

**HAMAMATSU**

UV SPOT LIGHT SOURCES

# LIGHTNINGCURE™ SERIES

Brings you "Easy Maintenance" in a "Compact Body".

## LC5

Delivers new functions for highly advanced optical curing !!

**NEW**

## LC6



Left: LC5 series, Right: LC6 series

# The LC6 now comes loaded with 3 major new functions for better stabilized optical curing

New  
Function

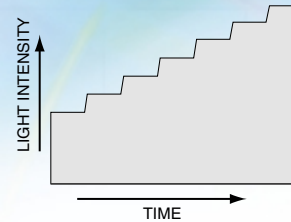
## Memory Step™ for 9 types 7-step programs

Program the irradiation intensity and irradiation time to any level you want! Freely set the UV irradiation conditions to match the component you want to bond. The LIGHTNINGCURE LC6 lets you store nine types of 7-step programs in the memory, so optimal irradiation conditions matching the component for bonding can be set just by changing the program number. This holds true even when multiple bonding components are flowing in the same production process or when shifting to different production lines.

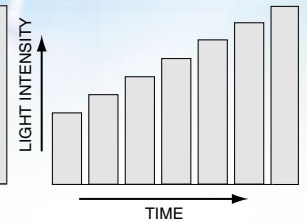
The LC6 is especially ideal for components that must be fixed in place with high precision. The mounting positions of these components often deviate due to stress warping and contraction in the adhesive that causes positional shifts. Using the LC6 gives better production stability and higher product yield especially for components demanding high position precision.

### Program example 1: Increasing light intensity in 7 steps

Shutter "open" between steps

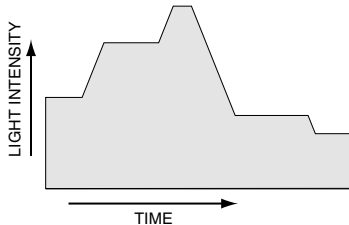


Shutter "closed" between steps

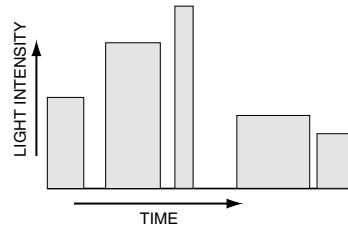


### Program example 2: Random light intensity and irradiation time settings

Shutter "open" between steps

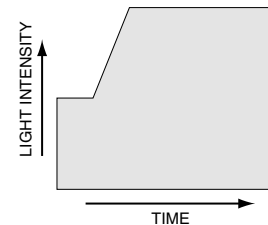


Shutter "closed" between steps

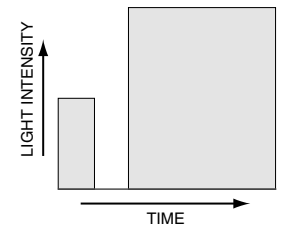


### Program example 3: Low light intensity and then long-term high intensity

Shutter "open" between steps



Shutter "closed" between steps



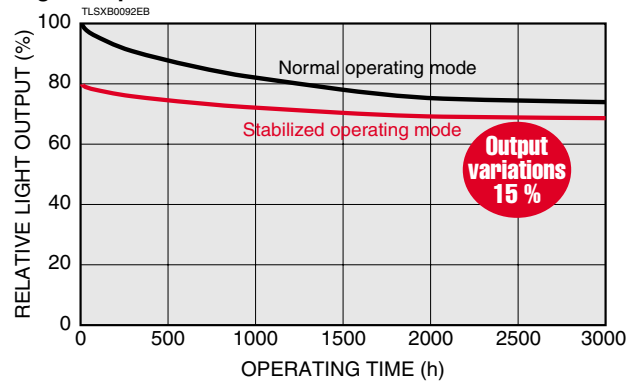
New  
Function

## Stable operating mode available

You can now select stable operating modes to reduce variations in light output over elapsed time while also lowering power consumption about 10 percent compared to standard operation.

Variations in light output can be reduced about 15 percent over 3,000 hours. This means you get stable light output all the way to the final lamp life stage. This operating switch is on the surface of rear panel.

### Light Output Variations



New  
Function

## Optical power monitor with optical feedback (option: sold separately)

An optical power monitor with optical feedback can be added as a useful option for maintaining constant irradiation power. The built-in sensor constantly monitors the light intensity that usually varies with operating time, and the sensor output is feedback to control the iris so the light intensity is always maintained at a preset constant level. The irradiation power (reference value) when using the standard light guide is shown in a digital display (in watts) on an LCD panel. This eliminates mistakes that occur due to using the wrong conditions or human errors during measurement.

This also means finer control on fully automated lines.



# LIGHTNINGCURE

# The LC5 brings you easy maintenance in a compact size.

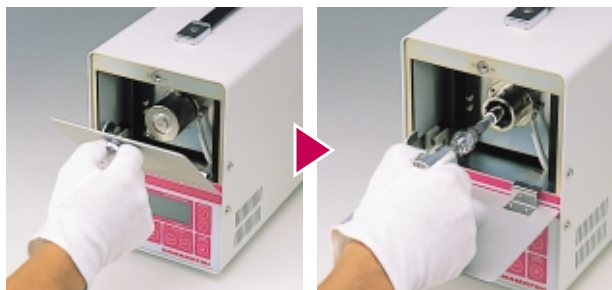
## FEATURES & FUNCTIONS

### Anybody can use it! One-touch replacement!

Lamp is replaceable in less than 30 seconds!

Just insert the lamp to replace it. No wiring to worry about. This is so easy you can do it with one hand.

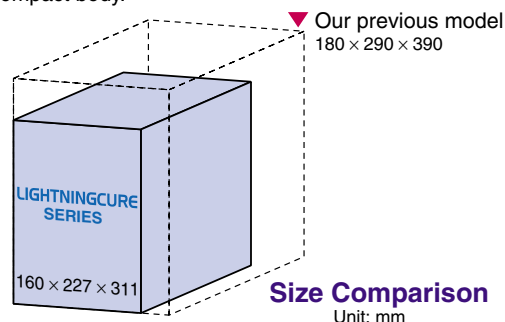
Lamp is the cassette type with a preset optical axis so no troublesome optical alignment is needed after replacement.



\* The L8388 and L8878 are exclusively for previous cassette type lamps. These are replaced the same way as our previous lamp models.

### Clever layout allows a compact body

The smallest size (volume) in its product class\* compared to previous products including those made by other manufacturers. Weight has been also reduced 6.5 kg making it 1.5 kg lighter than previous other models. Superior product features have all been condensed into this new, compact body.

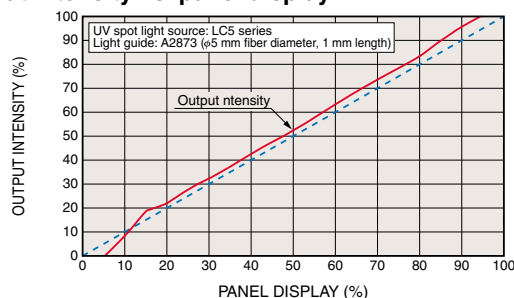


\*For light sources using lamps rated at 200 W or more.

### Light intensity adjustable anywhere within 0 to 100%!

An electric diaphragm mechanism allows a digital display of the relative light output from 0 to 100% on the LCD panel. Unlike conventional analog scales, this means highly precise light irradiation. Light output also can be controlled from an external device, so meeting various kinds of measurement conditions is now even easier.

#### Output intensity vs. panel display



### Selectable positions of light guide port

A front port type and a rear port type are available. The front port type allows lamp replacement from the operation panel side. This helps hold limits on equipment movement and installation location to a minimum.

Select the light guide port position that best matches the component for bonding and its mounting position.



Left: Front light guide port type, Right: Rear light guide port type

### Full line-up of external control equipment (D-sub connector: standard feature, terminal block: option [sold separately])

Turning the lamp on and off and opening-closing of the shutter can be controlled by input of external signals. An alarm signal output is also provided. This means ideal usage conditions on semi or fully automated production lines.



### Power supply compatible in world-wide

Internal power supply automatically switches to a 100 or 200 V input. There is no problem when shifting the operating location in world-wide.

# WORLD-WIDE OPERATION

### Instantaneous power-outage response program

Restores operation in about 10 seconds after power outages of a second or less.

Conventional products take at least a few minutes to start up again after a power shutdown, so you can see this function drastically shrinks down-time due to power outages.

This function is especially convenient in places where the supply of power is intermittent or unstable.

### Great energy saving benefits

Our 200 W lamps have high intensity equal to lamps in the 250 W class. Light sources using our 200 W lamps also have less power consumption than those using 250 W lamps.

Power consumption is the lowest in its class (within 300 VA). This means using multiple UV light source units at production facilities will yield tremendous energy saving benefits.



# The LC5 brings you easy maintenance in a compact size.

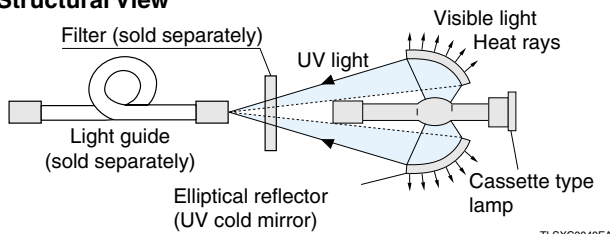
## STRUCTURE

### High efficiency optical system - no heat problems

The LC5 combines a mercury-xenon lamp having high-intensity UV line spectra with an elliptical reflector (UV cold mirror) having reflectivity higher than 90% in the UV range and a quartz light guide with excellent UV transmittance.

The lamp can be operated in a horizontal position, so the optical system has less light loss compared to lamps operated in an up-right position, allowing the UV light to input efficiently to the light guide. The elliptical reflector efficiently reflects only the UV light, and lets heat rays and visible light pass through to prevent adverse effects from heat on the irradiated point.

#### ●Structural View

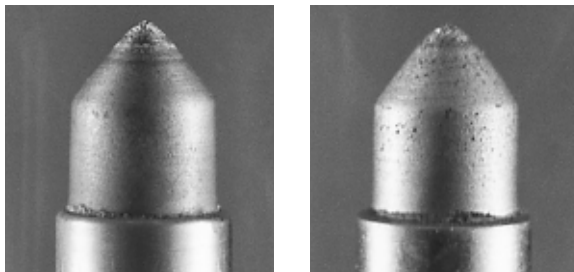


### No optical axis alignment

Uses a highly stable mercury-xenon lamp\* developed expressly for analysis and measurement applications. There is almost no wear on the electrodes and no positional shift of the arc point. Absolutely no optical axis alignment is needed, even during lamp replacement or during lamp use.

\* Patented

#### ●Electrode wear



Before use

After 2000 hours of use

### Highly durable shutter

The stepping motor used for the shutter in the LC5 has a service life 5 times longer than conventional rotary solenoids. Along with eliminating shutter troubles, the once noisy sound of shutter opening and closing can now hardly be heard. This makes the LC5 ideal for 24-hour continuous operation.

## CHARACTERISTICS

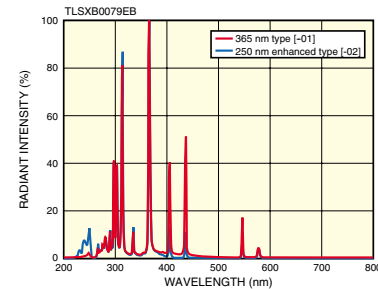
### Selectable wavelength

The LC5 allows you to select the wavelength range you need. The "-01" type suitable for wavelengths around 365 nm and the "-02" type enhanced for 250 nm band are provided. Select the light source that matches the adhesive agent you use.

These can also be combined with UV-transmitting filters that cut visible and infrared light, and minimize heat effects on the irradiated point.

A visible light type is also available (radiant wavelength range from 400 nm to 700 nm).

#### ●Radiant spectral distribution

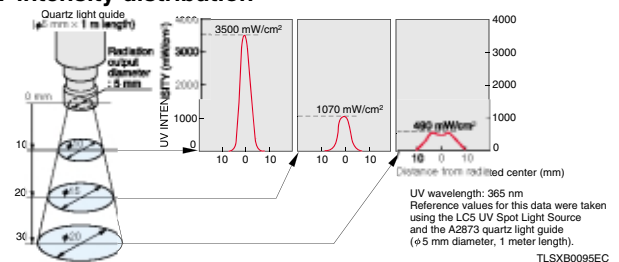


### High output

#### UV intensity: 3500 mW/cm<sup>2</sup> (-01 type, at 365 nm)

The LC5 yields an extremely strong spectral distribution in the UV range most effective for UV curing. UV intensity distribution is dependent on the distance from the light guide output end to the target surface to be irradiated, as well as on the type of light guide used. The greater the distance from the light guide output end to the target surface, the more the maximum UV intensity drops and the more the light beam expands (see below).

#### ●UV intensity distribution

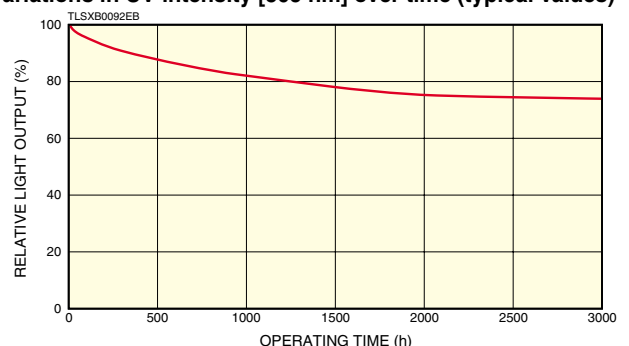


### Long service life

#### Guaranteed service life: 2000 h, Lamp operating life: 3000 h

UV intensity generally declines with lamp operating time. Hamamatsu has drastically improved these drops in light intensity by using a mercury-xenon lamp whose electrodes suffer almost no wear and an improved optical system.

#### ●Variations in UV intensity [365 nm] over time (typical values)



## FUNCTIONS

| Functions                                   | LC6 Series                |       |       | LC5 series |       |       |
|---|---------------------------|-------|-------|------------|-------|-------|
|   | L8858                     | L8868 | L8878 | L8222      | L8333 | L8388 |
| One-touch Lamp Replacement                  | ○                         | ○     | —     | ○          | ○     | —     |
| Irradiation Program (Memory Step™)          |                           | ○     |       |            | —     |       |
| Stabilized Operation Mode                   |                           | ○     |       |            | —     |       |
| Optical Power Monitor with Optical Feedback | (Option: sold separately) |       |       |            | —     |       |

○ : available, — : not available

## CONTROL

| Control                                       |                             | LC6 Series · LC5 Series |  |
|---|-----------------------------|-------------------------|--|
|   |                             | Front panel operation   | External control terminal (D-SUB connector) *1 |
| Main Power ON/OFF                             |                             | ○                       | —  |
| Lamp ON/OFF                                   |                             | ○                       | ○  |
| Shutter Drive                                 | Open/Close                  | ○                       | ○  |
|   | Auto Open/Close by Timer *2 | ○                       | ○  |
|   | Auto Shutter Time Setting   | ○                       | —  |
| Irradiation Program (Memory Step™) Setting *3 |                             | ○                       | —  |
| Optical Power Adjustment (UP/DOWN)            |                             | ○                       | ○  |
| Lamp ON Indicator                             |                             | ○                       | ○ (Signal Output)                              |
| Lamp Stability Indicator                      |                             | ○                       | ○ (Signal Output)                              |
| Shutter Open Indicator                        |                             | ○                       | ○ (Signal Output)                              |
| Lamp Operation Hour Meter                     |                             | ○                       | —  |
| Overheat Alarm                                |                             | ○                       | ○ (Signal Output)                              |
| Lamp Operation Time Alarm                     |                             | ○                       | ○ (Signal Output)                              |

\*1 10P terminal block is available as option (sold separately).

\*2 Corresponds to "start/stop" of Memory Step™ for the LC6.

\*3 These functions are available only for the LC6.

○ : available, — : not available

## SPECIFICATIONS

| Parameter                             |     | LC6 Series  |                         |                         | LC5 Series              |                         |                         |
|---------------------------------------|-----|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
|                                       |     | L8858   | L8868                   | L8878                   | L8222                   | L8333                   | L8388                   |
| Light Guide Port                      |     | Rear  | Operation panel (front) | Operation panel (front) | Rear                    | Operation panel (front) | Operation panel (front) |
| Lamp Replacement Position             |     | Operation panel (front)   | Rear                    | Top                     | Operation panel (front) | Rear                    | Top                     |
| UV Intensity <sup>Ⓐ</sup>             |     | 3500 mW/cm <sup>2</sup> Typ. (at 365 nm, -01 type)                          |                         |                         |                         |                         |                         |
| Radiant Wavelength Range <sup>Ⓑ</sup> | -01 | [365 nm type] 300 nm to 450 nm  |                         |                         |                         |                         |                         |
|                                       | -02 | [250 nm band enhanced type] 240 nm to 400 nm                                |                         |                         |                         |                         |                         |
|                                       | -03 | [Visible light type] 400 nm to 700 nm                                       |                         |                         |                         |                         |                         |
| Lamp for Maintenance <sup>Ⓒ</sup>     | -01 | L8251   |                         | L6721                   | L8251                   |                         | L6721                   |
|                                       | -02 | L8252 <sup>Ⓓ</sup>  |                         | L6722 <sup>Ⓓ</sup>      | L8252 <sup>Ⓓ</sup>      |                         | L6722 <sup>Ⓓ</sup>      |
|                                       | -03 | L8253 <sup>Ⓔ</sup>  |                         | L6723 <sup>Ⓔ</sup>      | L8253 <sup>Ⓔ</sup>      |                         | L6723 <sup>Ⓔ</sup>      |
| Lamp Service Life                     |     | Guaranteed life 2000 h, Lamp operating life 3000 h                          |                         |                         |                         |                         |                         |
| Power Supply Input                    |     | 100 Vac to 240 Vac (100 V / 200 V auto switching), single phase 47 to 63 Hz |                         |                         |                         |                         |                         |
| Power Consumption                     |     | 300 VA Max.   |                         |                         |                         |                         |                         |
| Weight                                |     | Approx. 6.5 kg  |                         |                         |                         |                         |                         |

**NOTE:** <sup>Ⓐ</sup> UV irradiance (at 365 nm) is measured in the center at a point 10 mm away from the output end of the A2873 light guide (sold separately), by using the Hamamatsu C6080-13 UV power meter.

<sup>Ⓑ</sup> Major radiant wavelengths. Various optical filters (sold separately) can also be attached.

<sup>Ⓒ</sup> L8251 and L6721 are 200 W super-quiet mercury-xenon lamps with ozone-free bulb. L8252 and L6722 are 200 W super-quiet mercury-xenon lamps. L8253 and L6723 are 150 W super-quiet xenon lamps with ozone-free bulb.

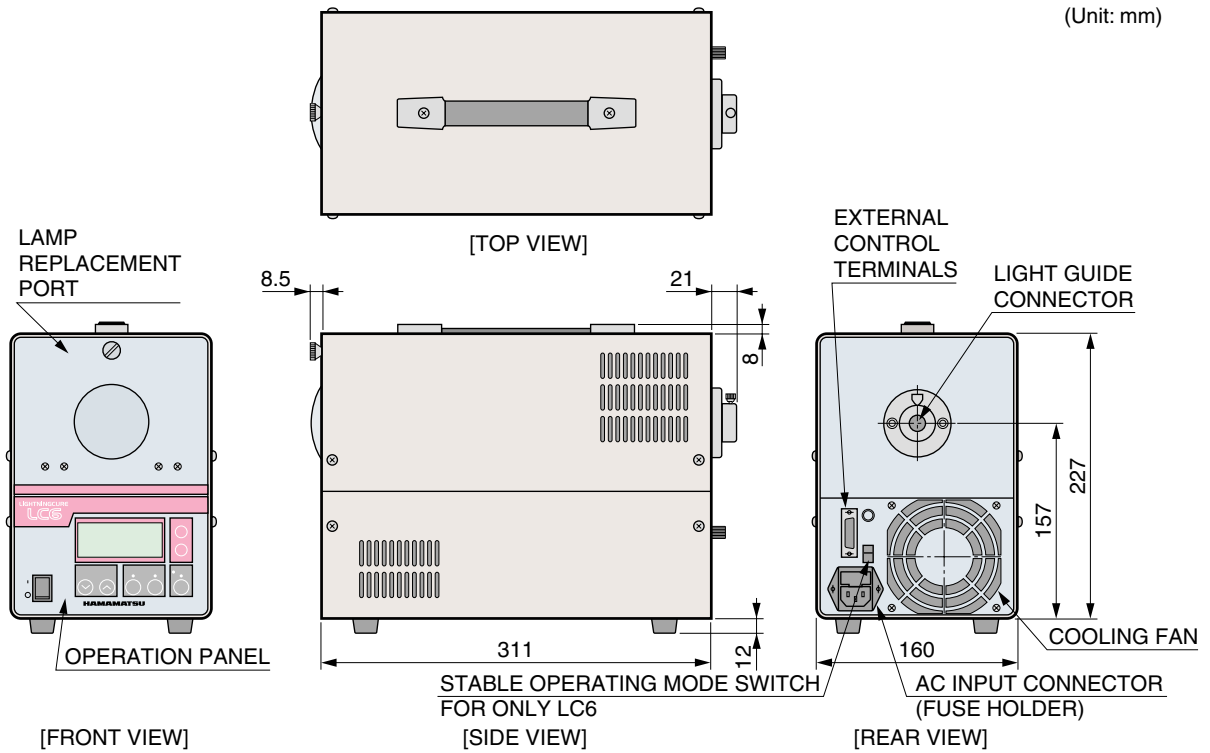
<sup>Ⓓ</sup> Ozone-free type is also available.

<sup>Ⓔ</sup> Standard quartz type is also provided.

## DIMENSIONAL OUTLINES

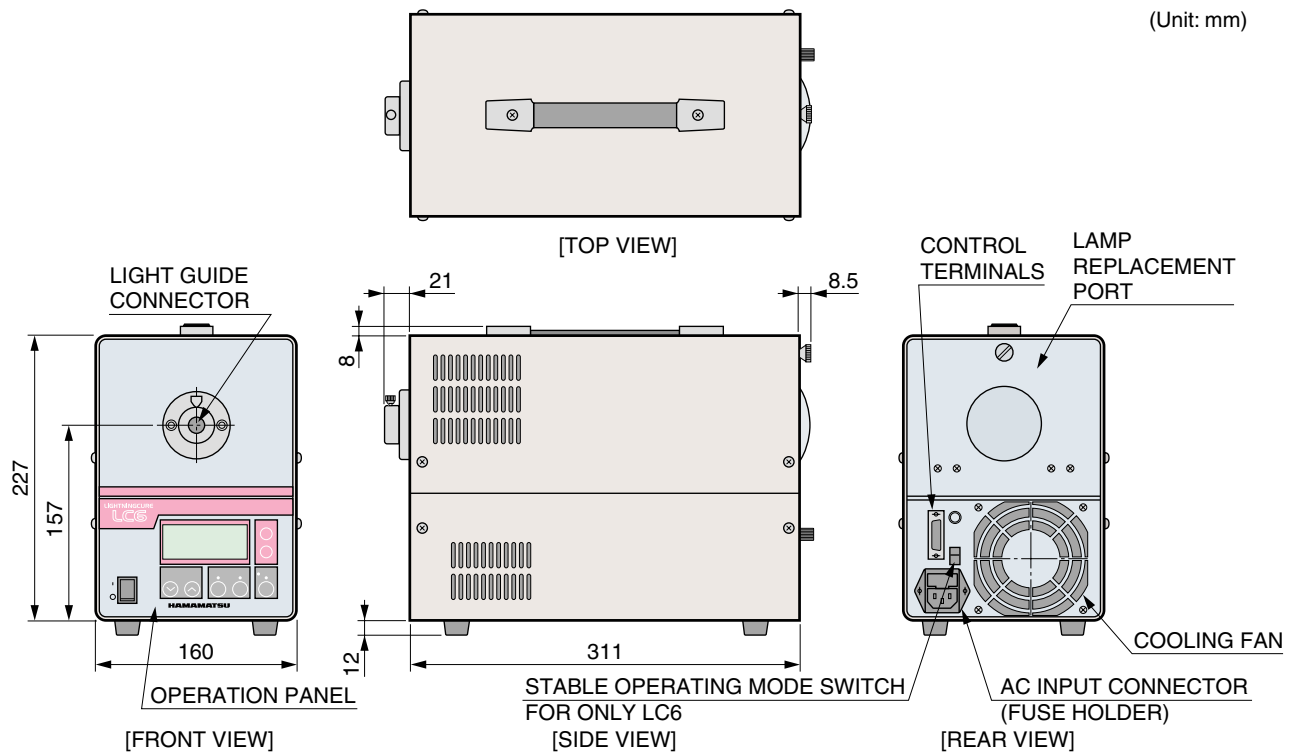
L8858 / L8222

(Unit: mm)



L8868 / L8333

(Unit: mm)



## **WARNING**

### ● **Light**

This equipment emits very strong ultraviolet light which is harmful to eyes and the skin.

Also, as the light emanating from the light guide connection aperture contains infrared light in addition to ultraviolet light, its irradiation will cause heat generation.

Be sure to observe following instructions for operation of the equipment.

- Never look directly into the light guide connection aperture or at the light emanating from the light guide. Strong ultraviolet light can cause visual disorder.
- Do not allow light to come into contact with skin. Contact with skin may cause sunburn-grade inflammation. Always wear safety glasses, gloves, and other appropriate protective gear when operating this equipment.
- Never allow light from the light guide to radiate onto flammable material.
- The unit includes an interlock that prevents the lamp from lighting while top cover is open. Never attempt to override the interlock function by manually depressing the switch, as this may result in uncontrolled release of dangerous ultraviolet light.

### ● **High-Voltage trigger**

- The mercury-xenon lamp employed started by a high-voltage (30 kV) pulse applied at the lamp electrodes.

As protection against accidental electrical shock hazard, the design includes an interlock switch that disables lamp operation while the top cover is open.

Never attempt to turn on the lamp by blocking the sensor window of the interlock switch.

### ● **Lamp Replacement**

- The inside of the lamp housing becomes extremely hot during lamp operation.

Before replacing the lamp, switch it off and run the cooling fan for at least 15 minutes.

- Always exercise due caution when handling or replacing a lamp.

A lamp contains high-pressure gas [approximately 1 MPa (10 atmospheres) at room temperature, approximately 4 MPa (40 atmospheres) during operation] and may burst if dropped or otherwise impacted.

### ● **Inhibition of Removal and Modification**

- Do not remove the top cover or under cover unless absolutely necessary and never touch any of the screws inside the unit. As the internal components of this unit have been precisely adjusted, disassembling or modifying the equipment can cause problems with the unit, fire and electrical shock.

## **WARRANTY PERIOD**

This device is guaranteed for one year after delivery date from us. The warranty extends only to replacement of the products. The warranty does not cover damage due to misuse or natural calamity.

## RELATED PRODUCTS

### UV POWER METER C6080 Series

The C6080 series is a UV power meter specifically designed to measure the intensity of UV radiation. Its compact size and simple operation are ideal for routine UV control work.



ISO9001 Certification  
JQA-1574

UV SPOT LIGHT SOURCES

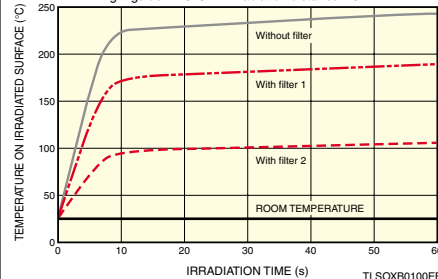
### ACCESSORIES FOR UV SPOT LIGHT SOURCES

#### • UV-transmitting filters

These filters transmit UV light while cutting visible and infrared light so heat generation on the irradiated point can be minimized. Effective in bonding parts vulnerable to heat.

#### Temperature changes on irradiated surface

• Light source: LC5 • Irradiated object: Glass epoxy board  
• Light guide: A2873 • Irradiation distance: 10 mm



#### • Various light guides

In addition to multi-furcated light guides, Hamamatsu provides light guide with various exit shapes such as linear (slit) type, square type, round type and special shapes to meet your specific needs.



#### Condenser lenses, protective glasses and others.

\* A catalog listing these accessories are available. Please ask our sales office for your free copy.

### UV BONDING EQUIPMENT

We design and configure simple UV curing or bonding equipment combined with dispensers and other devices.

We also welcome your queries regarding adhesive, bonding agents and syringes. Feel free to contact our sales office.



CE This product(s) conforms to the EMC directive/ EN61326:1997 + A1:1998 class A and the LVD/ EN61010-1:1993 + A2:1995 of the European Union.

#### [CONSULT US ABOUT UV CURING OR ANY RELATED ITEM]

We are available to help answer your various questions or concerns about UV curing or bonding.

We can provide the ideal combination of UV adhesive to meet your particular needs for bonding strength or job speed, etc.

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# HAMAMATSU

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