4.3 Calibration

> ⚠ ***Caution***: Calibration gases should be instrumentation grade and be supplied with a Certificate of Analysis (COA) indicating an accuracy of ? 0.03%.

> ⚠ ***Caution***: Calibration gas mixtures should contain only oxygen and nitrogen.

> ***Note:*** Single point (high or low) calibration can be performed, but is not recommended.

The calibration procedure requires cal gases with known oxygen concentration to determine cal factors for the analyzer (slope and intercept)

4.3.1 Calibration Set points

There are two adjustable calibration set points (% O_2) in both the high and low oxygen measurement ranges. One for the low cal gas and one for the high cal gas. Calibrating while in the low oxygen measurement range will set the calibration for the ppm O2 measurement range.

To view the set point press the CAL key while in the desired measurement range.

The set point for low cal is shown on the message display. (e. g. Cal 12.0%)

Press the CAL+ NEXT key to view the high cal set point.

The set point for high cal will be shown on the message display (e. g. Cal 100).

4.3.2 Two point Calibration for the MO2L

> ***Note:*** It is recommended that the high and low calibration gases used are outside (i.e. above and below) the desired oxygen measurement range for greatest accuracy. The ideal calibration for the **low oxygen** range is achieved by using a **high** cal gas close to 10% O_2, Bal. N_2 and a **low** cal gas close to 0% O_2, Bal. N_2. The ideal calibration for the **high oxygen** measurement range is achieved from using a **high** cal gas close to 100% O_2, and a **low** cal gas close to **12%** O_2, Bal. N_2.

> ⚠ ***Caution:*** Press the CAL key 6 times to display the cell temperature. Calibration should only be performed if the analyzer has been on for 10 minutes and the cell temperature is 45.0 +/- 0.3 ^{o}C.

A. Using the O2 key, select the desired oxygen measurement range for calibration.

B. Connect the high cal gas to the inlet and flow the gas at 50 to 550 ml/min.

C. Press the FLOW key to read flow. Adjust flow if needed. (Oxigraf regulators are factory set to approximately 150 ml/min and do not require further adjustment.)

D. Press the CAL key twice to display CAL xxx where xxx is the high calibration set point. Ensure that the high cal set point matches the calibration gas oxygen concentration, adjust the set point if necessary.

E. The main oxygen display will show the oxygen measurement for the high cal gas.

F. Allow the reading to stabilize then press the SET key. An automatic calibration will be initiated. The message display will briefly show HI CAL. As soon as the calibration is accepted by the monitor the message display will return to CAL xxx.

G. Disconnect the high cal gas and connect the low cal gas to the inlet and flow the gas at 50 to 550 ml/min.

H. Press the FLOW key to read flow. Adjust flow if needed. (Oxigraf regulators are factory set to approximately 150 ml/min and do not require further adjustment.)

I. Press the CAL key to display CAL xxx where xxx is the low calibration set point. Ensure that the low cal set point matches the calibration gas oxygen concentration, adjust the set point if necessary.

J. The main oxygen display will show the oxygen measurement for the low cal gas.

K. Allow the reading to stabilize then press the SET key. An automatic calibration will be initiated. The message display will briefly show LOW CAL. As soon as the calibration is accepted by the monitor the message display will return to CAL xxx.

The analyzer is now calibrated.

⚠ ***Caution:*** A calibration error (CALERR) is generated if the cal set point does not match the cal gas concentration, or if the low and high cal set points are too close to each other.

4.3.3 Single Point Calibration

Connect the low cal or the high cal gas to the inlet. Proceed as in 4.3.1 above.
Single point calibration may be performed, in a well ventilated room with “Room air” preferably dried with a desiccant. Select the low cal gas (i.e. 20.9%) setting and proceed as in 4.3.1 above.