EMS510 PS-1 Compliant Opacity/Dust Monitor

The EMS510 provides continuous, low maintenance, precision measurement of Opacity and Dust (mg/m3). It is designed for monitoring visible smoke in the exhaust gas of industrial combustion or air filtration processes.

Manufacturing and Servicing Opacity & Dust Monitors Since 1990

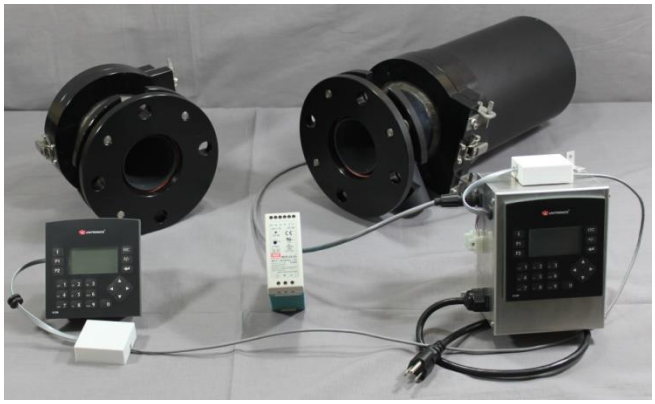
EPA PS1 ASTM 6216 Compliant

MADE IN THE USA

Veteran Owned Small Business VOSB CVE

Environmental Monitor Service, Inc. PO Box 4340, Yalesville, CT 06492
Ph. 203.935.0102, Fax 203.634.6663 Email: sales@emsct.com

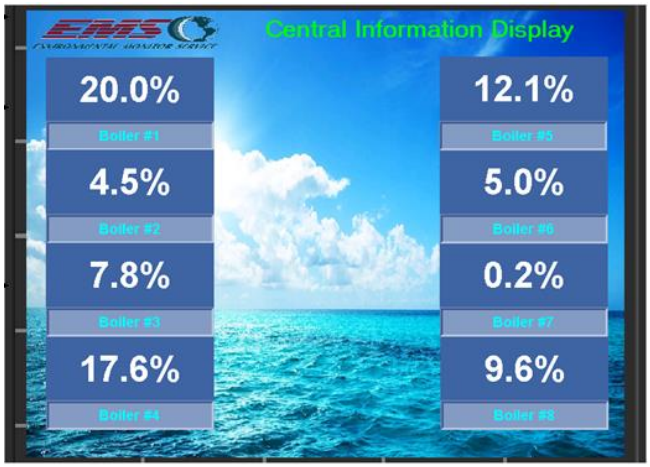
EMS510 Opacity & Dust Monitor



Standard System Configuration

Key Features

- ✓ ASTM D 6216 and 40 CFR 60 PS-1 Compliant
- ✓ Available Factory and Field Certification
- ✓ Custom Microprocessor Controlled Transceiver
- ✓ RS485, Modbus Communication, Optional Ethernet and Wireless
- ✓ Dual beam measurement with Green LED Source
- ✓ Automatic (Internal or External) and Manual On-Line Calibration
- ✓ Available Opacity or Dust Program
- ✓ Meets PS-11 requirements (Dust Program)



Central Information Display (CID)

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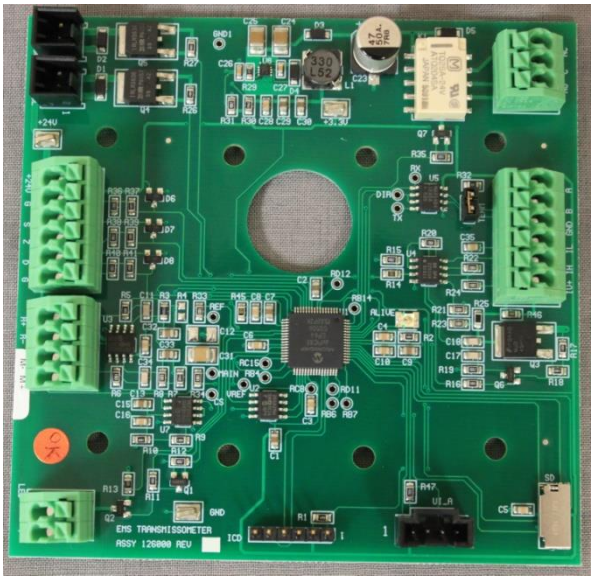
System and Measurement Principle

The EMS510 system consists of an optical transceiver mounted on one side of the stack and a retro reflector mounted on the other. The LSEM (LED Electronic Modulation) measurement beam is projected across the stack to a retro reflector, which reflects it back across the stack. The output of the transceiver is sent to the user interface via Modbus RS485 where the signal is analyzed and displayed. This intuitively designed controller.



Transceiver Microprocessor Board

Applications

- ✓ Power Plants
- ✓ Boilers
- ✓ Electrostatic Precipitators
- ✓ Filter Bag Houses
- ✓ Refineries
- ✓ Cement Plants
- ✓ Combustion Furnaces
- ✓ Process Industries

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Smart Service Module (SSM)

The newly developed **Smart Service Module** is located inside the stainless steel weather cover and utilizes Modbus communication over RS485 (2 wire) cable connected to the transceiver and control unit. Many of the control unit functions are accessible at the sensor location. This service module is useful for trouble shooting, PM/Audits and setup. It also eliminates the necessity for a second technician at the mounting location

Optional Accessories/Services

- ✓ Stainless Steel Weather Covers
- ✓ Customizeable CID (Central Information Display)
- ✓ Wireless Communications
- ✓ Custom Engineering
- ✓ Startup, Certification and Preventative Maintenance
- ✓ Procedure 3 Required Off- Stack Zero Kit
- ✓ Certified Neutral Density Filter sales and calibration

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Design and performance:	Meet or exceeds 40 CFR 60 appendix B, PS-1 and ASTM D 6216
Spectral Response	Peak 500 to 600nm, less than 10% of peak response outside 400 to 700 nm.
Angle of View/Angle of Projection	AV <4°, AP <4°.
Calibration Error/accuracy	+/- 1% of full scale
Response time	< 10 second
24 Hour Zero/ Calibration Drift	< 0.5% / < 0.5%
Operational Period	In excess of PS-1 required 336 Hrs.
Zero/Span Calibration	Manual or automatic with zero mirror and neutral density filter
Process gas	Up to 750 ° F (400 ° C) standard, higher available- contact factory.

Severe Weather Cover:	
Material	308 Stainless Steel
Quick release pins	2 for bottom and 2 for top release.
Mounting	3 inch IPS, 150# flange. Others available.
Standard Blower	Single phase, 110/220VAC 50/60Hz
Max stack pressure	+/- 5 inch WC, with the proper installation of purge blowers.
Wind Speed	< 60 mph
Ambient temperature limits	-40°F to 130°F (-4°C to 54°C)
Protection for	Transceiver and Retro-reflector components; purge blowers.

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EMS510 Opacity Control unit:	Environmental Monitor Service, Inc.
Enclosure	IP65/NEMA4X (when panel mounted), 96x96x64mm (3.8" x 3.8" x2.58"). Power 24Vdc +/- 10%.
EMS provided 24Vdc Supply	Input: 90-240 VAC, 50/60 Hz, 0.55 amp +10%;
Graphic Display	1.5x2.25” Viewing area, LED Backlight
Approvals	CE, UL, cUL
Measurement Ranges	-5 to 99% Opacity
Display Resolution	0.1% for Opacity
Process Display screens	3 Selectable pages, Instant, average, split screen.
Battery back up	7 years typical at 25°C
S.D. Card	Optional - Back up by SD memory card.
4-20mA Outputs	Two (2), 800 ohms max individually customer selected F.S. ranges and modes.
Relay Contacts	6 relays for alarms, Field programmable.
Alarm Reset	Automatic and manual.
Cal cycle initiate	Manual on demand, Remote initiated or Internal Clock.
Opacity Exit Correlation (Lx / 2*Lt)	0.3 to 1.0
Environment	Panel mounted IP65 / NEMA4X (front panel), Operational temperature 0 to 50ºC (32 to 122ºF), Storage temperature -20 to 60ºC (-4 to 140ºF), Relative Humidity (RH) 5% to 95% (non-condensing)
Network	Protocol: MODBUS (ASCII or RTU mode), type RS-485

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EMS510 Dust Control unit:	Environmental Monitor Service, Inc.
Enclosure	IP65/NEMA4X (when panel mounted), 96x96x64mm (3.8" x 3.8" x2.58"). Power 24Vdc +/- 10%.
EMS provided 24Vdc Supply	Input: 90-240 VAC, 50/60 Hz, 0.55 amp +10%;
Graphic Display	1.5x2.25” Viewing area, LED Backlight
Approvals	CE, UL, cUL
Measurement Ranges	0-2000/Actual mg^3, -5 to 100% Opacity, 0-2 Optical Density
Display Resolution	0.1 for Opacity and mg, 0.001 O.D.
Process Display screens	5 Selectable pages, mg, mg/O.D., O.D., mg/Opacity, Opacity
Battery back up	7 years typical at 25°C
S.D. Card	Optional - Back up by SD memory card.
4-20mA Outputs	Two (2), 800 ohms max individually customer selected F.S. ranges and modes.
Relay Contacts	6 relays for alarms, Field programmable.
Alarm Reset	Automatic and manual.
Cal cycle initiate	Manual on demand, Remote initiated or Internal Clock.
Opacity Exit Correlation (Lx / 2*Lt)	0.3 to 1.0
Environment	Inside cabinet IP20 / NEMA1 (case), Panel mounted IP65 / NEMA4X (front panel), Operational temperature 0 to 50°C (32 to 122°F), Storage temperature -20 to 60°C (-4 to 140°F), Relative Humidity (RH) 5% to 95% (non-condensing)
Network	Protocol: MODBUS (ASCII or RTU mode), type RS-485.

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EMS510 Smart Service Module	Environmental Monitor Service, Inc.
Enclosure	Stainless Steel when in EMS WC, NEMA 4X plastic when stand alone.
Graphic Display	1.5x2.25” Viewing area, LED Backlight
Approvals	CE, UL, cUL
Network	Protocol: MODBUS type RS-485.
RCU Display Resolution	0.1 for Opacity RCU, mg, 0.01 O.D. with DUST RCU
Process Display screens	Local display for, Sensor data, Service selections, Fault displays.
Battery back up	7 years typical at 25°C
Cal cycle initiate	Manual, Remote and Internal Clock.
Environment	Panel mounted IP65 / NEMA4X (front panel), Operational temperature 0 to 50°C (32 to 122°F), Storage temperature -20 to 60°C (-4 to 140°F), Relative Humidity (RH) 5% to 95% (non-condensing)
EMS provided 24Vdc Supply	Input: 90-240 VAC, 50/60 Hz, 0.55 amp +10%
Network	Protocol: MODBUS (ASCII or RTU mode), type RS-485, optically isolated, RS-232.
2-wire to EMS Control Unit	RS485 Modbus to Control Unit

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