High-output Spotlights

HLV2 Series

Wide-range Spotlight System Consisting of our HLV2 Series and Microfiber Heads

High-output Spotlights
HLV2 Series
HLV2-14
HLV2-22
HLV2-22-3W
HLV2-22-1220-3W

Microfiber Heads
HFS/HFR Series
HFS-14-500
HFR-25-10
HFR-25-30
HFR-40-20

Lights Designed for Microfiber Heads
HLV2-3M-RGB-3W
HLV2-22-NR-3W Series
HLV2-3M-RGB-3W
HLV2-22-NR-3W

CCS Inc.
The HLV2 Series can be customized to meet your specific needs and application environment.

<table>
<thead>
<tr>
<th>Saving Space</th>
<th>Demands for Spotlights</th>
<th>Reducing Running Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demands for Bright Spotlights</td>
<td>Demands for Spotlights with Uniform Illumination</td>
<td>Reducing CO2 Emissions</td>
</tr>
</tbody>
</table>

### HLV2 Series Evaluation Chart

<table>
<thead>
<tr>
<th>Model</th>
<th>Brightness</th>
<th>Uniformity</th>
<th>Lightweight</th>
<th>Compactness</th>
<th>Flexibility of Installation</th>
<th>Energy Saving</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLV2-14</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>HLV2-14-HU</td>
<td>△</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>HLV2-22</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>HLV2-22-3W</td>
<td>○</td>
<td>△</td>
<td>△</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>HLV2-22-1220-3W</td>
<td>○</td>
<td>△</td>
<td>△</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

### HLV2 Series Evaluation Graph

- **HLV2 Series Evaluation Chart**
  - **Brightness**: High, Medium, Low
  - **Uniformity**: Highly Uniform, Uniform
  - **Lightweight**: Light, Medium, Heavy
  - **Compactness**: High, Medium, Low
  - **Flexibility of Installation**: Easy, Medium, Hard
  - **Energy Saving**: High, Medium, Low

- **HLV2 Series Evaluation Graph**
  - **Brightness**: HLV2-14, HLV2-14-HU, HLV2-22, HLV2-22-3W, HLV2-22-1220-3W
  - **Flexibility of Installation**: HLV2-14, HLV2-14-HU, HLV2-22, HLV2-22-3W, HLV2-22-1220-3W

### Smallest in the Industry: HLV2-14 Series

**Lightweight, Compact Design Saves Valuable Space**

The HLV2-14 Series is perfect for use in tight spaces due to its compact, lightweight design.

- **Weights only 18 g**

### HLV2 Series Brightness Comparison

- **HLV2-14RD**
  - Light intensity: 20%
  - Shutter speed: 1/2,000 s

- **HLV2-14RD-HU**
  - Light intensity: 100%
  - Shutter speed: 1/2,000 s

The HLV2-14-HU provides a highly uniform emitting surface unlike any other spotlight seen before.

*Comparison of CCS products

*The data provided here is for reference only. The values are not guaranteed.
Providing the Highest Output in the Series: HLV2-22-3W Series

The HLV2-22-3W has the highest output of any Spotlight in the series. The HLV2-22-3W provides at least 1.5 times more output than the HLV2-22.

Why CCS Products Are Better than Halogen Lights

- **High Contrast**: Select an emission wavelength for your workpiece for high contrast imaging.
- **Easy Installation**: Can be used in place of fiber optics, enabling extremely easy setup.
- **Compact Size**: Lightweight design and compact housing save valuable space.
- **Long Life and Low Cost**: Light intensity adjustment, ON/OFF, and other controls allow for stable, long-term illumination.
- **Low Power Consumption and Low Heat Generation**: Eco-friendly through low power consumption and less heat generation.

Select an emission wavelength based on the spectral properties of your workpiece for high contrast imaging.

- **Comparison of Relative Spectral Distribution between a Halogen Lamp and the HLV2 Series**

The HLV2-series models are available with red (RD), green (GR), blue (BL), or white (SW) light so that you can use the models that are suitable for the spectral properties of your workpiece. LEDs (RGB) provide light that is nearly monochromatic, allowing you to obtain sharp images without any chromatic aberration.

- **Contrast Comparison between a Halogen Light and the HLV2**

By changing the emission color of the LEDs based on the workpiece, you can achieve clear, sharp contrast.

- **Photocoupler Character Recognition**

Select an emission wavelength based on the spectral properties of your workpiece for high contrast imaging.

- **Spectral Distribution of Halogen Lights**

- **Spectral Distribution Graph of HLV2**

* The data provided here is for reference only. The values are not guaranteed.
High-output Spotlights HLV2 Series

Long Life and Lower Power Consumption for Less Maintenance and Reduced Costs

■ Comparison of Power Consumption between the HLV2 and a Halogen Lamp

<table>
<thead>
<tr>
<th>Lamp Type</th>
<th>Power Consumption (W)</th>
<th>Yearly Power Consumption (kWh)</th>
<th>Yearly Power Cost (yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLV2-22</td>
<td>1.4 W</td>
<td>12.096 kWh</td>
<td>109 yen</td>
</tr>
<tr>
<td>Halogen lamp</td>
<td>100 W</td>
<td>72.0 kWh</td>
<td>648 yen</td>
</tr>
</tbody>
</table>

Power costs\(^1\): Monthly power consumption + 12 months = 12.096 kWh × 9 yen/kWh = 109 yen

Yearly power cost: Operating life × 12 months = 12 months × 1.008 kWh/month = 12.096 kWh

Yearly power cost: Operating life × 12 months = 12 months × 7.768 kWh/month = 99.22 kWh

■ Comparison of Change in Brightness between the HLV2 and a Halogen Lamp

<table>
<thead>
<tr>
<th>Time (hours)</th>
<th>Change in Intensity (%)</th>
<th>Halogen lamp replacement</th>
<th>HLV2</th>
<th>Halogen Lights</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100%</td>
<td>0</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>20,000</td>
<td>100%</td>
<td>0</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

■ Comparison of Cost between the HLV2 and a Halogen Lamp

<table>
<thead>
<tr>
<th>Lamp Type</th>
<th>Yearly Maintenance Costs (yen)</th>
<th>Yearly Replacement Costs (yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLV2-22</td>
<td>0 yen</td>
<td>0 yen</td>
</tr>
<tr>
<td>Halogen lamp</td>
<td>4,800 yen</td>
<td>37 yen</td>
</tr>
</tbody>
</table>

■ Comparison of CO2 Emissions between the HLV2 and a Halogen Lamp

<table>
<thead>
<tr>
<th>Lamp Type</th>
<th>Yearly CO2 Emissions (kg CO2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLV2-22</td>
<td>0.555 kg CO2/kWh × 12 months = 6.7 kg CO2</td>
</tr>
<tr>
<td>Halogen lamp</td>
<td>0.555 kg CO2/kWh × 12 months = 47.95 kg CO2</td>
</tr>
</tbody>
</table>

■ Comparison of Total Running Costs

<table>
<thead>
<tr>
<th>Lamp Type</th>
<th>Costs (yen)</th>
<th>Costs recovered in 2 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLV2-22</td>
<td>109 yen</td>
<td>0 yen</td>
</tr>
<tr>
<td>Halogen lamp</td>
<td>648 yen</td>
<td>109 yen</td>
</tr>
</tbody>
</table>

Two advantages of using halogen light sources are low initial costs and the ability to select the light guide best suited to your application. However, with a service life of only 1,000 hours on average, halogen lamps require frequent, labor-intensive maintenance in the form of replacement and adjustment resulting in a substantial cost in man-hours as well as losses due to production line downtime. In contrast, CCS's HLV2 High-output Spotlight has a service life of 20,000 hours, 20 times that of halogen lamps. Moreover, you don't have to worry about sudden lamp burnout as you do with halogen lamps and the light intensity can be precisely controlled. With the HLV2, you can expect a return on the total running cost after two years and enjoy stable use for a long period of time.

Be Eco Friendly

By replacing the halogen lamps you are using now with the HLV2-series High-output Spotlights, you can greatly reduce CO2 emissions, a contributing factor to global climate change.

* These calculations were made based on the assumption that lamps were used for 24 hours per day each one month (30 days).
*2: Light lives are calculated values until the light output decreases to 50% at a light intensity of 100% and an ambient temperature of 40Cº (reference values only).
*1: These are calculated values until the light output decreases to 50% at a light intensity of 100% and an ambient temperature of 40Cº (reference values only).
*2: These are calculated values until the light output decreases to 50% at a light intensity of 100% and an ambient temperature of 40Cº (reference values only).
\(^1\): These are calculated values until the light output decreases to 50% at a light intensity of 100% and an ambient temperature of 40Cº (reference values only).
\(^2\): CO2 emissions are calculated by multiplying the electricity consumption by an emission coefficient of 0.555 kg CO2 per kWh.
\(^3\): Costs to dispose of used lamps and cost of labor for replacement/adjustment.
### Specifications

*Product Number Guide: You can easily access the information page for any of our products by entering the item's 7-digit product number in the designated box on the CCS website (image processing page).*

<table>
<thead>
<tr>
<th>Model</th>
<th>Direct number</th>
<th>LED color</th>
<th>Peak wavelength/Correlated color temperature (typ.)</th>
<th>Power consumption (max.)</th>
<th>Weight (max.)</th>
<th>Polarity and signal</th>
<th>Case material</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLV2-14RD</td>
<td>1004853</td>
<td>Red</td>
<td>645 nm</td>
<td></td>
<td>0.9 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLV2-14SW</td>
<td>1004854</td>
<td>White</td>
<td>5,300 K</td>
<td></td>
<td>1.4 W</td>
<td>SMR-03V-B 1: Signal 2: (+) 3: (−)</td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-14BL</td>
<td>1004855</td>
<td>Blue</td>
<td>465 nm</td>
<td></td>
<td>1.4 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLV2-14GR</td>
<td>1004856</td>
<td>Green</td>
<td>520 nm</td>
<td></td>
<td>1.4 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-14RD-HU</td>
<td>1004857</td>
<td>Red</td>
<td>645 nm</td>
<td></td>
<td>1.4 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-14SW-HU</td>
<td>1004858</td>
<td>White</td>
<td>4,700 K</td>
<td></td>
<td>1.4 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-14BL-HU</td>
<td>1004859</td>
<td>Blue</td>
<td>465 nm</td>
<td></td>
<td>1.4 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-14GR-HU</td>
<td>1004860</td>
<td>Green</td>
<td>520 nm</td>
<td></td>
<td>1.4 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-22RD</td>
<td>1004512</td>
<td>Red</td>
<td>645 nm</td>
<td></td>
<td>2.8 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-22SW</td>
<td>1004513</td>
<td>White</td>
<td>5,300 K</td>
<td></td>
<td>2.8 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-22BL</td>
<td>1004514</td>
<td>Blue</td>
<td>465 nm</td>
<td></td>
<td>2.8 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-22GR</td>
<td>1004515</td>
<td>Green</td>
<td>520 nm</td>
<td></td>
<td>2.8 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-22RD-3W</td>
<td>1004516</td>
<td>Red</td>
<td>645 nm</td>
<td></td>
<td>2.8 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-22SW-3W</td>
<td>1004517</td>
<td>White</td>
<td>5,300 K</td>
<td></td>
<td>2.8 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-22BL-3W</td>
<td>1004518</td>
<td>Blue</td>
<td>465 nm</td>
<td></td>
<td>2.8 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-22GR-3W</td>
<td>1004519</td>
<td>Green</td>
<td>520 nm</td>
<td></td>
<td>2.8 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-22RD-1220-3W</td>
<td>1004524</td>
<td>Red</td>
<td>645 nm</td>
<td></td>
<td>2.8 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-22SW-1220-3W</td>
<td>1004525</td>
<td>White</td>
<td>5,300 K</td>
<td></td>
<td>2.8 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-22BL-1220-3W</td>
<td>1004526</td>
<td>Blue</td>
<td>465 nm</td>
<td></td>
<td>2.8 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-22GR-1220-3W</td>
<td>1004527</td>
<td>Green</td>
<td>520 nm</td>
<td></td>
<td>2.8 W</td>
<td></td>
<td>Aluminum alloy</td>
</tr>
</tbody>
</table>

### Dimensions (mm)

(Cable length: 300 mm)

#### HLV2-14/HLV2-14-HU

- Dimensions (mm)
- (lighting surface) 7 dia.
- 20 dia.
- 22 dia.
- 28 dia.

#### HLV2-22

- Dimensions (mm)
- (lighting surface) 7 dia.
- 50 dia.
- 12 dia.
- 20 dia.

#### HLV2-22-3W

- Dimensions (mm)
- (lighting surface) 7 dia.
- 14 dia.
- 62 dia.
- Two, M3 x 0.5 tapped holes, depth: 3 For mounting

#### HLV2-22-1220-3W

- Dimensions (mm)
- (lighting surface) 7 dia.
- 14 dia.
- 62 dia.
- Two, M3 x 0.5 tapped holes, depth: 3 For mounting

### Optional Extension Cable

- Standard models
  - FCB-1/-2/-3/-5
  - (1m/2m/3m/5m)
- Models with robot cables
  - FRCB-1/-2/-3/-5
  - (1m/2m/3m/5m)

#### Using an Extension Cable

- Do not connect an Extension Cable that is longer than 5 m.
- If you need to use an Extension Cable longer than 5 m, please contact a CCS sales representative.
- Branch cables cannot be used.
Unlock the True Potential of LED Lighting
Microfiber Head Series

HFS/HFR Series

Provides 9 Times* or More the Brightness of a 100-W Halogen Ring Light

* Comparison of the HFR-40-20 and a 100-W Halogen Light Source + 20-dia. Ring Light Guide at Maximum Intensity

Comparison of Brightness between a Halogen Lamp and the HFR Series

While halogen fiber lighting illuminates a wide area, the HFR Series utilizes CCS’s original condensing technologies to provide high intensity by illuminating only the required field of view.

Select the Optimal Condensing Illumination for a Variety of Fields of View and LWDs*

* LWD: Light Working Distance (the distance from a light to the workpiece)

Clear Images by Selecting the Illumination Range, Illumination Angle, and Radiance

Detecting a singular point that is difficult to capture with an existing halogen light source can be achieved with high contrast.

Comparison of Chip Part Images

Change in Radiance at Each LWD of the HFR Series

Light Used: HLV2-22SW-NR-3W

* The data provided here is for reference only. Value is not guaranteed.

Unlock the True Potential of LED Lighting
Microfiber Head Series

HFS/HFR Series

HFR

- Ring Light Units -

HFR-25-30

HFR-25-10

HFR-40-20

HFS

- Straight Light Units -

HFS-14-500

Application Example

Camera

Macro lens

Connecting adapter (included)

AD-HF

HFR-25-30

Light source

HLV2-22-NR-3W

Application Example

Camera

Macro lens

Connecting adapter (included)

AD-HF

HFS-14-500

Light source

HLV2-22-NR-3W

Change in Radiance at Each LWD of the HFR Series

Light Used: HLV2-22SW-NR-3W

HFR-40-20

HFR-25-30

HFR-25-10

100-W Halogen + 20-dia. Ring Light Guide

Relative radiation intensity (%) vs. LWD (mm)

LWD (mm) 0 5 10 15 20 25 30 35 40 45 50 55 60

Relative radiation intensity (%) 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Application Example

Camera

Connecting adapter (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source

HLV2-22-NR-3W

Connecting power supply (PJ Series)

Connecting adaptor (included)

AD-HF

Light source
Select the Optimal Light Source Color According to the Properties of the Workpiece

Comparison of TFT Barcode Images

100-W Halogen + Ring Light Guide: LWD of 20 mm

HFR-25-10 (white) : LWD of 10 mm

Intensity: 100%, Shutter speed: 1/4,000 s

HFR-25-30 (blue) : LWD of 30 mm

Intensity: 100%, Shutter speed: 1/2,000 s

Comparison of Circuit Board Chip Part Images

100-W Halogen + Ring Light Guide: LWD of 20 mm

HFR-25-10 (white) : LWD of 10 mm

Intensity: 100%, Shutter speed: 1/2,000 s

HFR-25-30 (blue) : LWD of 30 mm

Intensity: 100%, Shutter speed: 1/2,000 s

Perfect for a Wide Range of Applications (HFS-14-500)
The HFS-14-500 Straight Microfiber Head can be attached directly into the coaxial lens because the shape of the tip of halogen straight light guides is the same. Furthermore, less heat conductivity and a compact leading tip allow for applications in a wide variety of situations.

Specifications

Product Number Guide: You can easily access the information page for any of our products by entering the item's 7-digit product number in the designated box on the CCS website (image processing page).

<table>
<thead>
<tr>
<th>Model</th>
<th>Direct number</th>
<th>Operating temperature and humidity</th>
<th>Storage temperature and humidity</th>
<th>Weight (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFR-25-10</td>
<td>1000127</td>
<td>Temp.: 0 to 40°C, Humidity: 20% to 70% (non-condensing)</td>
<td>Temp.: -10 to 60°C, Humidity: 20% to 70% (non-condensing)</td>
<td>60 g</td>
</tr>
<tr>
<td>HFR-25-30</td>
<td>1000129</td>
<td></td>
<td></td>
<td>250 g</td>
</tr>
<tr>
<td>HFR-40-20</td>
<td>1000134</td>
<td></td>
<td></td>
<td>115 g</td>
</tr>
<tr>
<td>HFS-14-500</td>
<td>1000148</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dimensions (mm)

HFR-25-10/HFR-25-30

Two, 3.5-dia. holes with 6-mm countersinking, depth: 6

HFS-14-500

Two, 3.5-dia. holes with 6-mm countersinking, depth: 6

HFR-40-20

Four, M3 holes, depth: 4

Light source receivers (3)

Original Light Guides

Fiber Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>HFR-25-10/30</th>
<th>HFR-40-20</th>
<th>HFS-14-500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber material</td>
<td>Plastic</td>
<td>Multi-component glass</td>
<td></td>
</tr>
<tr>
<td>Case material</td>
<td>Aluminum</td>
<td>Aluminum</td>
<td></td>
</tr>
<tr>
<td>Bundle sheathing</td>
<td>SUS</td>
<td>SUS</td>
<td></td>
</tr>
<tr>
<td>Fiber diameter (μm)</td>
<td>500</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Fiber arrangement</td>
<td>–</td>
<td>Random spec.</td>
<td></td>
</tr>
<tr>
<td>Numerical aperture (NA)</td>
<td>0.5</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td>Acceptance angle (°)</td>
<td>60</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>Spectral transmittance (nm)</td>
<td>400 to 700</td>
<td>300 to 1,300</td>
<td></td>
</tr>
<tr>
<td>Minimum bending radius (mm)</td>
<td>30</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>
Blend Colors in Any Way You Can Imagine!

- Increased Output with the HLV2-22-NR-3W
  The HLV2-3M-RGB-3W is a special light source that consists of a Light Source Unit and a Blending Unit. This enables stepless, independent dimming of each individual color. The special construction of the Blending Unit eliminates irregularities to provide uniform light emission. Connection to a model from our Microfiber Head Series allows you to create the perfect illumination color for a wide range of configurations.

- Connecting the HLV2-3M-RGB-3W and Microfiber Head
  By connecting to CCS Microfiber Heads you can achieve full color Microfiber Heads with a wide range of illumination.

By changing the light source color, high-quality images can be obtained based on your particular application.

Image Examples of Liquid Crystal Color Filters

By utilizing the HLV2-22-NR-3W Series, we achieve highly accurate mixed color illumination. Independent control of intensity provides optimal illumination and images, and helps to improve inspection precision.
Connecting the HLV2-22-NR-3W and Microfiber Head

In order to utilize the unique properties of different wavelengths, four colors are available: red (RD), green (GR), blue (BL), and white (SW). By connecting to different types of microfiber heads, you can select the optimal color and illumination configuration when imaging to achieve the most precise feature extraction possible.

Easily Connect and Replace Light Sources

The special HLV2-22-NR-3W-series Light Sources for microfiber heads can easily be installed and removed. Highly precise feature extraction is achieved by choosing the optimal light source color when imaging.

Connecting Adapter (AD-HF) is included with the HFS/HFR Series

Connecting the HLV2-22-NR-3W and Microfiber Head

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Direct number</th>
<th>LED color</th>
<th>Peak wavelength/Correlated color temperature (typ.)</th>
<th>Power consumption (max.)</th>
<th>Weight (max.)</th>
<th>Polarity and signal</th>
<th>Case material</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLV2-22RD-NR-3W</td>
<td>1004520</td>
<td>Red</td>
<td>645 nm</td>
<td>2.8 W</td>
<td>37 g</td>
<td>1: Signal</td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>HLV2-22SW-NR-3W</td>
<td>1004521</td>
<td>White</td>
<td>5,300 K</td>
<td></td>
<td></td>
<td>2: (+)</td>
<td></td>
</tr>
<tr>
<td>HLV2-22BL-NR-3W</td>
<td>1004522</td>
<td>Blue</td>
<td>465 nm</td>
<td></td>
<td></td>
<td>3: (−)</td>
<td></td>
</tr>
<tr>
<td>HLV2-22GR-NR-3W</td>
<td>1004523</td>
<td>Green</td>
<td>520 nm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLV2-3M-RGB-3W</td>
<td>1004528</td>
<td></td>
<td></td>
<td>8.4 W</td>
<td>232 g</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dimensions (mm)

<table>
<thead>
<tr>
<th>HLV2-22-NR-3W</th>
<th>HLV2-3M-RGB-3W</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 dia.</td>
<td>14 dia.</td>
</tr>
<tr>
<td>14 dia.</td>
<td>14 dia.</td>
</tr>
<tr>
<td>45</td>
<td>14 dia.</td>
</tr>
<tr>
<td>14 dia.</td>
<td>14 dia.</td>
</tr>
<tr>
<td>(lighting surface)</td>
<td>(lighting surface)</td>
</tr>
<tr>
<td>Two, M3 x 0.5 tapped holes, depth: 3</td>
<td>Two, M3 x 0.5 tapped holes, depth: 3</td>
</tr>
<tr>
<td>For mounting</td>
<td>For mounting</td>
</tr>
<tr>
<td>Two, M3 x 0.5 tapped holes, depth: 5</td>
<td>One, M3 x 0.5 tapped holes, depth: 6</td>
</tr>
<tr>
<td>For mounting</td>
<td>For mounting</td>
</tr>
</tbody>
</table>

Optional Extension Cable

<table>
<thead>
<tr>
<th>Standard models</th>
<th>Models with robot cables</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCB-1/2/-3/5</td>
<td>FRCB-1/2/-3/5</td>
</tr>
<tr>
<td>(1m/2m/3m/5m)</td>
<td>(1m/2m/3m/5m)</td>
</tr>
</tbody>
</table>

Using an Extension Cable

- Do not connect an Extension Cable that is longer than 5 m.
- If you need to use an Extension Cable longer than 5 m, please contact a CCS sales representative.
- Branch cables cannot be used.
100 to 240-VAC Models

- **PJ-1505-2CA**
- **PJ-1505-3CA**

24-V DC Models

- **PJ-1505-2CD24**
- **PJ-1505-3CD24**

### Power Supplies for the HLV2 Series: PJ Series

You can perform external control of the system you are currently using with the same 0-5V external control as a standard halogen light source. Continuous current control enables more precise adjustment of the light intensity than is possible with halogen light sources. You can choose from four different models of Controllers based on your operating environment.

#### 100 to 240-V AC Models

- Two channels: **PJ-1505-2CA**, Three channels: **PJ-1505-3CA**

#### 24-V DC Models

- Two channels: **PJ-1505-2CA**, Three channels: **PJ-1505-3CA**

### Specifications

#### Model Input voltage (rated) Input voltage (range) Power consumption (typ.) Number of channels Output voltage (maximum rated) Light intensity control Weight (max.)

<table>
<thead>
<tr>
<th>Model</th>
<th>Direct number</th>
<th>100 to 240 VAC</th>
<th>85 to 264 VAC</th>
<th>27 VA</th>
<th>2</th>
<th>DC 5.5 V</th>
<th>640 g</th>
</tr>
</thead>
<tbody>
<tr>
<td>PJ-1505-2CA</td>
<td>2000131</td>
<td>100 to 240 VAC</td>
<td>85 to 264 VAC</td>
<td>27 VA</td>
<td>2</td>
<td>Manual:</td>
<td>640 g</td>
</tr>
<tr>
<td>PJ-1505-3CA</td>
<td>2000136</td>
<td>100 to 240 VAC</td>
<td>85 to 264 VAC</td>
<td>37 VA</td>
<td>3</td>
<td>Front light intensity dial</td>
<td>660 g</td>
</tr>
<tr>
<td>PJ-1505-2CD24</td>
<td>2000134</td>
<td>100 to 240 VAC</td>
<td>10 to 24 VDC</td>
<td>10 W</td>
<td>2</td>
<td>Remote (external):</td>
<td>380 g</td>
</tr>
<tr>
<td>PJ-1505-3CD24</td>
<td>2000139</td>
<td>100 to 240 VAC</td>
<td>10 to 24 VDC</td>
<td>14.5 W</td>
<td>3</td>
<td>Analog input voltage of</td>
<td>380 g</td>
</tr>
</tbody>
</table>

* The operable input voltage range is: 85 to 265 VAC for the PJ-1505-2CA and PJ-1505-3CA, and 10 to 26 VDC for the PJ-1505-2CD24 and PJ-1505-3CD24.

#### ON/OFF control

OFF: 2.5 to 5.0 V (24 V maximum) ON: 0.8 to 0 V (pulled down with 4.7 KΩ)

#### External control connector

D-Sub, 15-pin (plug)

External control cables are also available as an options.

### Dimensions (mm)

#### PJ-1505-2CA

- The PJ-1505-3CA is the same size.

#### PJ-1505-2CD24

- The PJ-1505-3CD24 is the same size.

---

Models with CE Marking

PJ-1505-2CA/PJ-1505-3CA
PJ-1505-2CD24/PJ-1505-3CD24
**Options**

**Condensing Lens for the HLV2-22 Series: HL-30/HL-24-21**

* Illumination Range of the HL-30/HL-24-21

![Condensing Lens Diagram]

* Mounting to the HLV2-22 Series

<table>
<thead>
<tr>
<th>HL-30</th>
<th>HL-24-21</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Compatible Models
HLV2-22 Series
HLV2-22-3W Series

* Cannot be used with the HLV2-14, HLV2-22-1220-3W, or HLV2-22-NR-3W Series.

Dimensions (mm)

**HL-30**

- Lens: M22.5*P0.5
- 2 setscrews, M3, 4 mm black
- 3.5 mm

**HL-24-21**

- Lens: M22.5*P0.5
- 2 setscrews, M3 holes, Depth: 5
- 2 setscrews, M3 holes, Depth: 5

**Extension Holders for the HFR-25-10/HFR25-30**

These Extension Holders are available to adjust the condensing location of the HFR Series when using a high-power lens with a fixed working distance. The light can be mounted with ease, allowing you to mount it at the most efficient condensing position.

**Usage Examples of Extension Holders (HD-HFR-25-1618/HD-HFR-25-1640)**

- Used for mounting a macro lens or telecentric lens and microfiber head.
- Use an appropriate Holder model for the working distance of the lens and the working distance of the Ring Light Guide that you are using.

- For a Ring Light Guide with a 10-mm LWD (HFR-25-10) and a lens with a 40 mm WD, use the HD-HFR-25-1618 Holder.

- No Holder is needed for a Ring Light Guide with a 30-mm LWD (HFR-25-30) and a lens with a 40-mm WD.

- For a Ring Light Guide with a 10-mm LWD (HFR-25-10) and a lens with a 60 mm WD, use the HD-HFR-25-1640 Holder.

- For a Ring Light Guide with a 10-mm LWD (HFR-25-10) and a lens with a 60 mm WD, use the HD-HFR-25-1640 Holder.

* For usage configurations other than those listed above, please inquire separately.
Highly Functional, Cost-effective
Original Macro Lens  SE-16/SE-18 Series

SE-16 series

Covers 0.5x, 1x, and 2x fields of view.

Coaxial Lens Models

SE-16VM05  SE-16VM1  SE-16VM2

A lens that provides the optimal brightness for image processing

Two-dimensional Codes

Macro Lens: SE-16VM2
LED Light: HLV2-22RD-3W
Sensor Size: 1/3 inch
Scale: 2x
Shutter speed: 1/20,000 s
Light intensity: 55%

SE-18 series

Covers 2x, 4x, and 6x fields of view.

Coaxial Lens Models

SE-18VM2  SE-18VM4  SE-18VM6

A lens with a long work distance of 110 mm

LED Display Alignment Marks

Macro Lens: SE-18VM4
LED Light: HLV2-22SW-3W
Sensor Size: 1/3 inch
Scale: 4x
Shutter speed: 1/7,000 s
Light intensity: 100%

For more details about our macro lenses, see our catalogs and pamphlets, or look us up on the web.

Notes

- Carefully read the product’s instruction manual before use to ensure correct operation.
- Product specifications and design are subject to change without notice.
- Examples of workpiece imaging in this catalog are a guide that may be informative for choosing illuminations. Please check the functions of the equipment and requirements when choosing.