

## Model 202 Ozone Monitor™

### EPA Federal Equivalent Method (FEM)



The 2B Technologies Model 202 Ozone Monitor™ is designed to enable accurate and precise measurements of ozone ranging from low ppb (precision of ~1 ppb) up to 100,000 ppb (0-100 ppm) based on the well established technique of absorption of UV light at 254 nm. The Model 202 Ozone Monitor™ is light weight (4.7 lb., 2.1 kg.) and has a low power consumption (12V DC, 0.33 amp, 4.0 Watt) relative to conventional instruments and is therefore well suited for applications such as:

- Vertical profiling using balloons, kites, RPVs and light aircraft where space and weight are highly limited
- Long-term monitoring at remote locations where power is highly limited
- Urban arrays of ground-based detectors
- Personal exposure monitoring for studies of health effects of air pollutants
- Environmental health and safety monitoring
- Laboratory studies of the effects of ozone exposure on materials and organisms

The Model 202 has been designated by the EPA as a Federal Equivalent Method (FEM): [EQUA-0410-190](http://www.epa.gov/oaqps/p/equivalent_methods/equivalent_methods.html). As a designated FEM, the Model 202 Ozone Monitor may be used by states and other monitoring agencies under 40 CFR Part 58, Ambient Air Quality Surveillance, for monitoring for compliance with the Clean Air Act

## Options

- Flash Card Memory for virtually unlimited, portable data storage
- GPS for continuous logging of latitude, longitude and altitude
- Rechargeable metal hydride battery provides 12 hr of continuous operation
- External particle filter
- Serial-to-USB adapter
- Rotary vane air pump for low temperature and quiet operation
- External air pump for long pump life

## Specifications

<b>Measurement Principle</b>	UV Absorption at 254 nm
<b>Linear Dynamic Range</b>	1.5 ppb to 250 ppm
<b>Resolution</b>	0.1 ppb
<b>Precision (1<math>\sigma</math>; rms noise)</b>	Greater of 1.5 ppb or 2% of reading
<b>Accuracy</b>	Greater of 1.5 ppb or 2% of reading
<b>Limit of Detection (2<math>\sigma</math>)</b>	3.0 ppb
<b>NIST-Traceable Calibration</b>	Yes
<b>Measurement Interval</b>	10 s (Data averaging options: 10 s, 1 min, 5 min, 1 hr)
<b>Flow Rate (nominal)</b>	~1 Liter/min
<b>Flow Rate Requirement</b>	>0.6 L/min
<b>Baseline Drift</b>	<2 ppb/day <5 ppb/year
<b>Sensitivity Drift</b>	<1%/day <3%/year
<b>Measurement Time, Frequency</b>	10 s, 0.1 Hz
<b>Response Time, 100% of Step Change</b>	20 s, 2 points
<b>Averaging Times</b>	10 s, 1 min, 5 min, 1 hr
<b>Data Storage</b>	14,336 lines (10 s avg. = 1.4 days; 5 min avg = 1.4 mo.)

<b>Ozone Units</b>	ppb, ppm, pphm, $\mu\text{g m}^{-3}$ , $\text{mg m}^{-3}$
<b>Pressure Units</b>	mbar, torr
<b>Temperature Units</b>	$^{\circ}\text{C}$ , K
<b>T and P Corrected</b>	Yes
<b>Operating Temperature Range</b>	0 to 50 $^{\circ}\text{C}$ ; -20 to 50 $^{\circ}\text{C}$ with low temperature modifications (rotary vane pump and lamp heater)
<b>Operating Altitude Range</b>	~0-30 km (~30-1000 mbar)
<b>Power Requirement; Supplied by battery or 110/220 VAC Power Pack</b>	12 V dc or 120/240 V ac, 335 mA, 4.0 watt (2.9 watt with cell heater unplugged)
<b>Size</b>	3.5 x 8.5 x 11 inches (9 x 21 x 29 cm)
<b>Weight</b>	4.7 lb (2.1 kg); 1.6 lb (0.7 kg) without instrument case
<b>Data Logger Capacity</b>	14,336 lines (10 s avg. = 1.4 days; 1 min avg = 10 days; 5 min avg = 1.4 mo; 1 hr avg = 1.6 yr)
<b>Analog Inputs for Internal Logging of Other Instruments</b>	3 Analog Inputs, 0-2.5 V; For example could log external T, P and RH
<b>Data Outputs</b>	RS232, 0-2.5 V Analog, LCD Display; External USB Converter: (Optional 4-20 mA Current; request quote)
<b>Data Transfer Baud Rates</b>	1200, 2400, 4800, 19200
<b>Output Ranges</b>	User Defined Scaling Factor in Menu
<b>DewLine™</b>	Yes
<b>Backup Air Pump</b>	Yes
<b>Flow Meter</b>	Yes
<b>Options</b>	GPS, Flash Card Memory, 4-20 mA Current Output; Lamp Heater; Rotary Vane Air Pump; Long-Life External Air Pump; Rack Mount Case
<b>Upgradable to Model 205 Dual Beam</b>	Yes

## System Includes

- Model 202 Ozone Monitor
- AC Power Adapter (100-240 VAC to 12 VDC) with Country-Specific Plug
- Cigarette Lighter Adapter
- Battery Wire Connector
- Zeroing Cartridge
- Operation Manual on CD
- Calibration Data and NIST-Traceable Calibration Certificate
- Instrument Birth Certificate
- One Year Warranty