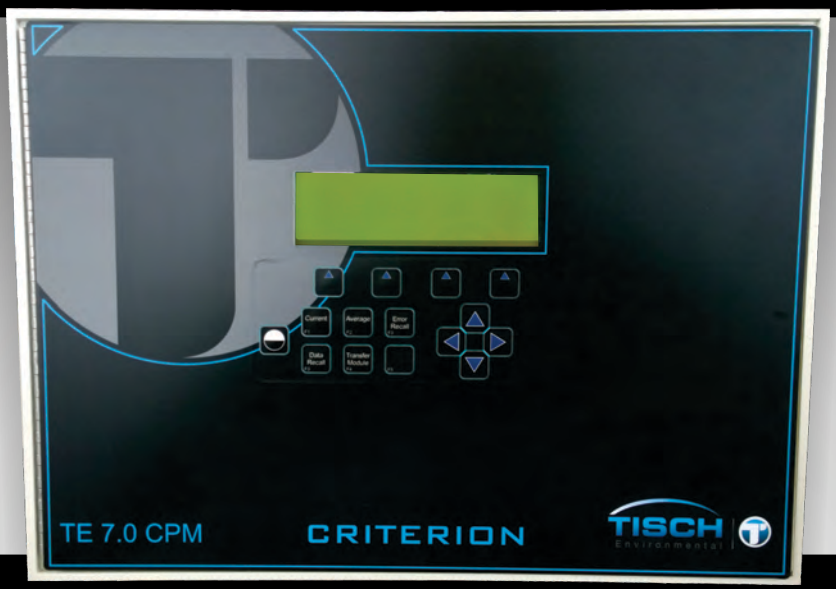
TISCH Environmental

Continuous Particulate Analyzers



Criterion 7.0 Series

Tisch Environmental (TE) is the benchmark for continuous sampling and monitoring of criteria pollutants including gases, particulates, metals, volatiles, and specialty monitoring equipment. Since the company's inception in 1953 as General Metal Works, the TE product line has expanded from the first high volume air sampler to include continuous gas and particulate analyzers.

The Criterion 7.0 Series of continuous particulate analyzers feature U.S. EPA Equivalent Method for PM10 and PM2.5 monitoring. The Criterion 7.0 series automatically measures and records airborne particulate concentration levels (in milligrams or micrograms per cubic meter) using the industry-proven principle of beta ray attenuation. All data files are accessible via an industry standard two-way RS-232 serial port and are available in a variety of formats including daily reports, last record, all data, and new records since last download.

Measurement Principal: Each hour, a small ^{14}C (carbon-14) element emits a constant source of high-energy electrons (known as beta rays) through a spot of clean filter tape. These beta rays are detected and counted by a sensitive scintillation detector to determine a zero reading. The Criterion 7.0 series automatically advances this spot of tape to the sample nozzle, where a vacuum pump then pulls a measured and controlled amount of dust-laden air through the filter tape, loading it with ambient dust. At the end of the hour this dirty spot is placed back between the beta source and the detector thereby causing an attenuation of the beta ray signal which is used to determine the mass of the particulate matter on the filter tape and the volumetric concentration of particulate matter in ambient air.

- U.S. EPA Federal Equivalent Method for PM10 and PM2.5 monitoring.
- Long term unattended remote operation of up to 90 days between site visits.
- Very low operating costs.
- Automatic hourly span checks.
- Fast and easy field audits using common FRM audit tools.
- Bench top or equipment rack mounting in mobile or stationary shelters.
- Rugged anodized aluminum, stainless steel, and baked enamel construction.
- Highly accurate and reliable flow system.
- Hourly filter advances minimize effects on volatile compounds.
- Advanced Smart Heater technology precisely controls sample relative humidity.
- Integrated data logger allows the connection of up to six additional meteorological sensors.
- Internal memory provides up to 182 days of digital data storage.
- Data retrieval through RS-232 serial ports using direct PC connections, modems, printers, or digital data collection systems.

TISCH International

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Criterion Series

Continuous Particulate Analyzers

Specification Sheet

General Specifications

Particulates Analyzed:
Measures ambient particulate concentrations using beta ray attenuation
Continuous measurement of PM_{10} and $PM_{2.5}$

Accuracy:
Exceeds U.S. EPA Class III $PM_{2.5}$ FEM standards for additive and multiplicative bias

Measurement Resolution:
0.1 $\mu g/m^3$

Display Resolution:
1 $\mu g/m^3$

Lower Detection Limit:
<4.8 $\mu g/m^3$ (<4.0 $\mu g/m^3$ typical) - (2σ) 1 Hour
<1.0 $\mu g/m^3$ - (2σ) 24 Hour

Standard Range:
0-1.000 mg/m^3 (0-1000 $\mu g/m^3$)

Optional Ranges:
0-0.100, 0.200, 0.250, 0.500, 2.000, 5.000, 10.000 mg/m^3 (special applications)

Measurement Cycle Time:
1 Hour

Flow Rate:
16.67 lpm adjustable, 0-20 lpm range actual or standardized flow

Filter Tape:
Continuous glass fiber filter tape, 30mm x 21m roll >60 days per roll

Span Check:
Automatic 0.800mg (typical) span foil, verified hourly

Beta Source:
^{14}C (carbon-14), 60 µCi ± 15 µCi (<2.22 x 10^6 Beq), half-life 5,730 years

Beta Detector Type:
Photomultiplier tube with organic plastic scintillator

Electrical Specifications

Power Supply:
100-230VAC, 50/60 Hz factory configured

Consumption:
Less than 0.4kw, 3.4A, max with pump and smart heater running

U.S. EPA Designations

PM_{10}: FEM (EQPM-0798-122)
$PM_{2.5}$: Class III FEM (EQPM-0308-170)

Physical/Environmental Specifications

Operating Temperature Range:
0°C to 50°C

Ambient Temperature Range:
-30°C to 60°C

Ambient Humidity Range:
0 to 90% RH, non-condensing

Sample Humidity Control:
Active Smart Heater module, 10-99% RH set point

Enclosure:
Weatherproof enclosure or shelter is required

Dimensions (H x W x D):
12.25" (310mm) x 17" (430mm) x 16" (400mm)

Net Weight:
54lbs (24.5kg) without external accessories

Communication Specifications

User Interface:
Menu-driven interface with 8-line 40-character LCD display and dynamic keypad

Analog Output:
Isolated 0-1 VDC output standard, 0-10V, 4-20mA, 0-16mA switch-selectable

Serial Interface:
RS-232 two-way serial port for PC or modem connections

Printer Output:
Output only serial port for data or diagnostic output to a PC or serial printer

Telemetry Inputs:
Clock reset (voltage or contact closure) telemeter fault (contact closure)

Alarm Contact Closures:
Data error, tape fault, flow error, power failure, maintenance

Error Reporting:
User configurable available through serial port, display, and relay outputs

Memory:
4,369 records (182 days at 1 record per hour)

Contact Information

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