

## Product Data Sheet

PDS 105-3000.A01

October, 2005

# OPM 3000 Opacity Dust Density Monitor

The OPM 3000 Opacity Dust Density Monitor is a high-performance opacity monitoring system with double-pass transmissometer.

## FEATURES

### SENSORS STANDARD

- Alignment viewing port – enables the operator to visually check system alignment at anytime during operation
- Double pass measurement – dual beam measurement assures high sensitivity, freedom from errors due to vibration or minor misalignment
- Insensitive to ambient light – the solid-state light modulation system eliminates possible interference due to ambient light
- Automatic lamp aging compensation – all measurements are made on a ratio basis and are independent of the absolute intensity of the light source

### REMOTE CONTROL UNIT

- Panel-mount or DIN rail – compact size 3.78" x 3.78" x 2.52" (96x96x64mm)
- Display – LED back light
- Communications – 2 RS232/485 ports (selectable)
- Supports Modbus protocol
- Memory backup – battery lifetime typically 7 years



- Environment – IP65/NEMA4X
- Power – 12/24VDC
- Outputs – high opacity with time delay
- Expansion – up to 128 I/Os may be added via I/O expansion port

Emerson's Rosemount Analytical OPM 3000 stack-mounting transmissometer sensor system consists of an optical transceiver mounted on one side of the stack and a retro reflector mounted on the other. The main light source is electronically modulated and projects a collimated beam of light, which is split into a reference beam and a measurement beam. The measurement beam is projected across the stack to a retro reflector, which reflects it back across the stack to the measurement detector. The ratio output of the measurement and reference detectors are transmitted to the control room-mounted monitoring unit where all output signals are analyzed.

Emerson's OPM 3000 Opacity Dust Density Monitor ratio measurement technique provides continuous automatic compensation for variations in light source intensity to ensure prolonged instrument accuracy and stability. Since the OPM 3000 is insensitive to the absolute intensity of the light source, it is not affected by light source aging.

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**EMERSON**<sup>™</sup>  
Process Management

# SPECIFICATIONS:

## Control unit:

Enclosure: Panel mounted IP65/NEMA4X dimensions 96x96x64mm (3.8"x3.8"x2.5"). Power 20.4 to 28.8VDC < 10% ripple, 400mA

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Digital Display: LED backlight

Ambient Temperature Range: 0° to +50°C (+32° to + 122°F)

Power Requirements: 24 VDC

Alarm Time Delay and Set Point: Field-programmable, 10 pnp (source) outputs 24 VDC; optional relays available

Alarm Reset: Manual or Automatic

Analog Outputs: Two 12-bit analog outputs: 4-20 mA

OPLR/Exit Correlation Lx/2\*Lt): 0.2 to 3.0

Calibration Check Options: Manual zero and span calibrate with dedicated zero reflector or zero with clear stack condition

RS485 Two Ports each: Modbus or RS485 networking

I/O Expansion Port: Up to 128 additional I/O

Battery Back: 7 years typical

**Transceiver/ Reflector:**

Enclosure: NEMA 4 watertight enclosure power 120/240VAC, 50/60Hz

Path Length: 3 feet to 53 feet (0.9 to 15.9 meters)

Optical System: Double pass

Light Source Aging Compensation: Automatic

Light Source Life: 45,000 hours (> 5 years)

Ambient Temperature Limits: -40° to +130°F (-40° 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 lb. flange, standard

Ambient Light Immunity: Solid-state electronic light modulation

Wiring: 2 pair twisted shielded cable, 22 AWG

## Design and performance:

Peak and Mean Spectral Response: Photopic; 515 to 585 nm, less than 10% of peak response outside the desired 400 to 700 nm region

Angle of View: < 4.0° from optical axis

Angle of Projection: < 4.0° from optical axis

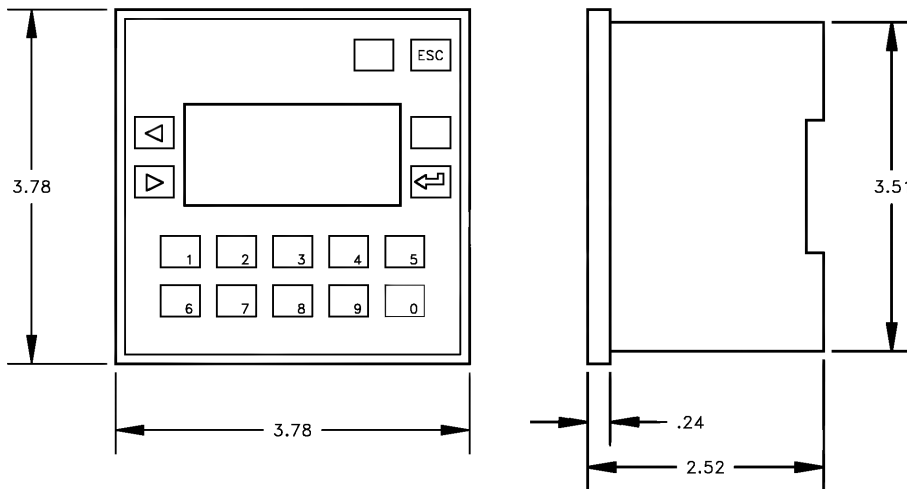
Calibration Error: < +2% of full scale

Response time: < 10 second

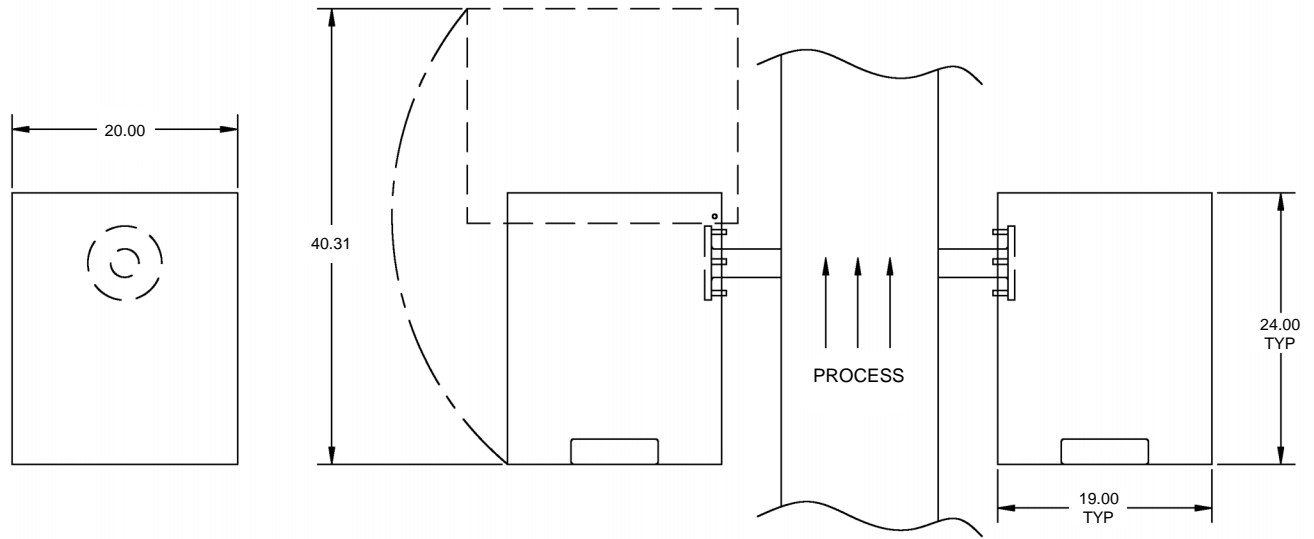
Zero Drift: < 1% (24 hours)

Calibration Drift: < 1% (24 hours)

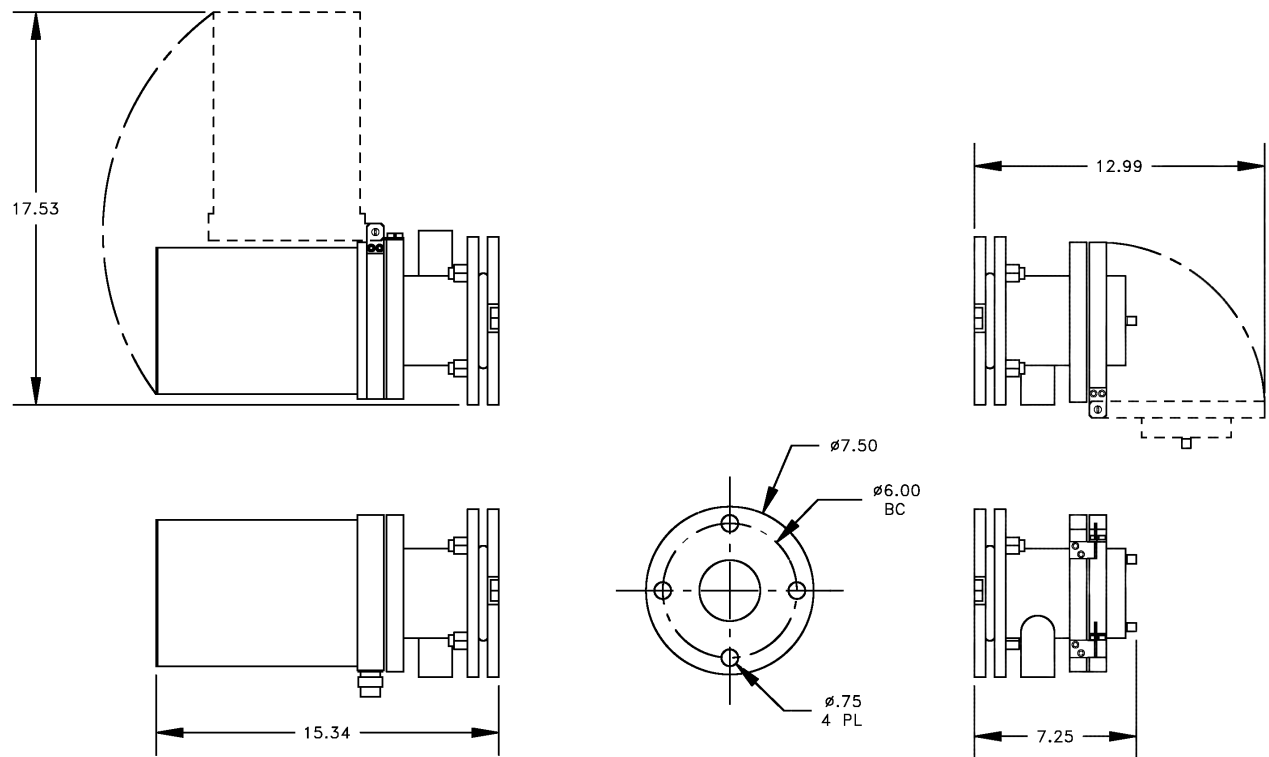
Operational Period: 6 months



**OPM 3000 Control Unit**



**OPM Covers**



**OPM Trans Retrofit**

## MODEL OPM 3000 OPACITY/DUST DENSITY MONITOR

Model	Description	
OPM 3000	Opacity/Dust Density Monitor Non-compliant	
<b>Level 1</b>	<b>Intelligent Electronics</b>	
	01	Basic Unit – Digital Display, (2) 4-20 mA Outputs, (4) Alarm PNP's, RS 232/485, Modbus
<b>Level 2</b>	<b>Transceiver and Path Length</b>	
	11	3-15' Path Length
	12	>15-21' Path Length
	13	>21-40' Path Length
	14	>40-53' Path Length
<b>Level 3</b>	<b>Weather Cover and Blowers</b>	
	00	None
	01	Weather Covers and Single Blower/Tee
	02	Weather Covers Only
<b>Level 4</b>	<b>Zero Jig Type</b>	
	00	None
	01	On-Line Calibration Reflector Assembly
<b>Level 5</b>	<b>Dust Calculation</b>	
	01	None
	02	With Dust Calculation (mg/m**3)

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