

Multi-Angle Absorption Photometer, Model 5012

Precision measurement of black carbon in the atmosphere



Key Features

- Automatic operation & continuous measurement
- Multiple detectors simultaneously measure transmitted and scattered light
- Control and data exchange over two serial interfaces
- User selectable sample averaging times
- Automatic temperature and pressure correction
- Internal quality assurance and data storage logbook

The Thermo Scientific Multi-Angle Absorption Photometer (MAAP), Model 5012 precisely measures loading of black carbon in the atmosphere using a radiative transfer scheme to particle loaded glass fiber filters.

Black Carbon (BC), a product of incomplete combustion, comes from industrial pollution, traffic, fires, the burning of coal and biomass fuels. Unlike carbon dioxide emissions, which add to global warming by trapping heat in the atmosphere, soot emissions may contribute to global warming and climate change by absorbing sunlight, heating the air and making the atmosphere more unstable.

The measurement of BC by optical means has typically meant the measure of the transmission of light through a filter as the BC was collected. This measurement is affected by reflection and the scattering of light in multiple directions due to particle size and shape.

The black carbon content of the aerosols are continuously determined by simultaneously measuring the optical absorption and scattering of light by the particles collected on the filter tape. The combination of these two techniques as utilized by the Model 5012 MAAP provides a much truer measurement of the black carbon content.

Multi-Angle Absorption Photometer, Model 5012

To maintain optimal product performance, you need immediate access to experts worldwide, as well as priority status when your air quality equipment needs repair or replacement. We offer comprehensive, flexible support solutions for all phases of the product life cycle. Through predictable, fixed-cost pricing, our services help protect the return on investment and total cost of ownership of your Thermo Scientific air quality products.

Product Specifications

Method	Multi Angle Absorption Photometer (MAAP)		
Minimum Detection	2 minute average	<100ng/m ³ BC	< 0.66 M/m Babs
Limit	10 minute average	< 50 ng/m ³ BC	< 0.33 M/m Babs
	30 minute average	< 20 ng/m ³ BC	< 0.13 M/m Babs
Filter Change	At 20% transmission (approximately 30µg)		
Active Measurement Time	>98%		
Air Flow Regulation	Deviation <1% (PID type)		
Filter Tape	Glass fiber, type GF 10, approximately 40m		
Data Output	2 serial interfaces RS 232		
	Analog output: 0/4mA - 20mA or 0V - 10V		
Data Memory	18,560 concentration values, log book with 1,632 entries, 385 daily averages		
Operating Temperature	-4 to 122°F (-20 to 50°C)		
Power Supply	Instrument: 100-240V, 50/60 Hz, 330W max., 15W without pump		
	Pump: 100-110/100-120V, 50/60Hz or 220/240V, 50/60Hz, 100W		
Pump Type	RPM regulated rotary vane pump		
Dimensions	Instrument: 19" (W) x 12.25" (H) x 13" (D) / 483mm (W) x 311mm (H) x 330mm (D)		
	Pump: 8.25" (W) x 8.75" (H) x 4.25" (D) / 210mm (W) x 222mm (H) x 108mm (D)		
Weight	Instrument: 50 lbs (22.5 kg)		
	Pump: 13.5 lbs (6.1 kg)		

Optional Accessories

- PM10, PM2.5, PM1 and TSP Inlets
- Sampling Tube Extensions
- Analog I/O Expansion Board
- Weather Enclosure
- Rack Mounting Accessories
- Calibration Kits for Flow Rate, Temperature and Pressure Sensors

This specification sheet is for informational purposes only and is subject to change without notice. Thermo Fisher Scientific makes no warranties, expressed or implied, in this product summary. © 2009 Thermo Fisher Scientific, Inc. All rights reserved Thermo Fisher Scientific, Inc.

This product is manufactured in a plant whose quality management system is ISO 9001 certified.

**Environmental
Instruments Division**
Air Quality Instruments

27 Forge Parkway
Franklin, MA 02038 USA

(866) 282-0430
(508) 520-0430
(508) 520-1460 fax

www.thermo.com/air

Lit_5012MAAPAQI_08/09

Thermo
SCIENTIFIC