



A powerful tool to better quantify black carbon aerosols with the smallest footprint available.

Features and Benefits

- Weighs only 8.8 ounces (250 g)
- Measures only 4.6" x 2.6" x 1.5"
- 0.001 $\mu\text{g}/\text{m}^3$ resolution
- 0 to 1 mg BC/ m^3 measurement range
- Variable time base from 1 sec to 5 min
- Variable flow rate from 50 to 150 ml/min
- Portable with up to 24 hours operation on a single battery charge
- Data storage space for up to a month of measurements
- USB connectivity for instrument control and data transfer
- Real-time black carbon aerosol measurements
- Flexible monitoring for a wide range of applications

Miniature Black Carbon Monitor Model AE51

Real-time sample collection and analysis of Aerosol Black Carbon mass concentration in air using the Aethalometer® optical absorption method.

The Miniature Black Carbon Monitor AE51 is a handheld instrument that detects and quantifies the presence of aerosol black carbon (BC) by Aethalometry, that is by measuring the attenuation of a light beam transmitted through aerosol particles that are continuously collected from the atmosphere on a filter.

The AE51 boasts real-time, high-resolution, wide dynamic sizing range and robust data logging performance in a convenient handheld form. It can be operated as a standalone instrument or can be combined with multiple units for multipoint monitoring in both indoor and outdoor environments.

Applications

- Epidemiology research
- Climate change and visibility research
- Workplace monitoring
- Engine exhaust and combustion source monitoring
- Ambient measurements



Specifications

Model AE51

Miniature Black Carbon Monitor

Measurement Principle

Real-time sample collection and analysis of Aerosol Black Carbon mass concentration in air using the Aethalometer® optical absorption method.

Optical Source

880 nm wavelength (IR) LED

Measurement Range

0 to 1 mg BC/m³

Measurement Resolution

0.001 µg BC/m³

Measurement Precision

±0.100 µg BC/m³, 1 min avg., 150 mL/min flow rate

Measurement Time Base (User setting)

1 sec, 1 min or 5 min

Flow Rate (User setting)

50 to 150 mL/min

Data Logging

4 MB flash memory, providing up to 1 month data storage when operating on a 5 minute time base, and more than 4 days when operating on a 1-minute time base.

Communications

USB Connectivity to Windows®-based PC with microAethCOM® software, or data stream via digital output through mini USB port (TSI can supply command protocols).

Data Output

Logged files are output to microAethCOM® software and stored in .csv file format. Quickview graphs are provided by microAethCOM® software.

PC Software

microAethCOM® software is included. Provides visual interface including real-time BC mass concentration values and graphing. Facilitates calibration routines, downloading data, and uploading new instrument firmware

Consumables

Typical: one filter "ticket" per sampling event

Filter Media

T60 Teflon-coated borosilicate glass fiber framed in SS "ticket"

Sample Spot Size

3 mm

Vacuum Pump

Internal 5 VDC with built in mass flow control



Dimensions (LWD)

4.6 x 2.6 x 1.50 in. (117 x 66 x 1.50 mm)

Weight

0.55 lbs (250 g)

Power

Internal 3.6 VDC rechargeable lithium-ion battery

Power Supply Adapter (charge through USB cable)

Input 100 to 240 VAC/50 to 60 Hz/0.2 A
Output 5 VDC/0.5 A max

Charging Time

4 hours to full charge (using A/C adapter, turned off)

Total Run Time (single battery charge)

24 hours @ 5 minute time base at 100 mL/min

Operation Environment

0 to 40 °C, non-condensing

Package Includes

Miniature Black Carbon Monitor Model AE51 instrument, 1-m conductive sample tubing, AC-power charging adapter, USB charging/interconnect cable, Pack of 5 filter tickets, microAethCOM® software, Quick Start Guide (hard copy), and Operating manual (electronic copy).

Specifications are subject to change without notice.

Manufactured as microAeth® Model AE51 by Magee Scientific, Berkeley, CA. Aethalometer® and microAeth® are registered trademarks of Magee Scientific.

To Order

Miniature Black Carbon Monitor

Specify	Description
AE51	AE51 Miniature Black Carbon Monitor

Accessories

Specify	Description
AE51- FT30	Filter Tickets, Box of 30
AE51- FT100	Filter Tickets, Box of 100

Accessories must be ordered separately

TSI Incorporated - 500 Cardigan Road, Shoreview, MN 55126-3996 USA

USA	Tel: +1 800 874 2811	E-mail: particle@tsi.com	Website: www.tsi.com
UK	Tel: +44 149 4 459200	E-mail: tsiuk@tsi.com	Website: www.tsiinc.co.uk
France	Tel: +33 491 11 87 64	E-mail: tsifrance@tsi.com	Website: www.tsiinc.fr
Germany	Tel: +49 241 523030	E-mail: tsigmbh@tsi.com	Website: www.tsiinc.de
India	Tel: +91 80 41132470	E-mail: tsi-india@tsi.com	
China	Tel: +86 10 8260 1595	E-mail: tsibeijing@tsi.com	
Singapore	Tel: +65 6595 6388	E-mail: tsi-singapore@tsi.com	

Contact your local TSI Distributor or visit our website www.tsi.com for more detailed specifications.

