Met One Instruments

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OPX 1025

Optical PM Mass Monitor

The OPX 1025 is a continuous particulate matter (PM) monitor using optical particle spectrometer technology with a polychromatic light source. It measures and records PM concentrations (e.g., $PM_{2.5}$, PM_{10}) by analyzing particle size and count from scattered light signatures and applying the proprietary RealPM size/density mass conversion algorithm, which automatically accounts for environmental factors.

Ambient air is drawn at a controlled flow rate through a size-selective (or optional TSP) inlet, conditioned via a Smart Heater, and analyzed in real-time, providing accurate, low maintenance mass concentration data.

Key features

- **Advanced Optical Particle Spectrometer**
  Polychromatic light source with 4,096 raw size bins, combined into 100 bins for mass conversion.
- **RealPM Dynamic Mass Conversion Algorithm**
  Size/density algorithm designed for high accuracy across varying environmental conditions.
- **Comprehensive PM Reporting**
  Simultaneous real-time PM_1, $PM_{2.5}$, PM_4, PM_{10}, and coarse fraction ($PM_{10-2.5}$) plus particle count and size histograms.
- **Controlled Sampling System**
  PM_{10} or TSP inlet, 16.67 LPM flow control, Smart Heater for humidity/temperature conditioning, and sheath flow optics protection.
- **High Sensitivity**
  Greater sensitivity than traditional continuous PM mass monitor methods.
- **User-Friendly Operation**
  Intuitive touchscreen interface with advanced diagnostics for quick troubleshooting.
- **Advanced Communications**
  Remote operation capability with cloud-based data access and integration with meteorological and other sensors.
- **Precision Calibration**
  Factory-calibrated against reference units; size accuracy verified with PSL and SigmaDust standards.
- **Low Maintenance**
  Minimal consumables required, and sheath-flow over optics reduces cleaning intervals.
- **Produced by an industry-leading ISO Certified facility.**
- **Time-tested reliability backed up by a 2-year Warranty.**
- **Sensor LED backed by 10-year manufacturer's warranty (parts only, field replaceable)**

Applications

- Ambient air quality monitoring ($PM_{2.5}$, PM_{10})
- Industrial and emissions monitoring
- Construction and mining site dust control
- Roadside and traffic pollution studies
- Fence-line and community monitoring
- Research and environmental studies
- Indoor air quality assessments
- Mobile or temporary monitoring campaigns

Specifications	
Measurement Principle	Broadband spectroscopy using 85°–95° light scattering with polychromatic LED
Particle Size Resolution	0.18 - 24µm range over 100 sizing channels
PM Mass Measurements	PM_{10}, $PM_{2.5}$, $PM_{10-2.5}$, as well as PM_4, PM_1, and TSP*
PM Mass Measurement Range	0.0 - 10,000+ µg/m³
Data Display Resolution	0.1 µg/m³
Lower Detectable Limit	< 0.1 µg/m³
Measurement Interval	10 seconds
Averaging Periods	User Adjustable: 1m – 24hr
Mass Concentration Accuracy	Meets or Exceeds US EPA PM_{10} FEM and Class III $PM_{2.5}$ & $PM_{10-2.5}$ FEM performance requirements compared to FRM samplers
Flow Rate	16.67 lpm
Flow Accuracy	±1% (Typically within ±0.5%)
Operating Temperature	0 - 50°C (inside shelter/enclosure)
Ambient Sample Temperature	-40 - 60°C
Ambient Sample Relative Humidity	0 - 100%
Sample RH Control	24VDC 150W (max) heater controlled to 35% RH or lower
Enclosure / Shelter	Requires weatherproof enclosure/shelter with 0–50°C, non-condensing environmental control
Instrument Warm-up Time	< 5 minutes
User Interface	Large graphic touchscreen display with intuitive layout / menu structure, and remote interface

Specifications	
Internal Data Storage	1 year of internal data storage, including all PM values, peripheral measurements, and size histograms
Data Download	Two Front Panel USB Flash Drive Ports (1xUSB-A and 1xUSB-C), and Ethernet and serial ports on rear panel
Ambient Sensor	Model **BX-597A** combination Temperature/Pressure/RH sensor
Optional Sensor Inputs	Smart Sensor inputs such as digital wind speed and direction (i.e. Met One Model AIO 2)
Electrical	100 - 240 VAC, 50/60Hz; 190W (max) power consumption, 50W typical
Instrument Dimensions (HxWxD)	26.7cm x 43cm x 40cm (10.5" x 17" x 15.8")
Instrument Weight	31 lbs (14 kg)
Sample Conditioner Dimensions	88.6cm x 6.35cm (34.875" x 2.5")
Sample Conditioner Weight	4.2 lbs (1.9 kg)
Warranty	2-year standard instrument warranty 10-year manufacturer's warranty on sensor LED^
Certifications (pending)	US EPA PM_{10} Federal Equivalent Method US EPA Class III $PM_{2.5}$ Federal Equivalent Method US EPA Class III $PM_{10-2.5}$ Federal Equivalent Method

*Using optional TSP inlet; ^ parts only, field replaceable

Supplied Accessories

- Sigmadust
- **BX-597A** Temperature/RH/ Pressure Sensor
- Operation manual
- Calibration certificate
- Quick start guide

Optional Accessories

- **BX-801** Sample Inlet System with Support Braces
- TSP Inlet
- AIO 2 Weather Station
- **BX-925B** Weatherproof Enclosure with Heater
- **BX-925B-AC** Weatherproof Enclosure with Heater and Air Conditioner
- **BX-802 PM_{10} Inlet**

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