

OREC™ DM-100 Series Ozone Monitors: Description



The OREC™ DM-100 Series Ozone Monitors are 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 meter. The DM-100 Series also alternately displays ozone concentration in millipascals (mPa).

The principle of ozone measurement is the absorption of ultraviolet light by ozone as determined by the [Beer-Lambert Absorption Law](#), in conjunction with the standard gas laws for temperature and pressure correction is recognized by the EPA as the method used in the calibration of ambient ozone analyzers.

[ASTM D4575 Standard Test Methods for Rubber Deterioration – Reference and Alternative Method\(s\) for Determining Ozone Level in Laboratory Test Chambers](#) (Volume 09.01) states: "UV absorption is adopted as the reference method against which other ozone measurement instruments shall be calibrated."

The OREC™ DM-100 Series Ozone Monitors incorporate an ultraviolet light source, a narrow band 254 nm 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 stored. This value is then compared to the light intensity with ozone present.

The two values are sent to an onboard signal processor which calculates the ozone concentration using the Beer-Lambert equation, providing non-linear approximations, but accurate over the entire range of the instrument.

The signal processor also includes automatic temperature, humidity and barometric pressure compensation. Formerly, the barometric pressure adjustment was a front panel mounted potentiometer requiring manual barometric pressure compensation.

The OREC™ DM-100 Series Ozone Monitors are unique in that a single instrument provides accurate measurement from 0 - 1000 ppm, with three ranges for increased sensitivity. Recognizing the requirement for rapid Ozone measurement, the instrument incorporates design features which minimize warm-up time.

Whether your requirement is for ambient air monitoring, ozone test chamber measurement, plant safety monitoring, research, control of ozone monitors or other applications, the OREC™ DM-100 Series Ozone Monitors fulfill the need for accurate, reliable and automatic ozone monitoring.

This, combined with the widest range, shortest warm-up period, and maximum updated reading time of any available monitor make the OREC™ DM-100 Series the industry's choice!

OREC™ DM-100 Series Ozone Monitors: Features

- Absolute Calibration based on Beer-Lambert Absorption Law;
- Two Minute Warm-Up Time;
- No Chemicals Required;
- Automatic Zeroing;
- Automatic External Temperature Compensation;
- Automatic External Humidity Compensation;
- Automatic External Barometric Pressure Compensation;
- Direct Reading Digital Display;
- Specific to Ozone;
- Rapid and Accurate;
- 0 - 1000 PPM Measurement;
- Three Operating Ranges.

OREC™ DM-100 Series Ozone Monitors: Specifications

Full Measurement Span:	0 - 1000 ppm/vol
Ranges:	0 - 10; 0 - 100; 0 - 1000 ppm/vol
Sensitivity:	0.1% of Range
Accuracy:	3% of Reading
Repeatability:	the larger of 1% or 1 digit
Zero Drift:	Readout 0% (auto-zeroed) Analog output 0.5% Max
Span Drift:	Readout 0.1% Analog output 0.5% Max
Linearity:	± 0.5%

Response Time:	5 Seconds
Sample Measurement Period:	45 seconds / minute
Gas Sampling:	Nominal 2 l/min (\pm 1 l/min)
Temperature Compensation:	Automatic 0 - 100 C° \pm 1 C°
Pressure Compensation:	400 - 1000 \pm 2.5 mm Hg
Recorder Output Scales:	.1x, .2x, .5x, 1x of Ranges
Recorder Output Voltage:	0 - 1 V on all scales
Connections:	¼" (6.35 mm) Tube fittings
Weight:	30 lbs (13.6 kg)
Dimensions:	12.25 x 21.0 x 5.75 in (311 x 533 x 146 mm)
Power Requirements:	115 or 220 \pm 10% VAC 60/50 Hz

OREC™ DM-100 Series Ozone Monitors: Options

- DM-110 High Concentration Ozone Monitor Range: 0 - 100 Mg/SL (0 - 8% wt);
- Strip Chart Recorder (dry, inkless, 30 day);
- Alarm Output (adjustable 0 - full range);
- Automatic Control System;
- NEMA 12 Enclosure;
- 220 VAC Power.

OREC™ DM-100 Series Ozone Monitors: Available Basic Models

Model	Part Number	Power Requirement	Description
DM-100	1100976	115 VAC 60/50 Hz	Ambient
DM-100	1101919	115 VAC 60/50 Hz	Ambient w/ alarm
DM-100	1104377	230 VAC 60/50 Hz	Ambient
DM-100	1104370	230 VAC 60/50 Hz	Ambient w/ alarm
DM-110	1100977	115 VAC 60/50 Hz	High concentration
DM-110	1104371	230 VAC 60/50 Hz	High concentration

NIST Direct Traceability & ISO/IEC 17025 Accredited Calibration Laboratory

National Institute of Standards & Technology
Reports of Analysis

Direct (Primary) Traceability

[NIST Report 839.03-03-155](#)
[NIST Report 839.03-05-168](#)
[NIST Report 839.03-08-004](#)
[NIST Report 839.03-09-142](#)



American Association for Laboratory Accreditation

[Instrument Calibration Certificate 1424.01](#)
[Mechanical Testing Certificate 1424.02](#)

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Index Terms: OREC, Ozone Research Equipment Company, 0500, 0900, ozone test chambers, ozone, ozone destruction, ozone generation, ozonator, ozone generator, ozone test chamber, ozone monitor, Osmonics, ASTM D518, ASTM D1149, ASTM D1171, ASTM D3395, ASTM D4575, ASTM D470, ISO 1431, ozone research, rubber cracking, ozone resistance, rubber, crack growth, weathering, rubber deterioration, surface cracking, ozone cracking, ozone measurement, rubber test, ultraviolet, UV.

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