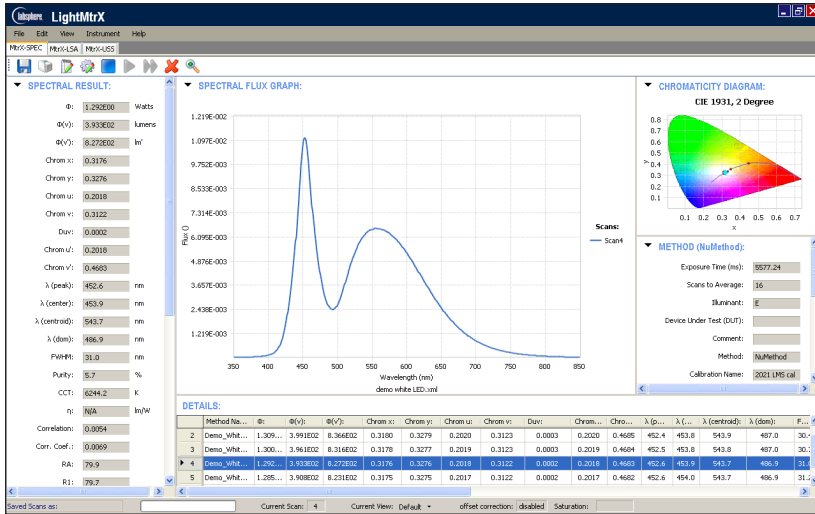


# CSLMS LED SERIES LARGE SPECTRAL LED MEASUREMENT SYSTEMS

Fast, Practical and Easy-to-Use Systems for Large LED Arrays and Lamp Characterization



LABSPHERE LIGHT MEASUREMENT SOFTWARE LIGHT MTRX-SPEC

## ACCURATE

CSLMS LED Large Systems are affordably priced and easily customized through a variety of interchangeable light measurement accessories. NIST traceable total spectral flux standards enable simple in-house system calibration and verification from 350 to 1050 nm. The systems can be expanded to include an auxiliary lamp for the correction of absorption error to ensure accurate test results.

CSLMS LED Large Systems combine intuitive software with high-speed hardware to simplify complex measurements. The coupling of application specific software with a CCD-based spectrometer, integrating sphere, and cosine receiver, makes it possible to deliver total spectral flux, luminous flux, radiometric flux, and colorimetric results in milliseconds.

## EASY-TO-USE

Sphere diameters of 40, 65 or 76 inches are coated with Spectrafect® which combines a 98% reflective surface with nearly perfect Lambertian reflectance. Both durable and highly stable over time, this coating provides consistent integration of light over the lifetime of your sphere.

The Windows®-based Light MtrX-SPEC software guides users through testing, providing straightforward testing procedures and repeatable results to meet the needs of both new users and experienced researchers.

Top and bottom ports admit additional cables for assembled fixtures while the external port provides for the unobstructed positioning of board-mounted or heat-sinked devices for forward and partial flux measurements. The telescopic lamp mount can be repositioned with a quick twist for base up, base down or horizontal lamp positioning. Exchangeable baffles give optimal detector screening efficiency while quick connect internal and external electrical contacts allow for effortless substitution between devices under test.

## FEATURES:

- NIST Traceable Standards for In-house Recalibration
- Spectral Results in Milliseconds
- Comprehensive Light Measurement Software
  - Total Spectral Flux
  - Luminous Flux
  - Radiant Flux
  - Chromaticity
  - CCT
  - CRI
  - Peak Wavelength
  - Dominant Wavelength
- Spectrafect® Interior
- CIE Recommended Geometry
- Backed by an ISO 9001:2000 Registered Quality Management System

## MEASURE:

- LED Sourced Systems
- Large-area LED Displays
- Automotive Lighting
- Architectural Lighting
- General Lighting



LMS-400

## SPECIFICATIONS

### CSLMS LED

Choice Spectral Light Measurement System

### CSLMS LED 4060

AS-02479-800

### CSLMS LED 4061

AS-02479-900

#### System Includes

Lamp Measurement Sphere, 40 inch  
CCD Spectrometer, CDS 600 or 610  
Spectral Calibrated Lamp, SCL-1400  
Lamp Power Supply, LPS-150-0268

AS-02479-000  
AS-02767-000  
AS-01342-000  
AS-02656-268

AS-02479-000  
AS-02767-100  
AS-01342-000  
AS-02656-268

#### Required, Sold Separately

Light Measurement Software, Light MtrX-SPEC

MtrX-SPEC

MtrX-SPEC

## SYSTEM PROPERTIES AND PERFORMANCE

### Sphere

Sphere Diameter:  
Sphere Coating Reflectance:  
Radiometric Range:  
Photometric Range: (Illuminant A)  
Red LED Range:  
Green LED Range:  
Blue LED Range:  
Max Recommended Lamp Dimension:  
Maximum Tubular Lamp Length:  
Sphere Dimension: (W x D x H)

### LMS-400

40 in (1.02 m)  
98%  
1,500 W (max)  
2 - 72,500 lm  
0.62 - 26,000 lm  
0.60 - 28,500 lm  
0.25 - 8,900 lm  
4 x 4 in (10 x 10 cm)  
24 in (60 cm)  
48.9 x 42.3 x 68.5 in  
(1.24 x 1.07 x 1.74 m)

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40 in (1.02 m)  
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2 - 72,500 lm  
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4 x 4 in (10 x 10 cm)  
24 in (60 cm)  
48.9 x 42.3 x 68.5 in  
(1.24 x 1.07 x 1.74 m)

### Spectrometer

Dimensions:  
Pixels:  
Pixel Size:  
Pixel Well Depth:  
Sensitivity:

### CDS 600

89.1 mm x 63.3 mm x 34.4 mm  
2048 pixels  
14 µm x 200 µm  
~62,500 electrons  
75 photons/  
count at 400 nm;  
41 photons/  
count at 600 nm  
42 mm input;  
68 mm output  
100 µm  
200-850 nm  
250:1 (at full signal)  
16 bit  
2 x 10<sup>8</sup> (system)  
8 ms to 30 seconds  
<0.05% at 600 nm;  
<0.10% at 435 nm  
>99.8%

### CDS 610

89.1 mm x 63.3 mm x 34.4 mm  
2048 pixels  
14 µm x 200 µm  
~62,500 electrons  
75 photons/  
count at 400 nm;  
41 photons/  
count at 600 nm  
42 mm input;  
68 mm output  
100 µm  
350-1000 nm  
250:1 (at full signal)  
16 bit  
2 x 10<sup>8</sup> (system)  
8 ms to 30 seconds  
<0.05% at 600 nm;  
<0.10% at 435 nm  
>99.8%

### Focal Length:

### Entrance Aperture:

### Wavelength Range:

### Signal-to-Noise Ratio:

### A/D Resolution:

### Dynamic Range:

### Integration Time:

### Stray Light:

### Corrected Linearity:

### Power Supply

### Power Requirements:

### Current Stability:

### Current Rise Time:

### Regulated Current:

### Weight:

### Dimension: (W x D x H)

### Compliance:

### LPS 150-0268

110./220 VAC, 50/60 Hz  
+/- 0.01%  
20 +/- 5 seconds  
2.679 A +/- 0.1%  
6.5 lbs (2.9 kg)  
8.3 x 10.5 x 3.5 in  
(21.1 x 26.7 x 8.9 cm)  
CE

### LPS 150-0268

110./220 VAC, 50/60 Hz  
+/- 0.01%  
20 +/- 5 seconds  
2.679 A +/- 0.1%  
6.5 lbs (2.9 kg)  
8.3 x 10.5 x 3.5 in  
(21.1 x 26.7 x 8.9 cm)  
CE

### Optional Accessories

#### LS Series LED Sockets

I 1000 Condition B Intensity Head

I 2000 Condition A & B Intensity Head

E 1000 Spectral Irradiance Head

IES 1000 Intensity/Irradiance Calibration Lamp Standard

CAL-LX-IRR Calibration of E 1000 with Light MtrX and Spectrometer

CAL-LX-INT Spectral Intensity Calibration

Absorption Correction Lamp, AUX-100

Preset Power Supply, LPS-100-0833, 8.33A 100W

Calibrated Spectral Flux Set, CSFS-1400

Horizontal Lamp Mount Bracket

Temperature Probe, TP-400

Temperature Probe and Monitor, TPM-400

Choose your own

AS-02700-100

AS-02700-316

AS-02700-000

AS-02700-602

CAL-LX-IRR

CAL-LX-INT

AS-02737-000

AS-02600-833

AS-01343-000

AS-02477-003

AS-02637-400

AS-02638-400

## SPECIFICATIONS

CSLMS LED Choice Spectral Light Measurement System	CSLMS LED 6560 AS-02480-800	CSLMS LED 6561 AS-02480-900
<b>System Includes</b> Lamp Measurement Sphere, 65 inch CCD Spectrometer, CDS 600 or 610 Spectral Calibrated Lamp, SCL-1400 Lamp Power Supply, LPS-150-0268	AS-02480-000 AS-02767-000 AS-01342-000 AS-02656-268	AS-02480-000 AS-02767-100 AS-01342-000 AS-02656-268
<b>Required, Sold Separately</b> Light Measurement Software, Light MtrX-SPEC	MtrX-SPEC	MtrX-SPEC

## SYSTEM PROPERTIES AND PERFORMANCE

<b>Sphere</b>	<b>LMS-6500</b>	<b>LMS-6500</b>
Sphere Diameter:	65 in (1.65 m)	65 in (1.65 m)
Sphere Coating Reflectance:	98%	98%
Radiometric Range:	4,000 W (max)	4,000 W (max)
Photometric Range: (Illuminant A)	6 – 200,000 lm	6 – 200,000 lm
Red LED Range:	1.2 – 68,000 lm	1.2 – 68,000 lm
Green LED Range:	1.5 – 77,000 lm	1.5 – 77,000 lm
Blue LED Range:	0.50 – 23,000 lm	0.50 – 23,000 lm
Max Recommended Lamp Dimension:	7 x 7 in (18 x 18 cm)	7 x 7 in (18 x 18 cm)
Maximum Tubular Lamp Length:	34 in (86 cm)	34 in (60 cm)
Sphere Dimension: (W x D x H)	112.6 x 78.4 x 84.1 in (2.86 x 1.99 x 2.13 m)	112.6 x 78.4 x 84.1 in (2.86 x 1.99 x 2.13 m)
<b>Spectrometer</b>	<b>CDS 600</b>	<b>CDS 610</b>
Dimensions:	89.1 mm x 63.3 mm x 34.4 mm	89.1 mm x 63.3 mm x 34.4 mm
Pixels:	2048 pixels	2048 pixels
Pixel Size:	14 µm x 200 µm	14 µm x 200 µm
Pixel Well Depth:	~62,500 electrons	~62,500 electrons
Sensitivity:	75 photons/ count at 400 nm; 41 photons/ count at 600 nm	75 photons/ count at 400 nm; 41 photons/ count at 600 nm
Focal Length:	42 mm input; 68 mm output	42 mm input; 68 mm output
Entrance Aperture:	100 µm	100 µm
Wavelength Range:	200-850 nm	350-1000 nm
Signal-to-Noise Ratio:	250:1 (at full signal)	250:1 (at full signal)
A/D Resolution:	16 bit	16 bit
Dynamic Range:	2 x 10 <sup>8</sup> (system)	2 x 10 <sup>8</sup> (system)
Integration Time:	8 ms to 20 seconds	8 ms to 20 seconds
Stray Light:	<0.05% at 600 nm; <0.10% at 435 nm	<0.05% at 600 nm; <0.10% at 435 nm
Corrected Linearity:	>99.8%	>99.8%
<b>Power Supply</b>	<b>LPS 150-0268</b>	<b>LPS 150-0268</b>
Power Requirements:	110./220 VAC, 50/60 Hz	110./220 VAC, 50/60 Hz
Current Stability:	+/- 0.01%	+/- 0.01%
Current Rise Time:	20 +/- 5 seconds	20 +/- 5 seconds
Regulated Current:	2.679 A +/- 0.1%	2.679 A +/- 0.1%
Weight:	6.5 lbs (2.9 kg)	6.5 lbs (2.9 kg)
Dimension: (W x D x H)	8.3 x 10.5 x 3.5 in (21.1 x 26.7 x 8.9 cm)	8.3 x 10.5 x 3.5 in (21.1 x 26.7 x 8.9 cm)
Compliance:	CE	CE
<b>Optional Accessories</b>		
LS Series LED Sockets		Choose your own
I 1000 Condition B Intensity Head		AS-02700-100
I 2000 Condition A & B Intensity Head		AS-02700-316
E 1000 Spectral Irradiance Head		AS-02700-000
IES 1000 Intensity/Irradiance Calibration Lamp Standard		AS-02700-602
CAL-LX-IRR Calibration of E 1000 with Light MtrX and Spectrometer		CAL-LX-IRR
CAL-LX-INT Spectral Intensity Calibration		CAL-LX-INT
Absorption Correction Lamp, AUX-100		AS-02737-000
Preset Power Supply, LPS-100-0833, 8.33A 100W		AS-02600-833
Calibrated Spectral Flux Set, CSFS-1400		AS-01343-000
Horizontal Lamp Mount Bracket		AS-02477-003
Temperature Probe, TP-400		AS-02637-400
Temperature Probe and Monitor, TPM-400		AS-02638-400

## SPECIFICATIONS

<b>CSLMS LED</b> Choice Spectral Light Measurement System	<b>CSLMS LED 7660</b> AS-02481-800	<b>CSLMS LED 7661</b> AS-02481-900
<b>System Includes</b> Lamp Measurement Sphere, 76 inch CCD Spectrometer, CDS 600 or 610 Spectral Calibrated Lamp, SCL-1400 Lamp Power Supply, LPS-150-0268	AS-02481-000 AS-02767-000 AS-01342-000 AS-02656-268	AS-02481-000 AS-02767-100 AS-01342-000 AS-02656-268
<b>Required, Sold Separately</b> Light Measurement Software, Light MtrX-SPEC	MtrX-SPEC	MtrX-SPEC

## SYSTEM PROPERTIES AND PERFORMANCE

<b>Sphere</b>	<b>LMS-7600</b>	<b>LMS-7600</b>
Sphere Diameter:	76 in (1.93 m)	76 in (1.93 m)
Sphere Coating Reflectance:	98%	98%
Radiometric Range:	5,000 W (max)	5,000 W (max)
Photometric Range: (Illuminant A)	0.08 – 260,000 lm	0.08 – 260,000 lm
Red LED Range:	1.7 – 93,000 lm	1.7 – 93,000 lm
Green LED Range:	2.0 – 10,000 lm	2.0 – 10,000 lm
Blue LED Range:	0.70 – 32,000 lm	0.70 – 32,000 lm
Max Recommended Lamp Dimension:	8 x 8 in (21 x 21 cm)	8 x 8 in (21 x 21 cm)
Maximum Tubular Lamp Length:	52 in (1.3 m)	52 in (1.3 m)
Sphere Dimension: (W x D x H)	116.9 x 88.2 x 91.4 in (2.97 x 2.24 x 2.32 m)	116.9 x 88.2 x 91.4 in (2.97 x 2.24 x 2.32 m)
<b>Spectrometer</b>	<b>CDS 600</b>	<b>CDS 610</b>
Dimensions:	89.1 mm x 63.3 mm x 34.4 mm	89.1 mm x 63.3 mm x 34.4 mm
Pixels:	2048 pixels	2048 pixels
Pixel Size:	14 µm x 200 µm	14 µm x 200 µm
Pixel Well Depth:	~62,500 electrons	~62,500 electrons
Sensitivity:	75 photons/ count at 400 nm; 41 photons/ count at 600 nm	75 photons/ count at 400 nm; 41 photons/ count at 600 nm
Focal Length:	42 mm input; 68 mm output	42 mm input; 68 mm output
Entrance Aperture:	100 µm	100 µm
Wavelength Range:	200-850 nm	350-1000 nm
Signal-to-Noise Ratio:	250:1 (at full signal)	250:1 (at full signal)
A/D Resolution:	16 bit	16 bit
Dynamic Range:	2 x 10 <sup>8</sup> (system)	2 x 10 <sup>8</sup> (system)
Integration Time:	8 ms to 30 seconds	8 ms to 30 seconds
Stray Light:	<0.05% at 600 nm; <0.10% at 435 nm	<0.05% at 600 nm; <0.10% at 435 nm
Corrected Linearity:	>99.8%	>99.8%
<b>Power Supply</b>	<b>LPS 150-0268</b>	<b>LPS 150-0268</b>
Power Requirements:	110./220 VAC, 50/60 Hz	110./220 VAC, 50/60 Hz
Current Stability:	+/- 0.01%	+/- 0.01%
Current Rise Time:	20 +/- 5 seconds	20 +/- 5 seconds
Regulated Current:	2.679 A +/- 0.1%	2.679 A +/- 0.1%
Weight:	6.5 lbs (2.9 kg)	6.5 lbs (2.9 kg)
Dimension: (W x D x H)	8.3 x 10.5 x 3.5 in (21.1 x 26.7 x 8.9 cm)	8.3 x 10.5 x 3.5 in (21.1 x 26.7 x 8.9 cm)
Compliance:	CE	CE
<b>Optional Accessories</b>		
LS Series LED Sockets		Choose your own
I 1000 Condition B Intensity Head		AS-02700-100
I 2000 Condition A & B Intensity Head		AS-02700-316
E 1000 Spectral Irradiance Head		AS-02700-000
IES 1000 Intensity/Irradiance Calibration Lamp Standard		AS-02700-602
CAL-LX-IRR Calibration of E 1000 with Light MtrX and Spectrometer		CAL-LX-IRR
CAL-LX-INT Spectral Intensity Calibration		CAL-LX-INT
Absorption Correction Lamp, AUX-100		AS-02737-000
Preset Power Supply, LPS-100-0833, 8.33A 100W		AS-02600-833
Calibrated Spectral Flux Set, CSFS-1400		AS-01343-000
Horizontal Lamp Mount Bracket		AS-02477-003
Temperature Probe, TP-400		AS-02637-400
Temperature Probe and Monitor, TPM-400		AS-02638-400