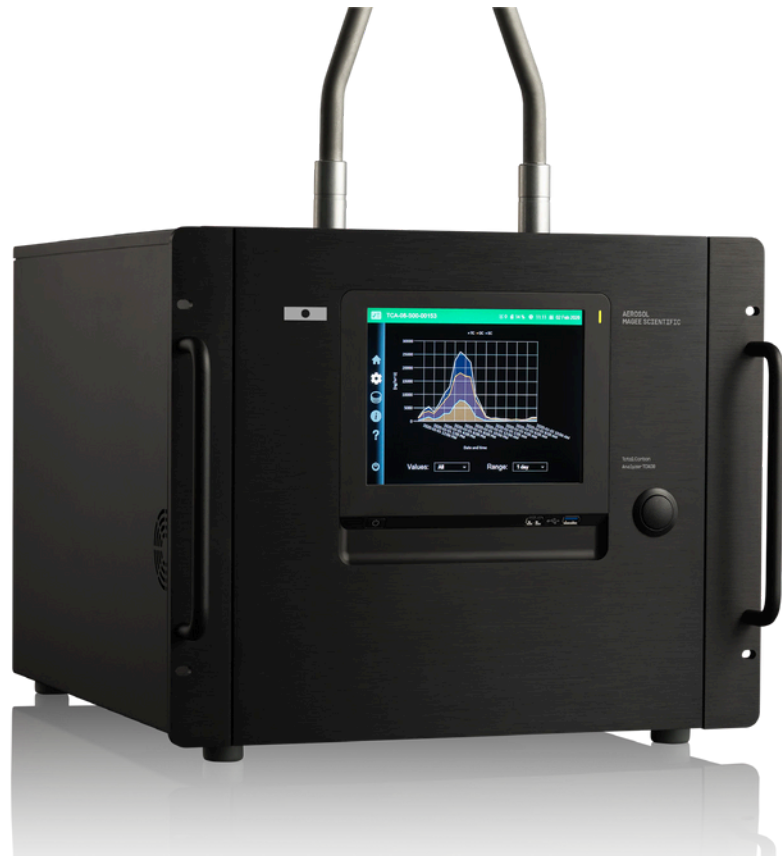




AEROSOL  
MAGEE SCIENTIFIC

## REAL-TIME MEASUREMENT OF TOTAL CARBON



# TCA08

## TOTAL CARBON ANALYZER

NO GLASS, NO GAS,  
NO CATALYST

### KEY FEATURES

- Continuous analysis of Total Carbon content of aerosol
- Sampling time 20 min to 24 hours  
Uses ambient air as carrier gas
- Rugged, All-Steel Construction
- Easy installation, operation and maintenance
- Integrates with Aethalometer® AE33 for OC/EC analysis

### APPLICATIONS

- Air Quality monitoring
- Climate Change research
- Health Effects research
- Emission testing

# AEROSOL MAGEE SCIENTIFIC

## PRODUCT SPECIFICATIONS

### MEASUREMENT PRINCIPLE

Two identical flow channels for sampling and analysis. Sample is collected on 47-mm quartz fiber filter in stainless-steel combustion chamber. At end of sampling timebase, collection flow is switched to second channel while first channel is analyzed. Collected sample is flash-heated to convert all Carbon

to CO<sub>2</sub>.

Ambient air is used as "analytical" carrier gas at low flow rate. The baseline level of CO<sub>2</sub> in ambient air is determined before and after the heating cycle. Large pulse of CO<sub>2</sub> in analytical flow is integrated over ambient baseline to determine Total Carbon content of sample.

### "NO GLASS, NO GAS"

No glass. Chambers constructed entirely from stainless steel.

Rugged FeCrAl alloy heating elements.

No gas. Uses ambient air as carrier: does not need any specialty gas supplies.

No catalyst.

### DETERMINATION OF OC AND EC

BC data from Aethalometer® AE33 is used to derive EC. OC is obtained by simple subtraction: OC = TC – EC.

The relationship between BC and EC depends on aerosol composition and the thermal protocol used for 'EC' assignment.

## COMBINATION WITH AE33 AETHALOMETER®

Cable connection: TCA software receives Aethalometer data.

### DETECTION

Detection Limit (1 hour): <0.005 µg/m<sup>3</sup> Range: <0.01 to >100 µg/m<sup>3</sup> Black Carbon Resolution: 0.001 µg/m<sup>3</sup> or 1 ng/m<sup>3</sup>

### SAMPLING

Standard flow rate of 16.7 LPM (1 m<sup>3</sup>/h), provided by closed-loop stabilized internal pump. Standard PM<sub>2.5</sub> inlet is included. Sampled air stream must be non-condensing (RH < 90% at instrument temperature). Operating altitude 0 ~ 3000 m. Ambient meteorological sensor (P, T, RH) is included to control sampling flow to ambient volumetric conditions.

### TIME RESOLUTION

Timebase for sampling and analysis is adjustable from 20 minutes to 24 hours. Default setting is 1 hour.

### ANALYTICAL PERFORMANCE

Limit of Detection: 300 ng C/m<sup>3</sup> (1-h timebase, 16.7 LPM flow)

Range: 300 ng/m<sup>3</sup> to 300.000 ng/m<sup>3</sup> of Total Carbon

### OPERATOR INTERFACE

21-cm color touch-screen with status indicator LED's.

### REMOTE MANAGEMENT

Network ready for remote management and data transfer.

### QUICK-CHANGE ANALYTICAL CHAMBER

Modular for easy servicing, routine replacement of quartz sampling filter, or exchange of heating elements.

### PHYSICAL SPECIFICATIONS

- Constructed in standard 19-inch rack-mount chassis.
- Dimensions (HxWxD): 42 x 48 x 60 cm (17" x 19" x 24")
- Height required for inlet assembly: 120 cm (4 feet)
- Weight: 50 kg (110 lbs)
- Electrical supply: 100~240 VAC, 50/60 Hz
- Power consumption (maximum): 100 W sampling, 600 W analysis (typical 1-minute duration).
- Internal sampling pump: dual diaphragm, brushless speed-controlled DC motor, stabilized flow.
- Modular internal hardware for rapid servicing.
- Constructed in fully-enclosed, self-contained rack-mount chassis.

### INSTALLATION REQUIREMENTS

- Indoor or laboratory use, rack or benchtop.
- Ambient environment 10°C ~ 35°C, non-condensing.

## TOTAL CARBON ANALYZER TCA08

### ACCESSORIES

- PM<sub>2.5</sub> inlet (PN M4117)
- Shockproof and waterproof transit case (PN TCA08 4 02 001)
- Flow Calibrator ALICAT FP-25 (0.1-25 LPM) includes communication cable includes communication cable (PN M7925-A)
- Tube coupling A (PN TCA08 8 03 003) • Tube coupling B (PN TCA08 8 03 004) • Filter Cartridge (for Clean Air performance test) (PN M8072)

### CONSUMABLE & OPERATIONAL SUPPLIES

- 47-mm quartz fiber filters, package of 25 (PN M8013)
- Capsule filter (PN TCA08 9 03 002)
- TCA08 Calibration Filter Set 12mm- Ambiental (PN M8081)
- TCA08 Calibration Filter Set 12mm- Special conc. (PN M8082)

### EXCHANGE SERVICE COMPONENTS

- VOC Denuder Cartridge (PN M3456)
- Analytical Chamber Assembly with heating modules (PN TCA08 8 11 000-A)
- CO<sub>2</sub> analyzer sensor (PN TCA LI-850)

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### Australian Sales and Support.

Contact Benchmark Monitoring  
for more information:

Email: [sales@benchmarkmonitoring.com.au](mailto:sales@benchmarkmonitoring.com.au)  
Website: <http://www.benchmarkmonitoring.com.au/>

Mobile: +(614) 01666077  
Office: +(612) 65721028

Address: U5 / 17 Enterprise Crescent,  
McDougalls Hill NSW 2330 Australia