

Presenting the Second-Generation HLV Series!

—High-Luminosity LED Spotlight Series for Replacing Halogen Light Sources—

High luminosity spotlights

HLV series

HLV-14-PJ
HLV-24
HLV-24-1220
HLV-24-3W
HLV-24-1220-3W



Patent Pending

Micro fiber-heads

HFR series HFS

HFR-25-10
HFR-25-30
HFR-40-20
HFS-14-500



Patent Pending

Light sources for Micro fiber-heads

HLV-3M-RGB-3W HLV-NR series

HLV-3M-RGB-3W
HLV-24-NR
HLV-24-NR-3W



Patent Pending

Power supplies for HLV series

PJ series

PJ-1505-2CA
PJ-1505-3CA
PJ-1505-2CD24
PJ-1505-3CD24



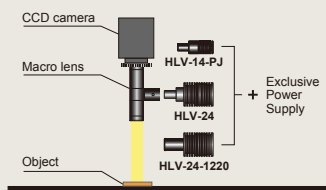
High luminosity spotlights

HLV series

The Replacement for Halogen Light Sources. Upgrade

HLV series

Connecting configuration



HLV-14-PJ

HLV-14RD-PJ

HLV-14SW-PJ

HLV-14GR-PJ

HLV-14BL-PJ

HLV-24

HLV-24RD

HLV-24SW

HLV-24GR

HLV-24BL

HLV-24-1220

HLV-24RD-1220

HLV-24SW-1220

HLV-24GR-1220

HLV-24BL-1220

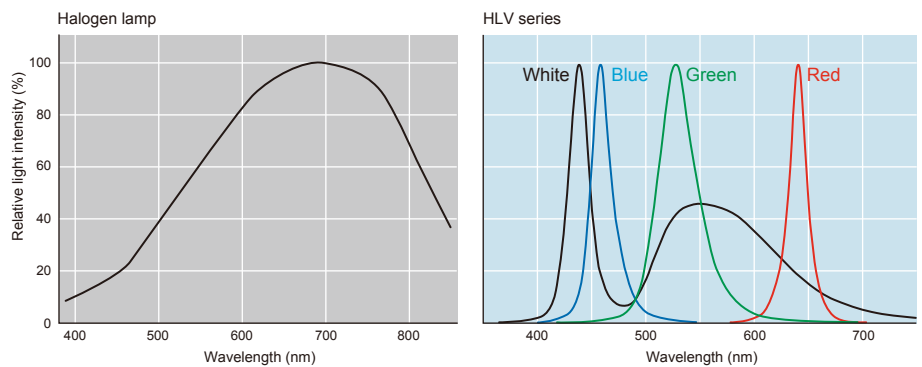
Why HLV spotlights are better than halogen lights

- High Contrast** Selectable light colors with the high contrast imaging according to the object characteristics.
- Easy Guidance** Easy cabling with a great deal of flexibility.
- Compact Size** Saving space by lightweight and extremely compact housing.
- Cost Effectiveness** Long life span saves maintenance cost.
- Low power consumption & Less heat** Eco-friendly through low power consumption and less heat generation.

Selecting the proper wavelength/color according to the object characteristics provides high contrast image

Comparison of Spectral Characteristics - Halogen vs HLV series

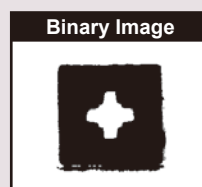
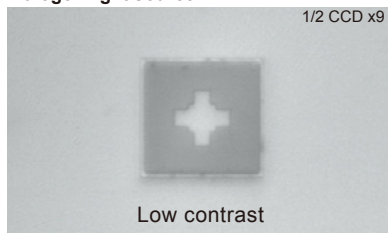
4 colors are available. LED(R-G-B) is monochromatic light, so a clear image can be captured without being influenced by color aberration.



Contrast Comparison - Halogen vs HLV series

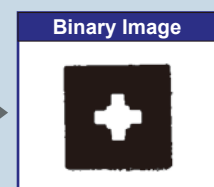
A range of LED colors unlike Halogen, is selectable from four different LED colors according to the work applications.

Halogen light source



Vague outline creates a difficulty in obtaining a clear image

HLV series: HLV-27-BL (Blue)



Very clear image of alignment mark recognition obtained

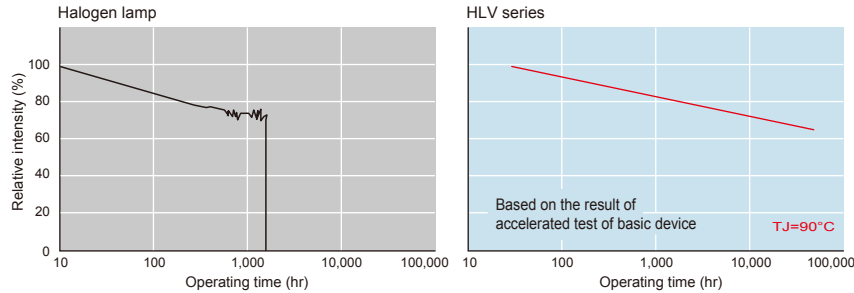
Absolute difference under binary image

to the New, Second Generation HLV Series of High-Luminosity LED Spotlights!

Long life span, less power consumption, saving time and maintenance costs!

Compact design to save space

Life span comparison - Halogen vs HLV series

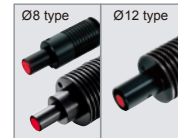


The compact housing of HLV-14 series is perfect for applications in a narrow space.



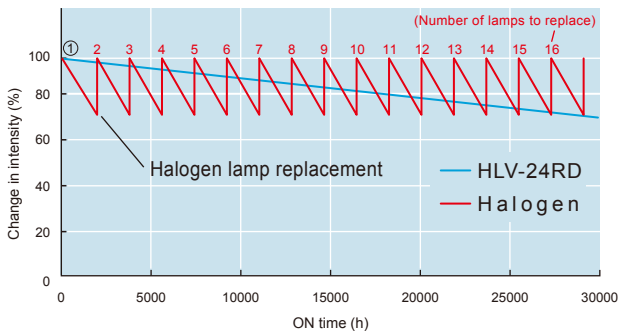
*Do not connect the HLV-14-PJ series to a conventional PLV power supply.

Two types of tip diameter Ø8 and Ø12



Two types of tip diameter Ø8 and Ø12 allow direct insertion into existing coaxial lenses.

Change in Brightness Comparison -- Halogen Lamp vs HLV Series



Two advantages of using halogen light sources are low initial costs and the ability to select the light guide best suited to the application. However, with a service life ranging from as short as 50 hours to an average of about 2,000 hours, 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. LEDs, on the other hand, have a service life of 30,000 hours minimum, more than 10 times that of halogen lamps. Moreover, you don't have to worry about sudden lamp burnout, as you do with halogen lamps, and LEDs can be precisely controlled. With LED illumination, you can expect a return on the total running cost within a few years, and enjoy stable use for an extended period of time.

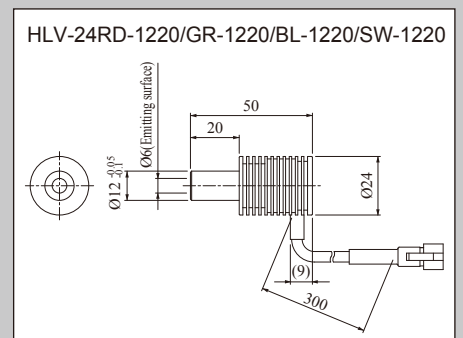
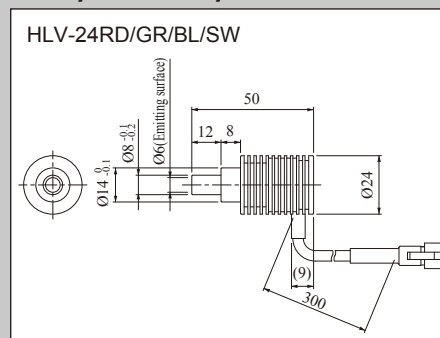
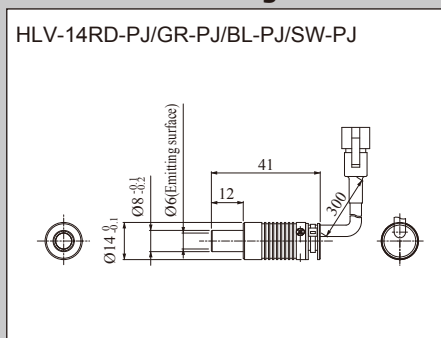
Specifications : HLV-14-PJ / HLV-24 / HLV-24-1220

RoHS-compliant products

Model	HLV-14RD-PJ	HLV-14GR-PJ	HLV-14BL-PJ	HLV-14SW-PJ	HLV-24RD	HLV-24GR	HLV-24BL	HLV-24SW	HLV-24RD-1220	HLV-24GR-1220	HLV-24BL-1220	HLV-24SW-1220	
Max power consumption	1.0W				1.1W				1.4W				
LED color	Red	Green	Blue	White	Red	Green	Blue	White	Red	Green	Blue	White	
Dominant wavelength or color temperature	max.	645nm	550nm	490nm	10000K	645nm	550nm	490nm	10000K	645nm	550nm	490nm	10000K
	typ.	627nm	530nm	470nm	5500K	627nm	530nm	470nm	5500K	627nm	530nm	470nm	5500K
	min.	620.5nm	520nm	460nm	4500K	620.5nm	520nm	460nm	4500K	620.5nm	520nm	460nm	4500K
Half radius of emission wavelength	20nm	35nm	25nm	-	20nm	35nm	25nm	-	20nm	35nm	25nm	-	
Case material	Aluminum												
Cable	0.3m												
Connector	SMR-03V-B												
Polarity, signal	1 - Signal (R) pink; 2 - Anode (+), brown; 3 - Cathode (-) blue												
Usage environment	Temperature 0 to 40°C, humidity 20 to 85% (with no condensation)												
Storage environment	Temperature -20 to 60°C, humidity 20 to 85% (with no condensation)												
Weight	25g						50g						

*Do not connect the HLV-14-PJ series to a conventional PLV power supply. Excessive current will lead to malfunction. When an older-type HLV-14 spotlight is connected to a PJ power supply, Low range light adjustment is not possible.

Dimensional Diagrams : HLV-14-PJ / HLV-24 / HLV-24-1220



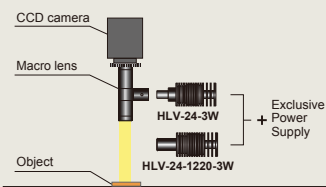
High luminosity spotlights

HLV series

The New Ultra-Powerful HLV-24-3W

HLV series

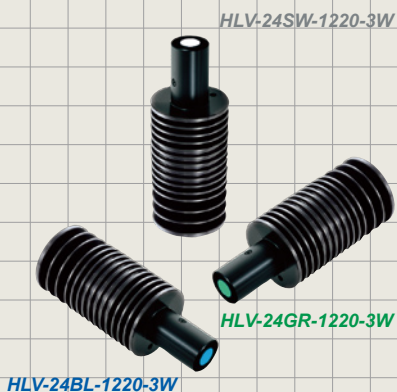
Connecting configuration



HLV-24-3W



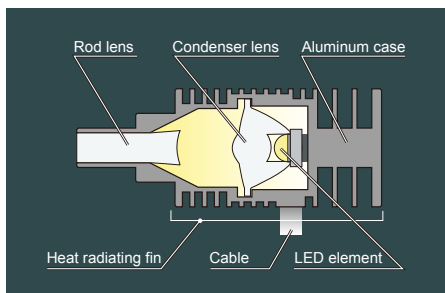
HLV-24-1220-3W



Unique Technology Achieves Highly Uniform, High-Luminosity Condensed Light

■ A CCS designed maximum condenser lens and rod lens combine to emit highly uniform, high-luminosity condensed light.

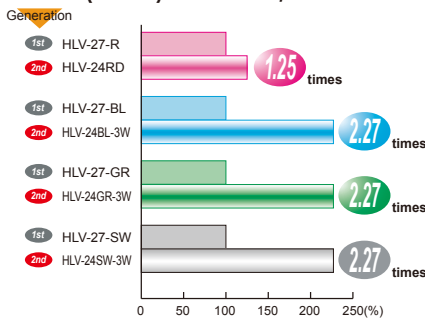
Cross-sectional View of the HLV-24-3W Patent Pending



LED light emitted from the light source is condensed to a high density by the condenser lens. The resulting light is gathered by the rod lens at the light emitting end, and emitted while suppressing diffusion to enable high uniformity and luminosity. This makes it possible to maintain high luminosity even when the LWD* is increased, resulting in 2 to 4 times greater brightness at an LWD of 50 mm in comparison to conventional LEDs. (See figure below.)

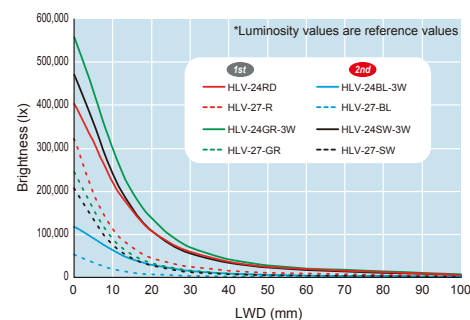
*Light Working Distance: the distance from the light source to the object

■ Maximum Luminosity Comparison - Conventional LED (HLV-27) vs HLV-24RD/HLV-24-3W



*Calculated by setting the maximum luminosity (LWD = 0, I_{max}) of a conventional LED to 100%.

■ Luminosity Characteristics of a Conventional LED (HLV-27) with respect to LWD



Higher Intensity Enables Imaging That Was Difficult for Conventional LEDs.

■ Alignment Mark Imaging Comparison - Conventional LED (HLV-27) vs the New HLV-24/HLV-24-3W

The new HLV-24 can be used even for imaging applications that were difficult to handle with conventional LEDs due to insufficient intensity. And the ultra-powerful HLV-24-3W enables stable imaging even at high shutter speeds.

Application Sample

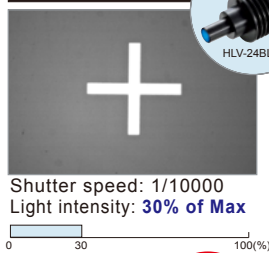


HLV-27-BL(Blue)



1st

HLV-24BL(Blue)

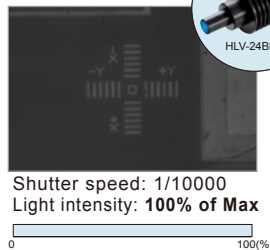


2nd

Application Sample

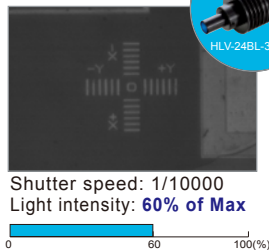


HLV-24BL(Blue)



2nd

HLV-24BL-3W(Blue)



2nd

HFR series HFS

Make the most of your work with the Micro

Remarkable

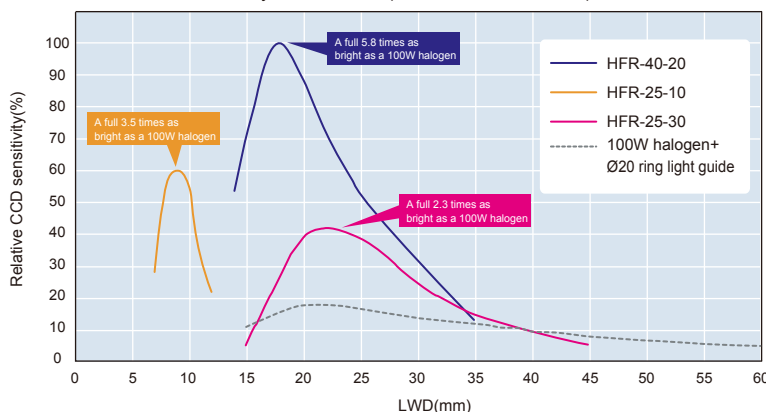
A full 5.8 times as bright as a 100W halogen ring-light!

* When 100W Halogen +Ø20 Ring light guide at maximum intensity used

Comparison of CCD intensity - Halogen vs HFR series

While halogen fiber lighting illuminates a wide area, the HFR series using original-condensing techniques provides high intensity by illuminating only a required field of view.

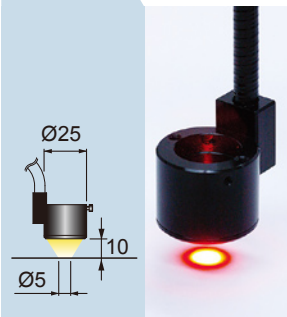
Relative CCD sensitivity at each LWD (LED colors are all RED)



The optimal condensing illumination selectable in the lineup according to the field of view size and LWD*

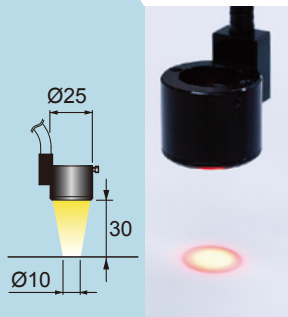
* LWD: Light Working Distance (Distance from a light to an object)

HFR-25-10



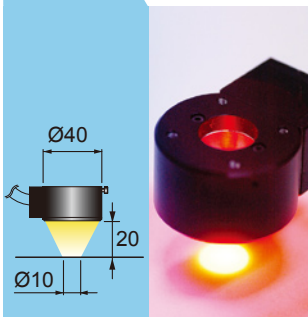
High-condensed illumination by Ø5 from 10mm LWD (high-condensed illuminating by single array)

HFR-25-30



Condensed illumination from 30mm LWD (condensed by single array)

HFR-40-20



High-condensed illumination by wide-view of Ø10 from 20mm LWD (condensed by three independent arrays)

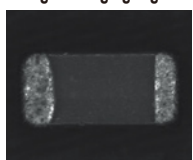
Clear images can be captured by selecting illumination range, illumination angle and luminosity

Detecting a minute part that is difficult to capture with an existing halogen light source, can be achieved with high contrast

Actual images of chip part

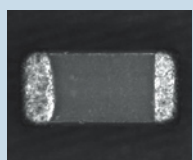
Operating conditions: Shutter speed: 500µsec(1/2,000 sec.) Lens: Double magnification Intensity: Maximum

Halogen+Ring light guide



Illuminated by 50W halogen light.

HFR-25-30



Condensed illumination at 30mm LWD (condensed by a single array).

HFR-25-10



High intensity condensed irradiation to Ø5 (condensed high intensity by a single array).

HFR-40-20

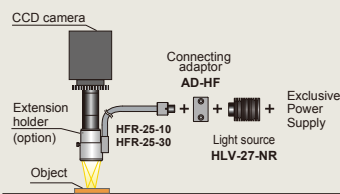


High intensity irradiation (condensed by three independent arrays) with wide viewing field.

HFRseries

— Ring type —

Connecting configuration

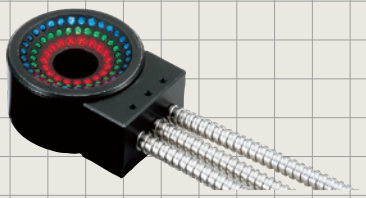


HFR-25-30

HFR-25-10



HFR-40-20 *

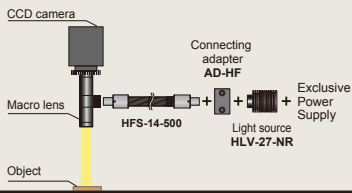


*Three light source units are required

HFS

— Straight type —

Connecting configuration



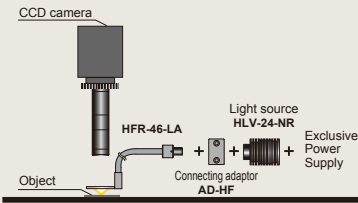
HFS-14-500



HFRseries

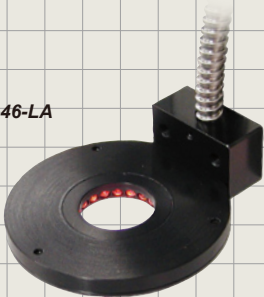
— Low angle type —

Connecting configuration

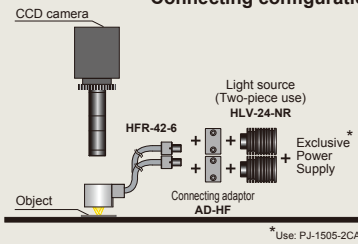


Custom-design available

HFR-46-LA

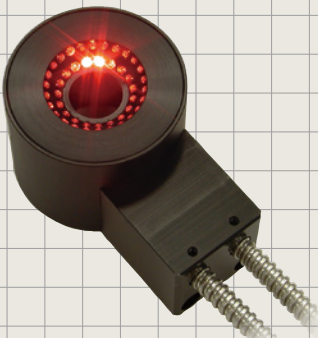


Connecting configuration



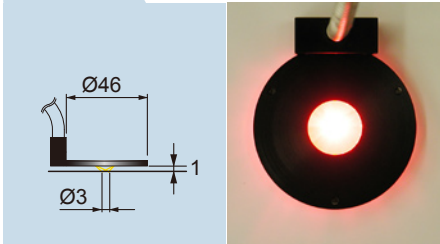
Custom-design available

HFR-42-6



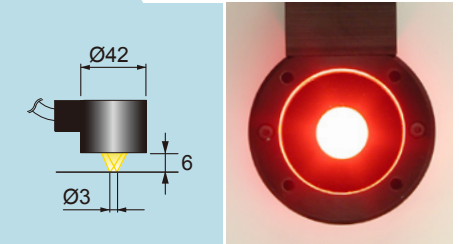
High-Luminosity Condensed Light Emission from Low Angles

HFR-46-LA



High-luminosity condensed light with a 3-mm diameter from the ultra-low angle of a 1-mm LWD.

HFR-42-6



High-luminosity condensed light emission in a 3-mm diameter from a low LWD of 6 mm (2-step independent light condensing).

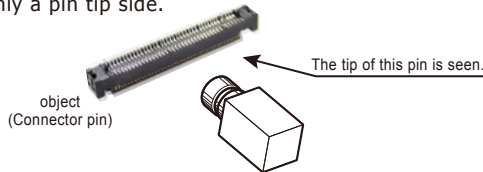
Extremely low-angle condensed light emission is possible with the HFR-46-LA

■ Ultra-thin housing with super-low-angle condensing illumination

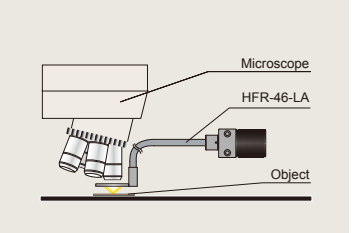
A low angle type is designed to detect minute concaves and convexes of an object. This super-compact design is perfect for a microscope for a narrow working distance between a lens and an object.

■ Application example of connector pin position

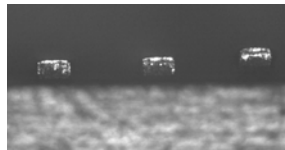
Detecting the pin displacement by illuminating only a pin tip side.



Connecting configuration

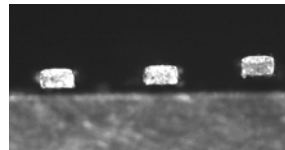


Coaxial Illumination
(Light used: HLV-27)



The edge of a pin with coaxial light (double magnification telecentric lens) cannot be detected.

HFR-25-10



The reflection of housing gives an unclear image on the pin position detection with the curved illumination.

HFR-46-LA



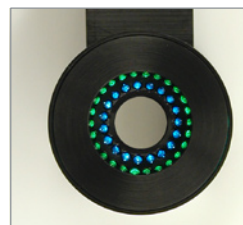
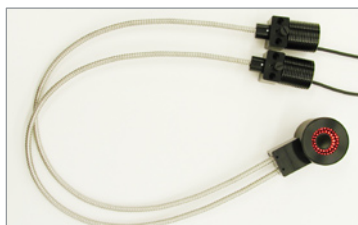
Enables the detection of the pin displacement clearly, by illuminating only a tip side.

HFR-42-6 -- High-Luminosity Condensed Light Emission from a Low Angle

■ High-luminosity condensed light emission achieved with two light sources.

Higher luminosity is achieved by using two HLV-24-NR light sources. This is ideal for extracting the features of extremely small objects or imaging at high shutter speeds. The light source can also be easily changed, so you can select the light color that is best suited to the spectral reflectance of the target object.

Connect the light source and the HFR-42-6 You can select the optimal light source color

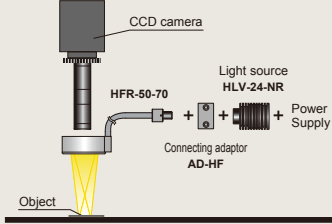


Select to Match Your Inspection Environment, Installation Conditions

HFRseries

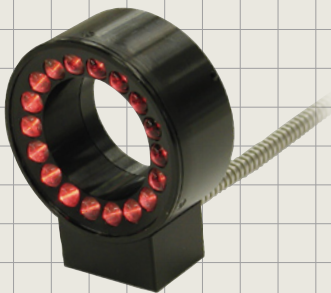
— Long Work Distance type —

Connecting configuration

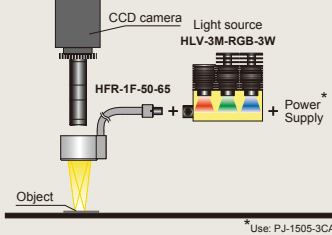


Custom-design available

HFR-50-70

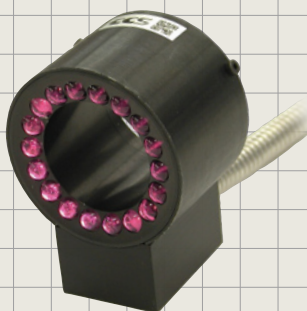


Connecting configuration



Custom-design available

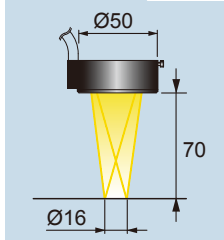
HFR-1F-50-65



*Special source of light HLV-3M-RGB-3W are required

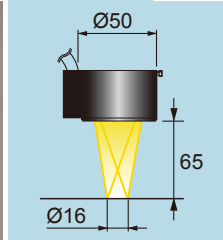
Uniform Condensed Light Emission from a Long Light Working Distance!

HFR-50-70



Uniform condensed light emission in a 16-mm diameter from a long LWD of 70 mm.

HFR-1F-50-65



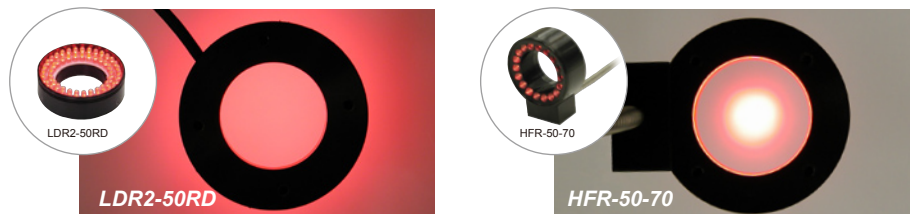
Uniform condensed light emission in a 16-mm diameter from a long LWD of 65 mm.

HFR-50-70 -- Condensed Light Emission from a Long Light Working Distance

■ Even when the light source and target object must be separated by distance, light dispersion is controlled for more effective spotlight emission.

Optimal when the inspection environment, inspection devices, and other installation conditions require space between the light source and the target object. With normal LED ring illuminators, the light is dispersed. By using the HFR-50-70, a precise intensity can be radiated onto the inspection point.

Illumination Range Comparison -- Conventional LED Ring Illuminator vs the HFR-50-70 (at an LWD of 70 mm)



HFR-1F-50-65 -- Condensed Light Emission in Any Color from a High Angle

■ Connection to the HLV-3M-RGB-3W light source lets you blend colors in unlimited steps.



■ Increased Precision from a New Light Source

The HLV-3M-RGB-3W is an exclusive light source comprised of a light source section and a blending unit. It enables step-less, independent dimming of each color. The special construction of the blending unit eliminates irregularities to provide uniform light emission. Connection to a model from the CCS Micro Fiber Head Ring Series allows you to create the optimal illumination color for a variety of configurations.



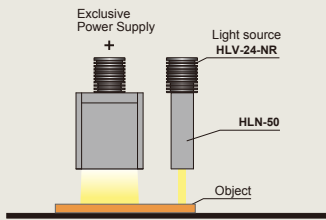
HLN/HLNV HLNW series

Micro Fiber Head Line Series -- Inspection Device, and Other In

HLNseries

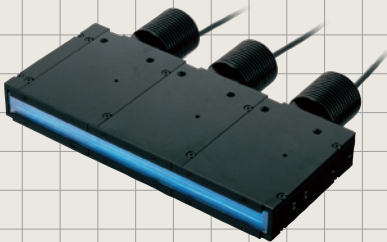
— Line type —

Connecting configuration



Custom-design available

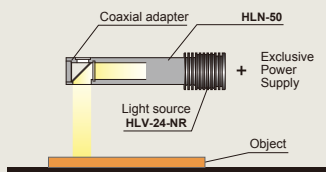
HLN-150



HLNVseries

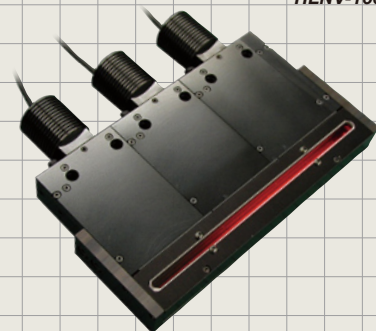
— Line-shaped coaxial type —

Connecting configuration



Custom-design available

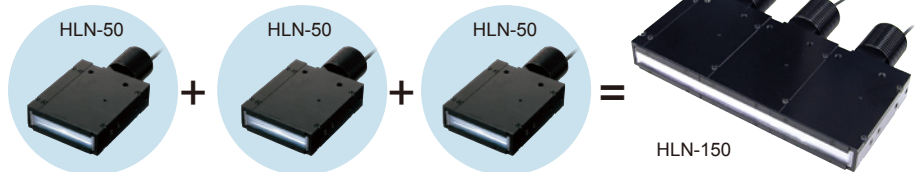
HLNV-150



Originally Developed Line Fiber Head Responds Flexibly to Diverse Inspection Environments

- Easy customization** Flexible modular design
- Simple size changes** Easy sizing (with no joints between modules)
- Uniform brightness** Uniform light intensity among modules, and uniform imaging brightness
- Selectable light source color** Select from red, green, or blue light source colors
- Applicable to a variety of target objects** Lets you respond to various objects by changing the illumination color

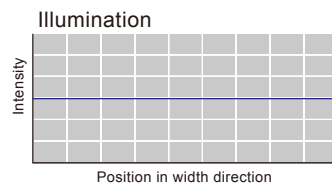
■ Easily Change the Light Source Color and Size (in 50-mm Units)



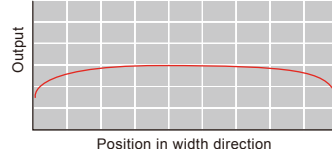
The modular design of the HLN series lets you create a maximum size of up to 300 mm (in 50-mm units) and change the light source color. Illuminator units can be easily assembled together by removing the screws on the sides. By mounting illuminator units on a diffusion board of the desired illumination length, you can assemble a seamlessly uniform line illuminator. The ability to control light modulation in 50-mm units lets you easily adjust the illuminator to solve the kinds of problems in emission uniformity often seen in line sensor illumination, such as differences in the light intensity between the center and the ends, or intensity decreases. This lets you easily unify line sensor output.

■ Light intensity adjustment unifies line sensor camera output

Conventional model

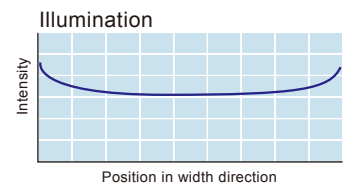


Line sensor camera output

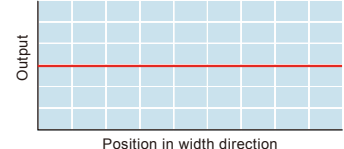


▲ Even though the illumination is uniform, the line sensor camera output is often not uniform.

Module-type line illumination

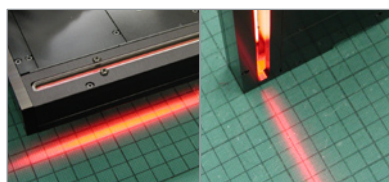


Line sensor camera output



▲ The line sensor camera output can be unified by adjusting the light intensity of each module.

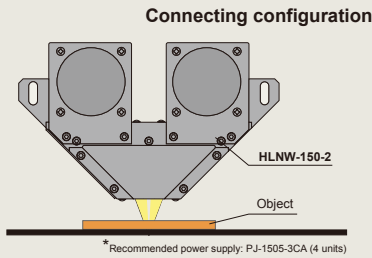
■ By attaching an adapter to the end, the unit can be used as a coaxial illuminator.



Using a coaxial adapter lets you control the reflectance from objects having a mirror surface, and illuminate them with uniform light. In addition, the HLN-50 can be used at higher luminosity than conventional incident-light coaxial illuminators, and the ability to select the light source color and to create illuminators in customized lengths allows you to flexibly handle applications in a wide variety of inspection environments.

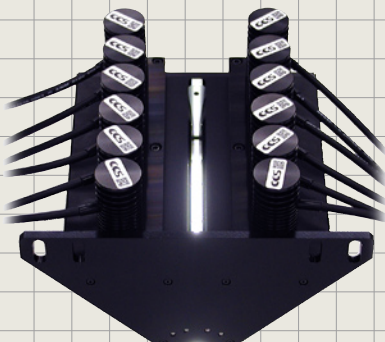
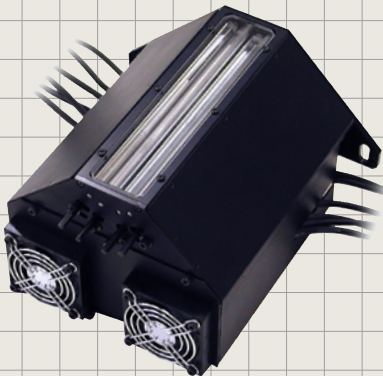
Select to Match Your Inspection Environment, Installation Conditions

HLNW series — Condensed light line type —



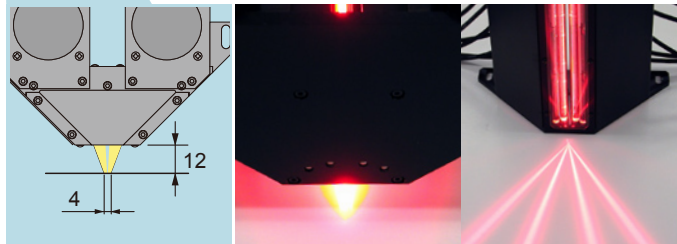
Custom-design available

HLNW-150-2



Achieves an Entirely New Level of High-Luminosity, Condensed Light Line Emission

HLNW-150-2



Use 12 high-luminosity spotlights (HLV-24-NR) for the light source. Unique light condensing technology achieves high-luminosity condensed light at an LDW of 12 mm.

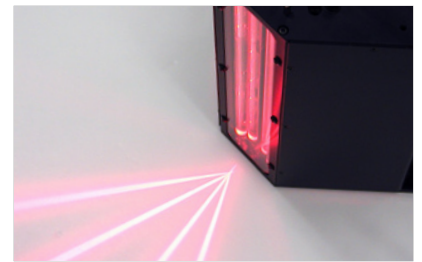
Light is concentrated at high luminosity to a diameter of approximately 4 mm from an LDW of 12 mm. A high-luminosity, highly uniform line light with a length of 130 mm can be emitted.

Four Line Lights Are Condensed into a Single Point to Create Uniform, High-Luminosity Light

High-luminosity condensed light line illumination for high-speed inspection by a line sensor camera.



Twelve high-luminosity spotlights are used as the light source to achieve an unprecedented level of brightness. CCS proprietary light condensing technology achieves uniformly high luminosity and condensation.

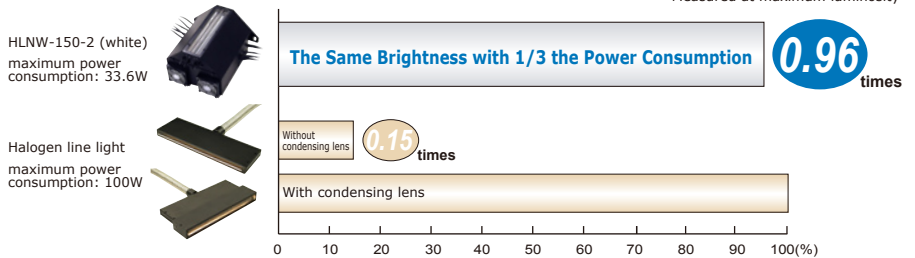


Four line lights are condensed into a single point from an LDW of 12 mm. Applicable to high-speed imaging with a line sensor camera, an application that is difficult with conventional illumination.

The Same Brightness as a 100W Halogen Line Light!

CCD Brightness Comparison -- HLNW-150-2 and a 100W Halogen Line Light

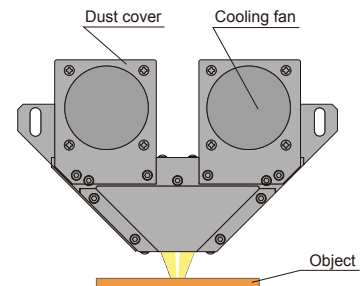
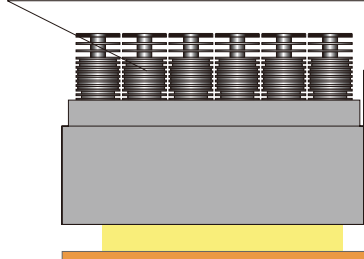
*Measured at maximum luminosity



A dramatic increase in light intensity has been achieved by combining our high-luminosity spot illumination and original light condensing technology. The new illumination both saves energy and offers a long service life because it does not consume large amounts of power as conventional halogen lamps do.

Illumination Structure of HLNW-150-2

Use 12 spotlights from the HLV-24 or HLV-24-3W series.



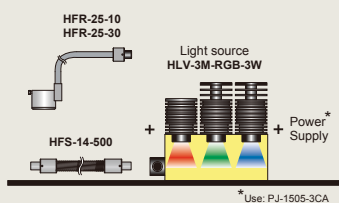
Light source of Micro fiber-heads

HLV-3M-RGB-3W HLV-24-NR series

Micro Fiber Head Light Sources

HLV-3M-RGB-3W

Connecting configuration

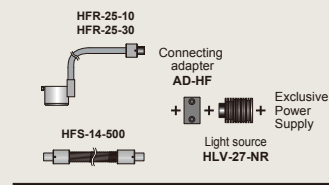


HLV-3M-RGB-3W



HLV-NRseries

Connecting configuration



HLV-24-NR

HLV-24SW-NR

HLV-24RD-NR

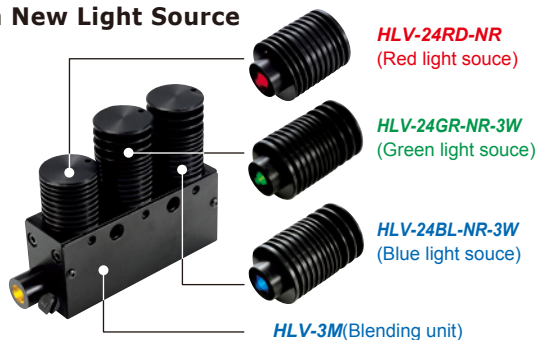


HLV-24BL-NR

Blend the color as you want!!

Increased Precision from a New Light Source

The HLV-3M-RGB-3W is an exclusive light source comprised of a light source section and a blending unit. It enables step-less, independent dimming of each color. The special construction of the blending unit eliminates irregularities to provide uniform light emission. Connection to a model from the CCS Micro Fiber Head Ring Series allows you to create the optimal illumination color for a variety of configurations.

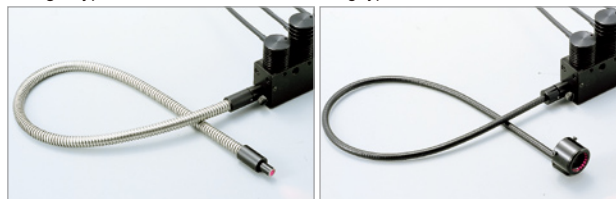


Connecting examples of HLV-3M-RGB-3W and Micro fiber-head

Connecting CCS Micro fiber-heads provide full color with various illumination types.

Straight type HFS-14-500

Ring type HFR-25-10/ HFR-25-30



By changing the light source color, high quality images can be obtained according to the application purpose

Image examples of liquid crystal glass panel

Independent control of intensity provides the optimal illumination and images according to the spectral characteristics of object.



Connecting example of HLV-27-NR series and Micro fiber-head

In order to utilize the characteristics of different wavelengths, four colors of Red (R)/ Green (G)/ Blue (B)/ White (SW) are available.

To connect to micro-fiber head, attached adapter is required.



Achieve Optimal Light Colors on Target Objects

The HLV-NR-3W Series with Higher Intensity than Conventional LEDs Is Being Simultaneously Released

Interchangeable light source color with ease

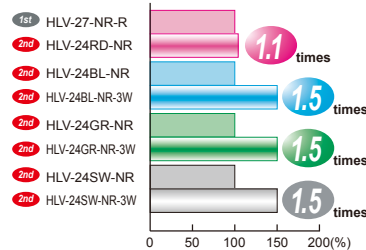
HLV-24-NR-3W



HLV-24BL-NR-3W

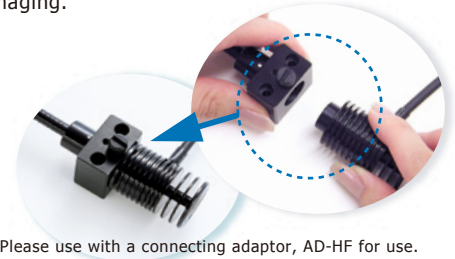
Maximum Illumination Comparison - Conventional LED (HLV-27-NR) vs HLV-24-NR-3W

Connect to the HFR-25-10, and measure at an LWD of 10 mm.



*This comparison is made by setting the maximum brightness (LWD = 0, I_{max}) of each HLV-24-NR color to 100%. Only the red color is compared with HLV-27-NR-R.

The exclusive light source, HLV-24-NR Series for Micro fiber-heads, is easily removable and attachable. Precise images can be obtained by choosing the optimum light source color when imaging.



Please use with a connecting adaptor, AD-HF for use.

Higher Intensity Enables Imaging at Shutter Speeds that were Impossible for Conventional LEDs.

Electronic Component Imaging Comparison - Conventional LED (HLV-27) vs the New HLV-24-NR/HLV-24-NR-3W

The new HLV-24-NR can be used even for imaging applications that were difficult to handle with conventional LEDs due to insufficient intensity. And the ultra-powerful HLV-24-NR-3W enables imaging at 25% light modulation, supporting stable imaging at faster shutter speeds.

Image target object



2x macro lens
HFR-25-10
Character inspection on
electronic components

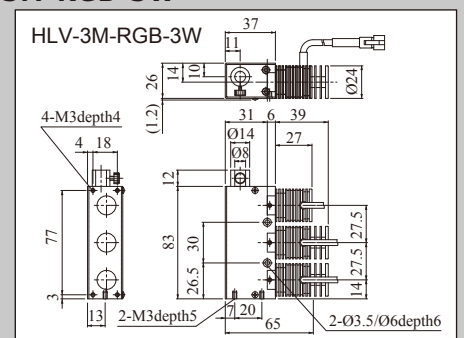
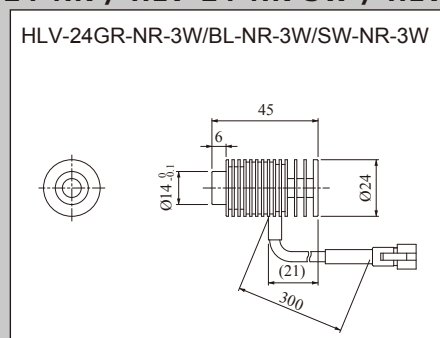
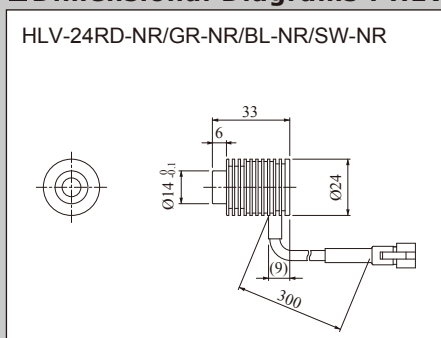


Specifications : HLV-24-NR / HLV-24-NR-3W / HLV-3M-RGB-3W

RoHS-compliant products

Model	HLV-24RD-NR	HLV-24GR-NR	HLV-24BL-NR	HLV-24SW-NR	HLV-24GR-NR-3W	HLV-24BL-NR-3W	HLV-24SW-NR-3W	HLV-3M-RGB-3W	
Max power consumption	1.4W		1.6W				2.8W	7.4W	
LED color	Red	Green	Blue	White	Green	Blue	White	Red/Green/Blue	
Dominant wavelength or color temperature	max.	645nm	550nm	490nm	10000K	550nm	490nm	10000K	(Transmitted wavelength)
	typ.	627nm	530nm	470nm	5500K	530nm	470nm	5500K	
	min.	620.5nm	520nm	460nm	4500K	520nm	460nm	4500K	
Half radius of emission wavelength	20nm	35nm	25nm	-	35nm	25nm	-	-	
Case material	Aluminum								
Cable	0.3m								
Connector	SMR-03V-B								
Polarity, signal	1 - Signal (R) pink; 2 - Anode (+), brown; 3 - Cathode (-) blue								
Usage environment	Temperature 0 to 40°C, humidity 20 to 85% (with no condensation)								
Storage environment	Temperature -20 to 60°C, humidity 20 to 85% (with no condensation)								
Weight	30g							200g	

Dimensional Diagrams : HLV-24-NR / HLV-24-NR-3W / HLV-3M-RGB-3W



PJ series

AC 100-240V



PJ-1505-2CA

PJ-1505-3CA

DC 24V



PJ-1505-2CD24

PJ-1505-3CD24

0-5V Analog Control

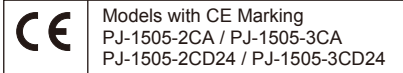
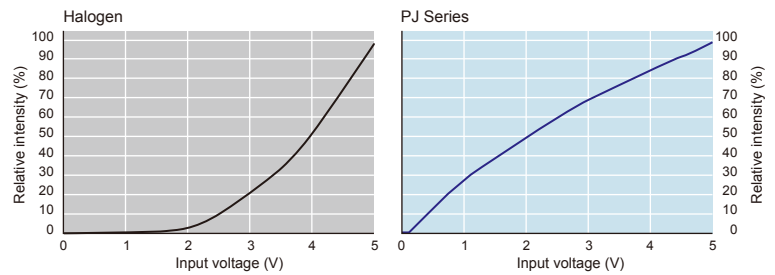
Utilizing the same 0-5V external control as a standard halogen light source, allows external control for the present system. Continuous current control enables adjustment of the light intensity more precisely than with halogen light sources. Four different types of controllers are available for various operating conditions.

100V AC type

2ch: PJ-1505-2CA 3ch: PJ-1505-3CA

24V DC type

2ch: PJ-1505-2CD24 3ch: PJ-1505-3CD24

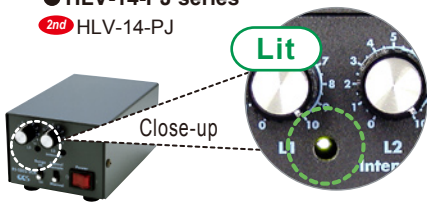


Applicable to the Entire HLV-14/HLV-27/HLV-24 Series

The PJ power supply has an internal circuit for automatically discriminating the illumination type. It can be used with all HLV series spotlights available to date. An LED indicator on the panel shows the status in accordance with the illumination type connected.

HLV-14-PJ series

2nd HLV-14-PJ



HLV-24 series

- 2nd HLV-24
- 2nd HLV-24-3W
- 2nd HLV-24-1220
- 2nd HLV-24-1220-3W
- 2nd HLV-24-NR
- 2nd HLV-24-NR-3W
- 2nd HLV-3M-RGB-3W



HLV-14/27 series

- 1st HLV-14
- 1st HLV-27
- 1st HLV-27-1220
- 1st HLV-27-NR
- 1st HLV-3M-RGB

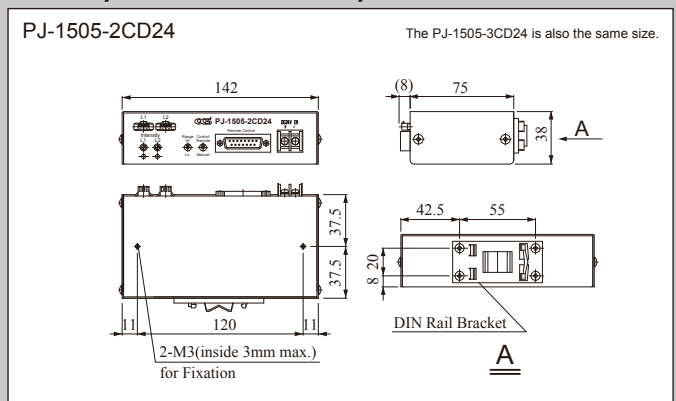
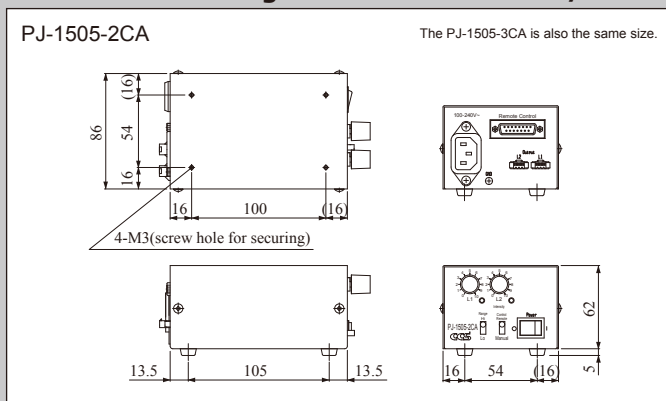


Specifications : PJ-1505-2CA / PJ-1505-3CA / PJ-1505-2CD24 / PJ-1505-3CD24 RoHS-compliant products

Model	PJ-1505-2CA	PJ-1505-3CA	PJ-1505-2CD24	PJ-1505-3CD24
Input *	100-240V AC(50/60Hz)		24V DC	
Power consumption (typ.)	27VA	37VA	10W	14.5W
Number of channels	2	3	2	3
DC output	5.5V max.			
Light intensity switch	Manual operation by panel switch (Manual), or remote light intensity (Remote)			
Light intensity control	Manual light intensity (Manual), panel dial, remote light intensity (Remote), analog voltage 0 to 5 V (5.25 V max.)			
Light OFF control	OFF: 2.5 to 5.0 V (24 V max.), ON: 0.8 to 0 V *Internal pulldown			
Remote control connector	D-Sub, 15-pin (male)			
Weight	620g	640g	360g	360g

*The operable range of input voltage 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.

Dimensional Diagrams : PJ-1505-2CA / PJ-1505-3CA / PJ-1505-2CD24 / PJ-1505-3CD24

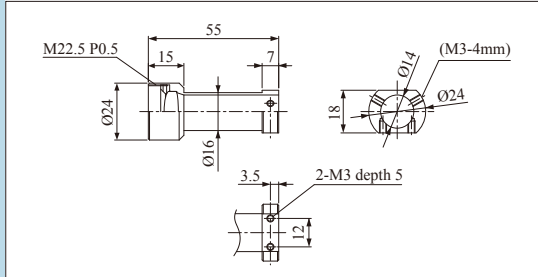


HLV/HFR Series Option

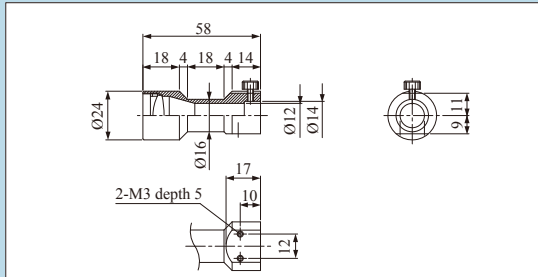
Condensing Lens for HLV-24 Series HL-30/HL-24-21

RoHS-compliant products

HL-30 Dimensions(mm)



HL-24-21 Dimensions(mm)



Combinations

HL-30



HL-24-21



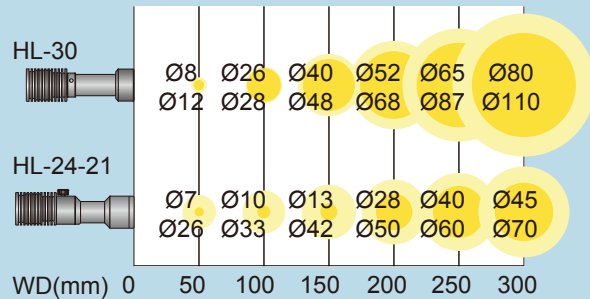
Supported Models
HLV-24 Series

HLV-24-3W Series

*HL-30/HL-24-21 cannot be used with HLV-14/HLV-24-1220/HLV-24-1220-3W/HLV-24-NR/HLV-24-NR-3W series.

Illumination diameter of HL-30/HL-24-21

Upper : Inner diameter
Lower : Outer diameter



*Data shown here are the actual measurements and does not guarantee the products performance.

Extension holders for HFR-25-10/ HFR25-30

The extension holders, HD-HFR-25-1640/1618 are designed to fix the converging spot of HFR series. It can be attached directly to a WD fixed magnification lens. Light can be mounted with ease, and possible to attach at most efficient working distance.

RoHS-compliant products



HD-HFR-25-1640

HD-HFR-25-1618



Attaching example

Attaching example

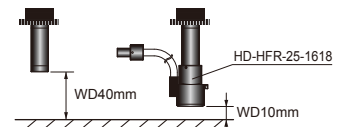
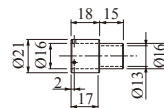


Attached to a telecentric lens

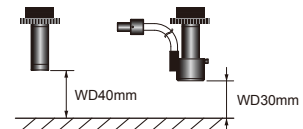
Usage examples of extension holders, HD-HFR-25-1618/ HD-HFR-25-1640

- Used for attaching macro lens and Micro fiber-head.
- Use an appropriate holder type according to the working distance of lens and the working distance of ring-light guide.

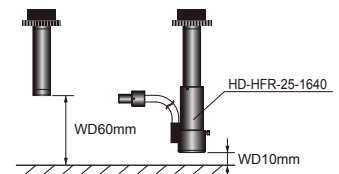
For 10mm LWD of Ring Light Guide (HFR-25-10) with a 40mm WD of lens, the HD-HFR-25-1618 holder is needed.



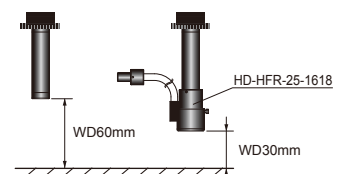
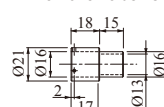
For 30mm LWD of Ring Light Guide (HFR-25-30) with a 40mm WD of lens, no holder needed.



For 10mm LWD of Ring Light Guide (HFR-25-10) with a 60mm WD of lens, the HD-HFR-25-1640 holder is needed.



For 30mm LWD of Ring Light Guide (HFR-25-30) with a 60mm WD of lens, the HD-HFR-25-1618 holder is needed.



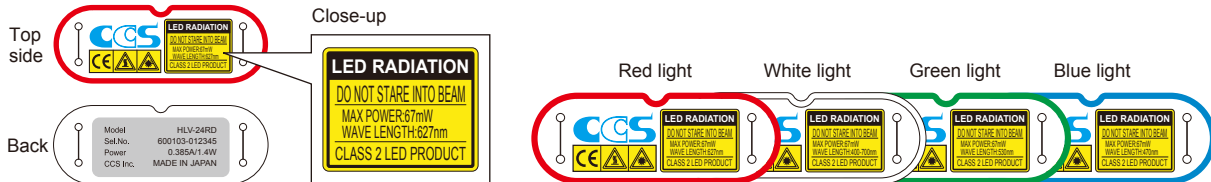
*Contact our sales representative for other variations.

Information

A hazard label indicating the hazard class rating is attached to HLV series spotlights. To ensure safe usage, be sure to read the label before use. Do not remove the label, as it contains important information for the safe operation of the product.

■ Hazard Label Example

HLV series spotlights are provided with a hazard label such as the following. Hazard labels are color-coded corresponding to the color of light emitted. Information such as the LED class, maximum output, and wavelength is recorded on the front of the label, and the model number, serial number, and other details are recorded on the back.



● With regard to Laser Safty Standard (IEC60825-1 Amd.2)

LED illuminations are applicable to laser products defined by IEC. The explanation of each class is shown below.

Class	Outline
Class 1	Class 1 levels of LED radiation are safe under reasonably foreseeable conditions of operation
Class 1M	Class 1M levels of LED radiation are safe under reasonably foreseeable conditions of operation, but may be hazardous if the user employs optics within the beam.
Class 2	Class 2 levels of LED radiation emit visible radiation(400nm ~ 700nm) where eye protection is normally afforded by aversion responses, including the blink reflex.
Class 2M	Class 2M levels of LED radiation emit visible radiation(400nm ~ 700nm) where eye protection is normally afforded by aversion responses, including the blink reflex. However, viewing of output may be more hazardous if the user employs optics within the beam.
Class 3R	Class 3R levels of LED radiation are potentially hazardous with direct intrabeam viewing, but the risk is lower than for Class 3B lasers.
Class 3B	Class 3B levels of LED radiation are normally hazardous when direct intrabeam exposure occurs.
Class 4	Class 4 levels of LED radiation also capable of producing hazardous diffuse reflections. They may cause skin injuries and could also constitute a fire hazard. Their use requires extreme caution.

● Classification of LED illuminations described in this HLV Series (IEC60825-1 Amd.2)

Class	Series names and model names
Class 2	HLV-14-PJ · HLV-24 · HLV-24-1220 · HLV-24-3W · HLV-24-1220-3W · HLV-24-NR · HLV-24-NR-3W · HLV-3M-RGB-3W

For RoHS-compliant products and other detail information, visit <http://www.ccs-grp.com>

Precautions

- To ensure safe usage, be sure to read the Operating Manual before operating the product.
- In the interest of product improvement, the specifications and design described herein may change without prior notice.

CCS Inc. <http://www.ccs-grp.com>

Headquarters Shimodachiuri-agaru, Karasuma-dori, Kamigyo-ku, Kyoto 602-8011 Japan
 Phone: +81-75-415-8284 / Fax: +81-75-415-8278
 E-mail: intlsales@ccs-inc.co.jp