



GfG Instrumentation

Worldwide manufacturer of gas detection solutions



TR 1009:

Removing and replacing G450 and G460 sensors

January 19, 2015

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Worldwide Manufacturer of Gas Detection Solutions

**G450 / G460 Advanced Training:
Removing, replacing and servicing sensors**



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www.goodforgas.com



**G450 / G460 Advanced
Service Procedures**

WARNING:
Advanced service
procedures should
only be undertaken
by authorized
personnel



Sensor replacement

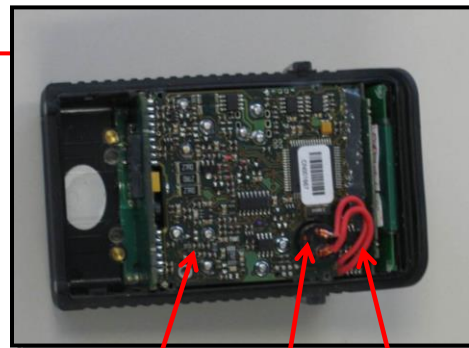
- **Make sure instrument is turned off**
- **Remove battery pack**
- **Using the star-hex tool, loosen the four screws holding the front and back of the instrument housing together**
- **GENTLY remove the back cover**
- **DO NOT USE SCREWDRIVERS OR OTHER HARD TOOLS TO PRY APART THE CASE SECTIONS!**

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Sensor replacement

- **GENTLY straighten yoke wires connecting the sounder with the main PCB (wires extend through circular hole in board to sounder)**
- **BE VERY GENTLE! If you pull too hard you can separate the wires from the board or sounder**



Main PCB

Yoke wires

Sounder

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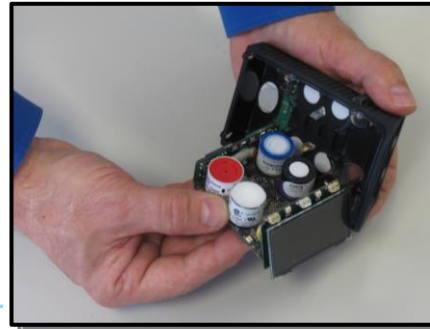
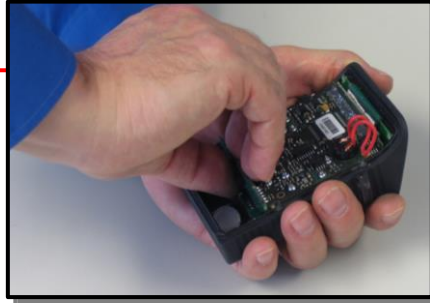
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Sensor replacement

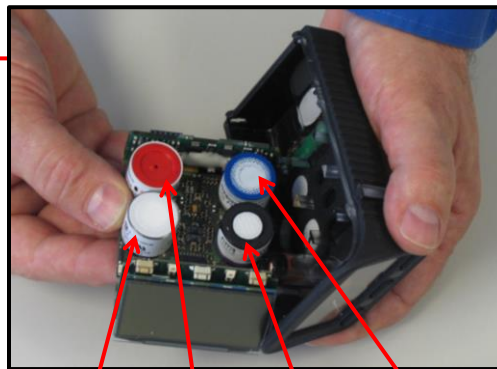
- **Once the yoke wires have been positioned vertically to board,**
- **GENTLY** loosen the main board and display assembly, then
- **Lift the main board and display assembly upwards from the housing and turn it so the sensors are exposed**
- **BE CAREFUL NOT PULL THE YOKE WIRES HARD ENOUGH TO CAUSE DAMAGE**



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G450 Sensor replacement

- **In the G450 the sensor positions are defined**
- **Identify the sensor you intend to replace**
- **Remove and replace the required sensors**
- **IN THE G450 THE SENSOR YOU REMOVE MUST BE REPLACED WITH THE EXACT SAME TYPE OF SENSOR IN THE EXACT SAME POSITION,**
- **SWITCHING SENSOR POSITIONS WILL RESULT IN CALIBRATION OR SENSOR TEST FAILURE WHEN THE INSTRUMENT IS RESTARTED**



LEL (stainless steel housing)

CO (solid red or red ring top)

H2S (blue ring top)

Oxygen (purple housing)

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G460 sensor replacement

- **G460 sensors are equipped with “smart” PCBs that identify the type of sensor and other settings to the instrument**
- **As long as the type of sensor is supported when installed in a particular position on the PCB, the instrument will automatically update the sensor configuration when it is restarted**



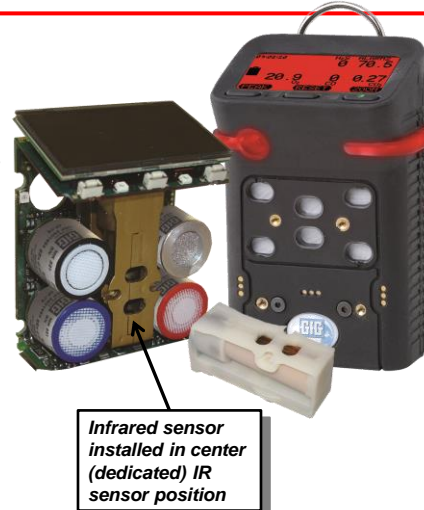
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Infrared CO₂ and combustible gas Smart Sensor

- **Proprietary GfG infrared sensor technology**
- **Three-wavelength smart-sensor design**
- **Expected operational life: 5+ Years!**
- **Available as a one channel or two channel detector for simultaneous measurement of CO₂ and combustible gas**
- **Full range:**
 - **0.1 – 5.0 % volume carbon dioxide (CO₂)**
 - **0 – 100% LEL combustible gas**
 - **0 – 100% volume combustible gas**



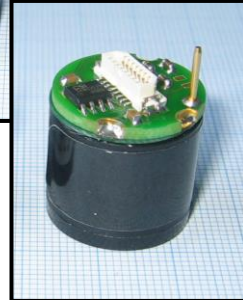
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G460 Smart Sensor PID

- **PID Smart-Sensor**
 - **Broad range VOC measurement**
 - **Extremely sensitive**
 - **Available in two ranges:**
 - **0.5 – 2,000 ppm (Standard PID sensor)**
 - **0.1 – 500 ppm (Optional high resolution PID sensor)**

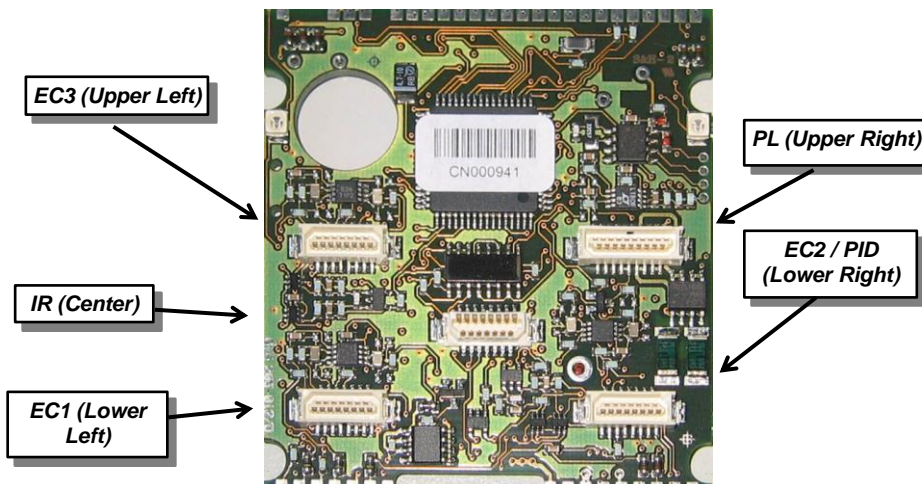


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G460 Main PCB: Five Smart Sensor Positions



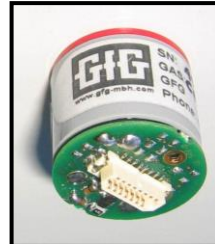
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G460 Interchangeable Smart Sensors

- **Five Smart Sensor positions on G460 PCB:**
- **All you need to do is plug the sensor into a position designed for that type of sensor**
 - **COSH:** Can only be installed in **EC1**
 - **CO, H2S, O2, NH3, SO2, H2, PH3, HCN:** Can be installed in **EC1, EC2, or EC3**
 - **NO, NO2, CL2, HCL, ETO, O3, ClO2, HF:** Can be installed in **EC2 or EC3:**
 - **PID:** Can only be installed in **EC2**
 - **PL:** Dedicated position for catalytic (CC) % LEL (pellistor) sensor
 - **IR:** Dedicated position for any version infrared (IR) sensor (0.1 - 5.0 Vol % CO2; 0 – 100% LEL combustible; 0 – 100% vol combustible)



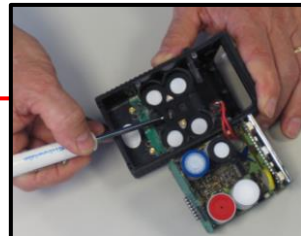
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Changing sensor gasket and filters

- **Gently remove the old gasket**
- **A new gasket should be installed anytime a sensor is replaced**
- **Filters that have become discolored or dirty should be replaced as needed**
- **Make sure the new filter is positioned properly**
- **IF THE NEW FILTER IS NOT INSTALLED PROPERLY THE INSTRUMENT HOUSING MAY LEAK WHEN EXPOSED TO RAIN OR MOISTURED**

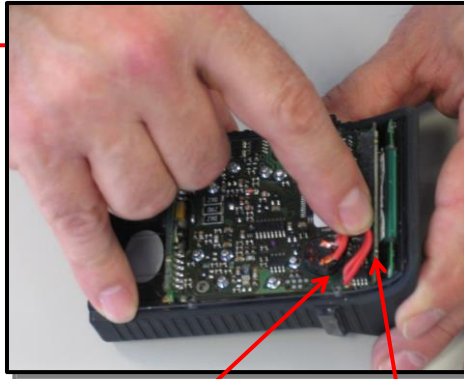


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Reassembling the instrument housing

- **Reinstall the main PCB and display assembly**
- **Make sure the assembly is inserted properly within the grooves of the housing**
- **DO NOT FORCE!**
- **BE CAREFUL NOT TO PINCH OR PULL UNNECESSARILY ON THE YOKE WIRES**
- **Fold the yoke wires flush with the main PCB**
- **MAKE SURE THE YOKE WIRES ARE POSITIONED BENEATH THE EDGE OF THE DISPLAY**



Make sure the yoke wires are bent flush with the main PCB and below the lip (edge) of the display

Edge of display



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Reassembling the instrument housing

- **Reattach the back of the instrument housing**
- **SQUEEZE THE CASE SECTIONS FIRMLY TOGETHER BEFORE TIGHTENING THE FOUR SCREWS**
- **Tighten the 4 screws in diagonal sequence (just like tightening the lug nuts on a tire)**
- **TIGHTEN THE FOUR SCREWS SECURELY BUT DO NOT OVERTIGHTEN!**



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Returning the instrument to service

- **Calibrate ALL sensors in the instrument (whether or not they have been changed) before returning the instrument to service**
- **It is best to let new sensors stabilize in the instrument for 30 minutes prior to calibration**



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Questions?



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