



BC-1050 BLACK CARBON MONITOR



The Met One Instruments BC-1050 Black Carbon Monitor measures black carbon through optical attenuation and absorption principles in both the infrared and ultraviolet spectral regions. The BC-1050 offers improved traceability for the measurement of black carbon (BC) compared to traditional filter-based optical techniques through its unique factory calibration process and through the incorporation of standard EPA-style sampling inlets.

This approach, which is based on the method used to both calibrate and operate the Met One Instruments line of beta attenuation mass monitors, will both insure an unbiased sampling protocol and improve

inter-unit reproducibility of equipment returned for service and redeployment.

As ambient air containing BC is continuously deposited onto optically transmissive filter media, the attenuation of dual IR/UV light sources passing through the collected BC is monitored. This information is stored and subsequently used to calculate both BC and UV-absorbing particulate matter. Time-resolution is user-selectable with 1-minute minimum. The filter advance frequency is user selectable and may be based on either UV or IR absorbance reaching a predetermined level, or based on time (i.e., once each hour).

defendable BC data with high time resolution that may be used for:
The BC-1050 is simple, reliable, cost effective and produces

Air quality surveillance

Global warming studies

Particulate emissions studies

Near-roadside monitoring

Visibility studies

Customer Support

All BC-1050 units leaving our factory have been set against a reference standard and smoke-tested to demonstrate linearity of response and long-term reproducibility of output. Equipment returned for service is always re-checked against a reference standard to insure data continuity in the field.

Construction

Many of the components and design principles that have been used in the BC-1050 are based on the knowledge that we have gained over the past two decades to support the evolution of our continuous beta attenuation mass monitors of which more than 8,000 have been so far deployed.

Connectivity

The BC-1050 has expanded inputs and outputs to enable the user to add other measurements and/or output data to cloud services or memory sticks. The BC-1050 will directly connect to a variety of products, such as the BAM 1020 or discrete particulate size and counting modules. The unique cloud-link feature allows for web-based real-time connectivity and direct comparison of BC to BAM-determined or optically determined mass measurements. The cloud-link feature also eliminates the need for on-site or remote data logging as well as reducing the frequency with which the monitoring site must be visited.

Specifications

PARAMETER SPECIFICATION

Measurement Principle	Optical absorption through material deposited on filter tape. Near infrared absorption (935 nm) for elemental carbon, ultraviolet absorption (375 nm) for elemental and organic carbon
Measurement Range	0.1 µg/m ³ – 1,000 µg/m ³
Measurement Sensitivity	2 ng/m ³ @ 5 LPM
Measurement Sample Time	1, 5, 10, 15, 30, 60 minutes
Flow Rate	2 to 5 LPM actual flow rate
Filter Tape	High capacity quartz filter tape
Operating Temperature Range	0 - 40°C
Ambient Humidity Range	0 - 90% RH, noncondensing
Serial Sensor	1 Met One Instruments Ambient Temperature and Barometric Pressure Sensor
User Interface	Menu driven interface with 4 line by 20 character LCD display with keypad
Analog Outputs	2 channels; optically isolated; switch settable voltage or current; voltage range 0-1 VDC, 0-2.5 VDC, 0-5 VDC; current range 4-20 mA
Alarm Contact Closure	1 NO dry contact; 125 VAC, 0.3 A; 30 VDC, 1 A
Serial Interface	1 each full duplex RS-232, USB, and Ethernet serial (Shared common serial output) Baud rates 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Cloud Interface	Cloud Modem connections
Internal Data Storage	4 Mbyte; 154,477 data records
External Data Storage	1 USB Flash drive device
Power Supply	External; AC input 100-240 VAC, 1.6 A, 50-60 Hz; DC output 12 VDC, 8.5 A
Weight	39.6 lb. (17.9 kg)
Dimensions	Height: 10.5" (26.7 cm) Width: 17" (43 cm) Depth: 15.8" (40 cm).

