BC 1054 Black Carbon

The Met One Instruments BC 1054

Multispectrum Black Carbon Analyzer continuously measures the transmittance of light across filter media onto which particulate matter is accumulating and in real-time calculates the black-carbon “BC” concentrations at 10 different wavelengths ranging from the near-UV to the near-IR. By employing the same widely accepted calibration constants and principles of operation as those used in the Magee Aethalometer the BC-1054 produces nearly identical results, but at a fraction of the cost

BC 1054 will directly connect to a variety of products, such as the BAM-1020, discrete particle size and counting modules, or a wide array of meteorological sensor inputs.

Operation

The BC 1054 uses inexpensive filter media from a reliable source and comes standard with an inlet heater for sample conditioning and simple, easy to use software to post-process collected data to compensate for changes in absorption coefficients due to filter loading. The BC 1054 allows the user to sample at either 2 or 5 liters per minute. Inlets are available for TSP, PM10, PM2.5 or PM1 sampling at either flow rate.

The BC 1054 employs many of the design features used in the Met One Instruments BAM 1020 of which more than 12,000 units have been deployed worldwide.

Construction

The BC 1054 is manufactured in the United States. The BC 1054 may be serviced at our factory in the United States or by any authorized Met One Instruments distributor.

All BC 1054 Multispectrum Black Carbon Analyzers are factory calibrated in a smoke chamber using similar methods and procedures as the Met One Instruments BAM 1020 beta attenuation mass monitor. This insures long-term and long-range reproducibility and traceability. All equipment returned for service is re-checked against the factory reference standard before being returned to service.

Features

- Tape-Saving mode for economical collection of data in high BC regions
- Optional cloud-based modem and data service permits collected data to be uploaded and stored on the Web
- Data access in near real time remotely without the need for an external data logger
- The simple sensor design requires no flow splitting, employs a single mass flow controller and is well matched for use with the filter media
- Flow checks, audits and trouble-shooting are simple to perform
- Actual flows are measured
- Concentrations are calculated under actual flow conditions but may be displayed in actual or standard conditions

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Applications

- Air quality surveillance
- Global warming studies
- Particulate emissions studies
- Near-roadside monitoring
- Visibility studies
- Source apportionment

Specifications

Measurement Principle:	Filter-Based Multiple Wavelength Optical Absorption at 10 Wavelengths: 370, 430, 470, 525, 565, 590, 660, 700, 880, 950 nm
Measurement Range:	<1 ng/m^3 to >100,000 ng/m^3 (effective)
Display Resolution:	0.1 ng/m^3
LDL (2σ):	< 8 ng/m^3 with 1 minute sample time < 1 ng/m^3 with 1 hour sample time
Measurement Interval:	1-minute standard
Flow Rate:	2 or 5 LPM, user selectable, mass-flow controlled under actual flow conditions.
Pump Type:	Internal vacuum pump, other configurations available
Filter Tape:	Reinforced glass fiber
Power Supply:	12V DC. Universal 100-240 VAC 50/60Hz input, supply included
Power Consumption:	50 W
Data Storage:	One USB Flash Drive Port Service process, 1-year, 1-minute data

Data Collection Interface:	Single serial output through RS-232, USB, or through Ethernet port 1,200 to 115,200 baud
Compatible Software:	Comet™ software and USB/Ethernet driver CD included
User Interface:	Menu-driven interface with 4×20 character backlit LCD display and dynamic keypad
Mounting Options:	Bench top or equipment rack mountable Rack mount hardware is standard
Inlet:	PM_1, $PM_{2.5}$ sharp cut cyclones (SCC) available at either 2 or 5 LPM Sampling Rates Through Flexible Tubing. 5 LPM $PM_{2.5}$ SCC standard
Unit Weight:	Approximately 40 lbs (18 kg)
Unit Dimensions:	Height: 10.5” (26.7 cm) Width: 17” (43 cm) Depth: 15.8” (40 cm)