

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

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

I = Light Intensity with ozone

I₀ = 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."

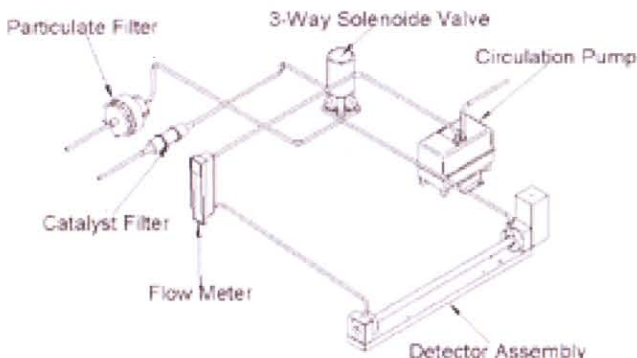
DESCRIPTION

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 (± 1 L/min)

(From Integral Sample Pump)

Instrument Temperature Range: 0-45°C

Sample Temperature Compensation:

Automatic 0-100°C (± 1 °C)

Sample Pressure Compensation:

Adjustable 100-400 mm Hg* (± 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