

## Model 106-L Ozone Monitor™

*Federal Equivalent Method (FEM)*

*Recommended for Both Ambient and Industrial Ozone Applications*



Standard Enclosure



Industrial 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 Industrial 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 (3-channel and 6-channel configurations).

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

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

<b>Digital Data Outputs</b>	USB, RS232, LCD display
<b>Analog Data Outputs</b>	0-2.5 V analog, 4-20 mA, user-scalable in menu
<b>Power Requirements</b>	100-240 VAC, 50/60 Hz 11-28 V DC, nominally 500 mA at 12 V DC, 6 watt
<b>Relays with 2 Setpoints</b>	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)  Four relays provided in Industrial models and in the 3-channel and 6-channel optional configurations
<b>Bluetooth Option Available</b>	Yes
<b>Flow-Through Option Available</b>	Yes
<b>Multi-Channel Options Available</b>	Yes, 3-channel and 6-channel configurations
<b>Size</b>	<b>Standard:</b> 3.6 × 7.9 × 9.4 inches (9 × 20 × 24 cm) <b>OEM:</b> 2.5 × 7 × 9 in (6.4 × 17.8 × 22.9 cm) <b>Industrial:</b> 16 × 14 × 9.3 in (40.7 × 35.7 × 23.6 cm)
<b>Weight</b>	<b>Standard:</b> 4.2 lb (1.9 kg) <b>OEM:</b> 2.8 lb (1.3 kg) <b>Industrial:</b> ~14 lb (6.4 kg)
<b>Options</b>	Battery, Particle Filter, Bluetooth, Exhaust Port, 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, O<sub>3</sub> 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); four relays provided in Industrial model and in the 3-channel and 6-channel optional configurations
- Long-life pump (15,000 hr)
- Bluetooth option for wireless data transmission
- Optional configurations for 3-channel or 6-channel air sampling