



# **Goniophotometer for Automotive and Signal Lamps (LSG-1950 )**

## **Brochure**

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**Leader in Lighting & Electrical Test Instruments**

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## 1. System Configuration

### A. LSG-1950 goniophotometer system::

- Angular measurement rotation console: using Japanese Mitsubishi Electric and German angle decoder system
- Photometer rotation controller: connected to computer and controlled by software.
- Class A constant temperature probe
- Laser alignment system for calibration
- Chinese and English software
- Laser System for Calibrating
- Two sets of multifunctional fixtures
- Two sets of luminaries Clamps: multi-functions
- SLS-150W DC light intensity standard light source

### B. LS2050B digital electrical parameter measuring instrument: LCD display, used to measure AC and DC voltage, current, power, power factor, DF and harmonics.

### C. DC6010 precision digital display DC voltage and current stabilized power supply: 60V/10A constant current and voltage source output (optional DC12010: output 120V/10A)

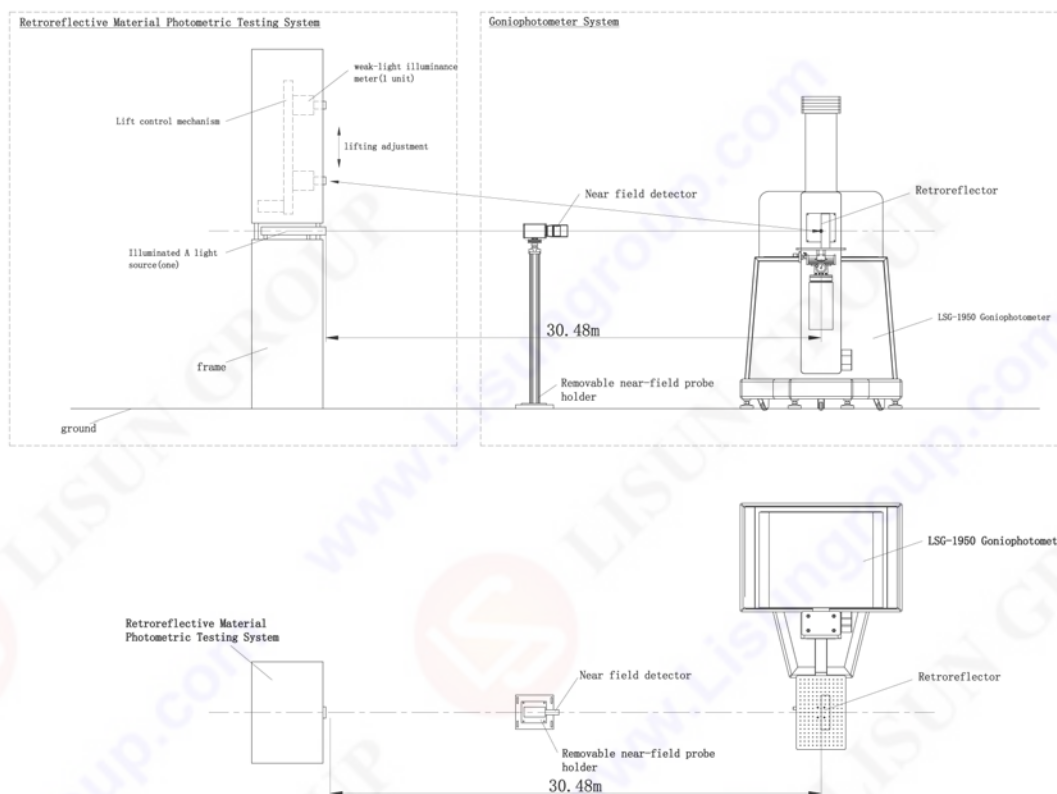
### D. AC power supply: equipped with LSP-500VARC pure sine wave variable frequency voltage stabilized power supply, LCD display, maximum output power 500VA

### E. CASE-19IN 19-inch cabinet: put AC/DC power supply and electrical parameter table, etc.

### F. LMS-9000CG high-precision CCD spectroradiometer and CLAMP-9000 accessories and adjustable tripod (optional): used for spatial color distribution test of automotive lights

### G. PM400F flash light source illuminance meter (optional): dedicated to testing flashing light sources

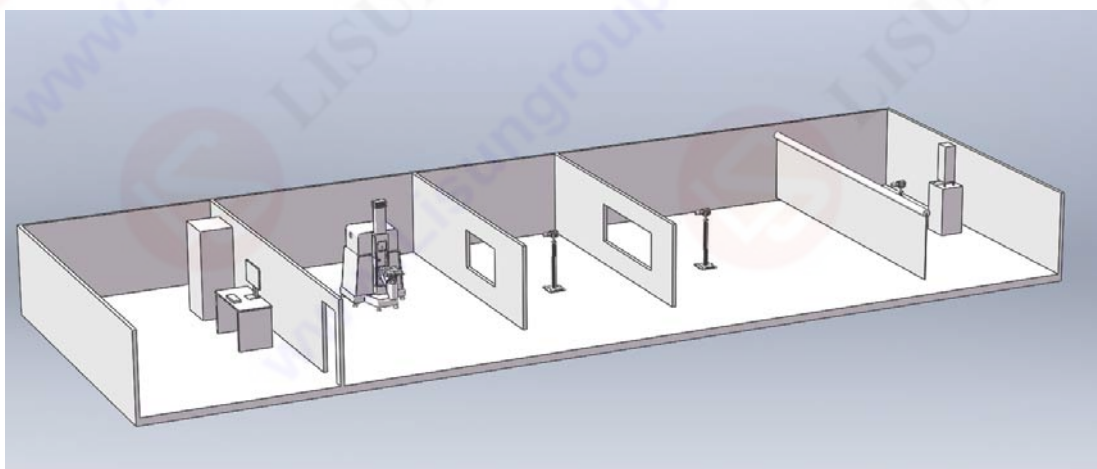
### H. LS-RF200 Retroreflective material photometric test system (optional): test the photometric performance of various retroreflectors or materials such as raised road signs, faulty vehicle warning signs, road marking paint, contour markers, etc.



**Note: The computer and printer must be prepared by the customer and must have at least one USB port.**

## 2. Measurement Principle

LSG-1950 is a goniophotometer recommended by CIE A-α. When the test sample rotates around the horizontal and vertical axes, the photometer head remains stationary and faces the object to be tested, so as to test the light intensity and illumination value of the tested lamp.



### 3. Specifications

#### 3.1 Goniophotometer LSG-1950:



- Adopting Mitsubishi Electric from Japan and angle encoder imported from Germany, angle accuracy: 0.01°;
- A-α axis rotation angle is -180~180°; turntable XY stroke is 100mm, Z stroke is 350mm;
- Probe accuracy: CIE Class A;
- Photometric linearity: 0.2%; Stray light: <0.1%;
- Photometric test range: illumination range 0.001lx~10000lx;
- Adopting precious metal steering gear to achieve uninterrupted continuous measurement, no need to worry about winding;
- The software has built-in traffic and automotive lamp test standard library, which is convenient for customers to call according to the test;
- Maximum weight of test lamp: 50KG;
- Maximum size of lamp:  $\phi 800*800\text{mm}$

LISUN MODEL	Center Height (A)	Total Height (B)	Total Depth (C)	Total Width (D)	The max size for the Testing Lamp: Diameter(E)*Depth(F)	The max diameter of the mast rotating(G)	Max Testing Weight
LSG-1950	1080	1900	980	1500	ø800×800max	ø1800	50kg

Table 1 The Dimensions of the Goniophotometer Master

Note: E is the max diameter of the testing lamp. Depends on the darkroom size, the max diameter of the light-emitting area will be about 200mm less and the thickness F will also be less accordingly

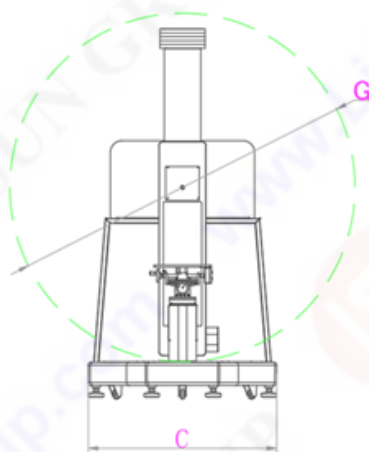


Figure 1 The Side View

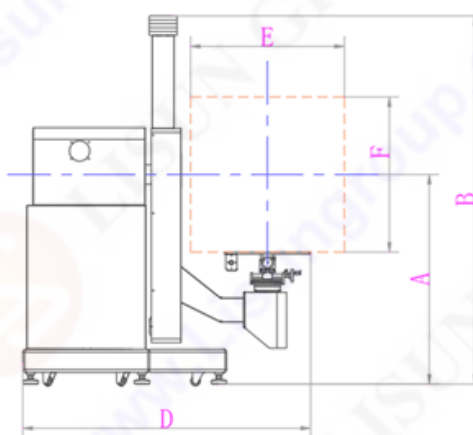


Figure 2 The Vertical View

### 3.2 LMS-9000CG High Precision CCD Spectroradiometer and CLAMP-9000 Accessories and Adjustable Tripod (Optional):



- Spectral range: 380-800nm, wavelength test accuracy:  $\pm 0.3\text{nm}$ , wavelength repeatability:  $\pm 0.1\text{nm}$
- Sample scanning interval:  $\pm 0.1\text{nm}$
- Chromaticity coordinate accuracy:  $\pm 0.002$  (under standard A light source)
- Correlated color temperature test range: 1,500K~100,000K, accuracy:  $\pm 0.3\%$
- Color rendering index range: 0~100.0, accuracy:  $\pm(0.3\% \text{rd} \pm 0.3)$
- Luminous flux test range: 0.01-200,000lm; photometric linearity:  $\pm 0.5\%$   
Stray light:  $< 0.015\%(600\text{nm})$  and  $< 0.03\%(435\text{nm})$



- Integration time: 0.1~10,000ms
- Temperature inside and outside the integrating sphere can be tested
- Luminous flux test method: spectroscopy, photometry, spectrophotometry
- Chinese and English software can run under Win7, Win8, Win10 and Win11

**3.3 PM400F flash light source illuminance meter (optional): used with LSG-1950, it fully complies with the following standards:**



MH/T 6012-1999 Aviation Obstruction Lights

HB6490-1991 General Specifications for Aircraft Navigation Lights and Anti-collision Lights

JTT 761—2022 General Technical Requirements for Navigation Lights

ECER65 Uniform Provisions Concerning The Approval of Special Warning Lamps for Motor Vehicles

JJF1330-2011 Calibration Specifications for Transient Effective Light Intensity Meters

**3.4 LS-RF200 Retroreflective material photometric performance test system (optional):**

**3.4.1 Weak-light illuminance meter**

- Measuring range: 0~1000.00 (mlx);
- Illuminance resolution: 0.01 (mlx);
- Matching accuracy: National Class I;

**3.4.2 illuminated A light source**

- Light source color temperature:  $T_c = (2856 \pm 50) \text{ K}$ ;
- Spot illumination unevenness  $E_{\max}/E_{\min} < 1.05$ ;
- Illumination of the irradiated surface can be provided:  $E_{\max} \geq 8.0 \text{ lx}$  (at a distance of 30m and an irradiated surface diameter  $\phi \approx 600\text{mm}$ );

Adopting a stepper motor precision guide rail system, the detector is driven up and down at 30.48m, and the observation angle is automatically adjusted from 12' to 2°. The observation angle adjustment speed is fast, and the adjustment time from 12' to 2° does not exceed 30 seconds. The positioning accuracy of the lifting and adjustment mechanism is  $\pm 0.5\text{mm}$ .

- ## 4. Laboratory Requirements

3\*3m (W\*L)

Technical drawing of a mobile laboratory unit layout. The unit is 10000 mm long and 3000 mm high. The layout includes:

- Top Section:** A 2-CORE POWER SOCKET A (170 LG-1750 POWER SUPPLY) is located at the top left. A 2500 mm section on the right contains a 2-CORE POWER SOCKET B (170 PM400C POWER SUPPLY).
- Left Section:** A 2500 mm wide section containing a 2-CORE POWER SOCKET (170 3-CORE POWER SUPPLY) and a 2500 mm wide section containing a 2500 mm wide section.
- Right Section:** A 2500 mm wide section containing a 2-CORE POWER SOCKET (170 3-CORE POWER SUPPLY).
- Equipment:** LAMP 1, LAMP 2, LAMP 3, LAMP 4, LAMP 5, LAMP 6, LAMP 7, LAMP 8, LAMP 9, LAMP 10, LAMP 11, LAMP 12, LAMP 13, LAMP 14, LAMP 15, LAMP 16, LAMP 17, LAMP 18, LAMP 19, LAMP 20, LAMP 21, LAMP 22, LAMP 23, LAMP 24, LAMP 25, LAMP 26, LAMP 27, LAMP 28, LAMP 29, LAMP 30, LAMP 31, LAMP 32, LAMP 33, LAMP 34, LAMP 35, LAMP 36, LAMP 37, LAMP 38, LAMP 39, LAMP 40, LAMP 41, LAMP 42, LAMP 43, LAMP 44, LAMP 45, LAMP 46, LAMP 47, LAMP 48, LAMP 49, LAMP 50, LAMP 51, LAMP 52, LAMP 53, LAMP 54, LAMP 55, LAMP 56, LAMP 57, LAMP 58, LAMP 59, LAMP 60, LAMP 61, LAMP 62, LAMP 63, LAMP 64, LAMP 65, LAMP 66, LAMP 67, LAMP 68, LAMP 69, LAMP 70, LAMP 71, LAMP 72, LAMP 73, LAMP 74, LAMP 75, LAMP 76, LAMP 77, LAMP 78, LAMP 79, LAMP 80, LAMP 81, LAMP 82, LAMP 83, LAMP 84, LAMP 85, LAMP 86, LAMP 87, LAMP 88, LAMP 89, LAMP 90, LAMP 91, LAMP 92, LAMP 93, LAMP 94, LAMP 95, LAMP 96, LAMP 97, LAMP 98, LAMP 99, LAMP 100, LAMP 101, LAMP 102, LAMP 103, LAMP 104, LAMP 105, LAMP 106, LAMP 107, LAMP 108, LAMP 109, 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9. The width of dark room door above 1050mm, so that LSG-1950 could enter into dark room.

- The dark room wall, ceiling and floor should be all coated with dull black paint or be covered by black cloth and black carpet.
- Air-conditioner: be set in the dark room to control the temperature around lamps to the standard value upon the CIE requirements.

**Note:** LISUN GROUP engineer dept will submit the Lab Design support documents according to the customer's real lab size after the formal purchase order was confirmed

## **2) Requirements of Eliminating the stray Light**

Luminaires must be where the photo detector can only receive the light reflected by the rotating mirror in the LSG-1950 system. The light given off directly by the luminaries and reflected by the wall and floor is warded off by the light fence. Internal surface of the dark room and dark path together with the surface of the light fence should be painted unpolished black or be covered by black cloth and black carpet.

## **3) Temperature of the Environment**

Temperature around the lamp or luminaries must be  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$  during the test. Exceptions can be given according to relative lamps as following.

- a. Tungsten Incandescent Lamp:  $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
- b. Double-caps Fluorescent Lamp:  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$
- c. High Pressure Mercury Lamp:  $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$
- d. Metal Halogen Lamp:  $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$
- e. High Pressure Sodium Lamp:  $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$
- f. Low Pressure Sodium Lamp:  $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$

## **4) Airflow**

Airflow may be induced by natural aeration, air conditioner or movement of the luminaries in the goniophotometer, but the speed of the airflow couldn't exceed 0.2m/s.

## **5) Vibration and shock**

When the lamp is in lighting, the vibration couldn't exceed  $10\text{m/s}^2$  (4~3000Hz), or the moving scope of the lamp couldn't exceed 30mm (at most 4Hz)

## **6) Smoke, Dust and Moisture**

The test environment must free from smoke, dust or moisture. At the same time, even not during the measurement, smoke, dust or moisture will also influence the reflectance of the reflecting mirror and induce more stray light. So, the test room must be kept clean, no smoke and dry. The humidity should be less than 60% RH.



## 5. Service

### 1) Installation and Training

LISUN GROUP engineers will take responsibility for installation and Training of the system at the customer's

### 2) Period of Guarantee: 24 months

The service is for free except technician's travel payment if the service provided by LISUN GROUP implement at the customer's.

### 3) Upgrading the applications software for free

## 6. Design Standard of Device

The construction, technical parameter, test & operate steps as well as data processing software of LSG-1950 Goniophotometer for Automotive and Signal Lamps meet the following requirements: GB, ECE, SAE, JIS, KS and FMVSS108

## 7. Typical overseas market customers:

There are many world famous company and lab institute choose Lisun Goniophotometer, Please get the reference customers' information from Lisun Group Oversea Sales Dept.

**The Next Page is the Test Report by the software:**

Report No. : LS171124  
 Program : Special Warning Lights  
 Standard : ECE Addendum 64 Regulation No.65  
 Revision :  
 Function : Category X Blue Day  
 Trade name or mark : LISUN  
 Type : lilp  
 Light source : led  
 Rated voltage : 12v  
 Manufacturer's name : lisun  
 Manufacturer's address : shanghai  
 Light source module : no  
 Light source module specific identification code : 12lo  
 Operator : oprt  
 Voltage : 12.140 V  
 Test Instrument : LSG-1950  
 Test Distance : 3.580 m  
 Test Time : 2017-10-19 18:19

H V	-90°	-45°	-30°	-20°	-10°	0°	10°	20°	30°	45°	90°
min 8° max					100 <b>92.5</b> 1500		100 <b>96.5</b> 1500				
min 6° max				100 <b>115.1</b> 1500		150 <b>140.4</b> 1500		100 <b>176.6</b> 1500			
min 4° max	40 <b>62.0</b> 1000	40 <b>45.2</b> 1000	40 <b>115.7</b> 1000		200 <b>165.6</b> 3000		200 <b>206.0</b> 3000		40 <b>236.6</b> 1000	40 <b>218.8</b> 1000	40 <b>113.8</b> 1000
min 0° max	100 <b>197.3</b> 1000	100 <b>128.8</b> 1000	100 <b>181.5</b> 1000	150 <b>243.6</b> 1500		200 <b>426.7</b> 3000		150 <b>515.7</b> 1500	100 <b>463.7</b> 1000	100 <b>431.6</b> 100	100 <b>276.9</b> 1000
min -4° max	40 <b>349.6</b> 1000	40 <b>426.3</b> 1000	40 <b>420.9</b> 1000		200 <b>687.7</b> 3000		200 <b>720.7</b> 3000		40 <b>620.2</b> 1000	40 <b>476.8</b> 1000	40 <b>275.9</b> 1000
min -6° max				100 <b>552.9</b> 1500		150 <b>617.1</b> 1500		100 <b>492.3</b> 1500			
min -8° max					100 <b>337.1</b> 1500		100 <b>257.3</b> 1500				