

EMS WATCHDOG DUAL PASS OPACITY/DUST MONITOR



Quality Manufacturing, Integrity, and Dependable Service by Design



Environmental Monitor Service, Inc. Phone: 800-864-2814 ext. 15

<https://emsct.com> Email: sales@emsct.com

EMS WATCHDOG DUAL PASS OPACITY/DUST MONITOR

The EMS WatchDog offers precision and reliability in monitoring opacity or dust levels in industrial environments. This dual-beam Opacity/Dust Monitor ensures unparalleled accuracy and consistency in measurement.

Designed for seamless integration into industrial setups, the EMS WatchDog offers continuous monitoring with minimal maintenance requirements, empowering operators with real-time data to optimize processes and ensure compliance with environmental regulations.

Typical Applications

- ✓ Boilers
- ✓ Combustion Furnaces
- ✓ Crematoriums
- ✓ Process Industries
- ✓ Manufacturing Industries
- ✓ Electrostatic Precipitators
- ✓ Ductwork
- ✓ Bag Houses
- ✓ Cement Kilns



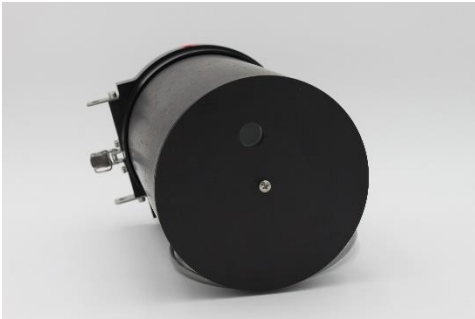
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System and Measurement Principle

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.



KEY FEATURES

- Microprocessor Controlled
- ASTM D 6216 and 40 CFR 60 PS-1 grade optics.
- Dual beam measurement with Green LED Source
- User selectable early warning, alarm setpoint and delay
- Push button for automatic gain, LED, zero, span and linearity calibration.
- Opacity Measurement output -5 to 99%
- Communications via MODBUS RS-485 or 4-20mA
- Optional Stainless-Steel Weather Covers and Blowers
- Optional Audit Kit for Linearity Confirmation



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WatchDog Control unit Specifications:

Enclosure	IP65/NEMA4X (when panel mounted), cut out 92x92mm (3.6" x 3.6"). Power 24Vdc +/- 10%.
EMS provided 24Vdc Supply	Input: 90-240 VAC, 50/60 Hz, 0.55 amp +10%
Monochrome Display	2.4" Viewing area, LED backlight
Approvals	CE, UL, cUL
Measurement Ranges	-5 to 100% Opacity, 0-2000/actual mg³, 0-2 Optical Density
Display Resolution	.1% for Opacity and Actual mg³, 0.001 O.D.
Process Display screens	Selectable pages, Opacity, mg and 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 Zero/Span
Exit Correlation	0.3 to 1.0
Environment	Operational temperature 0 to 50°C (32 to 122°F)
Network	Protocol: MODBUS, type RS-485.

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WatchDog Transceiver/ Reflector Specifications:	
Enclosure	NEMA 4 watertight enclosure.
Sensors	NEMA 4 Anodized Aluminum
Path Length	3-50 ft.
Optical System	Double Pass, LED
Reflector	Type 1
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)
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, 80% of full scale
24 Hour Zero/ Calibration Drift	ASTM D6216-12 must not exceed drift error 2% over 24hrs.
Zero/Span Calibration	Manual or Push button for automatic gain, LED, Zero, Span and linearity calibration

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