

**opacity and dust
compliance monitoring**



model 4500 MkIII

LAND

Combustion & Environmental Monitoring

An **AMETEK**® Company

4500 MkIII

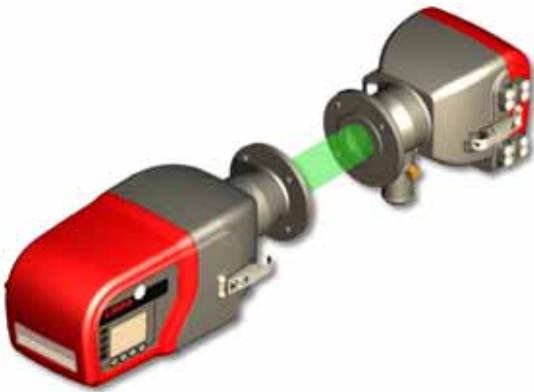
High accuracy monitoring for dust and opacity

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

The Model 4500 Mk III builds on Land's years of experience in dust monitoring and meets the most demanding standards for dust monitoring. It provides class leading performance in a compact, lightweight and easy to use instrument.

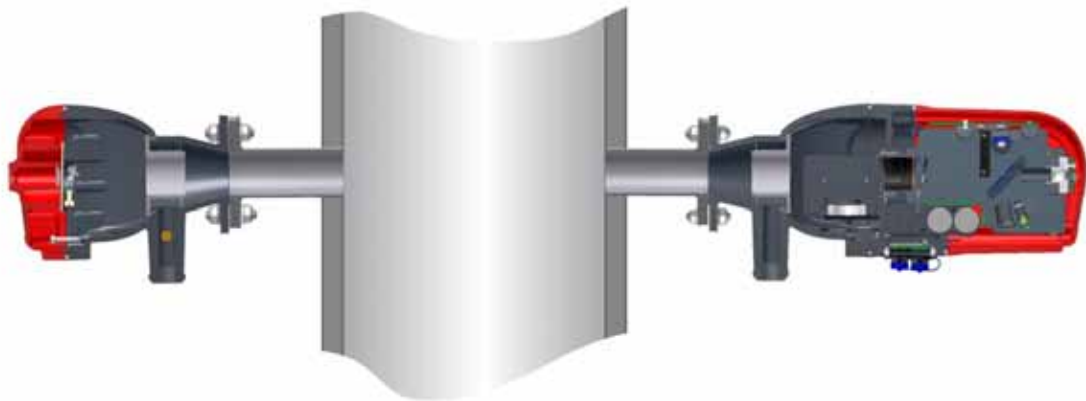
Designed for compliance monitoring

- Meets or exceeds US EPA requirements for 40CFR60 Sections 13, 17 and App. B PS-1
- Meets or exceeds US EPA requirements for proposed 40CFR60 App. F Procedure 3
- Meets or exceeds ASTM Standard D6216



Features and Benefits

- Outstanding reliability, low maintenance - *Measures with no moving parts*
- High accuracy and repeatability - *Designed for compliance monitoring applications*
- Patented measurement technology - *Unique "no drift" zero check*
- Automatic in-situ zero and span checking - *Built-in calibration audit jig*
- Range of instrument configurations - *Outputs in opacity, extinction, or dust density*
- Fully user-configurable - *An icon-driven integral control panel for set-up, control and diagnostics*
- Easily integrated into plant control system - *Current loop outputs and Modbus interface*
- Integral air purges - *Prevents dust and corrosive gases from contaminating the optical system*
- Remotely configurable - *Supplied with PC-based OPUS software and Modbus connection*
- Factory configurable for pathlengths of 0.5 to 10m - *suitable for a wide range of particulate emission applications*
- Low level measurement through advanced LED design gives a 0 to 10% opacity or equivalent dust density in mg/m³
- New compact design - *simplifies installation and reduces air purge requirements*



Patented Technology

The Model 4500 Mk III 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.

*US Patent No. 6781695

**UK Patent No. 2287785

*UK Patent No. 567127



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.

Icon driven setup

The instrument can be set up and configured via the integral control panel. It uses a menu system that is language-free and based on intuitive icons to lead the user through the process.



Dust Density

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

Automatic Calibration

The Model 4500 MkIII 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.

OPUS Software

OPUS software provides the user with a graphic based tool. It is designed to simplify setup and operation by presenting the user with a visual representation of the system.

In addition to configuration, screens are available for showing live, trend and historical measurement data.



Applications include:

- Incineration
- Power utilities
- Pulp and paper
- Cement and roadstone
- Steel (Electric Arc Furnace)
- Glass
- Refineries
- Petrochemical
- Process Industries

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Specifications

Measuring

| | |
|------------------------|---|
| Technique: | Double pass transmissometry |
| Operating Wavelength : | 520 +/-20nm |
| 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 - 10000mg/m3 User Selectable |
| Accuracy: | +/- 2% Opacity |
| Drift (long term): | <0.3% opacity / month |
| Thermal Stability: | <0.3% opacity / 22C ambient change |
| Angle of projection: | < 2° |
| Angle of View: | < 2° |
| Response Time: | ≤10s to 95% |
| Averaging: | Selectable from 10s to 24hr (1s increment) |
| Pathlength: | 0.5 to 10m / 20" to 32ft |
| Calibration: | Automatic zero and upscale check (Selectable period 1 to 24hr in 1hr 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 |
| 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 20mA Configurable as Opacity, Optical Density, Dust Density |
| Relay Outputs: | System OK, Calibration, Alarm |
| Relay Rating: | 1A @ 24Vdc |

Electrical

| | |
|----------------------|-----------------------------|
| Power Supply: | 24Vdc nominal (18 to 30Vdc) |
| Current Consumption: | 0.3A nominal (3A 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: | 6kg / 13.2 lbs |
| Retro-reflector: | 3 kg / 6.6 lbs |

Enclosure

| | |
|--------------------------------|------------------------------------|
| Transceiver / Retro-reflector: | Cast Aluminium, epoxy paint coated |
|--------------------------------|------------------------------------|

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

LAND has a comprehensive range of Combustion and Environmental Monitoring Instrumentation.

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