

# CSLMS SYSTEMS FOR TOTAL SPECTRAL FLUX OF LEDS AND SMALL LIGHT SOURCES

Fast, accurate LED measurements that are repeatable from research to production



10-INCH CSLMS SYSTEM

## PIONEERING

Labsphere continues to set the pace in the industry by introducing its new line of total spectral flux solutions. Featuring our high-end spectrometers and MtrX-SPEC software, combined with our Light Measurement Spheres and Lamp Standards, CSLMS Systems give the ultimate choice for spectral flux measurements. The heart of these systems is either the CDS 1100 or CDS 2100 spectrometer coupled with Labsphere's application based software. The base design of these spectrometers is the proven Crossed Czerny-Turner spectrograph with a top of the line thermal electrically cooled back thinned illuminated CCD detector designed for highly efficient stray-light rejection. Carrying over the best features of our industry proven spectrometers while addressing today's industries needs, these spectral engines include user activated integrated shutters for real-time dark correction and the most intuitive software modules for research, development, and production.

## FEATURES:

- Methods Driven Operations
- MtrX-SPEC's Intuitive Calibration Processes
- User Calibration and Validation Processes
- Display, Log, and Store Results for Research
- Pass/Fail Testing for Production
- Temporal Plots for Life Performance
- Windows® Office Programs Compatible
- High Dynamic Range for a Broad Range of Light Source
- Multiple Spectral Ranges to Choose From
- NIST traceable lamp standard included

## BEST FOR MEASURING:

- Total Spectral Flux (Watts/nm)
- Total Radiant Flux (Watts)
- Total Luminous Flux (lumens)
- Color (CCT)
- Color Ellipses and Quadrangles
- Lamp Performance vs. Time
- Peak and Dominant Wavelength
- Spectral Purity
- Color Rendering Index (CRI)
- Chromaticity Coordinates
- Half-Bandwidth

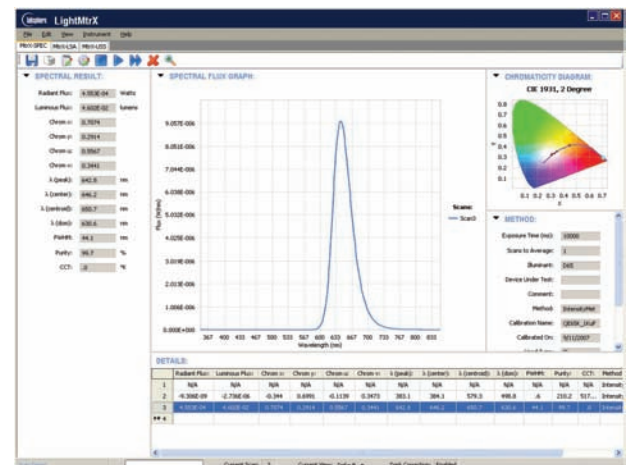
## FAST AND ACCURATE

The highly sensitive back thinned CCD array spectrometers offer low noise, high dynamic range, a choice of broad spectral ranges through UV-VIS-NIR and unparalleled ease of use. When integrated with Labsphere's light metrology systems, the spectrometers and MtrX-SPEC software offer integrated spectral calibration for complete total spectroradiometric, photometric and colorimetric characterization of light sources and light source systems from traditional general lighting lamps and luminaires, to new solid state lighting components and modules.

The fast results can help increase the rate of product development, decrease the time to market, and reduce development costs.

## COMPLETE YET FLEXIBLE

Use the high-end spectrometers for research, development or quality control. When you are ready to increase your capacity the integral design and user graphical interface make it easy for you to transition to the production floor with the same high performance you demand from the lab with the ease of use your operations desire.



MtrX-SPEC SOFTWARE

# Specifications

Description and Model	CSLMS 1011	CSLMS 1021
10-inch Spectral Flux Measurement System with CDS 1100 or 2100	AS-02477-600	AS-02477-700
<b>System Includes</b>		
Light Measurement Sphere, LMS 100	AS-02478-000	AS-02478-000
Spectrally calibrated lamp, SCL-600	AS-01335-000	AS-01335-000
Lamp Socket Assembly	AS-02478-002	AS-02478-002
Preset Power Supply, LPS-100-0260, 2.60 A, 35 W	AS-02600-260	AS-02600-260
CCD Array Spectrometer, CDS 1100 or CDS 2100	AS-02746-100	AS-02746-200
<b>Sold separately</b>		
MtrX-SPEC Spectral Light Measurement Software	MtrX-SPEC	MtrX-SPEC
<b>System Properties and Performance</b>		
<b>Sphere</b>	<b>10 in (25 cm)</b>	<b>10 in (25 cm)</b>
Sphere Coating Reflectance	98%	98%
Radiometric Range	100 W (max)	100 W (max)
Photometric Range (Illuminant A)	560 mlm – 12500 lm	385 mlm – 8500 lm
Red LED Range	95 mlm – 2100 lm	100 mlm – 2200 lm
Green LED Range	335 mlm – 7450 lm	375 mlm – 8400 lm
Blue LED Range	140 mlm – 3050 lm	145 mlm – 3100 lm
Spectral Range	350 - 850 nm	350 - 1050 nm
Max Recommended DUT dimension	1 x 1 in (3 x 3 cm)	1 x 1 in (3 x 3 cm)
Sphere Weight	8 lbs (3.6 kg)	8 lbs (3.6 kg)
Sphere Dimension (W x D x H)	16.7 x 11.9 x 15.5 in (42.4 x 30.2 x 39.4 cm)	16.7 x 11.9 x 15.5 in (42.4 x 30.2 x 39.4 cm)
<b>Spectrometer</b>	<b>CDS 1100</b>	<b>CDS 2100</b>
Detector	TE Cooled 1044 x 64 CCD (back thinned)	TE Cooled 1044 x 64 CCD (back thinned)
Spectral range	250-850 nm	350-1050 nm
Resolution	1.5 FWHM	1.5 FWHM
Integration time	8 ms – 40 s	8 ms - 40 s
Cooling	10 +/- 0.05 C	10 +/- 0.05 C
TE Temp Drift	+/- 1 C	+/- 1 C
Linearity	+/- 0.5%	+/- 0.5%
Wavelength Accuracy	<+/- 0.4 nm	<+/- 0.4 nm
Stray light Broadband	<10 <sup>-4</sup> at 400nm w/ III A source	<10 <sup>-4</sup> at 400nm w/ III A source
Stray light LED/laser	<10 <sup>-5</sup> at 500nm w/633 nm laser	<10 <sup>-5</sup> at 500nm w/633 nm laser
Focal Length	100 mm	100 mm
Optical Input	600 μm, 3m long (SMA Connection)	600 μm, 3m long (SMA Connection)
Speed	0.1 scans /sec	0.1 scans /sec
Dynamic range (single scan)	30000:1	30000:1
Spectral Sample interval	0.25nm	0.25nm
Mechanical Shutter	Yes	Yes
AD Converter	16 bit	16 bit
A/D Rate	TBD	TBD
PC Interface	USB 2.0	USB 2.0
Trigger	11.3 lbs (5.04 kg)	11.3 lbs (5.04 kg)
Dimensions (W x D x H)	8.3 x 13.0 x 3.5 in (21.1 x 32.9 x 8.9 cm)	8.3 x 13.0 x 3.5 in (21.1 x 32.9 x 8.9 cm)
<b>Lamp Standard</b>	<b>SCL-600</b>	<b>SCL-600</b>
Power	35 W	35 W
Approximate Luminous Flux	450 lm	450 lm
Rated Life	300 hrs	300 hrs
Calibration	Spectral Flux (W/nm) 350 - 1050 nm	Spectral Flux (W/nm) 350 - 1050 nm
<b>Power Supply</b>	<b>LPS-100-0260, 2.60 A, 35 W</b>	<b>LPS-100-0260, 2.60 A, 35 W</b>
Power Requirements	110/220 VAC, 50/60 Hz	110/220 VAC, 50/60 Hz
Current Stability	0.1%	0.1%
Current Rise Time	20 s	20 s
Regulated Current	2.60 A +/- 0.1%	2.60 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>		
TP-100 Sphere Photometer Temperature Probe	AS-02637-100	
TPM-100 Sphere Photometer Monitor and Probe	AS-02638-100	
35W Absorption Correction Lamp, AUX-35	AS-02639-000	

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Description	CSLMS 2011	CSLMS 2021
20-inch Spectral Flux Measurement System with CDS 1100 or 2100	AS-02478-600	AS-02478-700
<b>System Includes</b>		
Light Measurement Sphere, LMS 200	AS-02478-000	AS-02478-000
Spectrally calibrated lamp, SCL-600	AS-01335-000	AS-01335-000
Lamp Socket Assembly	AS-02478-002	AS-02478-002
Preset Power Supply, LPS-100-0260, 2.60 A, 35 W	AS-02600-260	AS-02600-260
CCD Array Spectrometer, CDS 1100 or CDS 2100	AS-02746-100	AS-02746-200
<b>Sold separately</b>		
MtrX-SPEC Spectral Light Measurement Software	MtrX-SPEC	MtrX-SPEC
<b>System Properties and Performance</b>		
<b>Sphere</b>		
Sphere Coating Reflectance	20 in (50 cm) 98%	20 in (50 cm) 98%
Radiometric Range	400 W (max)	400 W (max)
Photometric Range (Illuminant A)	2.25 lm – 50000 lm	1.55 lm – 34000 lm
Red LED Range	375 mlm – 8400 lm	395 mlm – 8800 lm
Green LED Range	1.35 lm – 30000 lm	1.50 lm – 33700 lm
Blue LED Range	550 mlm – 12000 lm	570 mlm – 12700 lm
Spectral Range	350 - 850 nm	350 - 1050 nm
Max Recommended DUT dimension	2 x 2 in (5 x 5 cm)	2 x 2 in (5 x 5 cm)
Sphere Weight	21 lbs (9.5 kg)	21 lbs (9.5 kg)
Sphere Dimension (W x D x H)	28.5 x 23.7 x 29.4 in (72.4 x 60.2 x 74.7cm)	28.5 x 23.7 x 29.4 in (72.4 x 60.2 x 74.7cm)
<b>Spectrometer</b>	<b>CDS 1100</b>	<b>CDS 2100</b>
Detector	TE Cooled 1044 x 64 CCD (back thinned)	TE Cooled 1044 x 64 CCD (back thinned)
Spectral range	250-850 nm	350-1050 nm
Resolution	1.5 FWHM	1.5 FWHM
Integration time	8 ms – 40 s	8 ms - 40 s
Cooling	10 +/- 0.05 C	10 +/- 0.05 C
TE Temp Drift	+/- 1 C	+/- 1 C
Linearity	+/- 0.5%	+/- 0.5%
Wavelength Accuracy	<+/- 0.4 nm	<+/- 0.4 nm
Stray light Broadband	<10 <sup>-4</sup> at 400nm w/ III A source	<10 <sup>-4</sup> at 400nm w/ III A source
Stray light LED/laser	<10 <sup>-5</sup> at 500nm w/633 nm laser	<10 <sup>-5</sup> at 500nm w/633 nm laser
Focal Length	100 mm	100 mm
Optical Input	600 μm, 3m long (SMA Connection)	600 μm, 3m long (SMA Connection)
Speed	0.1 scans /sec	0.1 scans /sec
Dynamic range (single scan)	30000:1	30000:1
Spectral Sample interval	0.25nm	0.25nm
Mechanical Shutter	Yes	Yes
AD Converter	16 bit	16 bit
A/D Rate	TBD	TBD
PC Interface	USB 2.0	USB 2.0
Trigger	11.3 lbs (5.04 kg)	11.3 lbs (5.04 kg)
Dimensions (W x D x H)	8.3 x 13.0 x 3.5 in (21.1 x 32.9 x 8.9 cm)	8.3 x 13.0 x 3.5 in (21.1 x 32.9 x 8.9 cm)
<b>Lamp Standard</b>	<b>SCL-600</b>	<b>SCL-600</b>
Power	35 W	35 W
Approximate Luminous Flux	450 lm	450 lm
Rated Life	300 hrs	300 hrs
Calibration	Spectral Flux (W/nm) 350 - 1050 nm	Spectral Flux (W/nm) 350 - 1050 nm
<b>Power Supply</b>	<b>LPS-100-0260, 2.60 A, 35 W</b>	<b>LPS-100-0260, 2.60 A, 35 W</b>
Power Requirements	110/220 VAC, 50/60 Hz	110/220 VAC, 50/60 Hz
Current Stability	0.1%	0.1%
Current Rise Time	20 s	20 s
Regulated Current	2.60 A +/- 0.1%	2.60 A +/- 0.1%
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Compliance	CE	CE
<b>Optional Accessories</b>		
Sphere Photometer Temperature Probe, TP-100	AS-02637-100	
Sphere Photometer Monitor and Probe, TPM-100	AS-02638-100	
35W Absorption Correction Lamp, AUX-35	AS-02639-000	