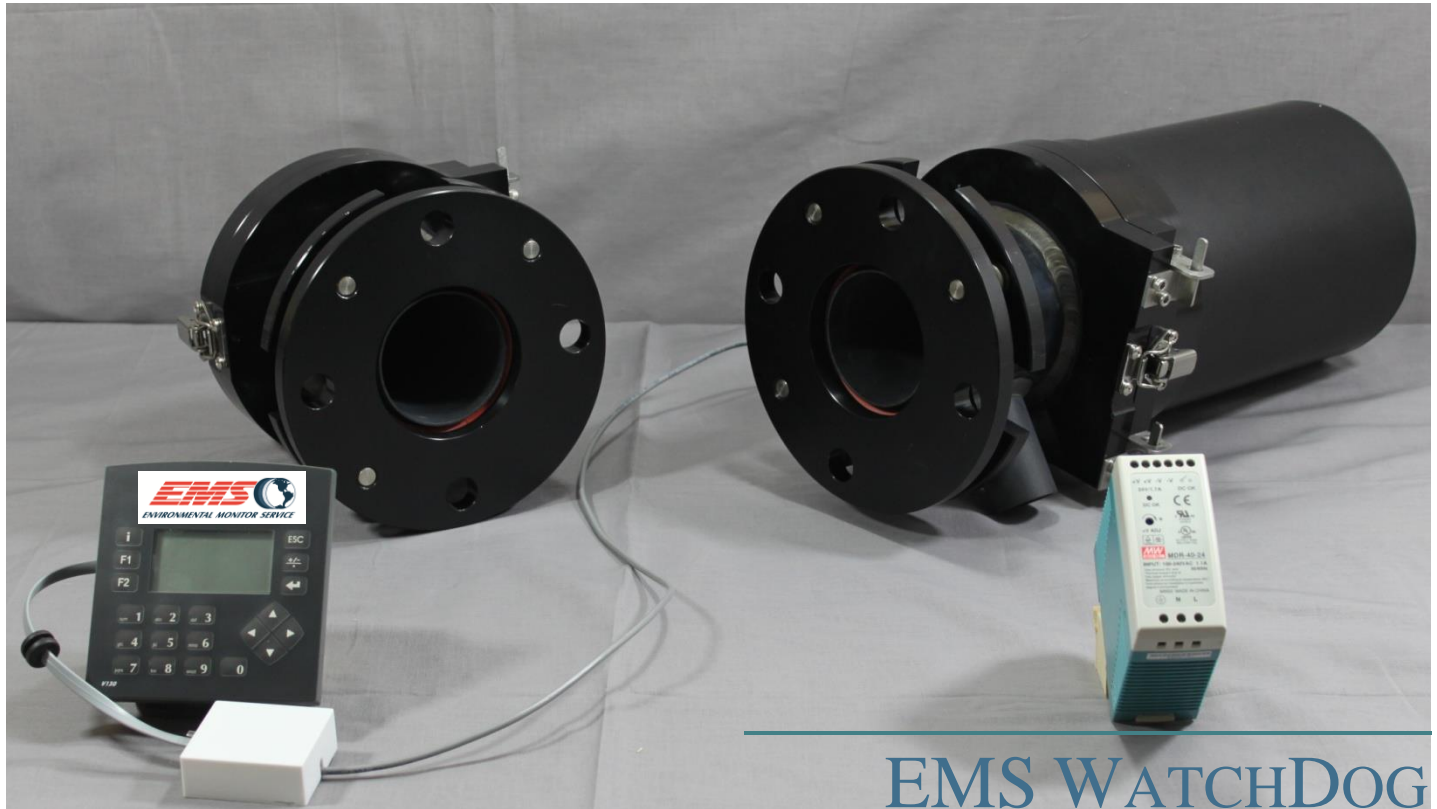


EMS WATCHDOG DUAL PASS OPACITY/DUST MONITOR



ENVIRONMENTAL MONITOR SERVICE

Manufacturing and Servicing Opacity & Dust Monitors Since 1990



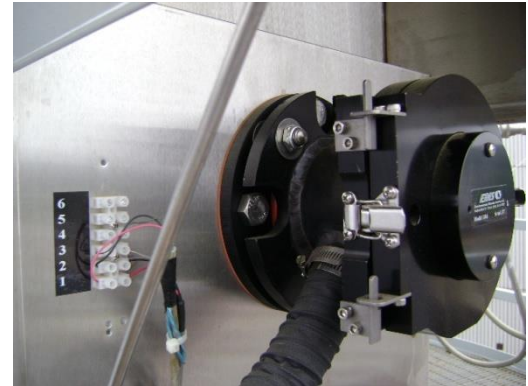
Compliant



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

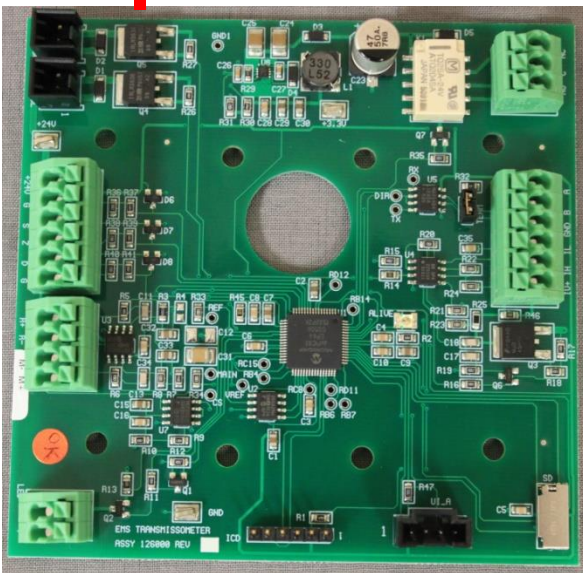
EMS WATCHDOG

The EMS WatchDog 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

EMS WATCHDOG

System and Measurement Principle

The EMS WatchDog 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

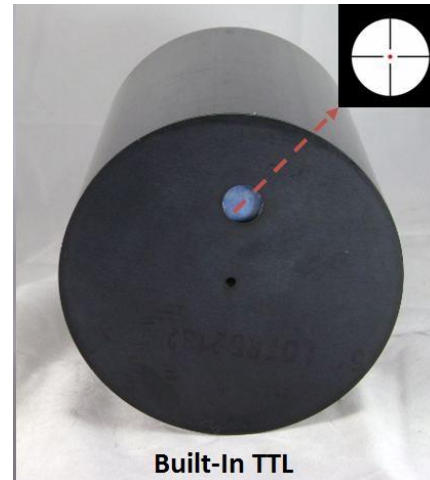
Applications

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

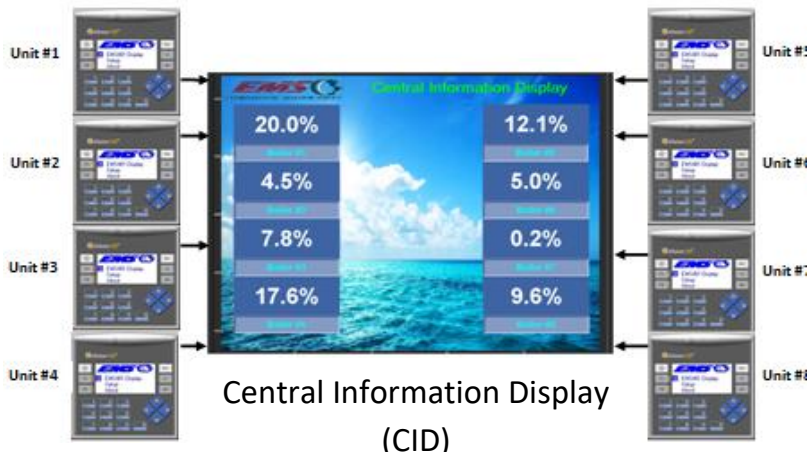


EMS WATCHDOG

The EMS WatchDog 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

WatchDog Opacity/Dust Control unit Specifications:		Environmental Monitor Service, Inc.
Enclosure	IP65/NEMA4X (when panel mounted), Cut out 92x92mm (3.6" x 3.6'''). Power 24Vdc +/- 10%.	
Sensors	NEMA 4 Anodized Aluminum	
EMS provided 24Vdc Supply	Input: 90-240 VAC, 50/60 Hz, 0.55 amp +10%	
Monochoime Display	2.4" Viewing area, LED Backlight	
Approvals	CE, UL, cUL	
Measurement Ranges	0-2000/Actual mg³, -5 to 100% Opacity, 0-2 Optical Density	
Display Resolution	1% for Opacity and Actual mg³, 0.001 O.D.	
Process Display screens	Selectable pages, mg/opacity, O.D.	
Battery back up	7 years typical at 25°C	
4-20mA Outputs	Two (2), 800 ohms max individually customer selected F.S. ranges and modes.	
Relay Contacts	6 relays for alarms, Field programmable setpoints.	
Alarm Reset	Automatic or manual.	
Clear Path Calibration	Push button Digital Auto Linearity, Z/S, Gain and LED current.	
Exit Correlation	0.3 to 1.0	
Environment	Operational temperature 0 to 50°C (32 to 122°F)	
Network	Protocol: MODBUS, type RS-485.	

WatchDog Transceiver/ Reflector Specifications:	
Enclosure	NEMA 4 watertight enclosure.
Sensors	NEMA 4 Anodized Aluminum
Path Length	Distance dependent.
Optical System	Double Pass, LED
Reflector	Distance dependent.
Light Source Aging Compensation	Automatic
Light Source Life	62,000 hours (> 7 years) Field replaceable
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 336 Hrs.
Zero/Span Calibration	Manual or Puss button for automatic gain, LED, Zero,Span and linearity calibration
Process gas	Up to 750 ° F (400 ° C) standard, higher available-contact factory.