

Overview

Calibration procedure for a PolyGard®2 Carbon Monoxide (CO) sensor, but could be adapted for any other X-Change SC2 gases.

Glossary of Terms

| | |
|----------------------|--|
| Sensor (module) | PolyGard®2 SC2 sensor cartridge of a specific gas and range |
| Transmitter/Detector | PolyGard®2 DC6/DT6 unit where sensor(s) are connected |
| Zero Gas | Certified clean air or contaminate-free gas |
| Calibration Gas | Gas of a specific concentration or range; also known as Span Gas |
| Target Gas | Gas detected by the sensor |
| EasyConfig Software | Calibration software, located on the DPT6 |

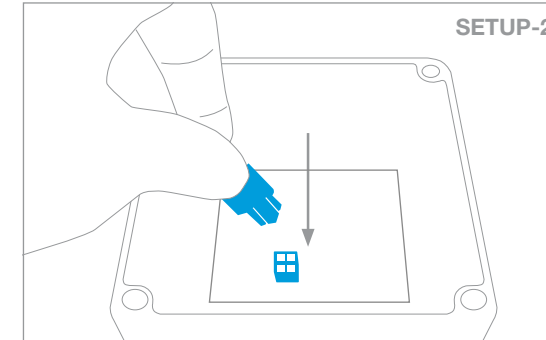
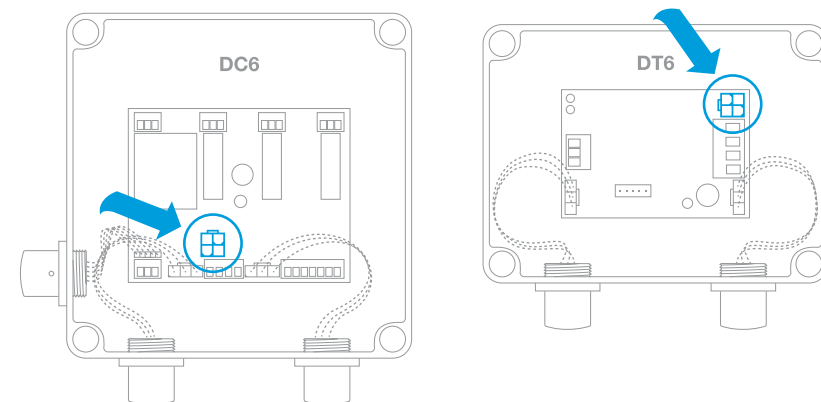
What You Will Need

- A Zero Gas Bottle
- B Calibration Gas Bottle
- C Gas Flow Regulator
(Same part # for both zero and Calibration gas bottles)
- D DPT6; EasyConfig Software and USB-Drive/Adapter
- E CONKIT-PG2; plastic tube (~6 ft) with attached sensor cup
- Laptop; Windows® 7 (or newer) operating system
- Volt Meter (Optional for DC6 Analog Output calibration)

| GAS CALIBRATION EQUIPMENT | | | | | | |
|---------------------------|-------------|-------------|-------------|----------------|-------------------|------------|
| GAS | MODEL | SENSOR SPAN | REGULATOR | CONNECTION KIT | GAS CONCENTRATION | GAS PART # |
| Carbon Monoxide (CO) | SC2-E1110-E | 250 ppm | GR-17-500 | CONKIT-PG2 | 200 ppm | GC-17-027 |
| Nitrogen Dioxide (NO2) | SC2-E1130-B | 20 ppm | GR-70-500-S | CONKIT-PG2 | 10 ppm | GC-70-030 |
| Combustibles | SC2-P34XX-A | 100% LEL | GR-17-150 | CONKIT-PG2 | 2.5% v/v Methane | GC-17-081 |
| Oxygen (O2) | SC2-E1195-A | 25% v/v | GR-17-150 | CONKIT-PG2 | 20.8% v/v | GC-17-003 |
| Carbon Dioxide (CO2) | SC2-I1164-B | 5% v/v | GR-17-150 | CONKIT-PG2 | 2% v/v | GC-17-011 |
| Carbon Dioxide (CO2) | SC2-I1164-C | 2% v/v | GR-17-150 | CONKIT-PG2 | 1% v/v | GC-17-014 |

The Service Tool Port

Identify the Service Tool Port (STP) on the transmitter.



1. Connect... (selected)

2. COM Port: COM5

3. Special mode

4. Calibration

Calibration Preparation

SETUP-1: Sensor Warm-up

The sensors should be powered-on and warmed-up prior to actual calibration.

| Gas | | Minimum Warm-Up Time | Calibration Interval (normal operating conditions) |
|------------------|-----|----------------------|--|
| Carbon Monoxide | CO | 1 hour | 12 months |
| Nitrogen Dioxide | NO2 | 6 hours | 12 months |
| Ammonia | NH3 | 18 hours | 12 months |
| Oxygen | O2 | 1 hour | 6 months |
| Combustibles | | 4 hours | 6 months |

SETUP-2: DPT6 USB-Drive/Adapter Installation

Plug the square connector of the DPT6 USB-Drive/Adapter to the transmitter and the USB-end to a laptop. Device configuration will start automatically:

- A. A drive labeled "PCE06_XXXX" is created
- B. The adapter component is assigned a COM port, viewable in Windows® "Device Manager"; if the adapter fails to install properly, see Technical Bulletin "Troubleshooting Adapter Driver" for guidance

SETUP-3: Launch EasyConfig Software

Locate the "PCE06_XXXX" drive with Windows® Explorer. Navigate into the "DGC_EasyConf" folder and double-click the "DGC06EasyConf" icon.

1. **Connecting to the Sensor**
From the System menu, choose **Connect**
2. **Selecting the Adapter's COM Port**
Choose the COM port matching the DPT6 USB-Drive/Adapter (If port is unknown, choose the shown port and click **OK**; then choose the next port down until sensor data are displayed)
3. **Entering Special Mode**
Enter Special Mode by clicking the **S** icon or **Special Mode** from the System drop-down; menu background turns blue
4. **Entering Calibration Mode**
Enter Calibration by clicking the **C** icon or **Calibration** from the System drop-down; calibration tab pops up

SETUP-4: Preparation Completed. Proceed to Calibration Procedure.

Calibration Procedure:

STEP 1 REPORT Tab

The Calibration Procedure starts with the **Calibration** dialog box. First enable **Special Mode**, then enter **Calibration**:
EasyConfig > System Menu > **Special Mode**
EasyConfig > System Menu > **Calibration**

On the REPORT Tab...

- Choose a sensor; available connected sensors are shown
- Fill-in "**Name of object**" field; a descriptive reference for the sensor
- Fill-in "**Person in charge**" field; individual performing the calibration
- Click **Search**; designates a path and file where working data will be stored

Do not click "Close"; continue to the ZERO Tab

STEP 2 ZERO Tab

Begin by (1) connecting the regulator to the Zero gas bottle, (2) attaching the tube to the regulator and (3) the cup-end firmly onto the sensor to be calibrated.
See *Calibration Components & Layout*
Turn the regulator on and wait for "**Current Gas Value**" to stabilize: this could take several minutes.

On the ZERO Tab...

- Click **Display**; retrieves existing zero offset
- Click **Calculate**; the software automatically determines a new zero offset
- Click **Save**; stores the new offset value to the sensor and saves to the report

Do not click "Close"; continue to the GAIN Tab

STEP 3 GAIN Tab

Turn the regulator off. Remove it from the Zero bottle and attach it to the Calibration bottle.
Turn the regulator on and wait for "**Current Gas Value**" to stabilize: this could take several minutes.
Note: The "Reference Gas" field is only used during combustible gas calibration.

On the GAIN Tab...

- Fill-in "**Bottle Gas Concentration**" field; in ppm, found on the Calibration gas bottle label; e.g. 200 ppm for CO
- Click **Display**; retrieves existing "**Sensor Sensitivity**" percentage
- Click **Calculate**; "**Sensor Sensitivity**" is re-evaluated; "**Current Gas Value**" is updated to match stabilized Calibration gas value
- Click **Save**; stores the new gain value to the sensor and saves to the report

Calibration Completed!

The confirmation message appears at the bottom:
"The display of the calibration has been successful!"

- Click **Close** to end calibration;
- Exit **Special Mode**: System Menu > **Special Mode**

If Calibration Procedure failed:

- "Sensor Sensitivity" level is below 40%; replace sensor
- Calibration gas not present;
- check setup to ensure that Calibration gas is properly applied

STEP 4 AO Tab

If assigned, the "**AO1**" button is shown.

On the AO Tab...

- Click **Display**; retrieves existing "**AO Offset from Device**" value
- Click the **increase/decrease arrows** and **Calculate** until volt meter reads desired zero value (between 2-9.5 mA); e.g. for 4-20 mA output signal, adjust until 4 mA is shown on the volt meter
- Click **Save**; stores the new AO Offset value to the sensor and saves to the report

- Click **Close** to end calibration;
- Exit **Special Mode**: System menu > **Special Mode**

FOR DC6 ONLY:

If the Analog Output is utilized:

- Extend wires from the DC6's X12: pin #3 (signal) and #4 (ground) to equivalent on volt meter
- Proceed to Step 4: AO Tab

IMPORTANT! Exit Special Mode to return sensor to normal operation