DynaSpect Series

DynaSpect is the name for a series of spectroscopic devices.

External Quantum Efficiency Measurement System C9920-12

External quantum efficiency measurement system for light emitting device utilizing an integrating sphere

Luminous Efficiency can be measured precisely without Effects of Emission Angle Distribution Characteristics.

The C9920-12 External Quantum Efficiency Measurement System is a system for measuring the external quantum efficiency of a light emitting device such as organic/inorganic LED and LED by electro-luminescence (EL) method.

The luminous efficiency of the light emitting devices is related to various elements, such as the absorption of the light emitting part and glass substrate, and the reflectance of the reflective mirror surface, so on. The C9920-12 can measure the efficiency of external emissions for the applied current (voltage), inclusive of these elements related to efficiency. The current (voltage) applied to the sample can be set on the software. It is applied to the sample in steps from the minimum value to the maximum value for the current (voltage) set in advance from a power source meter. With an integrating sphere, highly precise emission efficiency measurements can be made independently of the emission angle distribution characteristics.

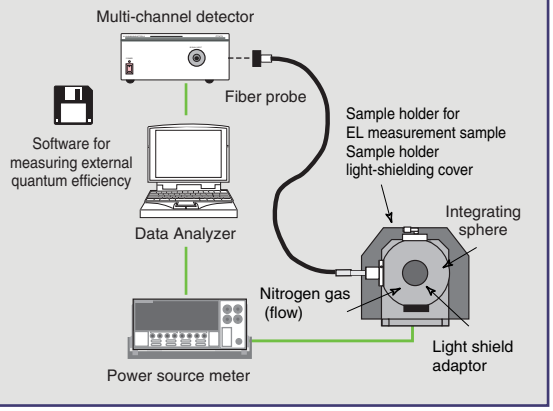
Employing Hamamatsu multi-channel detector, the spectrum can be measured instantaneously at each step. The spectral data from each step is recorded by the software, and the external quantum efficiency, I-V-L characteristics and chromaticity can be displayed.

HAMAMATSU

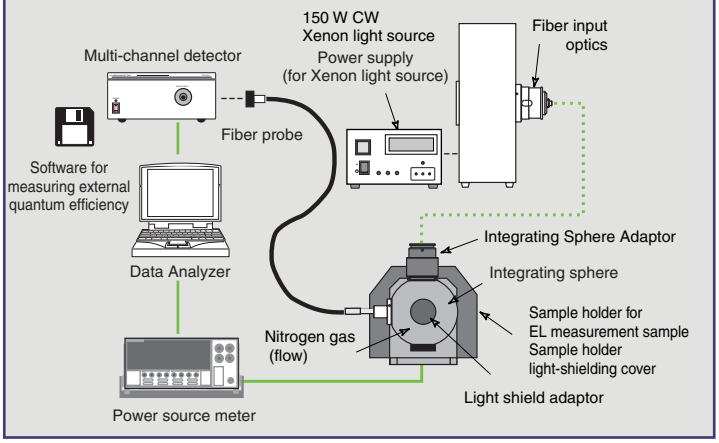
External quantum efficiency measurement system utilizing an integrating sphere.

The luminous efficiency of the light emitting device including the optical effect from the glass substrate and reflective mirror, etc. is measured rather than just that of the emitting part. The power source meter is controlled on software and the spectrum at each current (voltage) step is measured automatically.

C9920-12 standerd component



C9920-12 + OPTION (supplementing for sample absorption)



FEATURES

- With an integrating sphere the measurement does not influenced on the emission angle characteristics of the sample
- The power source meter (KEITHLEY 2400) can be controlled on the software
- The spectrum can be measured instantaneously with Hamamatsu multi-channel detector for each step of the applied current (voltage)
- Using a high-performance, BT(buck thinned) cooled CCD ,the system has ultra-high sensitivity
- Settings, measurements and displays of results are simplified by the dedicated software
- On the software, it is possible to display various types of graphs, such as current/current density/voltage-spectrum, current/current density/luminous efficiency or current/current density/voltage-chromaticity.
- The system can be easily extended to absolute PL quantum yield measurements and brightness and light distribution characteristics measurement systems with additional parts

SPECIFICATIONS

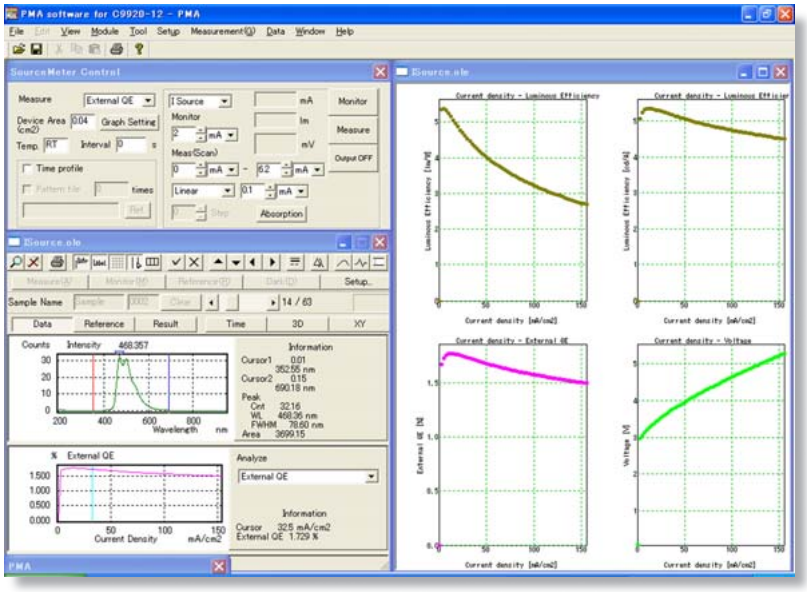
Integrating sphere	3.3 inch inside diameter, reflective material: Spectralon
Detector	BT(buck thinned) cooled CCD
Cooling temperature (CCD)	–15 ℃
No. of photosensitive device channels	1024 ch
Wavelength measurement range	380 nm to 780 nm (detector: 200 nm to 950 nm)
Fiber probe	1.5 m
Range of measurement for luminous flux	0.00013 lm to 0.12 lm (with an emission area 2 mm square and white light)

Simple and easy operativity is realized with the dedicated analysis software.

Software for measuring external quantum efficiency

Measurements for external quantum efficiency of light emitting device can be made on the software.

Screen displaying measurement results

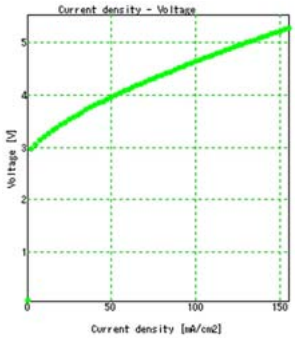


Minimum and maximum value of current/voltage value, and current/voltage value steps and the like can be set in a window at the upper left of the display screen. Raw measurement data (emission spectrum etc.) is displayed in the window. Sample monitoring measurements, data during a measurement and the like are displayed. Various graphs can be displayed in the figures on the right side of the display screen.

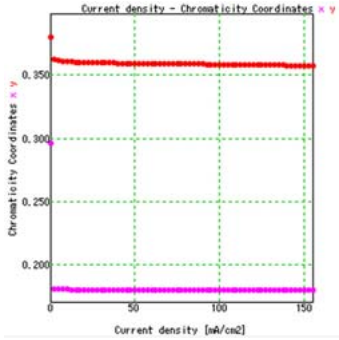
Graph display

The results of measurements can be displayed in various graph formats.

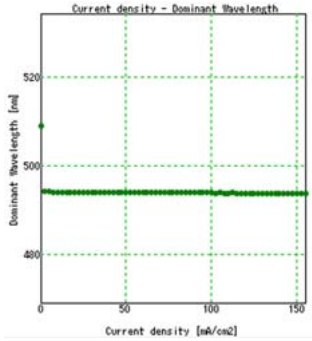
Current density/Voltage



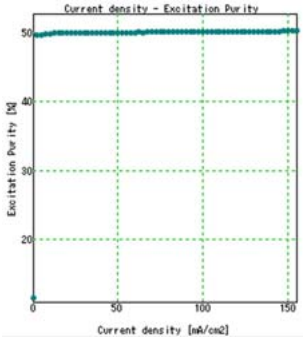
Current density/Chromaticity coordinates



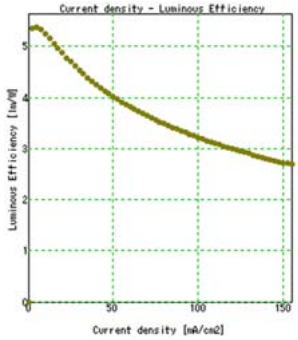
Current density/Dominant wavelength



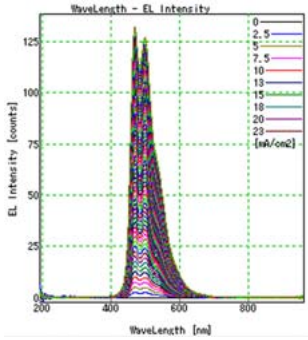
Current density/Excitation purity



Current density/Power efficiency



Wavelength/Intensity



Current density/External quantum efficiency

Time/emission spectrum

Time/Current (voltage)

Time/Chromaticity coordinates

Current/external differential quantum efficiency

Current density/Luminous efficiency (cd/A)

* Voltage can also be displayed in place of current density.

A wide variety of measurement targets can be accommodated by adding optional parts and components.

OPTIONS

150 W CW Zenon Light Source with Input Optics
L10092

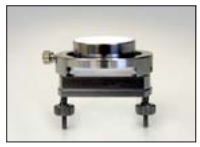
This is necessary when supplementing for sample absorption. It can be used jointly with an organic LED quantum absorption measurement device.

Integrating Sphere Adaptor
A10093

This is an adaptor for connecting an absorption supplementing light source to the integrating sphere.

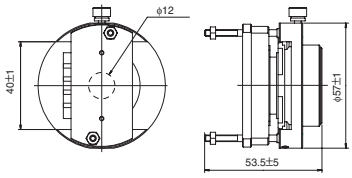
EL Measurement Sample Holder
A9924-04

This is a sample holder that uses pin type connectors.



EL Measurement Sample Holder
A9924-06

This is a general purpose sample holder that uses alligator clips. A light shielding cover is included.



Related Products

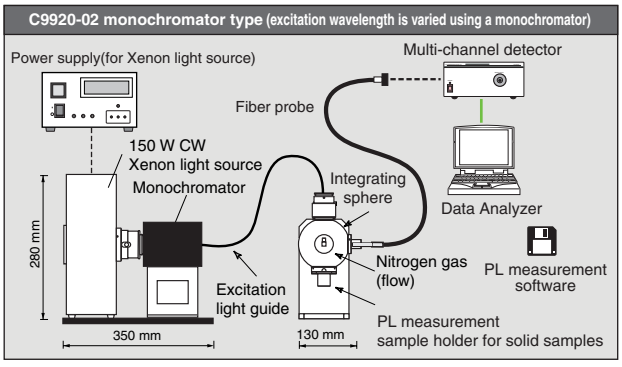
There are many products for combined configurations in the C9920 series, and expansion to the following products is easy.

Absolute PL Quantum Yield Measurement System
C9920-01,-02

The photo-luminescence quantum yield is measured for photo-luminescent materials using photoluminescence (PL) method.

Excitation at various wavelengths is possible with an band-pass filter or a monochromator. Various sample holders are provided, so measurements can be made not only on thin films, but also on solutions and powders.

Block Diagram

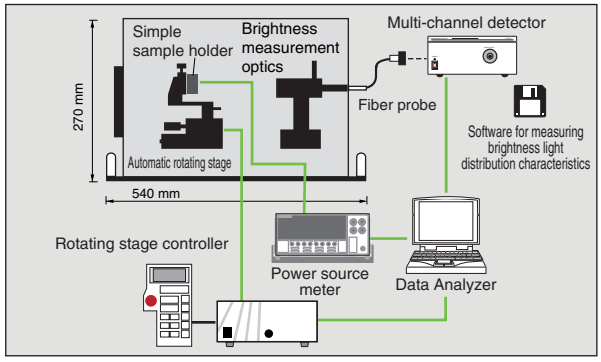


Brightness Light Distribution Characteristics Measurement System
C9920-11

Measurements such as brightness for each emission angle, emission spectrum and chromaticity are possible using a rotating stage.

The light emitting device emission brightness, spectrum and emission angle distribution are measured for each of the angle steps that has been set.

Block Diagram



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