

### High Intensity, 150 W Type, Vacuum UV (from 115 nm) Light Source - L1835

The L1314 and L1835 are water-cooled 150 W deuterium lamps that deliver a radiant intensity 3 to 4 times higher than standard 30 W deuterium lamps. The lamp bulb is enclosed in a cylindrical metal jacket specially designed for water cooling. The L1314 has a synthetic silica window for an efficient emission of UV radiation, and the L1835 employs a MgF<sub>2</sub> (magnesium fluoride) window which even allows emitting vacuum UV radiation. Select the lamp that matches wavelengths required by your application. Vacuum flanges are also available as options in the L1835 for easy mounting to a vacuum chamber.

## APPLICATIONS

- Spectrophotometer, Fluorescence Spectrophotometer
- Removal of static electricity from the semiconductor wafer
- PID (Photo Ionization Detector)
- Solar Simulator
- Optical CVD
- Optical Chemical Reaction
- Excitation Light Source

## SPECIFICATIONS

### GENERAL

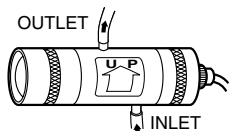
| Parameter                   | L1314                      | L1835            | Unit    |
|-----------------------------|----------------------------|------------------|---------|
| Spectral Distribution       | 160 to 400                 | 115 to 400       | nm      |
| Window Material             | Synthetic silica           | MgF <sub>2</sub> | —       |
| Aperture Size               | 2.5                        |                  | mm dia. |
| Cooling Method              | Water cooling <sup>Ⓐ</sup> |                  | —       |
| Weight (Approx.)            | 720                        | 950              | g       |
| Installation to Vacuum Port | No                         | Yes              | —       |

### RECOMMENDED OPERATING CONDITION / CHARACTERISTICS (at 25 °C)

| Parameter                       | Value                        | Unit       |
|---------------------------------|------------------------------|------------|
| Warm-up                         | Heater Voltage (DC, AC)      | 10 ± 1 V   |
|                                 | Heater Current (DC, AC)      | 1.2 A Typ. |
|                                 | Warm-up Time                 | 20 s       |
| Operation                       | Heater Voltage (DC)          | 5 V        |
|                                 | Heater Current (DC)          | 1 A Typ.   |
| Discharge Starting Voltage (DC) |                              | 500 V Min. |
| Anode Current                   |                              | 1.2 A      |
| Tube Drop Voltage (DC)          |                              | 120 ± 10 V |
| Output                          | Drift (Max.)                 | ±1.0 %/h   |
|                                 | Stability Fluctuation (Max.) | 0.5 % p-p  |
| Water Flow Rate                 |                              | 1.5 L/min  |
| Estimated Life                  |                              | 300 h      |

**NOTE:** <sup>Ⓐ</sup>Types L1314 and L1835 cannot be operated without cooling water passing through them. Care should be taken that the lamp is positioned properly so that the two nozzles are aligned vertically, with the water flowing into the jacket at the bottom nozzle and leaving the jacket at the top nozzle. If this arrangement is not observed, there is a danger of damaging the lamp due to overheating.

Flow of cooling water



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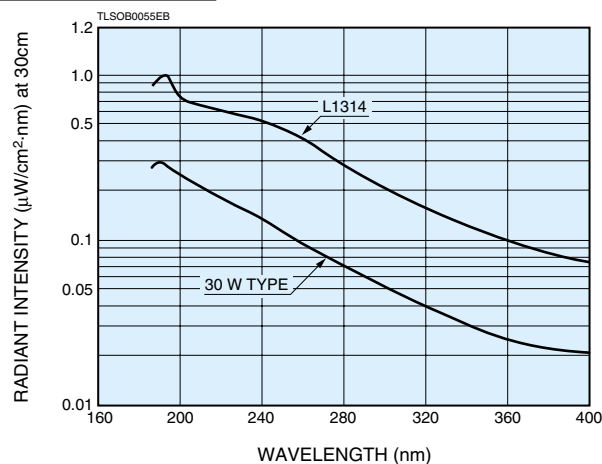


▲Left: L1835 Right: L1314

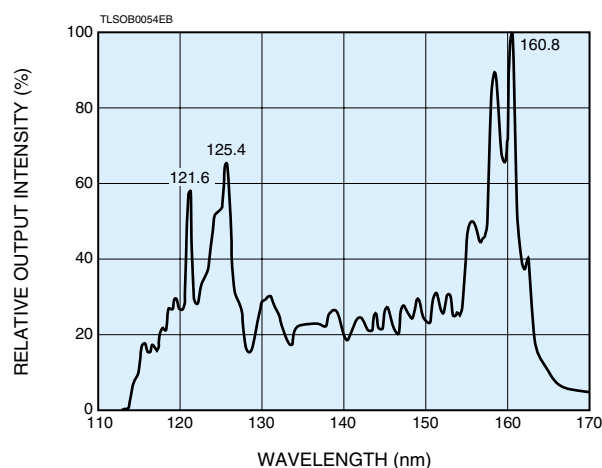
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Figure 1: Spectral Distribution

### L1314: UV range

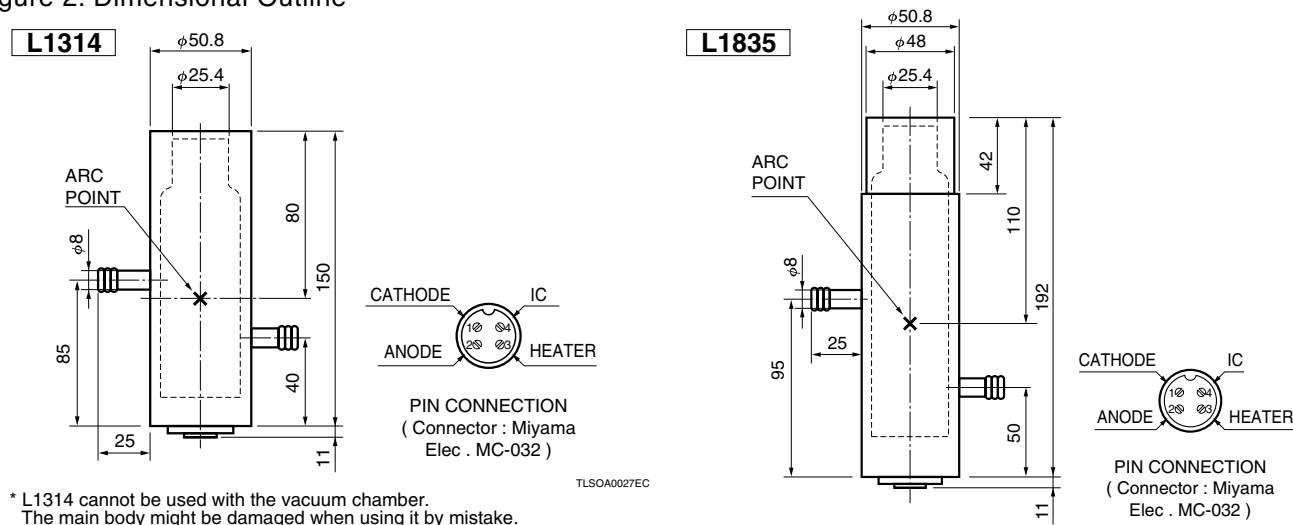


### L1835: Vacuum UV range



# WATER-COOLED TYPE DEUTERIUM LAMPS L1314, L1835

Figure 2: Dimensional Outline



## OPTION (sold separately)

### ● POWER SUPPLY C3150

The C3150 power supply is specifically designed for water-cooled 150 W lamps. Various devices to provide stable light output are built into this power supply. Protective functions such as a water flow rate monitor and lamp lighting monitor also ensure safe and correct operation.

### CHARACTERISTICS

#### Anode output

| Parameter                                 | Description/Value                                                 |
|-------------------------------------------|-------------------------------------------------------------------|
| Output Current (DC)                       | 1.2 A                                                             |
| Output Voltage                            | Normal Operation (DC) 120 V $\pm$ 25 V<br>No Load (DC) 250 V Typ. |
| Trigger Voltage                           | 600 V peek                                                        |
| Input Fluctuation ( $\pm 10\%$ )          | $\pm 0.1\%$ Max.                                                  |
| Load Fluctuation (normal operation range) | $\pm 0.1\%$ Max.                                                  |
| Drift                                     | $\pm 0.1\%$ /h Max.                                               |
| Ripple                                    | 0.1 % p-p Max.                                                    |
| Over-load Protection                      | 1.5 A Fuse                                                        |

### Filament (heater) output

| Parameter                                      | Description/Value                                                                    |
|------------------------------------------------|--------------------------------------------------------------------------------------|
| Output Voltage for Warm-up (DC)                | 10 V, 1.2 A                                                                          |
| Warm-up Time                                   | Approx. 30 s                                                                         |
| Output Voltage for Operation (DC)              | 5 V $\pm$ 0.5 V, 1.0 A                                                               |
| Input Fluctuation ( $\pm 10\%$ )               | $\pm 1.0\%$ or less                                                                  |
| Over-load Protection                           | 2 A slow-blow or by electronic circuit                                               |
| Input Source Voltage (AC)                      | 100 V / 118 V / 230 V ( $\pm 10\%$ )                                                 |
| Apparent Power                                 | Approx. 330 VA                                                                       |
| Operating Ambient temperature                  | 0 °C to 40 °C                                                                        |
| Performance Guaranteed Temperature             | +5 °C to +35 °C                                                                      |
| Cooling Method                                 | Forced air cooling                                                                   |
| Cooling Water Detection Method                 | Flow rate switch (1.5 L/min)                                                         |
| Protective Functions (LED on when malfunction) | Less cooling water, excessive temperature in the C3150, short circuit, disconnection |
| External Dimensions (mm)                       | 215(W) $\times$ 125(H) $\times$ 265(D)                                               |
| Weight                                         | Approx. 10 kg                                                                        |

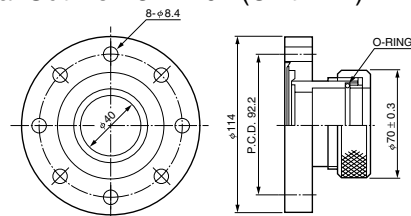
### ● VACUUM FLANGE E3444 SERIES (for L1835)

Since the L1835 vacuum UV deuterium lamp is often used while installed onto a vacuum chamber, Hamamatsu provides the E3444 series vacuum flanges specially designed for this purpose. Among these, the E3444-02 has a flange conforming to ICF114 specifications, allowing easy installation onto most vacuum chamber ports. The E3444 series also includes a general-purpose "N" flange and JIS (Japanese Industrial Standards) specification flange. Select the desired type depending on the vacuum equipment to be used.

### SPECIFICATIONS

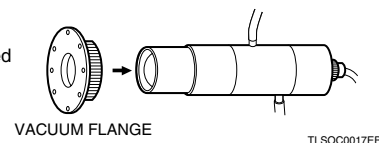
| Type No. | Sealing Method | Flange   | Mount Flange | Sealing Force Retention                                               |
|----------|----------------|----------|--------------|-----------------------------------------------------------------------|
| E3444    |                | Regular  | —            | 1.33 $\times 10^{-4}$ Pa L/s or less<br>(1 $\times 10^{-6}$ Torr L/s) |
| E3444-01 | O-Ring         | JIS VF50 | JIS VG50     |                                                                       |
| E3444-02 |                | ICF114   | ICF114       |                                                                       |

### Dimensional Outline E3444-02 (Unit: mm)



### Attachment Reference

It is designed to be simply inserted over the lamp housing.



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