Integrating Sphere Spectroradiometer System for LED LPCE-2(LMS-8000)

Brochure

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Lead in CFL & LED Test Instruments
Integrating Sphere Spectroradiometer System for LED

LPCE-2(LMS-8000)

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<td>(Test in small Integrating Sphere)</td>
<td>8</td>
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Note the following:

If you need to test LED luminaire and Single LEDs both, you need to choose LMS-8000S and the Blue items instruments

If you only need to test LED luminaire or Single LED, you can choose LMS-8000 but no need the Blue items instruments
1. **CCD Spectroradiometer**

The CCD Spectroradiometer is an automated measurement system for identifying the performance of individual LED. It is designed to have a capability of producing any visible spectral distribution, mimicking various light sources in the visible region by feedback control of the radiant power emitted by individual LEDs. This LED test system will be used as a transfer standard for photometric, colorimetric and radiometric applications.

LMS-8000S is updated version for LMS-8000, LMS-8000S can connect two integrating sphere at the same time. That’s mean LMS-8000S be switch between the two spheres conveniently, but no need to take out the detector cable and optical fiber between the big sphere and small sphere.

**Measures:**

**Electrical:** Forward Voltage, Reverse Current, Voltage, Current, Power, Power Factor  
**Photometric:** Total Luminous Flux, Luminous Efficiency  
**Colorimetric:** Total Radiant Intensity, Dominant Wavelength, Peak Wavelength, Color Coordinates, Half-bandwidth, Spectral Purity, Correlated Color Temperature (Color Temperature Meter), Color Rendering Index, Color Difference, Chromaticity, Spatial Radiation Pattern

**Specifications:**

- CCD spectrometer technology and SMA905 Optical Fiber  
- Spectral Range: 200nm ~ 780nm / 380nm ~ 780nm / 380nm ~ 1050nm  
- Spectral Resolution: ±0.2nm, Reproducibility: ±0.5nm  
- Accuracy of Chromaticity Coordinate \((\Delta x, \Delta y)\): ±0.003  
- Correlated Color Temperature CCT: 1500K ~ 25000K (±3%)  
- Single LEDs intensity measure: 1mcd~999.9cd with Class 1 detector (optional)  
- With a built-in 5000.0mA constant current power supply to drive LED: Current range is 0.01mA ~ 5000.0mA (±0.5%) and Voltage range is 0.01V ~ 40.0V  
- Connect with PC by USB and the English software can be run in WinXP and Win7  
- Compliance with the CIE Technical Report for Measurement of LEDs (CIE 127-1997) and IES LM 79-08 standards
2、Optical Fiber

CFO-1.5M: 1.5m optical fiber connect the Spectroradiometer and integrating sphere
CFO-1.5MY: 1.5m Y type optical fiber connect with Spectroradiometer and two spheres

3、Digital power meter

- Measure Voltage, Current, Power and Power Factor.
- Voltage range:10~600V; Current range: 0.005~20A
- Accuracy: ±(0.4%reading + 0.1%range + 1digit)
- Communicate with PC by RS-232. It can communicate with LISUN other instruments such as LMS-5000, LMS-8000 and LMS-9000

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Measure</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS2008R</td>
<td>AC Parameters: U, I, P, PF</td>
<td></td>
</tr>
<tr>
<td>LS2010</td>
<td>AC Parameters: U, I, P, PF and harmonic</td>
<td>Special Software can show harmonic in WinXP or Win7</td>
</tr>
<tr>
<td>LS2012</td>
<td>AC+DC Parameters: U, I, P, PF</td>
<td>DC: 1<del>600v, DC Current Range: 0.005</del>20A, out of limit alarming</td>
</tr>
</tbody>
</table>

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4、 AC Power Source

- AC-DC-AC frequency conversion technology
- Controlled and tested by 16 bits MCU, which has high automation
- High speed 12 bits A/D sampling technology
- Zero output impedance, equivalent resistance $\leq 0.1$
- Output frequency range: 45.00-65.00Hz
- Output voltage range: AC 0.0-300.0V
- Total voltage distortion: $\leq 0.6\%$; Voltage stability: $\leq 0.1\%/30$ min
- Load adjust rate: $\leq 0.1\%$; Frequency stability: $\leq 0.05\%/30$min

<table>
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<tr>
<th>Lisun Model</th>
<th>Output Power</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSP-500VA</td>
<td>500W</td>
<td>0<del>150V: 4.2A, 150</del>300V: 2.1A</td>
</tr>
<tr>
<td>LSP-500VAR</td>
<td>500W</td>
<td>(LSP-500VAR has RS-232 port can communicate with PC with low harmonic and high accuracy)</td>
</tr>
<tr>
<td>LSP-1KVA</td>
<td>1000W</td>
<td>0<del>150V: 8.4A, 150</del>300V: 4.2A</td>
</tr>
<tr>
<td>LSP-1KVAR</td>
<td>1000W</td>
<td>(LSP-1KVAR has RS-232 port can communicate with PC with low harmonic and high accuracy)</td>
</tr>
</tbody>
</table>

5、 Intensity Test Device

Work with LMS-8000 to measure the single LED’s intensity value: 1mcd~999.9cd with Class 1 detector
6. **New Design Integrating Sphere**

Due to the LED luminaries such as LED street luminaries developed, to do $4\pi$ geometry testing, it is hard to be hold in the traditional integrating sphere design. To solve this problem, Lisun design a new kind of sphere.

- The hold base can bear max 20kg, it can expanding to test all lamps such as E27/E40, all tubes such as T5/T8/T12, and all kinds of luminaries
- The hold base can be installed in the ceiling or down, it can be adjusted the height
- Hold base has four power cables connect to the outside Power Supply and max is 5KW

<table>
<thead>
<tr>
<th>Order Number:</th>
<th>Lisun Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>With Hold base</strong></td>
<td>1.5m</td>
</tr>
<tr>
<td>IS-1.5MA</td>
<td>IS-1.75MA</td>
</tr>
<tr>
<td><strong>With Hold base and side opening</strong></td>
<td>IS-1.5MA55P</td>
</tr>
</tbody>
</table>
7、 **Standard Lamp Source**

OSRAM Standard Lamp to calibrate the spectrum and luminous flux with Lisun Lab certification. The data can be traced NIM. The Standard Lamp Source is used to calibrate the integrating sphere system. The different size of Integrating Sphere should choose the right power of standard lamp source.

<table>
<thead>
<tr>
<th>Integrating Sphere Size</th>
<th>0.3m/0.5m</th>
<th>1m/1.5m/1.75m</th>
<th>2m/2.5m/3m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Lamp Source</td>
<td>SLS-10W</td>
<td>SLS-50W</td>
<td>SLS-50W/SLS-100W</td>
</tr>
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</table>

8、 **Standard Instrument Cabinet 19Inch (Option)**

Combine all of the test instruments in a 19 inch standard Cabinet, makes the whole systems looks nice and is simple to use.

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**Next pages are the test report for LED lamp & Single LED**
CCD Spectroradiometer

LED Luminaires Test Report

Product Mark
Product Type : LED1
Manufacturer : DIG Lighting
Temperature : 25°C
Humidity : 65%
Operator : Peter
Test Date : 2009-11-14

Remark:

Chroma Parameters
Chro.Coor.: x=0.3127, y=0.3225, u=0.2003, v=0.3099, duv=-0.0002
CCT: 6555K, Dominant Wave: 485.7nm, Purity: 7.8%
Flux RGB Ratio: R=12.8%, G=83.7%, B=3.5%
Peak Wave: 448.8nm
Half Width: 24.9nm

Rendering Index: Ra= 75.2
R1 = 73, R2 = 79, R3 = 80, R4 = 75, R5 = 74, R6 = 70, R7 = 85, R8 = 66
R9 = -10, R10 = 47, R11 = 71, R12 = 42, R13 = 75, R14 = 89, R15 = 0

Photo Parameters
Flux: 215.72lm
Effi.: 53.91m/W
Radiant: 679.9mW

Ele. Parameters
Voltage: U= 220.100V
Current: I= 0.0440A
Power: P= 4.00W
Power Factor: PF= 0.418

Instrument state
Instrument: Lisun LMS-8000
Integral Time: 112.339ms
VPeak: 13397
VDark: 1415
Scan Range: 380-780nm
Product ID: 0

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Single LED Test Report

Product Mark
Product Type :LD12KQ  Manufacturer :AB Lighting
Temperature :25'C  Humidity :65%
Operator :Peter  Test Date :2009-11-5

Chroma Parameters
Chro.Coor.:x=0.3168  y=0.3262  u=0.2018  v=0.3116  duv=-0.0004
CCT: 6301K  Dominant Wave.:487.0nm  Purity:6.1%
Flux RGB Ratio:R=13.1%,G=83.2%,B=3.8%  Peak Wave:453.1nm  Half Width:23.9nm

Rendering Index:Ra= 76.3
R1 =74    R2 =82    R3 =84    R4 =74    R5 =73    R6 =73    R7 =86    R8 =64
R9 =-12   R10=54   R11=68   R12=41   R13=76   R14=91   R15=0

Photo Parameters
Flux:7.2601m  Effi.:122.21m/W  Radiant:22.6mW  Iv:1500.0mcd

Ele. Parameters
Forward Current:If=20.0mA  Reverse Voltage:Vr=5.00V
Forward Voltage:Vf=2.97V  Reverse Current:Ir=0.00uA

Instrument state
Instrument:Lisun LMS-8000  Integral Time: 122.581ms  VPeak: 14253
VDark: 1412  Scan Range: 380-780nm  Product ID: 0