High Intensity Spotlights
HSL Series

Long working distance, wash down high-intensity focused spotlight

A spot light solution for your long working distance, focused, and washdown requirements

Conventional spot light sources

- Have short lifetimes resulting in a higher cost of goods to replace bulbs and significant cost due to downtime and maintenance over the long run duration.
- Have high power consumption increasing long term energy costs and environmental impact.
- High surface temperatures that can burn a bare hand.
- Non-uniform intensity over the illuminated area.
- Require filters to achieve desired color content which must be replaced frequently and block a significant fraction of the light power.

LED light sources

- Have the longest lifetime minimizing downtime and operating costs.
- Do not fail immediately but rather decrease in maximum reachable brightness over long period of time.
- Consume very little power thus minimizing electricity costs and environmental impact.
- Generate relatively little heat and can be safely handled even at full intensity.
- Provides illumination with a high intensity uniformity and minimal variation with time.
- Color comes from the LED itself and is available in red, white, green, and blue.
- Washdown (IP67 compliant)* Construction enables use the most demanding environments with water, dust, or other contaminants.

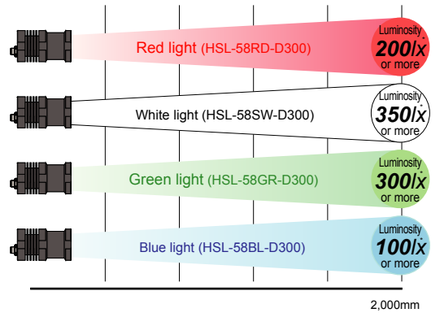
* IP67 specifies proper function with immersion in 1-m of water for a period of 30 minutes.

High-intensity, uniform, condensed illumination in only the areas required

Minimal light loss ensures efficient light use.

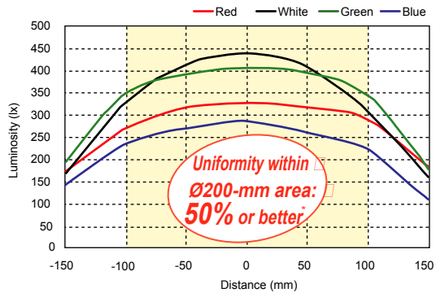
The HSL Series High-intensity LED Spotlights enables high-intensity condensed illumination in areas requiring illumination, ensuring use of the spotlights with a minimal light loss and high efficiency. Furthermore, the HSL Series spotlights have a high degree of uniformity in illumination areas to accurately illuminate inspection points, thus making it possible to perform inspections in a high contrast.

[HSL Series - Luminosity of red, white, green, and blue light]



* Maximum light intensity within the Ø300-mm diameter spot when it is illuminated with a 2,000 mm working distance from the front of the light. (The light intensity may vary with ambient temperatures.)

[HSL Series - Uniformity of red, white, green, and blue light]



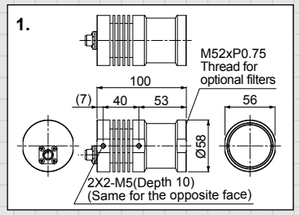
* Light intensity value across the Ø300-mm spot diameter when it is illuminated with a 2,000 mm working distance from the front of the light.

Product Lineup Table

Series	Model Name	Color	Power Consumption	Options	Dimension
HSL	HSL-58RD-D300□	●	4.6W	—	1
	HSL-58SW-D300□	○			
	HSL-58GR-D300□	●			
	HSL-58BL-D300	●			

Dimensions (Unit: mm)

1.



PHL-0508-CD24 power supply unit for best performance from the HSL Series spotlights

HSL Series power supply unit, PHL-0508-CD24

- Lightweight, compact design
- DIN rail mountable standard
- 24-VDC input
- Screw adjustable intensity control, prevents accidental tampering

PHL-0508-CD24

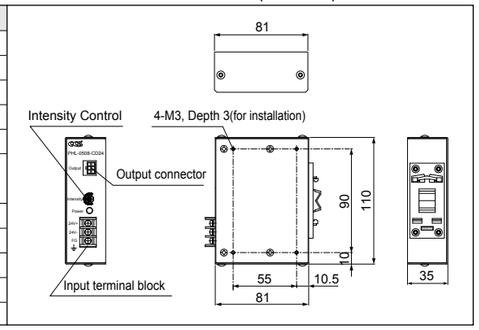
RoHS Directive Compatible

CE Models with CE marking
PHL-0508-CD24

Specifications for PHL-0508-CD24

Model	PHL-0508-CD24
Input voltage	24VDC (±10%)
Power consumption	8W max
Inrush current	1.8A typ.
Maximum output voltage	7V
Output current fluctuation range	76 ~ 950mA typ.
Input protection	Over-voltage protection with built-in fuse activated at approx. 140% of rated voltage. Reverse polarity protection with built-in fuse
Intensity control	Current control system
ON/OFF time	0.2 seconds or less
Operating environment	Temp.: 0 to 40℃, Humidity: 20 to 85%RH (With no condensation)
Storage environment	Temp.: -20 to 60℃, Humidity: 20 to 85%RH (With no condensation)
Weight	350g or less

Dimensions of PHL-0508-CD24 (Unit: mm)



HSL cable

Use the cable to connect between a spotlight and a power supply unit.

- FCB-2-IP67-PHL□ ····· 2m
- FCB-5-IP67-PHL□ ····· 5m
- FCB-10-IP67-PHL□ ····· 10m

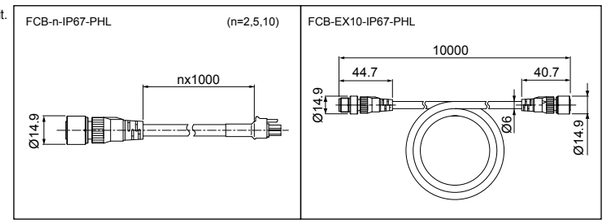
HSL extension cable

Use this cable to extend the distance between a spot light and a power supply unit in addition to a cable above for a maximum of 30-m length.

- FCB-EX10-IP67-PHL···· 10m

* Use a cable between a spotlight and a power supply unit at a maximum distance of 30 m.

Dimensions of HSL cable (Unit: mm)



Special

High luminosity LED spotlight

HLV-14-PJ/HLV-24/HLV-24-3W Series

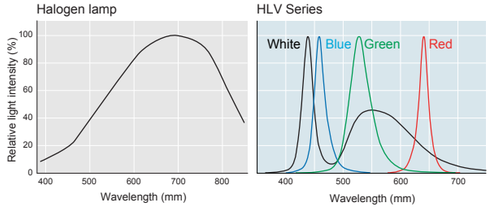
Second-generation, high-luminosity spotlights provide brighter, more uniform lighting

Designed to replace halogen light sources, this new generation of compact, lightweight illumination offers a long lifetime and low power consumption.

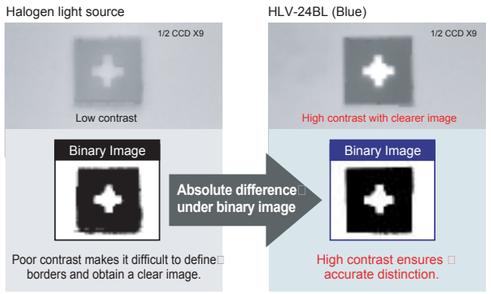
High contrast achieved by selecting light colors according to the spectroscopic characteristics of target object

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

Comparison of Spectral Characteristics - Halogen vs HLV Series



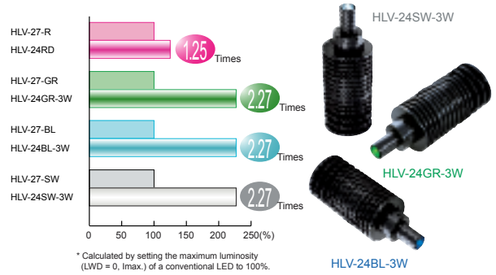
Contrast Comparison - Halogen vs HLV Series



Twice the intensity of former light sources

New HLV-24-3W Series lineup of white, green, and blue light sources are twice as bright as conventional halogen light sources.

Maximum Luminosity Comparison - Conventional



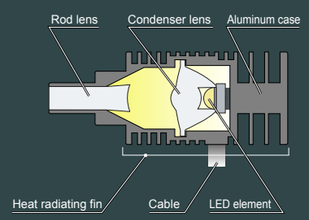
* Calculated by setting the maximum luminosity (LWD = 0, Imax.) of a conventional LED to 100%.

Two types of tip diameter ø8 and ø12

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

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

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



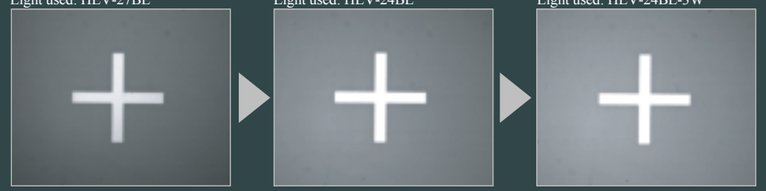
Examples of images captured using high-luminosity spotlights

Checking alignment marks on an LCD display

Image captured using a conventional light source with light intensity adjusted to 100% and a shutter speed of 1/10,000 s.
Light used: HLV-27BL

Image captured using the new HLV-24BL at the same shutter speed with light intensity dimmed to **30%**.
Light used: HLV-24BL

Image captured using the new HLV-24BL-3W with light intensity dimmed to **20%**.
Light used: HLV-24BL-3W

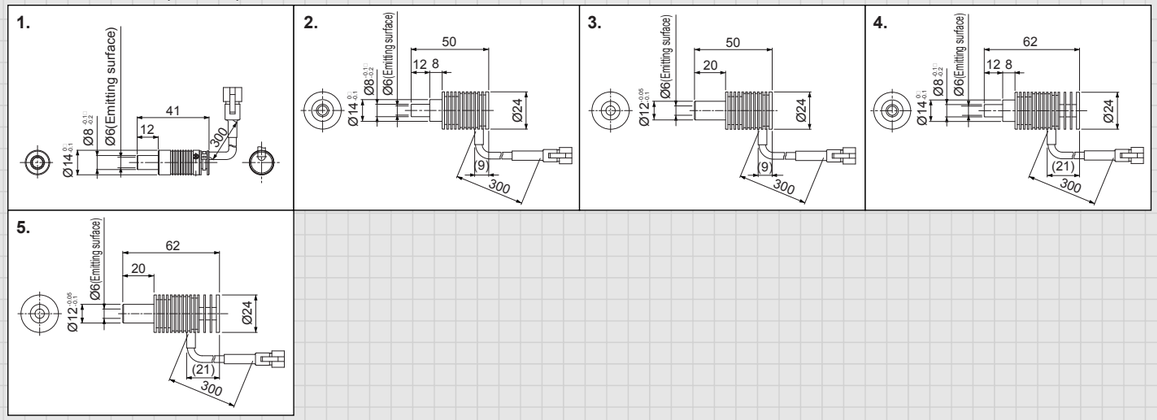


Product Lineup Table

Series	Model Name	Color	Power Consumption	Options	Dimension
HLV-14	HLV-14RD-PJ	●	1.0W	—	1
	HLV-14SW-PJ/GR-PJ/BL-PJ	○/●/●	1.1W	—	
HLV-24	HLV-24RD	●	1.4W	—	2
	HLV-24SW/GR/BL	○/●/●	1.6W	—	
HLV-24-1220	HLV-24RD-1220	●	1.4W	—	3
	HLV-24SW-1220/GR-1220/BL-1220	○/●/●	1.6W	—	

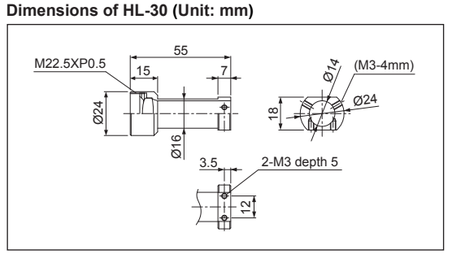
Series	Model Name	Color	Power Consumption	Options	Dimension
HLV-24-3W	HLV-24SW-3W/GR-3W/BL-3W	○/●/●	2.8W	—	4
HLV-24-1220-3W	HLV-24SW-1220-3W/GR-1220-3W/BL-1220-3W	○/●/●	2.8W	—	5

Dimensions (Unit: mm)

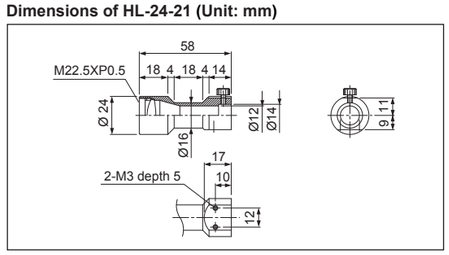


Condensing Lens Dedicated to the HLV-24 Series HL-30/HL-24-21

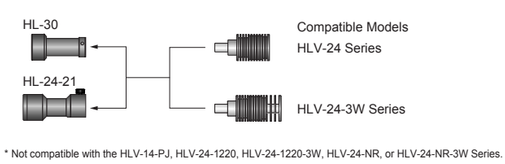
Dimensions of HL-30 (Unit: mm)



Dimensions of HL-24-21 (Unit: mm)

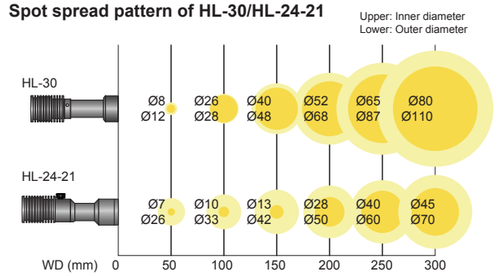


Combine with HLV-24 Series



* Not compatible with the HLV-14-PJ, HLV-24-1220, HLV-24-1220-3W, HLV-24-NR, or HLV-24-NR-3W Series.

Spot spread pattern of HL-30/HL-24-21



* The data shown here is the result of lab measurements and do not guarantee the products performance.

Specifications

Model		HLV-14 □□ -PJ				HLV-24□□ HLV-24 □□ -1220				HLV-24 □□ -3W HLV-24 □□ -1220-3W		
□□		RD	GR	BL	SW	RD	GR	BL	SW	GR	BL	SW
LED color		Red	Green	Blue	White	Red	Green	Blue	White	Green	Blue	White
Max power consumption		1.0W	1.1W			1.4W	1.6W			2.8W		
Dominant wavelength or color temperature	max.	645nm	550nm	490nm	10000K	645nm	550nm	490nm	10000K	550nm	490nm	10000K
	typ.	627nm	530nm	470nm	5500K	627nm	530nm	470nm	5500K	530nm	470nm	5500K
	min.	620.5nm	520nm	460nm	4500K	620.5nm	520nm	460nm	4500K	520nm	460nm	4500K
Half radius of emission wavelength		20nm	35nm	25nm	–	20nm	35nm	25nm	–	35nm	25nm	–
Weight		25g				50g				50g		
Usage environment		Temperature: 0 ~ 40C, humidity: 20 ~ 85%RH (with no condensation)										

Special Micro Fiber-heads
HFS/HFR Series

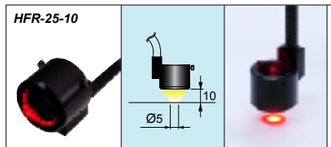
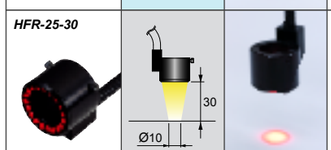
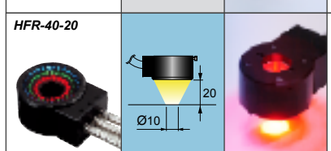
New generation. LED fiber system
A next generation illumination system that has advantages of both LED and fiber.

Our original light focusing technology realizes unprecedented brightness.

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.

Patent Pending

Selectable in the lineup according the work sample character is tics.

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)

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

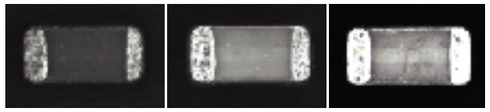
Clear images can be captured by selecting illumination range, illumination angle and luminosity

Actual images of chip part

50W Halogen light + Ring light guide

The ring type HFR Series offers a wide variety of products so that you can choose the irradiation range, illumination angle, and luminance most suitable for the objects to be inspected and the environment.

HFR-25-30 (Red) HFR-25-10 (Red) HFR-40-20 (Red)

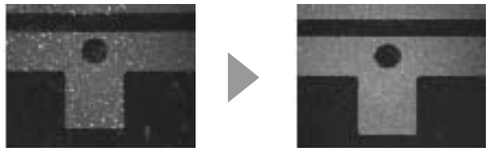


Operating conditions:
Shutter speed: 500µsec (1/2,000 sec.) Lens: Double magnification Intensity: Maximum

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

Image comparison of alignment of TAB tape

50W Halogen light + Ring light guide HFR-25-30 (Blue) LWD 30mm



Special Light Sources for Micro Fiber-heads
HLV-24-NR/HLV-24-NR-3W Series

Special light sources allow users to tailor the illumination color and intensity to the target object
Micro Fiber-head combination ensures compatibility with a wide array of applications

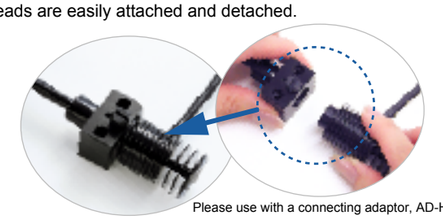
By changing the light source color, features can be clearly extracted according to the application purpose

Red (RD), green (GR), blue (BL), and white (SW) light sources are available for near monochromatic LED lighting that can be matched to the spectral characteristics of the target object. Combination with a Micro Fiber-head allows the user to tailor the best illumination color and lighting configuration to extract the most accurate image.

Straight type HFS-14-500 Ring type HFR-25-10/ HFR-25-30

Change light source color with ease

HLV-24-NR/NR-3W Series power supplies for Micro-Fiber-heads are easily attached and detached.

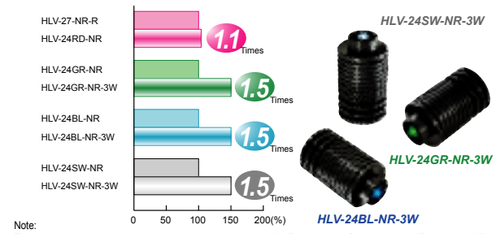


Please use with a connecting adaptor, AD-HF

New HLV-24-NR-3W offers greater intensity

New HLV-24-NR-3W Series lineup resolves the low-intensity problems of conventional white, green, and blue sources.

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.



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

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

Highly stable images can be captured at faster shutter speeds, making it possible to take clear images under low-light conditions that were difficult with conventional lights.

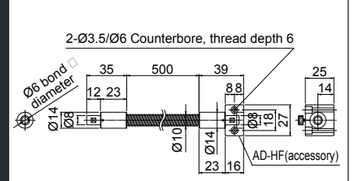
HLV-27-NR-BL (Blue) HLV-24BL-NR (Blue) HLV-24BL-NR-3W (Blue)

Shutter speed: 1/10000 Shutter speed: 1/10000 Shutter speed: 1/10000
Light intensity: **100% of Max** Light intensity: **50% of Max** Light intensity: **25% of Max**

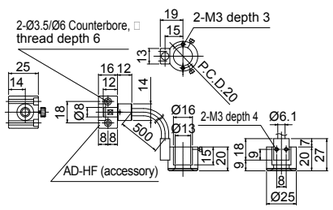
Shooting conditions: Coaxial 2x macro lens with an HFR-25-10

Dimensions (Unit: mm)

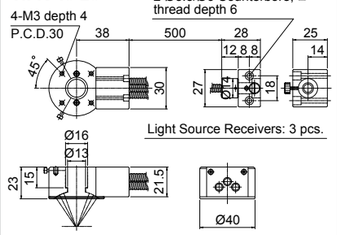
HFS-14-500



HFR-25-10/HFR-25-30

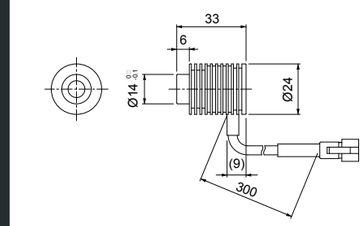


HFR-40-20

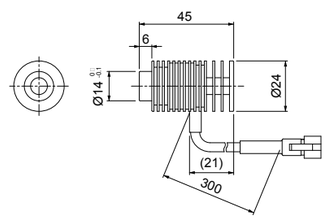


Dimensions (Unit: mm)

HLV-24RD-NR/GR-NR/BL-NR/SW-NR



HLV-24GR-NR-3W/BL-NR-3W/SW-NR-3W



Option

Extension Cables (HLV-Series Cables)

These cables are used to extend the distance between HLV-Series light sources and special power supplies.

*Do not use an extension cable longer than 5 m. Otherwise it may reduce light intensity.

- Standard Type
  FCB-1/2/3/5 (1m/2m/3m/5m)
- Robot Cable Type
  FRCB-2/3/5 (2m/3m/5m)

Special

Light Sources for Micro Fiber-heads

HLV-3M-RGB-3W

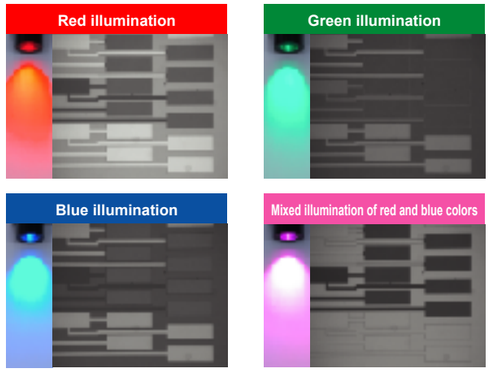
Full-color light sources allow users to tailor the illumination color to the target object

Micro Fiber-head combination ensures compatibility with a wide array of applications

Blend the color as you want

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.

Image examples of liquid crystal glass panel

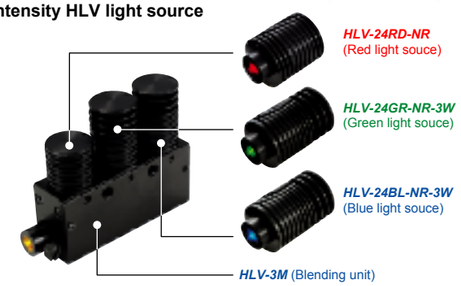


Independent control of intensity provides the optimal illumination and images according to the spectral characteristics of object.

Precise color blending using CCS's mixing chamber and three-channel power supply

An HLV-24RD-NR red light source, HLV-24GR-NR-3W green light source, and HLV-24BL-NR-3W blue light source are built into the HLV-3M-RGB-3W. The R, G, and B light sources can be independently controlled to create any combination up to full-spectrum lighting. This ensures that the best illumination color will be available for the spectroscopic reflectivity of the workpiece.

Increased intensity using CCS's second-generation high intensity HLV light source



Straight type HFS-14-500

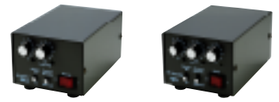
Ring type HFR-25-10/ HFR-25-30

HLV Series dedicated power supply unit

PJ Series

RoHS Directive Compatible

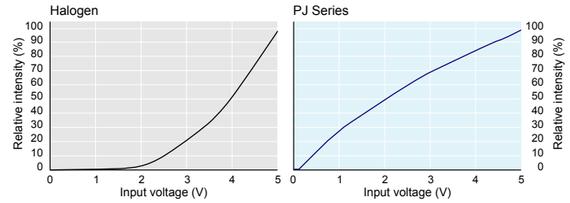
AC 100-240V



DC 24V

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.



240V AC type

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

24V DC type

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

CE Models with CE Marking
PJ-1505-2CA / PJ-1505-3CA / PJ-1505-2CD24 / PJ-1505-3CD24

Specifications

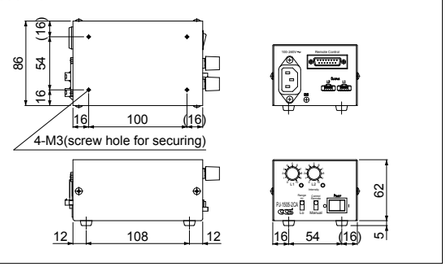
Model	PJ-1505-2CA	PJ-1505-3CA	PJ-1505-2CD24	PJ-1505-3CD24
Input	100-240V AC(50/60Hz)		24V DC	
Power consumption	27VA typ.	37VA typ.	10W typ.	14.5W typ.
Number of channels	2	3	2	3
DC output	5.5V max.			
Light intensity switch	Manual operation by panel switch (Manual), or remote light intensity (Remote)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

Note: The operable range of input voltage is: 85 to 265V AC for the PJ-1505-2CA and PJ-1505-3CA, and 10 to 26V DC for the PJ-1505-2CD24 and PJ-1505-3CD24.

Dimensions (Unit: mm)

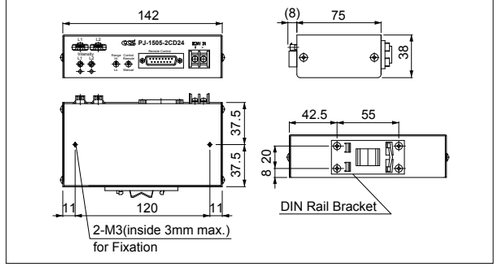
PJ-1505-2CA

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



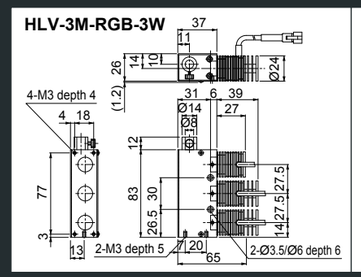
PJ-1505-2CD24

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

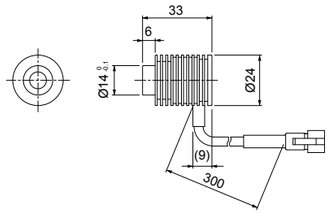


Dimensions (Unit: mm)

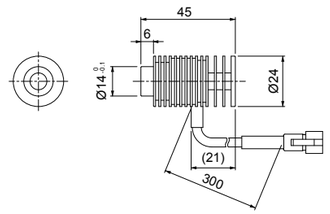
HLV-3M-RGB-3W



HLV-24RD-NR/GR-NR/BL-NR/SW-NR



HLV-24GR-NR-3W/BL-NR-3W/SW-NR-3W



Specifications

Model		HLV-24□□-NR				HLV-24□□-NR-3W			HLV-3M-RGB-3W		
									HLV-24RD-NR	HLV-24GR-NR-3W	HLV-24BL-NR-3W
□□		RD	GR	BL	SW	GR	BL	SW	RD	GR	BL
LED color		Red	Green	Blue	White	Green	Blue	White	Red	Green	Blue
Max power consumption		1.4W	1.6W			2.8W			7.0W		
Dominant wavelength or color temperature	max.	645nm	550nm	490nm	10000K	550nm	490nm	10000K	645nm	550nm	490nm
	typ.	627nm	530nm	470nm	5500K	530nm	470nm	5500K	627nm	530nm	470nm
	min.	620.5nm	520nm	460nm	4500K	520nm	460nm	4500K	620.5nm	520nm	460nm
Half radius of emission wavelength		20nm	35nm	25nm	—	35nm	25nm	—	20nm	35nm	25nm
Weight		30g				30g			200g		
Usage environment		Temperature 0 to 40°C, humidity 20 to 85% (with no condensation)									

Special

Macro Lens

SE-16/SE-18 Series

CCS Macro Lens provides high magnification and performance at a low cost

Magnification ranging from 0.5x to 6x and option for HLV Series coaxial light port

SE-16 Series with 0.5x, 1x, and 2x magnifications

Straight Tube | Coaxial Port for HLV Series Light

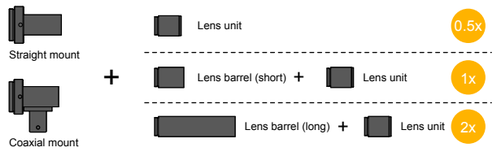
Type: SE-16SM05	Type: SE-16SM1	Type: SE-16SM2	Type: SE-16VM05	Type: SE-16VM1	Type: SE-16VM2
Magnification: 0.5 x	Magnification: 1 x	Magnification: 2 x	Magnification: 0.5 x	Magnification: 1 x	Magnification: 2 x

Combined use of lens unit, either optional magnification tube, and either mount changes magnification.
Interchangeable mount allows for coaxial or external lighting.

Full set

Type: SE-16MS
Full set includes:
- Straight mount
- Coaxial mount
- Lens unit
- Lens barrel (short)
- Lens barrel (long)

Configuring system for desired magnification



SE-18 Series with 2x, 4x, and 6x magnifications

Straight Tube | Coaxial Port for HLV Series Light

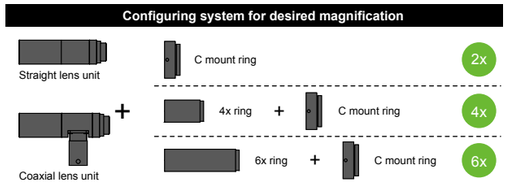
Type: SE-18SM2	Type: SE-18SM4	Type: SE-18SM6	Type: SE-18VM2	Type: SE-18VM4	Type: SE-18VM6
Magnification: 2x	Magnification: 4x	Magnification: 6x	Magnification: 2x	Magnification: 4x	Magnification: 6x

Combined use of C-mount ring with either lens unit either optional magnification tube changes magnification.
Interchangeable lens unit allows for coaxial or external lighting.

Full set

Type: SE-18MS
Full set includes:
- Straight lens unit
- Coaxial lens unit
- C mount ring
- 4x ring
- 6x ring

Configuring system for desired magnification



SE-16 Series Specifications

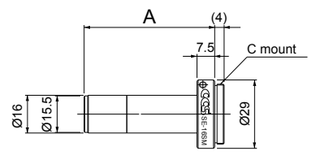
RoHS Directive Compatible

Type		Straight			Coaxial		
Model		SE-16SM05	SE-16SM1	SE-16SM2	SE-16VM05	SE-16VM1	SE-16VM2
Magnification		0.5x	1x	2x	0.5x	1x	2x
WD		107mm□	67mm□	47mm□	107mm□	67mm□	47mm□
Effective F-number (Image side)		5.93	7.74	11.5	5.92	7.88	11.7□
O/I		179.9mm	160mm	180.6mm	179.9mm	160mm	180.6mm
Depth of field *1		1900μm	620μm□	230μm□	1900μm	620μm□	230μm□
Resolving power *2		8μm	5.2μm	3.9μm	8μm	5.2μm	3.9μm
Distortion		-0.001335%	-0.000957%	-0.000232%	-0.026569%	-0.014059%	-0.005588%
NA (Object side)		0.042	0.065	0.087	0.042	0.065	0.087
Field of view (W x H x Diagonal)	1/3-inch CCD	9.6x7.2x12mm	4.8x3.6x6mm	2.4x1.8x3mm	9.6x7.2x12mm	4.8x3.6x6mm	2.4x1.8x3mm
	1/2-inch CCD	12.8x9.6x16mm	6.4x4.8x8mm	3.2x2.4x4mm	12.8x9.6x16mm	6.4x4.8x8mm	3.2x2.4x4mm
Lens outer diameter (lens barrel)		ø16					
Lens barrel length A		55.4mm□	75.5mm	116.1mm□	55.4mm□	75.5mm□	116.1mm□
Weight		29.6g	34g	43.5g	41.9g	46.3g	55.8g
Max. suitable CCD size		1/2 inch					
Camera mount		C mount					

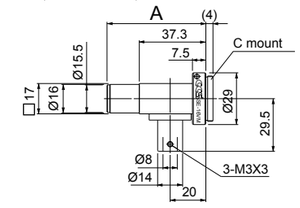
*1 The depth of field is obtained with 40μm permissible circle of confusion.
*2 The resolving power was obtained at a wavelength of 550nm.These specifications are numeric values based on optical design. Actual values will vary with physical factors such as the assembly accuracy.

Dimensions of SE-16 Series (Unit: mm)

SE-16 (Straight mount)

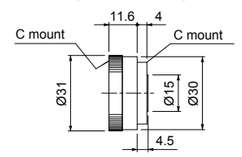


SE-16 (Coaxial mount)



Option

SE-EX2 (2x rear converter)



*Insert between the lens and the camera mount to double the magnification. Note that luminosity and resolution are reduced.

SE-18 Series Dimensions

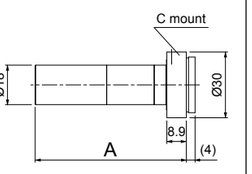
RoHS Directive Compatible

Type		Straight			Coaxial		
Model		SE-18SM2	SE-18SM4	SE-18SM6	SE-18VM2	SE-18VM4	SE-18VM6
Magnification		2x	4x	6x	2x	4x	6x
WD		114±1mm	110±1mm□	109±1mm	114±1mm□	110±1mm□	109±1mm□
Effective F-number (Image side)		18.9	37.7	56.6	18.9	37.7	56.6
O/I		199.1mm□	224.8mm	254.4mm□	201.4mm	227.1mm□	256.7mm□
Depth of field *1		380μm	190μm	130μm	380μm	190μm	130μm
Resolving power *2		6.3μm					
Distortion		-0.058268%	-0.073489%	-0.031328%	-0.058268%	-0.073489%	-0.031328%
NA (Object side)		0.053					
Field of view (W x H x Diagonal)	1/3-inch CCD	2.4x1.8x3mm	1.2x0.9x1.5mm	0.8x0.6x1mm	2.4x1.8x3mm	1.2x0.9x1.5mm	0.8x0.6x1mm
	1/2-inch CCD	3.2x2.4x4mm	1.6x1.2x2mm	1.07x0.8x1.33mm	3.2x2.4x4mm	1.6x1.2x2mm	1.07x0.8x1.33mm
	2/3-inch CCD	4.4x3.3x5.5mm	2.2x1.65x2.75mm	1.47x1.1x1.83mm	4.4x3.3x5.5mm	2.2x1.65x2.75mm	1.47x1.1x1.83mm
Lens outer diameter (lens barrel)		ø18					
Lens barrel length A		69.1mm	98.8mm□	128.4mm	–	–	–
Weight		40g	50g	55g	50g	60g	65g
Max. suitable CCD size		2/3 inch					
Camera mount		C mount					

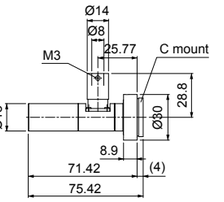
*1 The depth of field is obtained with 40μm permissible circle of confusion.
*2 The resolving power was obtained at a wavelength of 550nm.These specifications are numeric values based on optical design. Actual values will vary with physical factors such as the assembly accuracy.

Dimensions of SE-18 Series (Unit: mm)

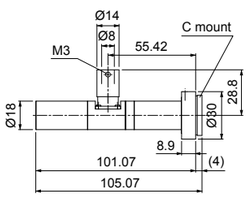
SE-18 (Straight mount)



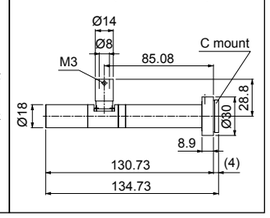
SE-18VM2 (Coaxial mount)



SE-18VM4 (Coaxial mount)



SE-18VM6 (Coaxial mount)



Special Spot Lights
LSP-41 Series

Super-Uniform Spotlight for wide variety of applications.

Bright at a long working distance

High luminance spot lights "LSP-41 Series" is suited for limited and long working distance from 300mm to 500mm, with a compact design-Ø41mm diameter housing.

Applications; reading bar codes/2D codes. Inspecting die cast products such as automobile parts, wooden materials, and plastic materials.

Reading bar code
Light used: LSP-41RD

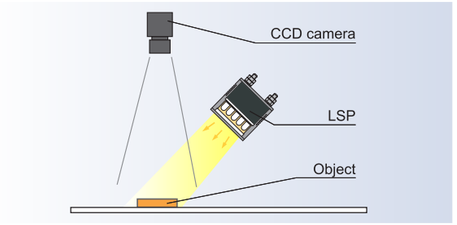
Reading QR code
Light used: LSP-41RD

Inspecting dot-marked characters on pipe
Light used: LSP-41RD

*Optional Parts
Polarizing plate: PL-LSP-41

Illumination Structure of LSP-41RD

Narrow directive LEDs provide high condensing illumination. It also provides soft, even illumination through the diffusion plate.

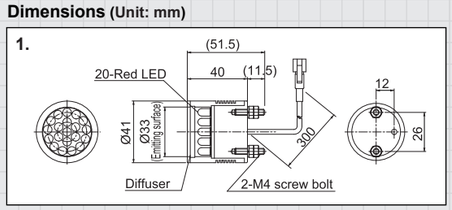


Product Lineup Table

Series	Model Name	Color	Power Consumption	Options	Dimension
LSP-41	LSP-41RD	●	12V/2.0W	P-L	1

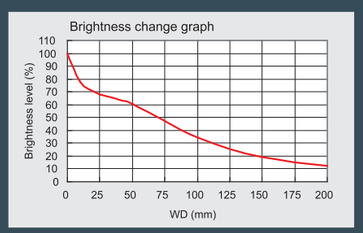
Dimensions (Unit: mm)

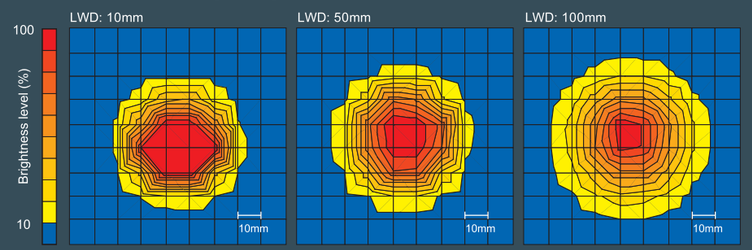
1.



Brightness Change Graph & Brightness Distribution of LSP-41RD

The spotlight maintains very high and constant intensity in a certain direction even at a long working distance.





Special Spot Lights / Lens
LV Series / MAC-13XA

Spot illumination that illuminates evenly.

The first in the industry! Hi-magnification macro lens with variable magnification from 7X to 13X.

Spot illumination that can be used for a wide variety of applications(LV-27)

Can be used instead of light guide of optical fiber illumination

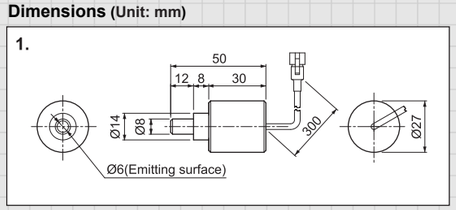
Red,white, blue, and green are available as standard products. In addition to 8f tip diameter, 10f and 12f are available as options. Compact and light-weight design enables installation in a small area.
In addition to the use as a spot illumination that illuminates evenly. this product can be used instead of light guide of optical fiber illumination by installing in the light source section of macro lenses etc.

Product Lineup Table

Series	Model Name	Color	Power Consumption	Dimension
LV	LV-27-R	●	12V/0.7W	1
	LV-27-SW	○	12V/0.7W	
	LV-27-GR	●	12V/0.7W	
	LV-27-BL	●	12V/0.7W	

Dimensions (Unit: mm)

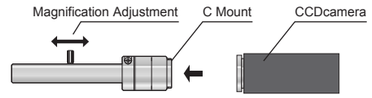
1.



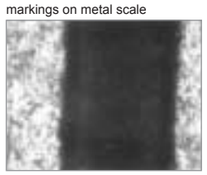
Macro Lens (MAC-13XA)

The first in the industry! Hi-magnification macro lens with variable magnification from 7X to 13X.

Can be directly installed on the C mount section of a camera. Because the outer diameter can be held firmly, this product can suppress the impact of vibrations and can be used for factory automation applications.



markings on metal scale



Examples of MAC-13XA Illumination Imaging

FOV : 0.3mm
LWD : 15mm
magnification : 13X

Magnification/Field of View

Magni-fication	L	WD	1/3 in.CCD	1/2 in.CCD	2/3 in.CCD
7X	104	85	Field of View: 0.5	Field of View: 0.7	Field of View: 1
13X	134	68	Field of View: 0.3	Field of View: 0.4	Field of View: 0.5

Dimensions (Unit: mm)