## 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
- **Sealing:** EN50 081 & EN50 082 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 / Retro-reflector:** Cast Aluminium, epoxy coated
- **Accessories Available:** Fail-safe Shutters, Blowers, Adapter Flanges, Remote Control Units, Additional Outlets Available
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. 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

<table>
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<th>4500 MkIII Performance</th>
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<td>&lt;1.5% Opacity</td>
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<td>Thermal Stability</td>
<td>&lt;0.6% Opacity every 22°C</td>
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<td>Ambient Light Sensitivity</td>
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</tr>
<tr>
<td>Insensitivity to Misalignment</td>
<td>&lt;1% Opacity for +0.25° misalignment</td>
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</table>

### Features & Benefits

#### The Best Warranty

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

#### Ultimate Performance

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

The 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.

#### User-Friendly

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

The Model 4500 MkIII menu tree is intuitive and language independent. The user is guided through the menu with synchronized 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.

#### Easy Auditing

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

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.

#### Easily Upgrade Existing Installation

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

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.
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