

## OREC™ O3DM-100 OZONE MEASUREMENT

### FEATURES

- An Integral Part of the Automatic Control System
- Absolute Calibration Based On Beer-Lambert Absorption Law
- No Chemicals Required
- Automatic Zeroing
- Automatic Temperature Compensation
- Calibrated Pressure Compensation
- Direct Reading Digital Display
- Specific To Ozone
- Rapid and Accurate
- 0-1000 PPM Measurement
- Three Operating Ranges

*OREC ozone generators and test equipment... an industry standard for 43 years!*



### MEASUREMENT METHOD

OREC Model O3DM-100 Ozone Monitor is a continuous ozone measurement instrument for the determination of ozone in air or oxygen. The standard instrument provides the range of 0-1000 PPM (parts per million) by volume, displayed on a panel-mounted digital readout. Alternate display of ozone in millipascals is included with the OREC O3DM-100 Ozone Monitor.

The principle of ozone measurement is the absorption of ultraviolet light by ozone as determined by the Beer-Lambert absorption law in conjunction with standard gas laws for temperature and pressure correction

$$I = I_0 \left( \frac{(-LCX \cdot 273)}{T} \right)^{\frac{P}{760}}$$

I = Light Intensity with ozone

I<sub>0</sub> = Light intensity without ozone

L = Path length of absorption cell

C = Ozone concentration

X = Absorption coefficient for ozone at 254nm

T = Sample temperature, degrees K

P = Sample pressure, mm Hg

The principle of measurement is recognized by the EPA as the method used in the calibration of ambient ozone analyzers.

ASTM D4575-86 states "UV absorption is adopted as the reference method against which other ozone instruments shall be calibrated."

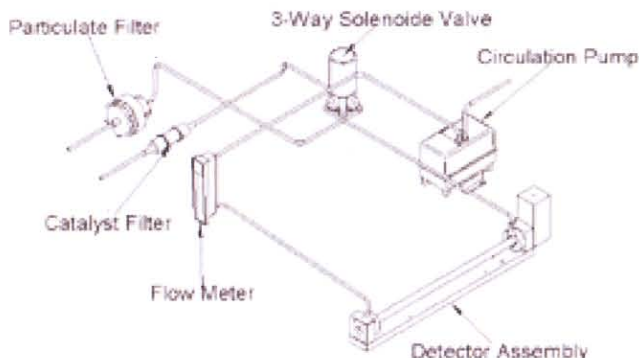
## DESCRIPTION

Model O3DM-100 incorporates an ultraviolet light source, a narrow-band 254nm interference filter, and a phototube for measuring light intensities. Ultraviolet light passing through a sample of gas containing no ozone is measured and the value stores this is compared to the light intensity with ozone present. The two values are sent to a signal processor that calculates the ozone concentration from the Beer-Lambert equation. This provides accurate measurement (not linear approximations) over the entire range of the instrument. Automatic temperature compensation is integrated into the signal processor. A front panel-mounted potentiometer calibrated in barometric pressure is provided for manual pressure compensation.

OREC Model O3DM-100 is unique in that a single instrument provides accurate measurement from 0-1000PPM with three ranges for sensitivity. Recognizing the requirements for rapid ozone measurement the instrument incorporates design features that minimize warm up times.

Whether your requirement is for ambient air monitoring, ozone test chamber measurement, plant safety monitoring, research, control of ozone generators, etc., OREC Model O3DM-100 fulfills the need for an accurate, reliable, automatic ozone monitor – with the combined widest range, shortest warm-up period, and maximum up-dated reading time of any available monitor.

## FLOW SCHEMATIC



## CONTACT INFORMATION

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## SPECIFICATIONS

**Full Measurement Span:** 0-100 PPM/Vol.

**Ranges:** 0-10, 0-100, 0-1000 PPM/Vol.

**Sensitivity:** 0.1% of Range

**Accuracy:** 3% of Reading

**Repeatability:** 1% or 1 Digit (whichever is larger)

**Zero Drift:** Readout 0% (Auto-zeroed)

Analog Output 0.5% Max

**Span Drift:** Readout 0.1%

Analog Output 0.5% Max

**Linearity:**  $\pm 0.5\%$

**Response Time:** 5 seconds

**Sample Measurement Period:** 45 sec/minute

**Gas Sampling:** Nominal 2 L/min ( $\pm 1$  L/min)

(From Integral Sample Pump)

**Instrument Temperature Range:** 0-45°C

**Sample Temperature Compensation:**

Automatic 0-100°C ( $\pm 1$ °C)

**Sample Pressure Compensation:**

Adjustable 100-400 mm Hg\* ( $\pm 2.5$ mm Hg)

**Recorder Output Scale:**

0.1X, 0.2X, 0.5X, 1.0X of Ranges

**Recorder Output Voltages:**

0-1VDC On All Recorder Scales

**Connections:** ¼ in. Tube Fittings

**Weight:** 30 lbs.

**Dimensions:** 12¼" W x 21" D x 5¾" H

**Power Requirements:** 115V  $\pm 5\%$ , 50/60Hz

## OPTIONS

- A. Model O3DM-110 High Concentration Ozone Monitor, Range 0-100 Mg/SL\*\* (0-8%/wt)
- B. Alarm Output: Adjustable 0-Full Range N.O. contact 10A AC
- C. NEMA 13 Enclosure: 16"W x 24"D x 8½"H
- D. 220 VAC 50/60 Hz Power
- E. Range Modifications available per customer requirement

\*Alternate measurement in millipascals by setting pressure compensation adjustment.

\*\* Milligrams per standard liter

A2LA Accredited Calibration Laboratory #1424.01  
ISO/IEC 17025 Registered

**MANUFACTURED IN AKRON, OHIO USA**