

## SPECIFICATIONS

### Measuring

Technique:	Double pass transmissometry
Operating Wavelength :	520 +/-20 nm
Light Source:	Pulsed High Intensity LED
Range:	Opacity 0-10 % to 0-100 % Optical Density 0-0.1 to 0-3.0 Dust Density 0-10 to 0-10000 mg/m3 User Selectable
Calibration Error:	1.5 % Opacity
Drift (long term):	<0.3 % opacity / month
Thermal Stability:	0.6 % opacity / 22° C ambient change
Angle of projection:	3°
Angle of View:	3°
Response Time:	≤10 s to 95 %
Averaging:	Selectable from 10 s to 24 hr (1 s increment)
Pathlength:	0.5 to 10 m / 20 in to 32 ft
Calibration:	Automatic zero and upscale check (Selectable period 1 to 24 hr in 1 hr increments)
Zero Correction:	Automatic correction for zero drift

### Control Panel

Display:	128 x 64 pixel reflective backlit LCD
Keypad:	4 keys for data input
Indicators:	Power, System OK, Alarm Calibration

### Environmental

Operating temperature:	-20 to 55° C / -4 to 131° F (optional -40°C/F)
Max. Flue gas temperature:	600° C / 1112° F
Max. Flange Temperature:	200° C / 392° F
Compliance:	EN 61010-2
EMC:	EN50 081 & EN50 082
Sealing:	IP65 / NEMA4X

### Outputs

Modbus Interface:	RS485. Opacity, Optical Density, Dust Density and Status information available
Analog Outputs:	Isolated 4 to 20 mA Configurable as Opacity, Optical Density, Dust Density
Relay Outputs:	System OK, Calibration, Alarm
Relay Rating:	1 A @ 24 Vdc

### Electrical

Power Supply:	24 Vdc nominal (18 to 30 Vdc)
Current Consumption:	0.3 A nominal (3 A startup)

### Mechanical Data

Dimensions (HxWxD)	
Transceiver:	191 x 201 x 413 mm / 7.5 x 7.9 x 16.3 in
Retro-reflector:	191 x 201 x 237 mm / 7.5 x 7.9 x 9.3 in

### Weight

Transceiver:	6 kg / 13.2 lbs
Retro-reflector:	3 kg / 6.6 lbs

### Enclosure

Transceiver / Retro-reflector:	Cast Aluminum, epoxy coated
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### Accessories

Available:	Fail-safe Shutters Blowers Adapter Flanges Remote Control Units Additional Outputs Available
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# LAND

[www.landinst.com](http://www.landinst.com)

An **AMETEK**® Company

### Office Locations

#### UK - Dronfield

Tel: +44 (0) 1246 417691  
E-Mail: [land.combustion@ametek.co.uk](mailto:land.combustion@ametek.co.uk)  
Web: [www.landinst.com](http://www.landinst.com)

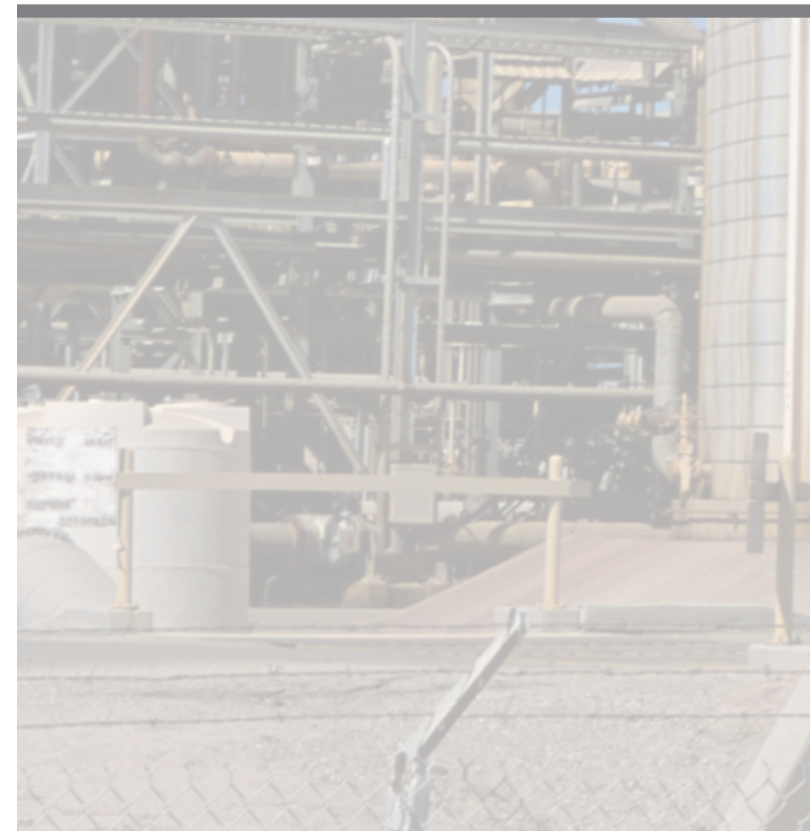
#### USA - Pittsburgh

AMETEK Land, Inc.  
Tel: +1 412-828-9040  
E-mail: [combsales@ametek.com](mailto:combsales@ametek.com)  
Web: [www.landinstruments.net](http://www.landinstruments.net)

For a complete list of international offices and distributors please visit our website.

# LAND

## Opacity and Dust Compliance Monitoring



## Model 4500 MkIII

An **AMETEK**® Company



# 4500 MkIII

## Setting *The* Standard

### Compliance Applications

- US EPA 40CFR60 App. B PS-1 and PS-11
- US EPA Proposed 40CFR60 App. F Procedure 3
- ASTM D6216-03
- EN:13284-2:2004

### Industrial Applications

- Boilers
- Heaters
- Furnaces
- Kilns
- FCC Stacks
- Incinerators
- Dust Collectors
- Precipitator Control
- Baghouse Monitoring

**The Land Model 4500 MkIII** has reset the industry standard on compliance opacity and dust concentration measurement. Combining the unique features of three patented technologies, the 4500 MkIII achieves the highest available specification for the principal performance parameters, as defined by the internationally recognized ASTM Standard D6216<sup>1</sup>. These industry-leading features make the MkIII the most accurate opacity monitor available today. Its excellent sensitivity makes it ideal for all current or future requirements in opacity and dust concentration measurement.

### Industry Best Specifications

ASTM Standard <sup>1</sup>	4500 MkIII Performance
Calibration Error	<1.5% Opacity
24 Hour Drift	<0.3% Opacity
Long Term Drift	<0.3% Opacity per Month
Voltage Variation	<0.2% Opacity
Thermal Stability	<0.6% Opacity every 22°C
Ambient Light Sensitivity	<0.2% Opacity
Insensitivity to Misalignment	<1% Opacity for +0.25° misalignment

<sup>1</sup>Standard Practice for Opacity Monitor Manufacturers to Certify Conformance with Design and Performance Specifications ASTM D6216-03; ASTM International, West Conshohocken, PA 2003.

# Features & Benefits

- **Ultimate Reliability**
- **3 Year System Warranty**
- **Lifetime Light Source Warranty**

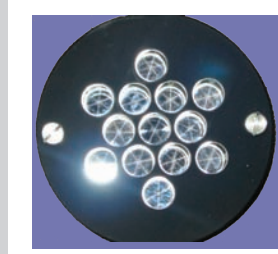
### The Best Warranty

The Model 4500 MkIII has reliability built-in. The entire system has a three year warranty and the patented LED light source carries a **lifetime** warranty.



- **Flood LED**  
US Patent #5617212
- **LED Light Source**  
US Patent #6781695
- **Retro-reflector**  
US Patent #7429112

### Ultimate Performance



The Model 4500 MkIII uses a highly homogenous advanced **LED light source** and a glass multi-prism **retro-reflector** to reduce the effects of misalignment on the measured opacity, thereby achieving the lowest possible detection limit. The **Flood LED** technique eliminates the requirement for continuous moving parts (chopper motors etc). Collectively these features provide the highest level of stability and lowest level of optical and electronic drift available.

- **Single Hand Operation**
- **Simple Installation**
- **Dual Function Menus**  
Text and Icons
- **Easy to Read Display**

### User-Friendly

The Model 4500 MkIII menu tree is intuitive and language independent. The user is guided through the menu with simultaneous text and icon menu prompts. The design feature eliminates the need to carry an operating manual or laptop to the installation location. Standard features include analog, digital and modbus outputs.



- **Built in Audit Jig**
- **Local Keypad**  
Initiate Audit
- **Local Display**  
View Results

### Easy Auditing



Designed with the field auditor/service engineer in mind, the periodic performance audit 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.

- **Adapter Flanges**
- **Air Purging Accessories**

### Easily Upgrade Existing Installation

The 4500 MkIII Solution includes options for adapter flanges, air purging and other accessories that make upgrading your existing opacity monitoring system quick and hassle free.

