

Model 106-L Ozone Monitor™

Federal Equivalent Method (FEM)

Recommended for Both Ambient and Industrial Ozone Applications



Standard Enclosure



NEMA Enclosure



OEM Version

The Model 106 series of ozone monitors was designed specifically for the industrial ozone industry to cover four different ozone concentration ranges by varying the optical path length. The ranges are: -L (low, 0-100 ppm); -M (medium, 0-1,000 ppm); -MH (medium high, 0-10,000 ppm, 0-1 vol%) and -H (0-20 wt%, 0-14 vol%). The Model 106 series is designed as an "ozone monitor on a board" in which nearly all of the components are mounted directly to the printed circuit board with very few wire connections, making these instruments highly robust and very easy to service. As seen in the images above, all models are available in a standard enclosure, weather-resistant NEMA enclosure, or with no enclosure for OEM applications for those who want to mount the instrument in their own enclosure or use it as a component of a larger system. For more details on OEM applications see: [Model OEM-106](#). Multi-channel sampling configurations are available for the Model 106-L, -M, and -MH.

The Model 106-L Ozone Monitor is designed for measurements of ambient ozone concentrations down to very low ppb levels. However, because of the large dynamic range of our ozone monitors, the Model 106-L also can be used for accurate measurements of ozone at concentrations up to 100 ppm (100,000 ppb). The accuracy and precision of this instrument is comparable to our original Model 202 Ozone Monitor widely used for field measurements by atmospheric researchers. Like the Model 202, it has been designated by the EPA as a Federal Equivalent Method (FEM) for monitoring for compliance with the US Clean Air Act: [EQOA-0914-218](#) The Model 106-L Ozone Monitor is recommended for workplace health and safety monitoring where ozone is being produced and used in a wide range of industrial applications like water treatment, food processing, aquaculture, fruit and vegetable warehouses, etc. For a pocket-sized personal monitor to measure individual exposures see: [Personal Ozone Monitor](#).

Specifications

Measurement Principle	UV absorption at 254 nm, single beam
Federal Equivalent Method (FEM)	Yes
Measurement Interval	2 s
Linear Dynamic Range	0-100,000 ppb (0-100 ppm)
Resolution	0.1 ppb
Precision (1σ for 10-s average; aka rms noise)	Greater of 1.5 ppb or 2% of reading
Limit of Detection (10-s average, 2σ)	3.0 ppb
Accuracy	Greater of 1.5 ppb or 2% of reading
Baseline Drift	< 3 ppb/day, < 6 ppb/year
Sensitivity Drift	< 1%/day, < 3%/year
Calibration	NIST Traceable; annual calibration recommended
Measurement Time and Frequency	2 s, 0.5 Hz
Data Averaging Options	10 s, 1 min, 5 min, 1 hr
Response Time, 100% of Step Change	For 2 s output: 4 s, 2 data points For 10 s output: 20 s, 2 data points
Adaptive Filter	Available; user-defined parameters
Data Logger Capacity	32,736 lines (10 s avg. = 3.8 days; 5 min avg = 113 days)
Data Transfer Baud Rates	2400, 4800, 19200
Ozone Units	ppb, pphm, ppm, $\mu\text{g m}^{-3}$, mg m^{-3}
Temperature Units	$^{\circ}\text{C}$, K
Pressure Units	mbar, torr
T and P Corrected	Yes
DewLine™ for Humidity Control	Yes
Operating Temperature Range	0 to 50 $^{\circ}\text{C}$
Operating Altitude Range	0-13.5 km (0-25 km option)
Flow Rate	Minimum Required: 0.6 L/min; Nominal: 1 L/min; Maximum: 1.5 L/min

Digital Data Outputs	USB, RS232, LCD display
Analog Data Outputs	0-2.5 V analog, 4-20 mA, user-scalable in menu
Power Requirements	100-240 VAC, 50/60 Hz 11-28 V DC, nominally 500 mA at 12 V DC, 6 watt
Relays with 2 Setpoints	Two available: Relay 1 responds based on user's ozone set points. Relay 2 responds based on user's ozone set points OR responds based on diagnostics (T, P, flow, lamp voltage)
Bluetooth Option Available	Yes
Flow-Through Option Available	Yes
Multi-Channel Options Available	Yes, 3-channel and 6-channel configurations
Size	Standard: 3.6 x 7.9 x 9.4 inches (9 x 20 x 24 cm) OEM: 2.5 x 7 x 9 in (6.4 x 17.8 x 22.9 cm)
Weight	Standard: 4.2 lb (1.9 kg) OEM: 2.8 lb (1.3 kg)
Options	Battery, Particle Filter, Bluetooth, Flow-Through Configuration, Multi-Channel Configurations, High-Altitude Package

Features

- Measurement based on UV absorption
- Low power consumption; can be battery operated (optional external lithium-ion battery)
- Internal data logger with real-time clock
- 2-s measurement interval
- On-board microprocessor with interactive menus includes data averaging options of 10 s, 1 m, 5 m, 1 hr, and user-defined adaptive filter
- USB and RS-232 output of time/date, O₃ concentration, internal temperature and pressure
- Analog output (0-2.5 V and 4-20 mA) of ozone concentration in user-selected units and scaling factors
- Two 2-level relays for control purposes (e.g., control of ozone source; turn warning light on and off)
- Long-life pump (15,000 hr)
- Bluetooth option for wireless data transmission
- Optional configurations for 3-channel or 6-channel air sampling