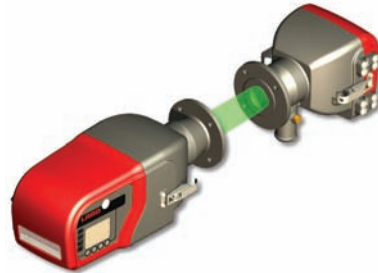


4500M kIII

COMPLIANCE OPACITY
AND DUST MONITORING



QAL 1 • PS-1 • ASTM D6216 • PROCEDURE 3 • PS-11

ETA Process Instrumentation

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LAND
AMETEK[®]
PROCESS & ANALYTICAL INSTRUMENTS



QUALITY CUSTOMER SOLUTIONS

4500MkIII

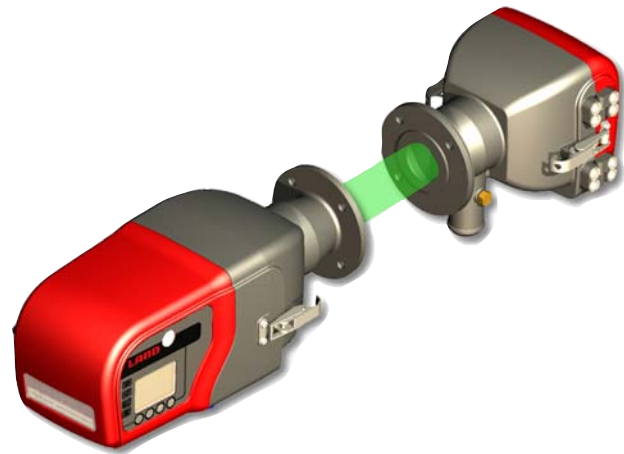
AMETEK LAND HAS BEEN MANUFACTURING PRECISION MEASURING EQUIPMENT SINCE 1947.

WE ARE SPECIALISTS IN NON-CONTACT TEMPERATURE MEASUREMENT AND COMBUSTION MONITORING WITH APPLICATIONS ACROSS DIVERSE INDUSTRIES SUCH AS STEEL AND GLASS MAKING, POWER GENERATION AND CEMENT MANUFACTURE.

As part of AMETEK Process & Analytical Instruments Division since 2006, our customers benefit from the worldwide AMETEK sales and service team.

THE 4500MkIII IS THE MOST ACCURATE AND RELIABLE OPACITY MONITOR CURRENTLY AVAILABLE.

Combining the unique features of three patented technologies, the 4500MkIII achieves the highest possible specification for the fundamental performance parameters for a compliance opacity monitor, as defined by the internationally-recognized ASTM Standard D6216. Its performance has been independently verified, meeting the QAL 1 requirements for EN 13284-2 and EN 15267-3.



MEETS ASTM D6216, EN 15267-3, QAL1, PS-11

FEATURES ▼

Lifetime warranty on LED light source
3-year warranty on transmissometer
No continuously moving parts
Patented all-glass multi-prism retroreflector
Flood LED
Optional fail-safe shutters
Adaptor flanges and spoolpieces
Control Room Unit (option)
Single purge blower
Wide operating temperature range
Auxiliary Function Unit (AFU)
Auxiliary Power Supply (APS)
Dust and Opacity

BENEFITS ▼

No need to replace the light source
Worry-free operation
Highest reliability
Lowest possible drift
Maximum thermal stability
Protects optics if purge air fails, and protects personnel from stack gases during servicing
Allows the 4500 MkIII to fit the existing stack flanges
Allows remote display and diagnostics
One blower provides purge air to transceiver and retro
Operation -40°C to 55°C (-40°F to 131°F) is standard
Easy connections and additional I/O
Universal mains power input and power distribution
Measure both % opacity and dust concentration in mg/m³



RELIABILITY IS BUILT IN

NO CONTINUOUSLY MOVING PARTS
AND A LIFETIME WARRANTY ON THE
LIGHT SOURCE MEAN THE 4500 M² kIII
WILL GIVE YEARS OF TROUBLE-FREE
OPERATION.



4500MkIII

SPECIFICATION & DESIGN

HIGH ACCURACY

The Model 4500 MkIII uses a highly homogenous advanced LED light source. A glass multi-prism retro-reflector reduces the effects of misalignment on the measured opacity, thereby achieving the lowest possible detection limit. The flood LED minimizes temperature drift. Collectively these features provide the highest level of stability and lowest level of optical and electronic drift available.

FLEXIBLE CONFIGURATION

This opacity monitor can be configured to meet your needs whether you need a simple low-cost installation or a full featured analyzer.

USER FRIENDLY

The Model 4500 MkIII menu tree is intuitive. 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.

INTELLIGENT COMMUNICATIONS

Modbus RTP, 4-20 mA signals and alarm relays are standard. Ethernet is available as an option.



**STACK DIAMETERS
FROM 0.3 M TO 15 M
(1 FT. TO 50 FT.)**

APPLICATIONS

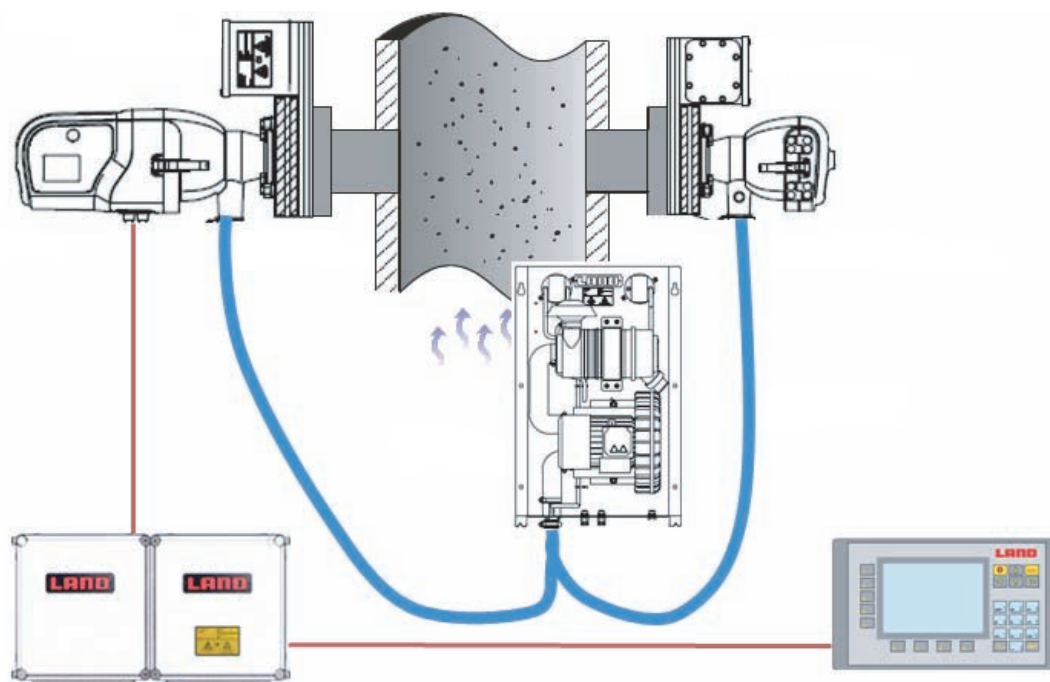
COMPLIANCE MONITORING OF STACK OPACITY AND PARTICULATE MATTER EMISSIONS FROM:

- Electricity Generating Units
- Industrial Boilers
- Process Heaters
- Furnaces
- Kilns

REGULATORY COMPLIANCE

- US EPA 40 CFR 60 Appendix B, Performance Standard 1 and Procedure 3
- ASTM D6216-07 and D6216-12
- EN 15267-3 (QAL1)
- EN 13284-2
- PS-11

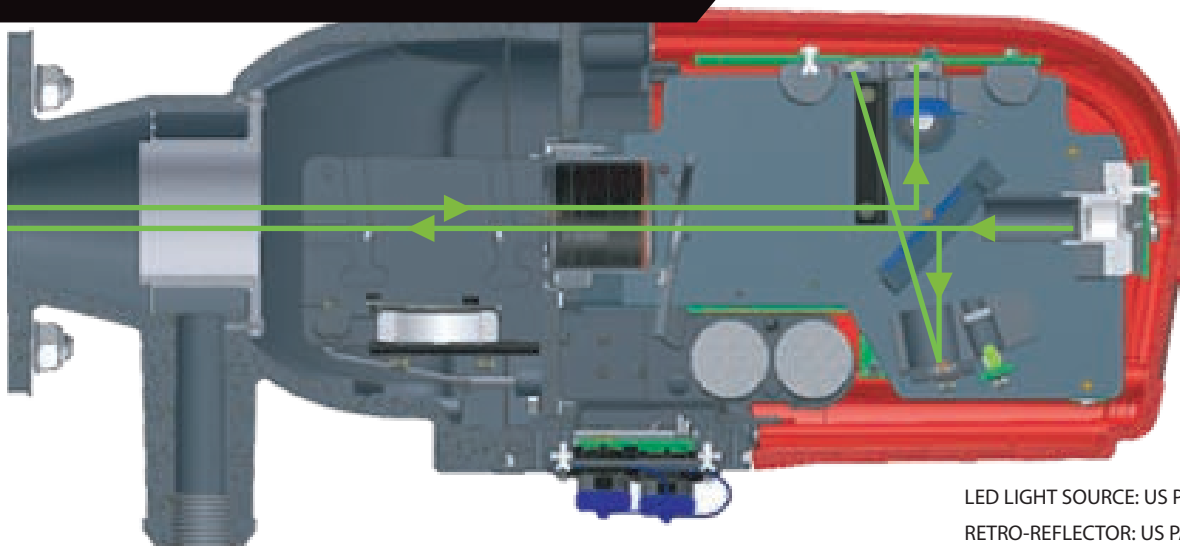
HOW THE 4500M kIII WORKS



KEY

- | | |
|-------------------|---------------------------------|
| 1. Shutter | 5. Blower |
| 2. Transceiver | 6. Air Hose |
| 3. Standpipe | 7. AFU & APS (Optional) |
| 4. Retroreflector | 8. Control Room Unit (Optional) |

PATENTED TECHNOLOGY ▼



LED LIGHT SOURCE: US PATENT 6781695
RETRO-REFLECTOR: US PATENT 7429112

4500MkIII

OPTIONS FOR THE ANALYSER



Select the inputs and outputs you need for your application.

CONFIGURING THE ANALYSER: I/O SELECTIONS

	4500 MkIII	AFU&APS	CRU
One 4-20 mA output	.		
2-wire RS485 Modbus	.	.	
In Cal relay	.		
Alarm relay	.	.	
System OK relay	.	.	
Screw terminal connections		.	
Mains power input		.	
4-wire RS485 Modbus		.	
Shutter connections		.	
Pressure switch connections		.	
Calibration trigger input		.	
2x 4-20 mA output		.	
Zero and Span cal relays		.	
Fuel Selection (for dust)		.	
Ethernet communications		Option	
Mains power to blowers		.	
-40°C Operation	.	.	
Remote Display			.

MOUNTING OPTIONS

THE 4500 MkIII MOUNTING IS A CORE PART OF THE OPTICAL ALIGNMENT SYSTEM AND THE CORRECT SELECTION IS ESSENTIAL.

Standpipe

The standpipe welds directly to the stack for a simple, rigid mounting.

Spoolpiece

Spoolpieces are available with a wide variety of ANSI Flange sizes which can be bolted onto an existing stack flange.

Transceiver Weather Cover

The transceiver is sealed to IP65 and will resist most weather conditions. The transceiver weather cover attaches to the mounting flange and provides additional protection from driving rain and intense sunlight.

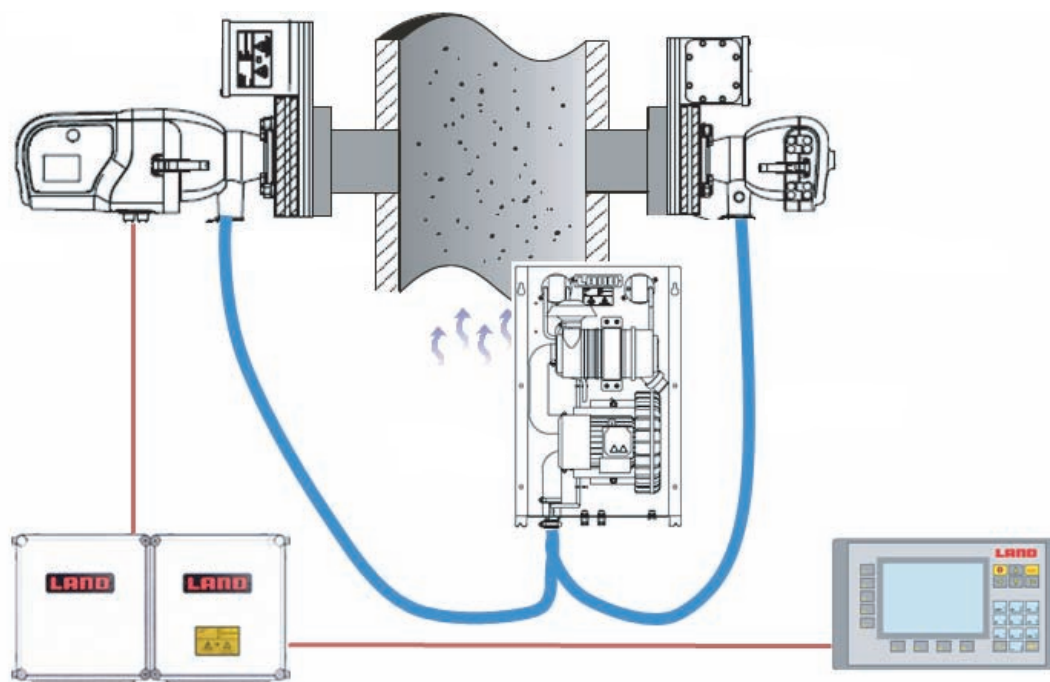
SPOOLPIECES

FLANGE SIZE	HOLE CONFIGURATION
3" 150 lb ANSI	Either straddled or top-dead-center
4" 150 lb ANSI	Either straddled or top-dead-center
5" 150 lb ANSI	Top-dead-center
6" 150 lb ANSI	Top-dead-center



Standpipe

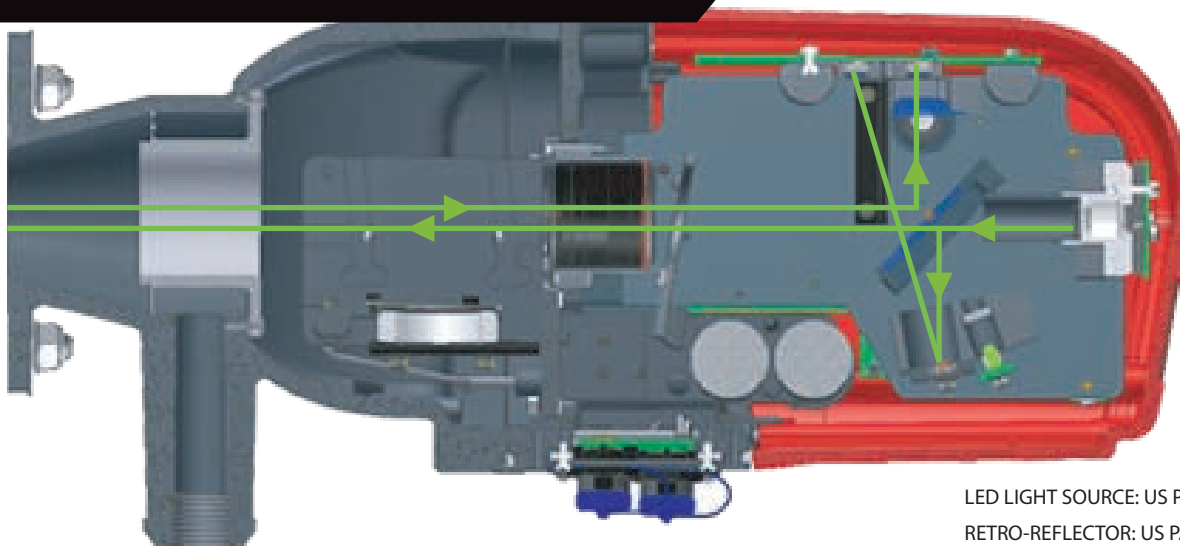
HOW THE 4500M kIII WORKS



KEY

- 1. Shutter
- 2. Transceiver
- 3. Standpipe
- 4. Retroreflector
- 5. Blower
- 6. Air Hose
- 7. AFU & APS (Optional)
- 8. Control Room Unit (Optional)

PATENTED TECHNOLOGY



LED LIGHT SOURCE: US PATENT 6781695
RETRO-REFLECTOR: US PATENT 7429112

4500M kIII

COMPLIANCE OPACITY AND DUST MONITORING

SPECIFICATIONS

Measuring Technique:	Double pass transmissometry
Operating Wavelength:	520 ± 20 nm
Light Source :	Pulsed High Intensity LED
Measurement Range:	Opacity 0-10 % to 0-100 % ; Optical Density 0 - 0.1 to 0-3.0 ; Dust Density 0-15 to 0-1000 mg/m ³ (at 5 m pathlength)
Calibration Error:	1.5 % opacity
Drift (long term):	< 0.3 % opacity / month
Thermal Stability:	0.6 % opacity / 22 ° C ambient change
Angle of Projection:	< 2 °
Angle of View:	< 2 °
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 (extended pathlengths to 15 m available)
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
Control Panel Keypad:	4 keys for data input
Control Panel Indicators:	Power, System OK, Alarm, Calibration
Operating Temperature:	-40 to 55 ° C / -40 to 131 ° F
Max. Flue Gas Temperature:	600 ° C / 1112 ° F
Max. Flange Temperature:	200 ° C / 392 ° F
Flue Gas Water Content:	Not sensitive to water vapor. Condensed water must not be present in the measurement path.
Electrical Safety:	IEC / EN 61010-2
EMC:	EN 50 081 & EN50 082
Sealing:	IP65 / NEMA4X
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
Power Supply:	24 Vdc nominal (18 to 30 Vdc), 0.3 A nominal (3 A startup)
Transceiver Dimensions (HxWxD):	191 x 291 x 413 mm / 7.5 x 7.9 x 16.3 in
Retro-reflector Dimensions (HxWxD):	101 x 201 x 237 mm / 7.5 x 7.9 x 9.3 in
Transceiver Weight:	6 kg / 13.2 lbs.
Retro-reflector Weight:	3 kg / 6.6 lbs.
Enclosure:	Cast Aluminum, epoxy coated
Accessories:	Fail-safe Shutters, Blowers, Adapter Flanges, Remote Control Units, Additional Outputs Available
Approvals:	QAL 1, EN 15267, EN 13284-2
Performance Specifications:	ASTM D6216, US EPA PS-1, PS-11, Procedure 3

SEE OUR OTHER PARTICULATE MONITORING AND OPACITY RELATED LITERATURE:

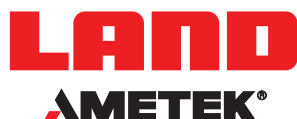


MODEL 4650-PM
PARTICULATE
MONITORING



MODEL 4400
OPACITY
MONITORING

DISCOVER HOW OUR BROAD RANGE
OF **NON-CONTACT TEMPERATURE**
MEASUREMENT AND COMBUSTION &
EMISSIONS PRODUCTS OFFER A
SOLUTION FOR YOUR PROCESS



CONTACT US

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