

# Opto-Spectrum Generator

— Recreates the ideal color as you need it —

## ■ APPLICATIONS

- Light stimulus to living body
- Spectral characteristic evaluation of devices
- Optical property evaluation of materials
- Illumination



**HAMAMATSU**  
PHOTON IS OUR BUSINESS

## APPLICATIONS

### Light stimulus to living body



#### Plant photosynthesis activity, plant culture, light stimulus to living cells

- High output 850  $\mu\text{mol}/\text{m}^2/\text{s}$  (at 700 nm) <sup>①②③</sup>  
3000  $\mu\text{mol}/\text{m}^2/\text{s}$  (at 680 nm) <sup>①②③</sup>  
4000  $\mu\text{mol}/\text{m}^2/\text{s}$  (at 460 nm) <sup>①②③</sup>
- Monochromatic light with high spectral purity

### Spectral characteristic evaluation of devices



#### Evaluation of solar cell devices, camera spectral characteristics, optical system deflection characteristics and CCD/CMOS

- High monochromatic light output: 15 mW or more (visible type) <sup>①②④</sup>
- Sharp spectral profile

### Optical property evaluation of materials



#### Characterization of photocatalyst, phosphor, and material (solar cell and container)

- High monochromatic light output: 15 mW or more (visible type) <sup>①②④</sup>
- Sharp spectral profile
- Uniform light irradiation <sup>⑥</sup>

### Illumination



#### Light source of microscopes and endoscopes

- High output power: 75 mW/cm<sup>2</sup> or more (visible type) <sup>①②</sup>  
Measured value (typical): 125 mW/cm<sup>2</sup> (at 436 nm) <sup>①②⑤</sup>
- Uniform light irradiation <sup>⑥</sup>

① Initial value (reference value) measured with a light meter positioned at the light output end of the A10014-50-0110 light guide (sold separately) attached to the Opto-Spectrum Generator.

② Light source: L12194-00-39070/-43079

③ Measured with Model LI-250 made by LI-COR.

④ Measured with NOVA II PD300-UV made by OPHIR.

⑤ Measured with C6080-04 made by Hamamatsu.

⑥ When used with the E5147-06 uniform irradiation lens (sold separately) attached to the light guide.

## FEATURES

### ● Emits light "when & where you need it" over a wide range of wavelengths

With just one Opto-Spectrum Generator you can freely select and irradiate any desired wavelength in 1 nm step with wavelength tuning at 50 nm per second.

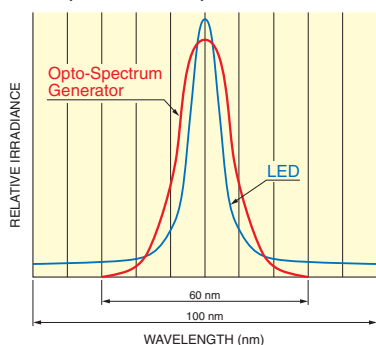
Product lineup gives a light emission spectrum ranging from UV to visible region as a standard product feature.

### ● Sharp spectrum with a high spectral purity

Spectral profile with no broadening ensures a sharp spectrum with a high spectral purity, not containing undesired wavelength components.

Emits light at any desired wavelength with high reproducibility and so allows highly accurate experiments, evaluations and tests that have not been possible with LED.

### ● Spectrum comparison (reference data)



### ● "High output" while maintaining "high stability"

The Opto-Spectrum Generator uses in-house high stability lamp and unique optical system we have developed and manufactured in-house for extracting light with high efficiency. This allows you to make a wide range of experiments, evaluations and tests compared to existing light sources and devices.

### ● "Compact body" means no more worries about installation space and location

Highly advanced functions are condensed into a compact body. This gives you a light source that fits into even limited spaces.

### ● Easy control from your PC

The built-in RS-232C interface allows you to easily set or control parameters such as wavelength, light output intensity and emission time from your PC. Hamamatsu also offers simple sample software that displays a setup screen.

### ● Sample software



# SPECIFICATIONS

Parameter	UV Type	Visible Type		Unit
	L12194-00-34054	L12194-00-39070	L12194-00-43079	
Spectral distribution	340 to 540	390 to 700	430 to 790	nm
Spectral half-width	Below 25			nm
Light output intensity <sup>①</sup>	See light output distribution (Typ.).			mW
Light output stability	within 5			%
Wavelength tunable width	1			nm
Wavelength tuning speed	50			nm/s
Warm-up time (Typ.)	10			min
Input voltage (AC)	100 V to 240 V, single phase 50 Hz / 60 Hz			—
Power consumption	280			VA
Guaranteed lamp life <sup>②</sup>	1000			h
Cooling method	Forced air cooling by fan			—
Operating temperature range	+5 to +35			°C
Storage temperature range	-10 to +70			°C
Operating humidity range	Below 80% (no condensation)			—
Storage humidity range	Below 80% (no condensation)			—
Control method	Communication connector (RS-232C)			—
Applicable standards	EMC standard	IEC61326-1: 2012 Group 1 Class A		—
	Safety standard	IEC61010-1: 2010		—

① Light output intensity differs depending on the wavelength.

② End of service life is defined as the time when light output intensity falls below 60 % of its initial value.

\* Please consult us if different wavelengths and specifications are needed.

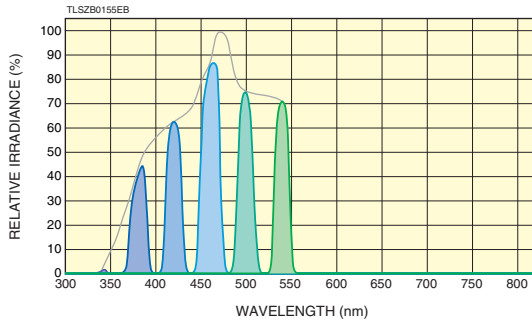
### <Control items>

- Lamp ON / OFF
- Shutter drive (open / close)
- Manual / Auto
- Timer setting
- Light intensity adjustment
- Emission wavelength setting
- Total lamp ON time
- Error signal

# CHARACTERISTICS

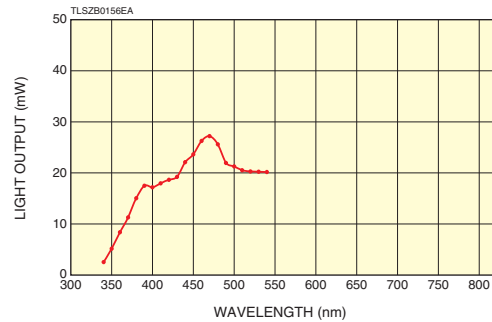
## ● SPECTRAL DISTRIBUTION (Typ.) \*

L12194-00-34054 (340 nm to 540 nm)

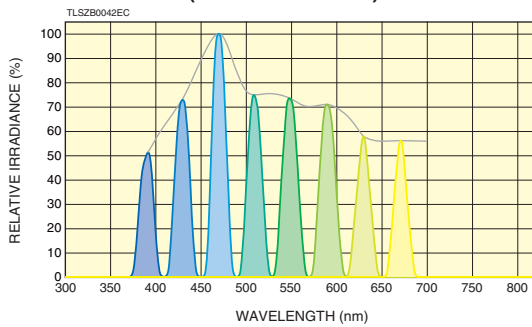


## ● LIGHT OUTPUT DISTRIBUTION (Typ.) \*

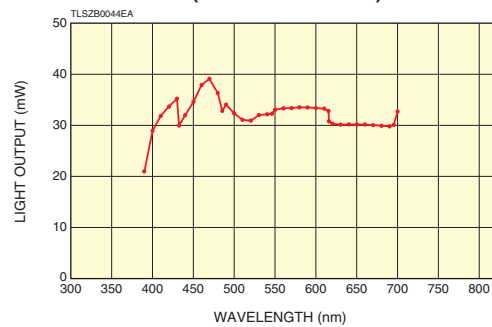
L12194-00-34054 (340 nm to 540 nm)



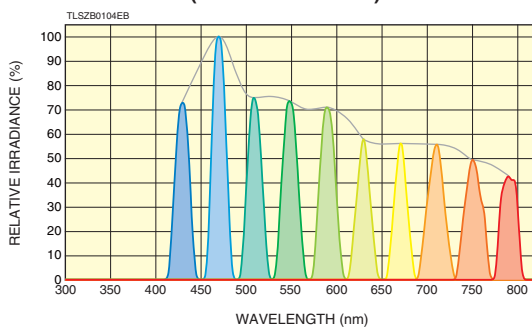
L12194-00-39070 (390 nm to 700 nm)



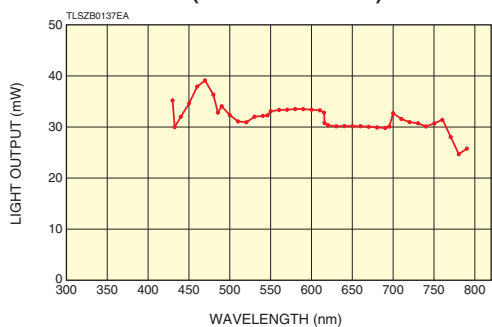
L12194-00-39070 (390 nm to 700 nm)



L12194-00-43079 (430 nm to 790 nm)



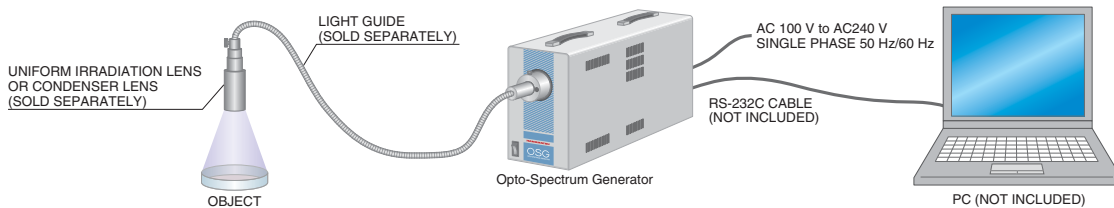
L12194-00-43079 (430 nm to 790 nm)



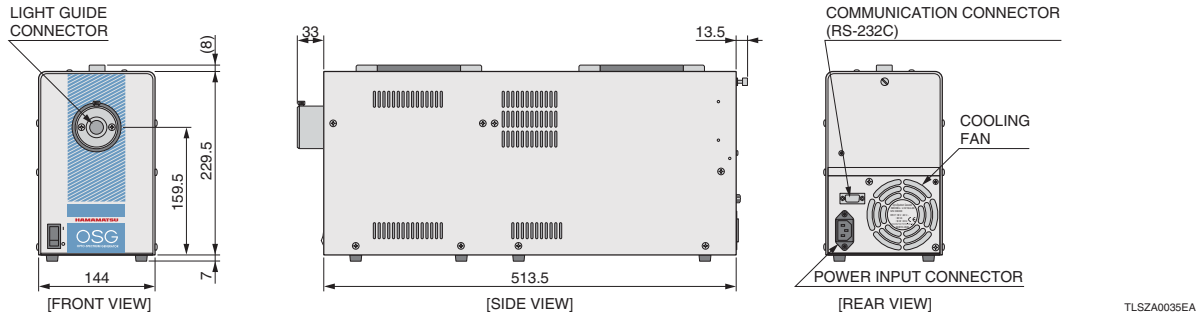
\* Each graph shows emission spectra at a wavelength interval of 40 nm.

\* Initial value (reference values) measured at the output end of the A10014-50-0110 light guide (sold separately) attached to the Opto-Spectrum Generator. Measured with NOVA II PD300-UV made by OPHIR.

## CONNECTION EXAMPLE



## DIMENSIONAL OUTLINE (Unit: mm)



## ACCESSORIES

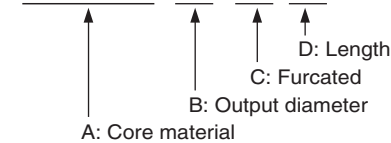
### LIGHT GUIDES

Hamamatsu provides quartz light guides with high UV to visible light transmittance as well as multicomponent light guides with high visible light transmittance.

\* We also handle orders for custom-made products. Feel free to consult us for special needs.

### TYPE NO. GUIDE

**A10014-50-0110**



A		B (Suffix numbers are examples)		D (Suffix numbers are examples)	
Type No.	Core material	Suffix	Output diameter	Suffix	Length
A10014	Quartz glass	35	3.5 mm	10	1 m
A10015	Multicomponent glass (for visible light)	50	5 mm	15	1.5 m
		70	7 mm	30	3 m

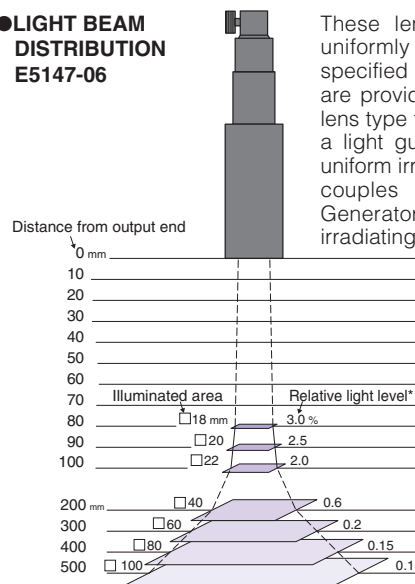
C (Suffix numbers are examples)	
Suffix	Furcated
01	1
04	4
06	6

### CONDENSER LENSES

These lenses serve to efficiently focus light emitted from the light guide. When irradiating an object separated some distance from the light guide, we recommend using a condenser lens. Available condenser lenses include a long focus lens, short focus lens, and right-angle irradiation lens.

### UNIFORM IRRADIATION LENSES

#### LIGHT BEAM DISTRIBUTION E5147-06



\* Relative to the light level measured using the A10014-50-0110 light guide at a 10 mm distance, which is assumed to be 100%. Measured with C6080-04 made by Hamamatsu.

TLSSXB0098EB

## RELATED PRODUCTS

### PHOTONIC MULTICHANNEL ANALYZER PMA-12 SERIES

The PMA-12 is compact spectral measurement apparatus that combines a spectrometer and optical detector into one unit.

The detector is so highly sensitive that the PMA can capture an optical spectrum by just bringing the optical fiber close to the reagent even without using a special condenser optical system. Combining the PMA with various optional peripheral devices lets you easily configure various types of measurement systems for measuring fluorescence, transmittance, absorbance, reflectance, colors, and micro spectrum, etc.



▲PMA-12

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