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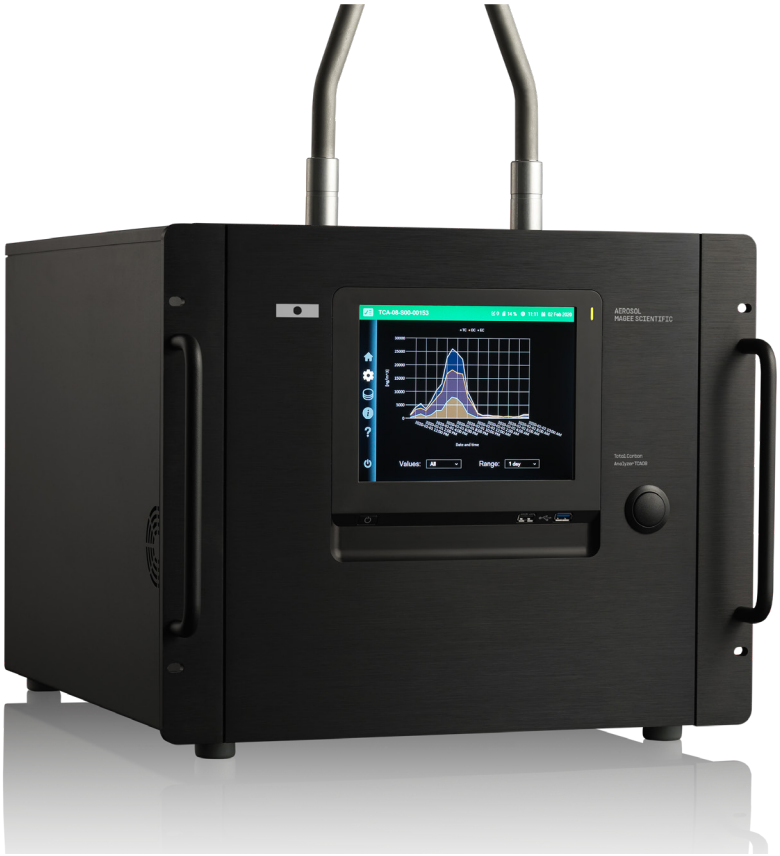
REAL-TIME MEASUREMENT OF TOTAL CARBON



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

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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_2.
Ambient air is used as "analytical" carrier gas at low flow rate. The baseline level of CO_2 in ambient air is determined before and after the heating cycle. Large pulse of CO_2 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.

SAMPLING

Standard flow rate of 16.7 LPM (1 m^3/h), provided by closed-loop stabilized internal pump. Standard PM2.5 inlet is included. Sampled air stream must be non-condensing (RH < 90% at instrument temperature). Operating altitude 0 ~ 3000 m.

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^3 (1-h timebase, 16.7 LPM flow)
Range: 300 ng/m^3 to 300.000 ng/m^3 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 × 48 × 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.

ACCESSORIES

- PM2.5 inlet
- Shockproof and waterproof transit case
- Flow Calibrator ALICAT FP-25 (0.1-25 LPM) includes comunication cable includes comunication cable
- Tube coupling A
- Tube coupling B
- Filter Cartridge (for Clean Air performance test)
- Ambient meteorological sensor GMX 300 (P, T, RH)
- Ambient meteorological sensor GMX 500 (P, T, RH, wind speed and direction)
- Ambient meteorogical sensor GMX 200 (wind speed and direction)

TOTAL CARBON ANALYZER TCA08

CONSUMABLE & OPERATIONAL SUPPLIES

- 47-mm quartz fiber filters, package of 25
- Capsule filter
- TCA08 Calibration Filter Set 12mm- Ambiental
- TCA08 Calibration Filter Set 12mm- Special conc.

EXCHANGE SERVICE COMPONENTS

- VOC Denuder Cartridge
- Analytical Chamber Assembly with heating modules
- CO_2 analyzer sensor

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Keeping an Eye on the Air

European Patent EP19213028 and other patents pending

Manufactured in EU by Aerosol d.o.o.

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