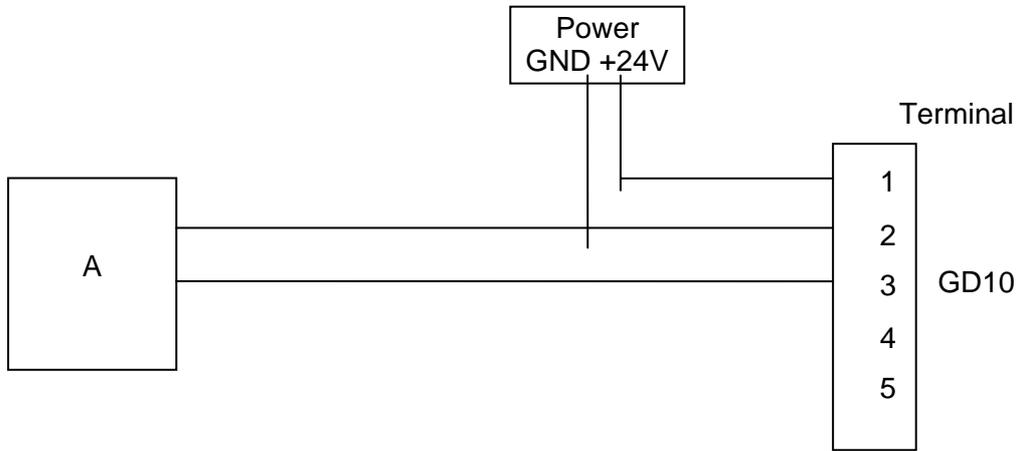
IMPORTANT: The sensor shall only be re-zeroed after performing the complete zero point test procedure.

Equipment:

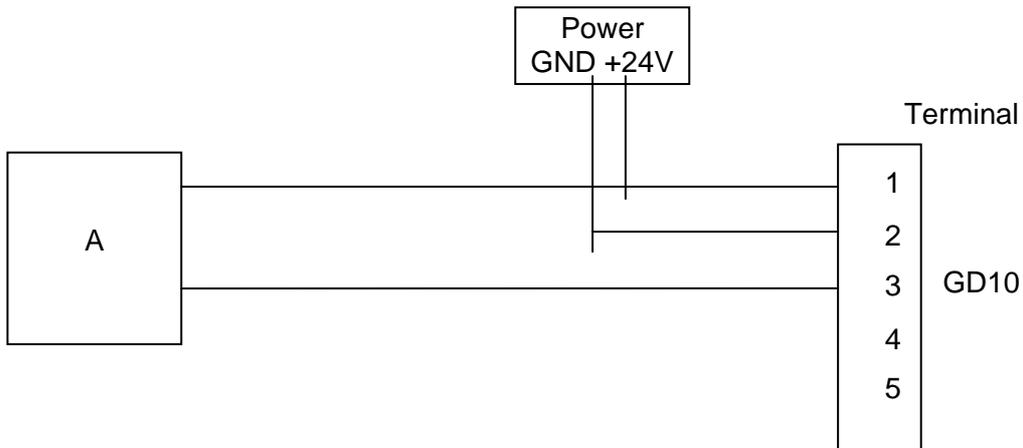
- GD10P Hand held terminal
- Power supply 24V, 0.3 A
- Volt/Amp meter
- Sample flow housing
- Nitrogen gas

Procedure:

1. Connect detector, power and terminal according to illustration.
 4. Mount the Sample flow hosing, connect the nitrogen gas bottle.
 2. Switch on power.
 3. Terminal will display start-up window. Select MENU by pressing ENTER key.
 4. The terminal will identify the detector, and the following functions can be performed:
 - Display gas value.*
This function displays the optical transmittance(0 – 100 %), and the gas measurement in 0 – 100 % Full Scale.
Optical transmittance should be 100 +/- 30 with clean detector optics.
(Fill in values in Inspection Report data sheet)
(If outside limit; send to Simrad for repair.)
 - Fault messages.*
This function displays fault messages from the sensor.
(If fault message; send to Simrad for repair)
 - Zero calibration.*
Starts zero point calibration routine.
 5. Before starting the zero point calibration, verify following:
 - Ambient temperature must be between 15 C and 25 C.
 - Power shall be switched on for at least 15 minutes.
 - Apply a low flow of nitrogen gas to the Sample flow housing.
 6. Find Zero calibration function by pressing UP or DOWN key, and select the function by pressing the ENTER key.
The terminal will display the zero point calibration conditions.
 7. Start the zero point calibration when the terminal displays “Start zero cal” by pressing the ENTER key. The terminal will display “Calculating zero. Please wait app. 3 (6) min.”
When the zero point calibration is finished (after app. 3 minutes), the terminal will display “Zero calibration completed. DISPLAY GAS VALUE ↵”, and the sensor will switch to normal gas measurement mode.
- NOTE; GD10P’s made before summer 1998, have a 6 min. duration zero point calibration routine.
8. Press ENTER, and verify that the detector zero point is OK.
 9. Do a calibration check as described in the operating manual to verify operation.
 10. Fill in Inspection Report data sheet including serial no. (appendix)



GD10 Test set-up (source output)



GD10 Test set up (sink output)

Figure 1 Test set-up source and sink output

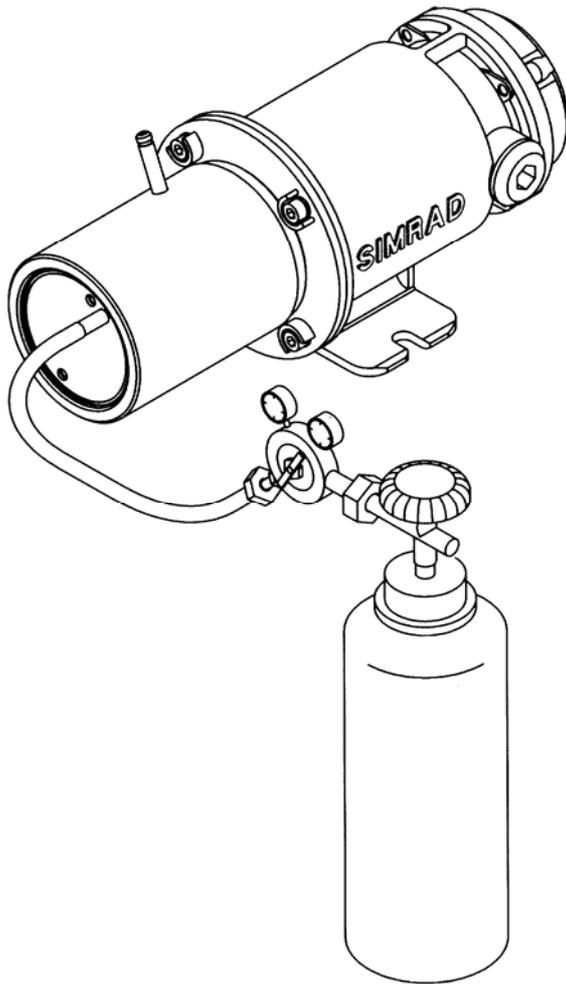


Figure 2 Set-up calibration test

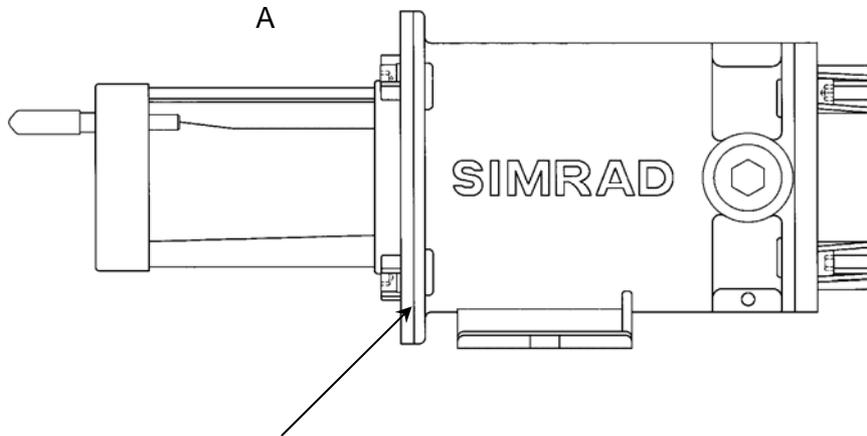


Figure 3 Flame-proof joint

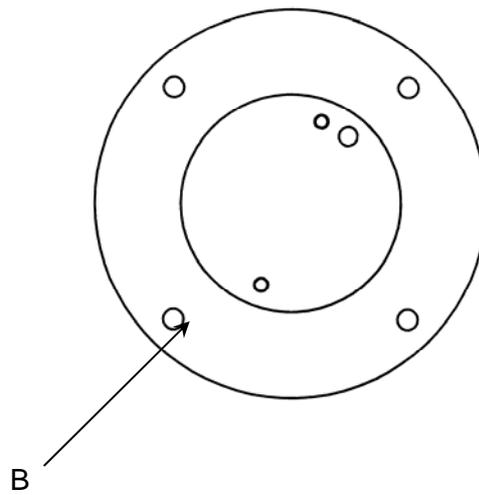


Figure 4 Screws and washers

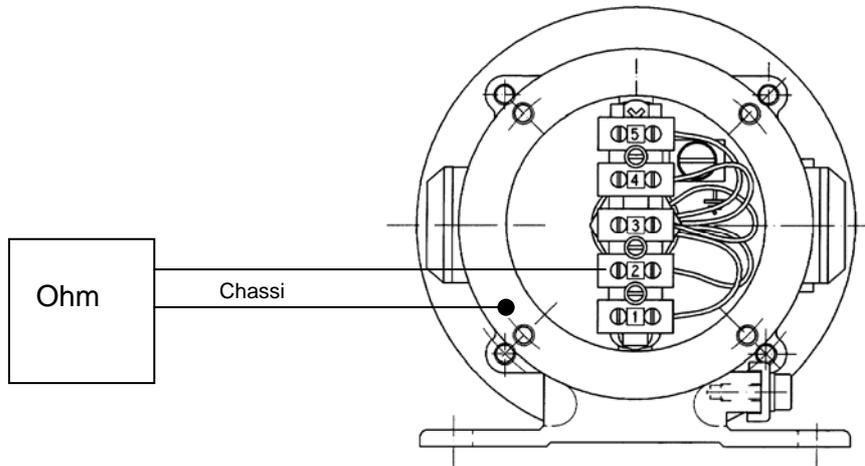


Figure 5 Connection of ohmmeter

Terminal 1 +24 VDC
Terminal 2 24 V return (0 V)
Terminal 3 4-20 mA output

Terminal 4 RS485
Terminal 5 RS485