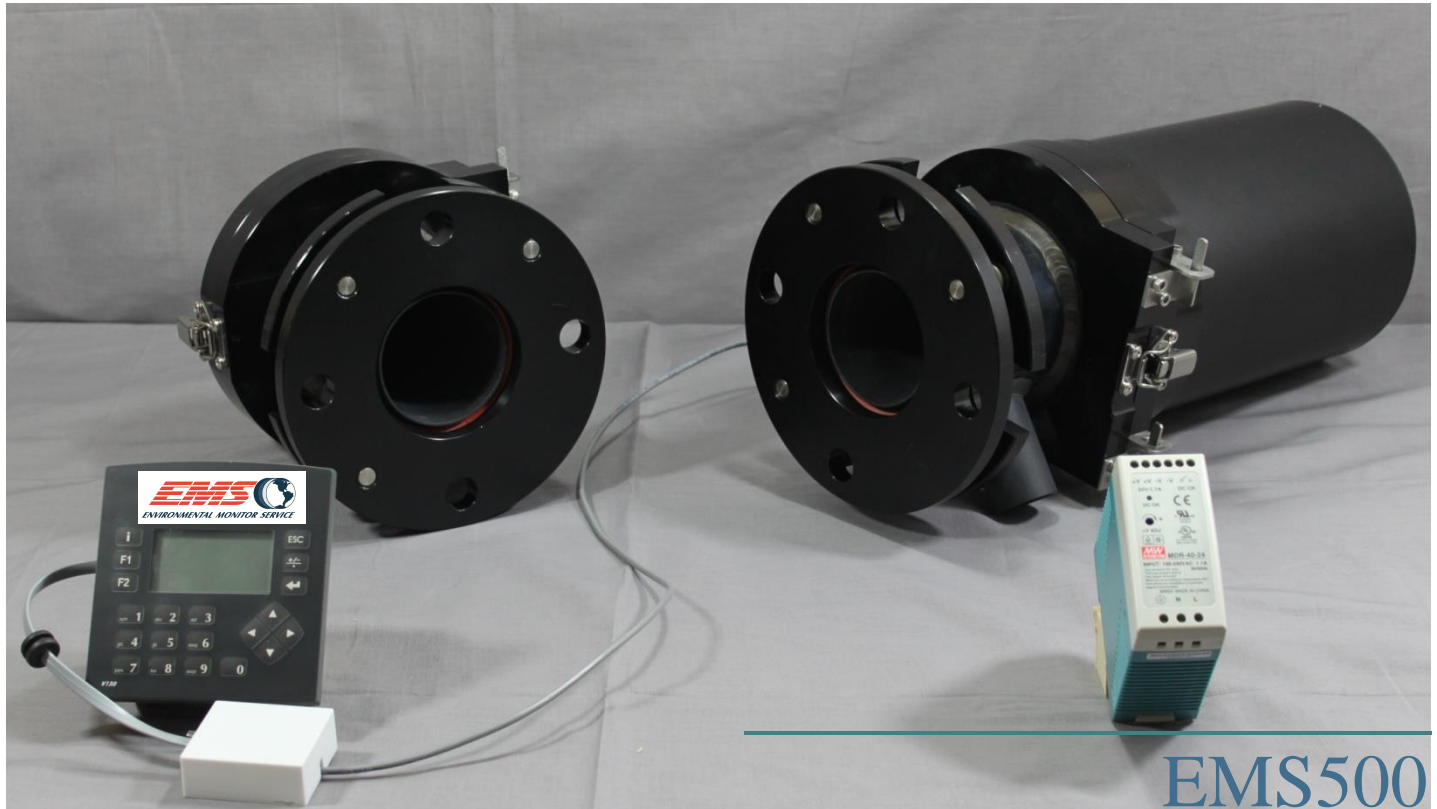


EMS500DUAL PASS OPACITY/DUST MONITOR



ENVIRONMENTAL MONITOR SERVICE

Manufacturing and Servicing Opacity & Dust Monitors Since 1990



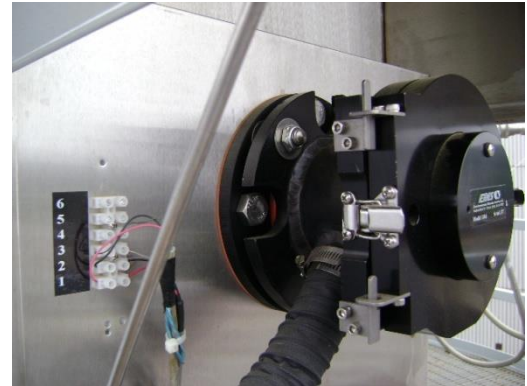
Compliant



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

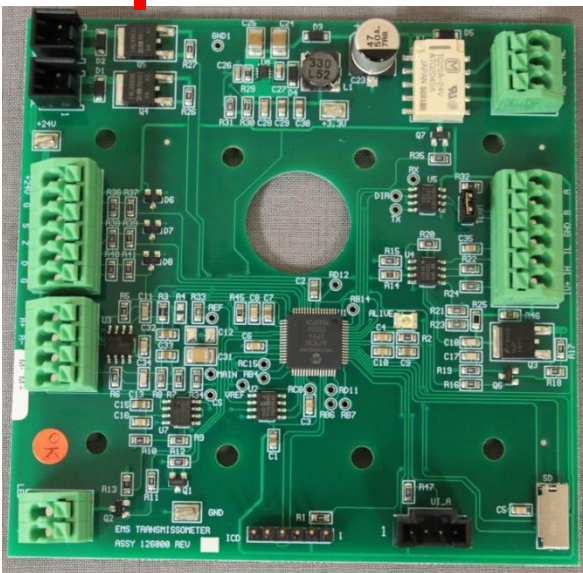
EMS500

The EMS500 is a microprocessor controlled **double-pass** Opacity or Dust Monitor which provides continuous, low maintenance, precision measurement of Opacity or Dust (mg/m³). It is designed for monitoring smoke in the exhaust gas of industrial combustion or air filtration processes.



Key Features

- ✓ Microprocessor Controlled Transceiver
- ✓ **ASTM D 6216 and 40 CFR 60 PS-1 grade optics**
- ✓ Dual beam measurement with Green LED Source
- ✓ **Push button** for automatic gain, LED, zero, span and linearity calibration
- ✓ Opacity Measurement output -5 to 99%
- ✓ Dust Measurement output 0-2000 mg/m³ (Dust Option)
- ✓ Split screen Display of **Opacity and Dust** (Dust Option)
- ✓ Optical Density 0-2.0 (Dust Option)
- ✓ Field proven reliability with low maintenance
- ✓ Communications via MODBUS RS-485



Transceiver Microprocessor Board

EMS500

System and Measurement Principle

The EMS500 system consists of an optical transceiver mounted on one side of the stack and a retro reflector mounted on the other. The LSEM (Light Source 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 microprocessor RCU where signals are analyzed. This user friendly controller includes **two 4-20mA outputs** as well as many user selectable settings.



Optional Stainless Steel Weather Covers

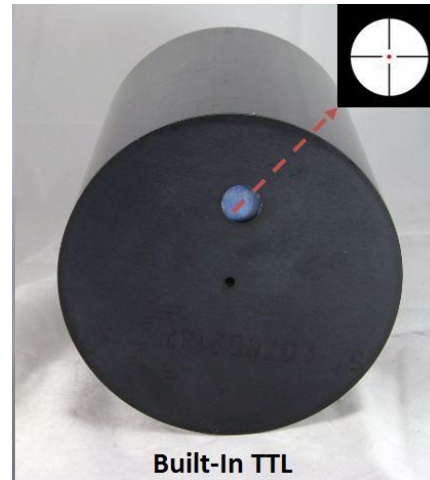
Applications

- ✓ Boilers
- ✓ Ductwork
- ✓ Electrostatic Precipitators
- ✓ Filter Bag Houses
- ✓ Refineries
- ✓ Cement Plants
- ✓ Combustion Furnaces
- ✓ Ship Board
- ✓ Process Industries

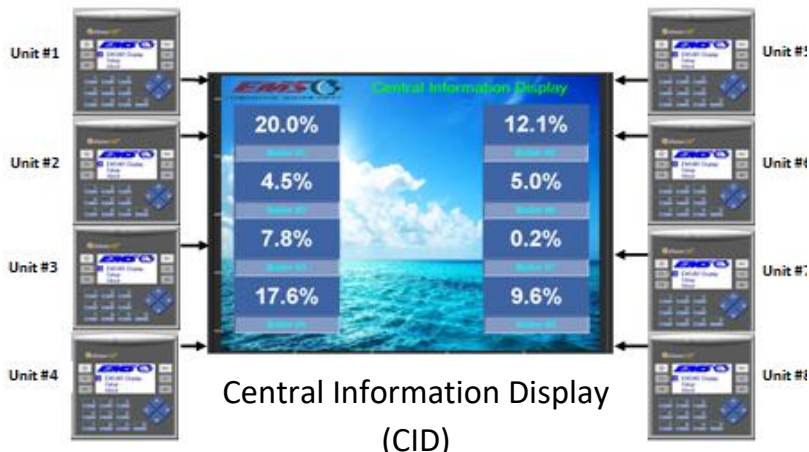


EMS500

The EMS500 includes a **built-in TTL** (through-the-lens) alignment system. The alignment target can be viewed through a window on the transceiver. Adjustments to changes in alignment are made by a 3-point alignment system that is integral to the air plenum. This insures optimum reliability while enabling the system to be easily serviced and maintained in the field by plant service personnel.



Optional Accessories/Services



- ✓ Stainless Steel Weather Covers
- ✓ **Touchscreen** Enhanced Controller
- ✓ Ability to Network up to 8 Monitors via Customizable CID (Central Information Display)
- ✓ Wireless Communications
- ✓ Air Blower/Mover System
- ✓ Certified Neutral Density Filter sales and
- ✓ Upgrade Kits for Many Competitors Models

Transceiver/ Reflector:	
Enclosure	NEMA 4 watertight enclosure.
Path Length	Distance dependent.
Optical System	PS-1 Double Pass
Reflector	Distance dependent.
Light Source Aging Compensation	Automatic
Light Source Life	62,000 hours (> 7 years) Field replaceable without removal
Ambient Temperature Limits	0 to +130° F (-17 to +54° C) (Cold weather option available).
Process Gas	Up to 750° F (400° C),
Alignment Verification	Built-in through-the-lens system standard
Mounting Flanges	3 inch IPS, 150# flange. Others available.
Ambient Light Immunity	Solid-state modulation (Meets ASTM D6216)

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 Push button for automatic gain, LED, zero, span and linearity calibration

EMS500 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	Selectable pages, Opacity		
Battery back up	7 years typical at 25°C		
S.D. Card	Optional - Back up by SD memory card.		
2-wire to EMS Control Unit	RS485 Modbus to Control Unit		
Relay Contacts	Optional 6 relays for alarms, Field programmable.		
Alarm Reset	Automatic and manual.		
Clear Path Calibration	Push button Digital Auto Linearity, Z/S, Gain and LED current.		
OPLR (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, type RS-485.		

EMS500 Dust Control unit:	Environmental Monitor Service, Inc.
Enclosure	IP65/NEMA4X (when panel mounted), 96x96x64mm (3.8" x 3.8" x 2.58"). 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 mg³, -5 to 100% Opacity, 0-2 Optical Density
Display Resolution	0.1 for Opacity and Actual mg³, 0.001 O.D.
Process Display screens	Selectable pages, mg/opaciy, O.D.
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.
Clear Path Calibration	Manual Zero/Span
OPLR (Exit Correlation Lx / 2*Lt)	Fixed (single pass)
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 , type RS-485.