

## Further Information

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## Specifications

### Measurement System

Operating Principle:  
Light Source:  
Accuracy:  
Repeatability:  
Drift:  
Angle of Projection:  
Angle of View:  
Response Time:  
Range:

Pathlength:  
Averaging:  
Calibration:

Zero Correction:

Controls

Displays:  
Keypad:  
Status Indicators:

Environmental

Ambient Operating Temperature:  
Enclosure:  
Maximum Flue Gas Temperature:  
Maximum Flange Temperature:  
Electrical Safety:  
EMC:

Power (excluding purge blowers)

Power Supply:

Dimensions

Transceiver (H x W x D):  
Retro-reflector (H x W x D):

Weight

Transceiver:  
Retro-reflector:

Termination Box

Modbus Interface:  
and Range: Information available

Analog Outputs :

Relay Outputs:

Relay Rating:  
Ambient Operating Temperature:  
Dimensions (H x W x D):  
Weight:

Control Room Unit

Display:

Control:

Relay Outputs:

Relay Rating:  
Ambient Operating Temperature:  
Mounting:

Power Supply:  
Dimensions (H x W x D):  
Weight:

Options

Lightning Protection Kit  
Control and Display Unit for up to 8 instruments

Cross-stack double pass Transmissometer  
High intensity advanced-design green LED  
±0.5 % Opacity  
±0.3 % Opacity  
<0.3 % of Opacity per month  
<2°

1 second to 90 % of the final value  
Opacity 0-10 % to 0 -100 %  
Optical Density 0-0.1 to 0-3.0  
Dust Density 0-10 to 0-4000 mg/m<sup>3</sup>  
2 ¼ to 33 ft standard; option to 65 ft  
Selectable from 1 to 59 minutes  
Automatic Zero and Upscale Check  
Selectable period 1 to 24 hours in 1 hour steps  
Remote trigger input  
Automatic correction for zero drift

2 x 16 Character reflective LCD  
with adjustable contrast control  
7 keys for data input  
System OK, Alarm 1, Alarm 2, Zero Calibration,  
Span Calibration

-4 to +131 °F; -40 °F with optional heater  
Sealed to NEMA4X  
1112 °F higher temperatures available  
400 °F

Conforms to EN61010  
Conforms to EN50 081 & EN50 082

90 - 260V a.c. 50/60 Hz 10W (universal input)

9 x 9 x 20.5 inches  
9 x 9 x 12.6 inches

33 lb  
18 lb

RS232 or RS485 Multi-drop  
Opacity, Dust, Optical Density, Status, Averaging

Calibration sequence trigger  
Two 4-20mA current loops, fully isolated  
Independently configurable as: Opacity, Dust,  
Optical Density, Calibration Drift or OPLR  
System OK, Span Calibration, Zero Calibration,  
Alarm 1, Alarm 2, Maintenance  
1A at 24V d.c.; 1A at 240 V a.c.  
4 to +131 °F; 40 °F with optional heater  
7 x 16 x 5 inches  
16.5 lb

2 numeric LCD displays configurable for  
Opacity, Dust or Optical Density  
4 LEDs for instrument status  
Calibration cycle start  
System OK, Span Calibration, Zero Calibration,  
Alarm 1, Alarm 2, Maintenance  
1A at 24V d.c.; 1A at 125 V a.c.  
20 to +55 °C (4 to +131 °F)  
Half or full width 19" rack mount  
Optional surface mount or flush mount  
85 - 264 V a.c. 48-62 Hz universal input, 15 W  
136 x 295 x 270 mm (5 x 12 x 11 inches)  
1 kg (2 lb)

*Continuous product development may make it necessary to change these details without notice*

Land Instruments International has a comprehensive range of Combustion  
and Environmental Monitoring Instrumentation.



An ISO 9001 Company

PDS 197A/09/02

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## low level

## opacity and dust

## compliance monitoring



model 4500  
Premier

# LAND

instruments international

Combustion & Environmental Monitoring

# 4500 Premier

**4500 Premier**

## - Compliance monitoring for low level opacity and dust



Land Instruments International is a world leader in opacity monitor design and manufacture, with a commitment to continuous product improvement.

The Model 4500 Premier meets the latest and most demanding standards for Continuous Opacity Monitoring Systems.

### Designed for compliance monitoring

- Meets or exceeds US EPA requirements for 40CFR60 Sections 13, 17 and App. B PS1
- Meets or exceeds US EPA requirements for proposed Method 203
- Meets or exceeds ASTM Standard D6216 - 98
- Meets or exceeds US EPA CPS-001 for 0 to 10 % Opacity monitors

### Standard Features

- 0 to 10% Opacity measurement range
- High reliability, low maintenance
- No continuously moving parts
- Automatic in-situ zero and span checking
- Unique 'no drift' zero check
- Outputs in opacity, extinction, or dust density
- Patented measurement technology
- Built-in calibration audit jig
- Simulated clear stack zero device
- RS232 or RS485 serial MODBUS interface
- Integral control panel
- Air actuated, positive seal fail-safe shutters
- High performance air purge system
- Weatherproof covers



### Applications include:

- Power utilities
- Incineration (Hazardous waste)
- Pulp and paper
- Rock products
- Steel (Electric Arc Furnace)
- Cement (40CFR63, subpart LLL)
- Glass
- Refineries
- Petrochemical
- Process Industries

### Patented Technology

The Model 4500 Premier uses a highly homogeneous, advanced LED light source\* to reduce the effect of misalignment on the measured opacity. Together with the patented "Flood LED", it achieves the highest levels of stability and accuracy. The "no moving parts" optical system gives an instrument with exceptional reliability.

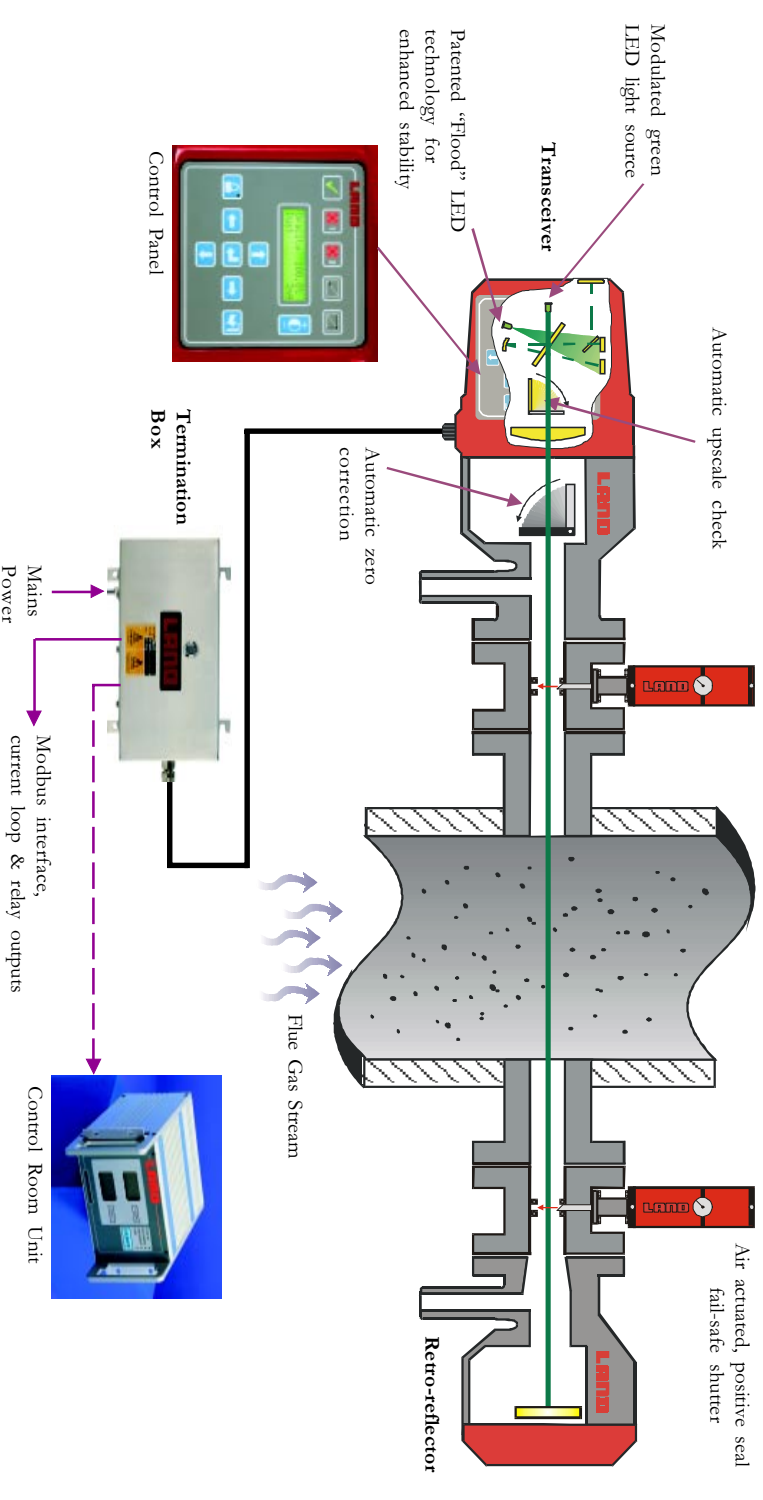
\**Patent pending*  
\*US Patent No. 5,617,212

### Easy Installation

The stainless steel Termination Box has a single, pre-terminated cable for connection to the instrument itself. All customer connections are made using simple terminal rails inside the box.

### Simple Setup

The integral control panel provides all user setup, control and diagnostic information.



### Automatic Calibration

The Model 4500 Premier is fitted with a fully automatic zero checking and drift compensation system. An automatic span check mechanism confirms the instrument calibration at user defined intervals.

### Easy Auditing

Periodic performance verification could not be simpler. The built-in audit jig accepts standard optical filters, and the zero alignment can be confirmed without removing the instrument from the stack.



### Dust Density

Dust density monitors must be calibrated by comparison with an isokinetic sample test, as proposed in PS-11. The Model 4500 Premier fully supports this operation with automatic averaging and calculation.