

The SE-16|SE-18series

*CCS Macro Lenses Achieve
High Performance for a Low Price*



SE-16 Series

covers a x0.5 to x2 magnification range

- ▶ CCS macro lenses achieve high resolution and low distortion with a low price.
- ▶ Lens design provides high intensity and contrast required for machine vision.

SE-16 Series

Straight			Coaxial light		
					
Type: SE-16SMO5 Magnification: x0.5	Type: SE-16SM1 Magnification: x1	Type: SE-16SM2 Magnification: x2	Type: SE-16VMO5 Magnification: x0.5	Type: SE-16VM1 Magnification: x1	Type: SE-16VM2 Magnification: x2

Full Kit

Patent Pending

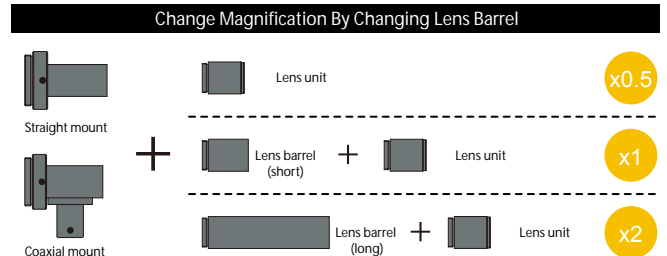
Type: SE-16MS

Kit Includes:

- Straight mount
- Coaxial mount
- Lens unit
- Lens barrel (short)
- Lens barrel (long)








Change the magnification or illumination type with different combinations of mounts and barrel units.



Comparison Between Top Selling Macro Lens and SE-16 Series


When used in combination with CCS HLV-24 light sources, the CCS macro lens series allows for higher contrast images than the top selling costly macro lens, even at a fast shutter speed.

Object image	General Macro Lens	CCS macro lens
		
Imaging Characters on an electronic part	Shutter speed: 1/4000 Light Working Distance: 30 mm, Light intensity: 100%	Shutter speed: 1/4000 Light Working Distance: 30 mm, Light intensity: 100%
x2 coaxial light: Competitor's macro lens vs. CCS macro lens Working Distance: 40mm/47mm Field of View: 3.2x2.4mm		

Lens and Light Source Configuration: SE-16VM2 macro lens (2x coaxial light type) and HFR-25-30 fiber bundle + HLV-24BL-NR-3W blue high intensity LED light source.

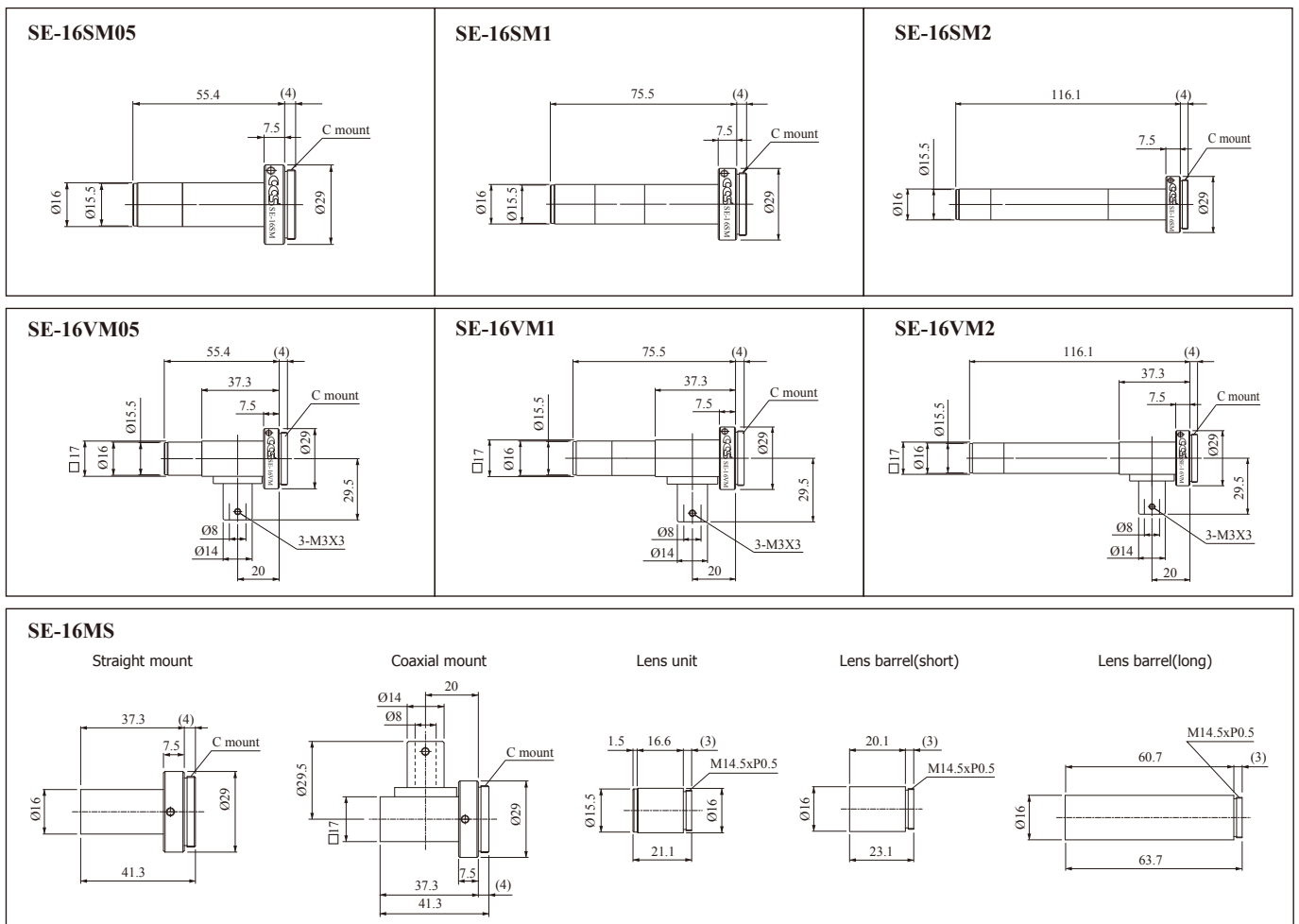
SE-16 Series Specifications

RoHS-compliant products

Shape	Straight			Coaxial incident light			
Model	SE-16SM05	SE-16SM1	SE-16SM2	SE-16VM05	SE-16VM1	SE-16VM2	
Magnification	x0.5	x1	x2	x0.5	x1	x2	
Combination							
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	1900 μm	620 μm	230 μm	1900 μm	620 μm	230 μm	
Resolving power *2	8 μm	5.2 μm	3.9 μm	8 μm	5.2 μm	3.9 μm	
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 - vertical x horizontal 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)	φ16						
Length of lens	59.4mm	79.5mm	120.1mm	59.4mm	79.5mm	120.1mm	
Weight	29.6g	34g	43.5g	41.9g	46.3g	55.8g	
Largest applicable CCD format	1/2inch						
Camera mount	C mount						
Ambient environment	Temperature : 0 to 40 °C ; humidity : 20 to 85%RH(with no condensation)						
Storage environment	Temperature : -20 to 60 °C ; humidity : 20 to 85%RH(with no condensation)						

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

Dimensions(mm)



SE-18 Series

covers a x2 to x6 magnification range

- ▶ CCS macro lenses achieve high resolution and low distortion with a low price.
- ▶ Lens design provide high intensity and contrast required for machine vision.

SE-18 Series

Straight			Coaxial Light		
					
Type: SE-18SM2 Magnification: x2	Type: SE-18SM4 Magnification: x4	Type: SE-18SM6 Magnification: x6	Type: SE-18VM2 Magnification: x2	Type: SE-18VM4 Magnification: x4	Type: SE-18VM6 Magnification: x6

Full Kit

Patent Pending

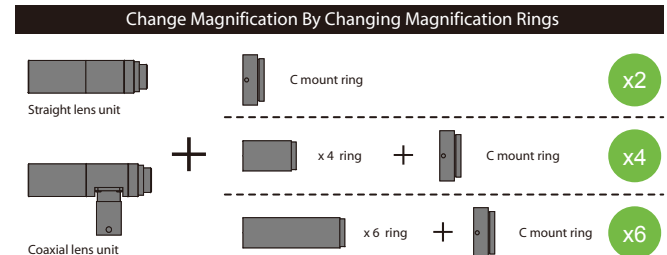
Type: SE-18MS

Kit Includes:

- Straight lens unit
- Coaxial lens unit
- C mount ring
- x 4 ring
- x 6 ring


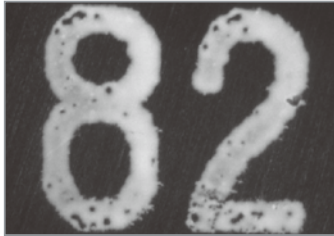





Change the magnification or illumination type with different combinations of lens units and magnification rings.



Comparison Between Top Selling Macro Lens and the SE-18 Series

When used in combination with CCS HLV-24 light sources, the CCS macro lens series allows for higher contrast images that many costly macro lens models, even at high shutter speeds.

Object image	General macro lens	CCS macro lens
		
Imaging characters on an electronic part	Shutter speed: 1/1000 Light Working Distance: 10 mm Light intensity: 100%	Shutter speed: 1/1000 Light Working Distance: 10 mm Light intensity: 100% at Max.
x4 coaxial light: Competitor's macro lens vs. CCS macro lens Working Distance: 110 mm Field of View: 1.6 x 1.2 mm		

Lens and Light Source Configuration : SE18VM4 macro lens (4x coaxial light type) and HFR-25-10 fiber bundle + HLV-24BL-NR-3W blue high intensity LED light source

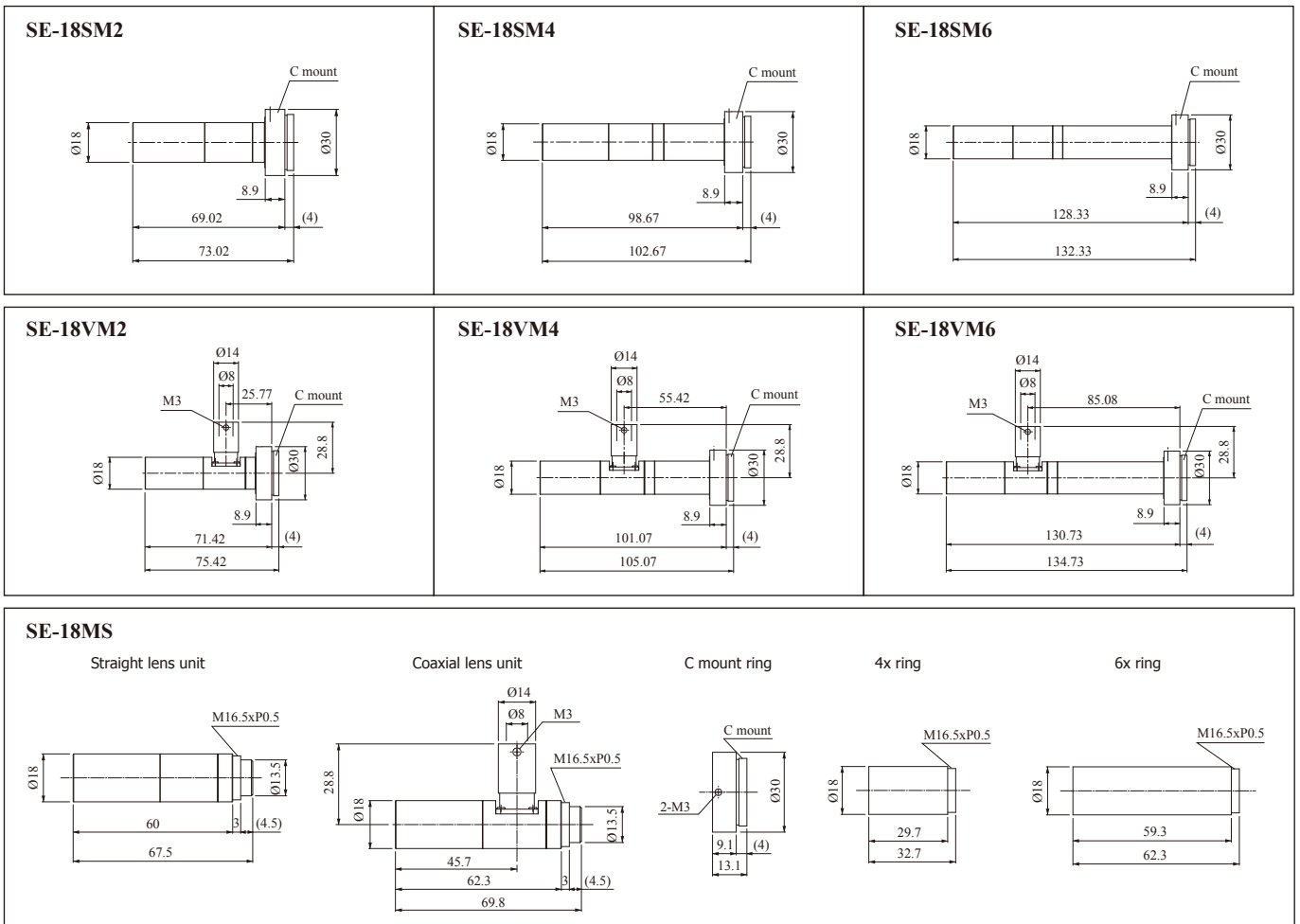
SE-18 Series Specification

RoHS-compliant products

Shape	Straight			Coaxial incident light			
Model	SE-18SM2	SE-18SM4	SE-18SM6	SE-18VM2	SE-18VM4	SE-18VM6	
Magnification	x2	x4	x6	x2	x4	x6	
Combination							
WD	114mm	110mm	109mm	114mm	110mm	109mm	
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	380 μm	190 μm	130 μm	380 μm	190 μm	130 μm	
Resolving power *2	6.3 μm						
Distortion	-0.058268%	-0.073489%	-0.031328%	-0.058268%	-0.073489%	-0.031328%	
NA (pbject side)	0.053						
Field of view -vertical x horizontal 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 CD	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)	φ18						
Length of lens	73.1mm	102.8mm	132.4mm	75.4mm	105.1mm	134.7mm	
Weight	40g	50g	55g	50g	60g	65g	
Largest applicable CCD format	2/3inch						
Camera mount	C mount						
Ambient environment	Temperature : 0 to 40 °C ; humidity : 20 to 85%RH(with no condensation)						
Storage environment	Temperature : -20 to 60 °C ; humidity : 20 to 85%RH(with no condensation)						

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

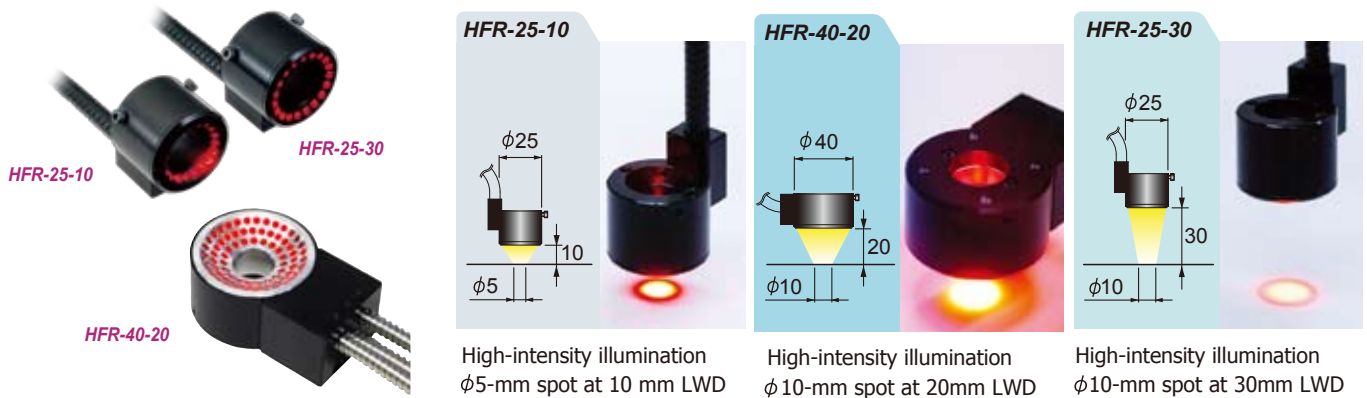
Dimensions(mm)



CCS High Intensity Spotlights & Micro Fiber-head Series, Full compatibility with SE-16 & SE-18 Series!

Micro Fiber-head Series utilize CCS leading illumination technology expertise

CCS offers solutions for a variety of viewing areas and working distances enabling you to select an optimal combination for your application.



*The CCS Micro Fiber-head Series requires a HLV-24 Series light source and PJ Series power supply. For details, please refer to CCS general catalog.

Image comparison between 100W halogen ring lights and the CCS Micro Fiber-head Series

The Micro Fiber-head Series utilize CCS leading illumination technology expertise to effectively direct the light in the area requiring illumination, this achieving a high contrast image even at a fast shutter speeds. Though halogen lights have higher wattage ratings, a great amount of this power is lost to heat or as light that does not reach the imaging area.

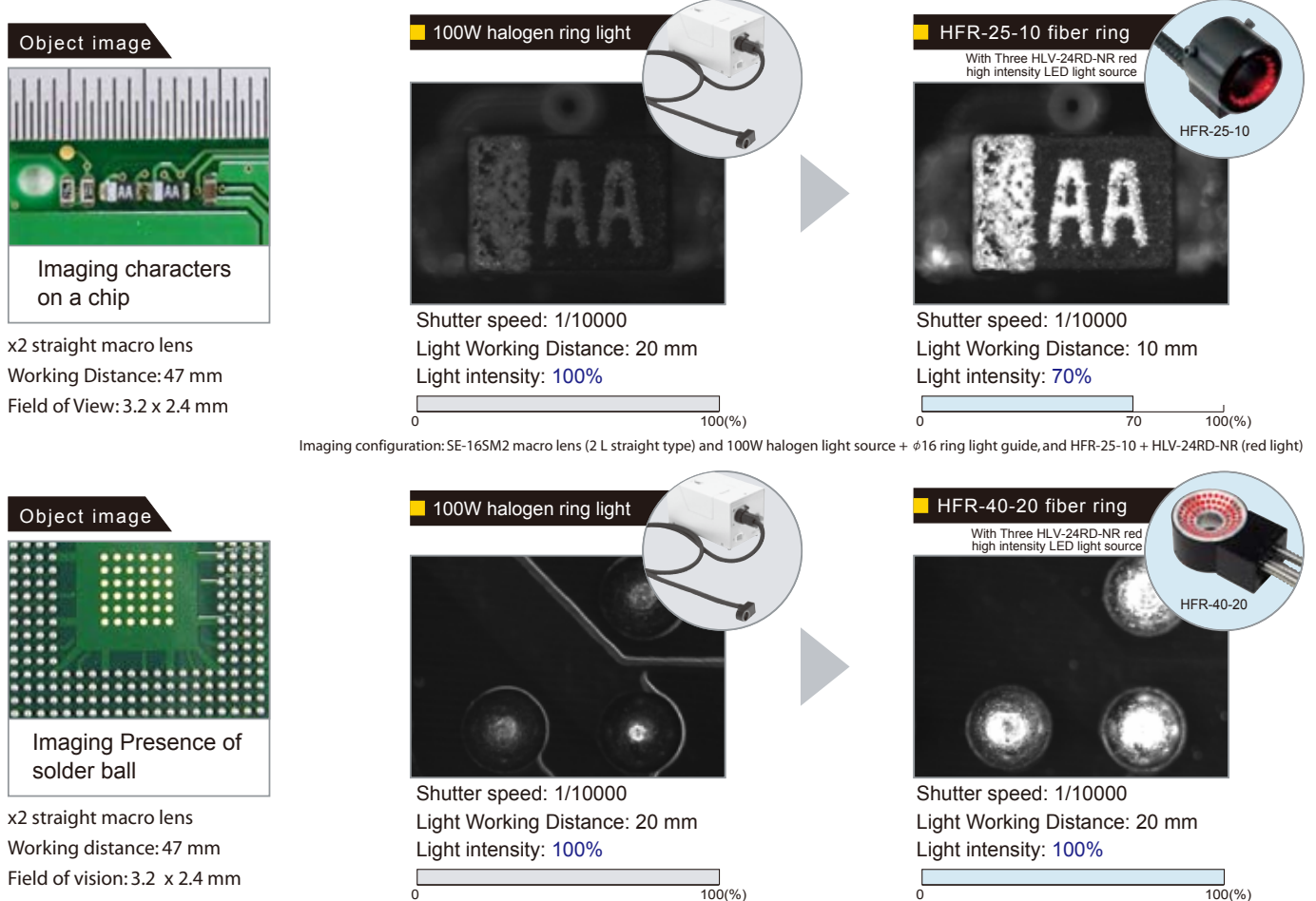



Image comparison between 100W halogen ring lights and the CCS Micro Fiber-Head Series

By combining CCS's SE-16 or SE-18 Macro Lens Series, the HLV-24 series of the high-intensity spotlights, and the Micro Fiber-head Series, CCS has a wide range of lighting solutions that enable you to capture the optimal image for high magnification machine vision applications.


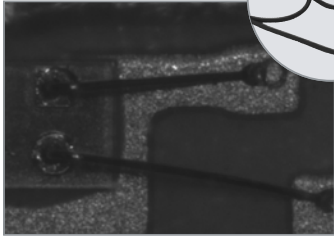
Object image



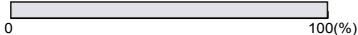
Imaging of electronic parts used on a printed circuit board

x6 straight macro lens
Working distance : 110 mm
Field of View : 1.07 x 0.8 mm


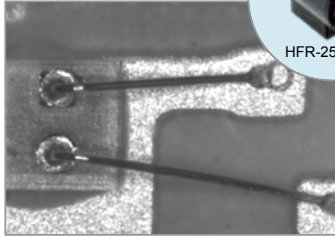
100W halogen ring light


Shutter speed: 1/1000
Light Working Distance: 30 mm
Light intensity: 100%




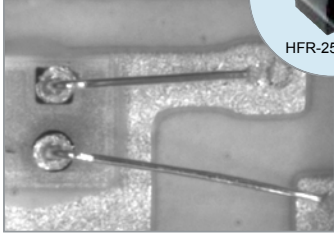
HFR-25-30 fiber ring
With Three HLV-24RD-NR red high intensity LED light source

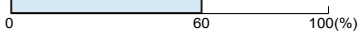
Shutter speed: 1/1000
Light Working Distance: 30 mm
Light intensity: 100%




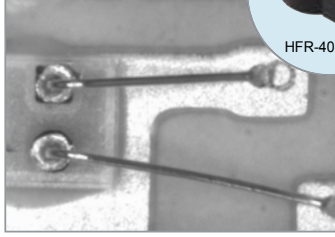
HFR-25-10 fiber ring
With Three HLV-24RD-NR red high intensity LED light source


Shutter speed: 1/1000
Light Working Distance: 10 mm
Light intensity: 60%



HFR-40-20 fiber ring
With Three HLV-24RD-NR red high intensity LED light source

Shutter speed: 1/1000
Light Working Distance: 20 mm
Light intensity: 30%



Light and Lens Configuration: SE-18SM6 macro lens (6x straight type); 100W halogen light source + ϕ 16 ring light guide. Each Micro Fiber-head Series ring + HLV-24RD-NR red high intensity LED light source. (*Three light sources used with HFR-40-20)

Use high-intensity HLV-24 Series spotlights in place of halogen light sources

■ HLV Series lineup supports wide variety of applications



■ HLV-24-NR Series light sources are designed for use with the CCS Micro Fiber-head series



*To power the CCS HLV-24 Series, a PJ Series power supply is required. For details please refer to CCS general catalog.

Environmentally Friendly

CCS Macro Lenses The SE-16 / SE-18 Series

Conforms to the RoHS Directive.



For detailed information on RoHS Directive and compatibility status of products,
please visit the CCS's website.

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

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. In addition, the sample workpieces that are used are processed by us and do not represent the original quality and performance.

* Many of our products are protected by industrial property rights (patents, industrial designs, and trademarks).
Be warned against imitations of CCS brand.

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