

**ECO SENSORS, INC.**  
**www.ecosensors.com**  
**sales@ecosensors.com**

## **Tech Note UV100-100**

### **Checking the UV-100 CALIBRATION WITH THE OG-3**

The Eco Sensors UV-100 calibration can be fairly accurately monitored using the Eco Sensors OG-3 Calibration Checker if the calibration of the OG-3 is checked and adjusted for accuracy at the user's altitude. The OG-3 is calibrated in Eco Sensors' laboratory at 2,100 meters. At lower altitudes the OG-3 will generate ozone at a slightly higher concentration than the standard .1 ppm due to the higher molecular density of air at lower altitudes. This difference in OG-3 output is not significant for checking the calibration of the semiconductor sensor (HMOS) Eco Sensor instruments, but may warrant slight adjustment for checking the calibration of the higher precision UV-100.

First, the OG-3 and UV-100 should have their calibrations synchronized when both instruments arrive from the factory to a calibration site with approximately the same altitude as the end user of the UV-100. This calibration checking should be done in relatively gas free air in an air conditioned room with essentially no direct outside air present.

1 - Allow a one hour warm-up for both the OG-3 and the UV-100.

2 - Attach the short 10 mm (3/8") outside diameter tube to the UV-100 air filter input barb and fit its other end just inside the 10 mm hole on the bottom of the OG-3. Do not extend it far into the OG-3. A few mm is sufficient. Any further in will reduce the calibration accuracy.

3 - After at least one minute, read the UV-100. It will typically be slightly different than .1 ppm - usually slightly higher. Align the tubing in the OG-3 hole in step (2) to maximize the UV-100 reading without pushing the tubing more than a few mm into the OG-3.

4 - Record the UV-100 reading. For example, if it is .11 ppm, future calibration check readings can be adjusted downward by .01 ppm.

5 - Alternately, the OG-3 calibration can be slightly adjusted for greater accuracy by:

- (a) Remove the black round tape patch on the calibration access hole near the power jack input.
- (b) The reading on the UV-100 will go down slightly because of the ozone leak through the calibration access hole.
- (c) Slightly adjust the calibration pot with an instrument screwdriver so that the apparent OG-3 output declines by the offset factor described above - .01 ppm in our example.
- (d) Replace the access hole patch and check for .1 ppm output as read on the UV-100.

- (e) Steps (a) - (d) may have to be repeated several times until exact calibration correspondence is achieved.
- (f) You may want to cut a fresh piece of tape (such as black electrical tape) to cover the calibration access hole.

6 - Assuming the OG-3 is used infrequently and kept in clean storage, and that the UV-100 is used frequently and is subject to more abuse, the OG-3 can be used for fairly accurate calibration checks of the UV-100 for several years.

7 - If the OG-3 does not appear to be generating close to its rated .1 ppm, check its DC power supply. It should provide at least 12 VDC under load and several volts more than 12 VDC would assure reliable operation of the OG-3.

NOTE: The zero of the UV-100 can be checked with the Eco Sensors ZO-1 zero ozone filter. Connect it to the UV-100 input air filter and the UV-100 should read 0.000-0.002 after several minutes of internal purging of ozone. If the UV-100 reads higher than zero without the ZO-1 zero ozone filter connected, there is ozone in the air where the UV-100 is sampling. Most buildings anywhere in the world have a residual room ozone concentration of at least .01 ppm.

