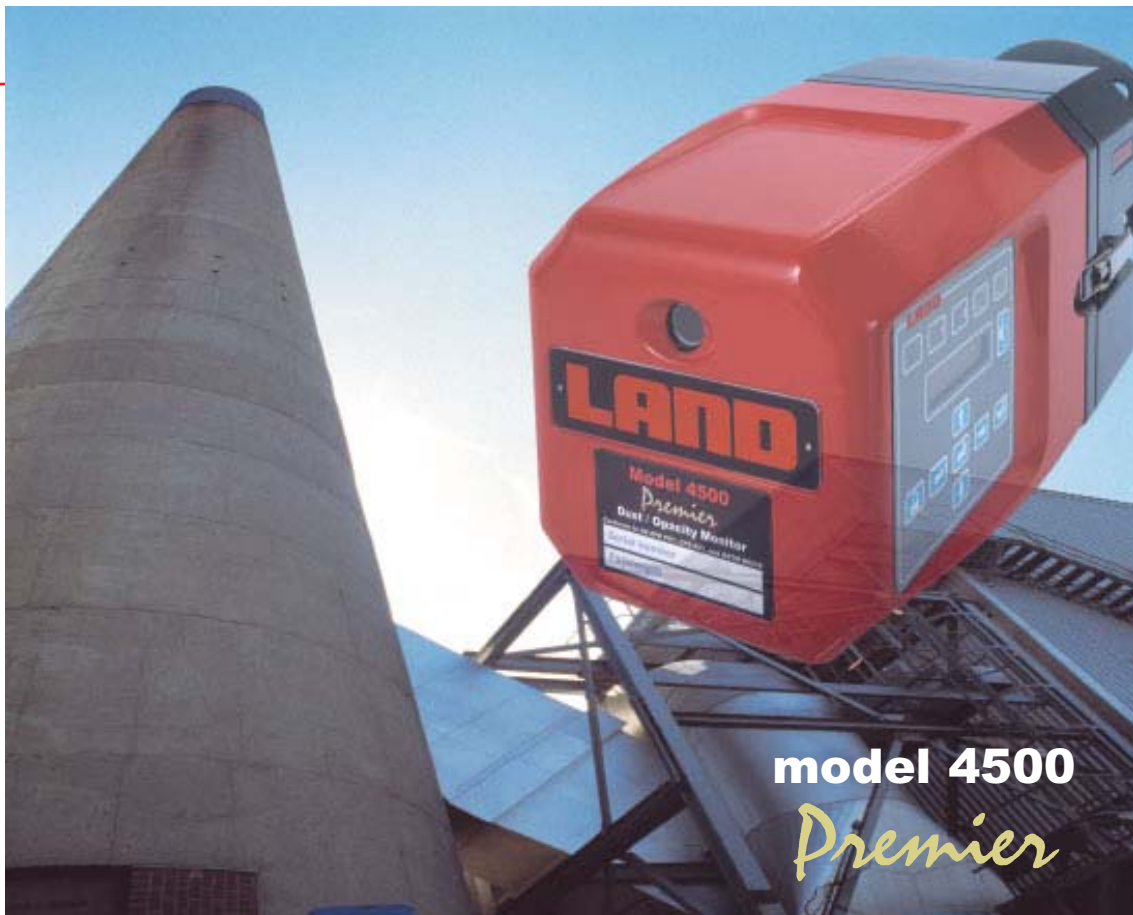


**low level**

**opacity and dust**

**compliance monitoring**



**LAND**

**Combustion & Environmental Monitoring**

An **AMETEK**® Company

# 4500 Premier

## High accuracy monitoring for low level dust and opacity

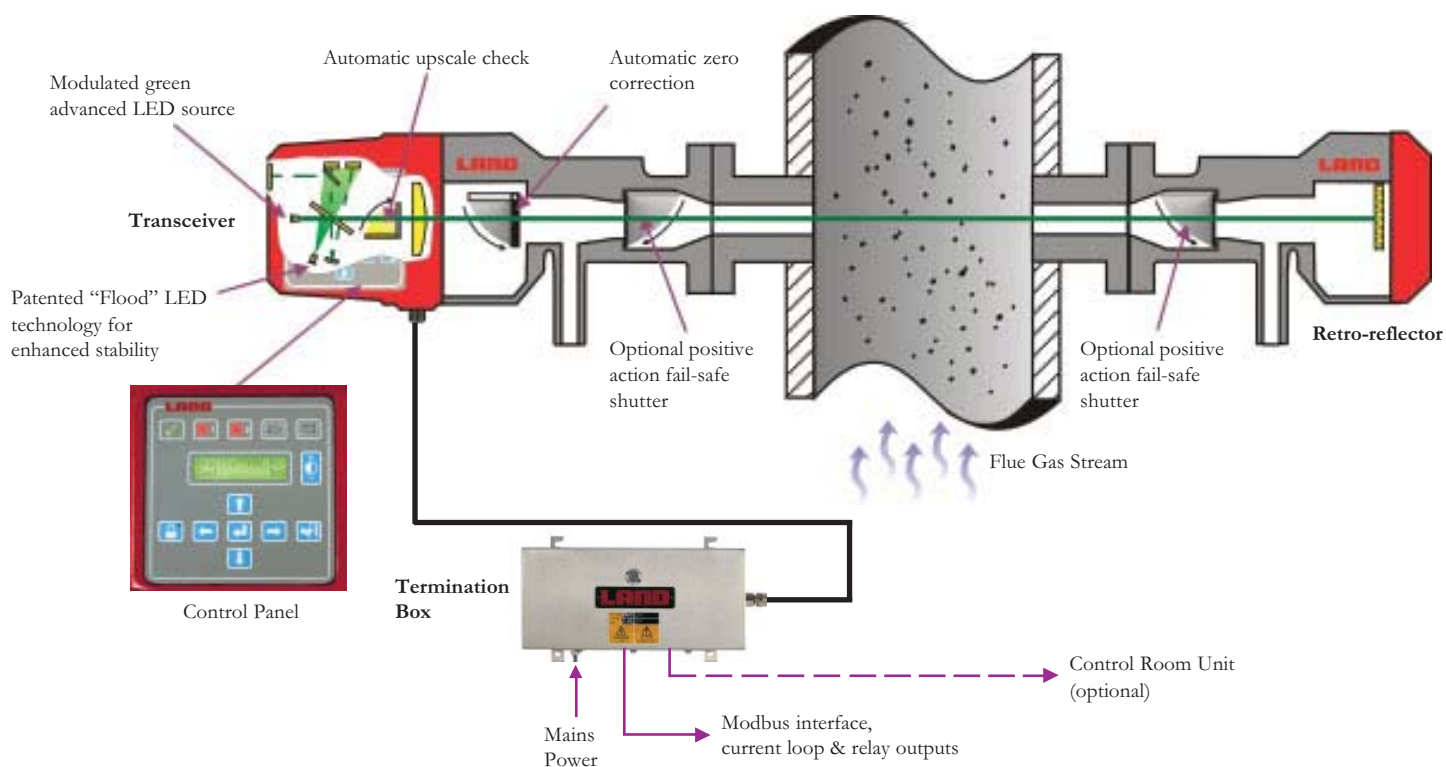
Land is a world leader in dust monitor design and manufacture, with a commitment to continuous product improvement.

The Model 4500 Premier meets the latest and most demanding standards for low level dust monitoring.



## Worldwide approvals 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 40CFR60 App. F Procedure 3
- Meets or exceeds ASTM Standard D6216
- Meets or exceeds US EPA CPS-001 for 0 to 10 % Opacity monitors
- MCerts certified Continuous Emissions Monitoring System
- TÜV approved to the requirements of the 13<sup>th</sup>, 17<sup>th</sup>, 27<sup>th</sup> & 30<sup>th</sup> BImSchV and TA Luft 2002



## Features and Benefits

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- Ultra-low level measurement - *advanced LED design gives 0 to 10 mg/m<sup>3</sup> dust density capability*
- 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 - *Integral control panel for set-up, control and diagnostics*
- Easily integrated into plant control system - *Current loop outputs and Modbus interface*

## Patented Technology

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

<sup>+</sup>US Patent No. 6781695

<sup>\*</sup>UK Patent No. 2287785



## Easy Auditing

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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

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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.

## Quick Installation

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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.

## Automatic Calibration

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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.

## Simple Setup

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The integral control panel provides all user setup and control. Detailed diagnostic information can be accessed through the key panel.

## Applications include:

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

## Further Information

Supplied & serviced by :

**Q Instrument Services Limited,  
Cork.**

Phone : 086-8129925

Fax : 021-4341218

Email : [info@qlimited.com](mailto:info@qlimited.com)

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

## Specifications

### Measuring

|                                           |                                                                                                                        |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Technique:                                | Double pass/path transmissometry                                                                                       |
| Operating Wavelength:                     | 520 ± 20 nm, High Intensity LED                                                                                        |
| Range (User selectable):                  | Opacity 0 – 10 % to 0 – 100 %; Optical Density 0 – 0.1 to 0 – 3.0<br>Dust Density 0 – 10 to 0 – 4000 mg/m <sup>3</sup> |
| Accuracy:                                 | ± 0.5 % opacity                                                                                                        |
| Linearity:                                | < 2 % of range                                                                                                         |
| Resolution:                               | 0.1 % Opacity; 0.001 Optical Density; 0.1 mg/m <sup>3</sup> Dust                                                       |
| Drift:                                    | < 1 % of range per month                                                                                               |
| Suitable for Stacks diameter:             | 0.6 to 9.7 m / 2 to 32 ft                                                                                              |
| Installation Pathlength:                  | 0.97 to 10 m / 3 to 22 ft (option to 20 m / 66 ft)                                                                     |
| Calibration:                              | Automatic zero and upscale calibration                                                                                 |
| Response Time:                            | < 10s (< 2s with no damping)                                                                                           |
| Calibration Error per ASTM D6216:         | < 1 % opacity                                                                                                          |
| 24 Hour Drift:                            | < 0.3 % opacity                                                                                                        |
| Long Term Drift:                          | < 0.3 % opacity per month                                                                                              |
| Voltage Variation per ASTM D6216:         | < 0.2 % opacity (over 85 – 264 V a.c.)                                                                                 |
| Thermal Stability per ASTM D6216:         | < 0.3 % opacity (over -20 to +55 °C / -4 to +131 °F range)                                                             |
| Ambient Light Sensitivity per ASTM D6216: | < 0.3 % opacity                                                                                                        |
| Insensitivity to Misalignment:            | < 0.2 % opacity for ±0.25 ° misalignment                                                                               |
| Zero Correction:                          | Automatic correction for zero drift                                                                                    |
| Averaging:                                | Selectable from 10 secs to 24 hours (in 1 second steps)                                                                |

### Environmental

|                        |                                                                    |
|------------------------|--------------------------------------------------------------------|
| Operating Temperature: | -20 to 55 °C / -4 to 131 °F (-40 °C / -40 °F with optional heater) |
| Max. Flue Gas Temp.:   | 600 °C / 1112 °F                                                   |
| Max. Flange Temp.:     | 200 °C / 392 °F                                                    |
| Environmental Rating:  | IP65 / NEMA4X                                                      |

### Compliance

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement Standards: | Meets or exceeds US EPA requirements for 40CFR60 Sections 13, 17 and App. B PS1<br>Meets or exceeds US EPA requirements for proposed 40CFR60 App. F Procedure 3<br>Meets or exceeds ASTM Standard D6216-03<br>Meets or exceeds US EPA CPS-001<br>MCerts certified Continuous Emissions Monitoring System<br>TÜV approved to the requirements of the 13 <sup>th</sup> , 17 <sup>th</sup> , 27 <sup>th</sup> & 30 <sup>th</sup> BImSchV and TA Luft 2002 |
| Safety:                | Conforms to EN-61010-2                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| EMC:                   | Conforms to EN-50 081 & EN-50 082                                                                                                                                                                                                                                                                                                                                                                                                                      |

### Outputs

|                   |                                                                                                                                |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Modbus Interface: | RS232 or RS485                                                                                                                 |
| Analog Outputs:   | Two isolated 4-20mA current outputs.<br>Independently configurable as Opacity, Dust Optical Density, Calibration Drift or OPLR |
| Relay Outputs:    | System OK, Span calibration, Zero calibration, Alarm 1, Alarm 2, Maintenance                                                   |
| Relay Rating:     | 1 A @ 24 V d.c., 1 A @ 240 V a.c.                                                                                              |

### Electrical

|               |                                        |
|---------------|----------------------------------------|
| Power Supply: | 100 – 240 V a.c.+10%, -15%, 50 – 60 Hz |
| Power Rating: | 10 W                                   |

### Mechanical Data

|                        |                                      |
|------------------------|--------------------------------------|
| Dimensions (HxWxD)     |                                      |
| Transceiver            | 220 x 220 x 520 mm / 9 x 9 x 20.5 in |
| Retro-reflector        | 220 x 220 x 320 mm / 9 x 9 x 12.6 in |
| Termination box        | 180 x 400 x 120 mm / 7 x 16 x 5 in   |
| Weight Transceiver     | 15.2 kg / 33.5 lb                    |
| Weight Retro-reflector | 7.6 kg / 16.8 lb                     |
| Weight Termination Box | 7.5 kg / 16.5 lb                     |

### Options

|                              |                     |
|------------------------------|---------------------|
| Air Blower Units             | Control Room Unit   |
| Automatic Fail-safe Shutters | Alignment Tool      |
| Weather Covers               | Calibration Filters |

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

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# LAND

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

An **AMETEK** Company

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



Approval applies to products designed and manufactured in the UK



Approval applies in the USA



Sira MC 040029/00

PDS 197/09/06