OPT®
Machine Vision

OPT Machine Vision

(2018~2019)

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Machine Vision

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Our Philosophy:

Do one thing! And do it well!

Who we are

OPT was founded in 2006 and has been continuously expanding its position as one of the leading supplier in machine vision industry. We have developed a vast variety of unique innovative solutions for equipment manufacturers, system integrators, large manufacturers and enterprises ranking in the top 10 of Fortune 500.

OPT is an enterprise with more than 900 employees now, including more than 120 R&D engineers, more than 180 software application engineers, more than 180 imaging engineers, and more than 100 sales engineers.

What we supply

OPT focuses on machine vision lights, industrial lenses, vision system and other components.

OPT standard lights:
45 series nearly 1000 models.

OPT industrial lenses:
line scan lenses, 29M/10M/5M/2M focal length lenses, 5M zoom lenses, telecentric lenses.

SCI[1] vision system:
SciVision SDK, SciSmart Software, SCI vision controller, smart camera and so on.

Customized lights:
more than 30000 customized designs, more than 100000 models, 3-10 working days for customized design.

Remarks:
[1] SCI is the brand for vision system of OPT Machine Vision.

Our Service

Service Consciousness

- Development & solutions for lighting, imaging, prototyping
- On-site support at mass production facilities
- Global human resource plan

Technology-Driven

- 100+ industries, 50000+ application cases, 30000+ customized lights
- 10+ years experience, 80+ patents
- 6+ doctors, 20+ masters, experienced team for sophisticated machine vision technologies

Extreme Flexibility

- Technical support is available 24/7
- Same day delivery for standard products (in selected regions)
- Fast 3-day delivery for customized lights

Service Network

Global Service Network

OPT East China office (Suzhou)

OPT Taiwan office (New Taipei)

OPT Malaysia office (Penang)

OPT Hongkong office

OPT USA office (Cupertino)

OPT Europe office (Stuttgart)

OPT Middle China office (Wuhan)

Service Network in China

East China office

Headquater in China

Our History

Oct. 2016
OPT Middle China office established

May 2012
OPT Hong Kong established

Oct. 2016
OPT Malaysia office established

June 2011
OPT became a member of AIA

Mar. 2015
OPT Europe office established

Oct. 2010
OPT began to attend
VISION | Messe Stuttgart

Apr. 2014
OPT Taiwan office established

Nov. 2009
OPT honored as “National
Hi-tech Enterprise”

May 2013
OPT USA office established

Oct. 2007
OPT honored with the “GD
Hi-tech Enterprise” award

July 2012
OPT East China office established

Mar. 2006
OPT brand established

Our Culture

Gym room

Gym room

Music room

Basketball

Tug-of-war competition

Basketball court

Staff communications

Our Philosophy

Do one thing! And do it well!

Our Goal

To be a global first-class machine vision enterprise.
To create a platform for our staff to succeed with pride.

Our Mission

To contribute to the development of machine vision in global world.
To service for industrial production via advanced machine vision technology.

Attitude to employees

The employees are the most valuable treasure for OPT company.
Recruiting excellent and potential employees, providing OPT employees with continuous opportunities for study and improvement is a long and top important work.

OPT Honors

- Over 80 patents
- Various computer software copyrights
- Chinese National Hi-Tech Enterprise
- Certified ISO 9001:2008 quality system
- Certified ISO 14000 environmental system
- Supported by several National Innovation Fund projects
- EMVA membership
- AIA membership
- CMVU membership
- All products are RoHS / CE compliant
- Over 30 subsidiaries and distributors worldwide

Partnership

Partners

- Over 15,000 customers trust our products and service
- Over 500,000 products developed and approved

--- Names listed in no particular order

格力电器

普利斯通

伯恩光学

蓝思科技

OPT Lenses

OPT Standard Lights

OPT Standard Lights

OPT Standard Lights

Customized Lights

Accessories

Applications

OPT Controllers

OPT Lenses

Coloretto Series Line Scan Lenses

Product Features

1. High standard optical design
   Broad spectrum range from 400 to 700nm, achromatic design;
   compatible to line scan camera with 7μm pixel, suitable for a wide range of industrial applications
2. Low distortion
   Total distortion below 0.1%
3. Broad range for image circle
   The lenses with image circle from φ30mm to φ80mm for choices
4. Broad range for magnification
   The lenses with magnification from 0.04X to 0.33X for choices

Selection Guide

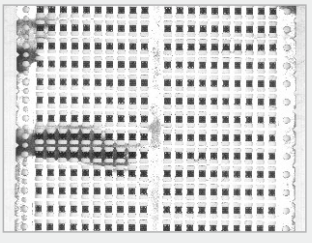
OPT-VCT60/4.0-0.17X

- Primary magnification 0.17X
- F# ⩾4.0
- Focal length 60mm±5%
- Coloretto series line scan lenses
- V mount
- Brand name

Application Examples

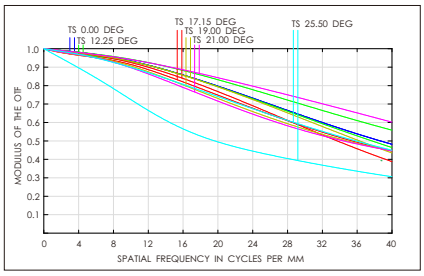
Inspection for mobile phone screen scratches

Surface inspection of plug

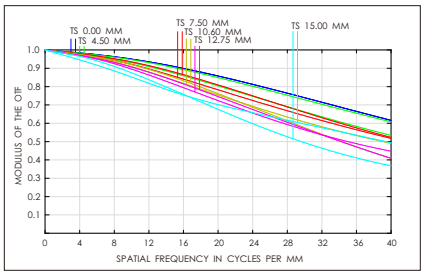


Burr detection of LED chips

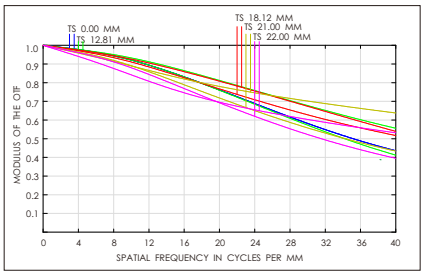
MTF Drawings



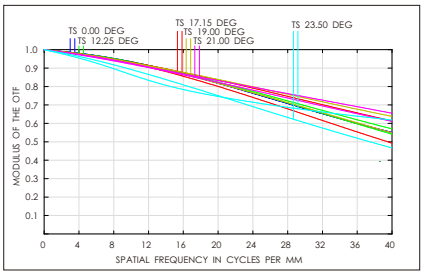
OPT-VCT28/2.8-0.10X



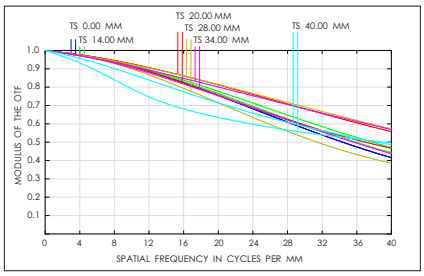
OPT-VCT35/2.8-0.10X



OPT-VCT50/2.8-0.17X



OPT-VCT60/4.0-0.17X



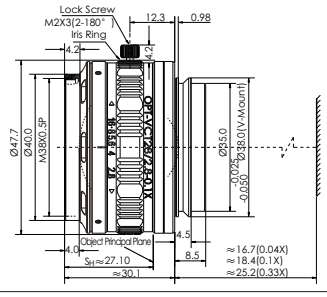
OPT-VCT80/4.0-0.17X

Model Table

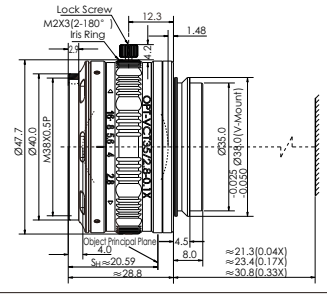
No.	Model	Focal length (mm)	Aperture range	Max camera sensor format (mm)	Interface	Weight (kg)	Distortion (%)	Primary Mag.	WD (mm)	Flange distance (mm)	Object to image distance (mm)
1	OPT-VCT28/2.8-0.10X	29	F2.8-F32	30 (image circle)	V38 mount	0.13	0.40	0.04X	737	16.7	784.1
							0.10	0.10X	304	18.4	352.7
							0.50	0.33X	93	25.2	148.4
2	OPT-VCT35/2.8-0.10X	35	F2.8-F32	30 (image circle)	V38 mount	0.12	0.50	0.04X	891	21.3	941.7
							0.07	0.10X	366	23.4	418.8
							0.90	0.33X	126	30.8	186.6
3	OPT-VCT50/2.8-0.17X	50	F2.8-F32	44 (image circle)	V38 mount	0.15	0.31	0.08X	632	38.5	704.1
							0.08	0.17X	328.9	42.6	405.1
							0.29	0.33X	183.8	50.2	267.6
4	OPT-VCT60/4.0-0.17X	61.5	F4.0-F32	63 (image circle)	V38 mount	0.14	0.30	0.04X	1528	54.4	1613.9
							0.05	0.17X	394.3	62.3	488.1
							0.25	0.33X	217	72.3	320.8
5	OPT-VCT80/4.0-0.17X	80.3	F4.0-F32	80 (image circle)	V38 mount	0.13	0.17	0.08X	1057	76.8	1164.7
							0.05	0.17X	535.7	83.7	650.3
							0.25	0.33X	297	96.8	424.6

Dimensional Drawings [mm]

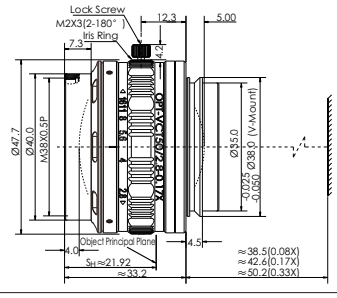
1 OPT-VCT28/2.8-0.10X

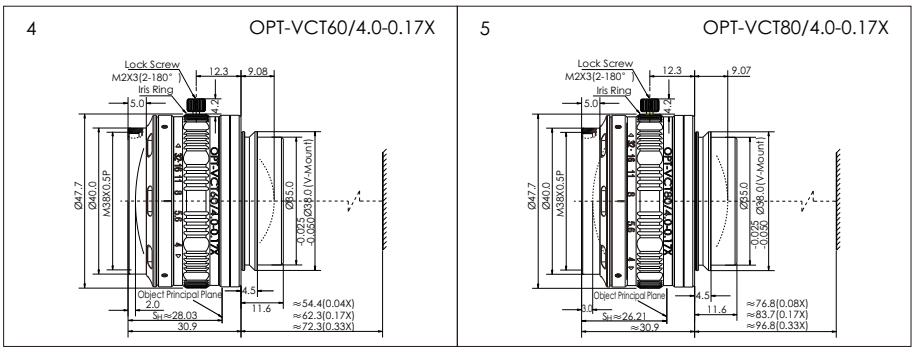


2 OPT-VCT35/2.8-0.10X



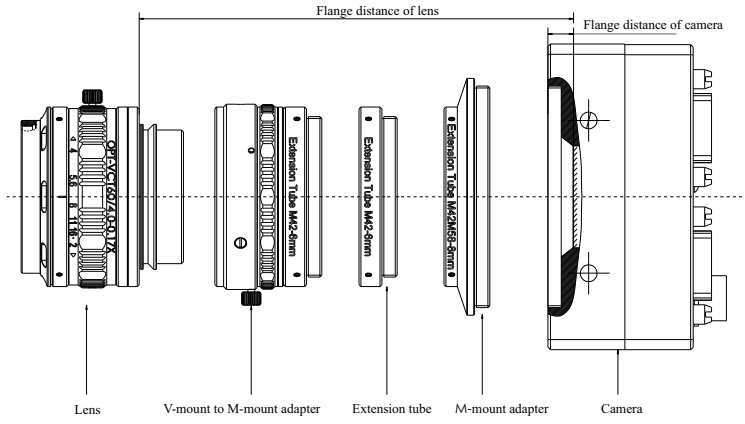
3 OPT-VCT50/2.8-0.17X



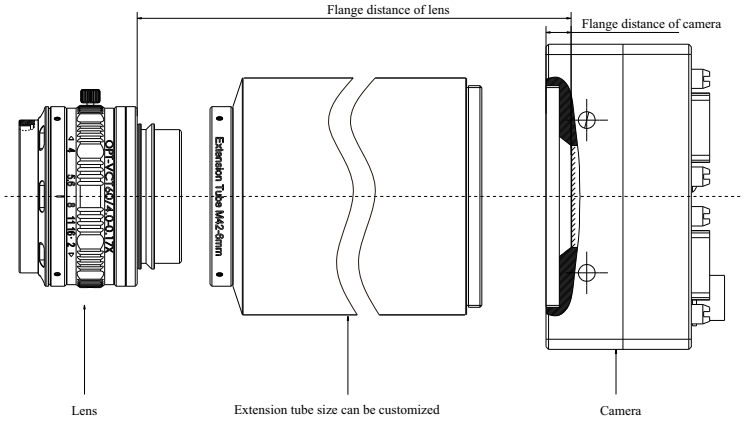


Instruction for Extension Tube Selection

1 Diagram of lens mounting to camera via extension tube



Standard version



Customized version

2 Formula

$FBL \approx (\beta - \beta_0) \times f' + FBL_0$

$EXT = FBL - FBL_C$

Remarks:

1. β is maganification, β_0 is primary magnification in Model Table;
2. FBL is flange distance, FBL_0 is flange distance in the Model table, FBL_C is the flange distance of camera;
3. EXT is the length of extension tube;
4. f ' is the lens focal length

Hawk Series Line Scan Lenses

Product Features

1 High resolution
High resolution optical design, 63mm image circle[1];
compatible to 3.5μm (16K), 5μm (12K), 7μm (8K) line scan cameras

2 Low distortion
Total distortion below 0.1%, min distortion low to 0.005%

3 High uniformity
Super relative illumination, available to capture sharp and clear image of the FOV

4 Broad range of magnification
The lenses with magnification from 0.21X to 2.1X for choices

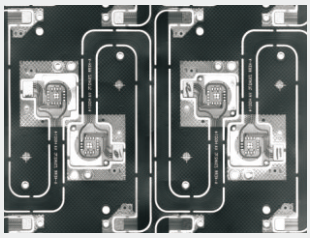
[1] The max image circle for OPT-VHK116/8.6-2.0X is up to 126mm

Selection Guide

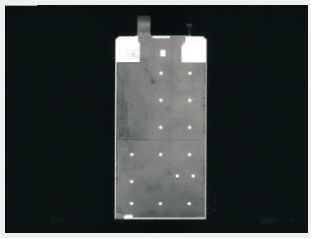
OPT-VHK120/5.8-1.0X

- Primary magnification 1.0X
- F# ⩾ 5.8
- Focal length120mm±5%
- Hawk series line scan lenses
- V mount
- Brand name

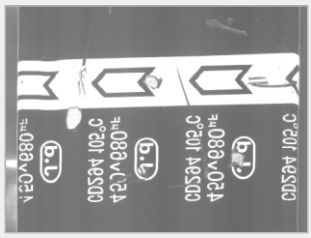
Application Examples



FPC locating and cutting

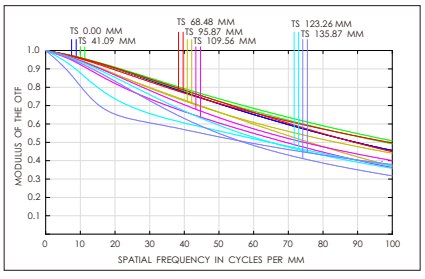


mobile cover inspection

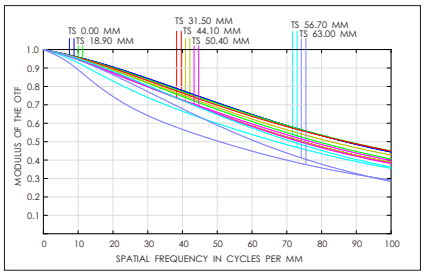


capacitance surface inspection

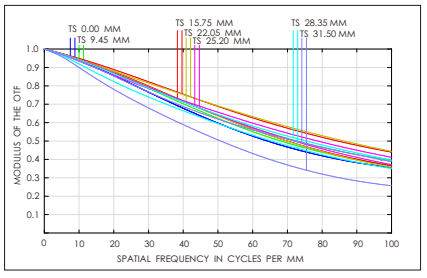
MTF Drawings



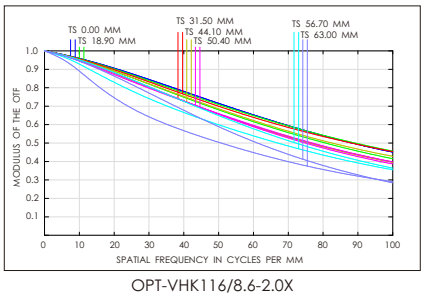
OPT-VHK98/3.9-0.23X



OPT-VHK116/4.3-0.5X



OPT-VHK120/5.8-1.0X



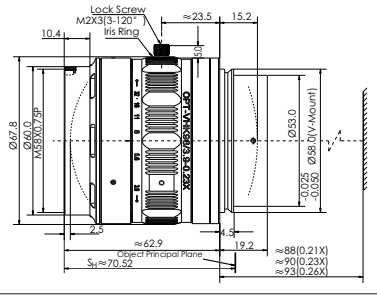
OPT-VHK116/8.6-2.0X

Model Table

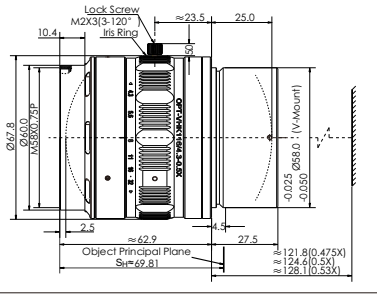
No	Model	Focal length (mm)	Aperture range	Max camera sensor format (mm)	Interface	Weight (kg)	Distortion (%)	Primary Mag.	WD (mm)	Flange distance (mm)	Object to image distance (mm)
1	OPT-VHK98/3.9-0.23X	98.7	F3.9-F32	63 (image circle)	V58 mount	0.51	0.2	0.21X	497.9	88	648.8
							0.04	0.23X	456.9	90	609.8
							0.15	0.26X	407.6	93	563.5
2	OPT-VHK116/4.3-0.5X	116	F4.3-F32	63 (image circle)	V58 mount	0.65	0.07	0.475X	289.5	121.8	474.2
							0.005	0.50X	277.5	124.6	465
							0.1	0.53X	264.5	128.1	455.5
3	OPT-VHK120/5.8-1.0X	120	F5.8-F45	63 (image circle)	V58 mount	0.61	0.07	0.97X	172	172.4	407.3
							0.01	1.0X	168.5	175.8	407.2
							0.1	1.04X	164	180.4	407.3
4	OPT-VHK116/8.6-2.0X	116	F8.6-F64	126 (image circle)	V58 mount	0.63	0.07	1.9X	100.2	293.3	456.4
							0.008	2.0X	97.14	305	465
							0.06	2.1X	94.5	316.1	473.5

Dimensional Drawings [mm]

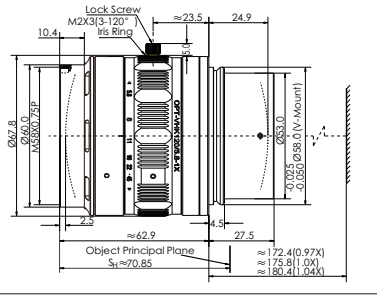
1 OPT-VHK98/3.9-0.23X

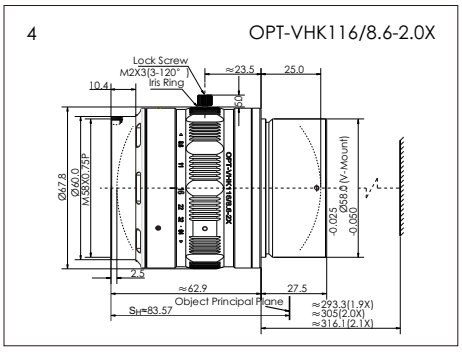


2 OPT-VHK116/4.3-0.5X



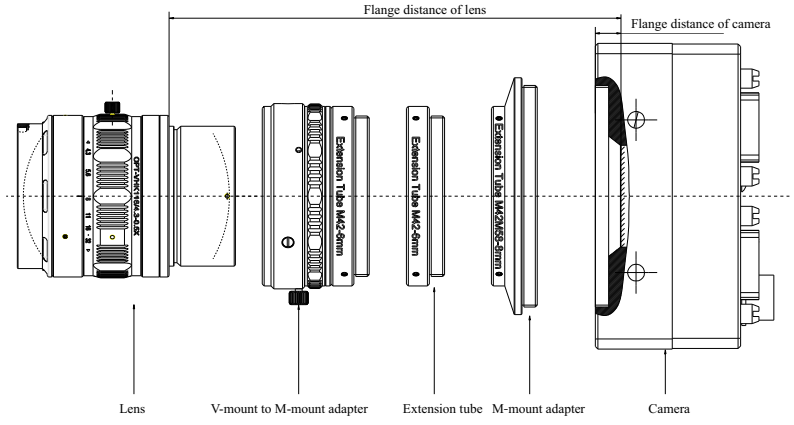
3 OPT-VHK120/5.8-1.0X



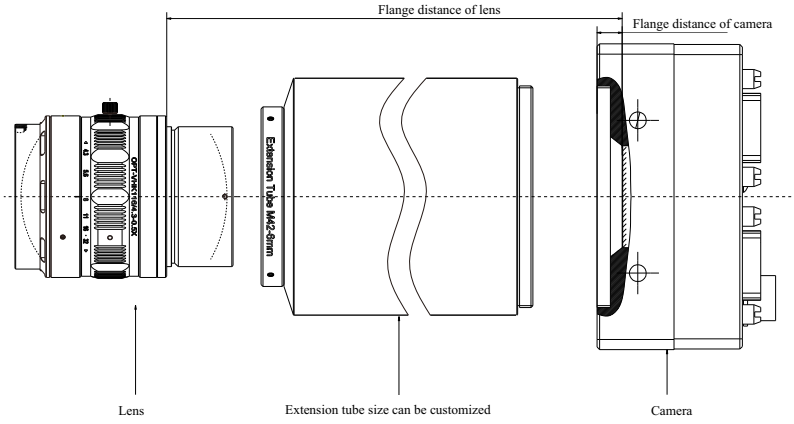


Instruction for Extension Tube Selection

1 Diagram of lens mounting to camera via extension tube



Standard version



Customized version

2 Formula

$FBL \approx (\beta - \beta_0) \times f' + FBL_0$

$EXT = FBL - FBL_C$

Remarks:

1. β is maganification, β_0 is primary magnification in Model Table;
2. FBL is flange distance, FBL_0 is flange distance in the Model table, FBL_C is the flange distance of camera;
3. EXT is the length of extension tube;
4. f ' is the lens focal length

29MP Fixed Focal Length Lenses

Compatible to 8K line scan cameras

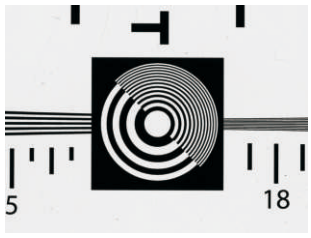
Product Features

1. High resolution
   The resolution of whole FOV up to 100lp/mm
2. Big image circle
   Suitable for 29MP area camera, max compatible with 8K line scan camera (pixel size below 5.6μm).
3. High uniformity
4. Low distortion
   Total distortion below 0.9%, min distortion low to 0.2%.

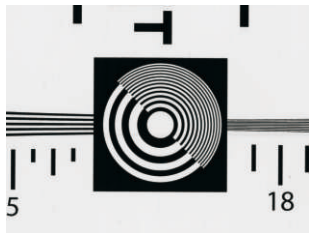
Selection Guide

OPT-F2528-29M

- 29M pixel
- F#≥2.8
- Focal length = 25mm
- F mount
- Brand name



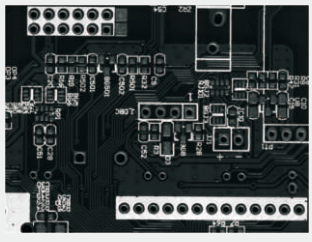
Picture taken via OPT-F2528-29M



Picture taken via other lens

Application Examples

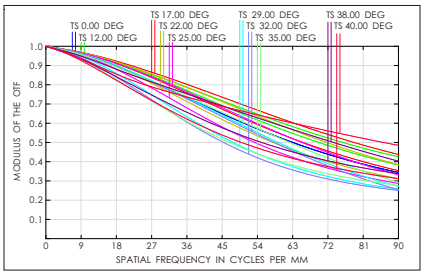
Surface inspection for beverage can



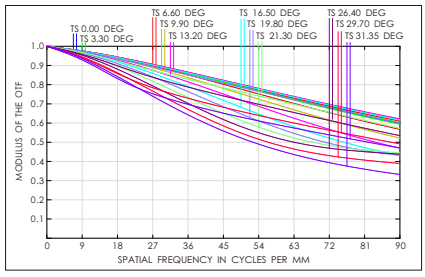
PCB board inspection

OCR for plastic parts

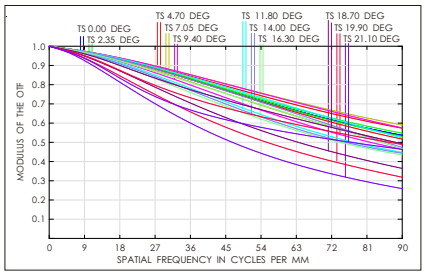
MTF Drawings



OPT-F2528-29M



OPT-F3528-29M



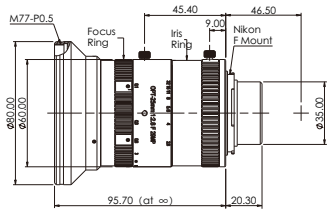
OPT-F5028-29M

Model Table

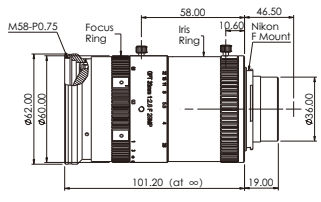
No	Model	Focal length (mm)	Aperture range	WD(mm)	Filter thread (mm)	Distortion	Flange distance (mm)	Weight (kg)	FOV angle					
									44mm	35mm	4/3″	1″	2/3″	1/2″
1	OPT-F2528-29M	25	F2.8-F32	140~∞	M77*P0.75	<0.9%	26.4	0.71	84°	71.3°	50°	36°	24.9°	18.1°
2	OPT-F3528-29M	35	F2.8-F32	180~∞	M58*P0.75	<0.4%	27.9	0.65	65°	53.6°	37°	26°	18°	6.7°
3	OPT-F5028-29M	50	F2.8-F32	180~∞	M58*P0.75	<0.2%	36.1	0.59	47.8°	38.8°	26°	18.2°	12.6°	9.1°

Dimensional Drawing [mm]

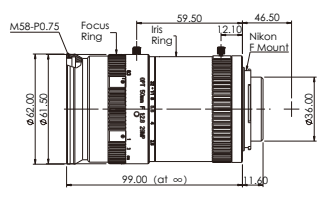
1 OPT-F2528-29M



2 OPT-F3528-29M



3 OPT-F5028-29M



2MP Fixed Focal Length Lenses

Product Features

1 Professional design and stable quality
Using high standard optical technology to realize perfect optical performance

2 High resolution
Compatible to most 2MP industrial cameras, suitable for cameras with pixel size≥5.5μm, max compatible to 2/3" sensor[1], resolution up to 100lp/mm

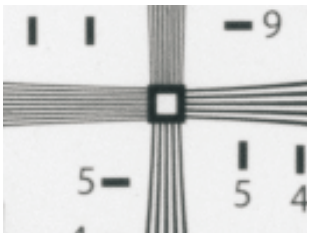
3 High uniformity
Can obtain clear uniform images due to our anti-shading technologies

[1]: OPT-C0420-2M & OPT-C0620-2M max compatible to 1/2" sensor

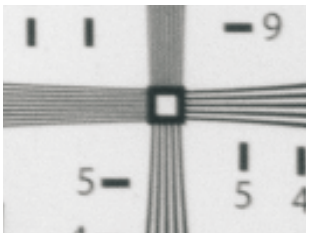
Selection Guide

OPT-C2514-2M

- 2M pixel
- F#≥1.4
- Focal length=25mm
- C mount
- Brand name



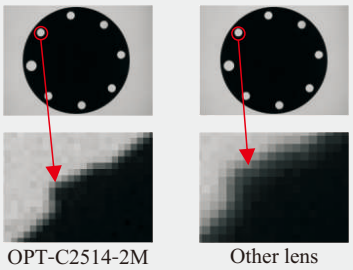
Picture taken via OPT-C2514-2M



Picture taken via other lens

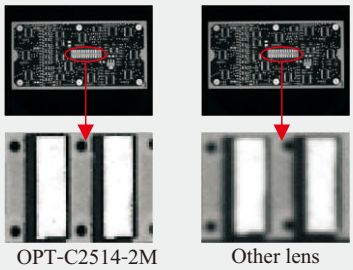
Application Examples

Motor burr inspection



OPT-C2514-2M Other lens

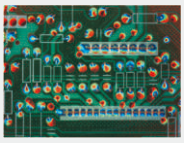
Detection for copper shit on PCB



OPT-C2514-2M Other lens

Result: under the same condition, OPT-C2514-2M provides an image with sharper edge and higher resolution

Application cases in different industries



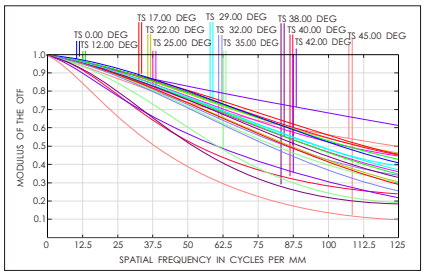
PCB soldering inspection

OCR for plastic parts

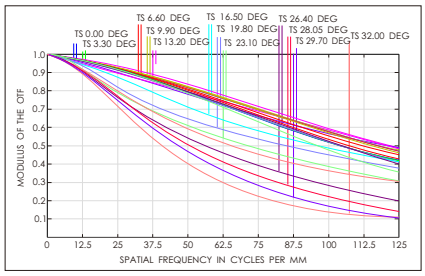
Lenses on plate inspection

Connector pins inspection

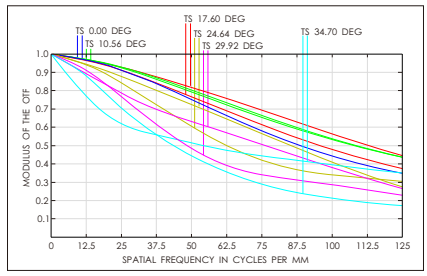
MTF Drawings



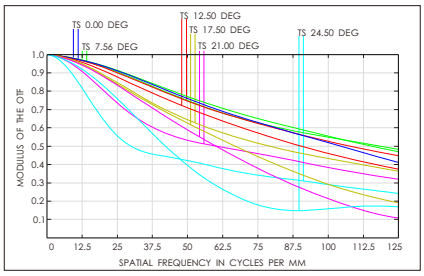
OPT-C0420-2M



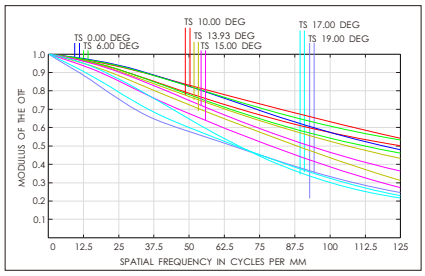
OPT-C0620-2M



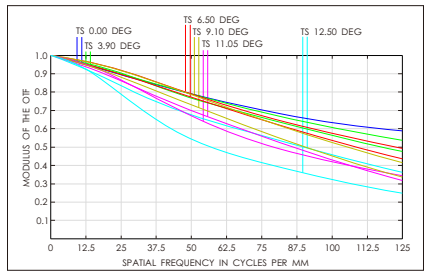
OPT-C0814-2M



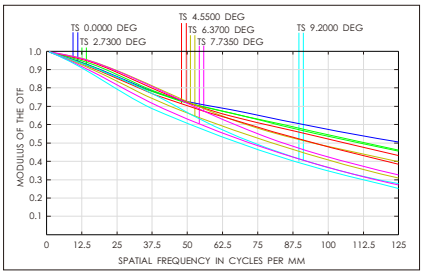
OPT-C1214-2M



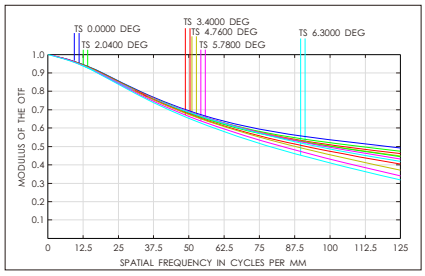
OPT-C1614-2M



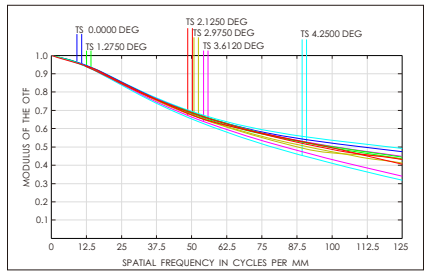
OPT-C2514-2M



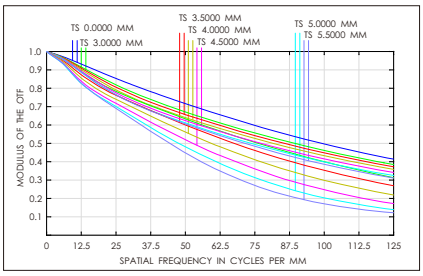
OPT-C3516-2M



OPT-C5024-2M



OPT-C7528-2M



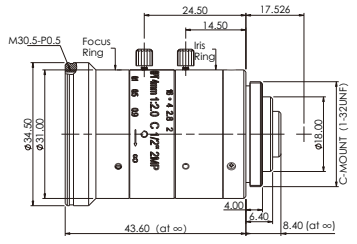
OPT-C10028-2M

Model Table

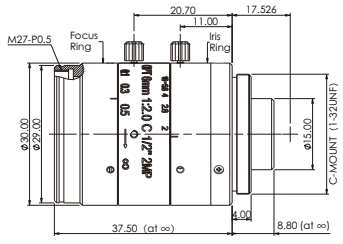
No.	Model	Focal length (mm)	Aperture range	WD (mm)	Filter thread (mm)	Distortion	Weight (kg)	Matching sensor format	FOV angle (horizontal - vertical - across)		
1	OPT-C0420-2M	4	2.0~16	100-∞	M30.5*P0.5	<1.6%	0.08	1/3 "	62.2°	48.6°	74.0°
								1/2.5 "	71.4°	56.3°	83.7°
								1/2 "	76.2°	61.6°	89.0°
2	OPT-C0620-2M	6	2.0~16	100-∞	M27*P0.5	<1.2%	0.06	1/3 "	42.4°	32.1°	51.5°
								1/2.5 "	49.0°	37.4°	59.2°
								1/2"	52.8°	40.6°	64°
3	OPT-C0814-2M	8	1.4~16	100-∞	M27*P0.5	<0.8%	0.07	1/3 "	33.8°	24.7°	41.0°
								1/2.5 "	38.3°	29.0°	46.8°
								1/1.8 "	47.5°	36.9°	57.8°
								2/3 "	55.4°	47.1°	68.6°
4	OPT-C1214-2M	12	1.4~16	100-∞	M27*P0.5	<0.9%	0.06	1/3 "	23.0°	17.3°	28.6°
								1/2.5 "	27.4°	20.4°	33.7°
								1/1.8 "	34.2 °	26.2°	42.2°
								2/3 "	40.1°	33.7°	50.7°
5	OPT-C1614-2M	16	1.4~16	100-∞	M27*P0.5	<0.8%	0.05	1/3 "	17.6°	13.3°	21.9°
								1/2.5 "	20.8°	15.7°	25.9°
								1/1.8 "	26.2°	20.0°	32.5°
								2/3 "	30.8°	25.8°	39.4°
6	OPT-C2514-2M	25	1.4~16	180-∞	M27*P0.5	<0.45%	0.05	1/3 "	11.3°	7.7°	13.6°
								1/2.5 "	13.4°	10.1°	16.8°
								1/1.8 "	16.8°	12.8°	21.0°
								2/3 "	20.0°	16.8°	25.9°
7	OPT-C3516-2M	35	1.6~16	250-∞	M27*P0.5	<0.25%	0.05	1/3 "	7.3°	6.0°	9.4°
								1/2.5 "	9.6°	7.2°	11.9°
								1/1.8 "	12.0°	9.0°	15.0°
								2/3 "	14.1°	11.8°	18.3°
8	OPT-C5024-2M	50	2.4~22	500-∞	M27*P0.5	<0.1%	0.06	1/3 "	5.4°	3.9°	6.6°
								1/2.5 "	6.3°	4.7°	7.9°
								1/1.8 "	7.9°	6.0°	9.9°
								2/3 "	9.6°	8.0°	12.5°
9	OPT-C7528-2M	75	2.8~32	700-∞	M30.5*P0.5	<0.02%	0.16	1/3 "	3.2°	2.4°	3.9°
								1/2.5 "	3.9°	2.9°	4.8°
								1/1.8 "	4.7°	3.6°	5.9°
								2/3 "	5.7°	4.9°	7.5°
10	OPT-C10028-2M	100	2.8~32	2700-∞	M37.5*P0.5	<0.05%	0.13	1/3 "	2.0°	1.5°	2.5°
								1/2.5 "	2.4°	1.8°	3.0°
								1/1.8 "	3.0°	2.3°	3.7°
								2/3 "	3.7°	2.8°	4.6°

Dimensional Drawings [mm]

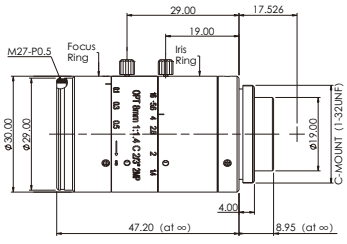
1 OPT-C0420-2M



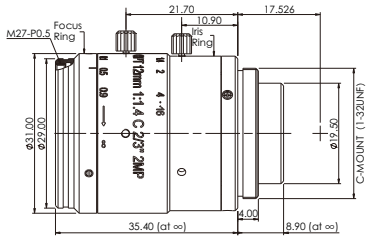
2 OPT-C0620-2M



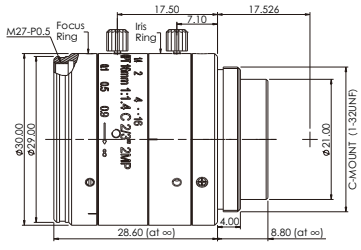
3 OPT-C0814-2M



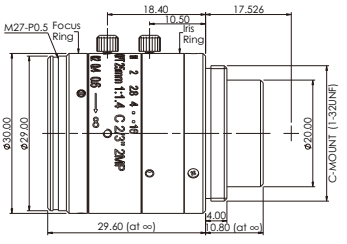
4 OPT-C1214-2M



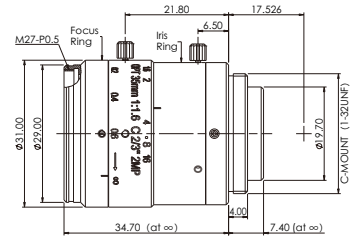
5 OPT-C1614-2M



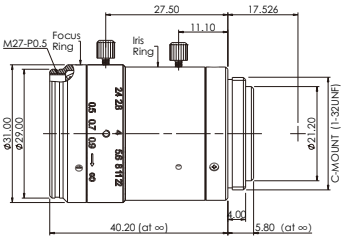
6 OPT-C2514-2M



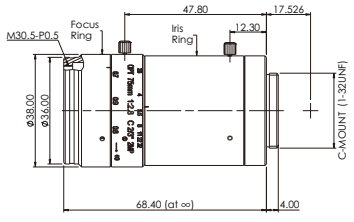
7 OPT-C3516-2M



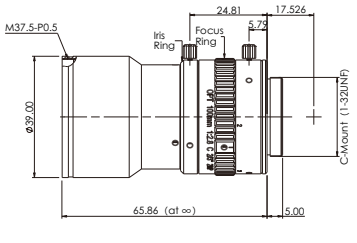
8 OPT-C5024-2M



9 OPT-C7528-2M



10 OPT-C10028-2M



Selection Guide of Extension Tube for 2MP Lenses

Extension tube	Model	OPT-C0420-2M		OPT-C0620-2M		OPT-C0814-2M		OPT-C1214-2M		OPT-C1614-2M	
	WD of lens	0.1m~∞		0.1m~∞		0.1m~∞		0.1m~∞		0.1mm~∞	
0mm	WD(mm)	100		100		100		100		100	
	1/3"	128.0×96.0		80.7×60.5		61.4×46.0		45.1×33.8		32.4×24.3	
	1/2.5"	153.6×113.4		96.8×72.1		73.7×54.9		54.1×40.3		38.8×28.9	
	1/1.8"	-		-		91.8×68.0		67.4×49.9		48.4×35.9	
	2/3"	-		-		112.5×84.4		82.6×62.0		59.3×44.5	
	Mag.	0.0375×		0.0595×		0.0782×		0.1065×		0.1483×	
0.5mm	WD(mm)	9	21	26	41	41	56	62	76	75	85
	1/3"	24.0×18.0	38.4×28.8	28.5×21.4	40.7×30.5	30.1×22.5	39.3×29.5	29.8×22.4	35.3×26.5	25.4×19.0	28.2×21.1
	1/2.5"	28.8×21.4	46.0×34.3	34.3×25.5	48.8×36.4	36.1×26.9	47.2×35.1	35.8×26.7	42.4×31.6	30.4×22.7	33.8×25.2
	1/1.8"	-	-	-	-	45.0×33.3	58.8×43.6	44.6×33.1	52.8×39.2	37.9×28.1	42.1×31.2
	2/3"	-	-	-	-	55.1×41.3	72.1×54.1	54.7×41.0	64.8×48.6	46.5×34.9	51.7×38.7
	Mag.	0.2×	0.125×	0.1678×	0.1178×	0.1595×	0.122×	0.1607×	0.1357×	0.1889×	0.1702×
1mm	WD(mm)	-	-	14	20	27	34	47	55	63	70
	1/3"	-	-	19.1×14.3	23.8×17.8	21.6×16.2	26.0×19.5	23.7×17.7	27×20.3	21.8×16.3	23.8×17.8
	1/2.5"	-	-	22.9×17.0	28.6×21.3	25.9×19.3	31.2×23.2	28.4×21.2	32.4×24.1	26.1×19.4	28.5×21.2
	1/1.8"	-	-	-	-	32.3×23.9	38.9×28.8	35.4×26.2	40.4×29.9	32.5×24.1	35.6×26.4
	2/3"	-	-	-	-	39.6×29.7	47.7×35.7	43.4×32.6	49.6×37.2	39.9×29.9	43.6×32.7
	Mag.	-	-	0.2512×	0.2012×	0.222×	0.1845×	0.2023×	0.1773×	0.2202×	0.2014×
1.5mm	WD(mm)	-	-	-	-	19	23	37	42	54	59
	1/3"	-	-	-	-	16.8×12.6	19.4×14.5	19.6×14.7	21.9×16.4	19.0×14.3	20.6×15.4
	1/2.5"	-	-	-	-	20.2×15.0	23.3×17.3	23.6×17.5	26.3×17.5	22.9×17	24.7×18.4
	1/1.8"	-	-	-	-	25.2×18.6	29.0×21.5	29.4×21.7	29.4×21.7	28.5×21.1	30.8×22.9
	2/3"	-	-	-	-	30.9×23.2	35.6×26.7	36.0×27.0	36.0×27.0	35.0×26.2	37.8×28.3
	Mag.	-	-	-	-	0.2845×	0.247×	0.244×	0.244×	0.2514×	0.2327×
2mm	WD(mm)	-	-	-	-	-	-	-	-	47	51
	1/3"	-	-	-	-	-	-	-	-	16.9×12.7	18.1×13.6
	1/2.5"	-	-	-	-	-	-	-	-	20.3×15.1	21.8×16.2
	1/1.8"	-	-	-	-	-	-	-	-	25.3×18.8	27.1×20.1
	2/3"	-	-	-	-	-	-	-	-	31.1×23.3	33.3×25.0
	Mag.	-	-	-	-	-	-	-	-	0.2827×	0.2639×
5mm	WD(mm)	-	-	-	-	-	-	-	-	25	26
	1/3"	-	-	-	-	-	-	-	-	10.2×7.6	10.6×7.9
	1/2.5"	-	-	-	-	-	-	-	-	12.2×9.1	12.7×9.5
	1/1.8"	-	-	-	-	-	-	-	-	15.2×11.3	15.8×11.7
	2/3"	-	-	-	-	-	-	-	-	18.7×14.0	19.4×14.6
	Mag.	-	-	-	-	-	-	-	-	0.4702×	0.4514×

Extension tube	Model	OPT-C2514-2M		OPT-C3516-2M		OPT-C5024-2M		OPT-C7528-2M		OPT-C10028-2M	
	WD of lens	0.18m~∞		0.25m~∞		0.5m~∞		0.7m~∞		2.7m~∞	
0mm	WD(mm)	180		250		500		700		2700	
	1/3"	35.2×26.4		34.7×26		46.8×35.1		40.8×30.6		124.7×93.5	
	1/2.5"	42.2×31.4		41.7×31		56.2×41.9		49×36.5		149.6×111.4	
	1/1.8"	52.6×39		51.9×38.5		70×51.9		61×45.2		186.4×138.2	
	2/3"	64.5×48.4		63.7×47.8		85.9×64.4		74.8×56.1		228.6×171.4	
	Mag.	0.1365×		0.1382×		0.1025×		0.1176×		0.0385×	
0.5mm	WD(mm)	152	164	223	236	448	472	658	677	2322	2481
	1/3"	29.5×22.1	31.8×23.9	30.6×22.9	32.3×24.2	41.5×31.1	43.8x32.8	38.0×28.5	39.2×29.4	106.6×80.0	114.2×85.7
	1/2.5"	35.4×26.4	38.2×28.5	36.7×27.3	38.8×28.9	49.8×37.1	52.6x39.1	45.6×33.9	47.1×35.0	128.0×95.3	137.1×102.1
	1/1.8"	44.1×32.7	47.6×35.3	45.7×33.9	48.4×35.8	62.1×46.0	65.5x48.5	56.8×42.1	58.6×43.5	159.4×118.2	170.8×126.6
	2/3"	54.1×40.6	58.4×43.8	56.1×42.0	59.3×44.5	76.1×57.1	80.3x60.2	69.6×52.2	71.9×53.9	195.6×146.6	209.5×157.1
	Mag.	0.1625×	0.1505×	0.1568×	0.1482×	0.1155×	0.1095×	0.1263×	0.1223×	0.045×	0.042×
1mm	WD(mm)	135	145	205	215	413	433	628	646	2100	2228
	1/3"	26.3×19.7	28.1×21.1	28.0×21.0	29.5×22.1	38.2×28.6	40.1×30.1	36.1×27.0	37.2×27.9	96.0×72.0	102.1×76.5
	1/2.5"	31.5×23.5	33.7×25.1	33.6×25.0	35.4×26.4	45.8×34.1	48.2×35.8	43.3×32.2	44.6×33.2	115.2×85.8	122.5×91.2
	1/1.8"	39.3×29.1	42.0×31.1	41.9×31.0	44.1×32.7	57.1×42.3	60.0×44.5	53.9×40.0	55.6×41.2	143.5×106.3	152.6×113.1
	2/3"	48.2×36.1	51.6×38.7	51.4×38.5	54.1×40.6	70.1×52.5	73.6×55.2	66.1×49.6	68.2×51.1	176.0×132.0	187.2×140.4
	Mag.	0.1825×	0.1705×	0.1711×	0.1625×	0.1255×	0.1195×	0.1329×	0.1289×	0.05×	0.047×
1.5mm	WD(mm)	122	130	189	198	384	401	601	617	1918	2023
	1/3"	23.7×17.7	25.1×18.8	25.8×19.4	27.1×20.3	35.4×26.5	37×27.7	34.3×25.7	35.3×26.5	87.2×65.4	92.3×69.2
	1/2.5"	28.4×21.1	30.2×22.5	31.0×23.1	32.5×24.2	42.5×31.6	44.4×33.1	41.2×30.7	42.4×31.6	104.7×78.0	110.7×82.5
	1/1.8"	35.4×26.2	37.6×27.9	38.7×28.6	40.5×30.0	52.9×39.2	55.4×41.0	51.4×38.1	52.9×39.2	130.4×96.7	138.0×102.2
	2/3"	43.4×32.5	46.1×34.6	47.4×35.6	49.7×37.3	64.9×48.7	67.9×50.9	63.0×47.2	64.8×48.6	160.0×120.0	169.2×126.9
	Mag.	0.2025×	0.1905×	0.1853×	0.1768×	0.1355×	0.1195×	0.1396×	0.1356×	0.055×	0.052×

Extension tube	Model	OPT-C2514-2M		OPT-C3516-2M		OPT-C5024-2M		OPT-C7528-2M		OPT-C10028-2M	
	WD of lens	0.18m~∞		0.25m~∞		0.5m~∞		0.7m~∞		2.7m~∞	
2mm	WD(mm)	111	117	175	183	359	373	577	591	1767	1854
	1/3"	21.6×16.1	22.8×17.1	24.0×18.0	25.1×18.8	32.9×24.7	34.4×25.8	32.8×24.6	33.7×25.3	80.0×60.0	84.2×63.1
	1/2.5"	25.8×19.2	27.3×20.3	28.8×21.4	30.1×22.4	39.5×29.4	41.2×30.7	39.3×29.3	40.4×30.1	96×71.5	101.0×75.2
	1/1.8"	32.2×23.9	34.0×25.2	35.9×26.6	37.5×27.8	49.3×36.5	51.4×38.1	49.0×36.3	50.4×37.3	119.6×88.6	125.8×93.3
	2/3"	39.5×29.6	41.8×31.3	44.0×33.0	46.0×34.5	60.4×45.3	63.0×47.3	60.1×45.1	61.8×46.3	146.6×110	154.3×115.7
	Mag.	0.2225×	0.2105×	0.1996×	0.1911×	0.1455×	0.1395×	0.1463×	0.1423×	0.06×	0.057×
5mm	WD(mm)	71	74	123	126	258	266	467	475	1211	1249
	1/3"	14.0×10.5	14.5×10.8	16.8×12.6	17.3×13.0	23.3×17.5	24.0×18.0	25.7×19.3	26.3×19.7	53.3×40.0	55.1×41.3
	1/2.5"	16.8×12.5	17.4×12.9	20.1×15.0	20.8×15.5	28.0×20.8	28.8×21.5	30.9×23.0	31.6×23.5	64.0×47.6	66.2×49.3
	1/1.8"	20.9×15.5	21.7×16.0	25.1×18.6	25.9×19.2	34.9×25.8	35.9×26.6	38.5×28.5	39.3×29.1	79.7×59.1	82.4×61.1
	2/3"	25.6×19.2	26.6×19.9	30.8×23.1	31.7×23.8	42.8×32.1	44.1×33.0	47.2×35.4	48.2×36.2	97.7×73.3	101.1×75.8
	Mag.	0.3425×	0.3305×	0.2853×	0.2768×	0.2055×	0.1995×	0.1863×	0.1823×	0.09×	0.087×
10mm	WD(mm)	44	45	82	83	179	182	361	365	814	830
	1/3"	8.8×6.6	9.0×6.7	11.2×8.4	11.4×8.5	15.7×11.7	16.0×12.0	18.9×14.2	19.2×14.4	34.2×25.7	35.0×26.2
	1/2.5"	10.6×7.9	10.8×8.0	13.4×10.0	13.7×10.2	18.8×14.0	19.2×14.3	22.7×16.9	23.1×17.2	41.1×30.6	42.0×31.3
	1/1.8"	13.2×9.8	13.5×10.0	16.7×12.4	17.1×12.6	23.4×17.4	23.9×17.77	28.3×21.0	28.8×21.3	51.2×37.9	52.3×38.8
	2/3"	16.2×12.1	16.5×12.4	20.5×15.4	20.9×15.7	28.8×21.6	29.3×22	34.7×26.0	35.3×26.5	62.8×47.1	64.2×48.1
	Mag.	0.5425×	0.5305×	0.4282×	0.4196×	0.3055×	0.2995×	0.2529×	0.2489×	0.14×	0.137×
15mm	WD(mm)	-	-	-	-	138	140	299	302	626	635
	1/3"	-	-	-	-	11.8×8.8	12.0×9.0	15.0×11.2	15.2×11.4	25.2×18.9	25.6×19.2
	1/2.5"	-	-	-	-	14.2×10.5	14.4×10.7	18.0×13.4	18.2×13.5	30.3×22.5	30.8×22.9
	1/1.8"	-	-	-	-	17.6×13.1	17.9×13.3	22.4×16.6	22.7×16.8	37.7×27.9	38.3×28.4
	2/3"	-	-	-	-	21.7×16.2	22.0×16.5	27.5×20.6	27.8×20.9	46.3×34.7	47.0×35.2
	Mag.	-	-	-	-	0.4055×	0.3995×	0.3196×	0.3156×	0.19×	0.187×
20mm	WD(mm)	-	-	-	-	114	115	258	260	517	522
	1/3"	-	-	-	-	9.4×7.1	9.6×7.2	12.4×9.3	12.5×9.4	20.0×15.0	20.2×15.1
	1/2.5"	-	-	-	-	11.3×8.4	11.5×8.5	14.9×11.1	15.0×11.2	24.0×17.8	24.3×18.1
	1/1.8"	-	-	-	-	14.1×10.5	14.3×10.6	18.5×13.7	18.7×13.9	29.9×22.1	30.2×22.4
	2/3"	-	-	-	-	17.4×13.0	17.6×13.2	22.7×17.0	23.0×17.2	36.6×27.5	37.1×27.8
	Mag.	-	-	-	-	0.5055×	0.4995×	0.3863×	0.3823×	0.24×	0.237×
25mm	WD(mm)	-	-	-	-		98	230	231	445	448
	1/3"	-	-	-	-		8.0×6.0	10.5×7.9	10.6×8.0	16.5×12.4	16.7×12.5
	1/2.5"	-	-	-	-		9.6×7.1	12.7×9.4	12.8×9.5	19.8×14.7	20.0×14.9
	1/1.8"	-	-	-	-		11.9×8.8	15.8×11.7	15.9×11.8	21.1×15.6	21.2×15.7
	2/3"	-	-	-	-		14.6×11.0	19.4×14.5	19.6×14.7	30.3×22.7	30.6×22.9
	Mag.	-	-	-	-		0.5995×	0.4529×	0.4489×	0.29×	0.287×
30mm	WD(mm)	-	-	-	-		86	208	209	394	397
	1/3"	-	-	-	-		6.8×5.1	9.2×6.9	9.3×6.9	14.1×10.5	14.2×10.6
	1/2.5"	-	-	-	-		8.2×6.1	11.0×8.2	11.1×8.3	16.9×12.6	17.0×12.7
	1/1.8"	-	-	-	-		10.2×7.6	13.8×10.2	13.9×10.3	24.7×18.3	25.0×18.5
	2/3"	-	-	-	-		12.6×9.4	16.9×12.7	17.0×12.8	25.8×19.4	26.1×19.5
	Mag.	-	-	-	-		0.6995×	0.5196×	0.5156×	0.34×	0.337×
35mm	WD(mm)	-	-	-	-	77	78	192	193	356	358
	1/3"	-	-	-	-	5.9×4.4	6.0×4.5	8.1×6.1	8.2×6.1	12.3×9.2	12.4×9.3
	1/2.5"	-	-	-	-	7.1×5.3	7.2×5.3	9.8×7.3	9.8×7.3	14.7×11.0	14.8×11.0
	1/1.8"	-	-	-	-	8.9×6.6	9.0×6.7	12.2×9.0	12.3×9.1	18.4×13.6	18.5×13.7
	2/3"	-	-	-	-	10.9×8.1	11.0×8.2	15.0×11.2	15.1×11.3	22.5×16.9	22.7×17.0
	Mag.	-	-	-	-	0.8055×	0.7995×	0.5863×	0.5823×	0.39×	0.387×
40mm	WD(mm)	-	-	-	-	-	-	179	180	327	329
	1/3"	-	-	-	-	-	-	7.3×5.5	7.3×5.5	10.9×8.1	10.9×8.2
	1/2.5"	-	-	-	-	-	-	8.8×6.5	8.8×6.6	13.0×9.7	13.1×9.8
	1/1.8"	-	-	-	-	-	-	10.9×8.1	11.0×8.1	16.3×12	16.4×12.1
	2/3"	-	-	-	-	-	-	13.4×10.1	13.5×10.1	20.0×15	20.1×15.1
	Mag.	-	-	-	-	-	-	0.6529×	0.6489×	0.44×	0.437×
45mm	WD(mm)	-	-	-	-	-	-	168	169	304	305
	1/3"	-	-	-	-	-	-	6.6×5.0	6.7×5.0	9.7×7.3	9.8×7.3
	1/2.5"	-	-	-	-	-	-	8.0×5.9	8.0×5.9	11.7×8.7	11.8×8.8
	1/1.8"	-	-	-	-	-	-	9.9×7.3	10.0×7.4	14.6×10.8	14.7×10.9
	2/3"	-	-	-	-	-	-	12.2×9.1	12.2×9.2	17.9×13.4	18.0×13.5
	Mag.	-	-	-	-	-	-	0.7196×	0.7156×	0.49×	0.487×
50mm	WD(mm)	-	-	-	-	-	-	-	-	285	286
	1/3"	-	-	-	-	-	-	-	-	8.8×6.6	8.9×6.7
	1/2.5"	-	-	-	-	-	-	-	-	10.6×7.9	10.7×7.9
	1/1.8"	-	-	-	-	-	-	-	-	13.2×9.8	13.3×9.9
	2/3"	-	-	-	-	-	-	-	-	16.2×12.2	16.3×12.2
	Mag.	-	-	-	-	-	-	-	-	0.54×	0.537×

5MP Fixed Focal Length Lenses

Product Features

1 Professional design and stable quality
Using high standard optical technology to realize perfect optical performance

2 High resolution
Compatible to most 5MP industrial cameras, suitable for cameras with pixel size≥3.45μm, max compatible to 2/3" sensor[1], resolution up to 140lp/mm

3 Low distortion
Total distortion < 0.9%, min distortion low to 0.02%[2]

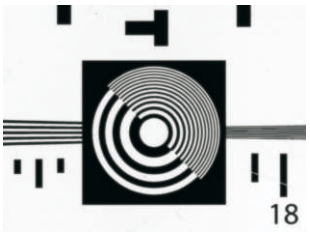
4 High uniformity
Can obtain clear uniform images due to our anti-shading technologies

Remark:
[1] OPT-C0420-5M & OPT-C0620-5M max compatible to 1/2" sensor
[2] OPT-C0420-5M & OPT-C0620-5M are not included

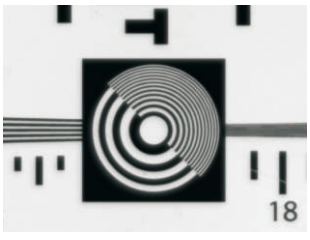
Selection Guide

OPT-C2514-5M

- 5M pixel
- F# ≥1.4
- Focal length = 25mm
- C mount
- Brand name



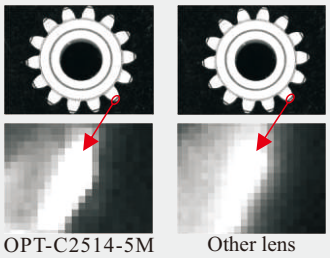
Picture taken via OPT-C2514-5M



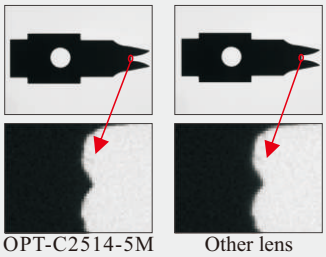
Picture taken via other lens

Application Examples

Gear chamfering inspection


OPT-C2514-5M Other lens

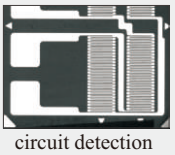
Gap Detection

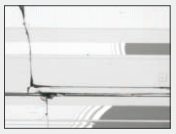

OPT-C2514-5M Other lens

Result: under the same condition, OPT-C2514-5M provides an image with sharper edge and higher resolution

Application cases in different industries

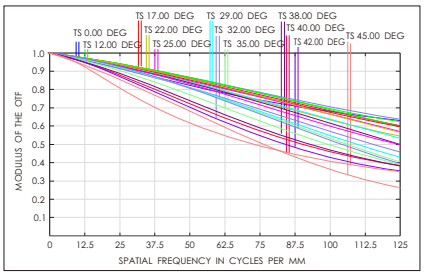

Magnet defect detection


circuit detection

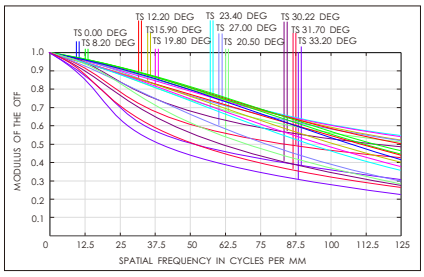

Lens surface inspection

OCR for capacitance

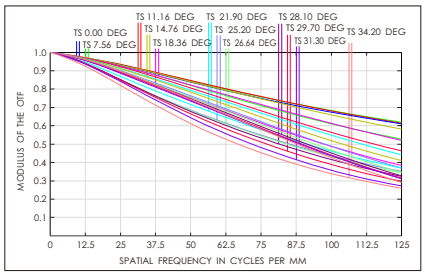
MTF Drawings



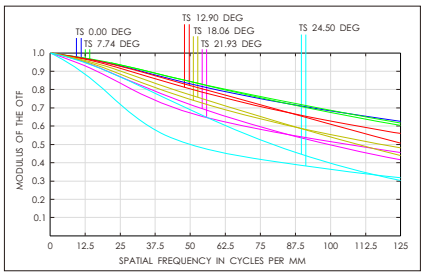
OPT-C0420-5M



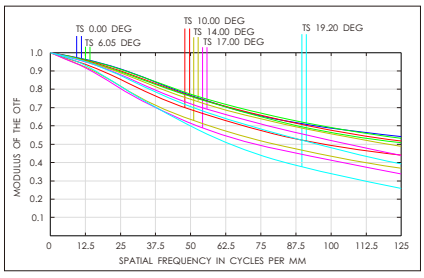
OPT-C0620-5M



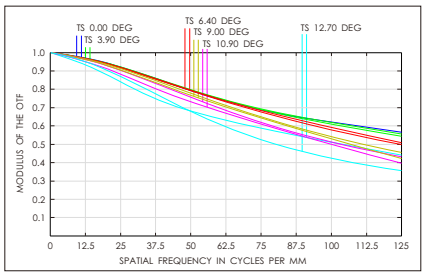
OPT-C0825-5M



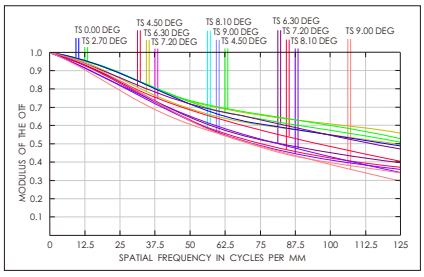
OPT-C1216-5M



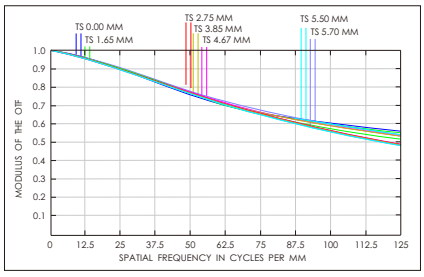
OPT-C1614-5M



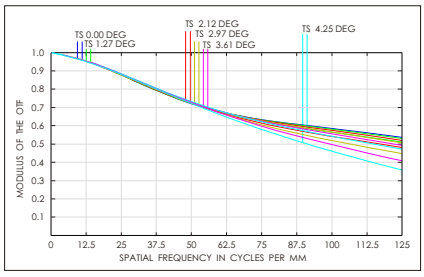
OPT-C2514-5M



OPT-C3514-5M



OPT-C5025-5M



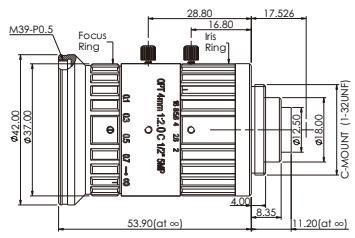
OPT-C7528-5M

Model Table

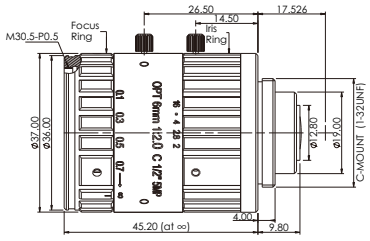
No.	Model	Focal length (mm)	Aperture range	WD (mm)	Filter thread	Distortion	Weight (kg)	Matching sensor format	FOV angle (horizontal - vertical - across)		
1	OPT-C0420-5M	4	2.0~16	100-∞	M39*P0.5	<1.7%	0.13	1/3 "	62.5°	48.6°	74.2°
								1/2.5 "	71.4°	56.0°	83.6°
								1/2 "	76.0°	60.8°	90.0°
2	OPT-C0620-5M	6	2.0~16	80-∞	M30.5*P0.5	<1.05%	0.11	1/3 "	43.8°	32.9°	53.0°
								1/2.5 "	51.2°	39.6°	61.8°
								1/2 "	56.8°	44.0°	68.2°
3	OPT-C0825-5M	8	2.5~16	100-∞	M30.5*P0.5	<0.7%	0.13	1/3 "	32.5°	25.4°	40.4°
								1/2.5 "	39.2°	29.8°	48.0°
								1/1.8 "	48.2°	37.3°	58.5°
								2/3 "	57.6°	49.3°	71.2°
4	OPT-C1216-5M	12	1.6~16	150-∞	M30.5*P0.5	<0.55%	0.09	1/3 "	23.0°	17.3°	28.6°
								1/2.5 "	27.4°	20.7°	33.9°
								1/1.8 "	34.1°	25.8°	41.8°
								2/3 "	40.1°	33.9°	50.9°
5	OPT-C1614-5M	16	1.4~16	200-∞	M30.5*P0.5	<0.56%	0.14	1/3 "	18.0°	13.5°	22.4°
								1/2.5 "	21.2°	16.1°	26.4°
								1/1.8 "	26.7°	20.3°	33.1°
								2/3 "	31.4°	26.3°	40.2°
6	OPT-C2514-5M	25	1.4~16	200-∞	M30.5*P0.5	<0.3%	0.08	1/3 "	10.9°	8.3°	13.6°
								1/2.5 "	13.1°	9.9°	16.4°
								1/1.8 "	16.4°	12.4°	20.4°
								2/3 "	19.4°	16.2°	25.1°
7	OPT-C3514-5M	35	1.4~16	390-∞	M30.5*P0.5	<0.1%	0.13	1/3 "	7.7°	5.9°	9.7°
								1/2.5 "	9.3°	7.0°	11.6°
								1/1.8 "	11.6°	8.9°	14.5°
								2/3 "	13.7°	11.4°	17.8°
8	OPT-C5025-5M	50	2.5~22	600-∞	M30.5*P0.5	<0.05%	0.11	1/3 "	5.3°	3.9°	6.6°
								1/2.5 "	6.2°	4.6°	7.7°
								1/1.8 "	7.9°	5.9°	9.8°
								2/3 "	9.1°	7.7°	12.0°
9	OPT-C7528-5M	75	2.8~32	600-∞	M30.5*P0.5	<0.02%	0.22	1/3 "	3.4°	2.6°	4.3°
								1/2.5 "	4.0°	3.0°	5.0°
								1/1.8 "	5.1°	3.9°	6.4°
								2/3 "	6.0°	5.0°	7.8°

Dimensional Drawings [mm]

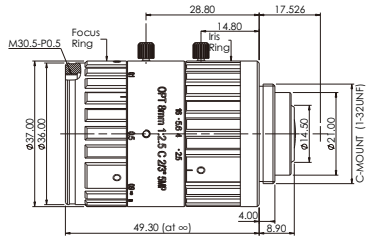
1 OPT-C0420-5M



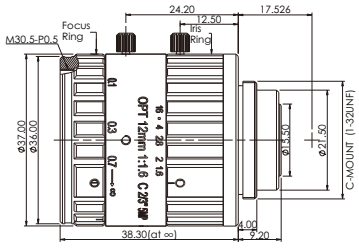
2 OPT-C0620-5M



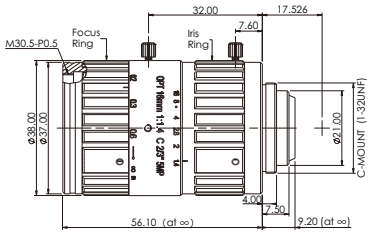
3 OPT-C0825-5M



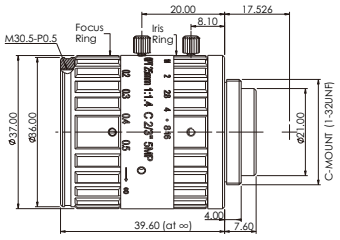
4 OPT-C1216-5M



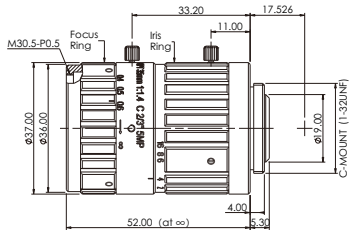
5 OPT-C1614-5M



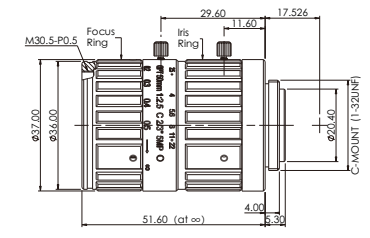
6 OPT-C2514-5M



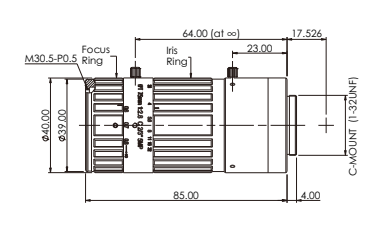
7 OPT-C3514-5M



8 OPT-C5025-5M



9 OPT-C7528-5M



Selection Guide of Extension Tube for 5MP Lenses

Extension tube	Model	OPT-C0420-5M		OPT-C0620-5M		OPT-C0825-5M		OPT-C1216-5M		OPT-C1614-5M	
	WD of lens	0.1m~∞		0.08m~∞		0.1m~∞		0.15m~∞		0.2mm~∞	
0mm	WD(mm)	100		80		100		150		200	
	1/3"	129.3×97.0		72.9×54.7		68.0×51.0		62.9×47.2		65.5×49.1	
	1/2.5"	155.2×115.6		87.5×65.1		81.7×60.8		75.5×56.2		78.6×58.6	
	1/1.8"	-		-		101.7×75.4		94.1×69.8		98.0×72.6	
	2/3"	-		-		124.8×93.6		115.4×86.6		120.2×90.1	
	Mag.	0.0371×		0.0658×		0.0705×		0.0762×		0.0732×	
0.5mm	WD(mm)	7	20	23	37	39	56	82	104	117	144
	1/3"	24.0×18.0	38.5×28.8	27.5×20.6	38.6×29.0	31.6×23.7	42.0×31.5	36.8×27.6	45.5×34.1	42.1×31.6	50.4×37.8
	1/2.5"	28.8×21.4	46.2×34.4	33.0×24.6	46.4×34.5	37.9×28.2	50.4×37.5	44.1×32.9	54.6×40.7	50.6×37.6	60.5×45.1
	1/1.8"	-	-	-	-	47.2×35.0	62.8×46.5	55.0×40.8	68.1×50.4	63.0×46.7	75.4×55.9
	2/3"	-	-	-	-	57.9×43.4	77.0×57.7	67.5×50.6	83.5×62.6	77.3×57.9	92.5×69.4
	Mag.	0.1996×	0.1246×	0.1741×	0.1241×	0.1518×	0.1143×	0.1304×	0.1054×	0.1138×	0.0951×
1mm	WD(mm)	-	-	12	17	24	31	60	71	86	103
	1/3"	-	-	18.6×13.9	23.1×17.3	22.4×16.8	27.1×20.3	27.9×20.9	32.6×24.4	33.0×24.8	37.9×28.4
	1/2.5"	-	-	22.3×16.6	27.7×20.6	26.8×20.0	32.5×24.2	33.4×24.9	39.1×29.1	39.7×29.5	45.5×33.9
	1/1.8"	-	-	-	-	33.4×24.8	40.5×30.0	41.7×30.9	48.8×36.1	49.4×36.6	56.8×42.1
	2/3"	-	-	-	-	41.0×30.8	49.7×37.3	51.1×38.3	59.8×44.8	60.6×45.4	69.6×52.2
	Mag.	-	-	0.2575×	0.2075×	0.2143×	0.1768×	0.172×	0.147×	0.1451×	0.1263×
1.5mm	WD(mm)	-	-	-	-	15	20	46	53	67	78
	1/3"	-	-	-	-	17.3×13.0	20.0×15.0	22.4×16.8	25.4×19.0	27.2×20.4	30.4×22.8
	1/2.5"	-	-	-	-	20.8×15.5	24.0×17.9	26.9×20.0	30.5×22.7	32.6×24.3	36.5×27.2
	1/1.8"	-	-	-	-	25.9×19.2	29.9×22.2	33.5×24.8	38.0×28.1	40.6×30.1	45.5×33.7
	2/3"	-	-	-	-	31.7×23.8	36.7×27.5	41.1×30.8	46.6×34.9	49.9×37.4	55.8×41.8
	Mag.	-	-	-	-	0.2768×	2393×	0.2137×	0.1887×	0.1763×	0.1576×
2mm	WD(mm)	-	-	-	-	-	-	-	-	53	61
	1/3"	-	-	-	-	-	-	-	-	23.1×17.3	25.4×19.0
	1/2.5"	-	-	-	-	-	-	-	-	27.7×20.6	30.5×22.7
	1/1.8"	-	-	-	-	-	-	-	-	34.5×25.6	38.0×28.1
	2/3"	-	-	-	-	-	-	-	-	42.3×31.7	46.6×34.9
	Mag.	-	-	-	-	-	-	-	-	0.2076×	0.1888×
5mm	WD(mm)	-	-	-	-	-	-	-	-	17	19
	1/3"	-	-	-	-	-	-	-	-	12.1×9.1	12.7×9.5
	1/2.5"	-	-	-	-	-	-	-	-	14.5×10.8	15.3×11.3
	1/1.8"	-	-	-	-	-	-	-	-	18.1×13.4	19.0×14.1
	2/3"	-	-	-	-	-	-	-	-	22.2×16.7	23.3×17.5
	Mag.	-	-	-	-	-	-	-	-	0.3951×	0.3763×

Extension tube	Model	OPT-C2514-5M		OPT-C3514-5M		OPT-C5025-5M		OPT-C7528-5M	
	WD of lens	0.2m~∞		0.39m~∞		0.57m~∞		0.6m~∞	
0mm	WD(mm)	200		390		570		600	
	1/3"	38.1×28.6		54.3×40.7		54.7×41		36.4×27.3	
	1/2.5"	45.8×34.1		65.2×48.5		65.6×48.9		43.7×32.5	
	1/1.8"	57×42.3		81.2×60.2		81.8×60.6		54.4×40.3	
	2/3"	70×52.5		99.6×74.7		100.3×75.2		66.8×50.1	
	Mag.	0.1257×		0.0883×		0.0877×		0.1317×	
0.5mm	WD(mm)	166	180	318	347	527	558	573	586
	1/3"	31.6×23.7	34.3×25.7	44.9×33.6	48.8×36.6	47.6×35.7	50.6×38	34.7×26	35.5×26.6
	1/2.5"	37.9×28.2	41.2×30.7	53.8×40.1	58.5×43.6	57.1×42.6	57.1×42.6	41.6×31	42.6×31.7
	1/1.8"	47.3×35	51.3×38	67.1×49.7	73×54.1	71.2×52.8	71.2×52.8	51.9×38.4	53×39.3
	2/3"	58×43.5	62.9×47.2	82.3×61.7	89×67.1	87.3×65.5	87.3×65.5	63.6×47.7	65×48.8
	Mag.	0.1517×	0.1397×	0.1069×	0.0983×	0.1007×	0.0947×	0.1382×	0.1352×
1mm	WD(mm)	147	158	280	302	482	508	555	566
	1/3"	27.9×20.9	30×22.5	39.6×29.7	42.6×31.9	43.3×32.5	45.8×34.3	33.5×25.1	34.2×25.6
	1/2.5"	33.5×24.9	36×26.8	47.5×35.4	51.1×38.1	52×38.7	55×40.9	40.2×29.9	41×30.5
	1/1.8"	41.7×30.9	44.9×33.3	59.2×43.9	63.7×47.2	64.8×48	68.5×50.8	50.1×37.1	51.1×37.9
	2/3"	51.2×38.4	55.1×41.3	72.6×54.4	78.1×58.6	79.4×59.6	84×63	61.4×46	62.7×47
	Mag.	0.1717×	0.1597×	0.1212×	0.1126×	0.1107×	0.1047×	0.1432×	0.1402×

Extension tube	Model	OPT-C2514-5M		OPT-C3514-5M		OPT-C5025-5M		OPT-C7528-5M	
	WD of lens	0.2m~∞		0.39m~∞		0.57m~∞		0.6m~∞	
1.5mm	WD(mm)	132	141	249	267	445	466	537	547
	1/3"	25×18.7	26.7×20	35.4×26.5	37.8×28.3	39.7×29.8	41.8×31.3	32.3×24.2	33×24.7
	1/2.5"	30×22.3	32×23.8	42.5×31.6	45.4×33.8	47.7×35.5	50.2×37.4	38.8×28.9	39.6×29.5
	1/1.8"	37.4×27.7	39.9×29.5	52.9×39.2	56.5×41.9	59.4×44	62.5×46.3	48.4×35.8	49.4×36.6
	2/3"	45.9×34.4	48.9×36.7	64.9×48.7	69.3×52	72.9×54.6	76.7×57.5	59.3×44.5	60.6×45.4
	Mag.	0.1917×	0.1797×	0.1354×	0.1269×	0.1207×	0.1147×	0.1482×	0.1452×
2mm	WD(mm)	119	127	225	239	413	431	520	530
	1/3"	22.6×17	24×18	32×24	34×25.5	36.7×27.5	38.4×28.8	31.3×23.4	31.9×23.9
	1/2.5"	27.2×20.2	28.8×21.4	38.4×28.6	40.8×30.3	44×32.8	46.1×34.4	37.5×28	38.3×28.5
	1/1.8"	33.8×25.1	35.9×26.6	47.9×35.5	50.8×37.6	54.9×40.6	57.5×42.6	46.8×34.7	47.7×35.4
	2/3"	41.5×31.1	44×33	58.7×44	62.3×46.7	67.3×50.4	70.5×52.9	57.4×43	58.5×43.9
	Mag.	0.2117×	0.1997×	0.1497×	0.1412×	0.1307×	0.1247×	0.1532×	0.1502×
5mm	WD(mm)	77	80	140	145	293	301	440	447
	1/3"	14.4×10.8	15×11.2	20.3×15.2	21.1×15.8	25.1×18.8	25.9×19.4	26.2×19.6	26.6×19.9
	1/2.5"	17.3×12.9	18×13.4	24.4×18.2	25.3×18.9	30.2×22.4	31.1×23.2	31.4×23.4	31.9×23.8
	1/1.8"	21.6×16	22.4×16.6	30.4×22.5	31.6×23.4	37.6×27.8	38.8×28.7	39.1×29	39.8×29.5
	2/3"	26.5×19.8	27.5×20.6	37.3×28	38.7×29	46.1×34.6	47.6×35.7	48×36	48.8×36.6
	Mag.	0.3317×	0.3197×	0.2354×	0.2269×	0.1907×	0.1847×	0.1832×	0.1802×
10mm	WD(mm)	48	50	83	86	202	206	352	357
	1/3"	9×6.7	9.2×6.9	12.6×9.5	12.9×9.7	16.5×12.3	16.8×12.6	20.5×15.4	20.8×15.6
	1/2.5"	10.8×8	11×8.2	15.2×11.3	15.5×11.6	19.8×14.7	20.2×15	24.6×18.3	25×18.6
	1/1.8"	13.4×10	13.8×10.2	18.9×14	19.4×14.3	24.6×18.2	25.2×18.6	30.7×22.8	31.1×23.1
	2/3"	16.5×12.4	16.9×12.6	23.2×17.4	23.8×17.8	30.2×22.7	30.9×23.1	37.7×28.3	38.2×28.6
	Mag.	0.5317×	0.5197×	0.3783×	0.3697×	0.2907×	0.2847×	0.2332×	0.2302×
15mm	WD(mm)	-	-	-	-	158	160	296	298
	1/3"	-	-	-	-	12.2×9.2	12.4×9.3	16.9×12.7	17.1×12.8
	1/2.5"	-	-	-	-	14.7×10.9	14.9×11.1	20.3×15.1	20.5×15.3
	1/1.8"	-	-	-	-	18.3×13.6	18.6×13.8	25.3×18.7	25.6×18.9
	2/3"	-	-	-	-	22.5×16.8	22.8×17.1	31×23.3	31.4×23.5
	Mag.	-	-	-	-	0.3907×	0.3847×	0.2832×	0.2802×
20mm	WD(mm)	-	-	-	-	132	134	256	258
	1/3"	-	-	-	-	9.7×7.3	9.9×7.4	14.4×10.8	14.5×10.9
	1/2.5"	-	-	-	-	11.7×8.7	11.8×8.8	17.2×12.8	17.4×12.9
	1/1.8"	-	-	-	-	14.6×10.8	14.8×10.9	21.5×15.9	21.7×16.1
	2/3"	-	-	-	-	17.9×13.4	18.1×13.6	26.4×19.8	26.6×19.9
	Mag.	-	-	-	-	0.4907×	0.4847×	0.3332×	0.3302×
25mm	WD(mm)	-	-	-	-	115	116	227	228
	1/3"	-	-	-	-	8.1×6	8.2×6.1	12.5×9.3	12.6×9.4
	1/2.5"	-	-	-	-	9.7×7.2	9.8×7.3	15×11.1	15.1×11.2
	1/1.8"	-	-	-	-	12.1×9	12.2×9	18.7×13.8	18.8×13.9
	2/3"	-	-	-	-	14.8×11.1	15×11.2	22.9×17.2	23.1×17.3
	Mag.	-	-	-	-	0.5907×	0.5847×	0.3832×	0.3802×
30mm	WD(mm)	-	-	-	-	103	104	204	205
	1/3"	-	-	-	-	6.9×5.2	7×5.2	11×8.3	11.1×8.3
	1/2.5"	-	-	-	-	8.3×6.2	8.4×6.2	13.2×9.9	13.3×9.9
	1/1.8"	-	-	-	-	10.3×7.7	10.4×7.7	16.5×12.2	16.6×12.3
	2/3"	-	-	-	-	12.7×9.5	12.8×9.6	20.3×15.2	20.4×15.3
	Mag.	-	-	-	-	0.6907×	0.6847×	0.4332×	0.4302×
35mm	WD(mm)	-	-	-	-	-	94	186	187
	1/3"	-	-	-	-	-	6.1×4.5	9.9×7.4	9.9×7.4
	1/2.5"	-	-	-	-	-	7.3×5.4	11.9×8.8	11.9×8.9
	1/1.8"	-	-	-	-	-	9.1×6.7	14.8×11	14.9×11
	2/3"	-	-	-	-	-	11.2×8.4	18.2×13.6	18.3×13.7
	Mag.	-	-	-	-	-	0.7847×	0.4832×	0.4802×
40mm	WD(mm)	-	-	-	-	-	-	171	172
	1/3"	-	-	-	-	-	-	9×6.7	9×6.7
	1/2.5"	-	-	-	-	-	-	10.8×8	10.8×8
	1/1.8"	-	-	-	-	-	-	13.4×9.9	13.5×10
	2/3"	-	-	-	-	-	-	16.5×12.3	16.5×12.4
	Mag.	-	-	-	-	-	-	0.5332×	0.5302×
45mm	WD(mm)	-	-	-	-	-	-	159	160
	1/3"	-	-	-	-	-	-	8.2×6.1	8.2×6.2
	1/2.5"	-	-	-	-	-	-	9.8×7.3	9.9×7.3
	1/1.8"	-	-	-	-	-	-	12.3×9.1	12.3×9.1
	2/3"	-	-	-	-	-	-	15×11.3	15.1×11.3
	Mag.	-	-	-	-	-	-	0.5832×	0.5802×

5 MP 3X Zoom Lenses

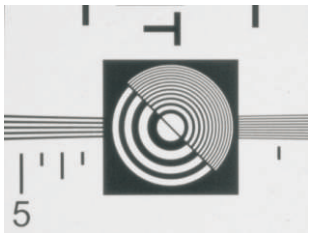
Product Features

1. 0.3-1.0x adjustable magnification
2. Large image circle, max compatible to 2/3" sensor
3. High resolution, the resolution of the whole FOV up to 120lp/mm
4. High uniformity
5. Low distortion, the total distortion of FOV below 0.5%

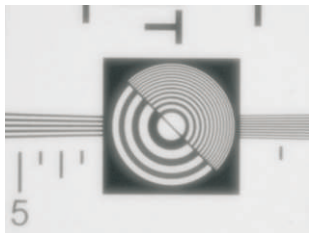
Selection Guide

OPT-C3X45-5M

- 5M pixel
- F# ⩾ 4.5
- Magnification 0.3X - 1X
- C mount
- Brand name



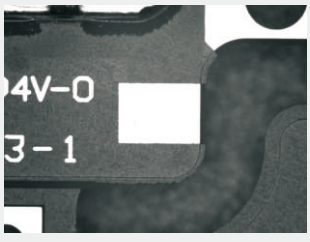
Picture taken via OPT-C3X45-5M



Picture taken via other lens

Application Examples

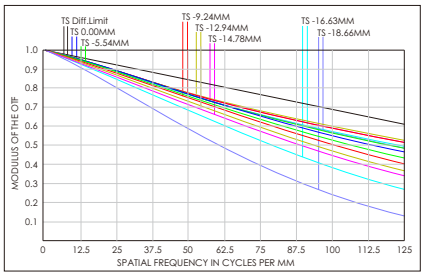
Part localization and OCR 1.0x zoom



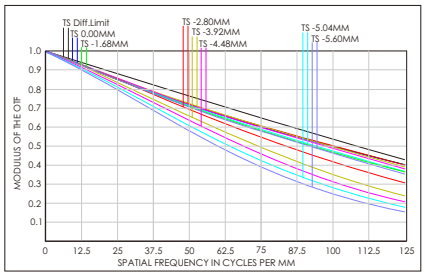
PCB localization and recognition

Tool inspection

MTF Drawings



0.3X

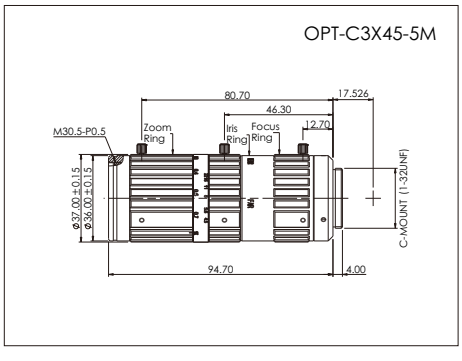


1.0X

Model Table

Model	Mag. [x]	Aperture range	WD (mm)	Filter thread	Weight (kg)	Matching sensor format	Distortion		FOV angle across - horizontal - vertical		
OPT-C3X45-5M	0.3X-1.0X	F4.5~F22	90	M30.5*P0.5	0.2	1/2"	0.3x	0.26%	10.7°	8.48°	6.38°
							1.0x	0.25%	2.72°	2.18°	1.64°
						2/3"	0.3x	0.49%	14.88°	11.8°	8.74°
							1.0x	0.47%	3.57°	2.78°	2.24°

Dimensional Drawing [mm]



10MP Fixed Focal Length Lenses

Product Features

1 Professional design and stable quality
Using high standard optical technology to realize perfect optical performance

2 High resolution
Compatible to most 10MP industrial cameras, suitable for cameras with pixel size≥3.45μm, max compatible to 1.1" sensor, resolution up to 140lp/mm

3 Low distortion
Total distortion below 1%, minimum distortion 0.1%

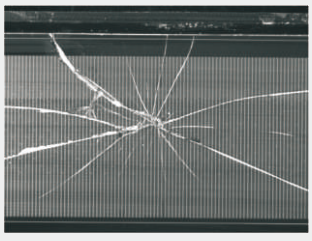
Selection Guide

OPT-C2514-10M

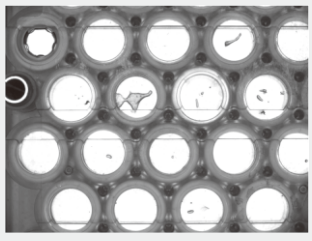
- 10M pixel
- F#≥1.4
- Focal length = 25mm
- C mount
- Brand name

Application Examples

Metal piece flatness inspection

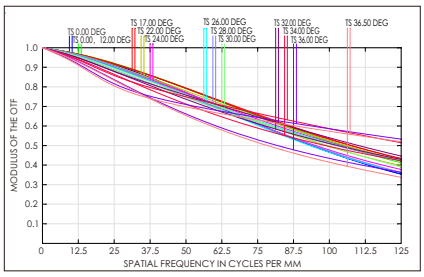


Lens surface crack detection

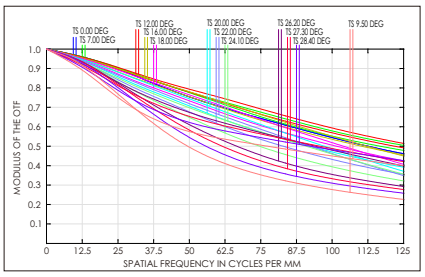


Inspection for glue on battery surface

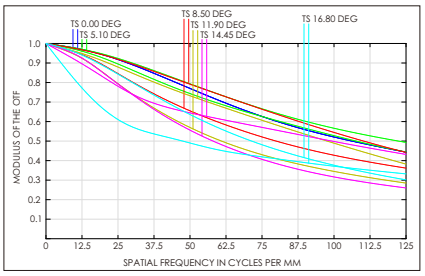
MTF Drawings



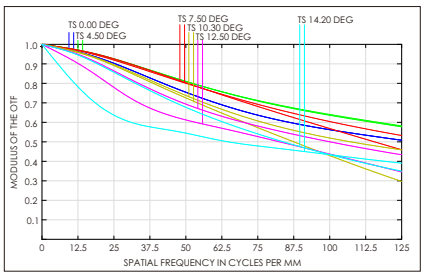
OPT-C1220-10M



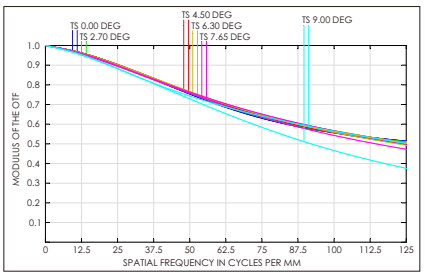
OPT-C1616-10M



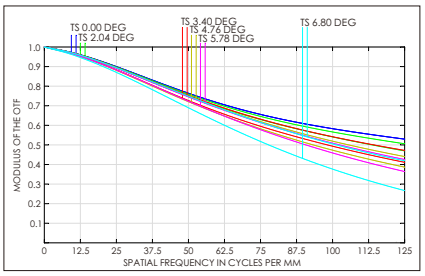
OPT-C2514-10M



OPT-C3514-10M



OPT-C5024-10M



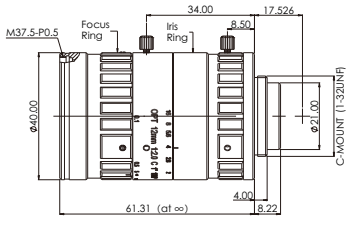
OPT-C7524-10M

Model Table

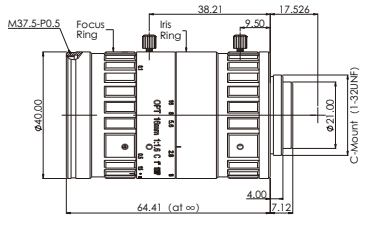
No.	Model	Focal length (mm)	Aperture range	WD(mm)	Filter thread	Distortion	Back focal length (mm)	Weight (kg)	Matching sensor format	FOV angle (horizontal - vertical - across)		
1	OPT-C1220-10M	12	F2.0-F16	100~∞	M37.5*P0.5	<0.77%	10.36	0.19	2/3"	40.2°	30.6°	49.6°
									1.1"	61.0°	47.6°	72°
2	OPT-C1616-10M	16	F1.6-F16	100~∞	M37.5*P0.5	<0.68%	10.7	0.19	2/3"	30.7°	23.2°	38.4°
									1.1"	48.2°	36.8°	58°
3	OPT-C2514-10M	25	F1.4-F16	200~∞	M37.5*P0.5	<0.3%	10.8	0.1	2/3"	20.1°	15.4°	24.3°
									1.1"	31.2°	23.4°	38.4°
4	OPT-C3514-10M	35	F1.4-F16	160~∞	M40.5*P0.5	<0.39%	11.3	0.12	2/3"	14.4°	10.8°	17.6°
									1.1"	22.4°	16.8°	27.8°
5	OPT-C5024-10M	50	F2.4-F22	550~∞	M37.5*P0.5	<0.1%	16.24	0.13	2/3"	10°	7.6°	12.2°
									1.1"	15.6°	11.8°	19.4°
6	OPT-C7528-10M	75	F2.8-F32	600~∞	M37.5*P0.5	<0.1%	36.9	0.25	2/3"	6.66°	5.0°	8.2°
									1.1"	10.4°	7.9°	13°

Dimensional Drawings [mm]

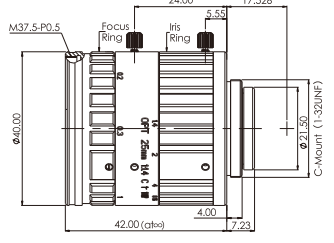
1 OPT-C1220-10M



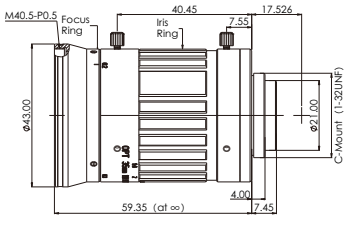
2 OPT-C1616-10M



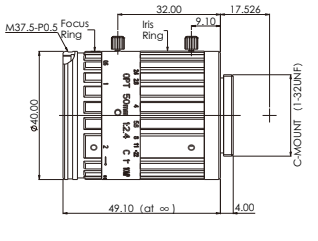
3 OPT-C2514-10M



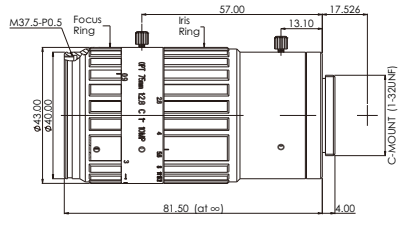
4 OPT-C3514-10M



5 OPT-C5024-10M



6 OPT-C7528-10M



IR Fixed Focal Length Lenses

Product Features

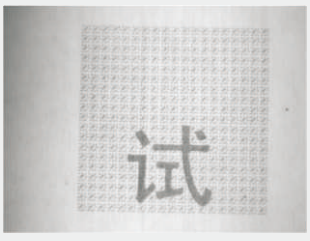
1. Compatible for IR spectrum
   Developed for infrared project, used for 800-1050nm IR spectrum
2. Professional design and stable quality
   Using high standard optical technology to realized perfect optical performance
3. High resolution
   Compatible to most 5MP industrial cameras, suitable for cameras with pixel size≥3.45μm, max compatible to 2/3" sensor, resolution up to 140lp/mm
4. Low distortion
   Total distortion < 0.1%
5. High uniformity

Selection Guide

OPT-C3514-5M-IR

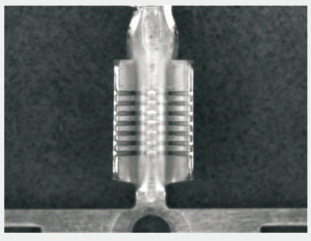
- Infrared
- 5M pixel
- F#≥1.4
- Focal length = 35mm
- C mount
- Brand name

Application Examples



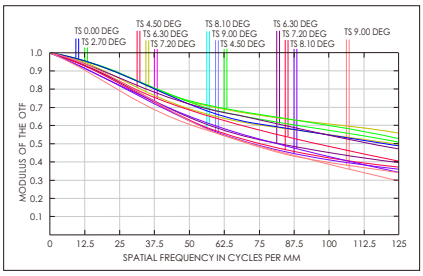
Security QR code recognition

Metal existing detection

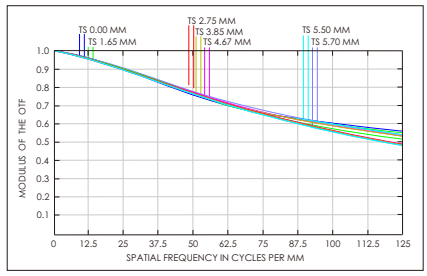


Distance measurement of metal parts

MTF Drawings



OPT-C3514-5M -IR



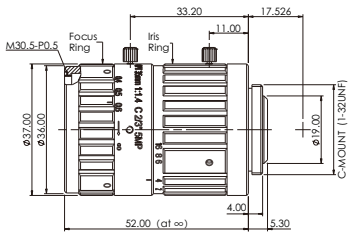
OPT-C5025-5M-IR

Model Table

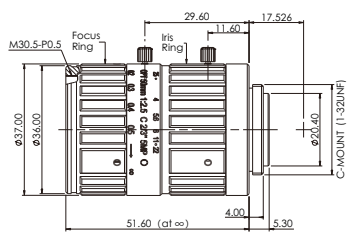
No.	Model	Focal length (mm)	Aperture range	WD (mm)	Filter thread	Distortion	Weight (kg)	Matching sensor format	FOV angle (across - horizontal - vertical)		
1	OPT-C3514-5M-IR	35	F1.4-F16	390-∞	M30.5*P0.5	<0.1%	0.13	1/3"	10°	8°	6°
								1/2"	13.2°	10.6°	8°
								1/1.8"	14.8°	11.9°	9°
								2/3"	18°	14.4°	10.8°
2	OPT-C5025-5M-IR	50	F2.5-F22	570-∞	M30.5*P0.5	<0.1%	0.11	1/3"	6.9°	5.5°	4.1°
								1/2"	9.2°	7.3°	5.5°
								1/1.8"	10.3°	8.2°	6.2°
								2/3"	12.5°	10°	7.6°

Dimensional Drawing [mm]

1 OPT-C3514-5M-IR



2 OPT-C5025-5M-IR

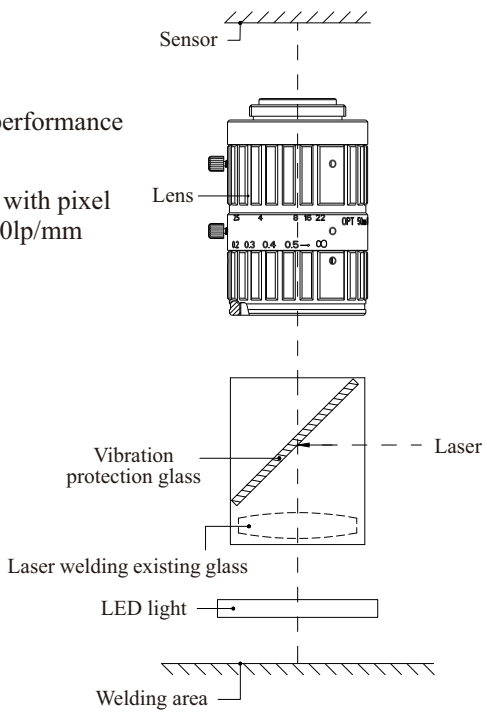


Laser Application Fixed Focal Length Lenses

Product Features

1. Extremely long working distance
   Designed for laser applications, working distance over 800mm
2. Professional design and stable quality
   Using high standard optical technology to realize perfect optical performance
3. High resolution
   Compatible to most 5MP industrial cameras, suitable for cameras with pixel size≥3.45μm, max compatible to 2/3" sensor, resolution up to 140lp/mm
4. Low distortion
   Total distortion < 0.1%
5. High uniformity

Lens application structure

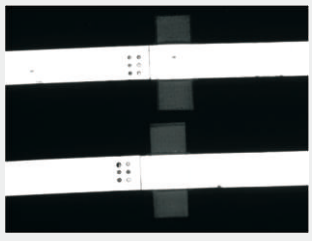


Selection Guide

OPT-C5025-5M-LW

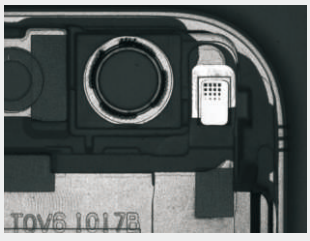
- Long working distance
- 5M pixel
- F# ≥ 2.5
- Focal length = 50mm
- C mount
- Brand name

Application Examples



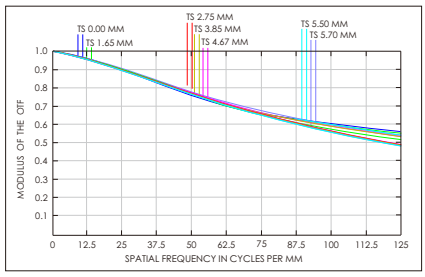
Soldering joint inspection

Lens position detection

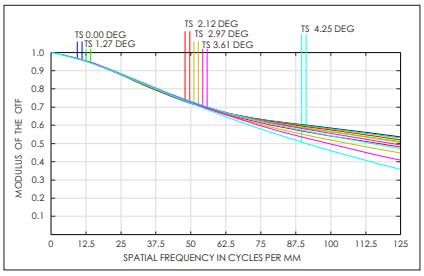


Copper foil welding inspection

MTF Drawings



OPT-C5025-5M-LW



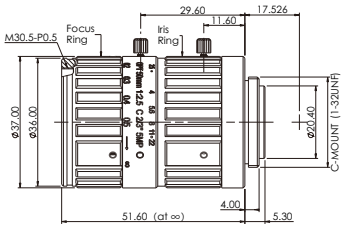
OPT-C7528-5M-LW

Model Table

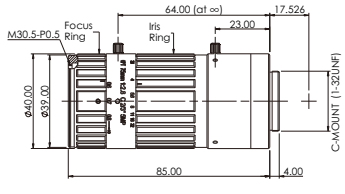
No.	Model	Focal length (mm)	Aperture range	WD (mm)	Filter thread	Distortion	Weight (kg)	Matching sensor format	FOV angle (across - horizontal - vertical)		
1	OPT-C5025-5M-LW	50	F2.5-F22	1000-∞	M30.5*P0.5	<0.1%	0.11	1/3"	6.9°	5.5°	4.1°
								1/2"	9.2°	7.3°	5.5°
								1/1.8"	10.3°	8.2°	6.2°
								2/3"	12.5°	10°	7.6°
2	OPT-C7528-5M-LW	75	F2.8-F32	5000-∞	M30.5*P0.5	<0.1%	0.2	1/3"	4.56°	3.65°	2.72°
								1/2"	6.1°	4.84°	3.62°
								1/2.5"	5.4°	4.35°	3.24°
								2/3"	8.34°	6.66°	5.0°

Dimensional Drawing [mm]

1 OPT-C5025-5M-LW



2 OPT-C7528-5M-LW



Zoom Telecentric Lens

Product Features

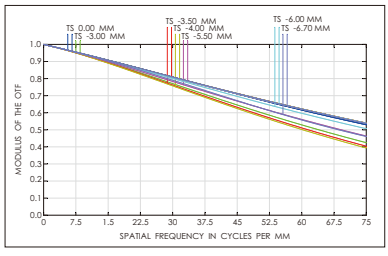
1. 0.5-1.0X adjustable magnification
2. Applicable to large target areas, suitable for 1/1.2" sensor and below
3. Object telecentric design, and the telecentricity below 0.05 in all magnification.
4. Low distortion, the whole image distortion below 0.1%

Selection Guide

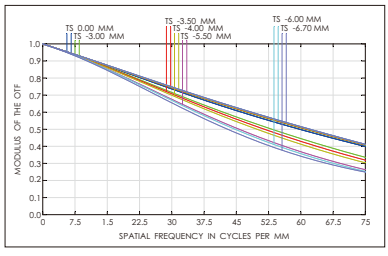
OPT-CZT0510X

- 0.5-1.0X Mag. range
- Telecentric zoom lens
- C mount
- Brand name

MTF Drawings



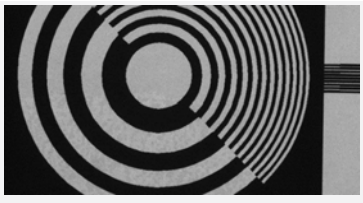
0.5X_MTF



1.0X_MTF

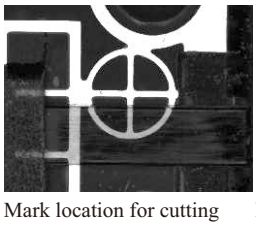
Resolution

0.5X

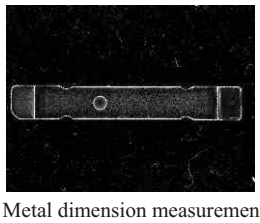


1.0X

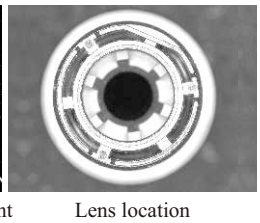
Application Examples



Mark location for cutting

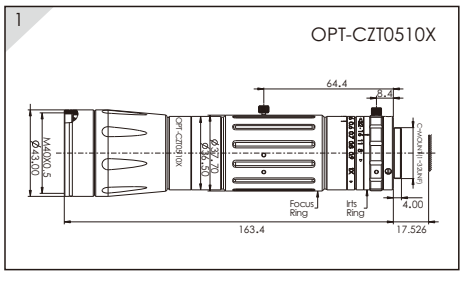


Metal dimension measurement



Lens location

Dimensional Drawing [mm]



Model Table

No.	Model	Aperture range	WD (mm)	Distortion @546nm	Mount	Magnification	Telecentricity	MTF 70lp/mm	Field of View			
									1/1.2"	2/3"	1/1.8"	1/2"
									10.72×8.04	8.8×6.6	7.18×5.32	6.4×4.8
1	OPT-CZT0510X	F8-22	108mm±3%	<0.05%	C	0.5X	<0.05°	>40%	21.44×16.08	17.6×13.2	14.36×10.64	12.8×9.6
						0.6X	<0.04°	>40%	17.87×13.4	14.67×11	11.97×8.87	10.67×8
						0.7X	<0.05°	>40%	15.31×11.49	12.57×9.43	10.26×7.6	9.14×6.86
						0.8X	<0.03°	>30%	13.4×10.05	11×8.25	8.98×6.65	8×6
						0.9X	<0.02°	>30%	11.91×8.93	9.78×7.33	7.98×5.91	7.11×5.33
						1.0X	<0.05°	>25%	10.72×8.04	8.8×6.6	7.18×5.32	6.4×4.8

MH Series Telecentric Lenses

Product Features

1. High resolution, max compatible to industrial camera with 2/3'' sensor and 2MP resolution
2. Low magnification, uniform brightness from the center to the edges with coaxial illumination
3. Object side telecentric design

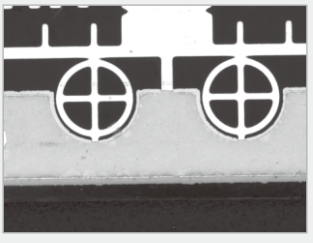
Selection Guide

OPT-MH15-110AB

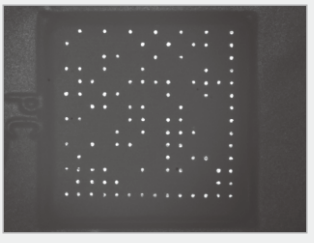
- Upgraded version
- C: coaxial structure; A: no coaxial structure
- Working distance 110mm
- Magnification 1.5x
- MH series telecentric lens
- Brand name

Application Examples

Wafer recognition



MARK point localization



QR code recognition

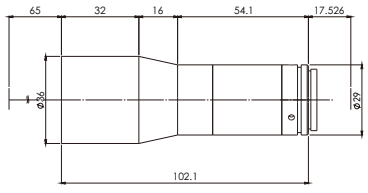
Model Table

No.	Model	WD (mm) [1]	Mag. (x)	Image circle (Ømm)	Aperture (F/#) [2]	Distortion (% Max)	DOF (mm) [3]	Mount	Weight (kg)	FOV (mm×mm)			
										1/3"	1/2.5"	1/2"	2/3"
										4.8×3.6	5.7×4.2	6.5×4.9	8.4×7.1
1	OPT-MH05-65A	65±2	0.5	11	16.5	0.01	5.45	C	0.18	9.6×7.2	11.4×8.4	13×9.8	16.8×14.2
2	OPT-MH08-65A	65±2	0.8	11	10	0.09	1.29	C	0.13	6×4.5	7.1×5.3	8.1×6.1	10.5×8.9
3	OPT-MH10-65A	65±2	1	11	11.1	0.04	0.92	C	0.21	4.8×3.6	5.7×4.2	6.5×4.9	8.4×7.1
4	OPT-MH15-65C	65±2	1.5	11	11.9	0.099	0.44	C	0.12	3.2×2.4	3.8×2.8	4.3×3.3	5.6×4.7
5	OPT-MH20-65C	65±2	2	11	14.4	0.039	0.30	C	0.12	2.4×1.8	2.9×2.1	3.3×2.5	4.2×3.6
6	OPT-MH30-65C	65±2	3	11	15.7	0.038	0.14	C	0.14	1.6×1.2	1.9×1.4	2.2×1.6	2.8×2.4
7	OPT-MH40-65C	65±2	4	11	17.7	0.064	0.09	C	0.12	1.2×0.9	1.4×1.1	1.6×1.2	2.1×1.8
8	OPT-MH60-65A	65±2	6	11	26.8	0.03	0.06	C	0.13	0.8×0.6	1.0×0.7	1.1×0.8	1.4×1.2
9	OPT-MH05-110A	110±3	0.5	11	9.6	0.095	3.17	C	0.18	9.6×7.2	11.4×8.4	13×9.8	16.8×14.2
10	OPT-MH08-110A	110±3	0.8	8	10	0.01	1.29	C	0.16	6×4.5	7.1×5.3	8.1×6.1	-
11	OPT-MH10-110A	110±3	1	11	11	0.03	0.91	C	0.17	4.8×3.6	5.7×4.2	6.5×4.9	8.4×7.1
12	OPT-MH15-110AB	110±3	1.5	11	11.8	0.023	0.43	C	0.20	3.2×2.4	3.8×2.8	4.3×3.3	5.6×4.7
13	OPT-MH15-110CB	110±3	1.5	11	11.8	0.023	0.43	C	0.21	3.2×2.4	3.8×2.8	4.3×3.3	5.6×4.7
14	OPT-MH20-110AB	110±3	2	11	11.6	0.036	0.24	C	0.21	2.4×1.8	2.9×2.1	3.3×2.5	4.2×3.6
15	OPT-MH20-110CB	110±3	2	11	11.6	0.036	0.24	C	0.23	2.4×1.8	2.9×2.1	3.3×2.5	4.2×3.6
16	OPT-MH30-110C	110±3	3	11	18.3	0.037	0.17	C	0.14	1.6×1.2	1.9×1.4	2.2×1.6	2.8×2.4
17	OPT-MH40-110C	110±3	4	11	22.1	0.058	0.11	C	0.15	1.2×0.9	1.4×1.1	1.6×1.2	2.1×1.8
18	OPT-MH60-110A	110±3	6	11	33.2	0.03	0.08	C	0.16	0.8×0.6	1×0.7	1.1×0.8	1.4×1.2
19	OPT-MH07-145A	145±4	0.7	7	14.6	0.42	2.46	C	0.08	6.9×5.1	8.14×6	-	-
20	OPT-MH10-200A	200±6	1	11	14.3	0.07	1.18	C	0.20	4.8×3.6	5.7×4.2	6.5×4.9	8.4×7.1

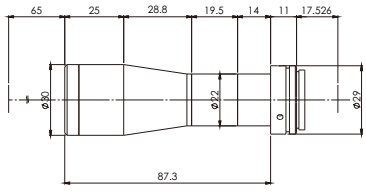
Remarks:
1. Working distance, the distance between the front end of the mechanics and the object.
2. The real F# of a lens when using. Lenses with smaller apertures can be workable.
3. At the borders of the DOF the image still can be used for measurement. But only half of the nominal DOF can get sharp images.

Dimensional Drawings [mm]

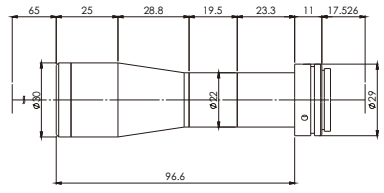
1 OPT-MH05-65A



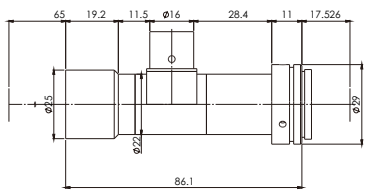
2 OPT-MH08-65A



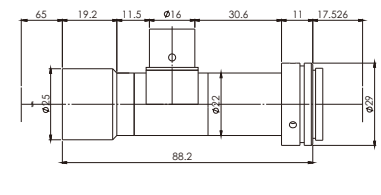
3 OPT-MH10-65A



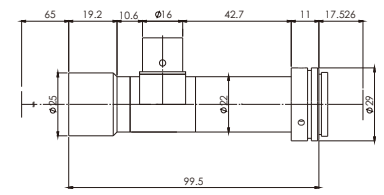
4 OPT-MH15-65C



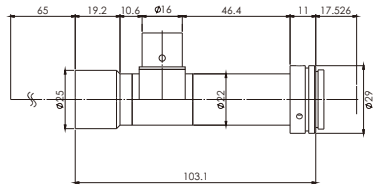
5 OPT-MH20-65C



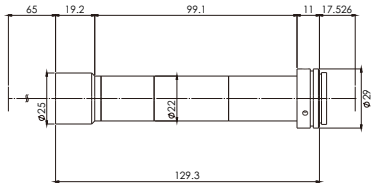
6 OPT-MH30-65C



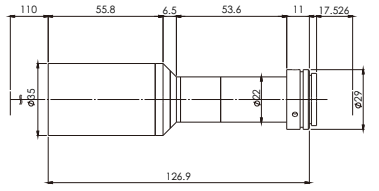
7 OPT-MH40-65C



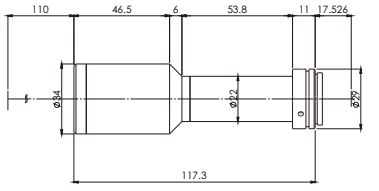
8 OPT-MH60-65A



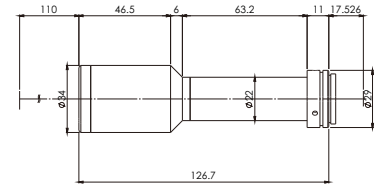
9 OPT-MH05-110A



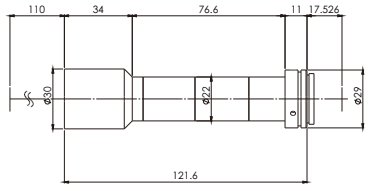
10 OPT-MH08-110A



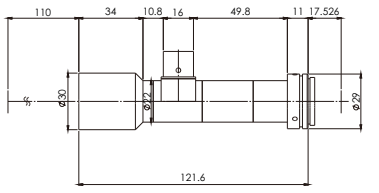
11 OPT-MH10-110A



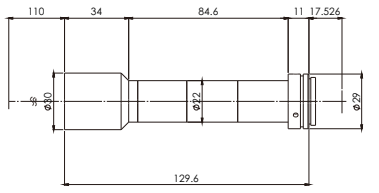
12 OPT-MH15-110AB



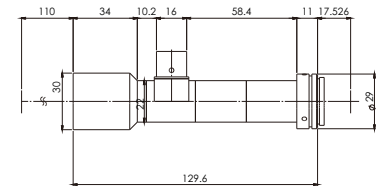
13 OPT-MH15-110CB



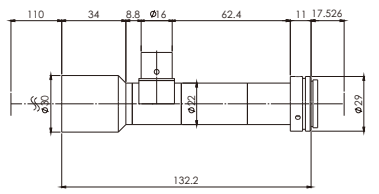
14 OPT-MH20-110AB



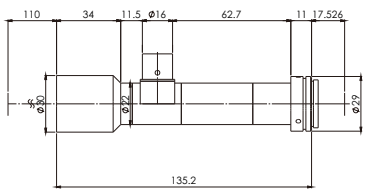
15 OPT-MH20-110CB



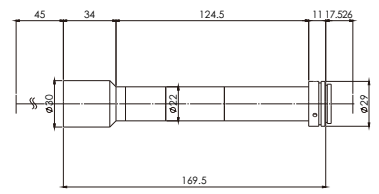
16 OPT-MH30-110C



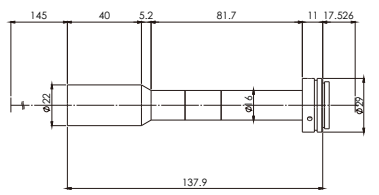
17 OPT-MH40-110C



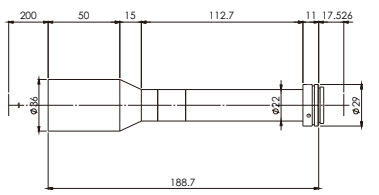
18 OPT-MH60-110A



19 OPT-MH07-145A



20 OPT-MH10-200A



ML Series Long WD Telecentric Lenses

Product Features

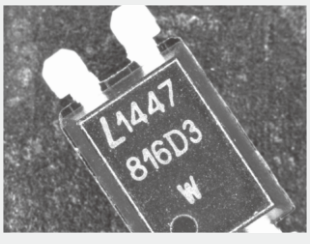
1. Working distance from 150mm to 650mm
2. Compatible to industrial cameras below 2MP resolution
3. Max compatible to industrial cameras with 1/1.8" sensor, some only compatible to 1/3" sensor
4. Object side telecentric design

Selection Guide

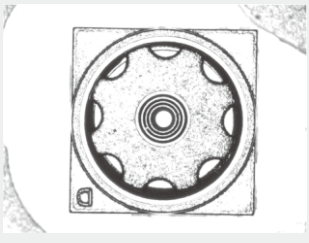
OPT- ML10-150A

- C: coaxial structure; A: no coaxial structure
- Working distance 150mm
- Magnification 1.0x
- ML series long WD telecentric lenses
- Brand name

Application Examples



IC surface characters inspection



Inspection for precision metal parts

Alignment and attaching

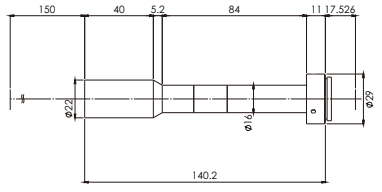
Model Table

No.	Model	WD (mm) [1]	Mag. (x)	Image circle (Ømm)	Aperture (F/#) [2]	Distortion (% Max)	DOF (mm) [3]	Mount	Weight (kg)	FOV(mm×mm)			
										1/3"	1/2.5"	1/2"	1/1.8"
										4.8×3.6	5.7×4.2	6.5×4.9	7.2×5.4
1	OPT-ML10-150A	150±4	1	8	21	0.18	1.73	C	0.07	4.8×3.6	5.7×4.2	6.5×4.9	-
2	OPT-ML05-200A	200±6	0.5	8	18.8	0.36	6.2	C	0.08	9.6×7.2	11.4×8.4	13×9.8	-
3	OPT-ML20-200C	200±6	2	6	41.6	0.055	0.86	C	0.07	2.4×1.8	-	-	-
4	OPT-ML022-250A	250±7	0.22	7.2	16	0.5	27.27	C	0.05	21.8×16.4	25.9×19.1	-	-
5	OPT-ML05-250A	250±7	0.5	8	22.7	0.22	7.49	C	0.05	9.6×7.2	11.4×8.4	13×9.8	-
6	OPT-ML20-250C	250±7	2	9	27.8	0.2	0.57	C	0.19	2.4×1.8	2.9×2.1	3.3×2.5	3.6×2.7
7	OPT-ML08-300A	300±9	0.8	8	20	0.035	2.58	C	0.10	6×4.5	7.1×5.3	8.1×6.1	-
8	OPT-ML10-300A	300±9	1	8	21	0.1	1.73	C	0.14	4.8×3.6	5.7×4.2	6.5×4.9	-
9	OPT-ML20-300C	300±9	2	8	33	0.17	0.68	C	0.2	2.4×1.8	2.9×2.1	3.3×2.5	-
10	OPT-ML10-420C	420±12	1	6	27	0.2	2.23	C	0.18	4.8×3.6	-	-	-
11	OPT-ML05-510A	510±15	0.5	8	25	0.27	8.25	C	0.15	9.6×7.2	11.4×8.4	13×9.8	-
12	OPT-ML05-650A	650±20	0.5	6	25	0.055	8.25	C	0.12	9.6×7.2	-	-	-

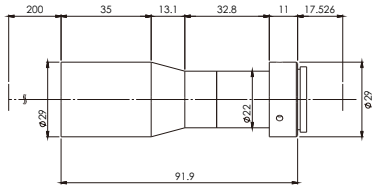
Remarks:
1. Working distance, the distance between the front end of the mechanics and the object.
2. The real F# of a lens when using. Lenses with smaller apertures can be workable.
3. At the borders of the DOF the image still can be used for measurement. But only half of the nominal DOF can get sharp images.

Dimensional Drawings [mm]

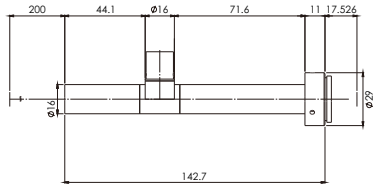
1 OPT-ML10-150A



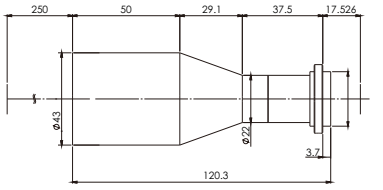
2 OPT-ML05-200A



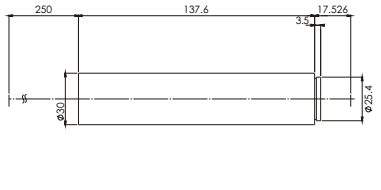
3 OPT-ML20-200C



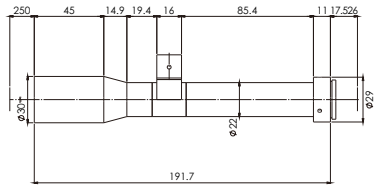
4 OPT-ML022-250A



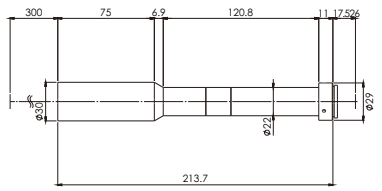
5 OPT-ML05-250A



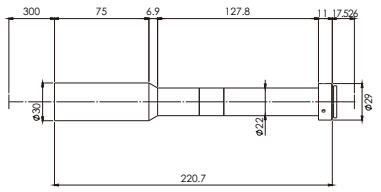
6 OPT-ML20-250C



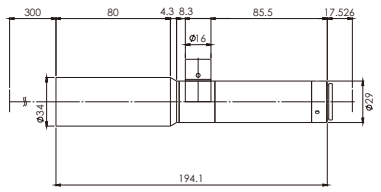
7 OPT-ML08-300A

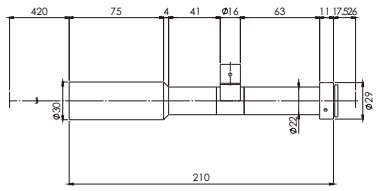
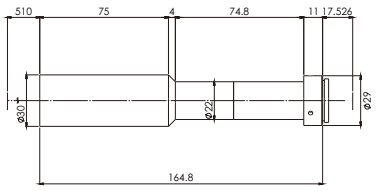
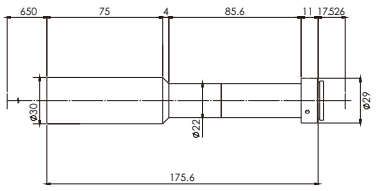


8 OPT-ML10-300A



9 OPT-ML20-300C



10 OPT-ML10-420C	11 OPT-ML05-510A	12 OPT-ML05-650A
		

AS Series Variable Iris Bi-telecentric Lenses

Product Features

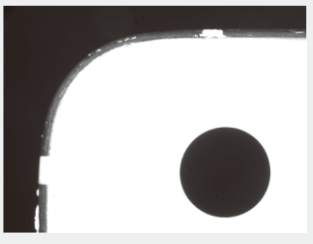
1. Equipped with a variable iris to balance depth of field and resolution
2. Designed for high accuracy measurement tasks
3. Excellent image resolution
4. Max compatible to industrial cameras with 2/3" sensor
5. Bi-telecentric design
6. Available for customization

Selection Guide

OPT-AS04-96A-IR

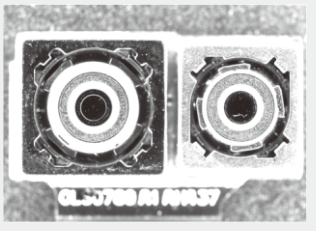
- Infrared
- C: coaxial structure; A: no coaxial structure
- Working distance 96mm
- Magnification 0.4x
- AS Series Variable iris bi-telecentric lenses
- Brand name

Application Examples



Mobile phone back cover inspection

OCR for socket



Scratches inspection for camera module

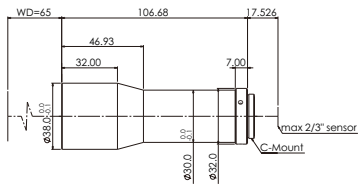
Model Table

No.	Model	WD (mm) [1]	Mag. (x)	Image circle (Ømm)	Aperture (F#) [2]	Distortion (% Max)	DOF (mm) [3]	Mount	Weight (kg)	FOV (mm×mm)			
										1/3"	1/2.5"	1/2"	2/3"
										4.8×3.6	5.7×4.2	6.5×4.9	8.4×7.1
1	OPT-AS05-65A	65±1	0.500	11	5.0	0.1	1.65	C	0.17	9.6×7.2	11.4×8.4	13×9.8	16.8×14.2
2	OPT-AS05-65C	65±1	0.500	11	5.0	0.1	1.65	C	0.18	9.6×7.2	11.4×8.4	13×9.8	16.8×14.2
3	OPT-AS04-96A	96±2	0.400	11	10.7	0.1	5.52	C	0.17	12×9	14.3×10.5	16.3×12.3	21×17.8
4	OPT-AS04-96A-IR	96±2	0.400	11	5.0	0.1	2.58	C	0.16	12×9	14.3×10.5	16.3×12.3	21×17.8
5	OPT-AS03-110A	110±2	0.300	11	3.75	0.1	3.44	C	0.38	16×12	19×14	21.7×16.3	28×23.7
6	OPT-AS03-110C	110±2	0.300	11	3.75	0.1	3.44	C	0.34	16×12	19×14	21.7×16.3	28×23.7
7	OPT-AS0166-166A	166±3	0.166	11	3.3	0.1	9.88	C	0.61	28.9×21.7	34.3×25.3	39.2×29.5	50.6×42.8

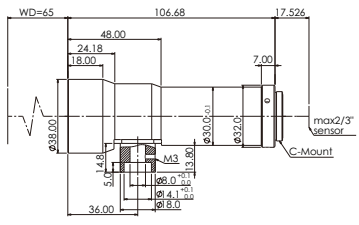
Remarks:
1. Working distance, the distance between the front end of the mechanics and the object.
2. The real F# of a lens when using. Lenses with smaller apertures can be workable.
3. At the borders of the DOF the image still can be used for measurement. But only half of the nominal DOF can get sharp images.

Dimensional Drawings [mm]

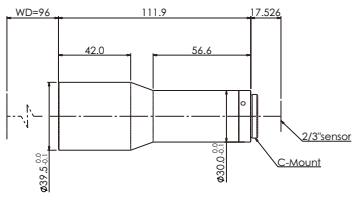
1 OPT-AS05-65A



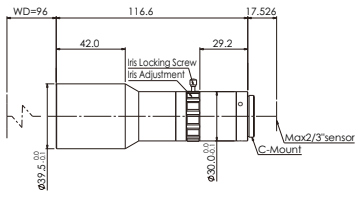
2 OPT-AS05-65C



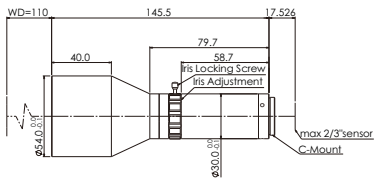
3 OPT-AS04-96A



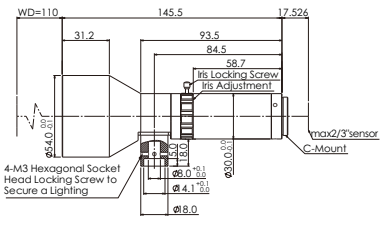
4 OPT-AS04-96A-IR



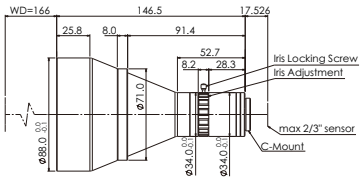
5 OPT-AS03-110A



6 OPT-AS03-110C



7 OPT-AS0166-166A



TS Series Large FOV Bi-telecentric Lenses

Product Features

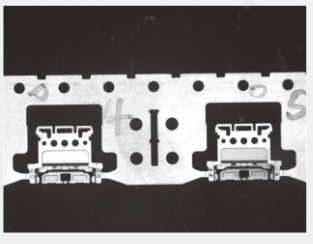
1. Max FOV up to 240mm
2. Compatible to 1/2.5"~1" C mount cameras or 4/3"~59mm F/M mount cameras
3. Bi-telecentric design, excellent imaging performance
4. Large aperture, high telecentricity, low distortion, large depth of field
5. Broad range of 42 standard models and nearly one hundred non-standard models for choices

Slection Guide

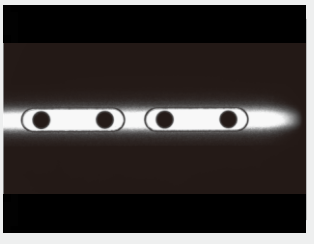
OPT-TS0188-138S-AL

- Back focal length adjustable
- Short style
- Working distance 138mm
- Magnification 0.188x
- TS series bi-telecentric lenses
- Brand name

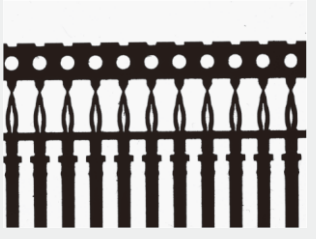
Application Examples



Metal elastic piece soldering inspection



Mobile phone back cover measurement



Connector dimension measurement

Model Table

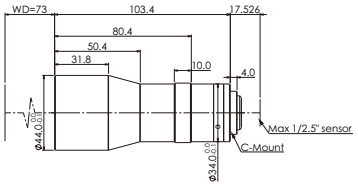
No.	Model	WD (mm) [1]	Mag. (x)	Image circle (Ømm)	Aperture (F/#) [2]	Distortion (% Max)	DOF (mm) [3]	Mount	Weight (kg)	FOV (mm×mm)			
										1/2.5"	1/1.8"	2/3"	1"
										5.7×4.2	7.2×5.4	8.4×7.1	12.4×9.8
1	OPT-TS0277-73	73±1	0.277	7.2	4.2	0.1	4.52	C	0.28	20.6×15.2	-	-	-
2	OPT-TS0346-73	73±1	0.346	9	4.6	0.1	3.17	C	0.29	16.5×12.1	20.8×15.6	-	-
3	OPT-TS0438-73	73±1	0.438	11.4	6.0	0.1	2.58	C	0.31	13×9.6	16.4×12.3	19.2×16.2	-
4	OPT-TS0638-73	73±1	0.638	16.6	8.7	0.1	1.76	C	0.35	8.9×6.6	11.3×8.5	13.2×11.1	19.4×15.4
5	OPT-TS0200-110	110±2	0.200	7.2	4.2	0.1	8.66	C	0.40	28.5×21	-	-	-
6	OPT-TS0250-110	110±2	0.250	9	4.6	0.1	6.07	C	0.41	22.8×16.8	28.8×21.6	-	-
7	OPT-TS0317-110	110±2	0.317	11.4	5.4	0.1	4.43	C	0.42	18×13.3	22.7×17	26.5×22.4	-
8	OPT-TS0460-110	110±2	0.460	16.6	7.8	0.1	3.04	C	0.47	12.4×9.1	15.7×11.7	18.3×15.4	27×21.3
9	OPT-TS0188-138S-AL	138±3	0.188	9	5.3	0.1	12.37	C	0.40	30.3×22.3	38.3×28.7	-	-
10	OPT-TS0238-138S-AL	138±3	0.238	11.4	6.7	0.1	9.76	C	0.50	24×17.7	30.3×22.7	35.3×29.8	-
11	OPT-TS0346-138S-AL	138±3	0.346	16.6	9.8	0.1	6.75	C	0.50	16.47×12.14	20.8×15.6	24.3×20.5	35.8×28.3
12	OPT-TS0113-189-AL	189±3	0.113	7.2	4.2	0.1	27.14	C	0.81	50.4×37.2	-	-	-
13	OPT-TS0140-189-AL	189±3	0.140	9	5.3	0.1	22.31	C	0.82	40.7×30	51.4×38.6	-	-
14	OPT-TS0178-189-AL	189±3	0.178	11.4	5.4	0.1	14.06	C	0.83	32×23.6	40.5×30.3	47.2×39.9	-
15	OPT-TS0258-189-AL	189±3	0.258	16.6	9.8	0.1	12.15	C	0.88	22.1×16.3	27.9×20.9	32.6×27.5	48.1×38
16	OPT-TS0090-228-AL	228±4	0.090	7.2	4.2	0.1	42.78	C	1.49	63.3×46.7	-	-	-
17	OPT-TS0113-228-AL	228±4	0.113	9	5.3	0.1	34.24	C	1.50	50.4×37.2	63.7×47.8	-	-
18	OPT-TS0142-228-AL	228±4	0.142	11.4	5.4	0.1	22.09	C	1.52	40.1×29.6	50.7×38	59.2×50	-
19	OPT-TS0206-228-AL	228±4	0.206	16.6	9.8	0.1	19.05	C	1.56	27.7×20.4	35×26.2	40.8×34.5	60.2×47.6
20	OPT-TS0072-258-AL	258±4	0.072	7.2	4.2	0.1	66.84	C	3.02	79.2×58.3	-	-	-
21	OPT-TS0090-258-AL	258±4	0.090	9	4.6	0.1	46.85	C	3.04	63.3×46.7	80×60	-	-
22	OPT-TS0114-258-AL	258±4	0.114	11.4	5.4	0.1	34.28	C	3.05	50×36.8	63.2×47.4	73.7×62.3	-
23	OPT-TS0166-258-AL	258±4	0.166	16.6	6.5	0.1	19.46	C	3.09	34.3×25.3	43.4×32.5	50.6×42.8	74.7×59
24	OPT-TS0060-280-AL	280±5	0.060	7.2	4.2	0.1	96.25	C	4.17	95×70	-	-	-
25	OPT-TS0075-280-AL	280±5	0.075	9	4.6	0.1	67.47	C	4.18	76×56	96×72	-	-
26	OPT-TS0095-280-AL	280±5	0.095	11.4	4.9	0.1	44.79	C	4.20	60×44.2	75.8×56.8	88.4×74.7	-
27	OPT-TS0138-280-AL	280±5	0.138	16.6	6.5	0.1	28.16	C	4.24	41.3×30.4	52.2×39.1	60.9×51.5	89.9×71
28	OPT-TS0048-300-AL	300±5	0.048	7.2	4.2	0.1	150.39	C	5.65	118.8×87.5	-	-	-
29	OPT-TS0060-300-AL	300±5	0.060	9	4.6	0.1	105.42	C	5.66	95×70	120×90	-	-
30	OPT-TS0076-300-AL	300±5	0.076	11.4	4.9	0.1	69.99	C	5.68	75×55.3	94.7×71.1	110.5×93.4	-
31	OPT-TS0110-300-AL	300±5	0.110	16.6	6.5	0.1	44.32	C	5.72	51.8×38.2	65.5×49.1	76.4×64.6	112.7×89.1
32	OPT-TS0060-330-AL	330±5	0.060	11.4	4.9	0.1	112.29	C	11.02	95×70	120×90	140×118.3	-
33	OPT-TS0087-330-AL	330±5	0.087	16.6	6.5	0.1	70.85	C	11.10	65.5×48.3	82.8×62.1	96.6×81.6	142.5×112.6
34	OPT-TS0048-410-AL	410±6	0.048	11.4	4.9	0.1	179.17	C	25.50	120×88.4	151.6×113.7	176.8×149.5	-
35	OPT-TS0069-410-AL	410±6	0.069	16.6	6.5	0.1	112.63	C	25.60	82.6×60.9	104.4×78.3	121.7×103	179.7×142

No.	Model	WD (mm) [1]	Mag. (x)	Image circle (Ømm)	Aperture (F/#) [2]	Distortion (% Max)	DOF (mm) [3]	Mount	Weight (kg)	FOV (mm×mm)			
										2k×10μm	4k×7μm	8k×5μm	35mm Full
										20.48	28.67	40.96	36.1×24.1
36	OPT-TS0688-189-AL	189±3	0.688	44	25.9	0.1	4.51	F	1.20	29.8	41.7	59.6	52.5×35
37	OPT-TS0550-228-AL	228±4	0.550	44	25.9	0.1	7.06	F	1.90	37.3	52.2	74.5	65.6×43.8
38	OPT-TS0440-258-AL	258±4	0.440	44	17.2	0.1	7.33	F	3.40	46.6	65.2	93.2	82.1×54.8
39	OPT-TS0367-280-AL	280±5	0.367	44	14.8	0.1	9.07	F	4.59	55.9	78.2	111.7	98.4×65.7
40	OPT-TS0293-300-AL	300±5	0.293	44	14.8	0.1	14.22	F	6.07	70	98	139.9	123.2×82.3
41	OPT-TS0230-330-AL	330±5	0.230	44	10.3	0.1	16.06	F	11.40	89.1	124.8	178.3	157×104.8
42	OPT-TS0183-410-AL	410±6	0.183	44	10.3	0.1	25.37	F	25.90	112	156.8	224.0	197.3×131.7

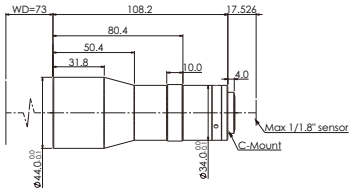
Remarks:
1. Working distance, the distance between the front end of the mechanics and the object.
2. The real F# of a lens when using. Lenses with smaller apertures can be workable.
3. At the borders of the DOF the image still can be used for measurement. But only half of the nominal DOF can get sharp images.

Dimensional Drawings [mm]

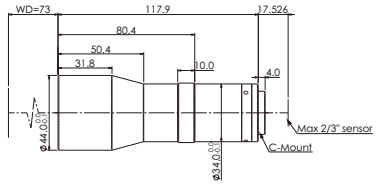
1 OPT-TS0277-73



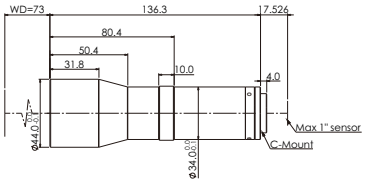
2 OPT-TS0346-73



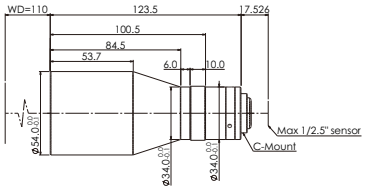
3 OPT-TS0438-73



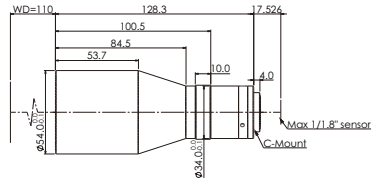
4 OPT-TS0638-73



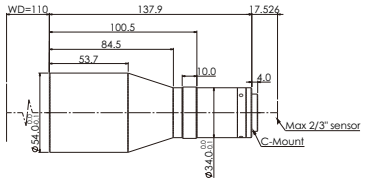
5 OPT-TS0200-110



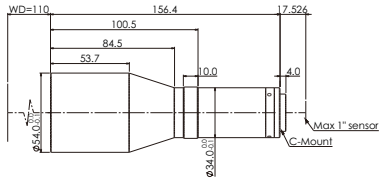
6 OPT-TS0250-110



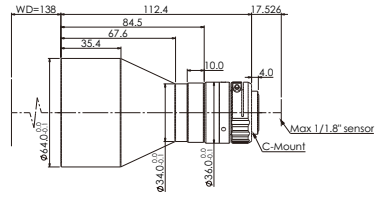
7 OPT-TS0317-110



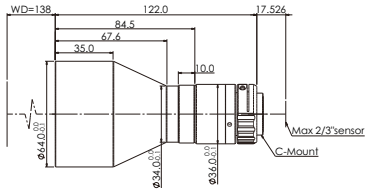
8 OPT-TS0460-110



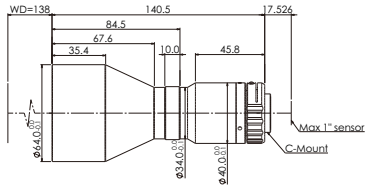
9 OPT-TS0188-138S-AL



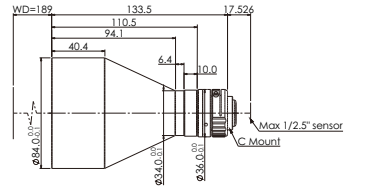
10 OPT-TS0238-138S-AL



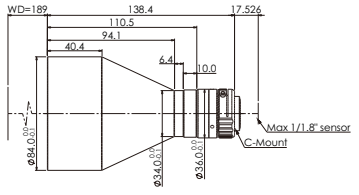
11 OPT-TS0346-138S-AL



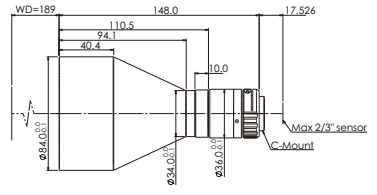
12 OPT-TS0113-189-AL



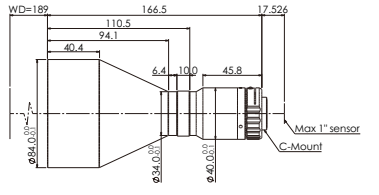
13 OPT-TS0140-189-AL



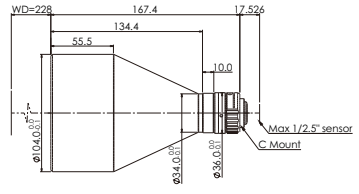
14 OPT-TS0178-189-AL



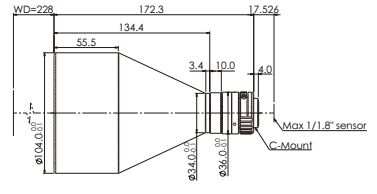
15 OPT-TS0258-189-AL



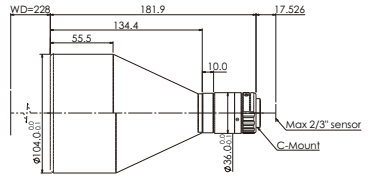
16 OPT-TS0090-228-AL



17 OPT-TS0113-228-AL

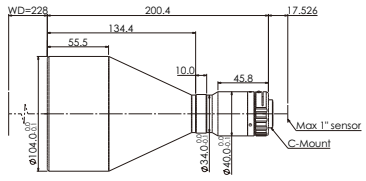


18 OPT-TS0142-228-AL

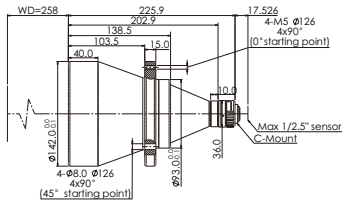


Dimensional Drawings [mm]

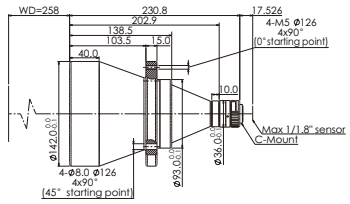
19 OPT-TS0206-228-AL



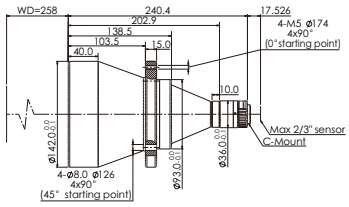
20 OPT-TS0072-258-AL



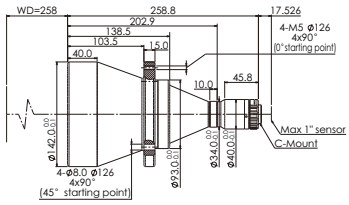
21 OPT-TS0090-258-AL



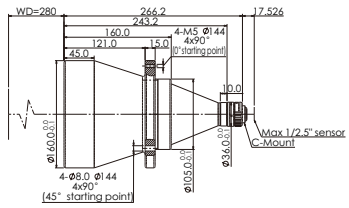
22 OPT-TS0114-258-AL



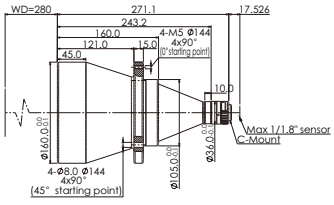
23 OPT-TS0166-258-AL



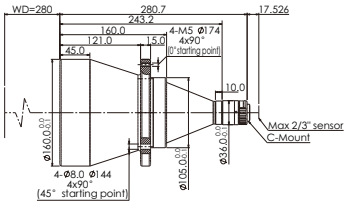
24 OPT-TS0060-280-AL



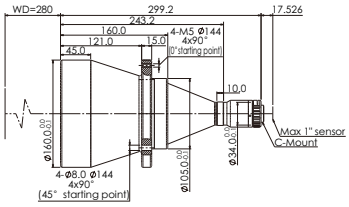
25 OPT-TS0075-280-AL



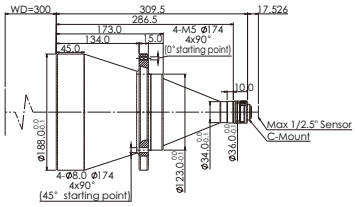
26 OPT-TS0095-280-AL



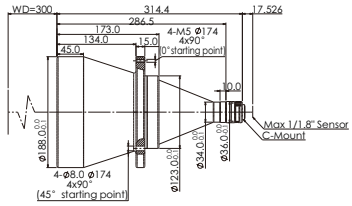
27 OPT-TS0138-280-AL



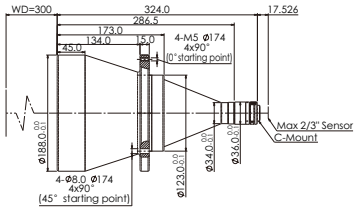
28 OPT-TS0048-300-AL



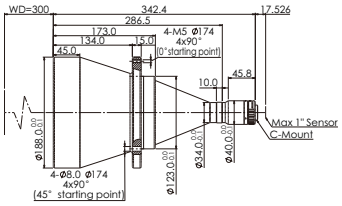
29 OPT-TS0060-300-AL



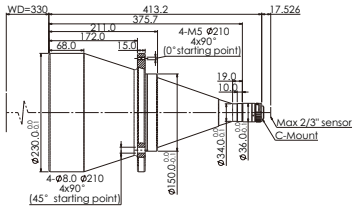
30 OPT-TS0076-300-AL



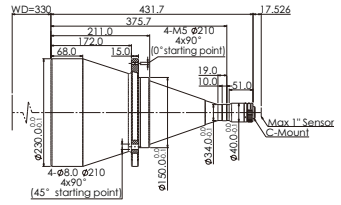
31 OPT-TS0110-300-AL



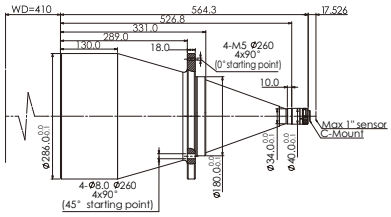
32 OPT-TS0060-330-AL



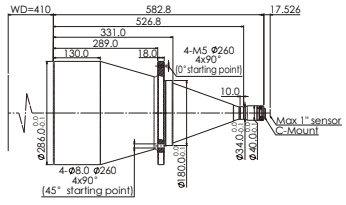
33 OPT-TS0087-330-AL



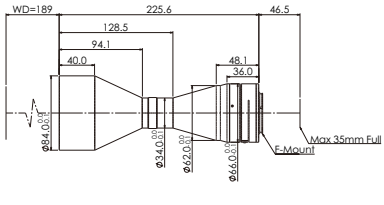
34 OPT-TS0048-410-AL



35 OPT-TS0069-410-AL

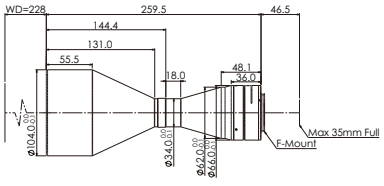


36 OPT-TS0688-189-AL

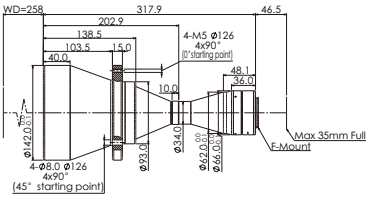


Dimensional Drawings [mm]

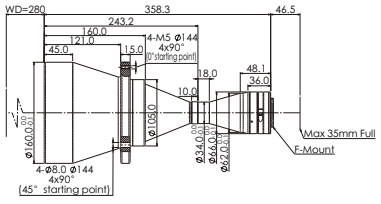
37 OPT-TS0550-228-AL



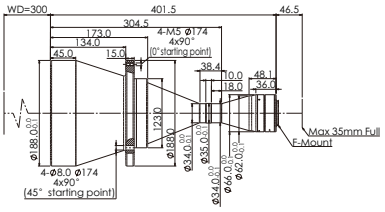
38 OPT-TS0440-258-AL



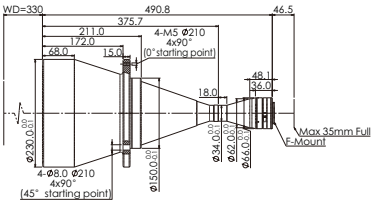
39 OPT-TS0367-280-AL



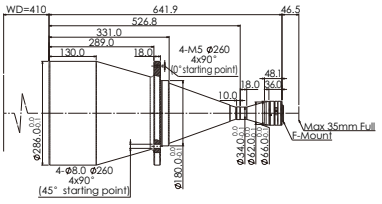
40 OPT-TS0293-300-AL



41 OPT-TS0230-330-AL



42 OPT-TS0183-410-AL



KS Series Large FOV Telecentric Lenses

Product Features

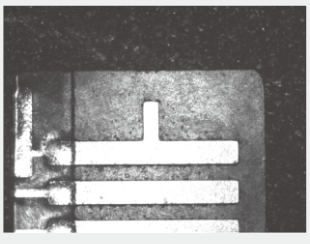
1. Low magnification, large field of view
2. High resolution, low distortion, max compatible to 1.1" sensor format camera
3. Long working distance, good for installation of lighting source
4. Object side telecentric design

Selection Guide

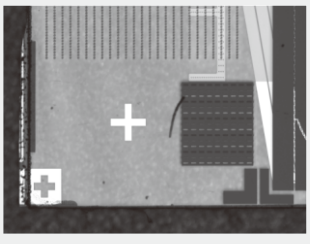
OPT-KS014-190-125

- 125 → Max support 1/2.5" sensor format
- 190 → Working distance 190mm
- 014 → Magnification 0.14x
- KS → KS series telecentric lenses
- OPT → Brand name

Application Examples



MARK point localization



LCD MARK point localization

Resolution Detection Board Imaging Result

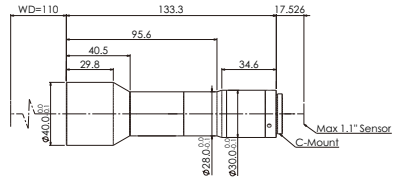
Model Table

No.	Model	WD (mm) [1]	Mag. (x)	Image circle (Ømm)	Aperture (F/#) [2]	Distortion (% Max)	DOF (mm) [3]	Mount	FOV (mm×mm)				
									1/2.5"	1/1.8"	2/3"	1"	1.1"
									5.7×4.2	7.2×5.4	8.4×7.1	12.4×9.8	14.2×10.4
1	OPT-KS10-110-111	110±2	1.0	18	7	0.13	0.58	C	5.7×4.2	7.2×5.4	8.4×7.1	12.4×9.8	14.2×10.4
2	OPT-KS10-110C-111	110±2	1.0	18	7	0.13	0.58	C	5.7×4.2	7.2×5.4	8.4×7.1	12.4×9.8	14.2×10.4
3	OPT-KS15-110-111	110±2	1.5	18	10	0.1	0.37	C	3.8×2.8	4.8×3.6	5.6×4.7	8.3×6.5	9.5×6.9
4	OPT-KS15-110C-111	110±2	1.5	18	10	0.1	0.37	C	3.8×2.8	4.8×3.6	5.6×4.7	8.3×6.5	9.5×6.9
5	OPT-KS20-110-111	110±2	2.0	18	13.5	0.1	0.28	C	2.9×2.1	3.6×2.7	4.2×3.6	6.2×4.9	7.1×5.2
6	OPT-KS20-110C-111	110±2	2.0	18	13.5	0.1	0.28	C	2.9×2.1	3.6×2.7	4.2×3.6	6.2×4.9	7.1×5.2
7	OPT-KS30-110-111	110±2	3.0	18	20.1	0.1	0.18	C	1.9×1.4	2.4×1.8	2.8×2.4	4.1×3.3	4.7×3.5
8	OPT-KS30-110C-111	110±2	3.0	18	20.1	0.1	0.18	C	1.9×1.4	2.4×1.8	2.8×2.4	4.1×3.3	4.7×3.5
9	OPT-KS03-180-118	180±2	0.3	9	8	0.1	7.33	C	19×14	24×18	-	-	-
10	OPT-KS03-180-230	180±2	0.3	11	10	0.1	9.17	C	19×14	24×18	28×23.7	-	-
11	OPT-KS014-190-125	190±2	0.14	7.2	8	0.2	33.67	C	40.7×30	-	-	-	-
12	OPT-KS022-200-230	200±3	0.22	11	10	0.1	17.05	C	25.9×19.1	32.7×24.6	38.2×32.3	-	-
13	OPT-KS0345-220-110	220±3	0.345	16	8	0.1	5.55	C	16.5×12.2	20.9×15.7	24.4×20.6	35.9×28.4	-
14	OPT-KS05-220-110	220±3	0.5	16	8	0.1	2.64	C	11.4×8.4	14.4×10.8	16.8×14.2	24.8×19.6	-
15	OPT-KS022-220-111	220±3	0.22	18	8	0.1	13.64	C	25.9×19.1	32.7×24.6	38.2×32.3	56.4×44.6	64.6×47.3

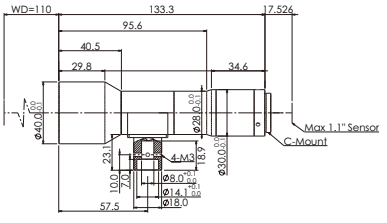
Remarks:
1. Working distance, the distance between the front end of the mechanics and the object.
2. The real F# of a lens when using. Lenses with smaller apertures can be workable.
3. At the borders of the DOF the image still can be used for measurement. But only half of the nominal DOF can get sharp images.

Dimensional Drawings [mm]

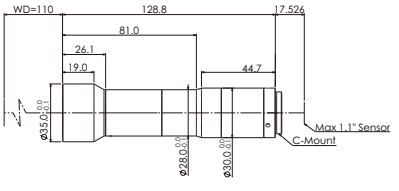
1 OPT-KS10-110-111



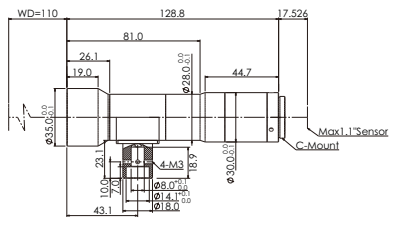
2 OPT-KS10-110C-111



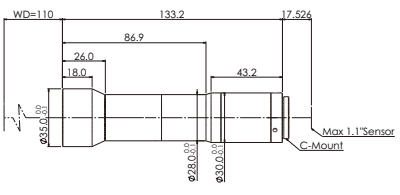
3 OPT-KS15-110-111



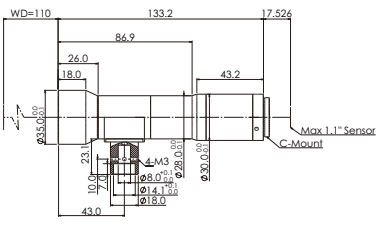
4 OPT-KS15-110C-111



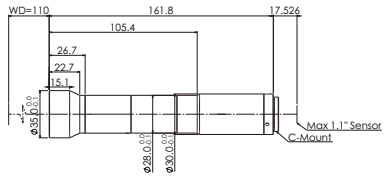
5 OPT-KS20-110-111



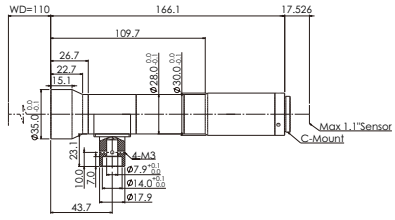
6 OPT-KS20-110C-111



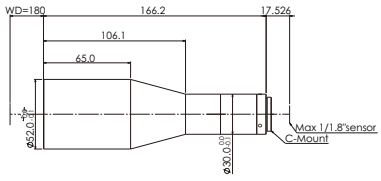
7 OPT-KS30-110-111



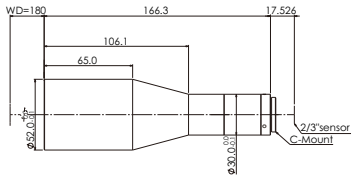
8 OPT-KS30-110C-111



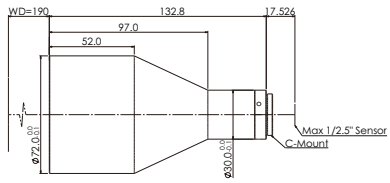
9 OPT-KS03-180-118



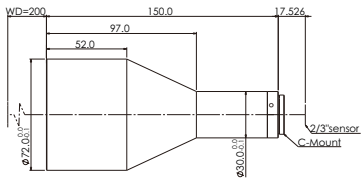
10 OPT-KS03-180-230



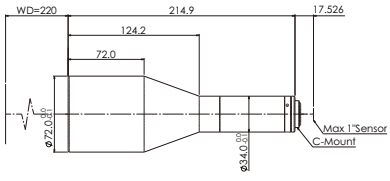
11 OPT-KS014-190-125



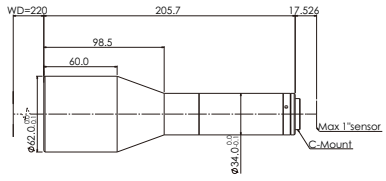
12 OPT-KS022-200-230



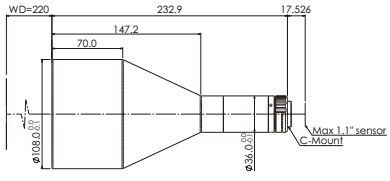
13 OPT-KS0345-220-110



14 OPT-KS05-220-110



15 OPT-KS022-220-111

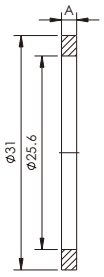


Lens Accessories

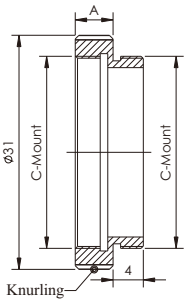
To optimize the performance of lenses in applications, we usually need to use lens together with lens accessories. OPT supplies various lens accessories, including extension tube, extension tube for line scan lens, adaptor, filter, and so on.

Extension Tube

For most standard lenses, there is always a minimum object distance (MOD) below which focusing becomes impossible. Adding an extension tube between the lens and the camera increases the back focal length, making it possible to reduce the MOD. This also increases the magnification of the lens or, in other words, reduces the FOV.



Drawing 1



Drawing 2

Selection Guide

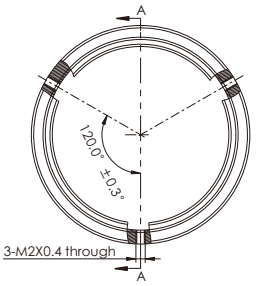
OPT-ETB-CE1

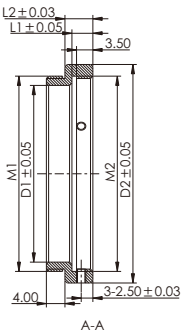
- Length = 1mm
- C mount
- Extension tube
- Brand name

Table 1

Model	Size A (mm)	Thread	Mount
OPT-ETB-CE1	1		C-mount (drawing 1)
OPT-ETB-CE2	2		C-mount (drawing 1)
OPT-ETB-CE5	5	1-32UNF	C-mount (drawing 2)
OPT-ETB-CE10	10	1-32UNF	C-mount (drawing 2)
OPT-ETB-CE20	20	1-32UNF	C-mount (drawing 2)
OPT-ETB-CE30	30	1-32UNF	C-mount (drawing 2)

Extension Tube For Line Scan Lens





Selection Guide

OPT-ETB-M42E6

- Length 6mm
- M42-mount
- Extension tube for line scan lens
- Brand name

Table 2

Model	D1	D2	M1	M2	L1	L2
OPT-ETB-M42E6	Ø38	Ø47	M42*1	M42*1	4.5mm	6mm
OPT-ETB-M42E6.5	Ø38	Ø47	M42*1	M42*1	4.5mm	6.5mm
OPT-ETB-M42E8	Ø38	Ø47	M42*1	M42*1	6mm	8mm
OPT-ETB-M42E10	Ø38	Ø47	M42*1	M42*1	8.5mm	10mm
OPT-ETB-M42E15	Ø38	Ø47	M42*1	M42*1	13mm	15mm
OPT-ETB-M42E25	Ø38	Ø47	M42*1	M42*1	23mm	25mm
OPT-ETB-M42E50	Ø38	Ø47	M42*1	M42*1	48mm	50mm
OPT-ETB-M42E75	Ø38	Ø47	M42*1	M42*1	73mm	75mm
OPT-ETB-M42E100	Ø38	Ø47	M42*1	M42*1	98mm	100mm
OPT-ETB-M58E6	Ø54	Ø62	M58*0.75	M58*0.75	4.5mm	6mm
OPT-ETB-M58E6.5	Ø54	Ø62	M58*0.75	M58*0.75	4.5mm	6.5mm
OPT-ETB-M58E8	Ø54	Ø62	M58*0.75	M58*0.75	6mm	8mm
OPT-ETB-M58E10	Ø54	Ø62	M58*0.75	M58*0.75	8.5mm	10mm
OPT-ETB-M58E15	Ø54	Ø62	M58*0.75	M58*0.75	13mm	15mm
OPT-ETB-M58E25	Ø54	Ø62	M58*0.75	M58*0.75	23mm	25mm
OPT-ETB-M58E50	Ø54	Ø62	M58*0.75	M58*0.75	48mm	50mm
OPT-ETB-M58E75	Ø54	Ø62	M58*0.75	M58*0.75	73mm	75mm
OPT-ETB-M58E100	Ø54	Ø62	M58*0.75	M58*0.75	98mm	100mm
OPT-ETB-M72E6	Ø68	Ø76	M72*0.75	M72*0.75	4.5mm	6mm
OPT-ETB-M72E6.5	Ø68	Ø76	M72*0.75	M72*0.75	4.5mm	6.5mm
OPT-ETB-M72E8	Ø68	Ø76	M72*0.75	M72*0.75	6mm	8mm
OPT-ETB-M72E10	Ø68	Ø76	M72*0.75	M72*0.75	8.5mm	10mm
OPT-ETB-M72E15	Ø68	Ø76	M72*0.75	M72*0.75	13mm	15mm
OPT-ETB-M72E25	Ø68	Ø76	M72*0.75	M72*0.75	23mm	25mm
OPT-ETB-M72E50	Ø68	Ø76	M72*0.75	M72*0.75	48mm	50mm
OPT-ETB-M72E75	Ø68	Ø76	M72*0.75	M72*0.75	73mm	75mm
OPT-ETB-M72E100	Ø68	Ø76	M72*0.75	M72*0.75	98mm	100mm

Adaptor for Lens

Selection Guide

OPT-ADP-M42M58
- M58-mount
- M42-mount
- Adaptor
- Brand name

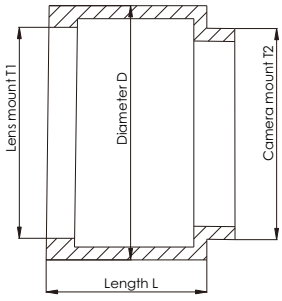


Table 3

Model	Lens mount T1	Camera mount T2	Diameter	Length
OPT-ADP-M42M58	M42*1.0	M58*0.75	φ62mm	8mm
OPT-ADP-M58M72	M58*0.75	M72*0.75	φ76mm	8mm
OPT-ADP-M42M72	M42*1.0	M72*0.75	φ76mm	8mm
OPT-ADP-FM42	F-mount	M42*1.0	φ60mm	34.4mm
OPT-ADP-FM58	F-mount	M58*0.75	φ60mm	34.1mm
OPT-ADP-V38M42	V38-mount	M42*1.0	φ48.5mm	18-23mm
OPT-ADP-V58M58	V58-mount	M58*0.75	φ71.5mm	31.5-39.5mm
OPT-ADP-V58M72	V58-mount	M72*0.75	φ76mm	31.5-39.5mm

Polarizer for Lens

Polarizers are used to reduce surface reflections. They let through 99% of the light in the polarization direction pass.

Selection Guide

OPT-PPZ 27
- Thread size
- Polarizer
- Brand name

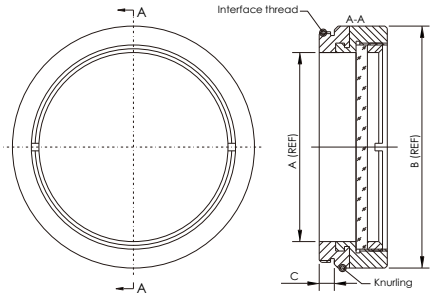
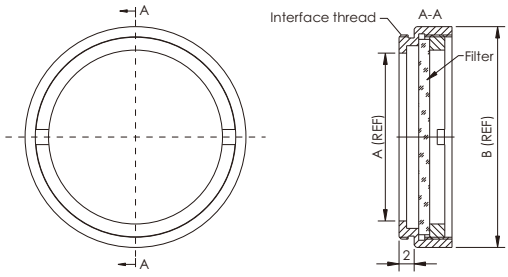


Table 4: Polarizer parameters

Thread code	Mode	Size A	Size B	Size C
27	M27×0.5	Φ21.5	Φ28.5	2
30.5	M30.5×0.5	Φ25	Φ32	2
37.5	M37.5×0.5	Φ32	Φ39	2
40.5	M40.5×0.5	Φ35	Φ42	2
58	M58×0.75	Φ52.5	Φ59.5	3
62	M62×0.75	Φ56.5	Φ63.5	3
77	M77×0.75	Φ71.5	Φ78.5	3

Optical Filter

Filter is to pass or block chosen wavelength light.
It can highlight or restrain the color features of objects.
Filter is usually installed on the lens front end.



Selection Guide

OPT-PLG 27-R 625-630
- Passable wavelength
- Passable color
- Thread size
- Filter
- Brand name

Please refer to table 5 and table 6 for details of passable wavelength and thread size.

Table 5: Parameter 1 - Passable Wavelength

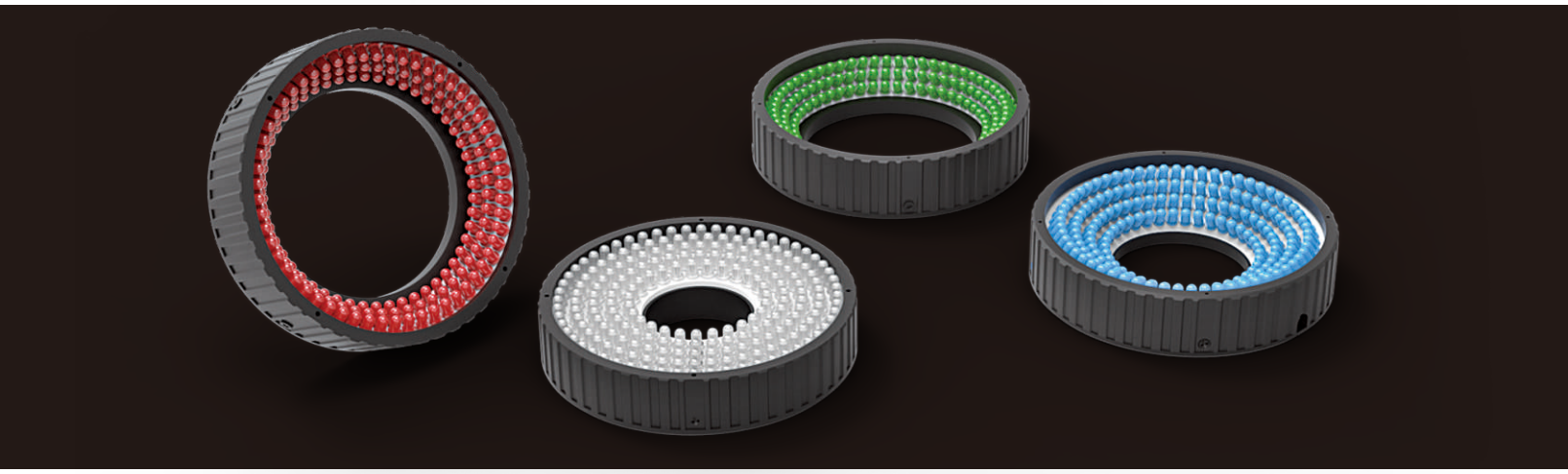
Model code	Passable Wavelength (nm)	Transmittance	Description
B465-470	465-470	⩾90%	pass blue light
G525-530	525-530	⩾90%	pass green light
R625-630	625-630	⩾90%	pass red light
Y585-590	585-590	⩾90%	pass yellow light
UV365	365	⩾90%	pass UV light
IR850	850	⩾90%	pass IR light

Table 6: Parameter 2 - Thread Size

Thread code	Thread size	Size A	Size B
27	M27×0.5	Φ22.2	Φ29.2
30.5	M30.5×0.5	Φ25.7	Φ32.7
37.5	M37.5×0.5	Φ32.7	Φ39.7
40.5	M40.5×0.5	Φ35.7	Φ42.7
58	M58×0.75	Φ53.2	Φ60.2
62	M62×0.75	Φ57.2	Φ64.2
77	M77×0.75	Φ72.2	Φ79.2

OPT Lights

Ring Lights OPT-RI Series



Product Features

1. Ring lights can emit light from different angles and highlight three-dimensional information of an object
2. The design of the light enclosure enlarges the area for heat transfer. This keeps the device cool and extends its life span.
3. Diffusers can be selected according to the different requirements of the application.

Application Cases

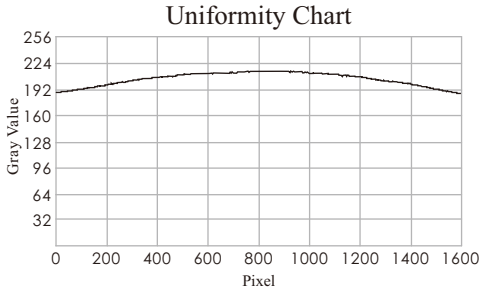
- PCB & plastic containers
- Electronic components, OCR on integrated circuits
- Microscope illumination, surface inspection
- Calibration

Selection Guide

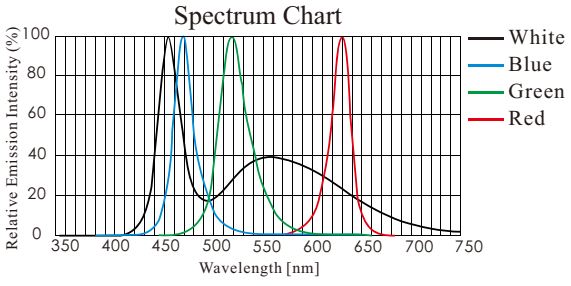
OPT-RI12000

- Emitting angle
- Outer diameter
- Ring light
- Brand name

Uniformity Chart



Spectrum Chart



Customization Options


Emitting angle


Color


Sectional control


Size


Mounting


Connector

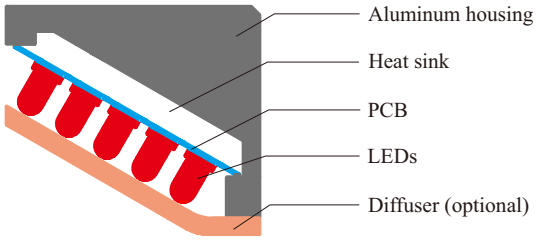
Special diffuser is available for a more uniform illumination


Transparent diffuser


Uniformity diffuser

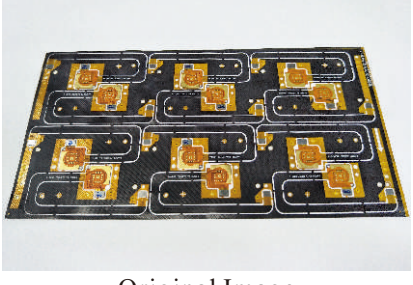

Standard diffuser

Section Structure Drawing

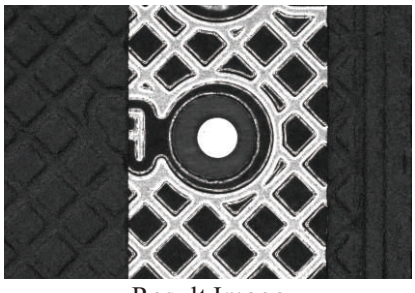


Application Example

FPC mark point localization


Original Image


Illuminated


Result Image

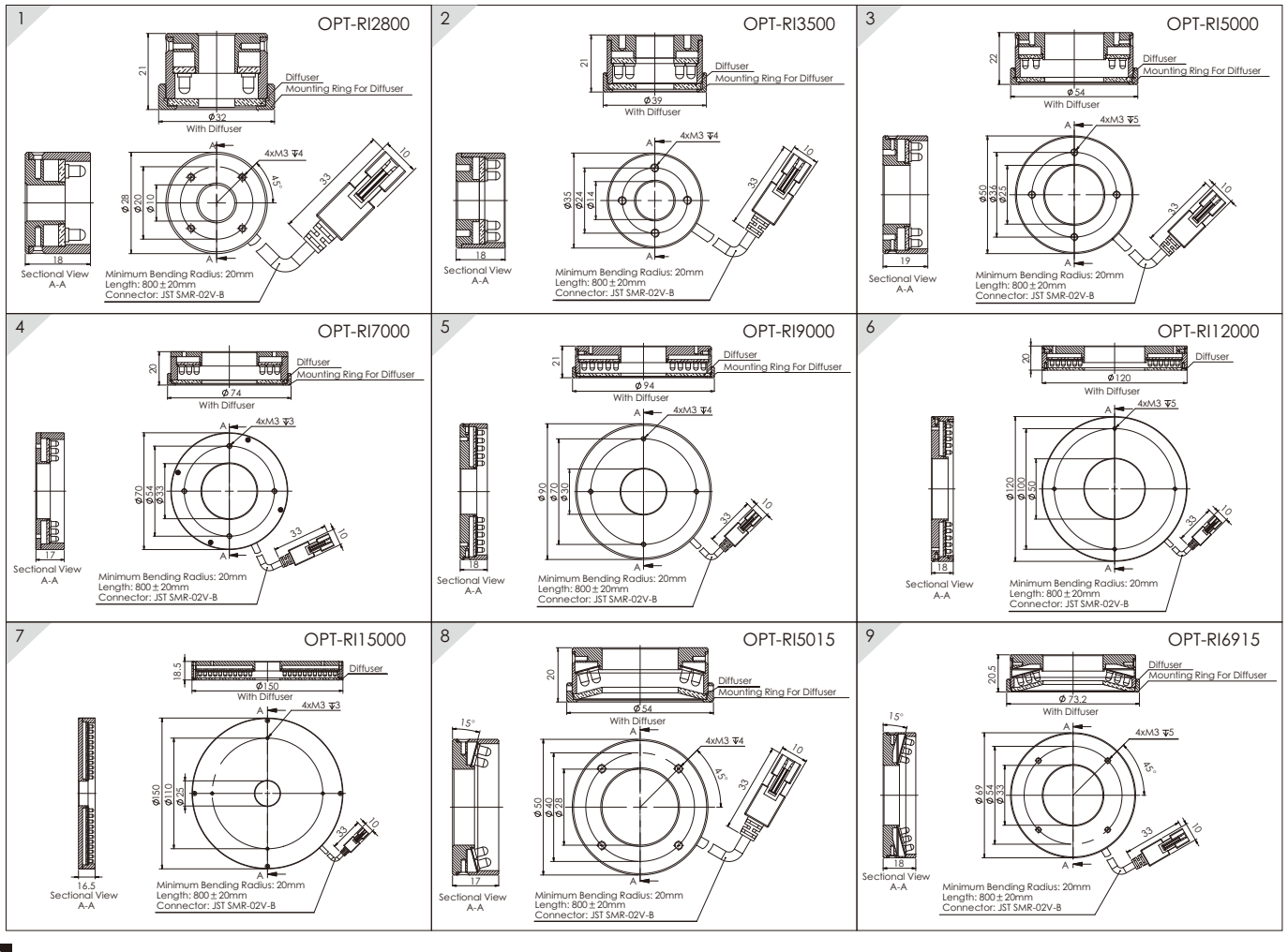
Model Table

No.	Model	Output 🔴	Output ⚪🟢🔵	Recommended controller	Emitting angle[1]
1	OPT-RI2800	24V/0.2W	24V/0.5W	OPT-DPA1024E	0°
2	OPT-RI3500	24V/0.7W	24V/1.4W	OPT-DPA1024E	
3	OPT-RI5000	24V/0.7W	24V/1.9W	OPT-DPA1024E	
4	OPT-RI7000	24V/1.4W	24V/3.2W	OPT-DPA1024E	
5	OPT-RI9000	24V/3.5W	24V/6.2W	OPT-DPA1024E	
6	OPT-RI12000	24V/3.4W	24V/8W	OPT-DPA1024E	
7	OPT-RI15000	24V/7W	24V/18W	OPT-DPA1024E	
8	OPT-RI5015	24V/1.4W	24V/3W	OPT-DPA1024E	15°
9	OPT-RI6915	24V/2.7W	24V/3.8W	OPT-DPA1024E	
10	OPT-RI9215	24V/2.1W	24V/4.7W	OPT-DPA1024E	
11	OPT-RI10015	24V/4.4W	24V/7.6W	OPT-DPA1024E	
12	OPT-RI3220	24V/0.7W	24V/0.8W	OPT-DPA1024E	20°
13	OPT-RI2825	24V/0.2W	24V/0.5W	OPT-DPA1024E	25°
14	OPT-RI4225	24V/0.4W	24V/1.2W	OPT-DPA1024E	
15	OPT-RI5030	24V/0.6W	24V/1.7W	OPT-DPA1024E	30°
16	OPT-RI7030	24V/1.3W	24V/3.1W	OPT-DPA1024E	
17	OPT-RI9030	24V/2.3W	24V/5.3W	OPT-DPA1024E	
18	OPT-RI12030	24V/3.8W	24V/11W	OPT-DPA1024E	
19	OPT-RI15030	24V/4.3W	24V/10W	OPT-DPA1024E	
20	OPT-RI18030	24V/10W	24V/18.5W	OPT-DPA1024E	
21	OPT-RI5045	24V/0.9W	24V/2.3W	OPT-DPA1024E	45°

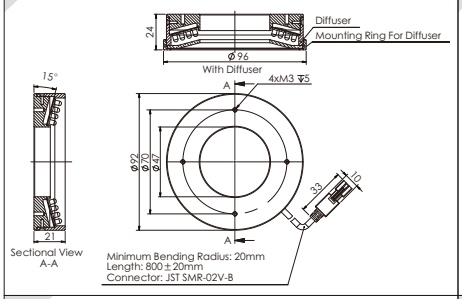
No	Model	Output 🔴	Output ⚪🟢🔵	Recommended controller	Emitting angle[1]
22	OPT-RI7045	24V/1.5W	24V/4.2W	OPT-DPA1024E	45°
23	OPT-RI9045	24V/1.9W	24V/4.8W	OPT-DPA1024E	
24	OPT-RI12045	24V/3.5W	24V/8W	OPT-DPA1024E	
25	OPT-RI15045	24V/4.6W	24V/11.3W	OPT-DPA1024E	
26	OPT-RI7060	24V/1.6W	24V/3.8W	OPT-DPA1024E	60°
27	OPT-RI9060	24V/1.9W	24V/4.8W	OPT-DPA1024E	
28	OPT-RI12060	24V/4W	24V/10.4W	OPT-DPA1024E	
29	OPT-RI15060	24V/4.4W	24V/11W	OPT-DPA1024E	
30	OPT-RI18060	24V/5.5W	24V/13.W	OPT-DPA1024E	
31	OPT-RI27270	24V/3.6W	24V/6.8W	OPT-DPA1024E	70°
32	OPT-RI5080	24V/1.2W	24V/1.6W	OPT-DPA1024E	80°
33	OPT-RI10080	24V/1.7W	24V/3.9W	OPT-DPA1024E	
34	OPT-RI12080	24V/5.3W	24V/8.1W	OPT-DPA1024E	
35	OPT-RI27280	24V/6W	24V/11W	OPT-DPA1024E	
36	OPT-RI5090	24V/0.5W	24V/0.8W	OPT-DPA1024E	90°
37	OPT-RI7090	24V/0.4W	24V/1.3W	OPT-DPA1024E	
38	OPT-RI9090	24V/0.8W	24V/1.3W	OPT-DPA1024E	
39	OPT-RI12090	24V/1.8W	24V/2.2W	OPT-DPA1024E	
40	OPT-RI15090	24V/2W	24V/2.9W	OPT-DPA1024E	
41	OPT-RI18090	24V/1.4W	24V/3.2W	OPT-DPA1024E	

Remarks:
[1] Emitting angle is the angle between LED mounting direction and vertical direction

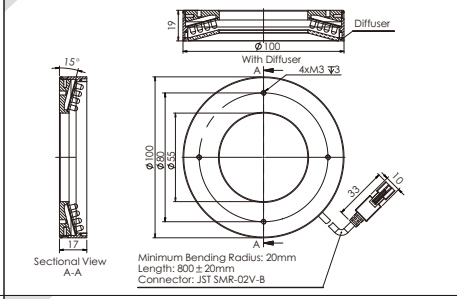
Dimensional Drawings [mm]



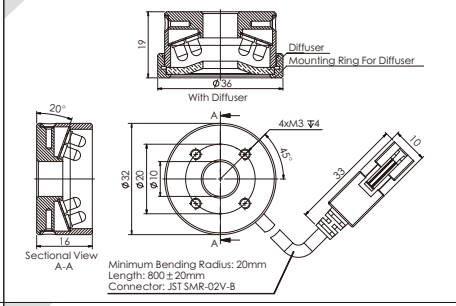
10 OPT-RI9215



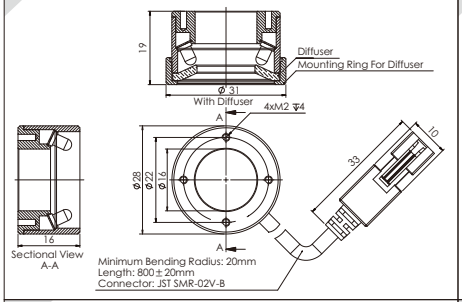
11 OPT-RI10015



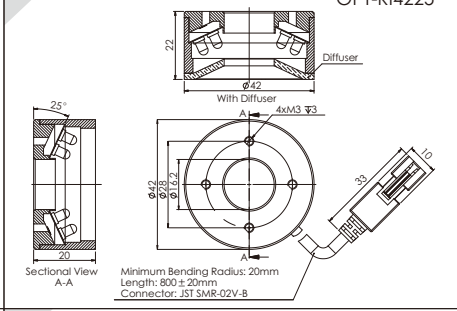
12 OPT-RI3220



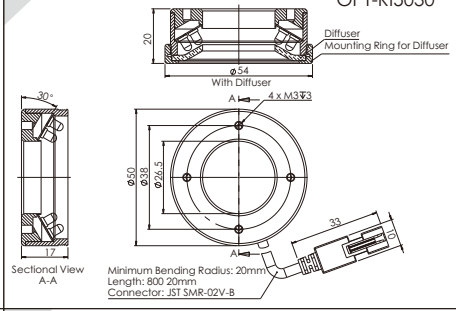
13 OPT-RI2825



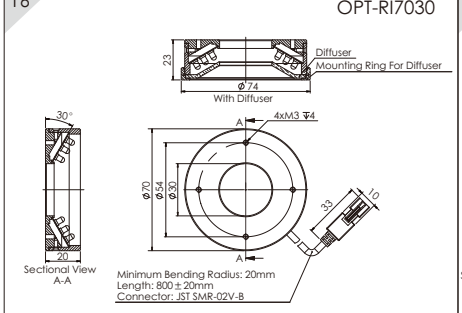
14 OPT-RI4225



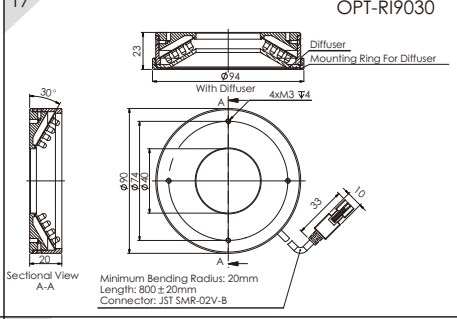
15 OPT-RI5030



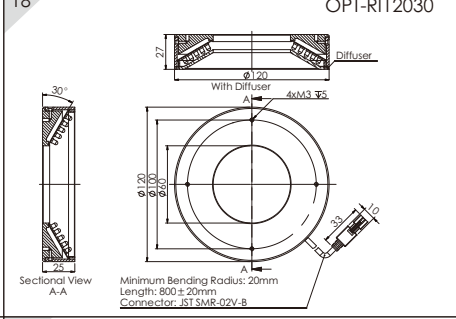
16 OPT-RI7030



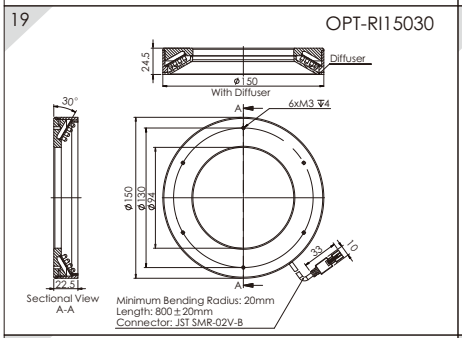
17 OPT-RI9030



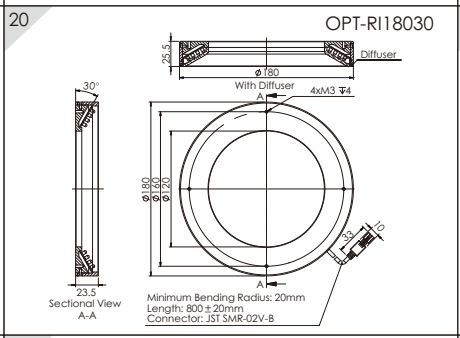
18 OPT-RI12030



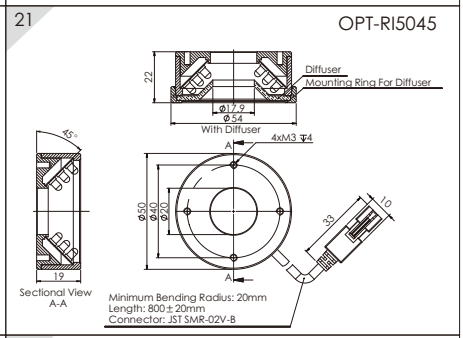
19 OPT-RI15030



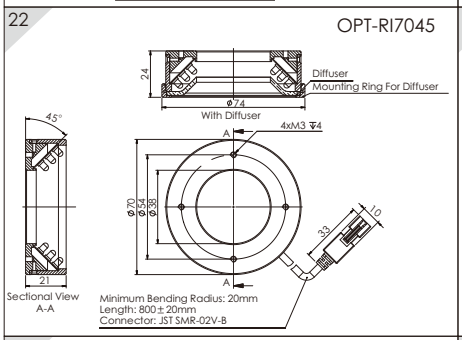
20 OPT-RI18030



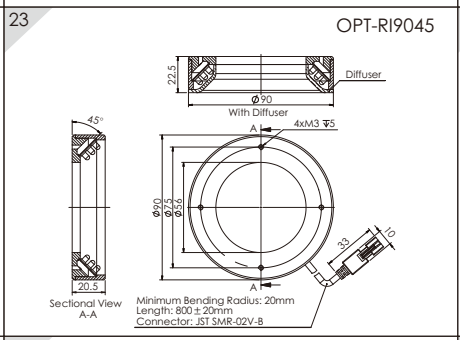
21 OPT-RI5045



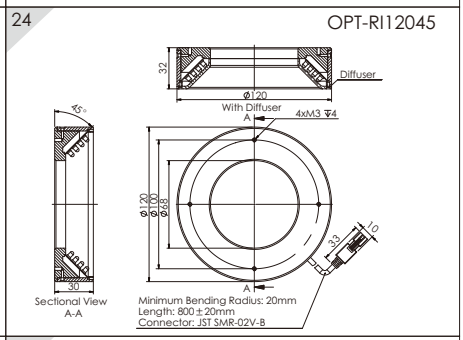
22 OPT-RI7045



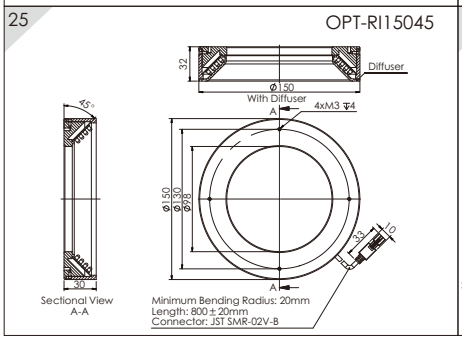
23 OPT-RI9045



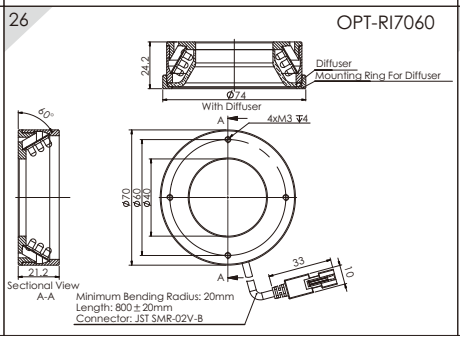
24 OPT-RI12045



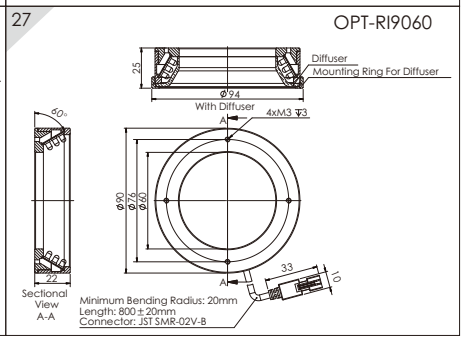
25 OPT-RI15045



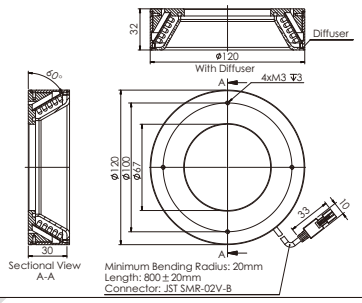
26 OPT-RI7060



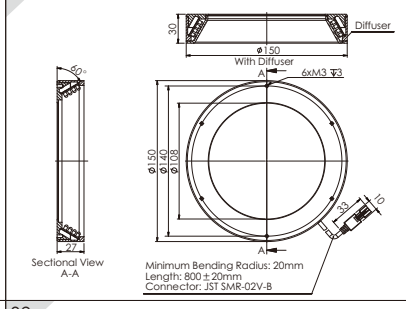
27 OPT-RI9060



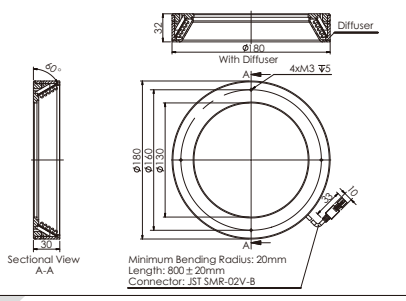
28 OPT-RI12060



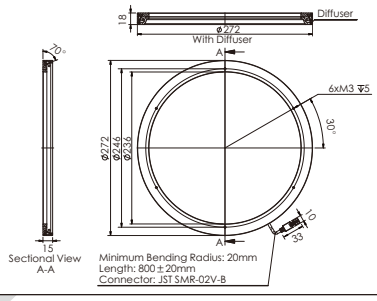
29 OPT-RI15060



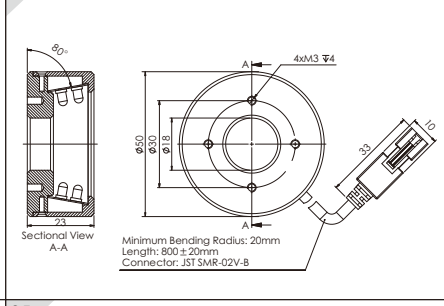
30 OPT-RI18060



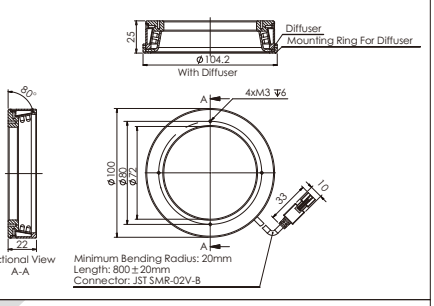
31 OPT-RI27270



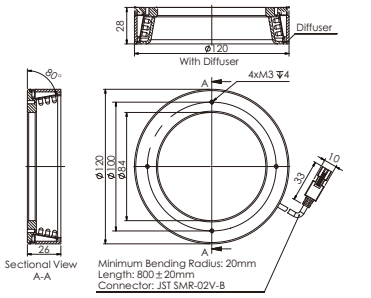
32 OPT-RI5080



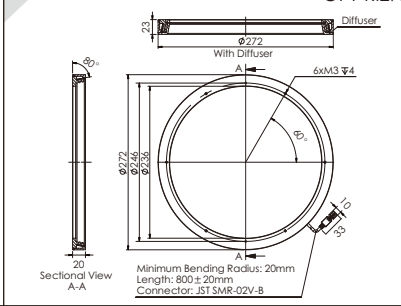
33 OPT-RI10080



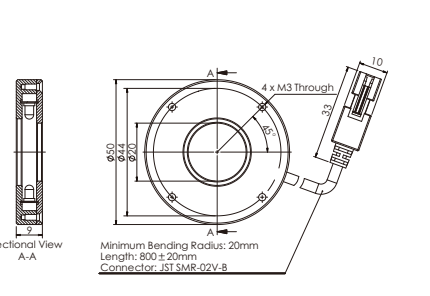
34 OPT-RI12080



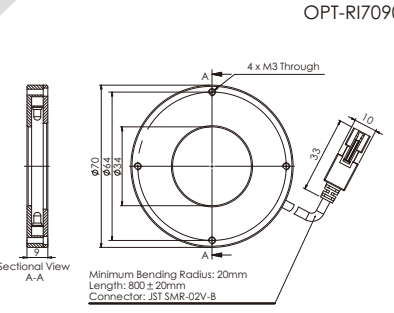
35 OPT-RI27280



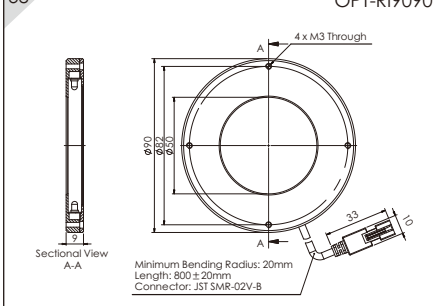
36 OPT-RI5090



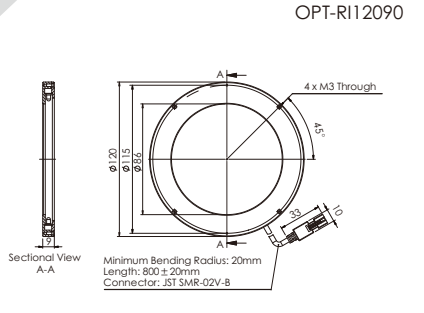
37 OPT-RI7090



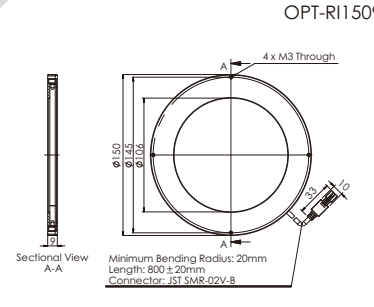
38 OPT-RI9090



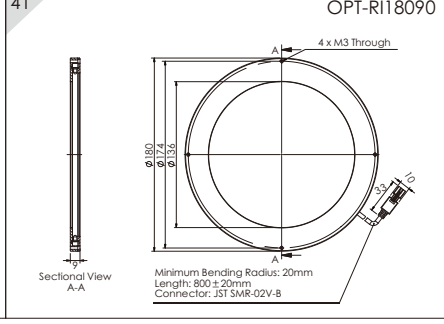
39 OPT-RI12090



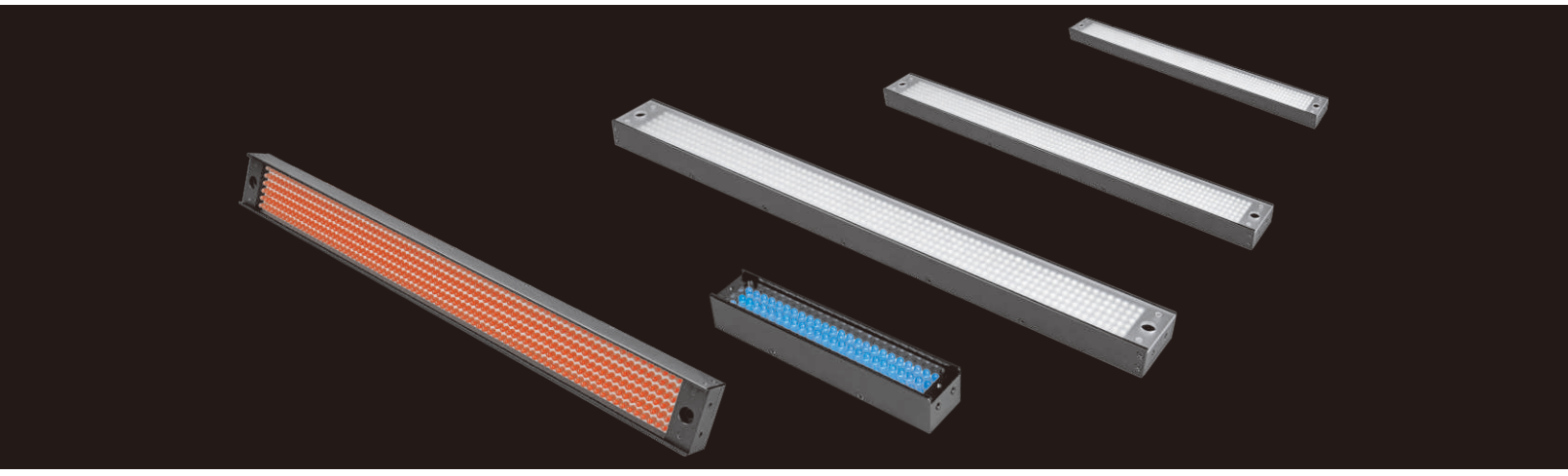
40 OPT-RI15090



41 OPT-RI18090



Bar Lights OPT-LI Series



Product Features

1. Best choice for the cost-effective inspection of large objects
2. Illumination angle can be adjusted according to your requirements
3. Various colors can be combined to satisfy different demands; easy for customization of size and colors.

Application Cases

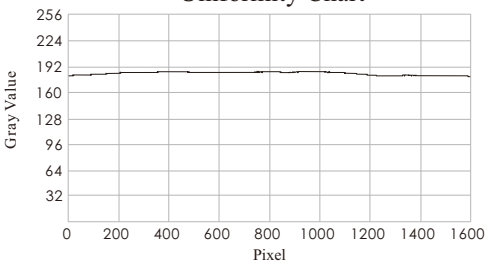
- Metal surface inspection
- Image scan
- Surface crack detection
- LCD panel inspection, etc.

Selection Guide

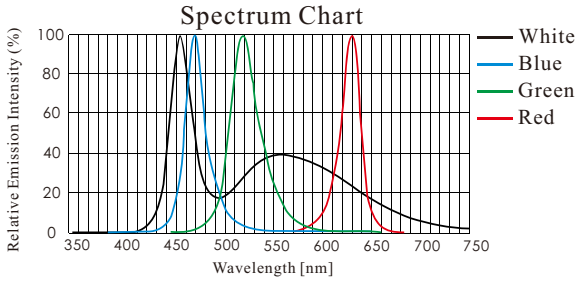
OPT-LI58041

- Width
- Length
- Bar Light
- Brand name

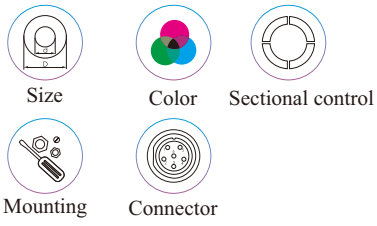
Uniformity Chart



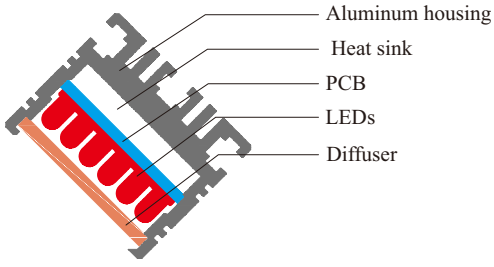
Spectrum Chart



Customization Options

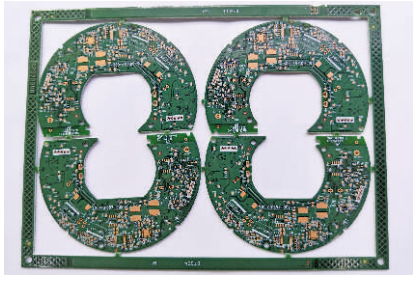


Section Structure Drawing



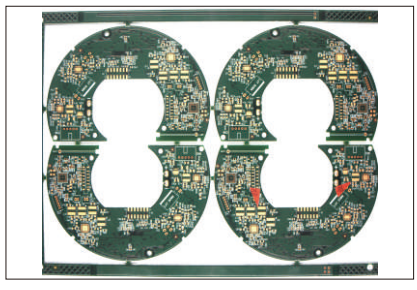
Application Example

PCB board localization and detection



Original Image

Illuminated



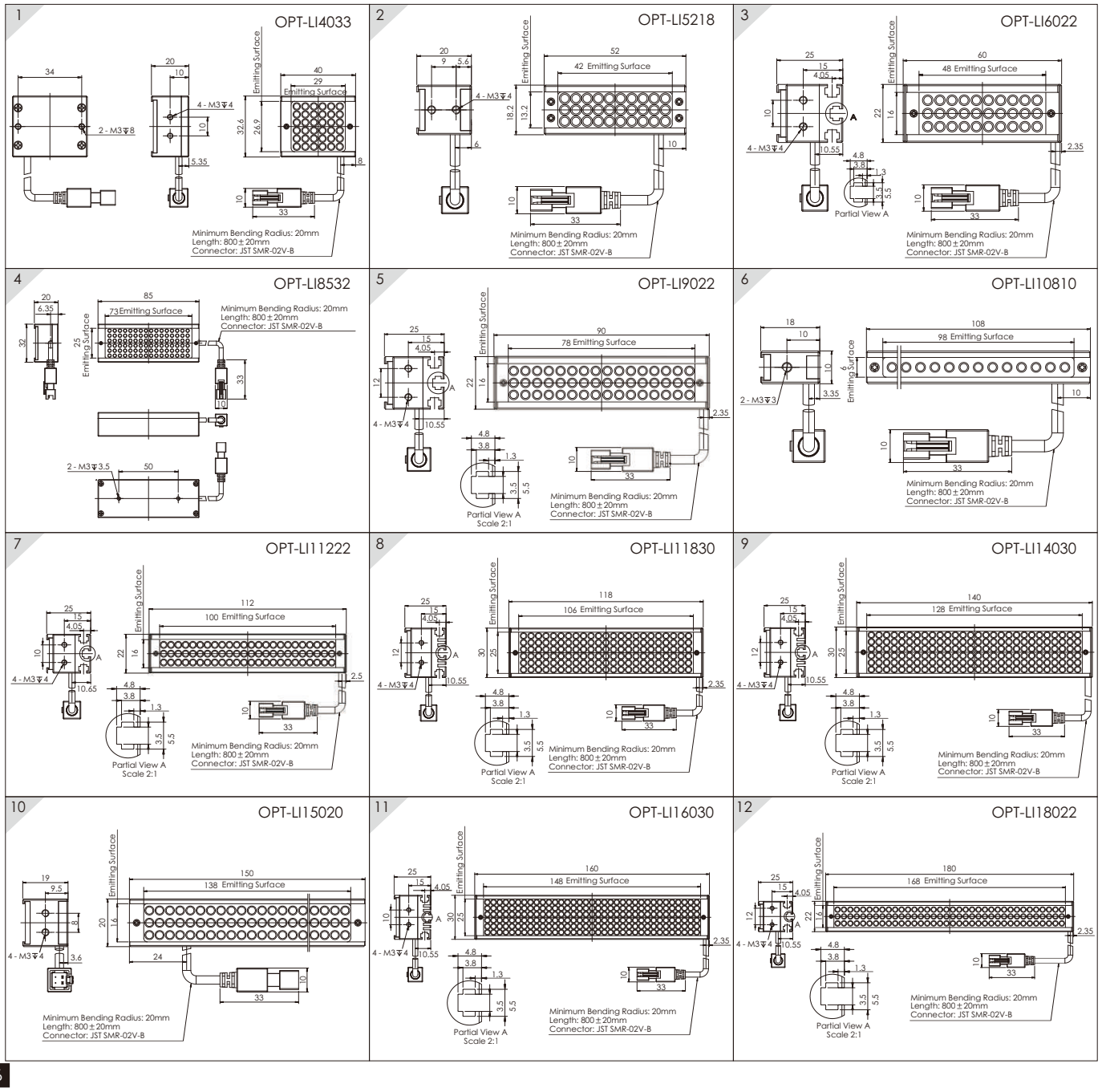
Result Image

Model Table

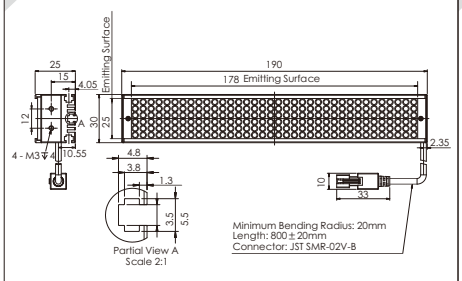
No.	Model	Output 🔴	Output ○🟢🔵	Recommended controller
1	OPT-LI4033	24V/0.5W	24V/1.6W	OPT-DPA1024E
2	OPT-LI5218	24V/0.8W	24V/1.8W	OPT-DPA1024E
3	OPT-LI6022	24V/0.7W	24V/1.8W	OPT-DPA1024E
4	OPT-LI8532	24V/1.2W	24V/2.8W	OPT-DPA1024E
5	OPT-LI9022	24V/0.6W	24V/2.8W	OPT-DPA1024E
6	OPT-LI10810	24V/0.4W	24V/0.8W	OPT-DPA1024E
7	OPT-LI11222	24V/1.4W	24V/3.8W	OPT-DPA1024E
8	OPT-LI11830	24V/2.8W	24V/4.8W	OPT-DPA1024E
9	OPT-LI14030	24V/3.6W	24V/5.5W	OPT-DPA1024E
10	OPT-LI15020	24V/1.2W	24V/2.8W	OPT-DPA1024E
11	OPT-LI16030	24V/2.2W	24V/6.5W	OPT-DPA1024E

No	Model	Output 🔴	Output ○🟢🔵	Recommended controller
12	OPT-LI18022	24V/1.4W	24V/6W	OPT-DPA1024E
13	OPT-LI19030	24V/4.1W	24V/7.9W	OPT-DPA1024E
14	OPT-LI21222	24V/2.6W	24V/4.6W	OPT-DPA1024E
15	OPT-LI23034	24V/7W	24V/8.5W	OPT-DPA1024E
16	OPT-LI25030	24V/6.6W	24V/10.8W	OPT-DPA1024E
17	OPT-LI27022	24V/4.2W	24V/6.4W	OPT-DPA1024E
18	OPT-LI33037	24V/4.6W	24V/12W	OPT-DPA1024E
19	OPT-LI35030	24V/8.6W	24V/13.6W	OPT-DPA1024E
20	OPT-LI38037	24V/5.9W	24V/13.2W	OPT-DPA1024E
21	OPT-LI48031	24V/12.5W	24V/12.7W	OPT-DPA1024E
22	OPT-LI58041	24V/9.1W	24V/26.4W	OPT-DPA2024E

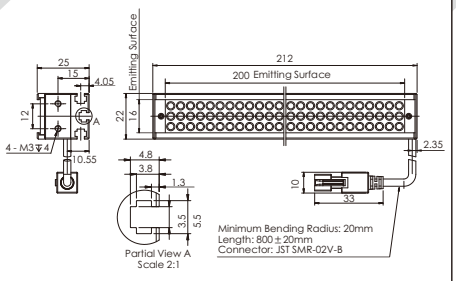
Dimensional Drawings [mm]



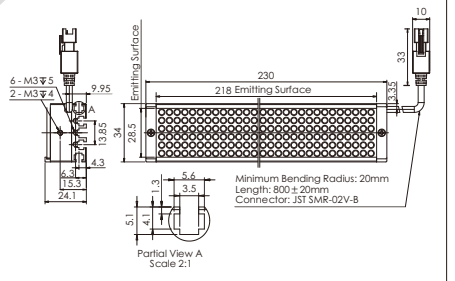
13 OPT-LI19030



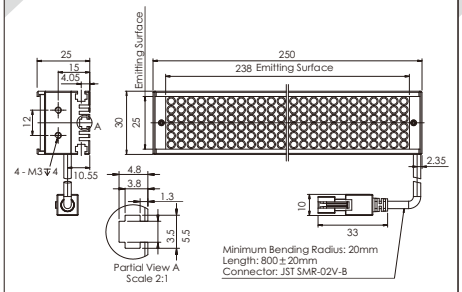
14 OPT-LI21222



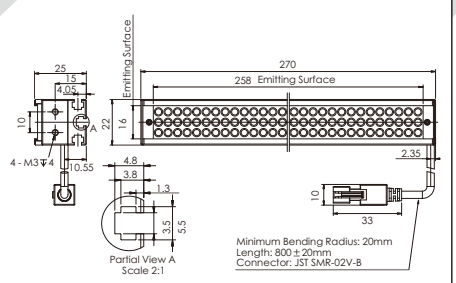
15 OPT-LI23034



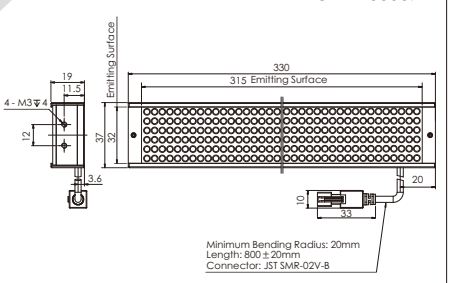
16 OPT-LI25030



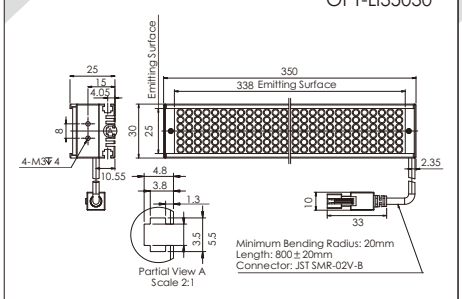
17 OPT-LI27022



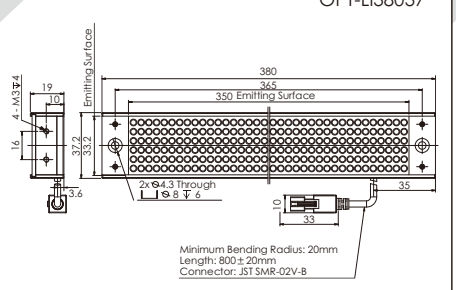
18 OPT-LI33037



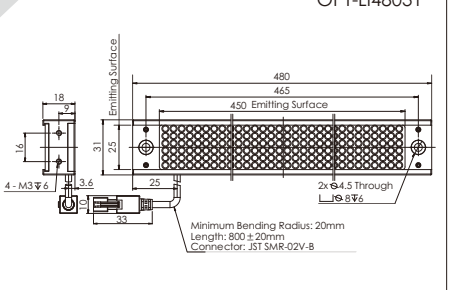
19 OPT-LI35030



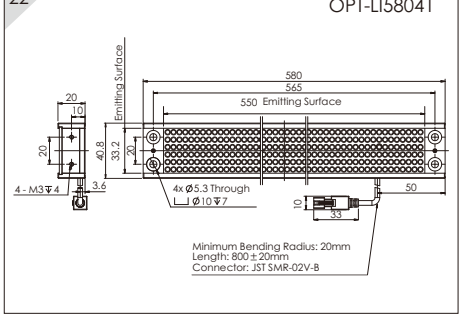
20 OPT-LI38037



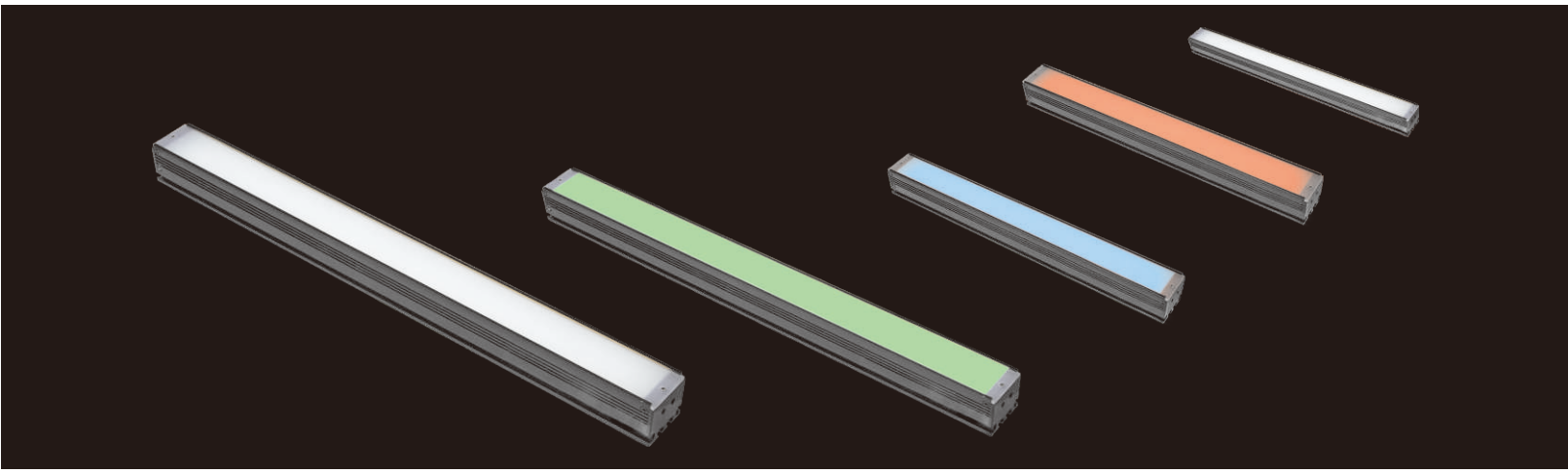
21 OPT-LI48031



22 OPT-LI58041



High Uniformity Bar Lights OPT-LIT Series



Product Features

1. High uniformity
2. Dimension of emitting surface for standard lights can be made up to 2000 mm
3. Can be installed by M3 threaded hole , and also can be installed in the three extrusion slots by inserting the M3 nut

Application Cases

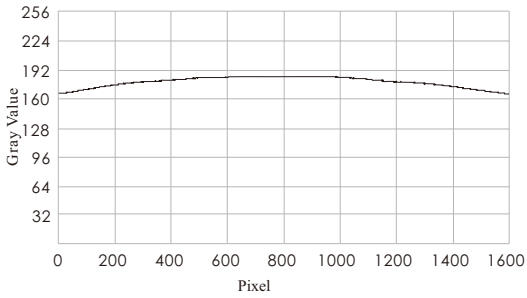
- Electronic components identification & inspection
- Apparel & textiles, food package inspection
- Print inspection, light source for light box
- Household appliances inspection, replacement of fluorescent lamps

Selection Guide

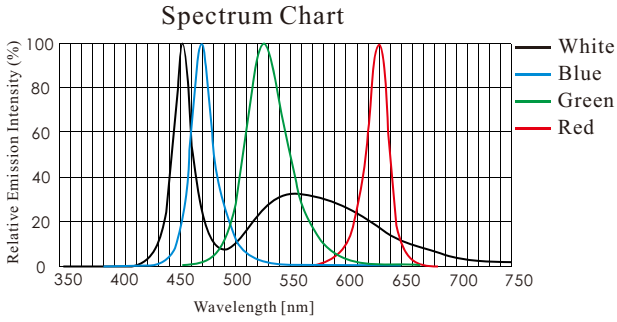
OPT-LIT17228

- Width
- Length
- High uniformity bar light
- Brand name

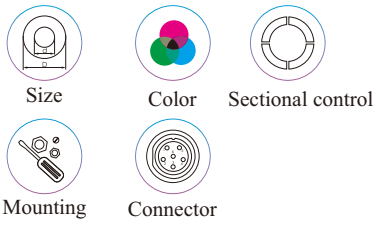
Uniformity Chart



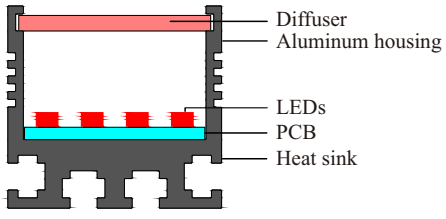
Spectrum Chart



Customization Options



Section Structure Drawing

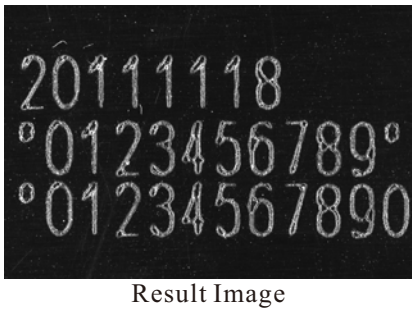


Application Example

Letter inspection on packaging

Original Image

Illuminated

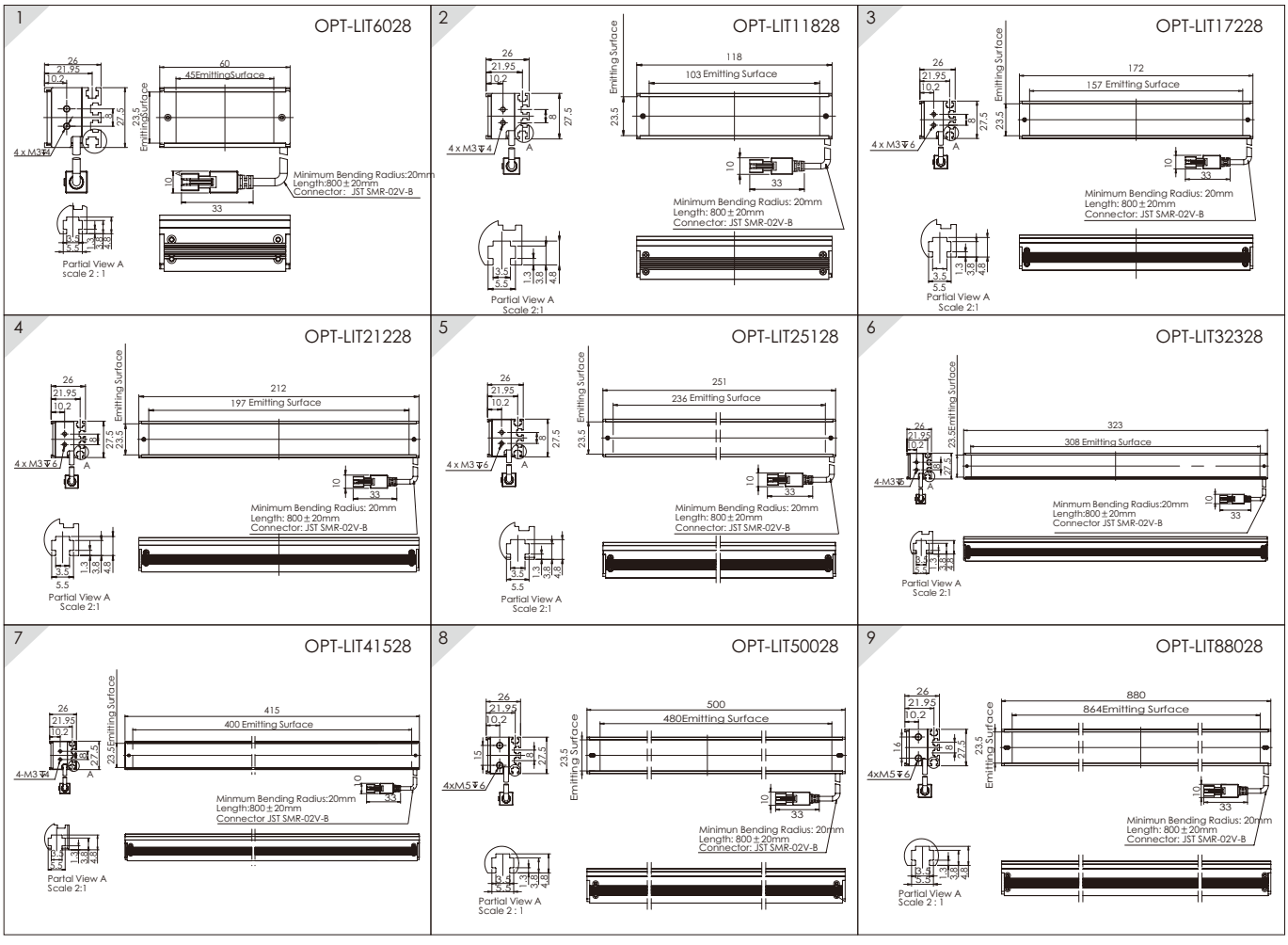


Result Image

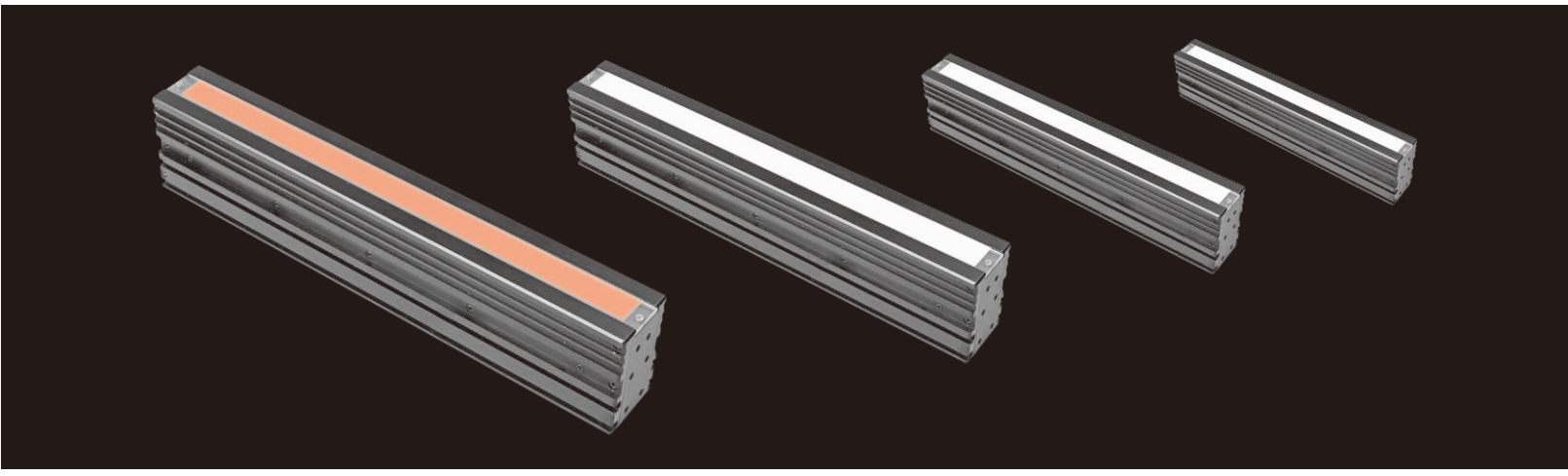
Model Table

No.	Model	Output 🔴	Output ⚪🟢🔵	Recommended controller
1	OPT-LIT6028	24V/0.6W	24V/1.2W	OPT-DPA1024E
2	OPT-LIT11828	24V/1.6W	24V/4.1W	OPT-DPA1024E
3	OPT-LIT17228	24V/1.5W	24V/4.5W	OPT-DPA1024E
4	OPT-LIT21228	24V/3.4W	24V/7.6W	OPT-DPA1024E
5	OPT-LIT25128	24V/4.4W	24V/8.0W	OPT-DPA1024E
6	OPT-LIT32328	24V/4.8W	24V/9.1W	OPT-DPA1024E
7	OPT-LIT41528	24V/5.8W	24V/10W	OPT-DPA1024E
8	OPT-LIT50028	24V/6.7W	24V/11.2W	OPT-DPA1024E
9	OPT-LIT88028	24V/11.5W	24V/14.5W	OPT-DPA1024E

Dimensional Drawings [mm]



High Power Bar Lights OPT-LIG Series



Product Features

1. Three times intensity of OPT-LI series lights
2. Dimension of emitting surface can be made from 60 mm to 2000 mm
3. Long working distance available due to high-power LEDs

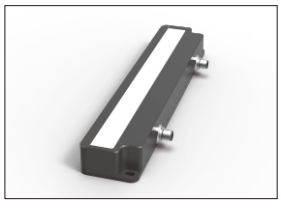
Application Cases

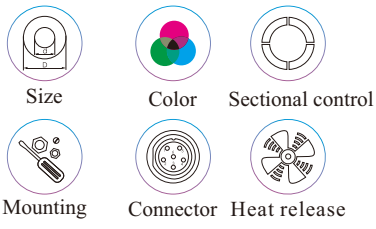
- Long work distance illumination
- High speed on line illumination
- Big FOV illumination

Selection Guide

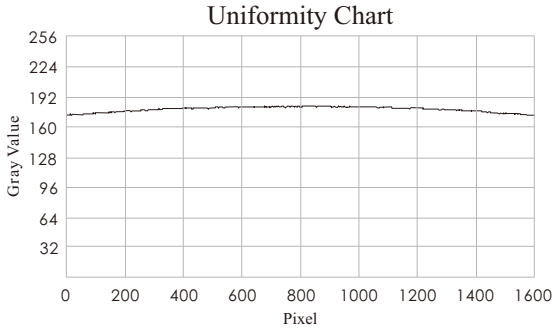
OPT-LIG255
- Length
- High uniformity bar light
- Brand name

Customization Options

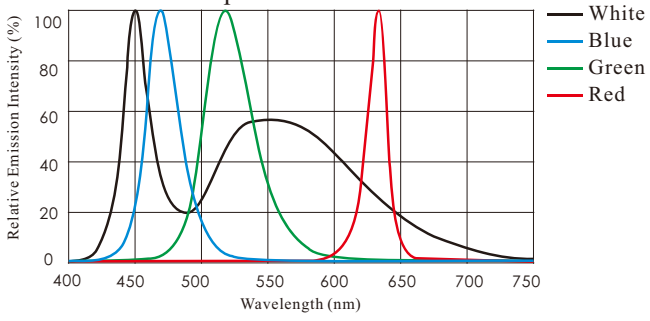




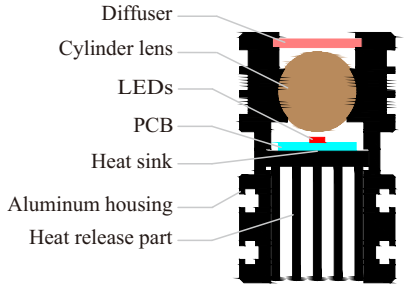
Uniformity Chart



Spectrum Chart



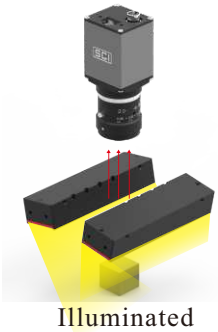
Section Structure Drawing



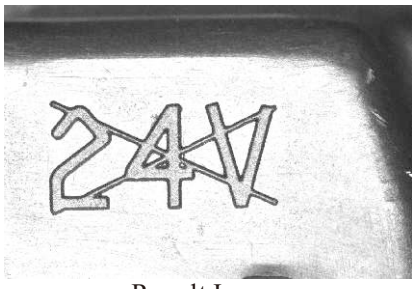
Application Example

Letter inspection

Original Image



Illuminated

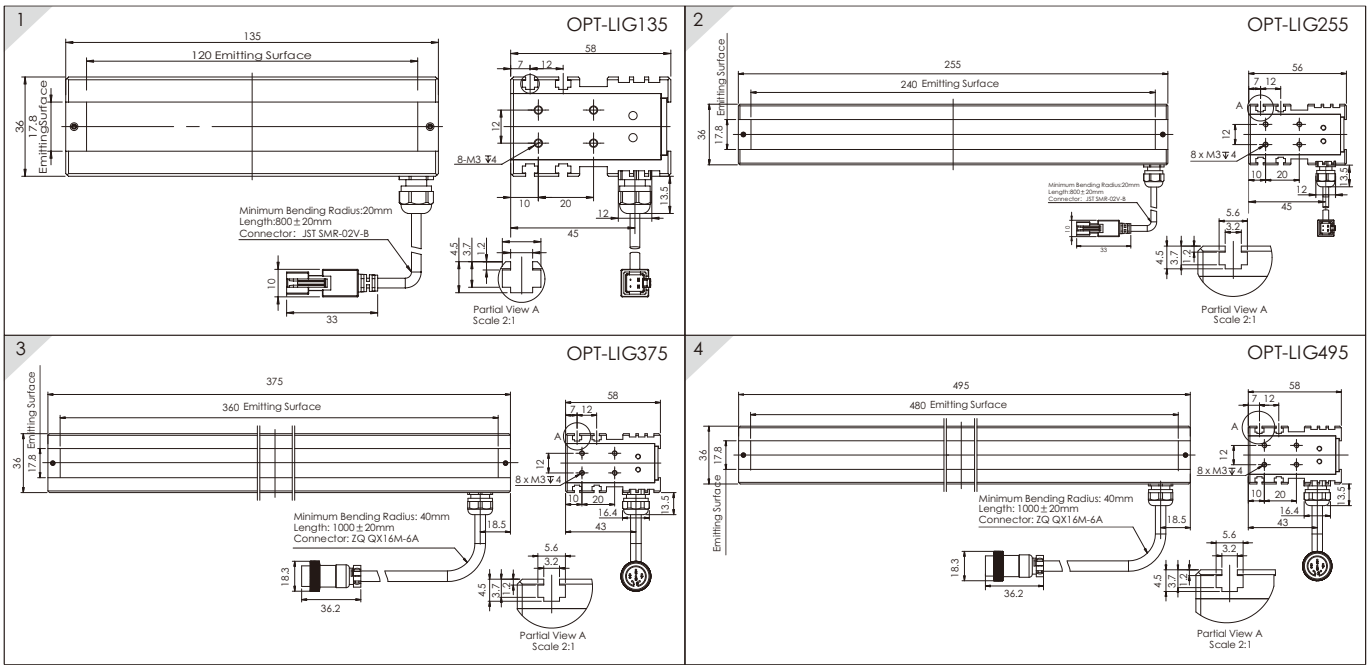


Result Image

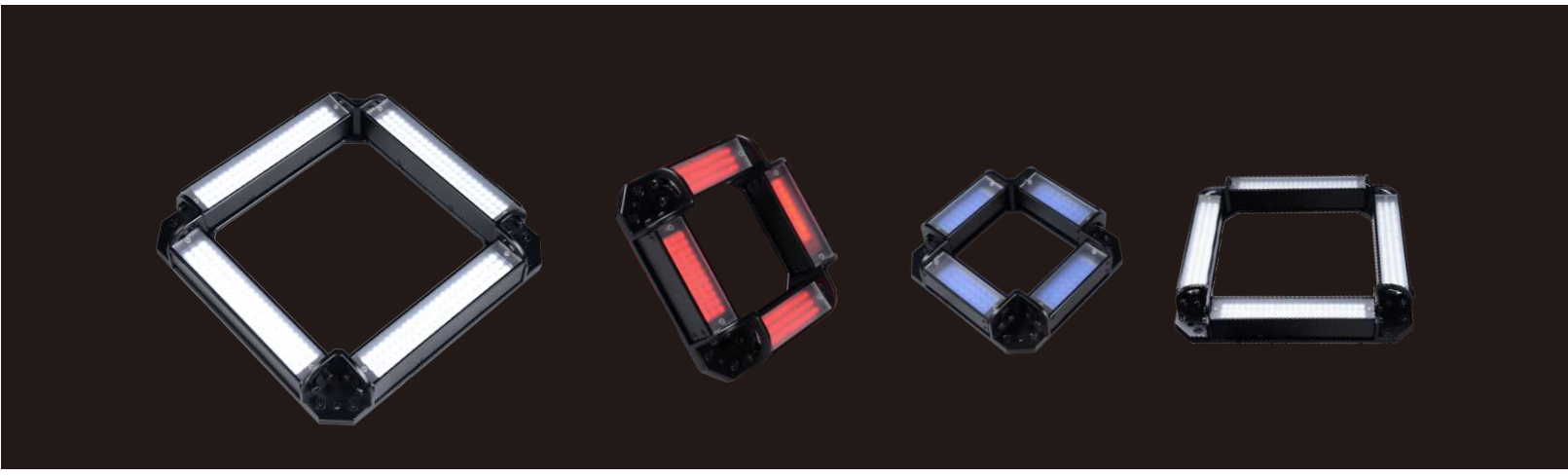
Model Table

No.	Model	Output 🔴	Output ⚪🟢🔵	Recommended controller
1	OPT-LIG135	0.2A/4.8W	0.58A/13.9W	OPT-DPA1024E
2	OPT-LIG255	0.7A/16.8W	0.8A/19.2W	OPT-DPA1024E
2	OPT-LIG375	1.2A/28.8W	1.2A/28.8W	OPT-DPA6024
3	OPT-LIG495	1.6A/38.4W	1.6A/38.4W	OPT-DPA6024

Dimensional Drawings [mm]



Combined Bar Lights OPT-LIM Series



Product Features

1. The illuminate angle can adjust freely
2. Intensity of each light can be controlled independently
3. First choice for large area illumination, workable for different cases

Application Case

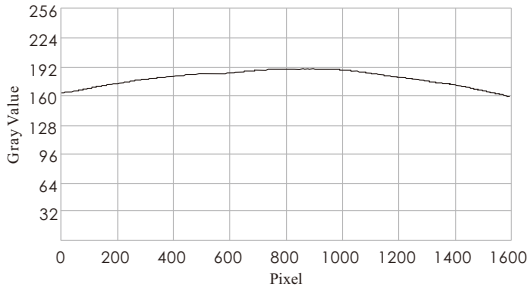
- PCB inspection
- Electronic component inspection
- Solder inspection
- Marker point localization
- Microscopes illumination
- Reading of package labels

Selection Guide

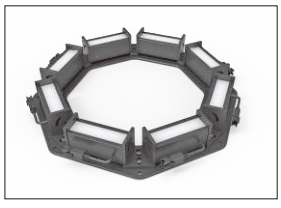
OPT-LIM6022

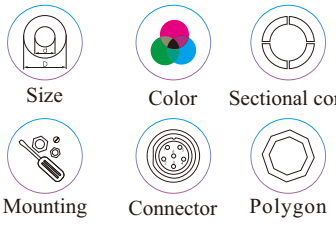
- The width (outside)
- The length (outside)
- Combined bar light
- Brand name

Uniformity Chart

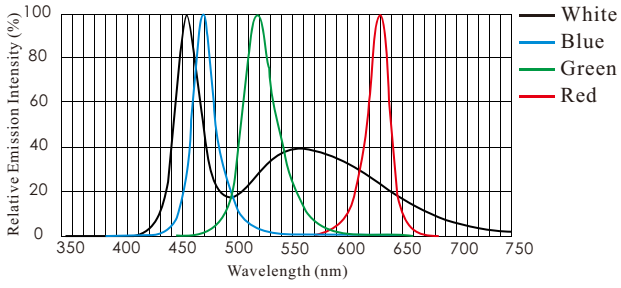


Customization Options



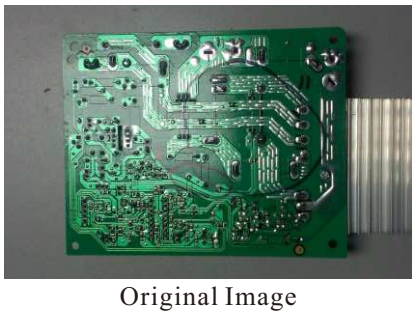


Spectrum Chart

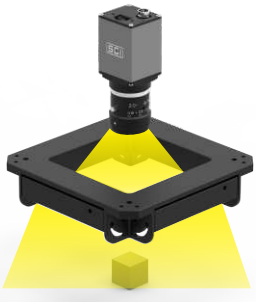


Application Example

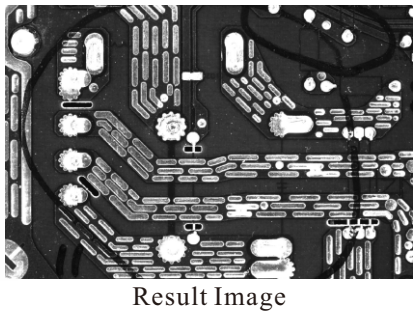
PCB solder inspection



Original Image



Illuminated



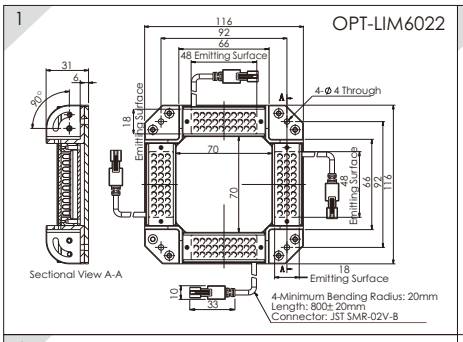
Result Image

Model Table

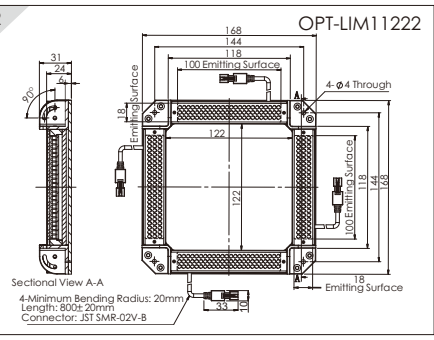
No.	Model	Output 🔴	Output ⚪🟢🔵	Channels	Recommended controller
1	OPT-LIM6022	24V/2.5W	24V/2.9W	4	OPT-DPA1024E
2	OPT-LIM11222	24V/3.8W	24V/8.9W	4	OPT-DPA1024E
3	OPT-LIM15020	24V/4.8W	24V/12.1W	4	OPT-DPA1024E
4	OPT-LIM21230	24V/13.4W	24V/31.2W	4	OPT-DPA1024E

Dimensional Drawings [mm]

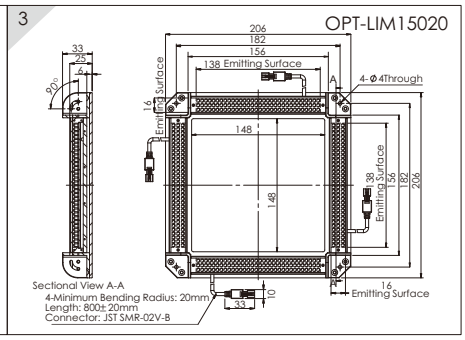
1 OPT-LIM6022



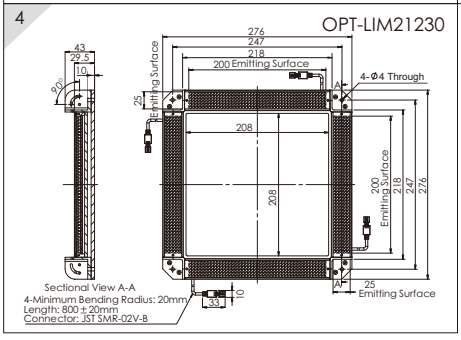
2 OPT-LIM11222



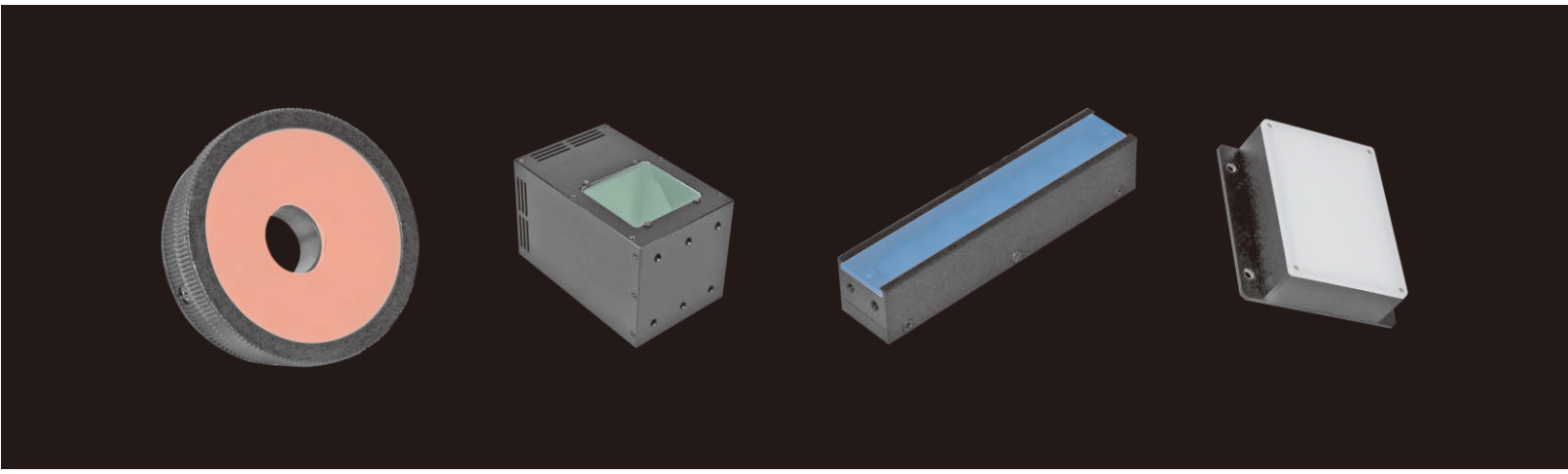
3 OPT-LIM15020



4 OPT-LIM21230

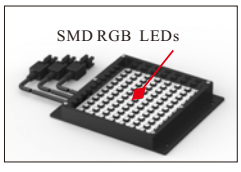


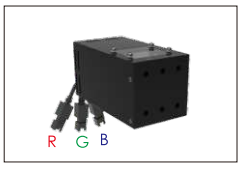
RGB Lights OPT-RGB Series

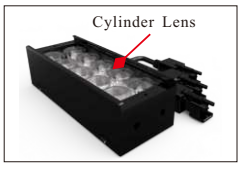


Product Features

1. Using SMD RGB LEDs
2. Available to combine into any colors, suitable for inspection of workpiece with different colors
3. Using special 45° cylinder lens for RI and LI series RGB lights to provide more uniform and focused light emission
4. R, G, B colors can be used separately and also simultaneously







Application Cases

- Inspection of highly reflective surfaces
- Chip and silicon wafer inspection
- Marker localization
- Bar code recognition
- Inspection of laser marking characters, 2D code identification

Selection Guide

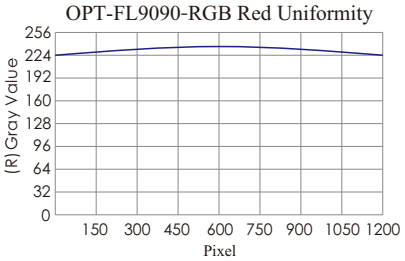
OPT-CO50RGB

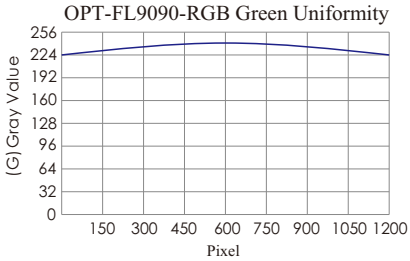
- RGB
- Size
- Coaxial Light
- Brand name

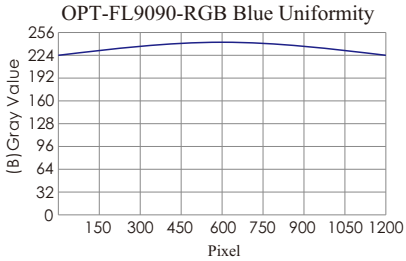
Customization Options


Size


Mounting



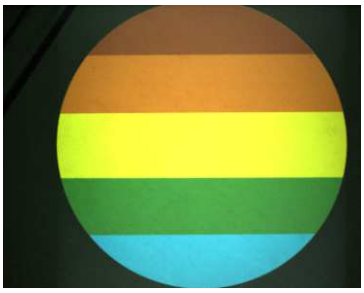


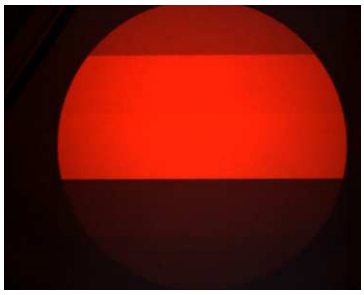


Note: we used a CCD camera for the analysis of the grey values; above drawing shows the average grey values.
Above data is just for your reference, not for quality assurance.

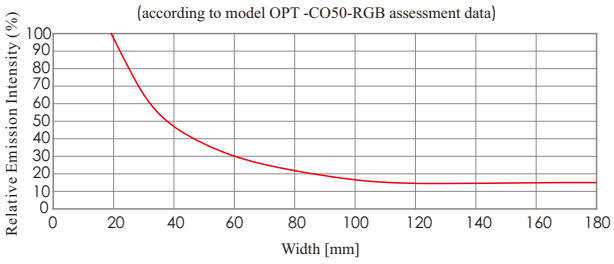
Application Example

Color filtering and enhancement

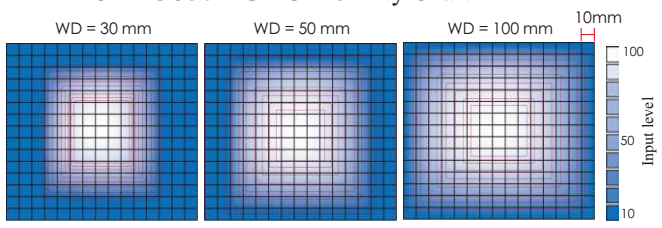




Relative Emission Intensity Uniformity Chart



OPT-CO50-RGB Uniformity Chart



Different colors can be freely applied to different workpiece

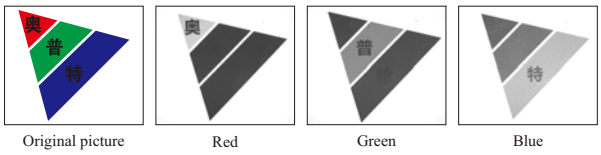
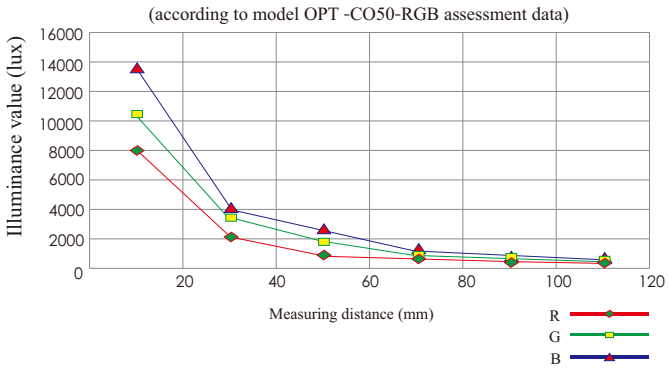
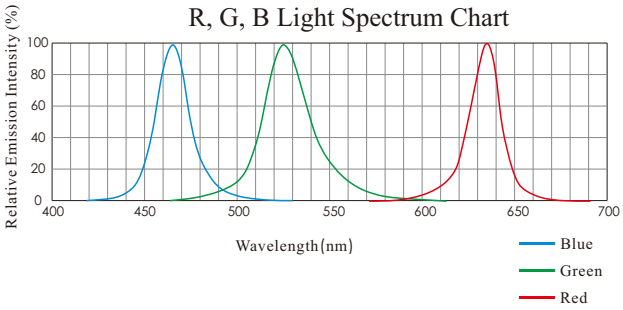


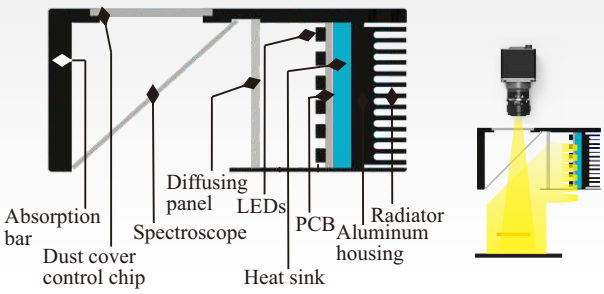
Chart of Illuminanc over Working Distance



R, G, B Light Spectrum Chart

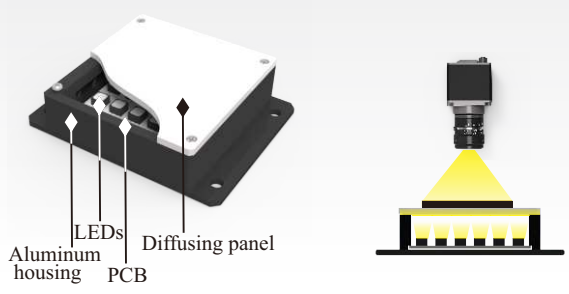


*Note: The structure picture is only for your reference



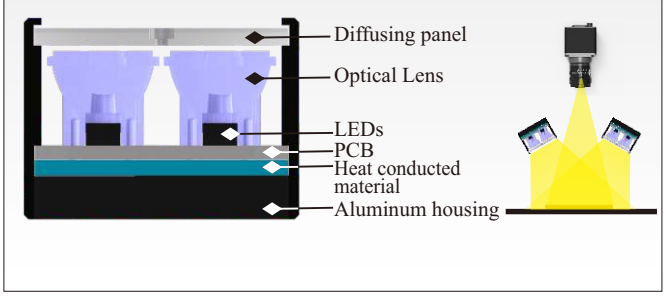
RGB Coaxial Light Structure Display and Working Way

*The structure picture is only for your reference



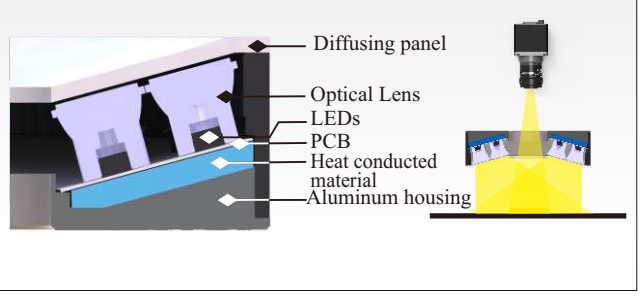
RGB Bottom Back Light Structure Display and Working Way

*The structure picture is only for your reference



RGB Bar Light Structure Display and Working Way

*The structure picture is only for your reference



RGB Ring Light Structure Display and Working Way

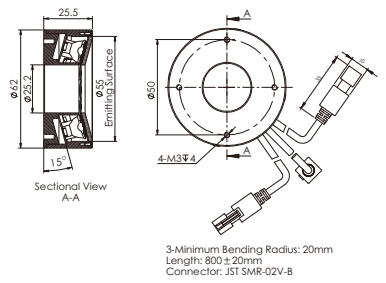
Model Table

Series	No.	Model	Output 🔴	Output 🟢	Output 🔵	Controller
RI	1	OPT-RI6215-RGB	24V/0.6W	24V/1.1W	24V/1.1W	OPT-DPA1024E
	2	OPT-RI8515-RGB	24V/1.5W	24V/2.5W	24V/2.7W	OPT-DPA1024E
FL	3	OPT-FL5050-RGB	24V/1.2W	24V/1.9W	24V/2.3W	OPT-DPA1024E
	4	OPT-FL9090-RGB	24V/4.5W	24V/6.7W	24V/7.4W	OPT-DPA1024E
	5	OPT-FL130130-RGB	24V/6.1W	24V/12.0W	24V/14.6W	OPT-DPA1024E

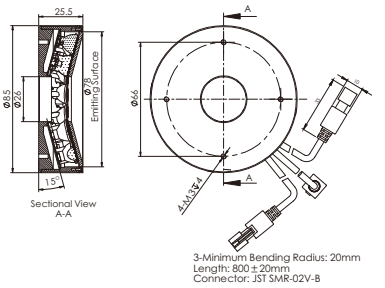
Series	No.	Model	Output 🔴	Output 🟢	Output 🔵	Controller
LI	6	OPT-LI8332-RGB	24V/0.6W	24V/0.9W	24V/1.1W	OPT-DPA1024E
	7	OPT-LI15320-RGB	24V/0.6W	24V/1.1W	24V/1.1W	OPT-DPA1024E
	8	OPT-LI22332-RGB	24V/1.7W	24V/3.1W	24V/3.3W	OPT-DPA1024E
CO	9	OPT-CO50-RGB	24V/1.7W	24V/3.0W	24V/3.3W	OPT-DPA1024E
	10	OPT-CO80-RGB	24V/5.1W	24V/6.6W	24V/7.8W	OPT-DPA1024E

Dimensional Drawings [mm]

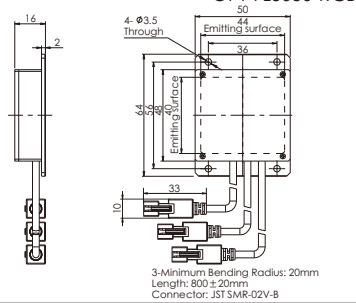
1 OPT-RI6215-RGB



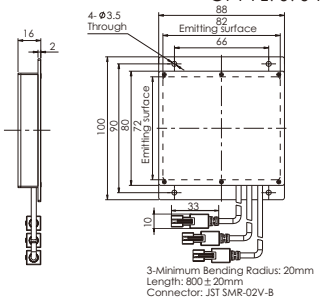
2 OPT-RI8515-RGB



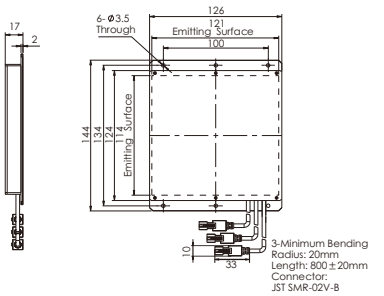
3 OPT-FL5050-RGB



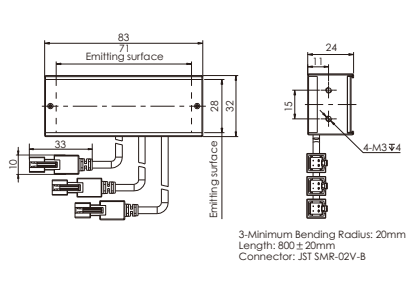
4 OPT-FL9090-RGB



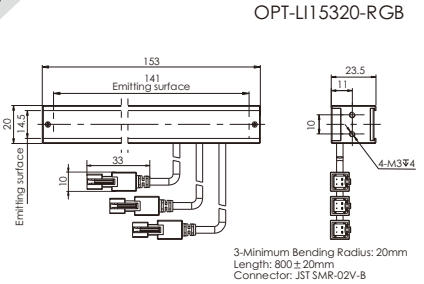
5 OPT-FL130130-RGB



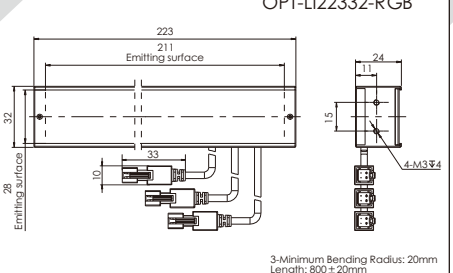
6 OPT-LI8332-RGB



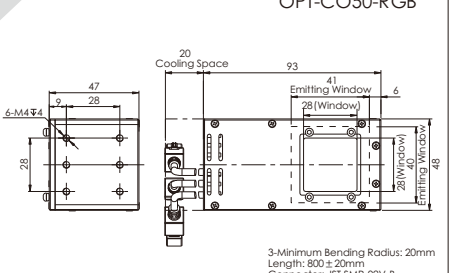
7 OPT-LI15320-RGB



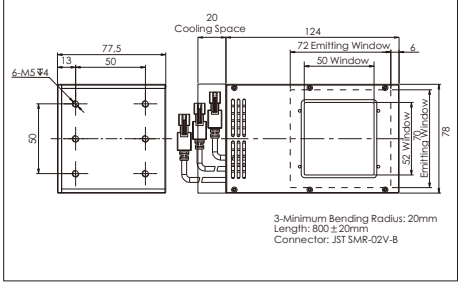
8 OPT-LI22332-RGB



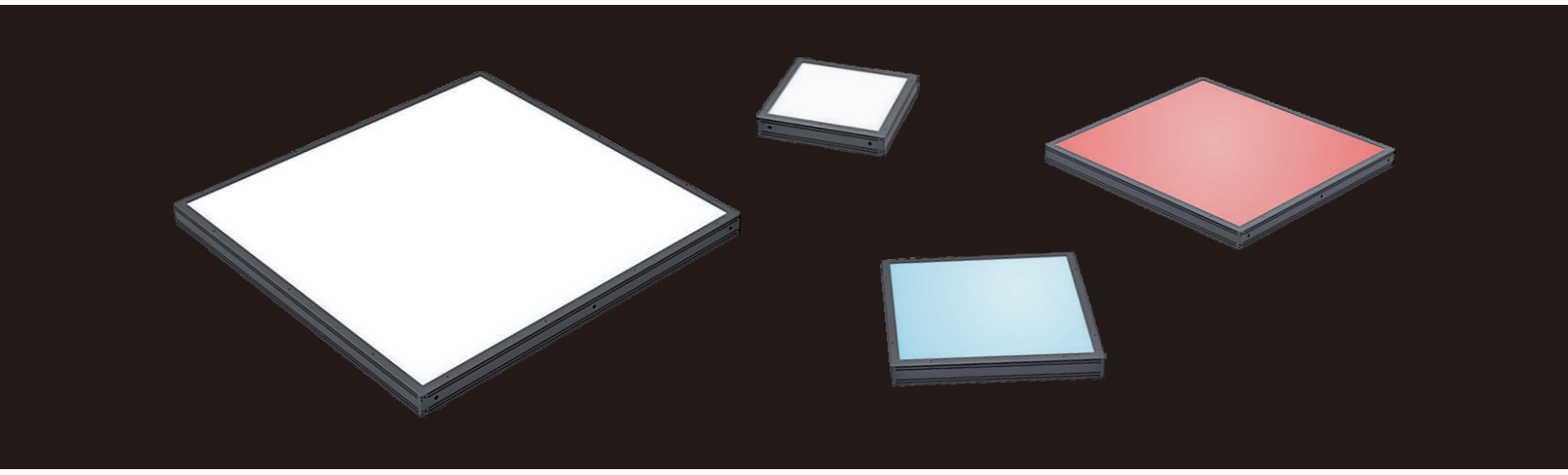
9 OPT-CO50-RGB



10 OPT-CO80-RGB



Bottom Back Lights OPT-FL Series



Product Features

1. Using high density LEDs to provide high intensity uniform illumination
2. Maximized design for emitting surface, suitable for compact mounting environment
3. With mounting holes for all sides, suitable for flexible mounting

Application Cases

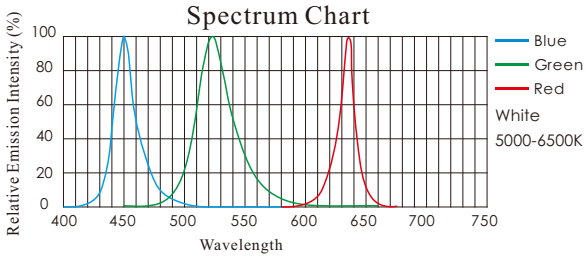
- Geometric measurement of mechanical details
- Electronic components, IC contour detection
- Blur inspection for film
- Transparent objects scratches detection

Selection Guide

OPT-FL9090

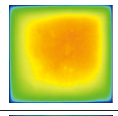
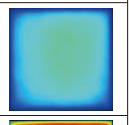
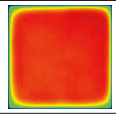
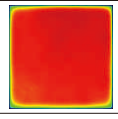
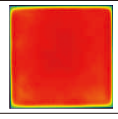
- Width
- Length
- Bottom Back Light
- Brand name

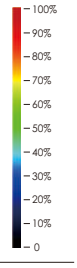
Spectrum Chart



Remarks: data above only for your reference. It may be different in applications

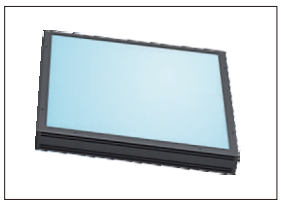
Intensity and Uniformity upgrade

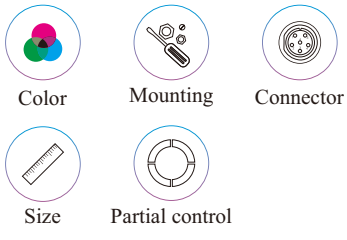
Model	FL9090 White	FL130130 Blue	FL200200 Red
Old version			
New version			



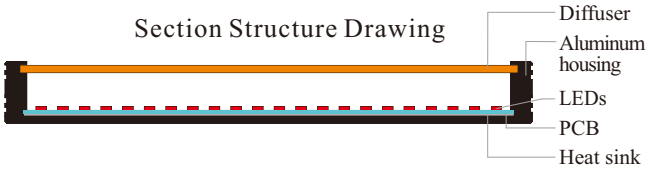
The uniformity and intensity of the new version FL lights is better than the old version FL lights

Customization Options

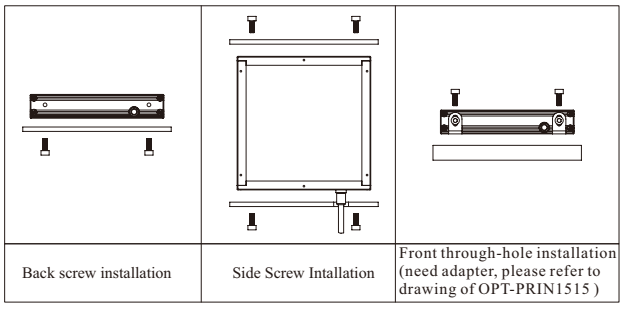




Section Structure Drawing



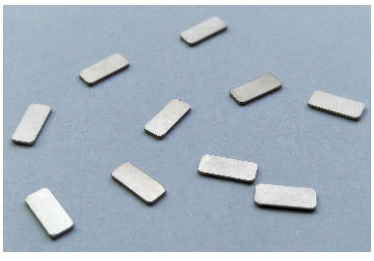
Different mounting ways



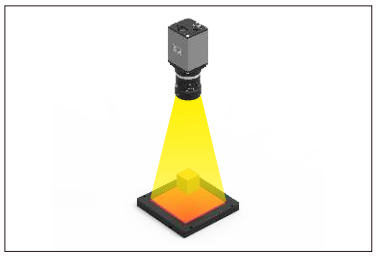
Back screw installation	Side Screw Intallation	Front through-hole installation (need adapter, please refer to drawing of OPT-PRIN1515)

Application Example

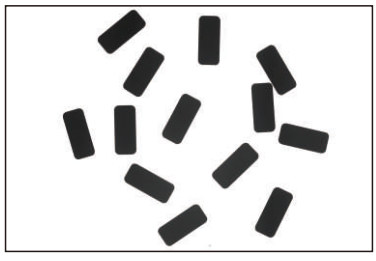
Metal parts quantity counting



Original image



Illuminated



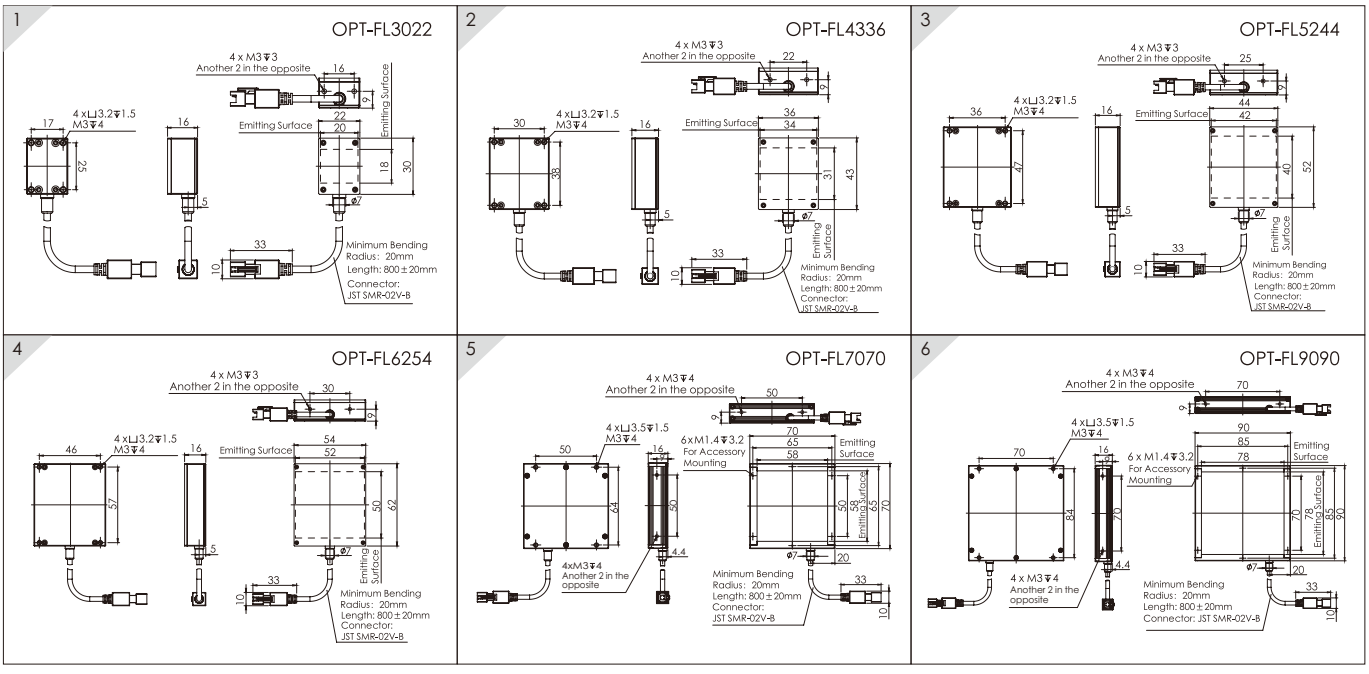
Result image

Model Table

No.	Model	Color	Output	Recommended Controller
1	OPT-FL3022	○	24V/1.6W	OPT-DPA1024E OPT-AP1024F
		Red	24V/1.3W	
		Green	24V/1.2W	
		Blue	24V/1.4W	
2	OPT-FL4336	○	24V/2.7W	OPT-DPA1024E OPT-AP1024F
		Red	24V/2.0W	
		Green	24V/2.3W	
		Blue	24V/2.6W	
3	OPT-FL5244	○	24V/3.4W	OPT-DPA1024E OPT-AP1024F
		Red	24V/3W	
		Green	24V/2.9W	
		Blue	24V/3.3W	
4	OPT-FL6254	○	24V/4.9W	OPT-DPA1024E OPT-AP1024F
		Red	24V/4.4W	
		Green	24V/4.1W	
		Blue	24V/4.3W	
5	OPT-FL7070	○	24V/6.3W	OPT-DPA1024E OPT-AP1024F
		Red	24V/4.7W	
		Green	24V/4.6W	
		Blue	24V/5.3W	
6	OPT-FL9090	○	24V/8W	OPT-DPA1024E OPT-AP1024F
		Red	24V/6.6W	
		Green	24V/6.4W	
		Blue	24V/8W	
7	OPT-FL110110	○	24V/11.4W	OPT-DPA1024E OPT-AP1024F
		Red	24V/9.7W	
		Green	24V/8.8W	
		Blue	24V/12.4W	

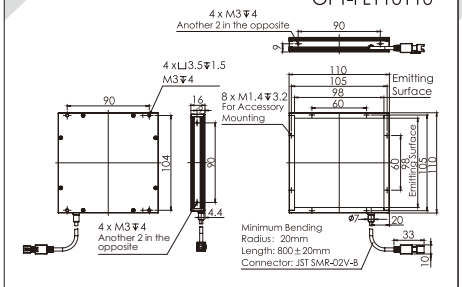
No.	Model	Color	Output	Recommended Controller
8	OPT-FL130130	○	24V/16W	OPT-DPA1024E OPT-AP1024F
		Red	24V/14W	
		Green	24V/14.4W	
		Blue	24V/14.8W	
9	OPT-FL150150	○	24V/18.6W	OPT-DPA1024E OPT-AP1024F
		Red	24V/15.7W	
		Green	24V/17.7W	
		Blue	24V/18.9W	
10	OPT-FL175175	○	24V/24.5W	OPT-DPA2024E
		Red	24V/18.9W	
		Green	24V/21W	
		Blue	24V/21.5W	
11	OPT-FL200200	○	24V/29W	OPT-DPA2024E
		Red	24V/23.4W	
		Green	24V/21.3W	
		Blue	24V/26.2W	
12	OPT-FL225225	○	24V/36.7W	OPT-DPA2024E
		Red	24V/28.9W	
		Green	24V/21.3W	
		Blue	24V/31.1W	
13	OPT-FL250250	○	24V/41.5W	OPT-DPA2024E
		Red	24V/33.8W	
		Green	24V/27.3W	
		Blue	24V/39.5W	

Dimensional Drawings

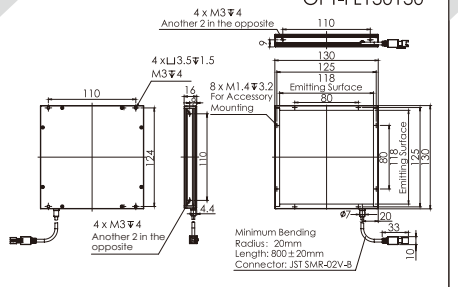


Dimensional Drawings

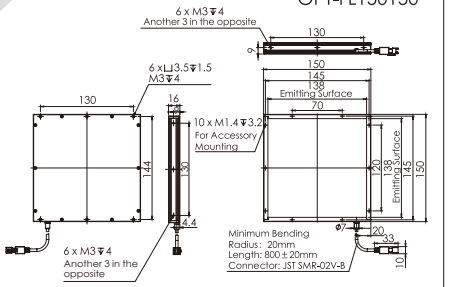
7 OPT-FL110110



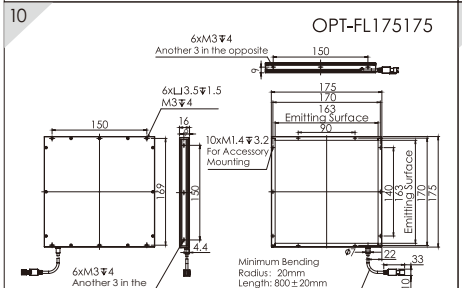
8 OPT-FL130130



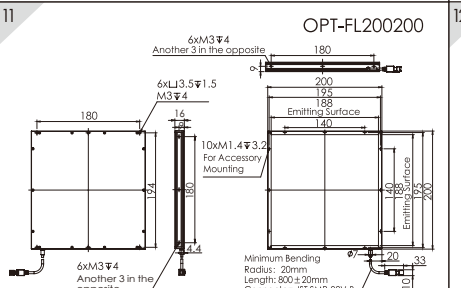
9 OPT-FL150150



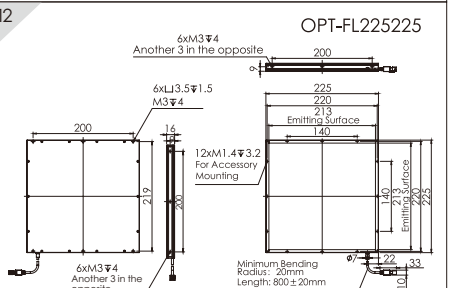
10 OPT-FL175175



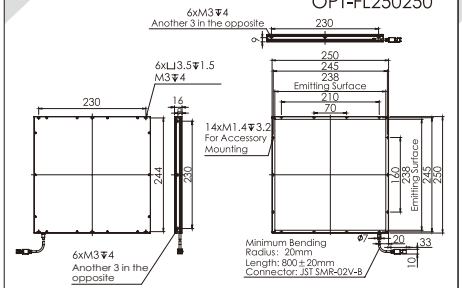
11 OPT-FL200200



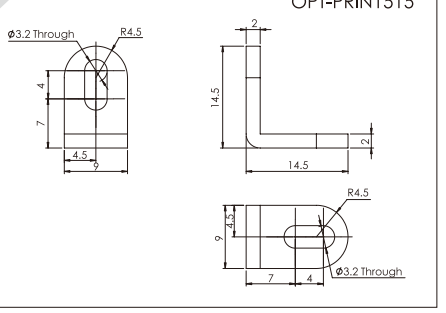
12 OPT-FL225225



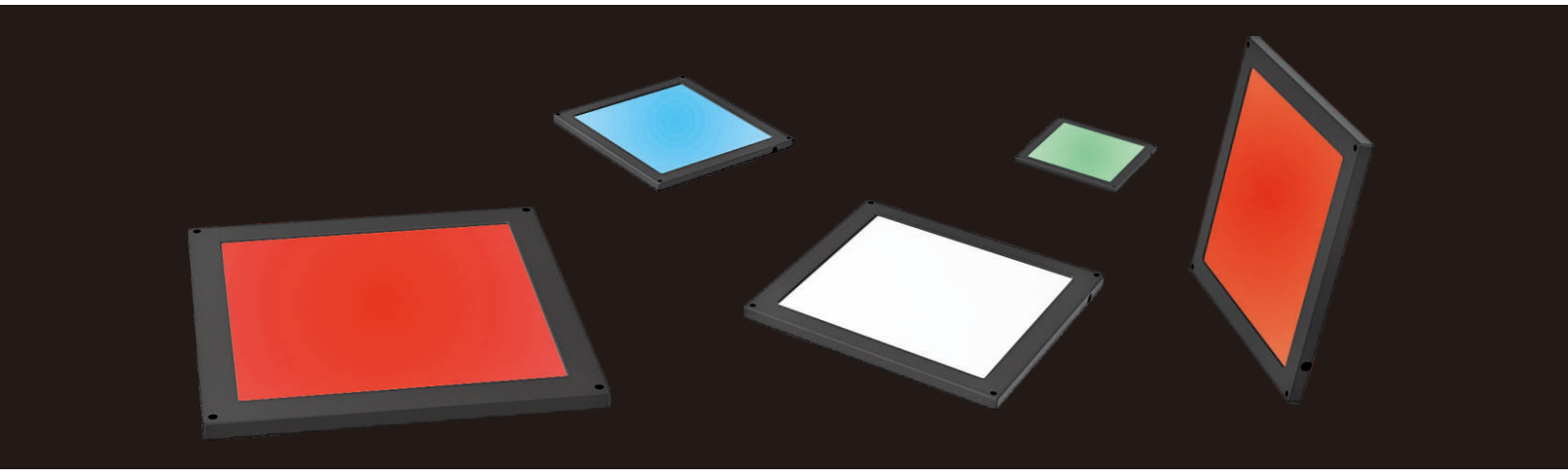
13 OPT-FL250250



14 OPT-PRIN1515



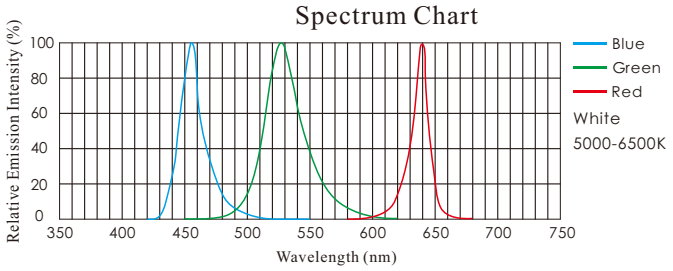
Side Back Lights OPT-FLC Series



Product Features

1. Multilateral emission, excellent overall uniformity
2. Ultra-thin: the height can be reduced down to 6 mm to satisfy compact installation environment
3. Freely customizable size, easy to realize uniform illumination for large field of view

Spectrum Chart



Above data only for your reference, it maybe different in applications

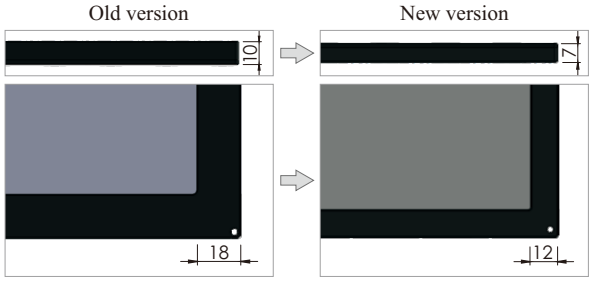
Application Cases

- Identification and inspection for PCBs and electronic components with large area
- Geometric measurement
- LED defects inspection

Selection Guide

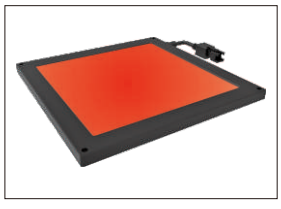
OPT-FLC9090
- Width
- Length
- Side Back Light
- Brand name

Dimensional Change



The new version FL lights have thinner thickness, narrower bezel, bigger emitting surface, suitable for compact installation environment

Customization Options



Color

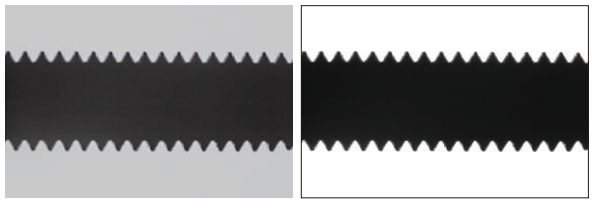
Mounting

Connector

Size

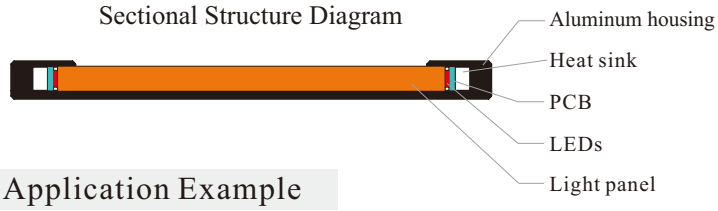
Customization-Bright Enhancement Film

without bright enhancement film | with bright enhancement film



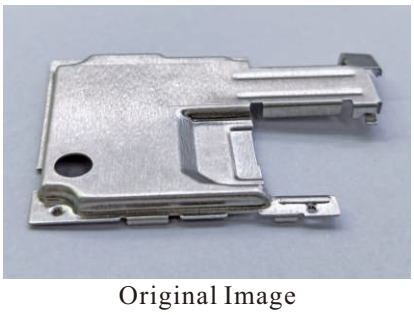
The bright enhancement film improves the light parallel and intensity

Sectional Structure Diagram



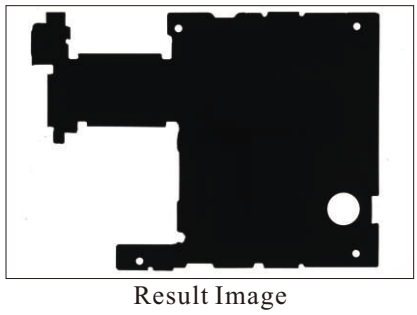
Application Example

Profile detection for metal parts



Original Image

Illuminated



Result Image

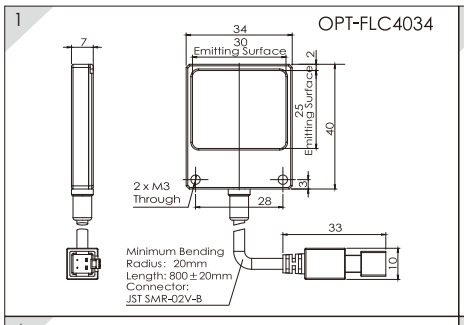
Model Table

No.	Model	Color	Output Power	Recommended Controller
1	OPT-FLC4034	○	24V/1.4W	OPT-DPA1024E OPT-AP1024F
		Red	24V/1.7W	
		Green	24V/1.7W	
		Blue	24V/1.4W	
2	OPT-FLC5039	○	24V/1.8W	OPT-DPA1024E OPT-AP1024F
		Red	24V/1.7W	
		Green	24V/1.7W	
		Blue	24V/1.7W	
3	OPT-FLC7070	○	24V/3.7W	OPT-DPA1024E OPT-AP1024F
		Red	24V/4.1W	
		Green	24V/3.6W	
		Blue	24V/4.4W	
4	OPT-FLC9090	○	24V/6.5W	OPT-DPA1024E OPT-AP1024F
		Red	24V/5.4W	
		Green	24V/4.7W	
		Blue	24V/6W	
5	OPT-FLC110110	○	24V/8W	OPT-DPA1024E OPT-AP1024F
		Red	24V/6.7W	
		Green	24V/7W	
		Blue	24V/7.2W	

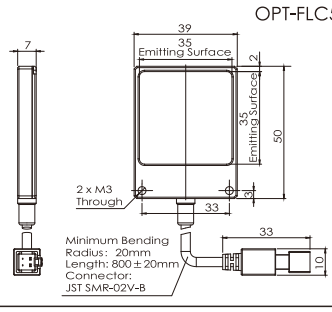
No.	Model	Color	Output Power	Recommended Controller
6	OPT-FLC130130	○	24V/10.8W	OPT-DPA1024E OPT-AP1024F
		Red	24V/9W	
		Green	24V/9.1W	
		Blue	24V/11.3W	
7	OPT-FLC150150	○	24V/14.1W	OPT-DPA1024E OPT-AP1024F
		Red	24V/12.1W	
		Green	24V/12.1W	
		Blue	24V/14.9W	
8	OPT-FLC175175	○	24V/14.1W	OPT-DPA1024E OPT-AP1024F
		Red	24V/14.9W	
		Green	24V/14.4W	
		Blue	24V/14.9W	
9	OPT-FLC200200	○	24V/18.3W	OPT-DPA1024E OPT-AP1024F
		Red	24V/17W	
		Green	24V/16.8W	
		Blue	24V/19.9W	
10	OPT-FLC225225	○	24V/22.8W	OPT-DPA2024E
		Red	24V/20.6W	
		Green	24V/22.4W	
		Blue	24V/24W	
11	OPT-FLC250250	○	24V/32W	OPT-DPA2024E
		Red	24V/26.7W	
		Green	24V/24.2W	
		Blue	24V/26.7W	

Dimensional Drawings [mm]

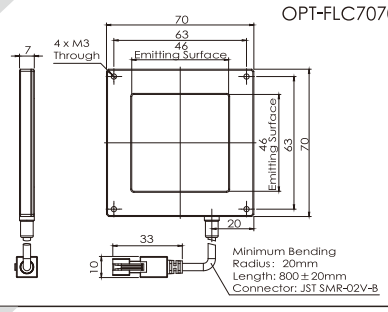
1 OPT-FLC4034



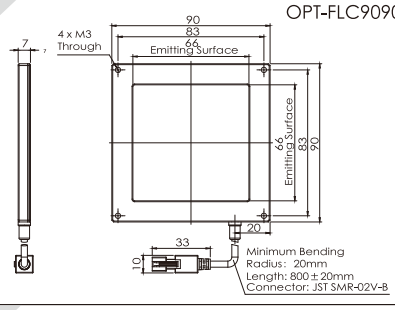
2 OPT-FLC5039



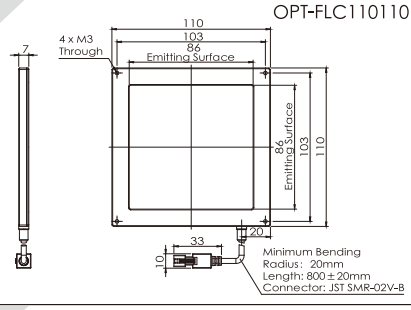
3 OPT-FLC7070



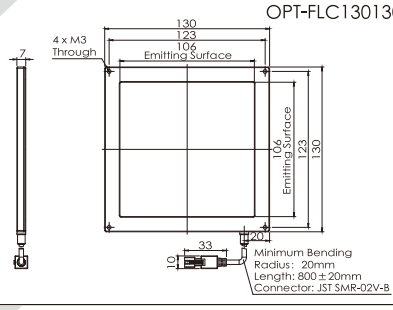
4 OPT-FLC9090



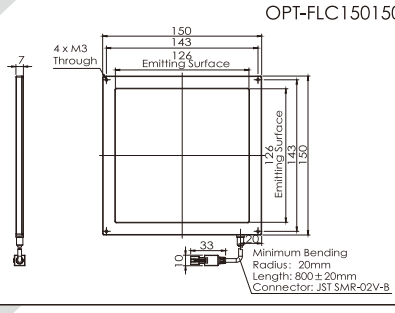
5 OPT-FLC110110



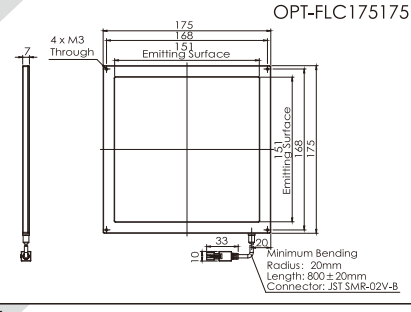
6 OPT-FLC130130



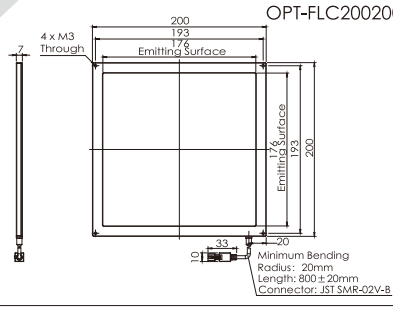
7 OPT-FLC150150



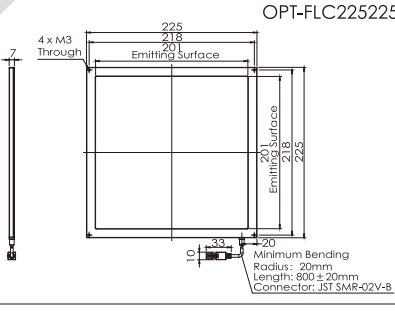
8 OPT-FLC175175



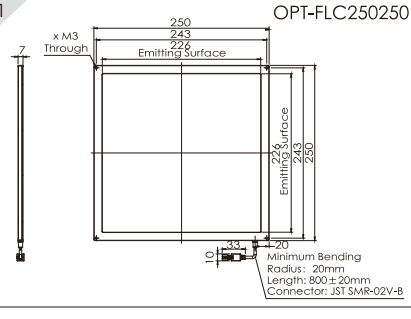
9 OPT-FLC200200



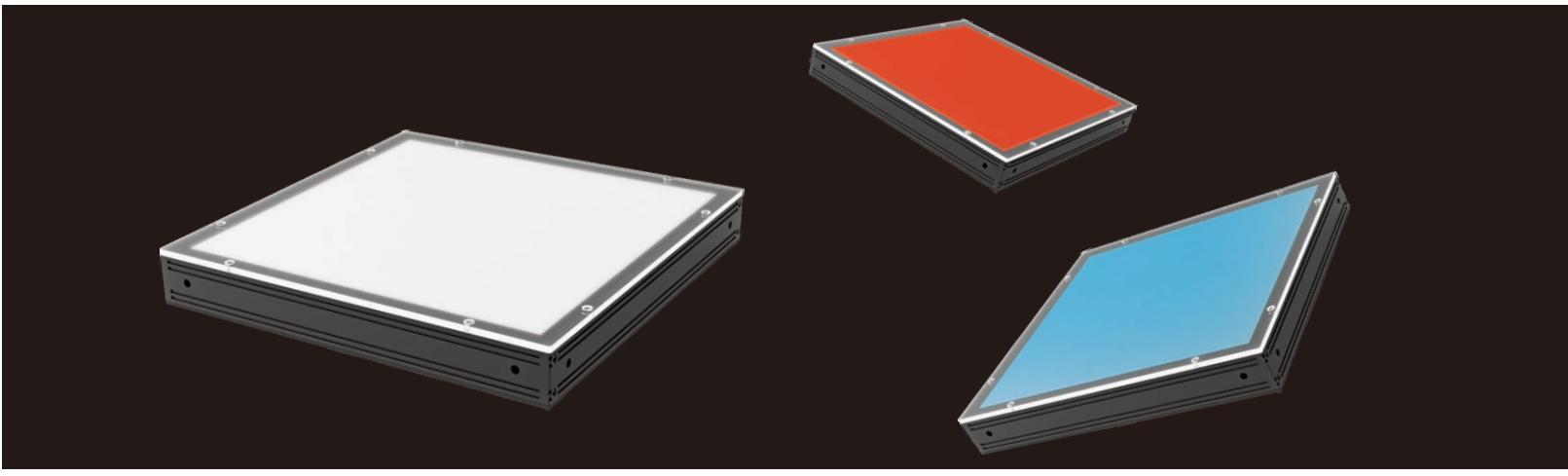
10 OPT-FLC225225



11 OPT-FLC250250



Collimated Back Lights OPT-FLP Series



Product Features

1. Higher intensity than OPT-FL and OPT-FLC series
2. Available to restrain light emitting to particular direction, help camera get more light
3. Available to restrain the diffraction of emitted light, realize clear imaging of objects edge, suitable for high precision and curved edge inspection

Application Cases

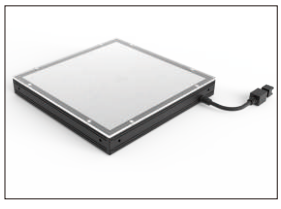
- The identification and inspection of large PCBs
- Dimension measurement
- LED defects inspection

Selection Guide

OPT-FLP9090

- Width
- Length
- Collimated back light
- Brand name

Customization Options



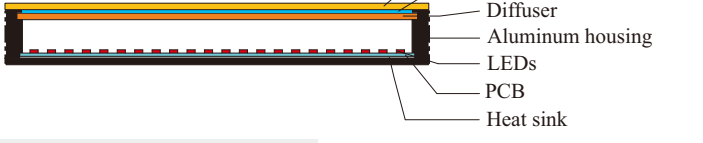
Color

Mounting

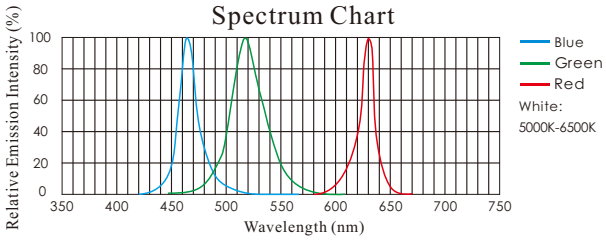
Connector

Size

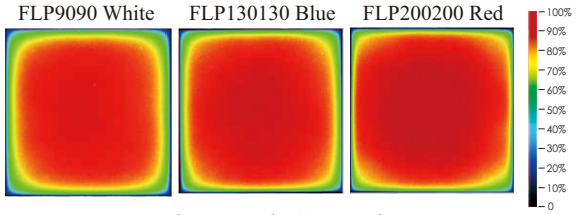
Section Structure Drawing



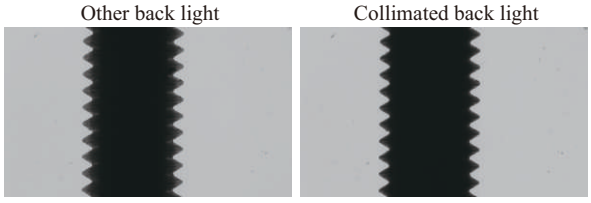
Spectrum Chart



Uniformity

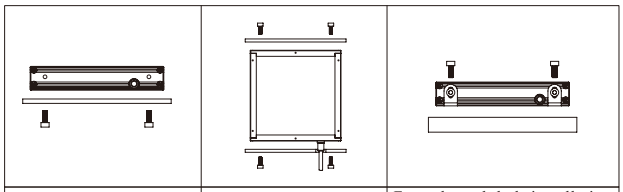


Imaging Result Comparison



Collimated back lights can restrain the diffraction of emitted light, realize clearly imaging of objects edge

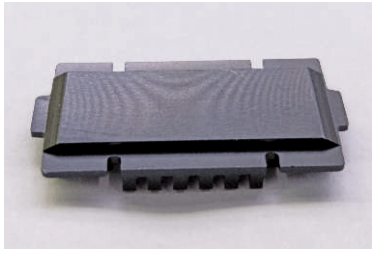
Different mounting ways



Back screw installation	Side Screw Intallation	Front through-hole installation (need adapter, please refer to drawing of OPT-PRIN1515)

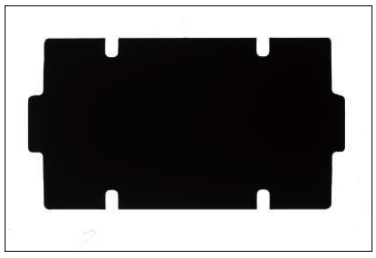
Application Example

Plastic parts dimension measurement



Original Image

Illuminated



Result Image

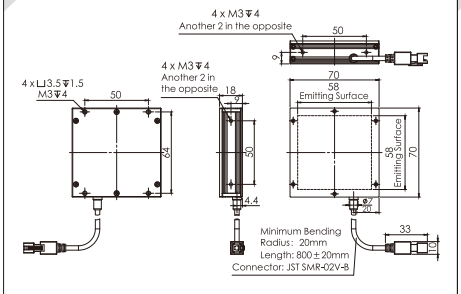
Model Table

No.	Model	Color	Output	Recommended Controller
1	OPT-FLP7070	○	24V/6.3W	OPT-DPA1024E OPT-AP1024F
		Red	24V/4.7W	
		Green	24V/4.6W	
		Blue	24V/5.3W	
2	OPT-FLP9090	○	24V/8W	OPT-DPA1024E OPT-AP1024F
		Red	24V/6.6W	
		Green	24V/6.4W	
		Blue	24V/8W	
3	OPT-FLP110110	○	24V/11.4W	OPT-DPA1024E OPT-AP1024F
		Red	24V/9.7W	
		Green	24V/8.8W	
		Blue	24V/10.5W	
4	OPT-FLP130130	○	24V/12.7W	OPT-DPA1024E OPT-AP1024F
		Red	24V/14W	
		Green	24V/11W	
		Blue	24V/14.8W	
5	OPT-FLP150150	○	24V/18.6W	OPT-DPA1024E OPT-AP1024F
		Red	24V/15.7W	
		Green	24V/13.6W	
		Blue	24V/18.9W	

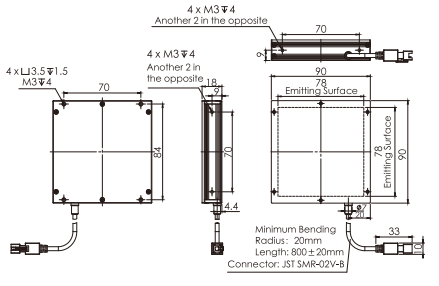
No.	Model	Color	Output	Recommended Controller
6	OPT-FLP175175	○	24V/24.5W	OPT-DPA2024E
		Red	24V/18.9W	
		Green	24V/18.4W	
		Blue	24V/21.5W	
7	OPT-FLP200200	○	24V/26.2W	OPT-DPA2024E
		Red	24V/20.6W	
		Green	24V/21.8W	
		Blue	24V/26.2W	
8	OPT-FLP225225	○	24V/33.8W	OPT-DPA2024E
		Red	24V/28.3W	
		Green	24V/21.3W	
		Blue	24V/28.8W	
9	OPT-FLP250250	○	24V/35.5W	OPT-DPA2024E
		Red	24V/30.9W	
		Green	24V/27.3W	
		Blue	24V/31.9W	

Dimensional Drawings [mm]

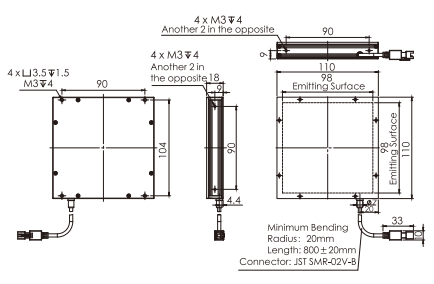
1 OPT-FLP7070



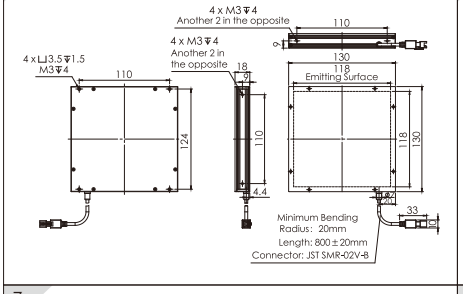
2 OPT-FLP9090



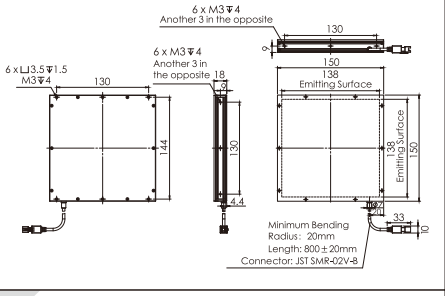
3 OPT-FLP110110



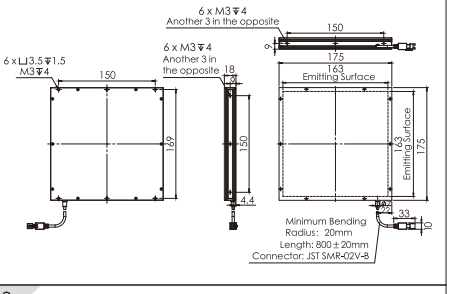
4 OPT-FLP130130



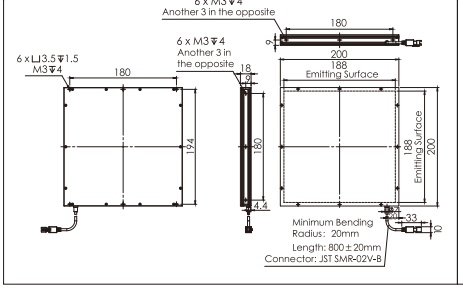
5 OPT-FLP150150



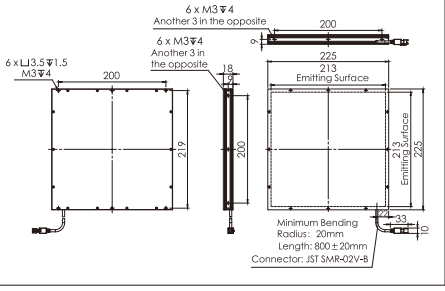
6 OPT-FLP175175



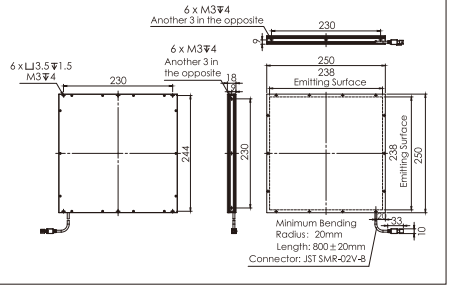
7 OPT-FLP200200



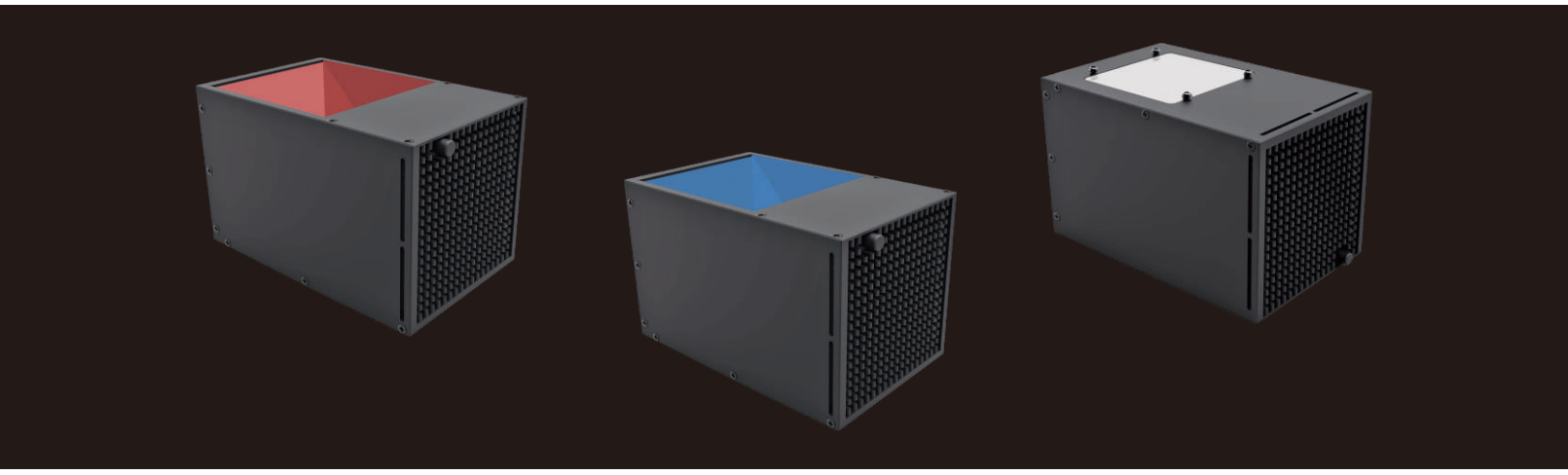
8 OPT-FLP225225



9 OPT-FLP250250



Coaxial Lights OPT-CO Series



Product Features

1. High image resolution and uniform illumination, intensity improved greatly due to high-density LED array,
2. Special heat-conductive design for longevity and stability
3. Special coated beam splitter for max light transmission
4. Available to show surface unevenness, reduce reflections
5. Mainly used for the inspection of surface scratches, flaws, damages, etc

Application Cases

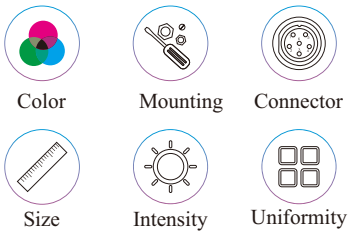
- Inspection of highly reflective surfaces for scratches
- Inspection of breakage on chip parts and silicon wafers
- Marker point localization
- Bar code recognition
- Recognition of laser marking characters and 2D codes

Selection Guide

OPT-CO150

- Width
- Coaxial light (COR: turn 90°for illumination)
- Brand name

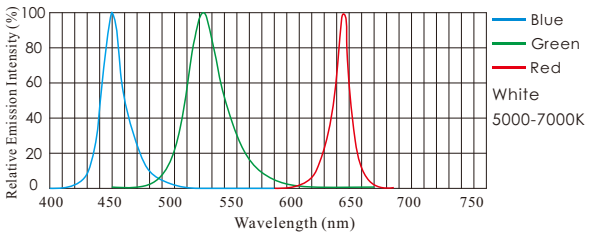
Customization Options



Uniformity and intensity customizable

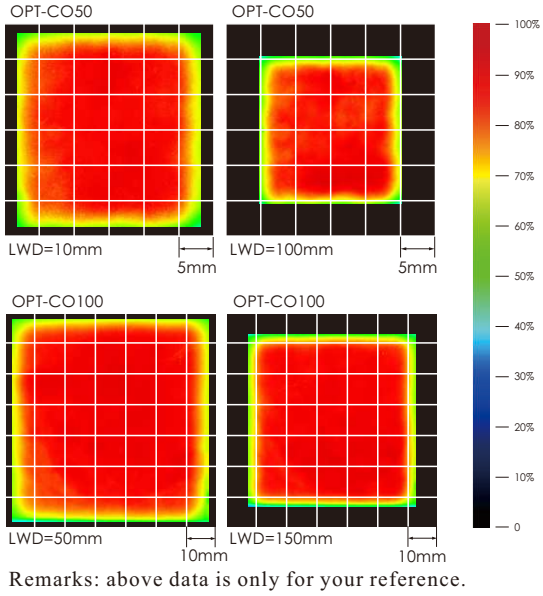
customized items	high intensity light	Standard	high uniform light	Remarks
uniformity				high reflection objects inspection (like glass), can customize highly uniform light if standard light not workable.
intensity				low reflection objects inspection (like plastic), can customize high intensity light if standard light not workable.

Spectrum Chart



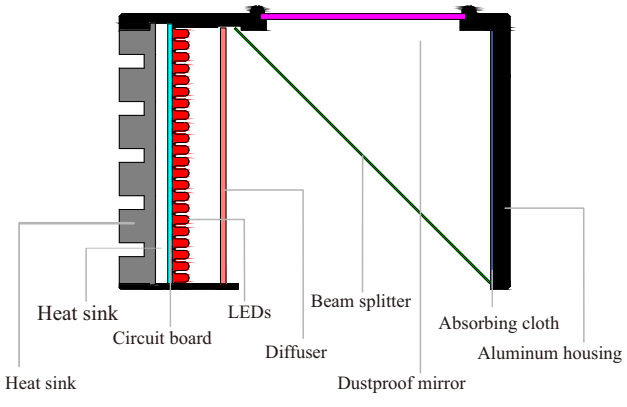
Remarks: above data is only for your reference.

Relative emission intensity distributions



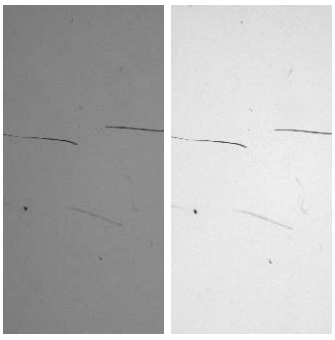
Remarks: above data is only for your reference.

Section Structure Drawing



Intensity and direction upgrade

Intensity comparison



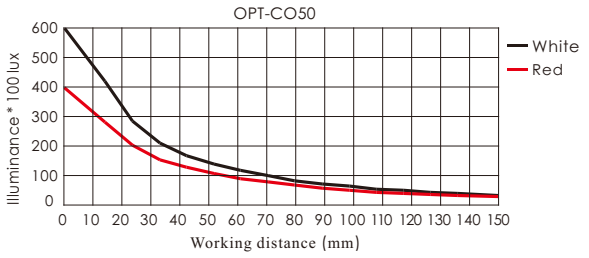
Old version CO70 New verison CO70

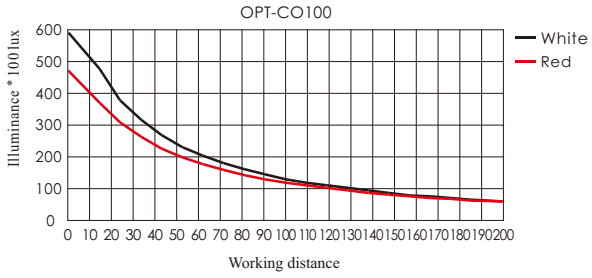
Direction comparison

Old versionCO70 New verison Co70

Note: the new version CO series lights have better illumination intensity and direction than old version.

Illuminance changing with working distance

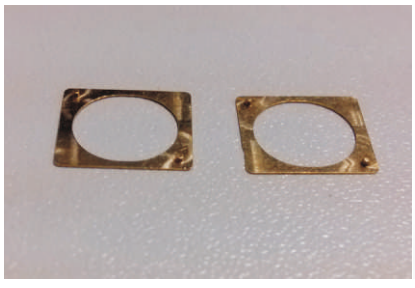




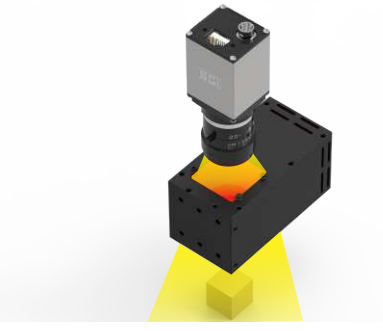
Remarks: above data is only for your reference.

Application Example

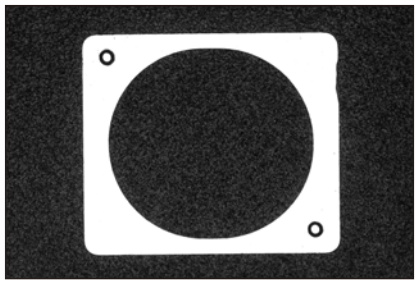
Metal plate profile inspection



Original Image



Illuminated



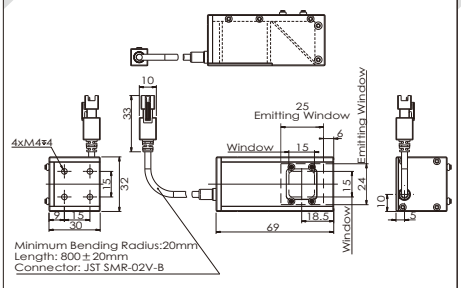
ResultImage

Model Table

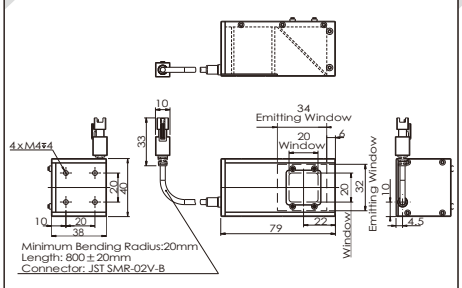
No.	Model	Output ●	Output ○●●	Recommended controller
1	OPT-CO30	24V/1.4W	24V/1.8W	OPT-DPA1024E OPT-AP1024F
2	OPT-CO40	24V/2.0W	24V/3.0W	OPT-DPA1024E OPT-AP1024F
3	OPT-CO50	24V/3.4W	24V/5.4W	OPT-DPA1024E OPT-AP1024F
4	OPT-CO60	24V/4.7W	24V/7.6W	OPT-DPA1024E OPT-AP1024F
5	OPT-CO70	24V/7.2W	24V/10.5W	OPT-DPA1024E OPT-AP1024F
6	OPT-CO80	24V/8W	24V/12W	OPT-DPA1024E OPT-AP1024F
7	OPT-CO100	24V/16.8W	24V/17.5W	OPT-DPA1024E OPT-AP1024F
8	OPT-CO150	24V/31W	24V/36W	OPT-DPA2024E
9	OPT-CO200	24V/52.8W	24V/60W	OPT-DPA6024 OPT-APA6024

Dimensional Drawings [mm]

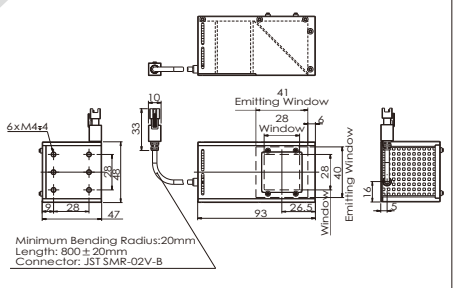
1 OPT-CO30



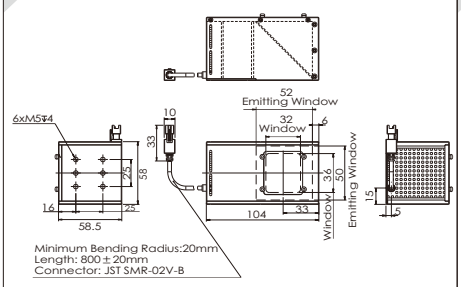
2 OPT-CO40



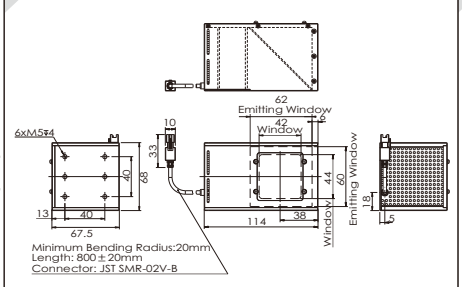
3 OPT-CO50



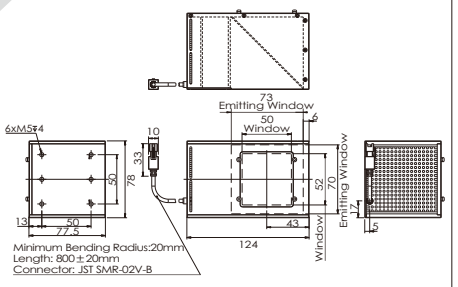
4 OPT-CO60



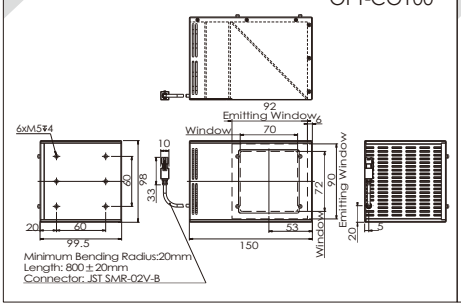
5 OPT-CO70



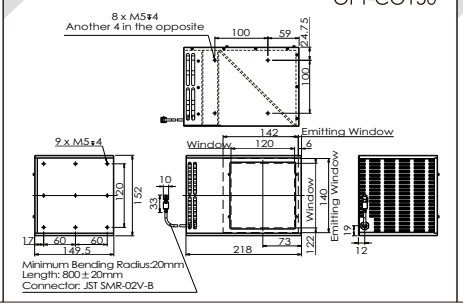
6 OPT-CO80



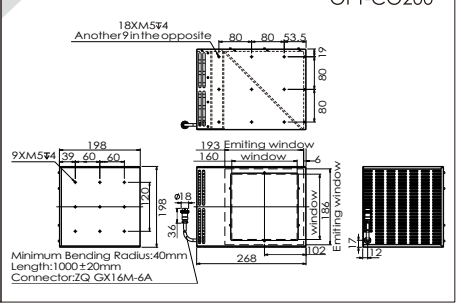
7 OPT-CO100



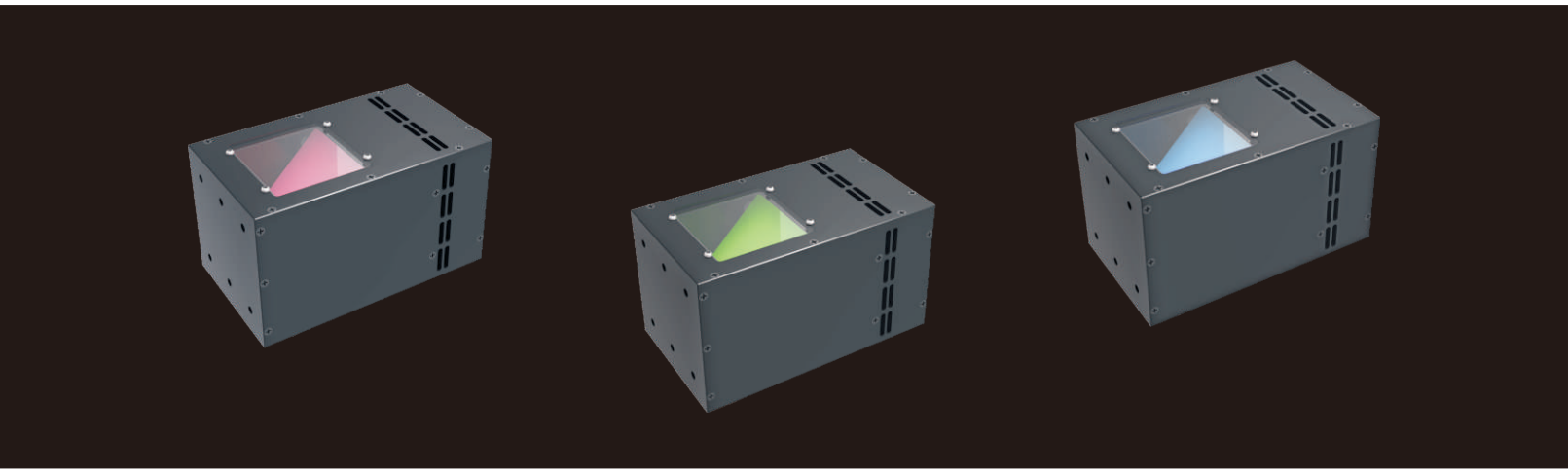
8 OPT-CO150



9 OPT-CO200



High Power Coaxial Lights OPT-COG Series



Product Features

1. More than four times intensity of the OPT-CO series
2. High-power SMD LEDs
3. High-transparency and high-uniformity diffuser
4. Heat-conductive plate and fan to release the heat
5. Special view window and beam splitter

Application Cases

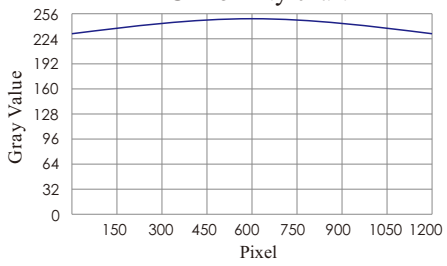
- Inspection dents, damage, defects of reflective surfaces
- Printing circuit board characters and pattern inspection
- Marker point localization
- Inspection of glass surface and geometric measurement
- Recognition of QR codes

Selection Guide

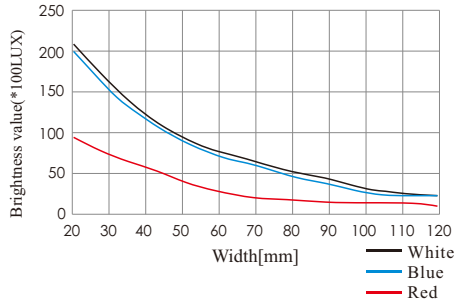
OPT-COG 50

- Width
- High power coaxial light
- Brand name

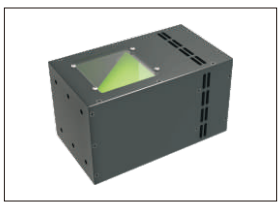
Uniformity chart

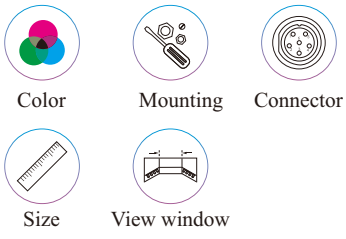


Spectrum Chart

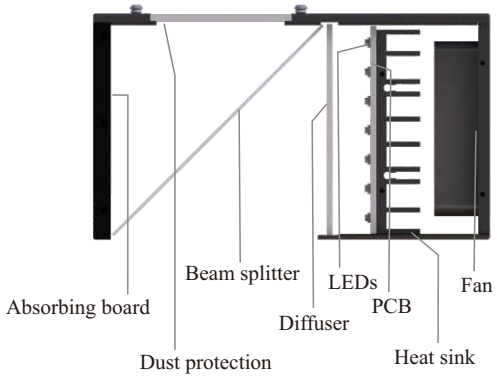


Customization Options



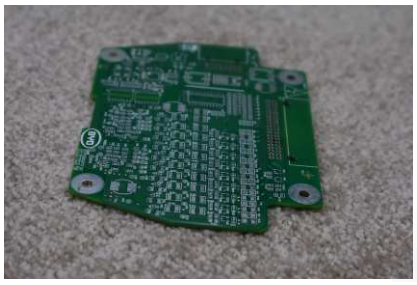


Section Structure Drawing

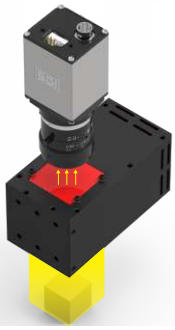


Application Example

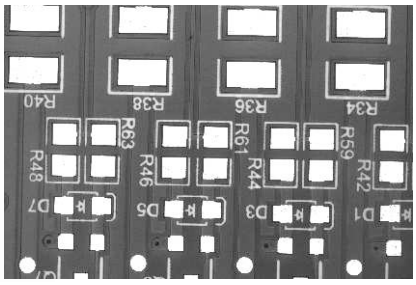
PCB soldering plate localization



Original Image



Illuminated



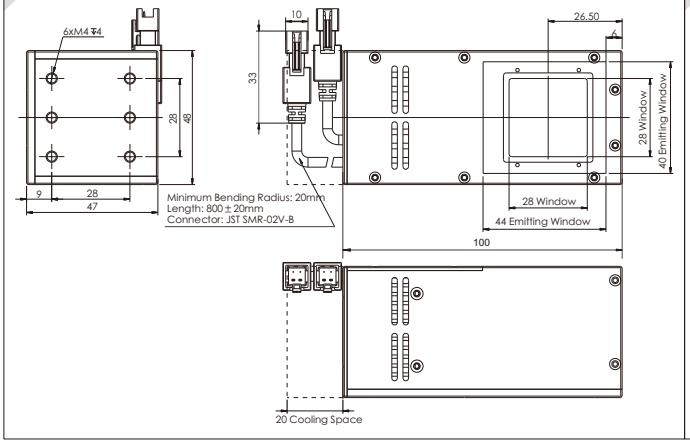
Result Image

Model Table

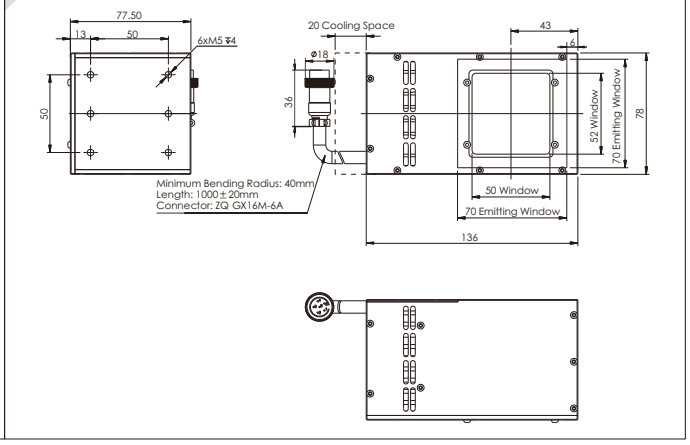
No.	Model	Output ●	Output ○●●	Recommended controller
1	OPT-COG50	1A/24W	0.63A/15.1W	OPT-DPA1024E
2	OPT-COG80	2A/48W	2A/48W	OPT-DPA6024

Dimensional Drawings [mm]

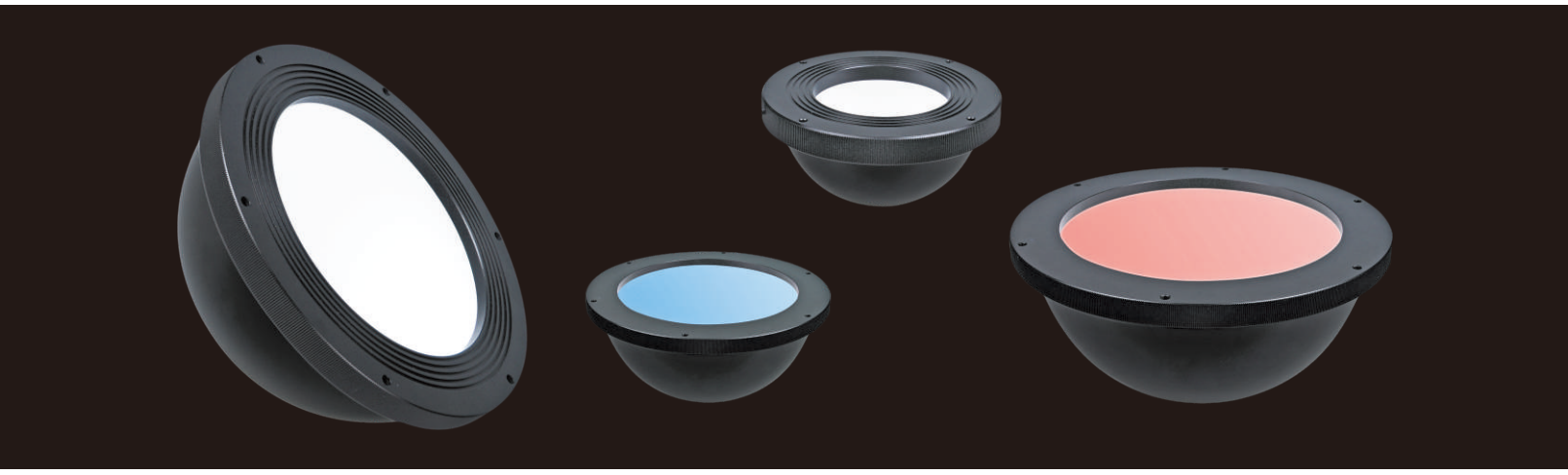
1 OPT-COG50



2 OPT-COG80



Dome Lights OPT-RID series



Product Features

1. Using special diffuser, providing uniform and shadowless lighting
2. Eliminating reflections and shadows, ideal for inspection of glossy and curved surfaces

Application Cases

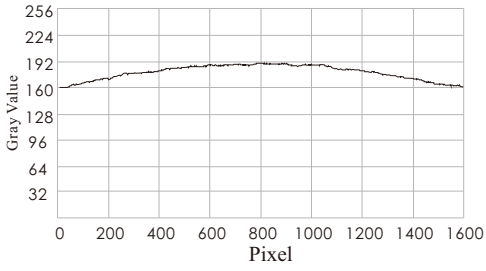
- Inspection of curved and uneven surfaces
- Inspection of highly reflective metal and glass surfaces

Selection Guide

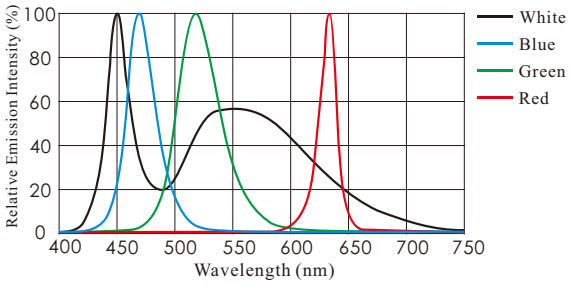
OPT-RID 150

- 150 → Outer diameter
- RID → Dome Light
- OPT → Brand name

Uniformity Chart



Spectrum Chart



Customization Options

Color

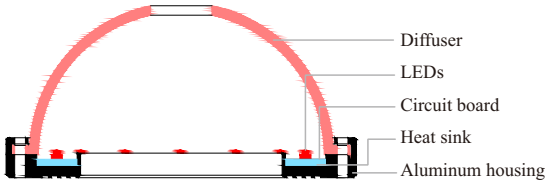
Mounting

Connector

Size

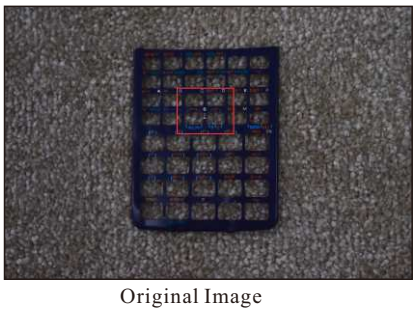
View window

Section Structure Drawing



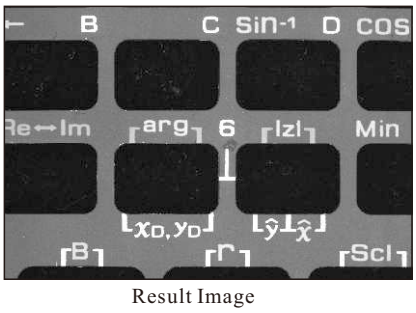
Application Example

Inspected item: Calculator buttons



Original Image

Illuminated



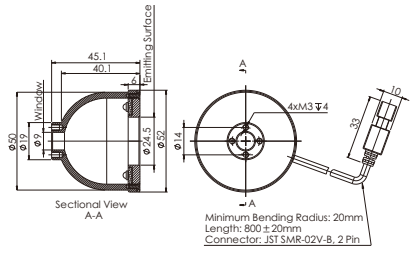
Result Image

Model Table

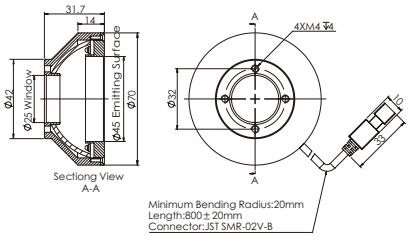
No.	Model	Output 🔴	Output ⚪🟢🔵	Recommended controller
1	OPT-RID52	0.13A/3.1W	0.15A/3.6W	OPT-DPA1024E
2	OPT-RID70	0.15A/3.6W	0.2A/4.8W	OPT-DPA1024E
3	OPT-RID95	0.16A/3.9W	0.23A/5.5W	OPT-DPA1024E
4	OPT-RID100	0.28A/6.7W	0.26A/6.3W	OPT-DPA1024E
5	OPT-RID150	0.27A/6.4W	0.44A/10.6W	OPT-DPA1024E
6	OPT-RID180	0.36A/8.6W	0.42A/10.1W	OPT-DPA1024E
7	OPT-RID240	0.5A/12W	1.2A/28.8W	OPT-DPA6024
8	OPT-RID350	1.6A/38.4W	2A/48W	OPT-DPA6024

Dimensional Drawings [mm]

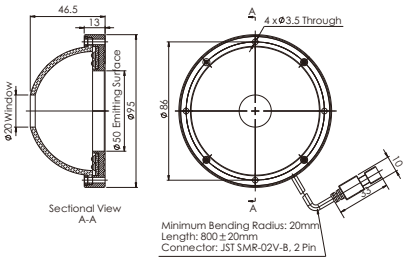
1 OPT-RID52



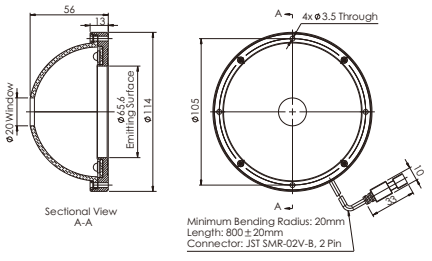
2 OPT-RID70



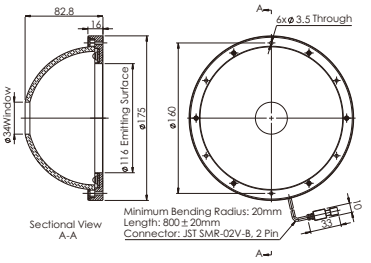
3 OPT-RID95



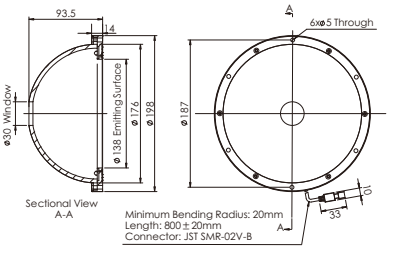
4 OPT-RID100



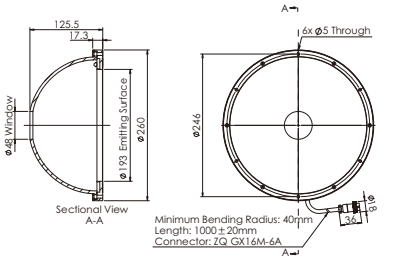
5 OPT-RID150



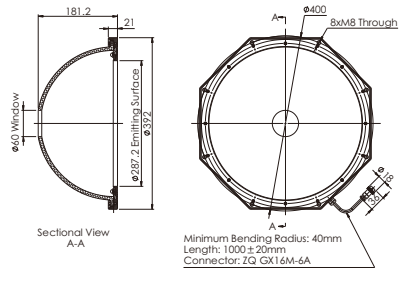
6 OPT-RID180



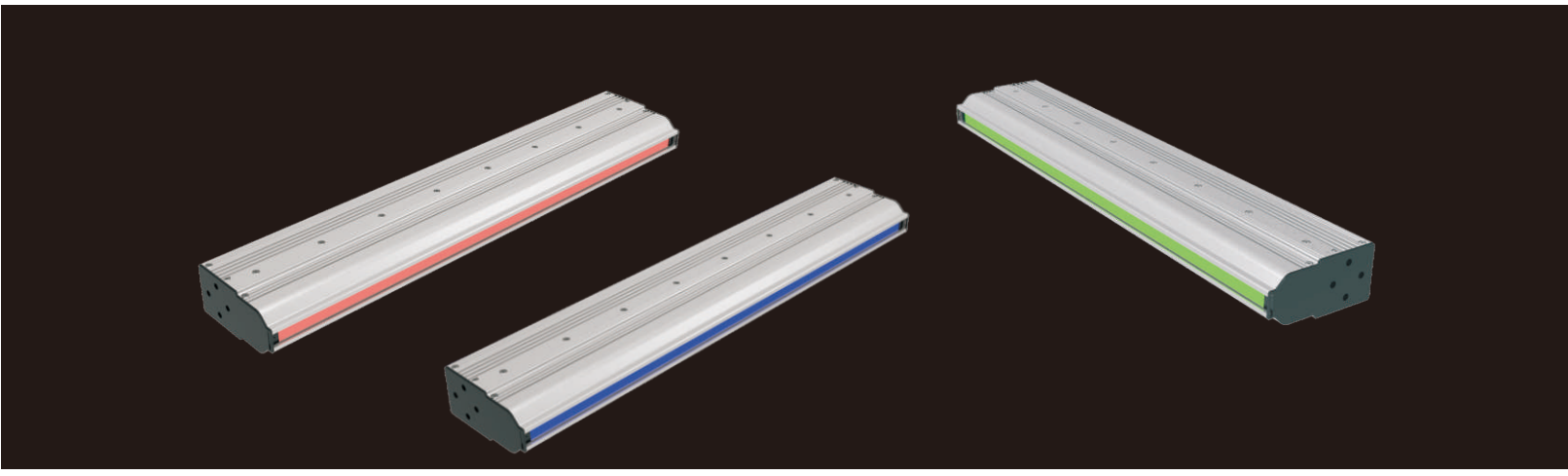
7 OPT-RID240



8 OPT-RID350



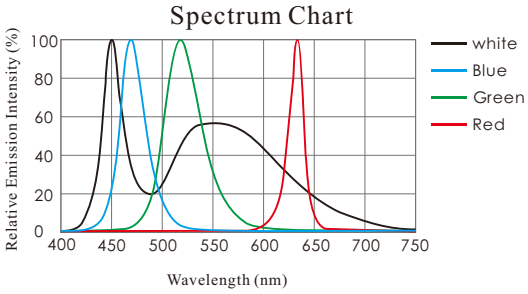
High Intensity Line Scan Lights OPT-LSG series



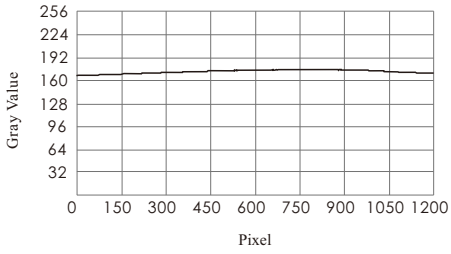
Product Features

1. Suitable for long working distance line scan applications, customizable basing on different working distance.
2. Using high power SMD LEDs and special focusing design, suitable for high speed line scan applications.
3. Max intensity up to 750K lux for standard LSG lights, max intensity 1000K lux for customized LSG lights.

Spectrum Chart



Uniformity Chart



Application Cases

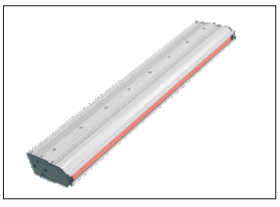
- Inspection of mobile phone screen surface
- Inspection of aluminum foil surface for scratches
- Inspection of steel surface

Selection Guide

OPT-LSG 134

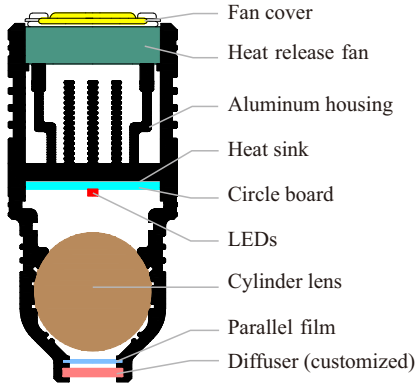
- 134 → Length
- 134 → High intensity line scan light
- OPT-LSG → Brand name

Customization Options



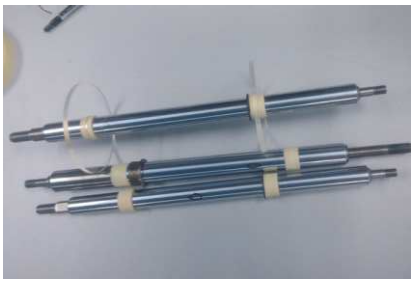
Color · Mounting · Connector · Size · Heat release method

Section Structure Drawing

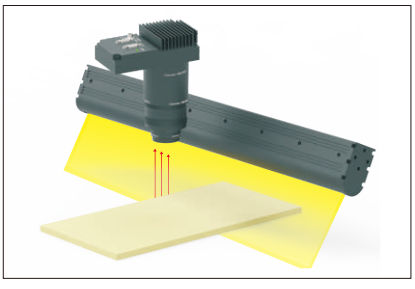


Application Example

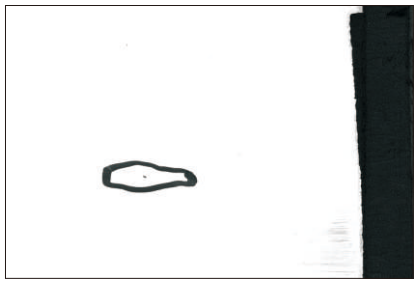
Bearing surface inspection



Original Image



Illuminated



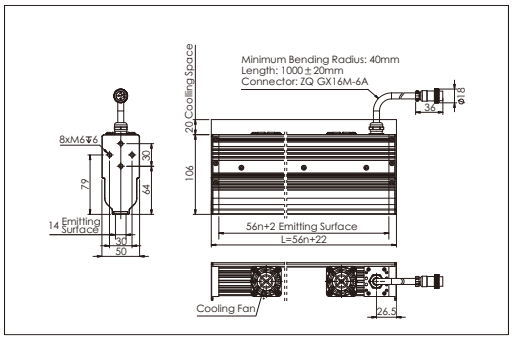
Result Image

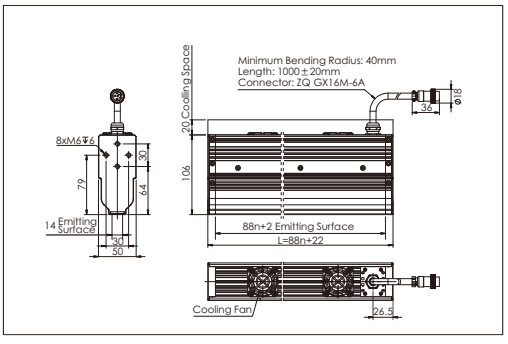
Model Table

No.	Model	Color	Output	Channels	Recommended Controller
1	OPT-LSG134	○●●●	1.4A/33.6W	1	OPT-DPA6024
2	OPT-LSG246	○●●●	2.8A/67.2W	1	OPT-DPA6024
3	OPT-LSG358	○●●●	4.2A/100.8W	1	OPT-DPA6024
4	OPT-LSG470	○●●●	5A/120W	1	OPT-DPA6024
5	OPT-LSG582	○●●●	7A/168W	2	OPT-DPA6024
6	OPT-LSG694	○●●●	8.4A/201.6W	2	OPT-DPA6024
7	OPT-LSG806	○●●●	9.6A/230.4W	2	OPT-DPA6024

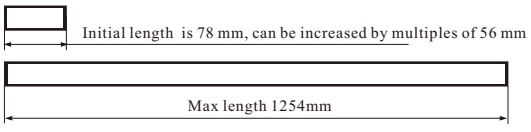
No.	Model	Color	Output	Channels	Recommended Controller
8	OPT-LSG918	○●●●	11.2A/268.8W	3	2pcs OPT-DPA6024
9	OPT-LSG1254	○●●●	13.2A/316.8W	3	2pcs OPT-DPA6024
10	OPT-LSG110	●	0.4A/9.6W	1	OPT-DPA6024
11	OPT-LSG198	●	0.8A/19.2W	1	OPT-DPA6024
12	OPT-LSG286	●	1.2A/28.8W	1	OPT-DPA6024
13	OPT-LSG374	●	1.6A/38.4W	1	OPT-DPA6024
14	OPT-LSG550	●	2.4A/57.6W	1	OPT-DPA6024

Dimensional Drawings [mm]

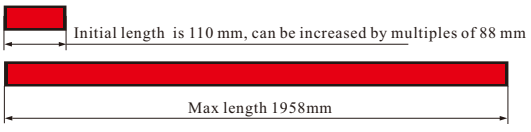




Customizable length

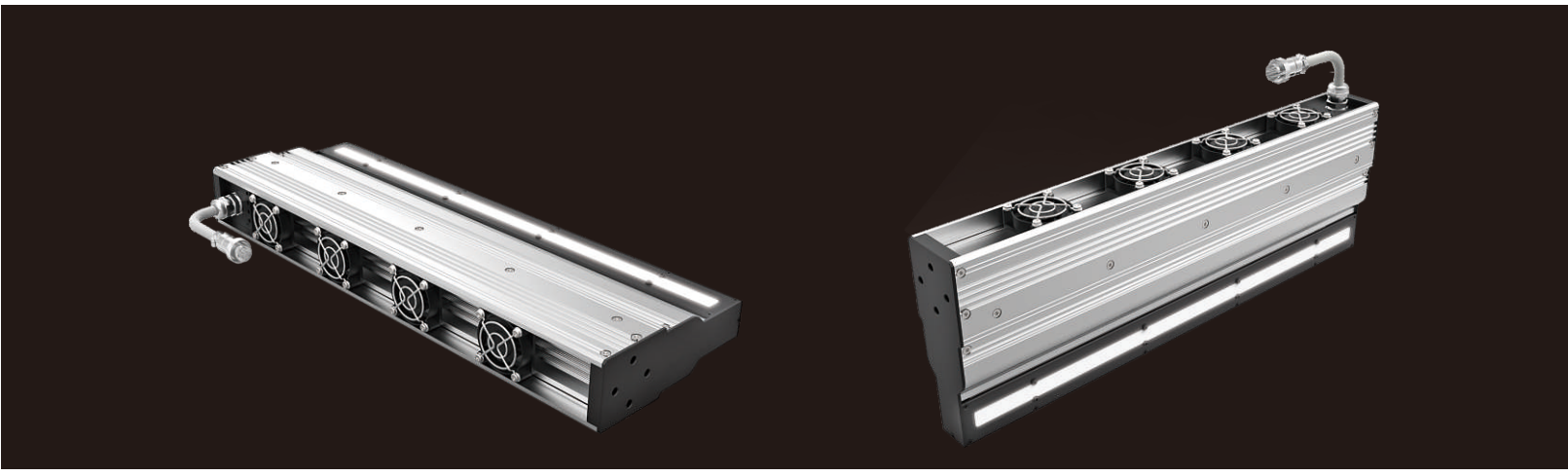


Length of white, green, and blue lights



Length of red lights

High Intensity Coaxial Line Scan Lights OPT-LSGC series



Product Features

1. Highly effective optical structure, compatible to the high intensity inspection applications
2. Compatible to inspections of both highly reflective and non-refelective surfaces
3. Emitting direction highly focused, available to improve the inspection result greatly

Application Cases

- High speed on-line detection
- High reflective surface inspection
- Printing quality inspection

Selection Guide

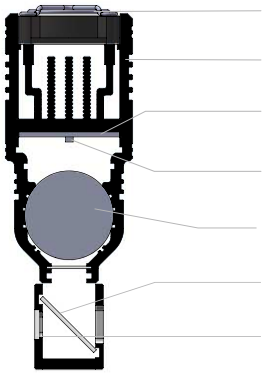
OPT-LSGC 134

- 134 → Length
- OPT-LSGC → High intensity coaxial line scan light
- Brand name

Customization Options

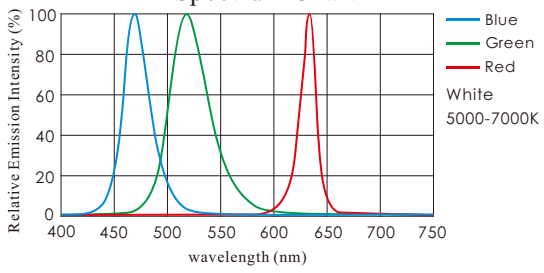
Color, Mounting, Connector, Size, Heat release method

Section Structure Drawing

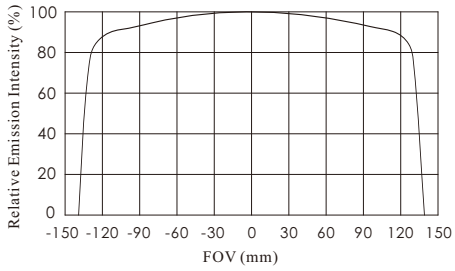


- Cooling fan
- Aluminum housing
- Circle board
- High power LEDs
- Cylinder lens
- Beam splitter
- Dustproof mirror

Spectrum Chart

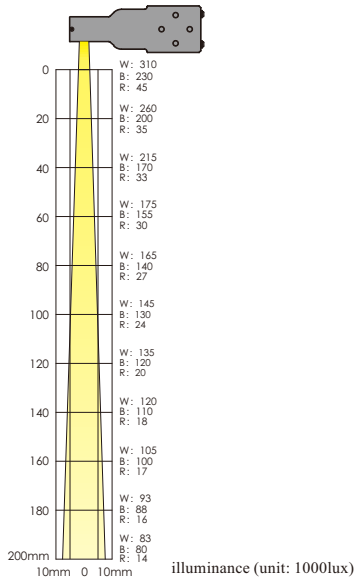


Relative Emission Intensity Distribution



Remarks: data above is the testing result of OPT-LSGC286-R at 20mm WD, only for your reference.

Light Spot and Illuminance at different WD



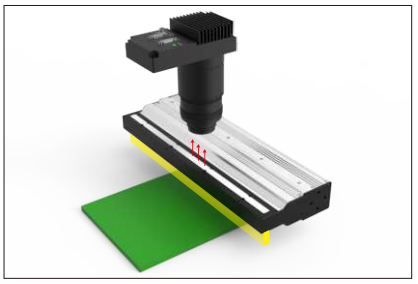
The data is from experiment, only for your reference

For higher intensity, please refer to OPT-LSSC

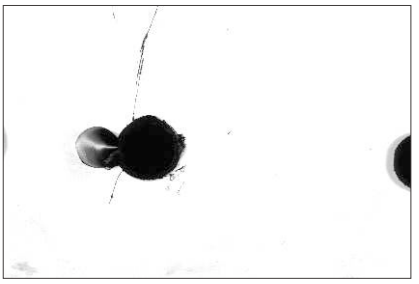
Application Example

Glass surface inspection

Original Image



Illuminated



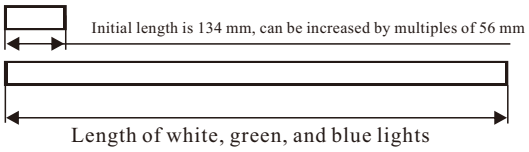
Result Image

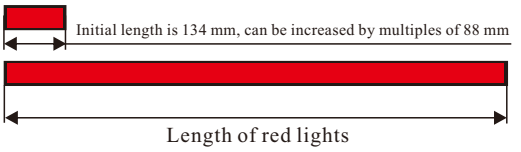
Model Table

No.	Model	Color	Output	Channels	Recommended Controller	Length A(mm)	Emitting Surface B (mm)
1	OPT-LSGC134	○●●	1.4A/33.6W	1	OPT-DPA6024 OPT-APA6024	134	104
2	OPT-LSGC190	○●●	2.1A/50.4W	1	OPT-DPA6024 OPT-APA6024	190	170
3	OPT-LSGC246	○●●	2.8A/67.2W	1	OPT-DPA6024 OPT-APA6024	246	226
4	OPT-LSGC358	○●●	4.2A/100.8W	1	OPT-DPA6024 OPT-APA6024	358	338
5	OPT-LSGC414	○●●	4.9A/117.6W	1	OPT-DPA6024 OPT-APA6024	414	394
6	OPT-LSGC470	○●●	5.6A/134.4W	1	OPT-DPA6024 OPT-APA6024	470	450
7	OPT-LSGC526	○●●	6.3A/216.0W	2	OPT-DPA6024 OPT-APA6024	526	506

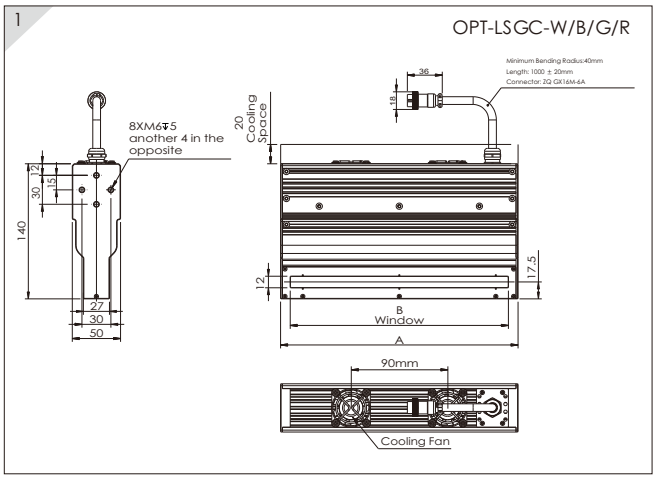
No.	Model	Color	Output	Channels	Recommended Controller	Length A (mm)	Emitting Surface B (mm)
1	OPT-LSGC110	●	0.4A/9.6W	1	OPT-DPA6024 OPT-APA6024	110	90
2	OPT-LSGC198	●	0.8A/19.2W	1	OPT-DPA6024 OPT-APA6024	198	178
3	OPT-LSGC286	●	1.2A/28.8W	1	OPT-DPA6024 OPT-APA6024	286	266
4	OPT-LSGC374	●	1.6A/38.4W	1	OPT-DPA6024 OPT-APA6024	374	354
5	OPT-LSGC462	●	2.0A/48.0W	1	OPT-DPA6024 OPT-APA6024	462	442
6	OPT-LSGC550	●	2.4A/57.6W	1	OPT-DPA6024 OPT-APA6024	550	530

Customizable length

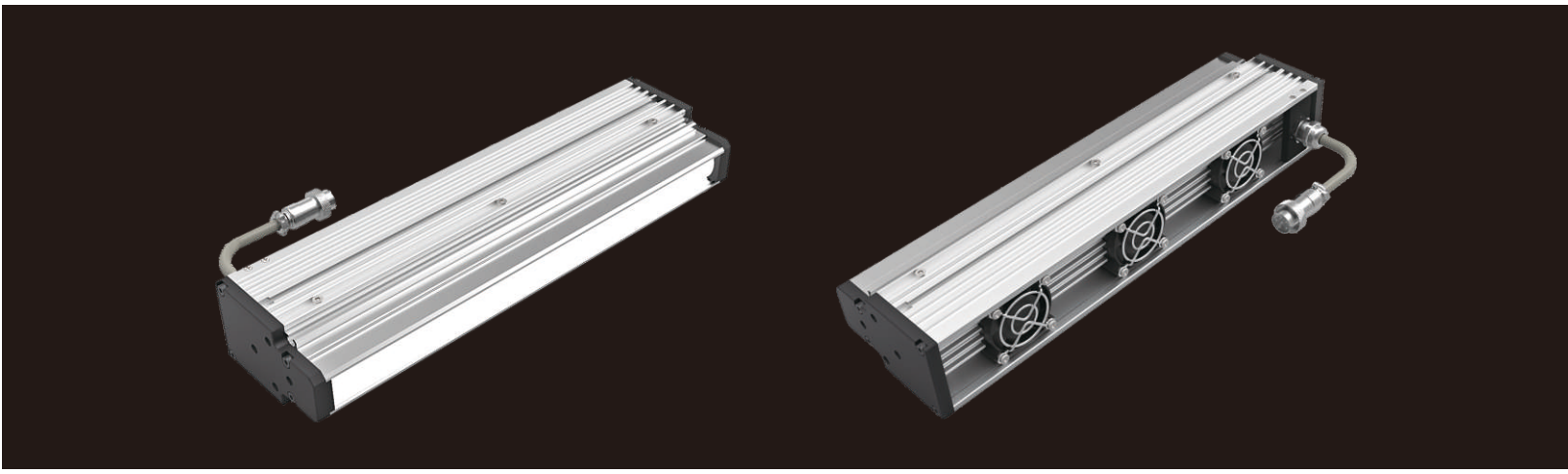




Dimensional Drawing [mm]



Ultra Intensity Line Scan Lights OPT-LSS Series



Product Features

1. Max illuminance up to 1800K lux
2. Suitable for different working distance due to ultra focused light spot
3. Compatible to inspections of both highly reflective and non-refelective surfaces

Application Cases

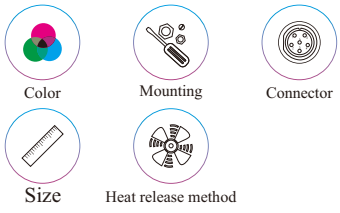
- Ultra high speed on-line inspection
- Long working distance on-line inspection
- High speed printing quality inspection

Selection Guide

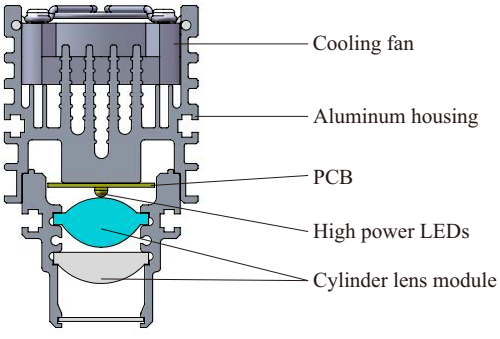
OPT-LSS104

- Length
- Ultra high intensity line scan light
- Brand name

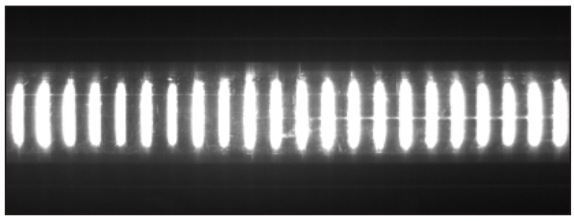
Customization Options



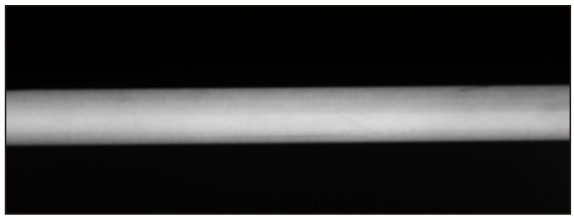
Section Structure Drawing



Special Design Customized

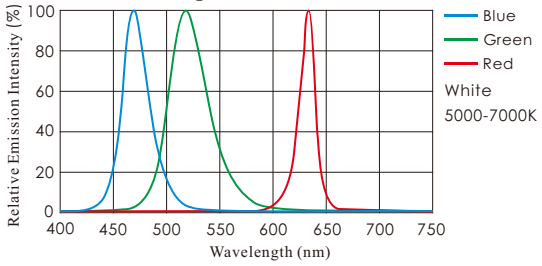


For standard designs, LEDs are visible when inspecting reflective surface.



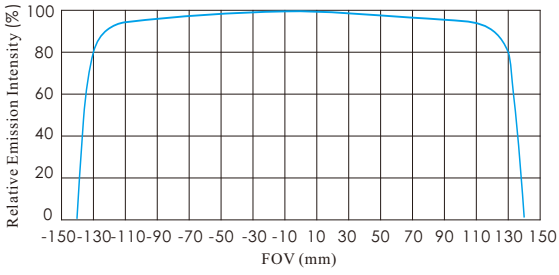
The LEDs are not visible for special design, light intensity decrease 20% -40%.

Spectrum Chart



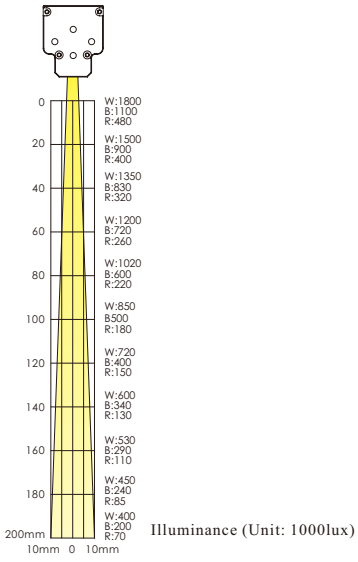
Remarks: above data is only for your reference.
It may be different in applications.

Relative Emission Intensity Distribution



Remarks: data above is the testing result of OPT-LSS300-R at 20 mm WD, only for your reference.

Light Spot and Illuminance at different WD



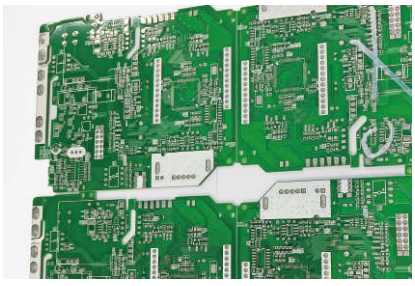
Illuminance (Unit: 1000lux)

The data above is from experiments, only for your reference.

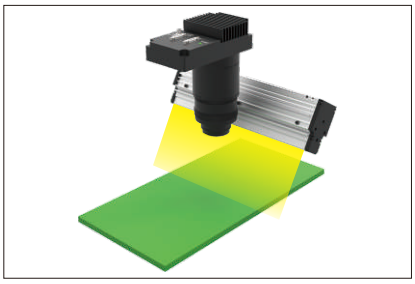
For higher intensity, please refer to OPT-LSSC.

Application Example

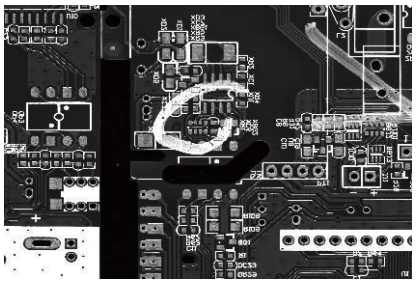
Character detection for PCB board



Original Image



Illuminated



Result Image

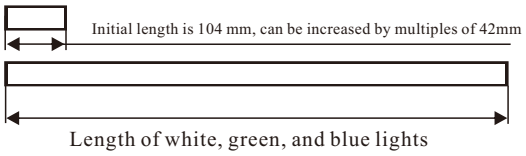
Model Table

No.	Model	Color	Output	Channels	Recommended Controller	Length A(mm)	Emitting Surface B(mm)
1	OPT-LSS104	○●●	1.4A/33.6W	1	OPT-DPA6024 OPT-APA6024	104	84
2	OPT-LSS146	○●●	2.1A/50.4W	1	OPT-DPA6024 OPT-APA6024	146	126
3	OPT-LSS188	○●●	2.8A/67.2W	1	OPT-DPA6024 OPT-APA6024	188	168
4	OPT-LSS230	○●●	3.5A/84.0W	1	OPT-DPA6024 OPT-APA6024	230	210
5	OPT-LSS272	○●●	4.2A/100.8W	1	OPT-DPA6024 OPT-APA6024	272	252
6	OPT-LSS314	○●●	4.9A/117.6W	1	OPT-DPA6024 OPT-APA6024	314	294
7	OPT-LSS356	○●●	5.6A/134.4W	2	OPT-DPA6024 OPT-APA6024	356	336
8	OPT-LSS398	○●●	6.3A/151.2W	2	OPT-DPA6024 OPT-APA6024	398	378
9	OPT-LSS440	○●●	7.0A/168.0W	2	OPT-DPA6024 OPT-APA6024	440	420
10	OPT-LSS482	○●●	7.7A/184.8W	2	OPT-DPA6024 OPT-APA6024	482	462

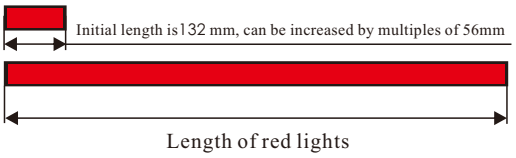
No.	Model	Color	Output	Channels	Recommended Controller	Length A(mm)	Emitting Surface B(mm)
11	OPT-LSS524	○●●	8.4A/201.6W	2	OPT-DPA6024 OPT-APA6024	524	504
12	OPT-LSS608	○●●	9.8A/235.2W	2	OPT-DPA6024 OPT-APA6024	608	588
13	OPT-LSS692	○●●	11.2A/268.8W	1	OPT-DPA20024E	692	672
14	OPT-LSS860	○●●	14.0A/336.0W	1	OPT-DPA20024E	860	840
15	OPT-LSS1028	○●●	16.8A/403.2W	1	OPT-DPA20024E	1028	1008

No.	Model	Color	Output	Channels	Recommended Controller	Length A(mm)	Emitting Surface B(mm)
1	OPT-LSS132	●	1.4A/33.6W	1	OPT-DPA6024 OPT-APA6024	132	112
2	OPT-LSS188	●	2.1A/50.4W	1	OPT-DPA6024 OPT-APA6024	188	168
3	OPT-LSS244	●	2.8A/67.2W	1	OPT-DPA6024 OPT-APA6024	244	224
4	OPT-LSS300	●	3.5A/84W	1	OPT-DPA6024 OPT-APA6024	300	280
5	OPT-LSS356	●	4.2A/100.8W	1	OPT-DPA6024 OPT-APA6024	356	336
6	OPT-LSS412	●	4.9A/117.6W	1	OPT-DPA6024 OPT-APA6024	412	392
7	OPT-LSS468	●	5.6A/134.4W	2	OPT-DPA6024 OPT-APA6024	468	448
8	OPT-LSS524	●	6.3A/151.2W	2	OPT-DPA6024 OPT-APA6024	524	504
9	OPT-LSS580	●	7A/168W	2	OPT-DPA6024 OPT-APA6024	580	560
10	OPT-LSS692	●	8.4A/201.6W	2	OPT-DPA6024 OPT-APA6024	692	672
11	OPT-LSS804	●	9.8A/235.2W	2	OPT-DPA6024 OPT-APA6024	804	784
12	OPT-LSS916	●	11.2A/268.8W	1	OPT-DPA20024E	916	896

Customizable length



Length of white, green, and blue lights

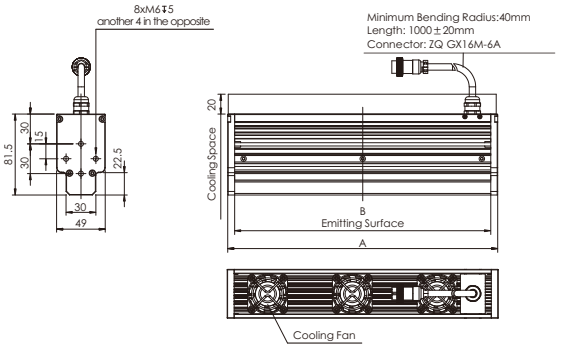


Length of red lights

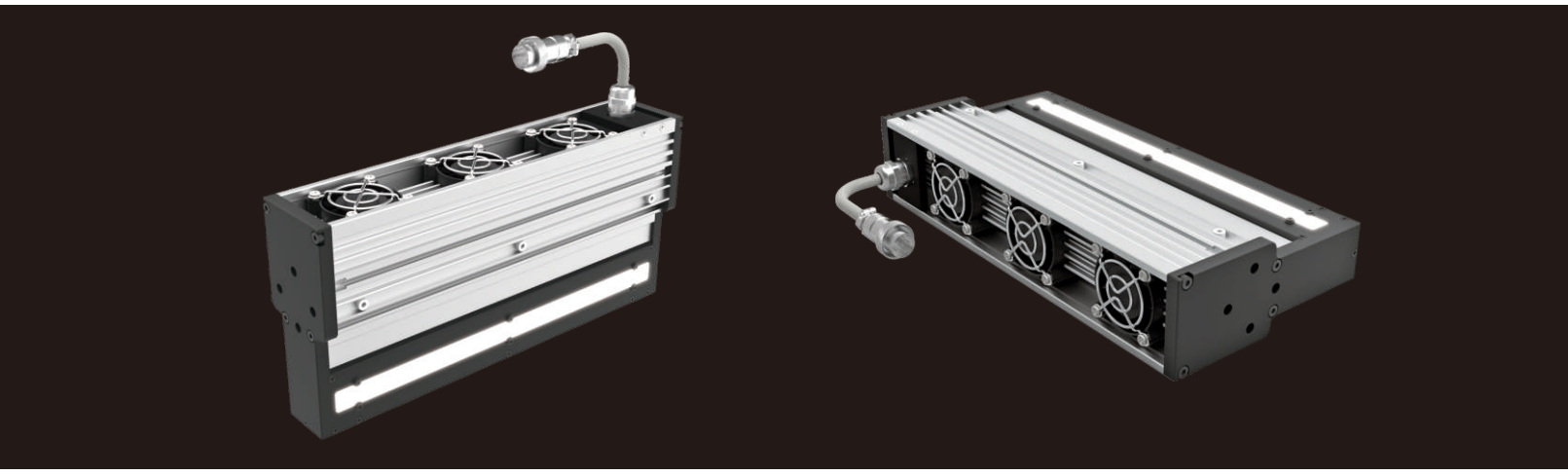
Dimensional Drawing (mm)

1

OPT-LSS



Ultra Intensity Coaxial Line Scan Light OPT-LSSC series



Product Features

1. With ultra intensity, suitable for high speed on-line inspection
2. Compatible to inspection of both high reflective and non-refelective surfaces
3. Suitable for different working distance due to ultra focused light spot,

Application Cases

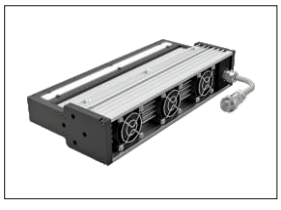
- Providing illumination for line scan cameras
- Film and glass surface scratches and inside impurities inspection
- High speed printing quality inspection

Selection Guide

OPT-LSSC272

- Length
- Ultra intensity coaxial line scan light
- Brand name

Customization Options



Color

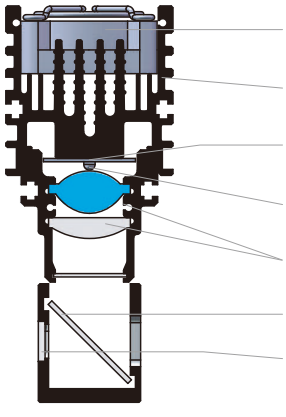
Mounting

Connector

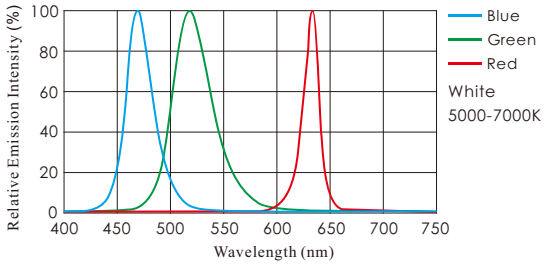
Size

Heat release method

Section Structure Drawing

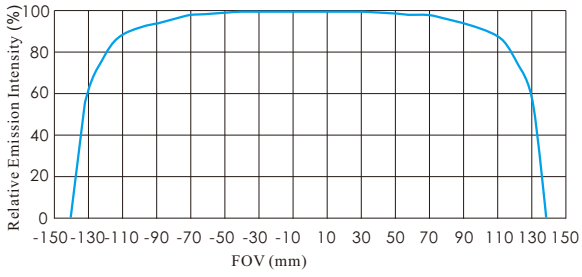


Spectrum Chart



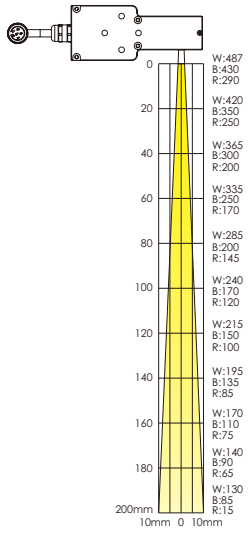
Remarks: data above is only for your reference.
It may be different in applications

Relative Emission Intensity Distribution



Remarks: data above is the testing result of OPT-LSSC300-R at 20mm WD, only for your reference.

Light Spot and Illuminance at different WD



illuminance (unit: 1000lux)

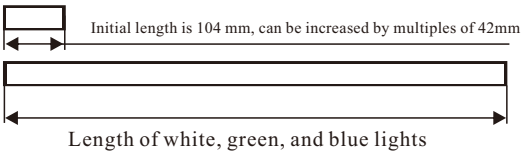
The data is from experiment, only for your reference
For lower intensity, please refer to OPT-LSGC

Model Table

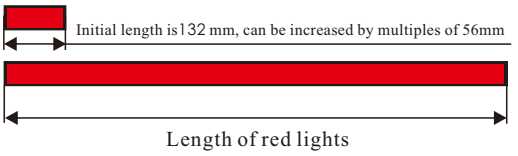
No.	Model	Color	Output	Channels	Recommended Controller	Length A(mm)	Emitting Surface B(mm)
1	OPT-LSSC104	○●●	1.4A/33.6W	1	OPT-DPA6024 OPT-APA6024	104	84
2	OPT-LSSC146	○●●	2.1A/50.4W	1	OPT-DPA6024 OPT-APA6024	146	126
3	OPT-LSSC188	○●●	2.8A/67.2W	1	OPT-DPA6024 OPT-APA6024	188	168
4	OPT-LSSC230	○●●	3.5A/84W	1	OPT-DPA6024 OPT-APA6024	230	210
5	OPT-LSSC272	○●●	4.2A/100.8W	1	OPT-DPA6024 OPT-APA6024	272	252
6	OPT-LSSC314	○●●	4.9A/117.6W	1	OPT-DPA6024 OPT-APA6024	314	294
7	OPT-LSSC356	○●●	5.6A/134.4W	2	OPT-DPA6024 OPT-APA6024	356	336
8	OPT-LSSC398	○●●	6.3A/151.2W	2	OPT-DPA6024 OPT-APA6024	398	379
9	OPT-LSSC440	○●●	7A/168W	2	OPT-DPA6024 OPT-APA6024	440	420
10	OPT-LSSC482	○●●	7.7A/184.8W	2	OPT-DPA6024 OPT-APA6024	482	462
11	OPT-LSSC524	○●●	8.4A/201.6W	2	OPT-DPA6024 OPT-APA6024	524	504

No.	Model	Color	Output	Channels	Recommended Controller	Length A(mm)	Emitting Surface B(mm)
1	OPT-LSSC132	●	1.4A/33.6W	1	OPT-DPA6024 OPT-APA6024	132	102
2	OPT-LSSC188	●	2.1A/50.4W	1	OPT-DPA6024 OPT-APA6024	188	168
3	OPT-LSSC244	●	2.8A/67.2W	1	OPT-DPA6024 OPT-APA6024	244	224
4	OPT-LSSC300	●	3.5A/84W	1	OPT-DPA6024 OPT-APA6024	300	280
5	OPT-LSSC356	●	4.2A/100.8W	1	OPT-DPA6024 OPT-APA6024	356	336
6	OPT-LSSC412	●	4.9A/117.6W	1	OPT-DPA6024 OPT-APA6024	412	392
7	OPT-LSSC468	●	5.6A/134.4W	2	OPT-DPA6024 OPT-APA6024	468	448
8	OPT-LSSC524	●	6.3A/151.2W	2	OPT-DPA6024 OPT-APA6024	524	504

Customizable length



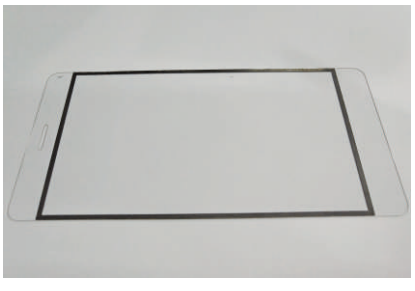
Length of white, green, and blue lights



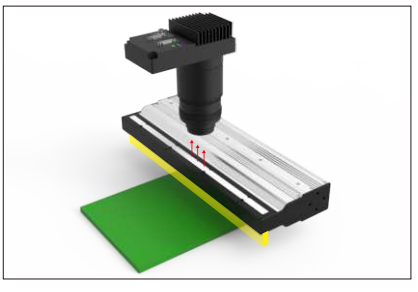
Length of red lights

Application Example

Transparent glass surface scratches inspection



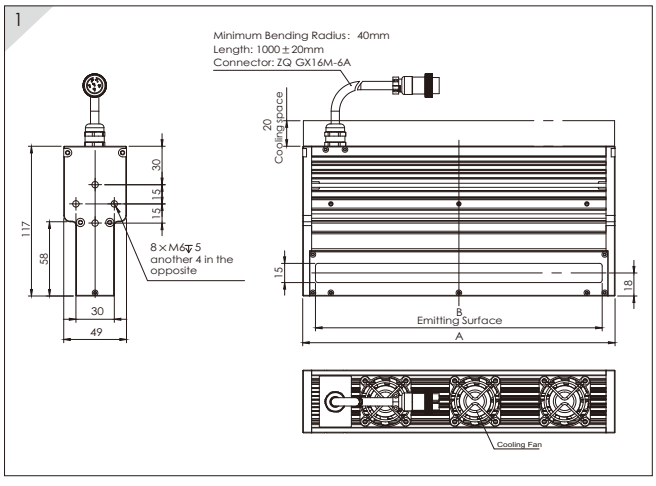
Original Image



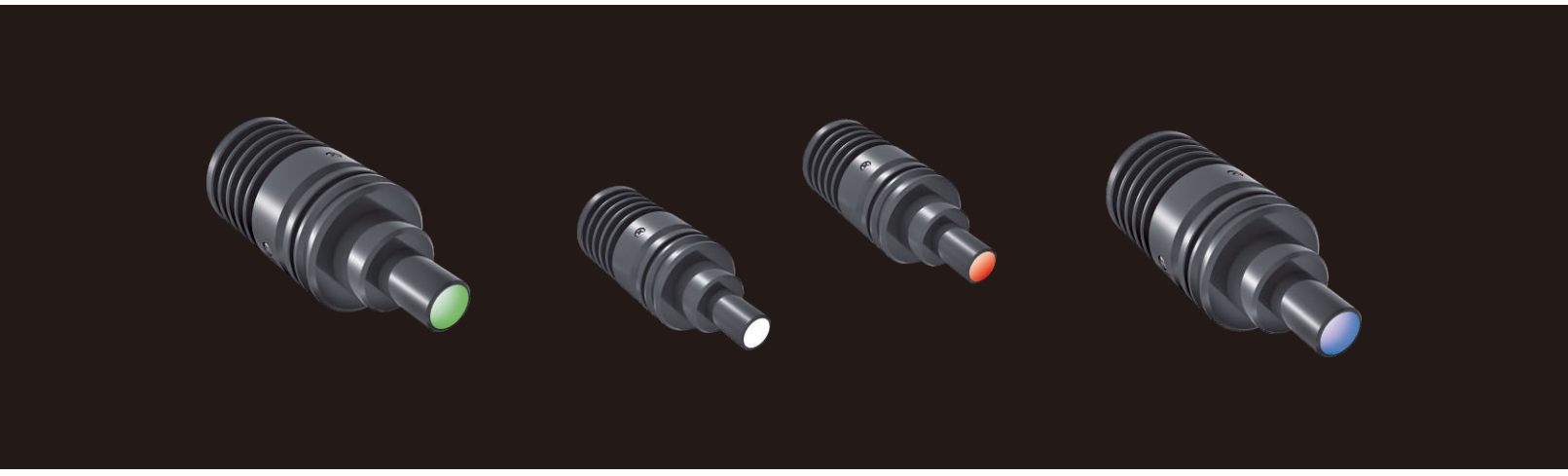
Illuminated

Result Image

Dimensional Drawing (mm)



High Intensity Spot Lights OPT-PIG series



Product Features

1. Five times intensity of ordinary spot lights
2. The housing temperature keeping below 45°C due to highly effective heat dissipation design
3. A special lighting-guide optical part deployed, the max illuminance up to 400,000 lux

Application Cases

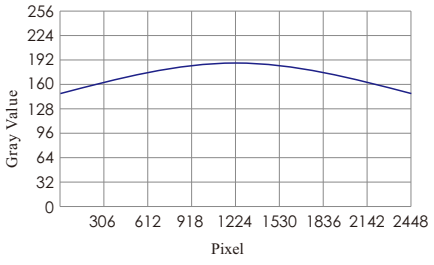
- Detection of capacitance
- Screw surface defects inspection
- Pitch measurement of connectors
- Inspection of soldering points

Selection Guide

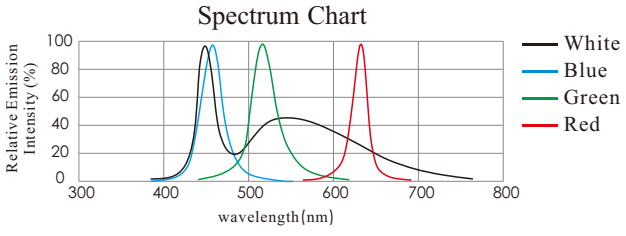
OPT-PIG0803

- Power
- Diameter of light emitting circle
- High intensity spot light
- Brand name

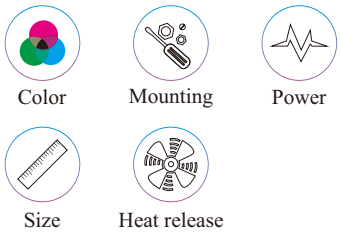
Uniformity Chart



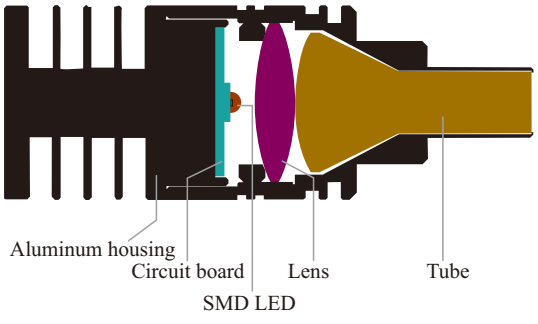
Spectrum Chart



Customization Options

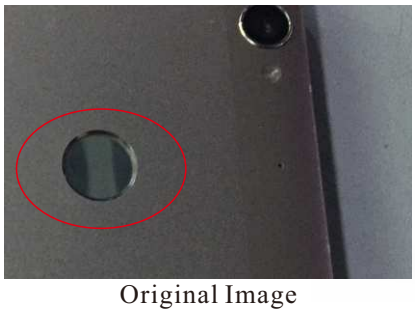


Section Structure Drawing

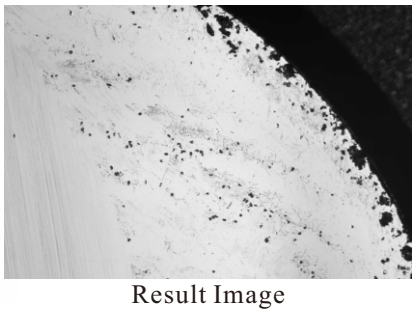


Application Example

Surface inspection of fingerprint scanner


Original Image

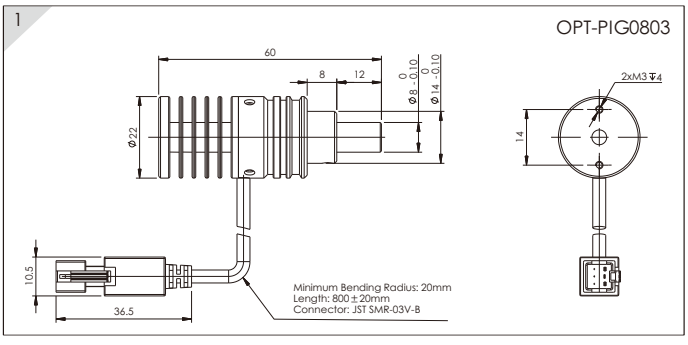

Illuminated


Result Image

Model Table

No.	Model	Output 🔴	Output ○🟢🔵	Recommended controller
1	OPT-PIG0803	0.7A/1.8W	0.7A/2.3W	OPT-APA0705F

Dimensional Drawing [mm]



Collimated Spot Lights OPT-PIPL series

Product Features

1. The direction of emitted light is parallel
2. Working distances from 80 to 250 mm, illuminated area adjustable

Application Case

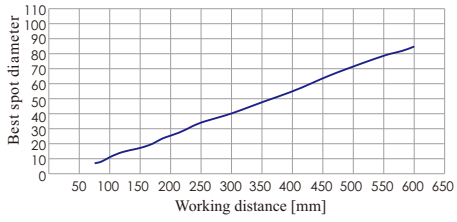
- Localization of marker points
- Electronic chip inspection
- Inspection of wafers and LCD glass substrates
- Scanning
- Surface inspection
- LCD board inspection

Selection Guide

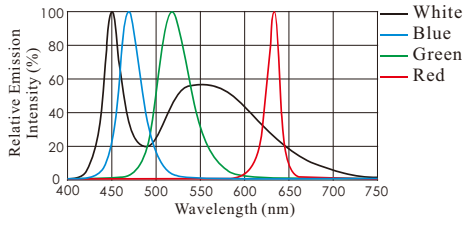
OPT-PIPL24

- Emitting surface diameter
- Collimated spot light
- Brand name

Spot Diameter Over Working Distance



Spectrum Chart



Customization Options

Color

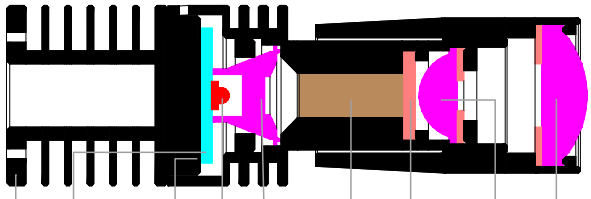
Mounting

Power

Size

Heat release

Section Structure Drawing



PCB LED

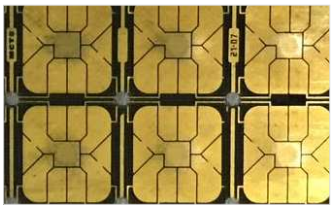
Aluminum housing Heat sink Lens 1 Tube Diffuser Lens 2 Lens 3

Model Table

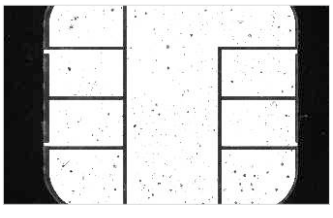
No.	Model	Output ●	Output ○●○	Recommended controller
1	OPT-PIPL24	0.8A/2.4W	0.8A/3W	OPT-APA0805

Application Example

Inspected item: bank card chip

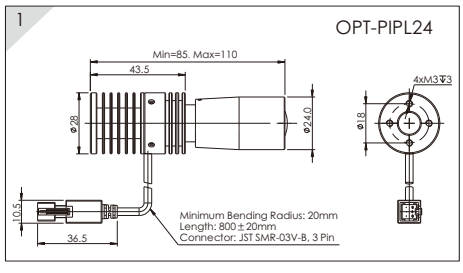


Original Image



Result Image

Dimensional Drawings [mm]



Fiber Spot Lights OPT-QG series

Product Features

1. Built-in 100 - 240V AC power, integrated structure
2. Suitable to replace halogen lights without changing any other equipment
3. Using high intensity LEDs, two times longer lifetime than halogen lights

Application Cases

- Replacement of halogen lights
- Illumination in the medical field
- Semiconductor equipment
- Microscopes
- General industrial applications

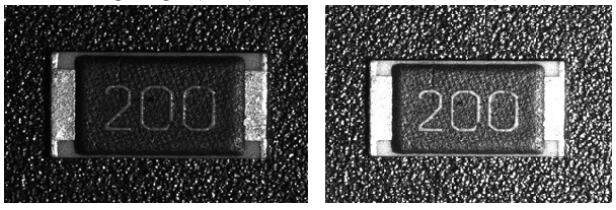
Selection Guide

OPT-QG10

- Power
- Fiber spot light
- Brand name

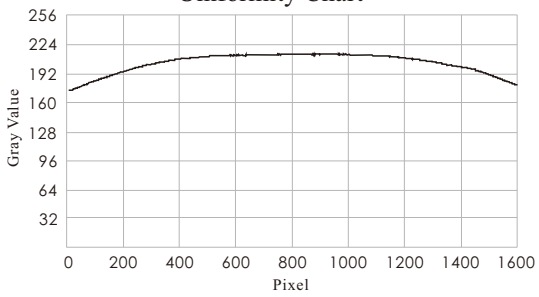
25W LEDs delivery the same brightness as 100 W halogen lights

Halogen light (white) | QG series (white)



Halogen lights provide insufficient intensity, leading to poor image quality, while QG series lights offer the required brightness.

Uniformity Chart

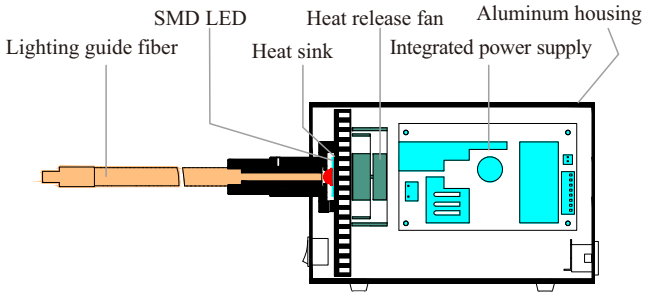


Customization Options

Color | Mounting | Power

Heat release | Size

Section Structure Drawing



Application Example

Beer cap surface characters recognition

Original Image

Result image

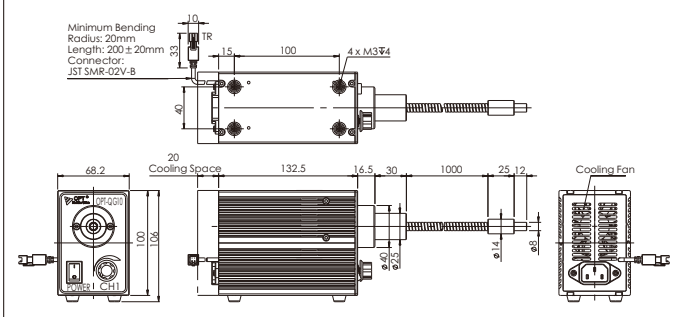
Result Image

Model Table

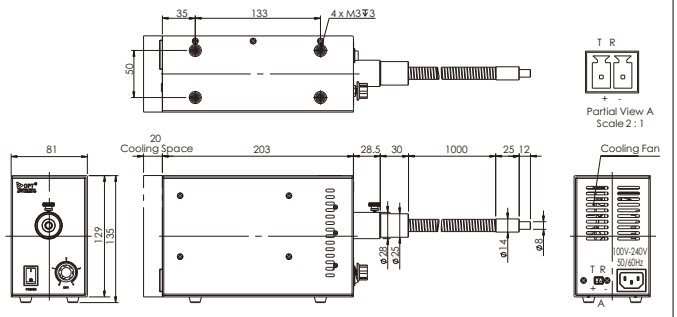
No.	Model	Input Voltage	Power
1	OPT-QG10	110~240V	10W
2	OPT-QG80	110~240V	80W

Dimensional Drawings [mm]

1 OPT-QG10



2 OPT-QG80



Digital Fiber Spot Lights OPT-DOFP Series

Product Features

1. Illuminance up to 2500K lux at zero working distance
2. Integrated design for LED light and controller
3. Supporting both Ethernet and RS232 communication
4. Supporting both programmable trigger mode and external trigger mode, trigger frequency up to 50KHz

Application Cases

- Replacement of halogen lights Illumination in the medical field
- Semiconductor equipment
- Microscopes
- General industrial applications

Selection Guide

OPT-DOFP150

- Power
- Digital fiber spot light
- Brand name

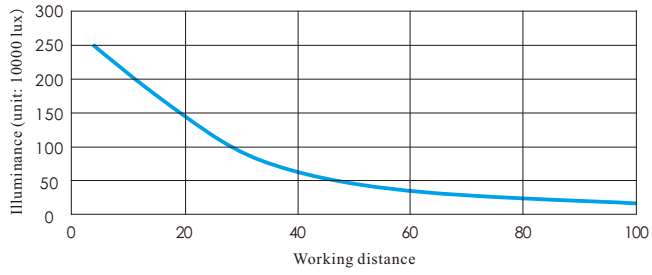
Customization Options

Fiber length

Emitting surface

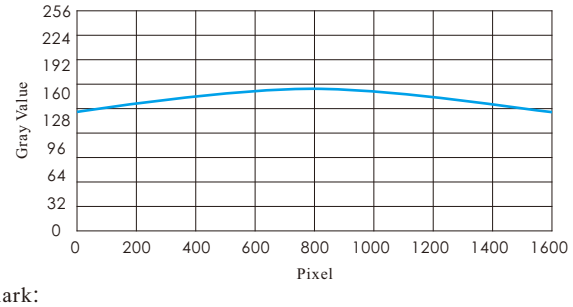
Fiber type

Illuminance changing with working distance



Remarks:
The light equipped with a 1m fiber, emitting surface 6.5mm diameter.
Above data is from experiment, only for your reference.

Uniformity Chart



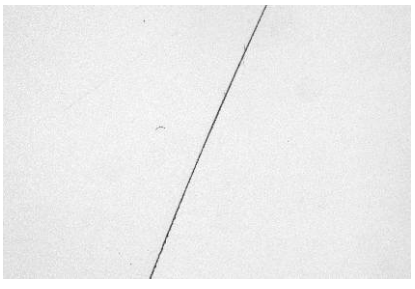
Remark:
Data above is the testing result of OPT-DOFP150 worked with telecentric lens at 20mm field of view, only for your reference.

Application Example

Mobile phone LCD screen defects detection

Original image

Illuminated



Result image

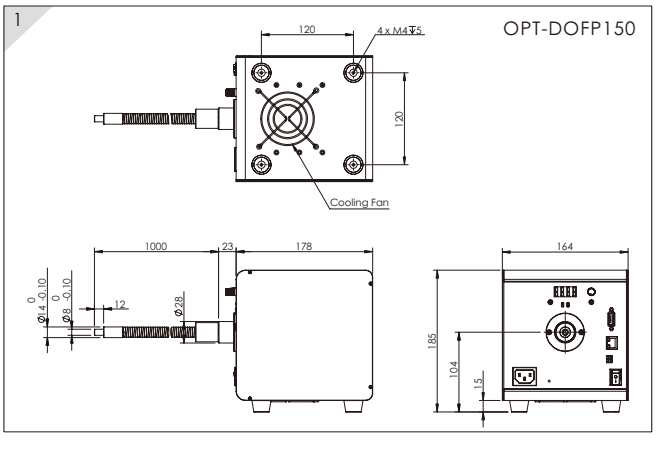
Model Table

No.	Model	Input Voltage ○	Output Power ○
1	OPT-DOFP150	110~240V	150W

Parameters

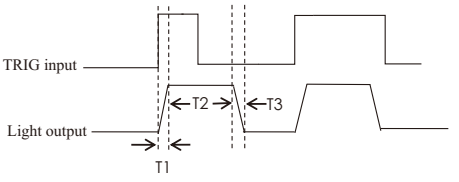
Item	Parameter	Details
Input voltage	AC100-240V	50/60Hz
Light intensity	256 levels	Adjust by the intensity adjust key or DEMO software
Short circuit protection	yes	Protection shuts down the related channel and “ER2” appears on the display
Over current protection	yes	When the current is over 10% of set value the related channel is shut down and “ER1” appears on the display
Trigger mode	level trigger	High level: 5-24V; Low level: 0-2V
Normal trigger mode	256 levels	
High-intensity trigger mode	8A per channel	
normal trigger pulse width	1μs-30s	Adjusted by the intensity adjustment key or via software, the time unit only can be set via DEMO software
High-intensity trigger pulse width	0.01-5.00ms	Adjusted by the intensity adjustment key or via software
Programmable trigger mode	yes	Both intensity and pulse width can be set
Response time	≤15μs	
Trigger frequency	50KHz	
Output power	120W	
Communication	Rs232 / Ethernet	
Standby power	18.2W	input 220V
Hi-pot test	AC1500V 1Min	Leak current < 10mA
Insulation resistance	DC500V	Insulation resistance > 20MΩ
Working temperature	-5℃~50℃	
Size (mm)	164 x 178 x 186	
Weight (kg)	3.72	

Dimensional Drawing (mm)

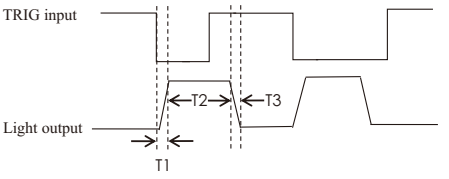


Sequence Diagram

Rising edge trigger



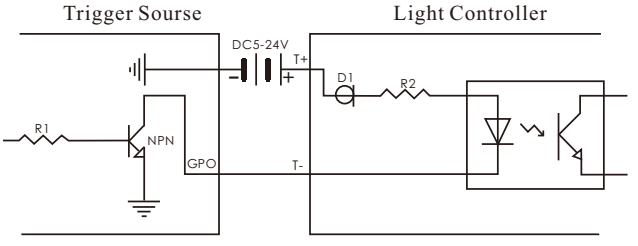
Falling edge trigger



Remarks: T1 is the OFF to ON response time; T2 is the trigger pulse width, T3 is the ON to OFF response time; T1≤15μs, T2 can be set in the range of 1μs ~30s, T3≤5μs

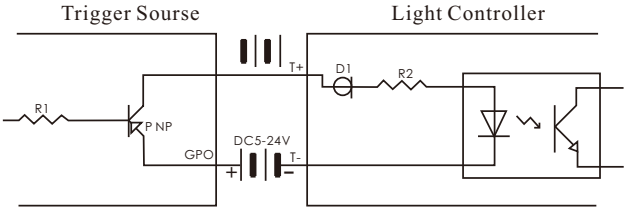
Trigger Connection Reference

(1) NPN Connection



Trig Input Circuit For NPN Type Trigger

(2) PNP Connection



Trig Input Circuit For NPN Type Trigger

Structured Lights OPT-SL/OPT-SLS Series

OPT-SL Direct Structured Lights

Product Features

1. The lens position adjustable, no need adapter rings
2. Suitable for C Mount lens with 2/3" image circle
3. Different types of grid chips for choices according to the application request
4. The spot boundary is clear and uniform, can realize accurate illumination
5. The lights is perpendicular to the measuring surface (for slant illumination please refer to OPT-SLS)

Application Cases

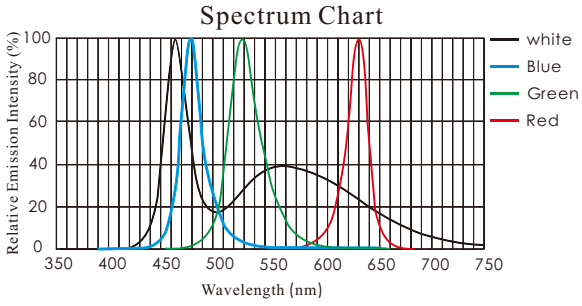
- 3D analysis and reconstruction
- Measure object with complex structure and inclined plane
- Dimensional measurement of electronic components
- Planarity control of product
- Location and alignment for robot picking and placing

Selection Guide

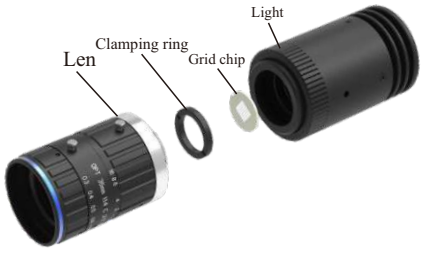
OPT-SL03

- Power
- Direct structured lights
- Brand name

Spectrum Chart



Mounting guide of grid chip and len



1. The coated side of grid chip is faced to the lens.
2. Rotate the clamping ring to replace the grid chip.

Customization Options

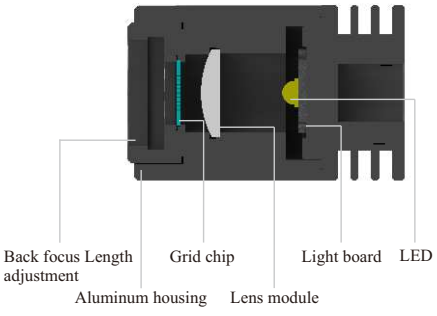
Color

Mounting

Power

Size

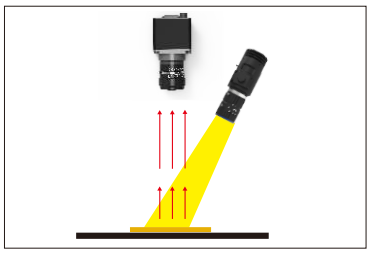
Sectional Structure Diagram



Application Example

Inspection items: metal height measurement

Original Image



Illuminated

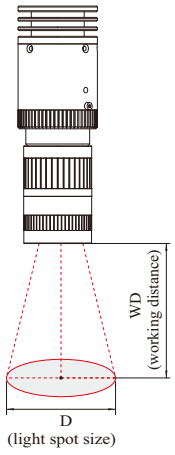
Result Image

Lens and spot size

Lens Model	Working Distance(WD)						
	50mm	100mm	150mm	200mm	300mm	400mm	500mm
	Light Spot Size (mm)						
OPT-C0825-5M	90	160	220	280	420	460	–
OPT-C1216-5M	70	110	160	200	290	380	490
OPT-C1614-5M	–	90	120	150	220	300	360
OPT-C2514-5M	–	–	70	100	140	170	210
OPT-C3514-5M	–	–	–	–	100	130	160

Note:

1. Above data is OPT-SL03 and OPT-SL10 test values, only for reference.
2. It's also compatible to other C Mount lens with 2/3" image circle

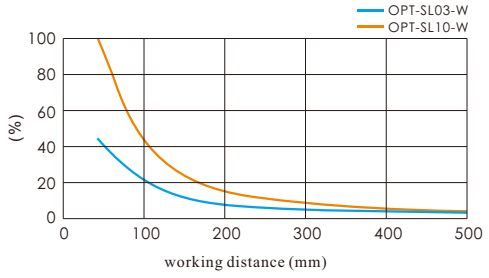


Illuminance

Light Model	Illuminance (unit:100lux)	Light Model	Illuminance (unit:100lux)
OPT-SL03-R	120	OPT-SL10-R	280
OPT-SL03-G	130	OPT-SL10-G	320
OPT-SL03-B	170	OPT-SL10-B	510
OPT-SL03-W	330	OPT-SL10-W	700

Note: above data is test values at working with 25mm focal length lens, F# = 1.4, WD = 100mm, without grid chip, only for reference

Relative Intensity Comparison



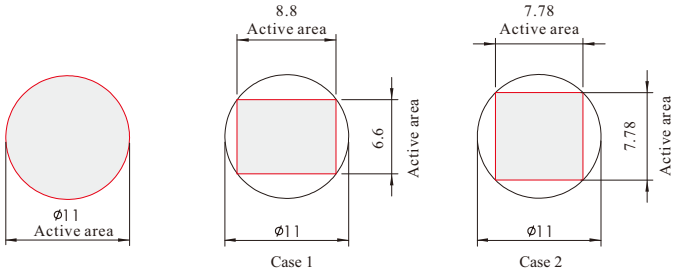
Above data is the test result at same conditions, only for reference

Model Table

No.	Model	Output 🔴	Output ⚪🟢🔵	Recommended Controller
1	OPT-SL03	1A/2.6W	1A/3.5W	OPT-DPA1005E
2	OPT-SL10	0.7A/7.4W	0.7A/9.1W	OPT-DPA1012E

Customization for Grid Chip

Grid chip active area



OPT-PGS-L-0.05
Specification : Line
Line thickness : 0.05mm

OPT-PGS-G-0.05-0.45
Specification : Grid
Line thickness : 0.05mm
Line gap : 0.45mm

OPT-PGS-G-0.05
Specification : Cross
Line thickness : 0.05mm

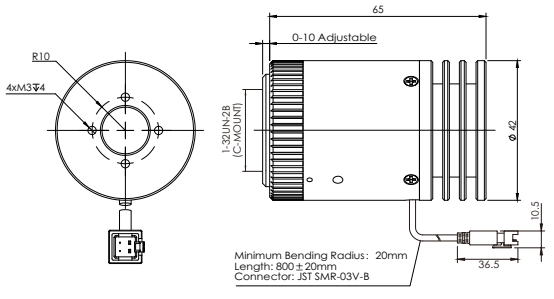
OPT-PGS-R-0.05-0.15
Specification : Round
Line thickness : 0.05mm
Line gap : 0.15mm

OPT-PGS-L-0.05-0.45
Specification : Stripe
Line thickness : 0.05mm
Line gap : 0.45mm

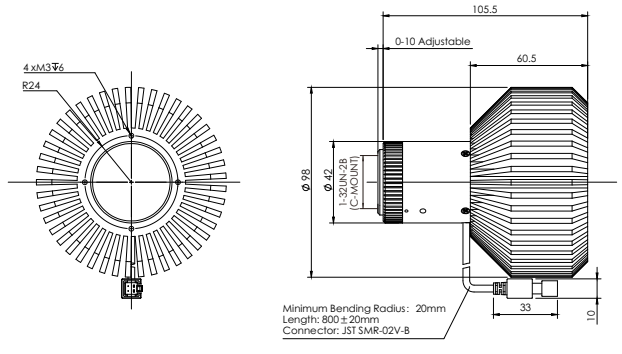
1. Grid chip accuracy can be ⩽2μm.
2. Grid chip is customizable by providing precise geometric parameters.

Dimensional Drawings [mm]

1 OPT-SL03



2 OPT-SL10



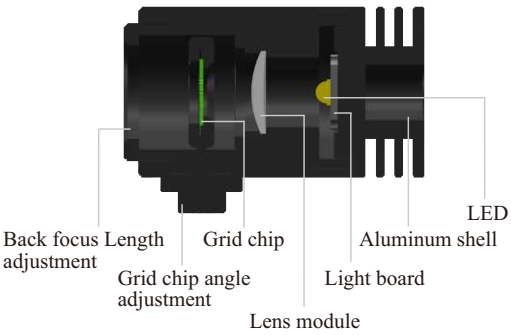
OPT-SLS Slant Structured Lights

Selection Guide

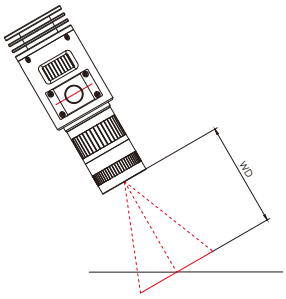
OPT-SLS03

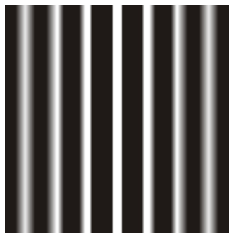
- Power
- Slant Structured Lights
- Brand name

Sectional Structure Diagram

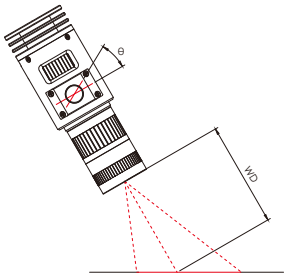


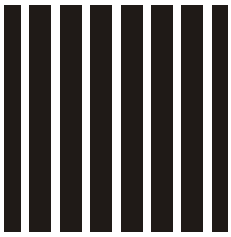
Use Method





Only partial features can be focused if not adjust the grid chip.





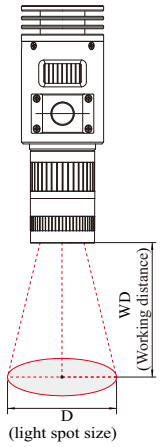
All the features can be focused after adjusting the grid chip.
The adjustable range of the grid chip angle is within 45 degrees.

Application Example

Lens and Spot Size

Lens Model	Working Distance (WD)						
	50mm	100mm	150mm	200mm	300mm	400mm	500mm
	Light Spot Size (mm)						
OPT-C0825-5M	60	115	160	210	300	390	480
OPT-C1216-5M	45	75	105	140	205	270	335
OPT-C1614-5M	40	65	90	115	160	210	260
OPT-C2514-5M	20	35	45	65	95	125	160
OPT-C3514-5M	-	25	35	50	70	90	115

Above values are OPT-SLS03 and OPT-SLS10 test result at zero grid chip angle.

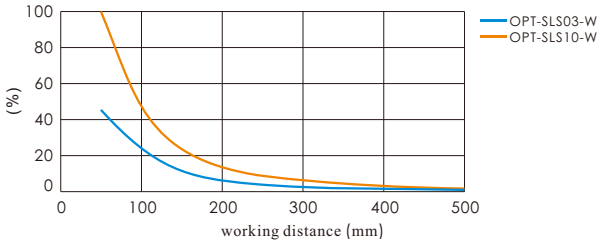


Illuminance

Model	Illuminance (unit: 100lux)	Model	Illuminance (unit: 100lux)
OPT-SLS03-R	100	OPT-SLS10-R	180
OPT-SLS03-G	90	OPT-SLS10-G	210
OPT-SLS03-B	130	OPT-SLS10-B	300
OPT-SLS03-W	250	OPT-SLS10-W	650

Note: above data is test values at working with 25mm focal length lens, F# = 1.4, WD = 100mm, without grid chip, only for reference

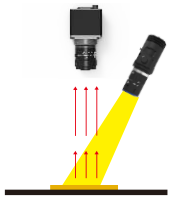
Relative Intensity Comparison



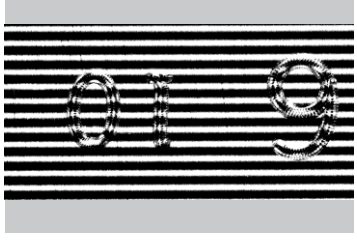
Note: above data is test result at zero grid chip angle, only for reference.

Character depth inspection on metal surface

Original Image



Illuminated



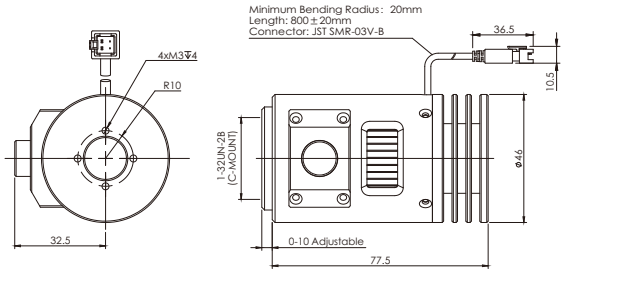
Result Image

Model Table

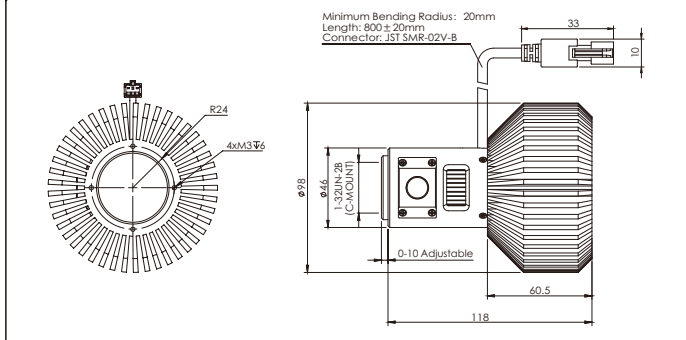
No.	Model	Output ●	Output ○●●	Recommended Controller
1	OPT-SLS03	1A/2.6W	1A/3.5W	OPT-DPA1005E
2	OPT-SLS10	0.7A/7.4W	0.7A/9.1W	OPT-DPA1012E

Dimensional Drawings [mm]

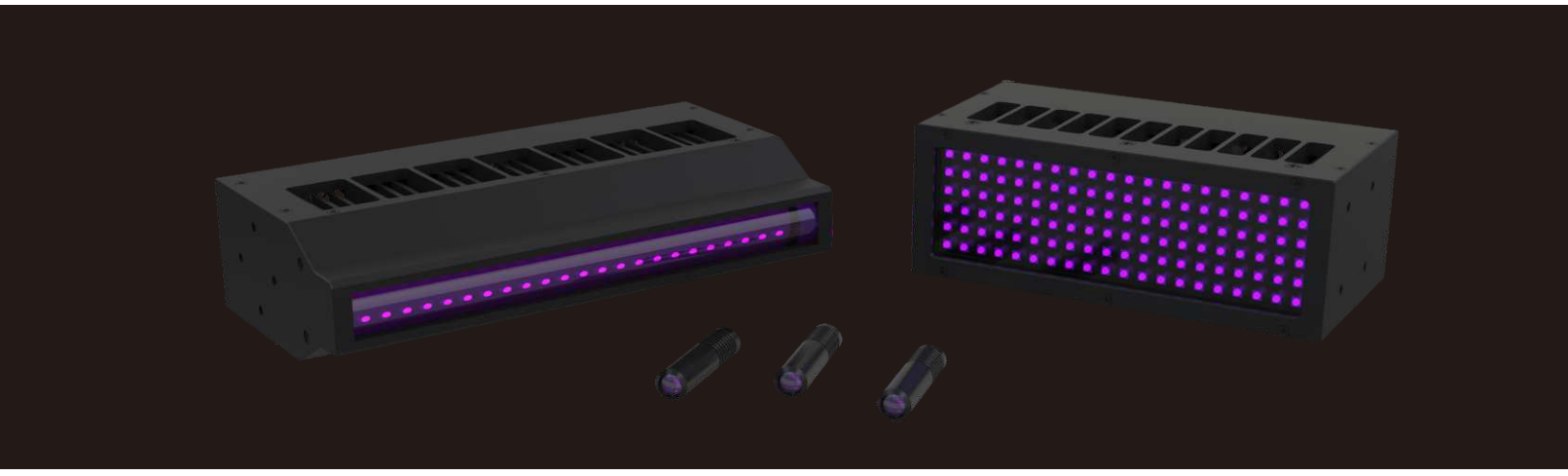
1 OPT-SLS03



2 OPT-SLS10



UV Curing Lights OPT-CXXX-UV Series



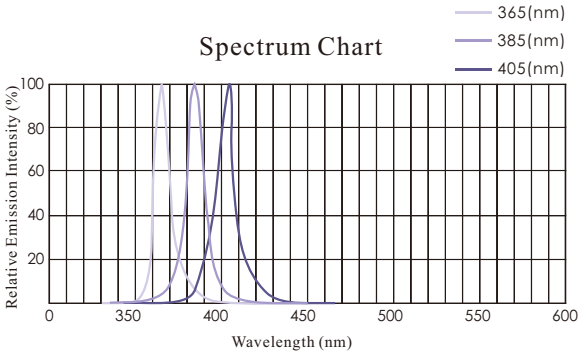
Summary

1. Using ultra high quality high-power LED to realize high energy irradiation
2. 365nm, 385nm, 405nm and other wavelengths for choices

OPT-CPIG Curing Spot Lights

Product Features

1. 4mm, 6mm, 8mm, 10mm, 15mm diameter light spots for choices
2. Customized cylinder lens to provide focused and high power illumination
3. Using highly flexible and torsion resistant cable, suitable for motion applications
4. Radiant exitance up to 4700mW/cm² at 10mm working distance (OPT-CPIG1203-04-UV405 measured data)



Application Cases

- Bonding of digital cameras, phone, camera lens, small optical lens
- Package of semiconductor chip, sensor production, bonding of hard Disk magnetic head
- Adhesion of injection head for medical instruments
- Bonding of small devices

Selection Guide

OPT-CPIG1203-04-UV405

- UV wavelength
- Light spot size
- Power
- Shape dimension
- High intensity spot lights
- Curing lights series
- Brand name

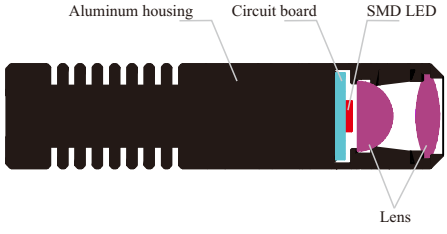
Customization Options

Heat release

Mounting

Size

Section Structure Drawing



Applications Example

Light spot

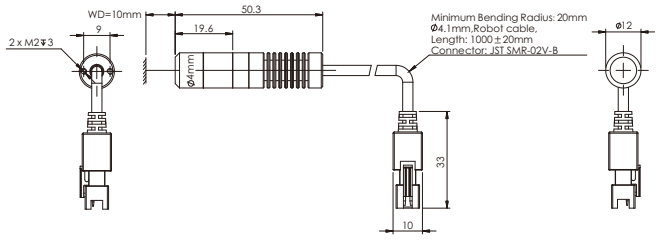
Illuminated

Model Table

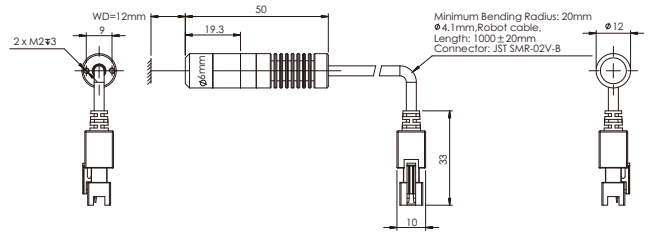
No.	Model	Wavelength	Output	Channels	Recommended Controller
1	OPT-CPIG1203-04	365nm/385nm/405nm	1.0A/3.5W	1	DPA1005
2	OPT-CPIG1203-06	365nm/385nm/405nm	1.0A/3.5W	1	DPA1005
3	OPT-CPIG1203-08	365nm/385nm/405nm	1.0A/3.5W	1	DPA1005
4	OPT-CPIG1203-10	365nm/385nm/405nm	1.0A/3.5W	1	DPA1005
5	OPT-CPIG1203-15	365nm/385nm/405nm	1.0A/3.5W	1	DPA1005

Dimemsional Drawings [mm]

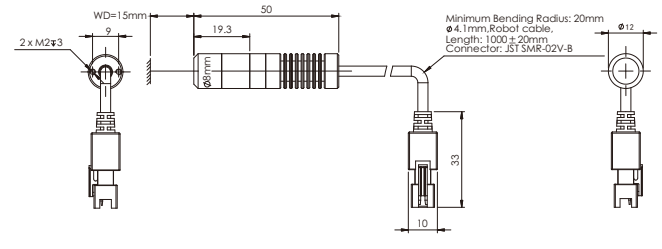
1 OPT-CPIG1203-04



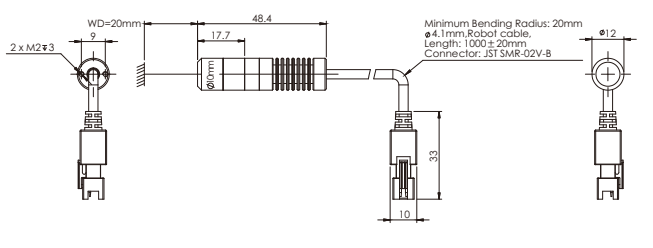
2 OPT-CPIG1203-06



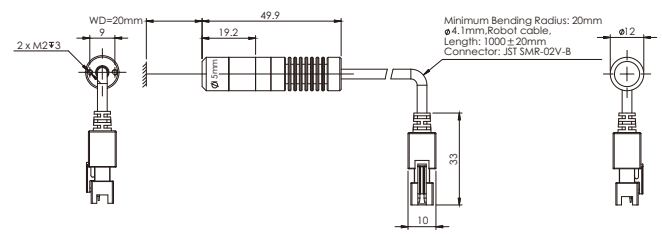
3 OPT-CPIG1203-08



4 OPT-CPIG1203-10



5 OPT-CPIG1203-15



OPT-CLSG Curing Line Scan Lights

Product Features

1. Using high penetrable quartz cylinder lens, the emitted light more focused and high power
2. Using unique fan-cool structured design, stable heat release feature, available for continuously on mode
3. Radiant exitance up to 5500mW/cm² at 20mm working distance (OPT-CLSG195-UV405 measured data)

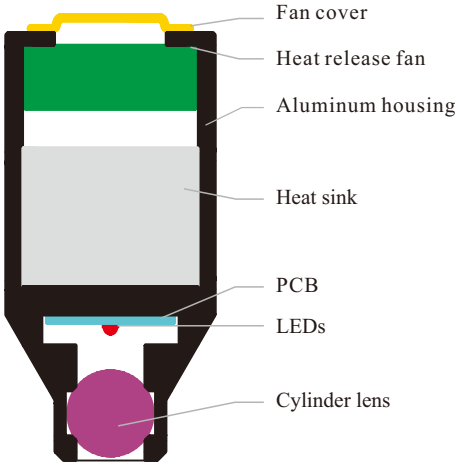
Customization Options

Heat release

Mounting

Size

Section Structure Drawing



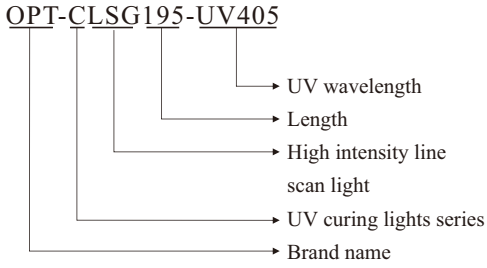
Model Table

No.	Model	Wavelength	Output	Channels	Recommended Controller
1	OPT-CLSG60	365nm/385nm/405nm	24V/24W	1	DPA1024
2	OPT-CLSG105	365nm/385nm/405nm	2.0A/48W	1	DPA6024
3	OPT-CLSG150	365nm/385nm/405nm	3.0A/72W	1	DPA6024
4	OPT-CLSG195	365nm/385nm/405nm	4.0A/96W	1	DPA6024
5	OPT-CLSG240	365nm/385nm/405nm	5.0A/120W	1	DPA6024
6	OPT-CLSG285	365nm/385nm/405nm	6.0A/144W	2	DPA6024
7	OPT-CLSG330	365nm/385nm/405nm	7.0A/168W	2	DPA6024
8	OPT-CLSG375	365nm/385nm/405nm	8.0A/192W	2	DPA6024
9	OPT-CLSG420	365nm/385nm/405nm	9.0A/216W	2	DPA6024
10	OPT-CLSG465	365nm/385nm/405nm	10.0A/240W	2	DPA6024

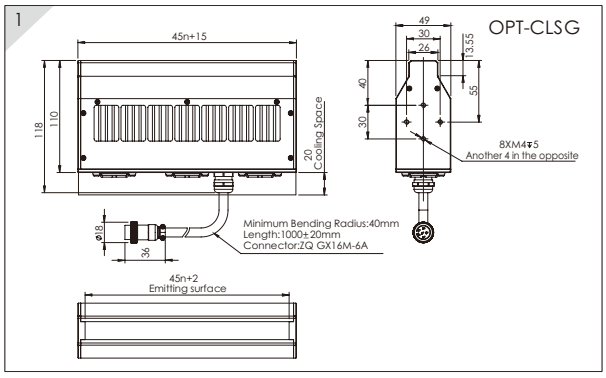
Application Cases

- PCB board chip bonding via UV adhesive
- Edge banding of the touch screen, encapsulation of liquid crystal filler mouth for LCD panel
- Curing of surface coating of building materials and wooden products
- Bonding of medical instruments
- Curing of Ink, varnish and paint

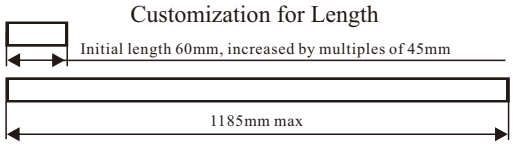
Selection Guide



Dimemsional Drawing [mm]



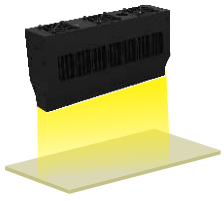
Customization for Length



For standard models, the minimum length is 60mm, increased by multiples of 45mm. The maximum length is 1185mm. Other sizes need customization.

Application Example

Light spot

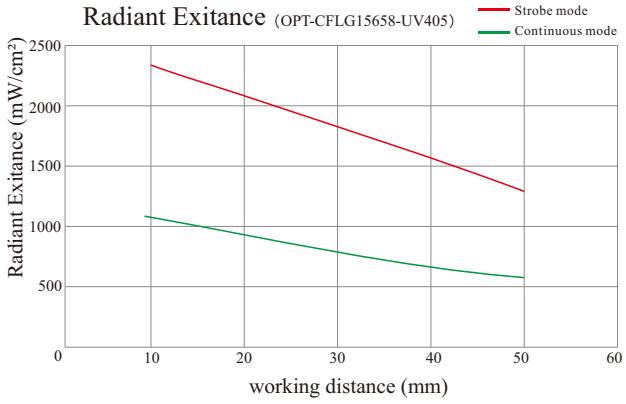


Illuminated

OPT-CFLG Curing Flat Lights

Product Features

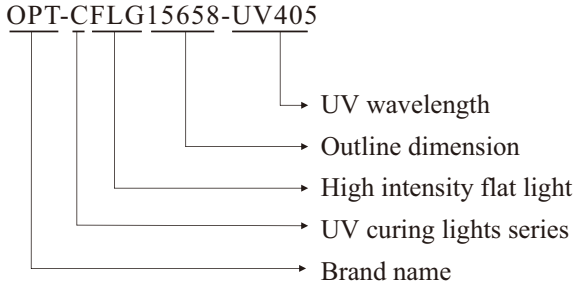
1. Uniform illumination, high power and density LED array
2. Radiant exitance up to 2200mW/cm² at 10mm working distance (OPT-CFLG15658-UV405 measured data)



Application Cases

- Second time curing of mobile phone and optical communication device
- Film printing
- Curing of ink, varnish and paint
- Curing of surface coating of building materials and wooden products

Selection Guide

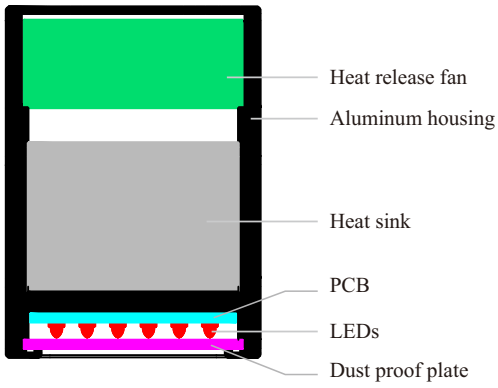


Customized Options

Heat release

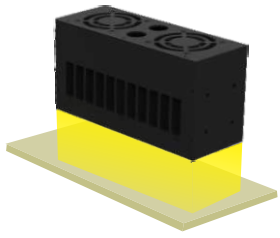
Mounting

Section Structure Drawing



Application Example

Light spot



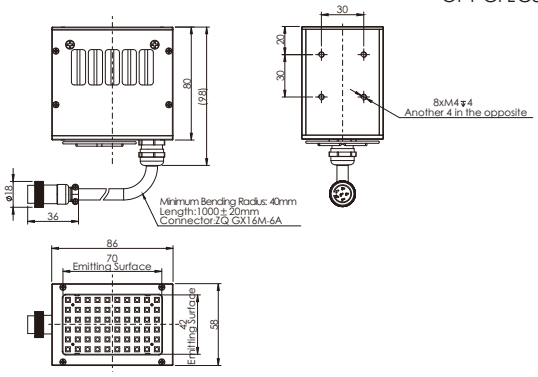
Illuminated

Model Table

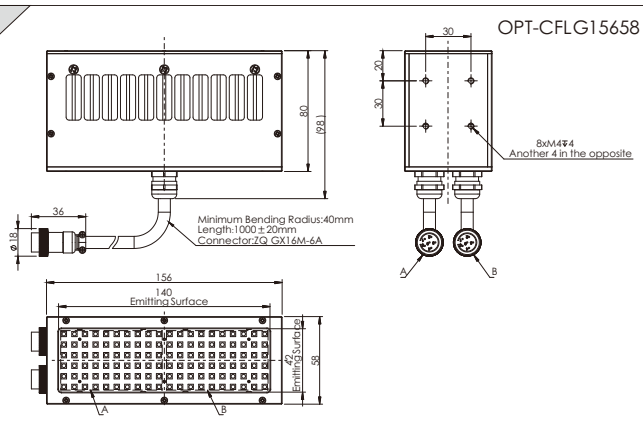
No.	Model	Wavelength	Output	Channels	Recommended Controller
1	OPT-CFLG8658	365nm/385nm/405nm	5A/120W	1	DPA6024
2	OPT-CFLG15658	365nm/385nm/405nm	10A/240W	2	DPA6024
3	OPT-CFLG22658	365nm/385nm/405nm	15A/360W	1	DPA20024
4	OPT-CFLG29658	365nm/385nm/405nm	20A/480W	1	DPA20024
5	OPT-CFLG156100	365nm/385nm/405nm	20A/480W	1	DPA20024

Dimemsional Drawings[mm]

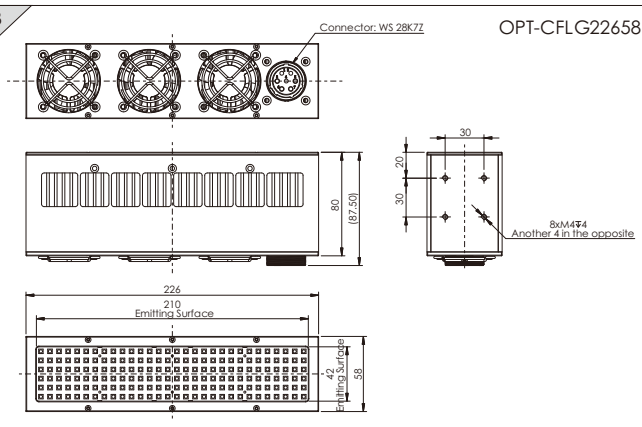
1 OPT-CFLG8658



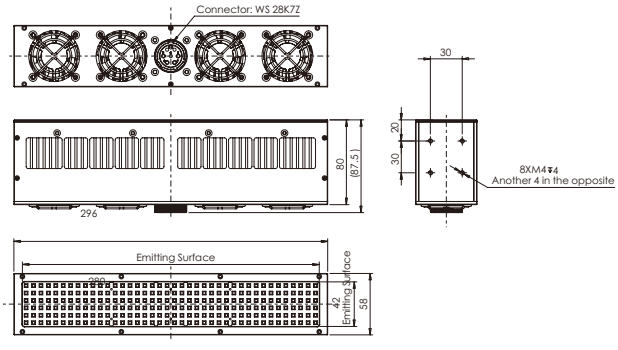
2 OPT-CFLG15658



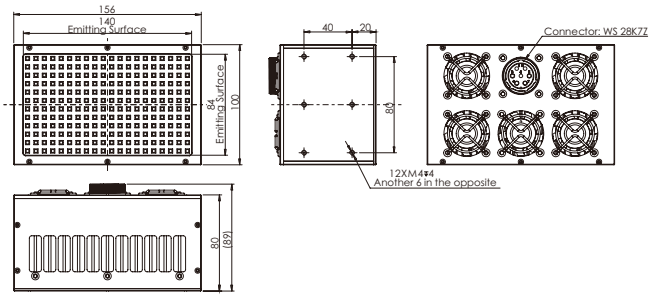
3 OPT-CFLG22658



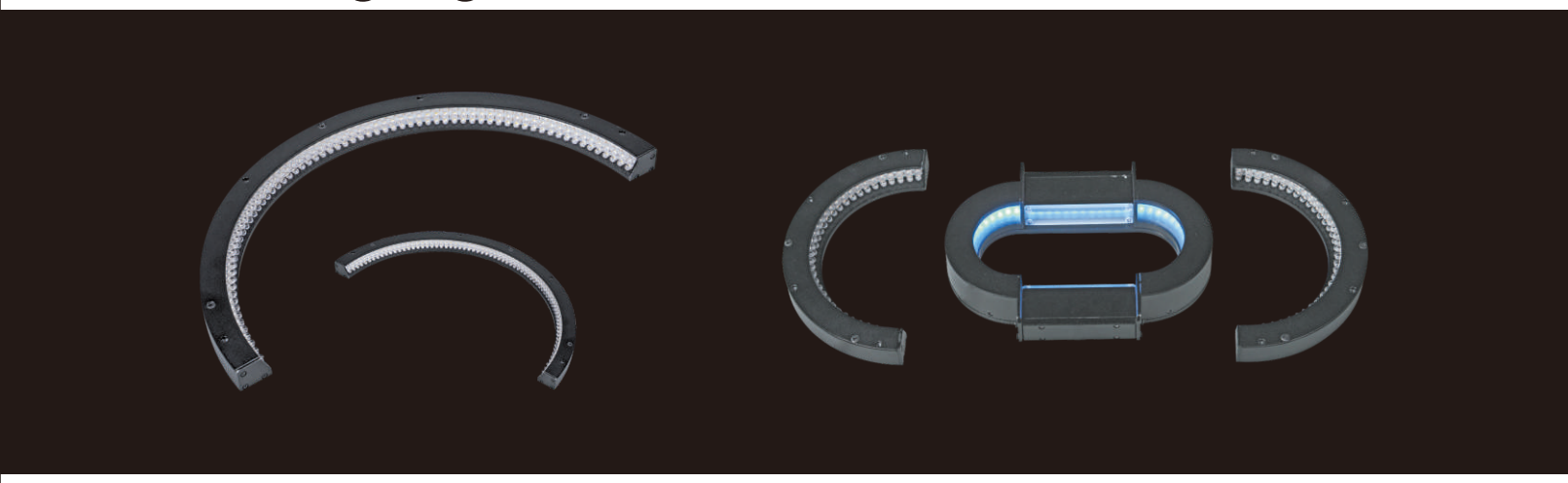
4 OPT-CFLG29658



5 OPT-CFLG156100



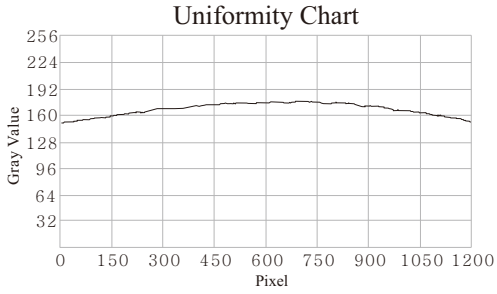
Half Ring Lights OPT-RIC series



Product Features

1. The best option for elliptical objects illumination
2. Compact LED array for higher intensity and uniformity
3. Can be combined with bar light for illumination from all sides
4. Special half ring light design for the inspection of curved objects
   Applicable for low angle illumination

Uniformity Chart



Application Cases

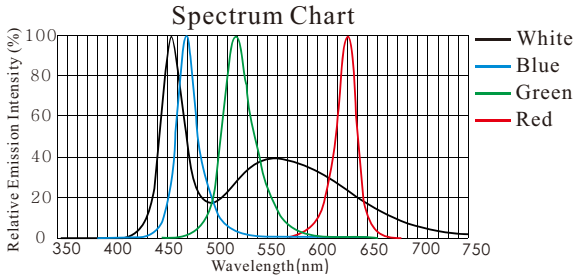
- Geometric measurement of curved objects
- Inspection of reflective surfaces

Selection Guide

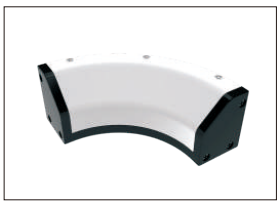
OPT-RIC7075

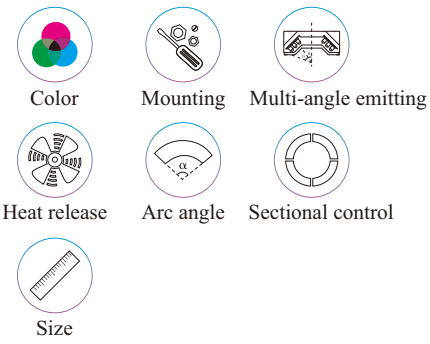
- Emitting angle
- Outer diameter
- Half ring light
- Brand name

Spectrum Chart

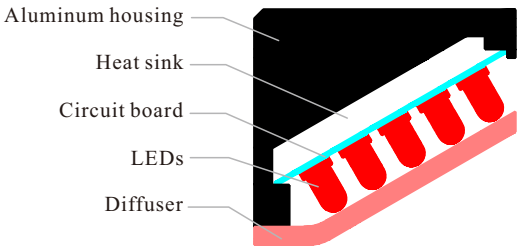


Customization Options





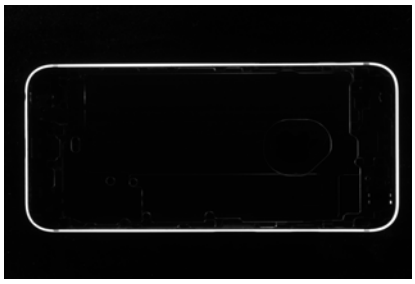
Section Structure Drawing



Application Example

Inspected item : localization of mobile phone profile

Original Image



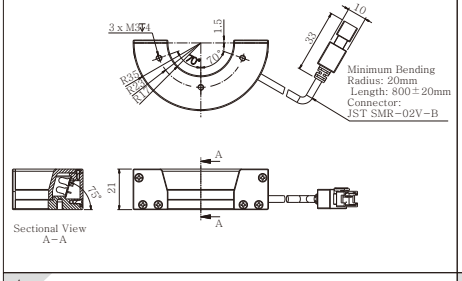
Result Image

Model Table

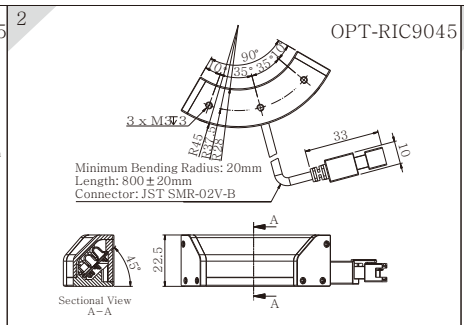
No.	Model	Output 🔴	Output ⚪🟢🔵	Recommended controller
1	OPT-RIC7075	24V/0.9W	24V/1.3W	OPT-DPA1024E
2	OPT-RIC9045	24V/0.4W	24V/2.1W	OPT-DPA1024E
3	OPT-RIC12090	24V/1.9W	24V/2.4W	OPT-DPA1024E
4	OPT-RIC24090	24V/3.6W	24V/4.2W	OPT-DPA1024E
5	OPT-RIC30045	24V/3.8W	24V/7.1W	OPT-DPA1024E

Dimensional Drawings [mm]

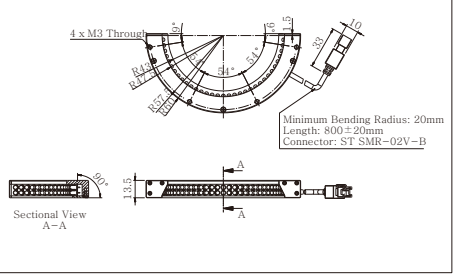
1 OPT-RIC7075



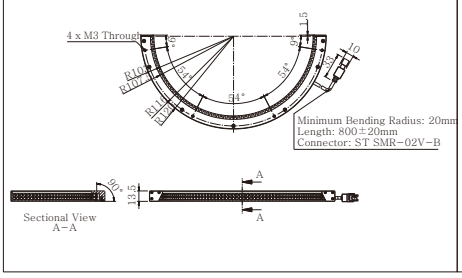
2 OPT-RIC9045



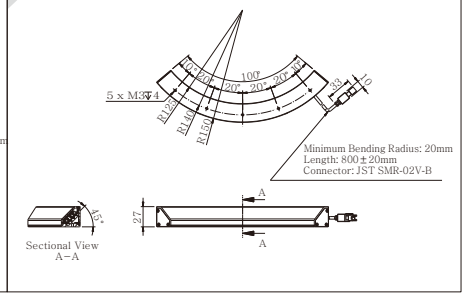
3 OPT-RIC12090



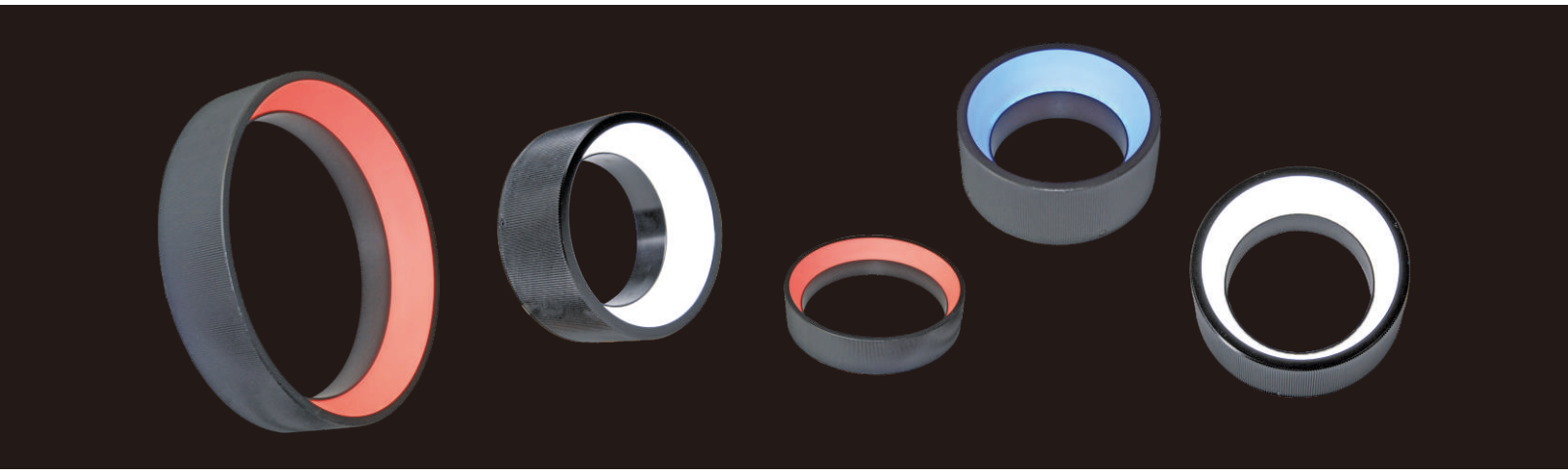
4 OPT-RIC24090



5 OPT-RIC30045



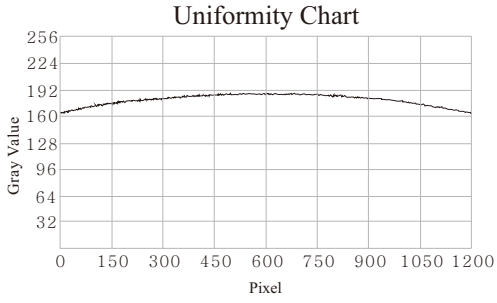
Diffuse LED Dark Field Ring Lights OPT-RIF series



Product Features

1. For large round objects or small irregularly shaped objects
2. Higher uniformity compared to standard ring lights
3. Uniform illumination without shadow
4. Different results caused by different working distances

Uniformity Chart



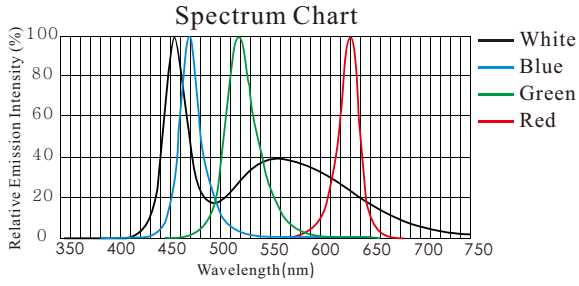
Application Cases

- ◆ Surface inspection
- ◆ Optical Character Recognition Reading of logos, barcodes, fingerprints

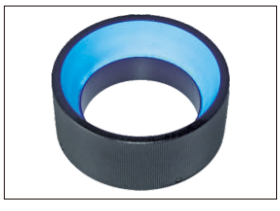
Selection Guide

OPT-RIF88
- Outer diameter
- Low angle ?ring light
- Brand name

Spectrum Chart



Customization Options



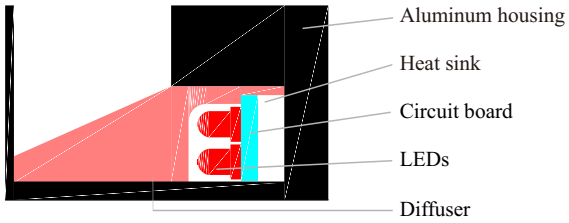
Color

Mounting

Heat release

Size

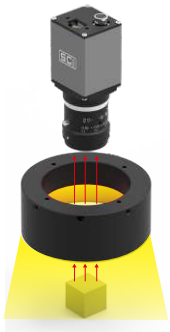
Section Structure Drawing



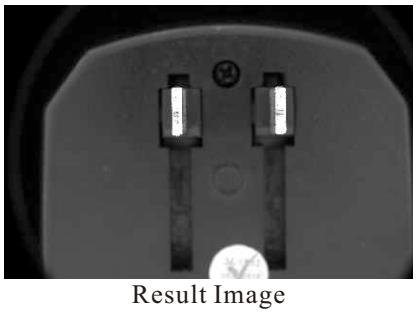
Application Example

Adapter metal plate inspection

Original Image



Illuminated



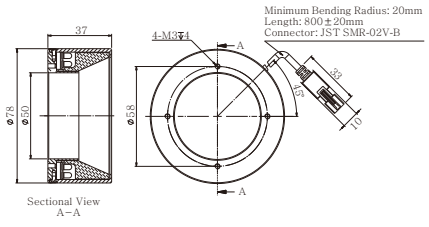
Result Image

Model Table

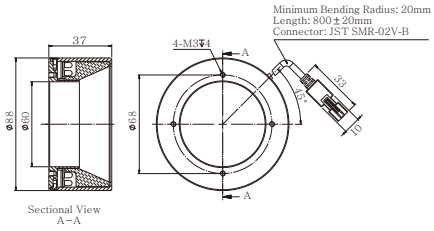
No.	Model	Output ●	Output ○●●	Recommended controller
1	OPT-RIF78	24V/1.7W	24V/3.6W	OPT-DPA1024E
2	OPT-RIF88	24V/2.6W	24V/4.1W	OPT-DPA1024E
3	OPT-RIF130	24V/3.3W	24V/6.4W	OPT-DPA1024E
4	OPT-RIF160	24V/5.8W	24V/7.9W	OPT-DPA1024E

Dimensional Drawings [mm]

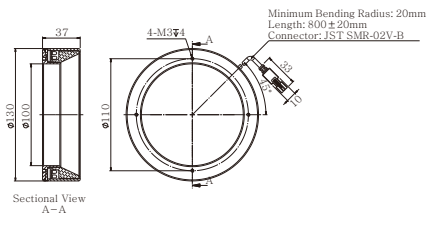
1 OPT-RIF78



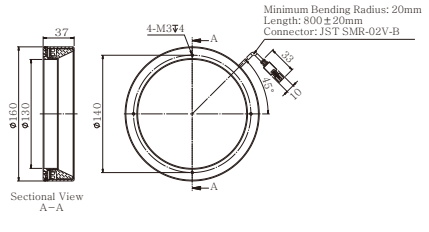
2 OPT-RIF88



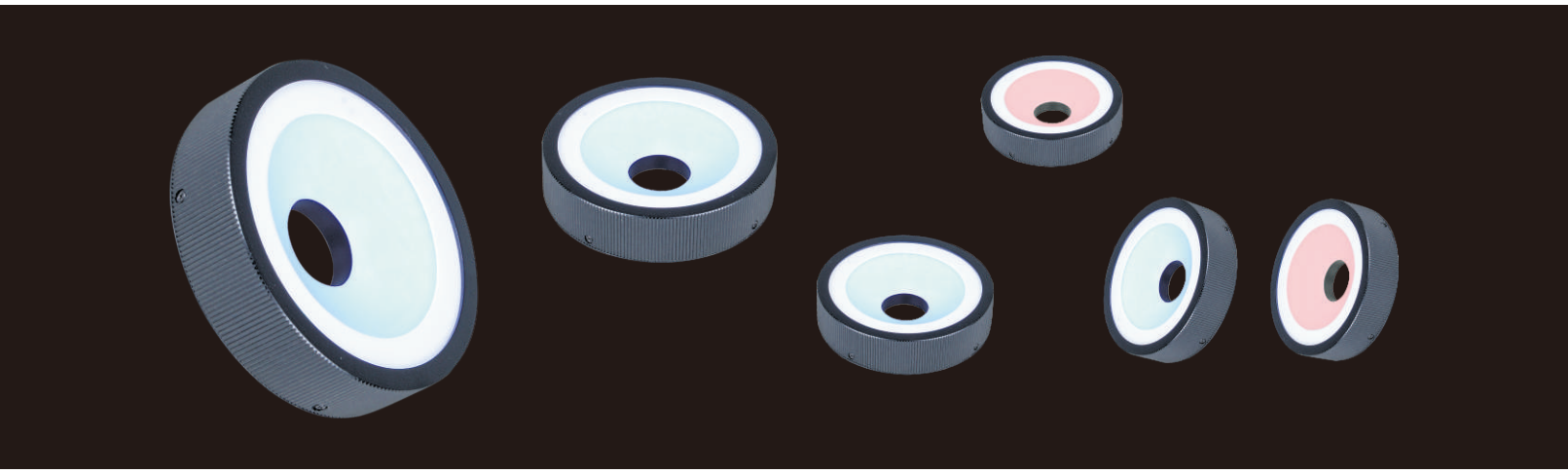
3 OPT-RIF130



4 OPT-RIF160



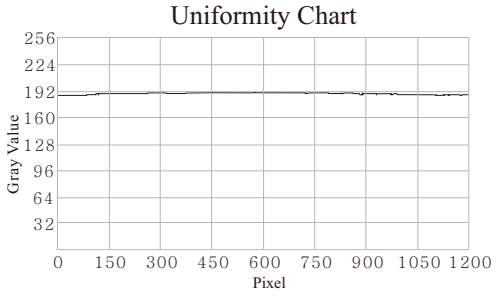
Diffuse LED Ring Lights OPT-RIE series



Product Features

1. More uniform illumination of large areas compared to standard ring lights
2. Providing uniform illumination for rough surface, eliminating flare, and highlighting the 3D information
3. A special diffuser design to reduce reflection and ensure uniform illumination.

Uniformity Chart



Application Cases

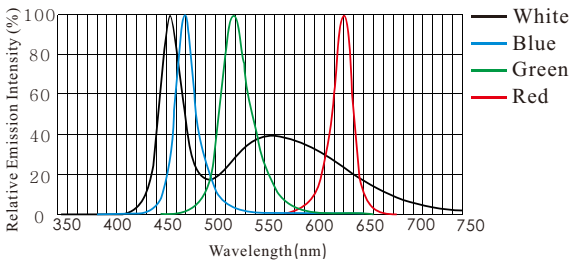
- ◆ Localization and measurement of metal objects
- ◆ Inspection of surfaces for scratches

Selection Guide

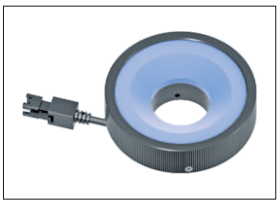
OPT-RIE74

- Outer diameter
- Flat dome ring light
- Brand name

Spectrum Chart



Customization Options



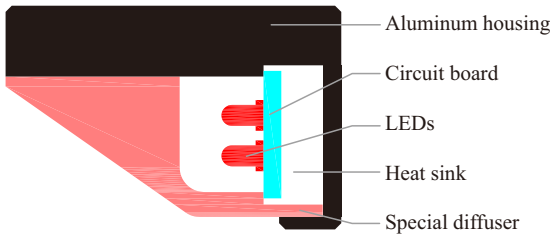
Color

Mounting

Heat release

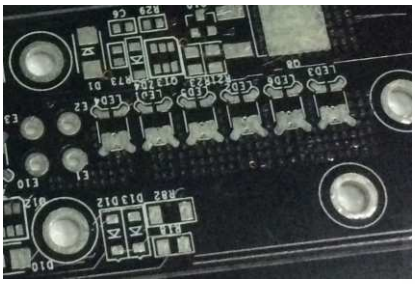
Size

Section Structure Drawing



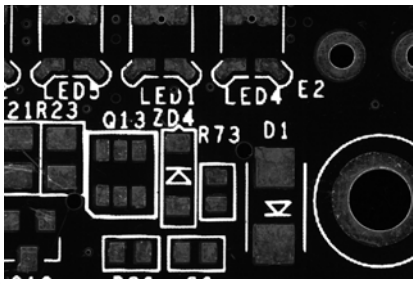
Application Example

Inspected item: Letter recognition on PCBs



Original Image

Illuminated



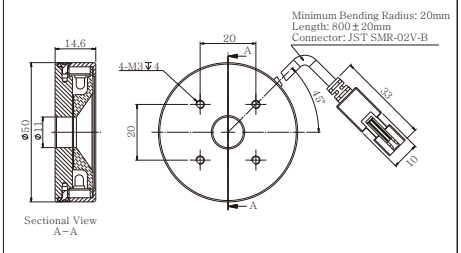
Result Image

Model Table

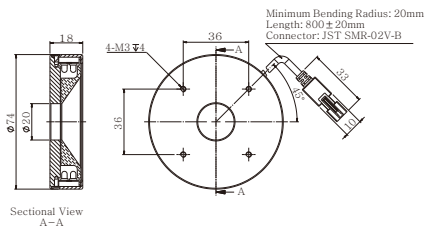
No.	Model	Output 🔴	Output ⚪🟢🔵	Recommended controller
1	OPT-RIE50	24V/0.9W	24V/0.9W	OPT-DPA1024E
2	OPT-RIE74	24V/1.8W	24V/3.4W	OPT-DPA1024E
3	OPT-RIE100	24V/3.5W	24V/4.9W	OPT-DPA1024E
4	OPT-RIE150	24V/5W	24V/8.8W	OPT-DPA1024E

Dimensional Drawings [mm]

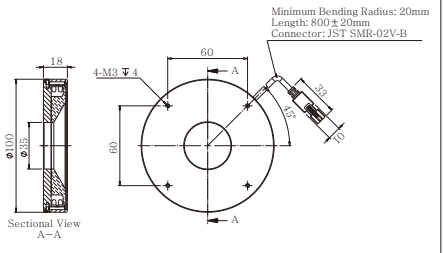
1 OPT-RIE50



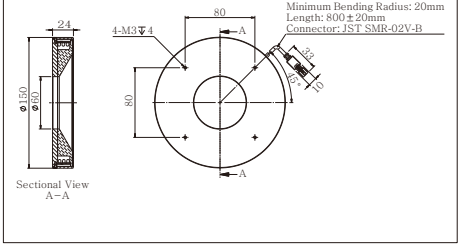
2 OPT-RIE74



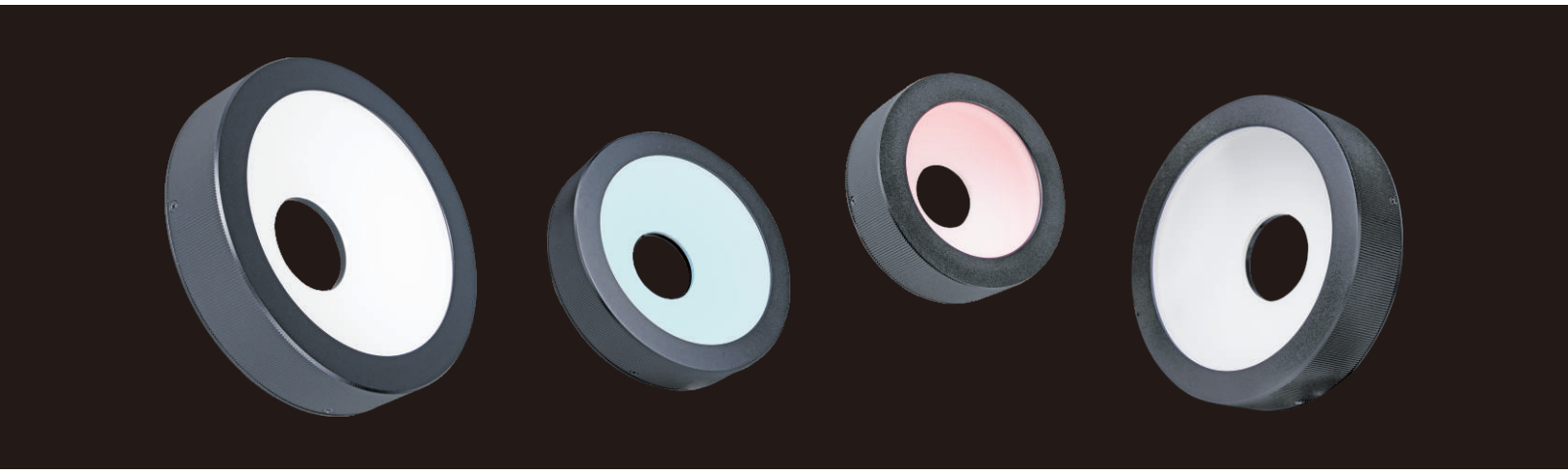
3 OPT-RIE100



4 OPT-RIE150



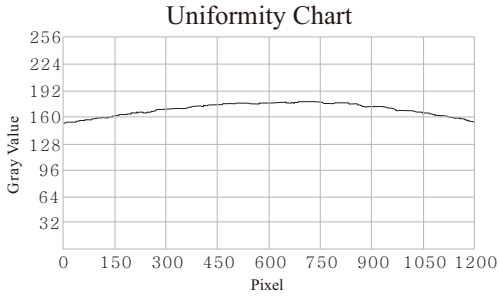
Diffuse LED Ring Lights OPT-RIW series



Product Features

1. Highly uniform illumination of large area, even illumination on difficult objects without reflections
2. Special diffuser design to ensure diffuse and uniform illumination

Uniformity Chart



Application Cases

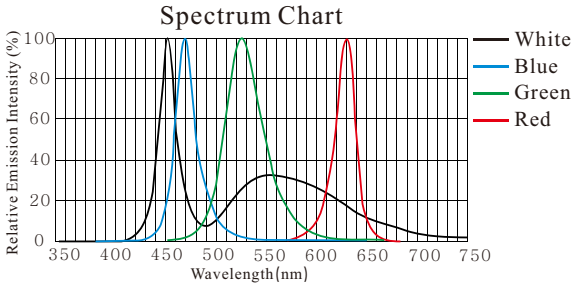
- ◆Inspection of electronic parts
- ◆Localization of electronic parts on PCBs after placement
- ◆Character and image recognition on surfaces
- ◆Geometric measurement

Selection Guide

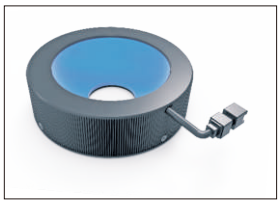
OPT-RIW90

- Outer diameter
- Diffuse ring light
- Brand name

Spectrum Chart



Customization Options



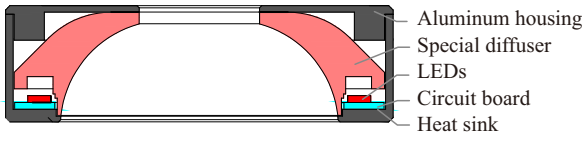
Color

Mounting

Heat release

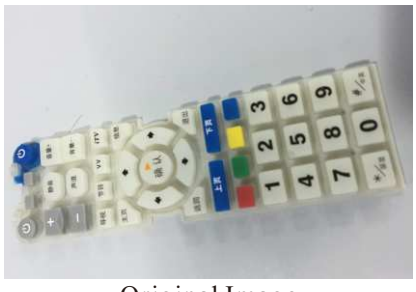
Size

Section structure drawing

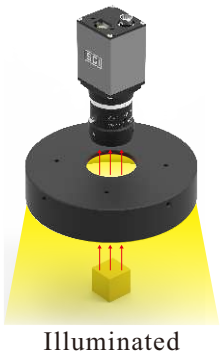


Application Example

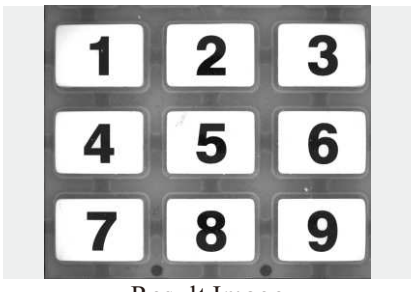
Inspected item: Character recognition on remote control



Original Image



Illuminated



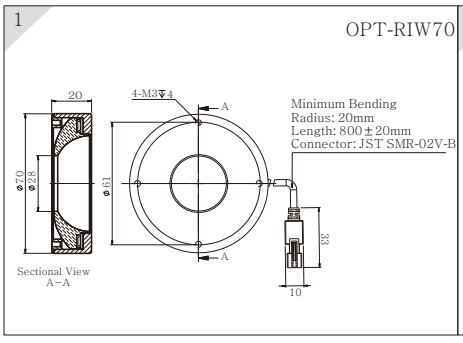
Result Image

Model Table

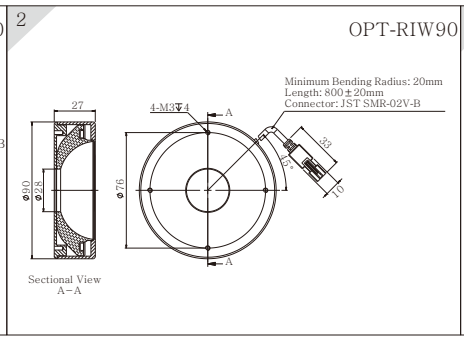
No.	Model	Output ●	Output ○●●	Recommended controller
1	OPT-RIW70	24V/0.6W	24V/1.1W	OPT-DPA1024E
2	OPT-RIW90	24V/0.8W	24V/2.4W	OPT-DPA1024E
3	OPT-RIW120	24V/1.3W	24V/2.6W	OPT-DPA1024E

Dimensional Drawings [mm]

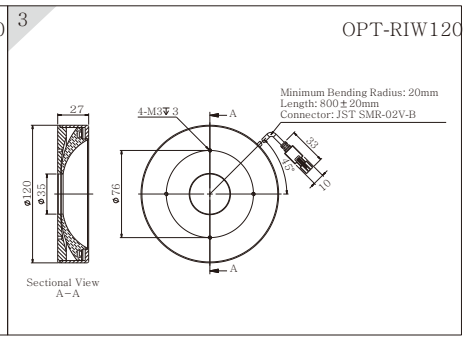
1 OPT-RIW70



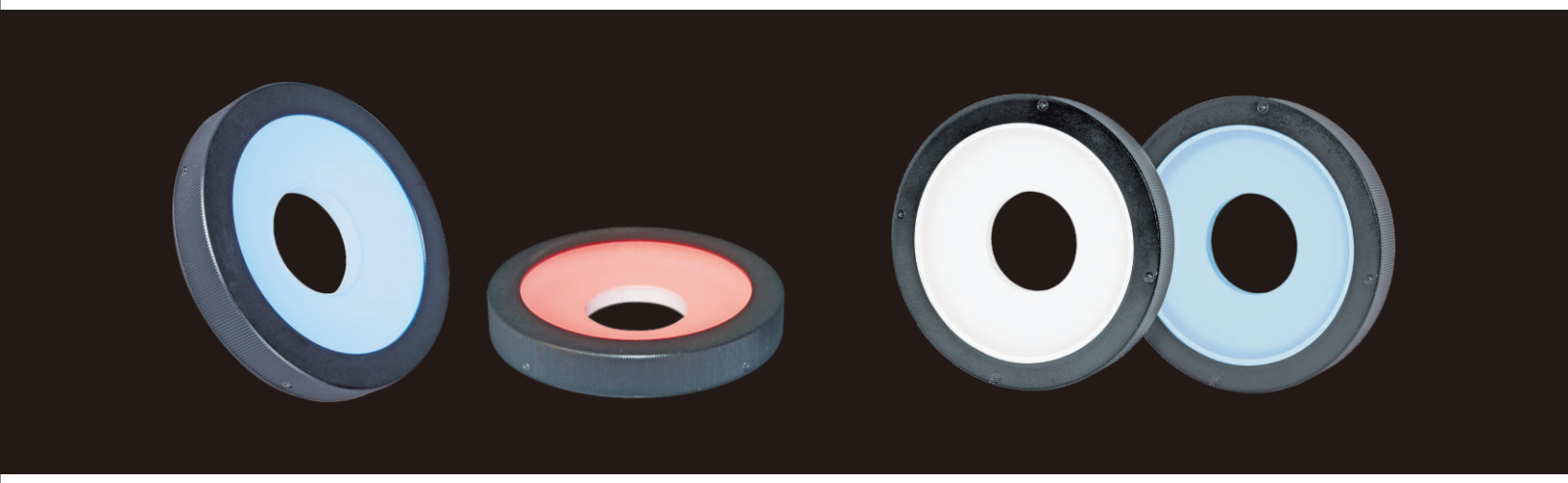
2 OPT-RIW90



3 OPT-RIW120



Diffuse LED Front Ring Lights OPT-RIU series



Product Features

1. Spherical design to eliminate the reflections on the surface effectively
2. Special diffuser to reduce reflections, closed to the performance of dome lights.

Application Cases

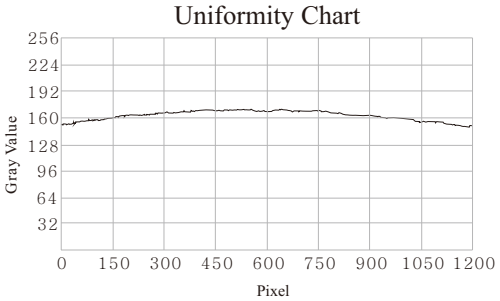
- ◆ Recognition and inspection of characters and images on reflective surfaces
- ◆ Inspection of electronic parts and glass products
- ◆ Inspection of punched metal parts
- ◆ Inspection of plastic injections

Selection Guide

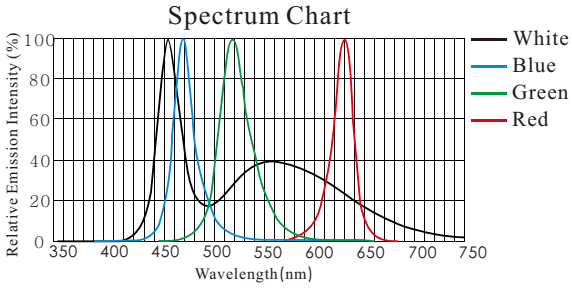
OPT-RIU114

- Outer diameter
- Diffuse Front Ring Light
- Brand name

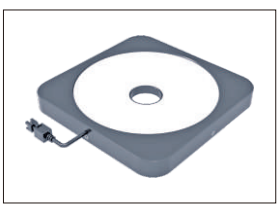
Uniformity Chart



Spectrum Chart



Customization Options



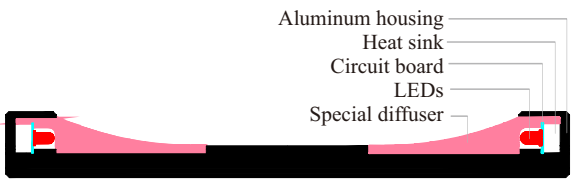
Color

Mounting

Heat release

Size

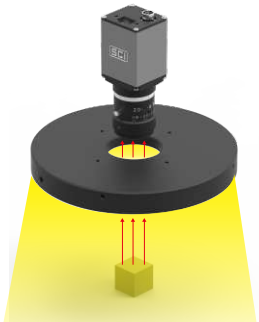
Section Structure Drawing



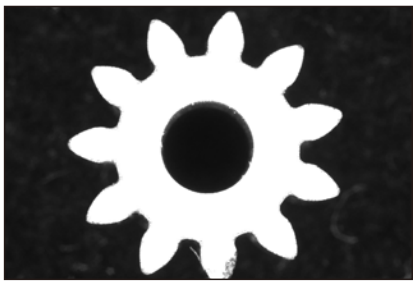
Application Example

Inspected item: gear defects inspection

Original Image



Illuminated



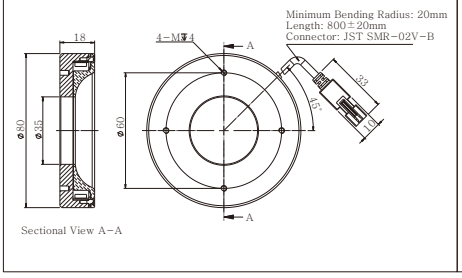
Result Image

Model Table

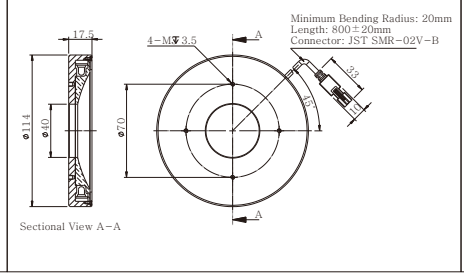
No.	Model	Output ●	Output ○●●	Recommended controller
1	OPT-RIU80	24V/0.8W	24V/1.5W	OPT-DPA1024E
2	OPT-RIU114	24V/1.6W	24V/2.8W	OPT-DPA1024E
3	OPT-RIU150	24V/1.2W	24V/3.6W	OPT-DPA1024E

Dimensional Drawings [mm]

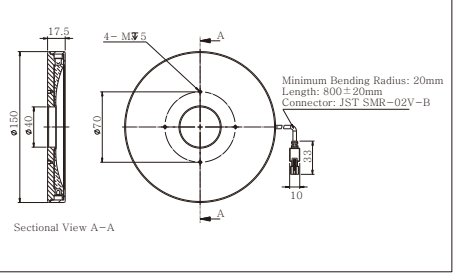
1 OPT-RIU80



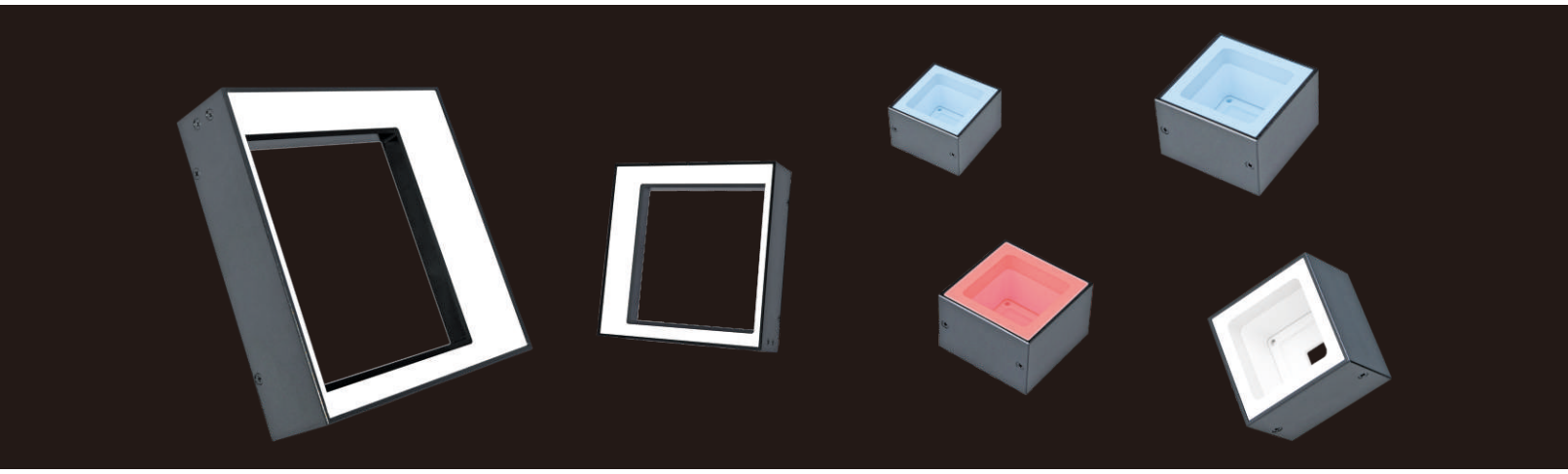
2 OPT-RIU114



3 OPT-RIU150



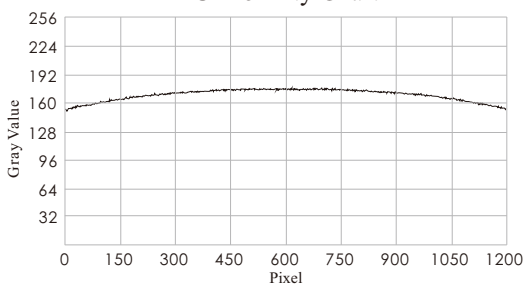
Diffuse LED Dark Field Square Lights OPT-RIH series



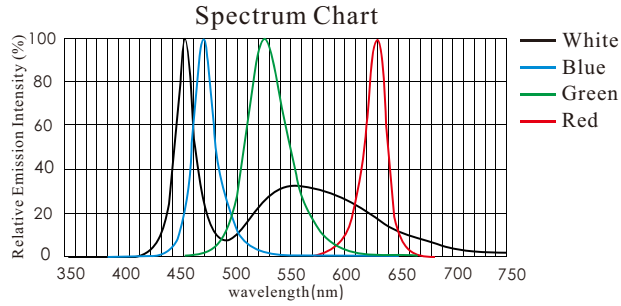
Product Features

1. High uniform illumination of the entire field of view from four directions
2. Best suited for the inspection of square objects or parts of similar shape
3. Different results caused by different working distances

Uniformity Chart



Spectrum Chart



Application Cases

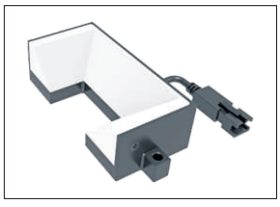
- Inspection of surfaces for scratches, dents and other defects
- Recognition of printed letters, markers, bar codes, finger prints and textures

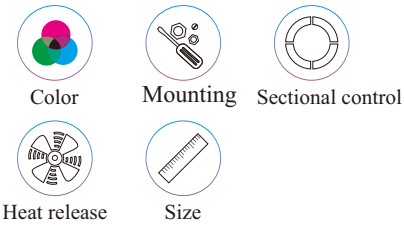
Selection Guide

OPT-RIH48

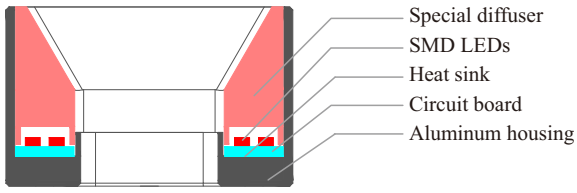
- Outer dimension
- Dark field square light
- Brand name

Customization Options





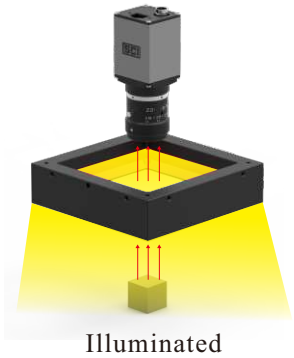
Section Structure Drawing



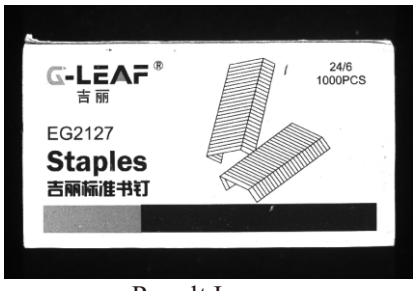
Application Example

Packaging box surface inspection

Original Image



Illuminated

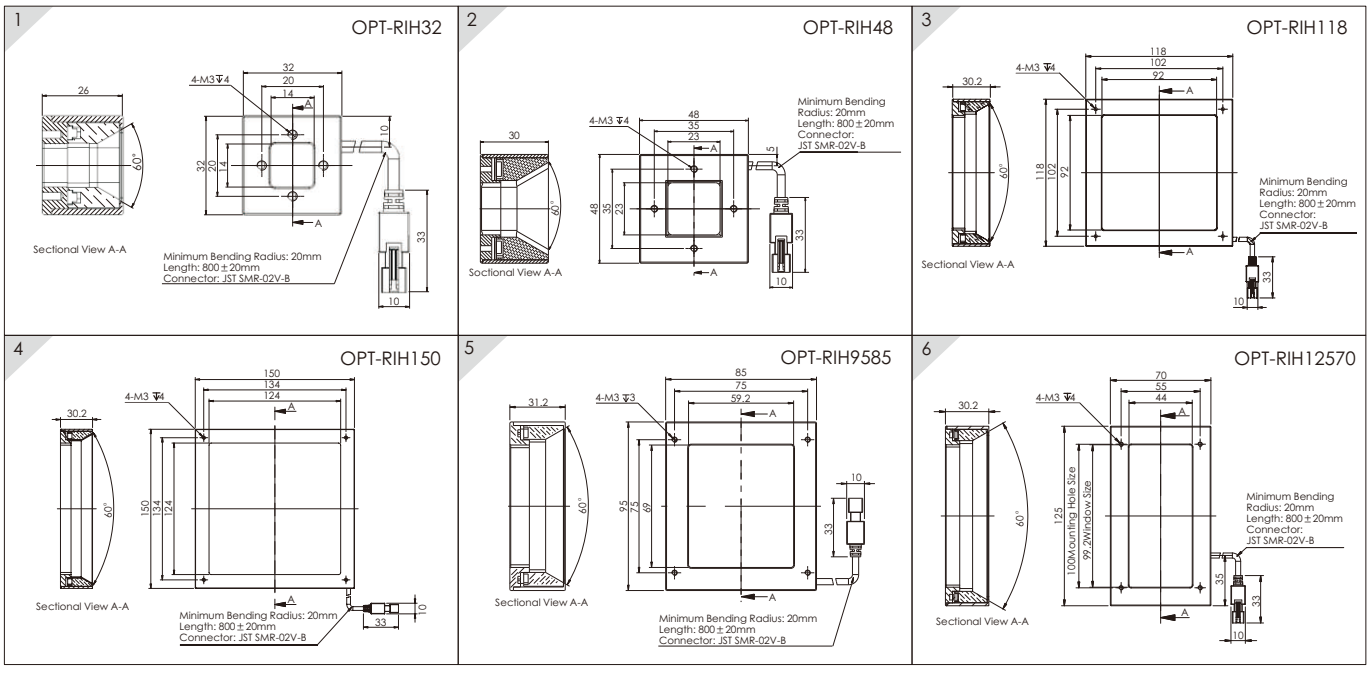


Result Image

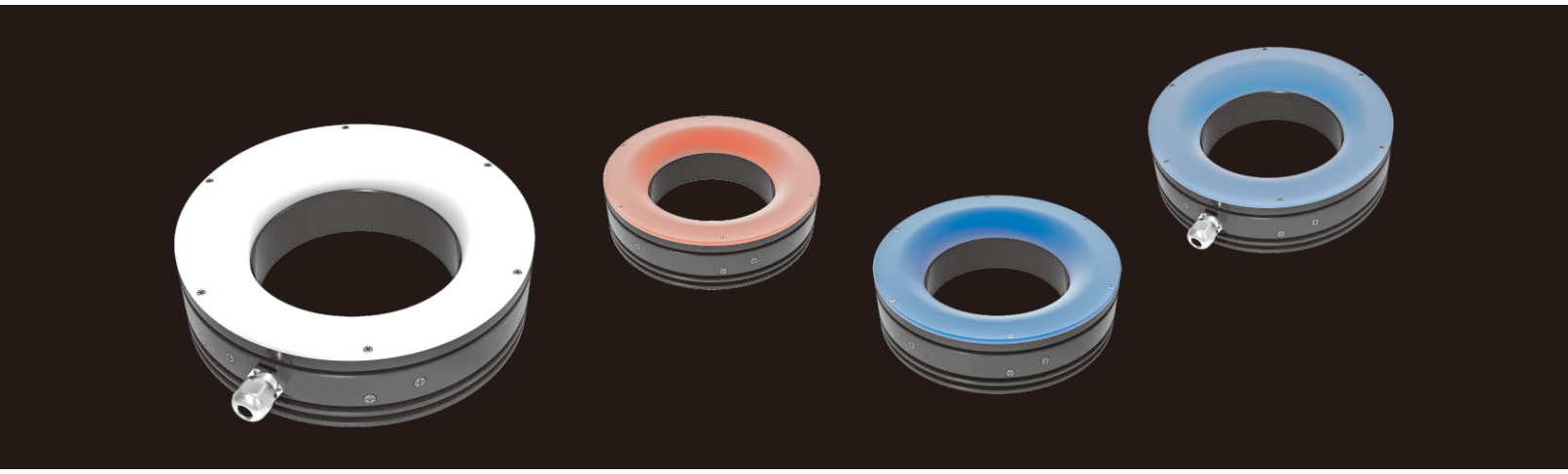
Model Table

No.	Model	Output ●	Output ○●●	Recommended controller
1	OPT-RIH32	24V/0.2W	24V/0.7W	OPT-DPA1024E
2	OPT-RIH48	24V/0.5W	24V/1.7W	OPT-DPA1024E
3	OPT-RIH118	24V/2.4W	24V/2.7W	OPT-DPA1024E
4	OPT-RIH150	24V/1.9W	24V/3.8W	OPT-DPA1024E
5	OPT-RIH9585	24V/1.2W	24V/3.1W	OPT-DPA1024E
6	OPT-RIH12570	24V/1.7W	24V/5.0W	OPT-DPA1024E

Dimensional Drawings [mm]



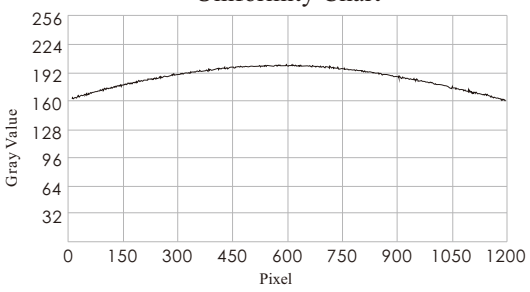
Bright Uniform Ring Lights OPT-RIP series



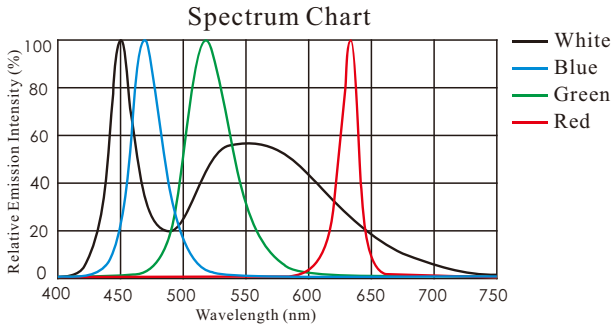
Product Features

1. Using high-power SMD LEDs and high-uniformity diffuser to provide high intensity and shadowless illumination
2. Strong stability due to robust connection

Uniformity Chart



Spectrum Chart



Application Cases

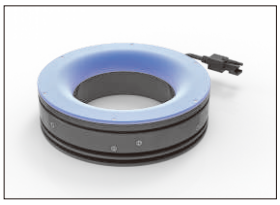
- Surface inspection of electronic parts on high-speed production line
- Inspection of inner surface of cylinders

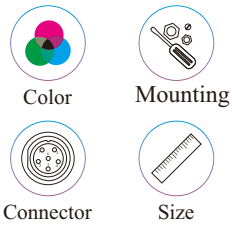
Selection Guide

OPT-RIP120

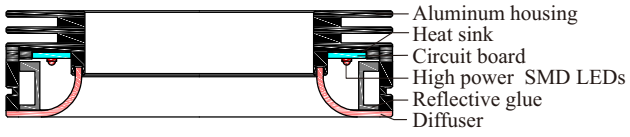
- Outer diameter
- Bright uniform ring light
- Brand name

Customization Options





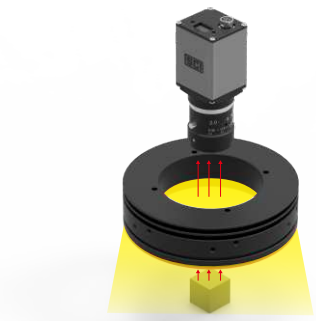
Section Structure Drawing

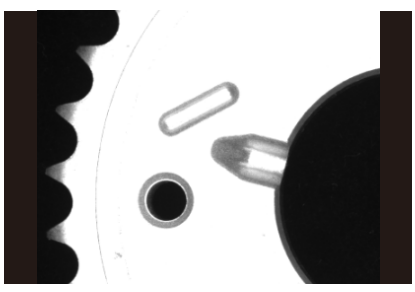


Application Example

Gear surface Inspection


Original Image


Illuminated

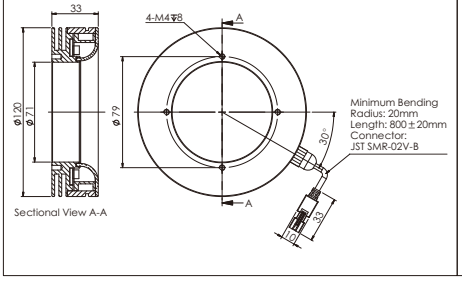

Result Image

Model Table

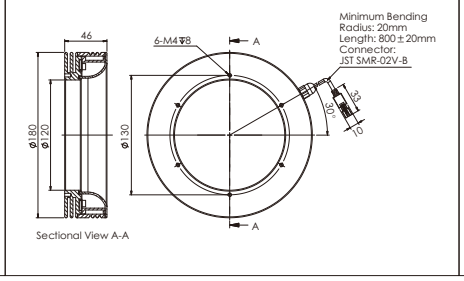
No.	Model	Output 🔴	Output ⚪🟢🔵	Recommended controller
1	OPT-RIP120	0.41A/9.9W	0.37A/8.8W	OPT-DPA1024E
2	OPT-RIP180	1.1A/26.0W	0.78A/18.8W	OPT-DPA1024E
3	OPT-RIP245	--	1.2A/28.8W	OPT-DPA1024E

Dimensional Drawings [mm]

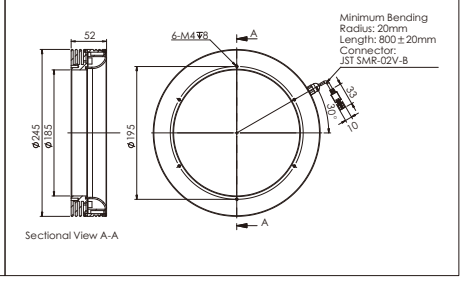
1 OPT-RIP120



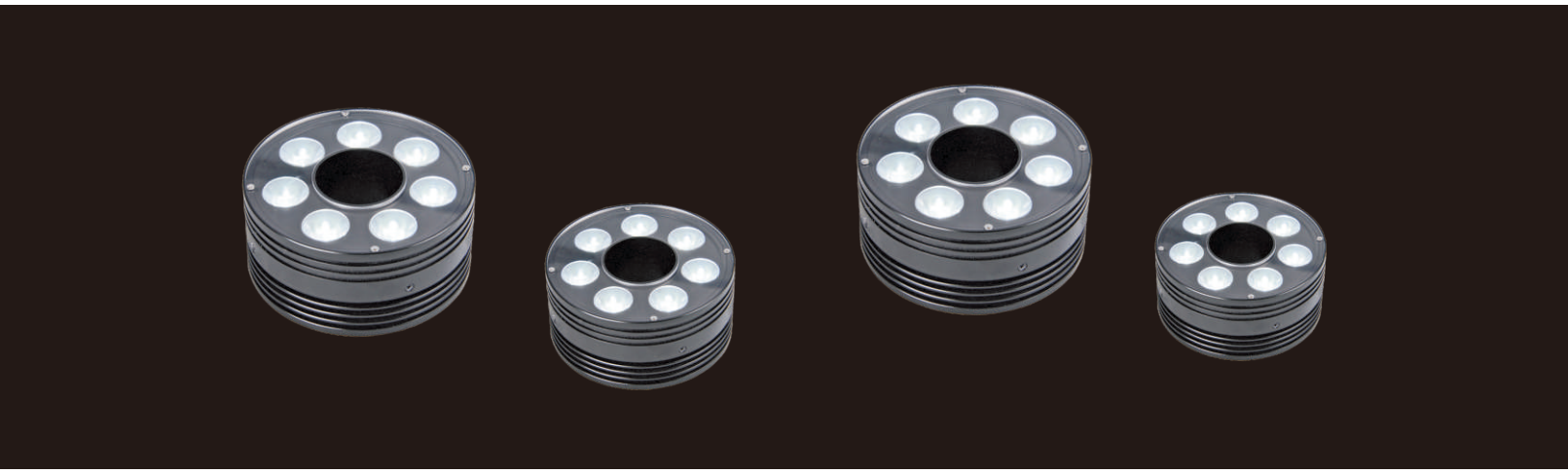
2 OPT-RIP180



3 OPT-RIP245



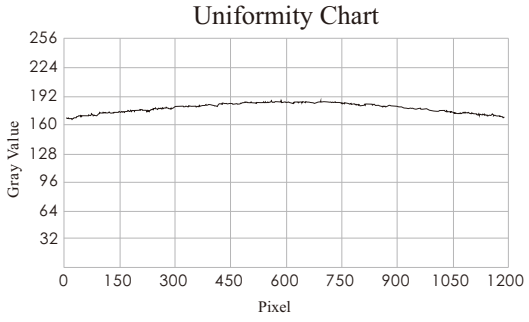
High Power Ring Lights OPT-RIG Series



Product Features

1. High-power LEDs, high-density LED array, special lens, more than 2 times intensity of standard ring lights
2. Suitable for long working distance applications

Uniformity Chart



Application Cases

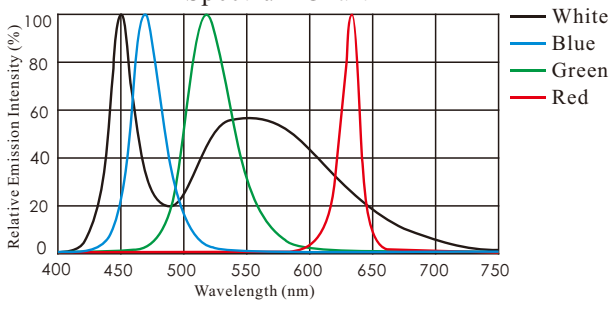
- High-speed on-line inspection
- Long working distance
- Large area illumination

Selection Guide

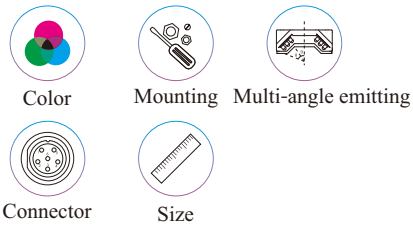
OPT-RIG9000

- Emitting angle
- Outer diameter
- High-power ring light
- Brand name

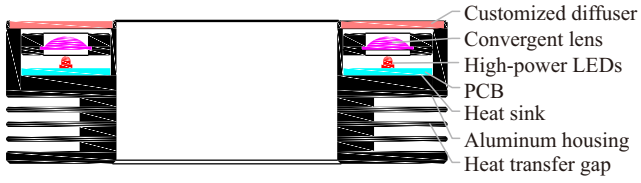
Spectrum Chart



Customization Options



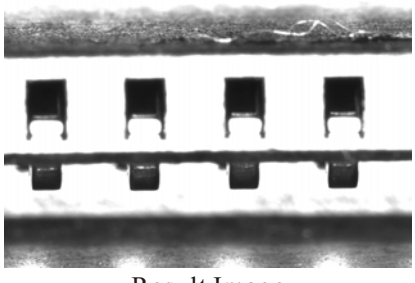
Section Structure Drawing



Application Example

Connector pins inspection

Original Image

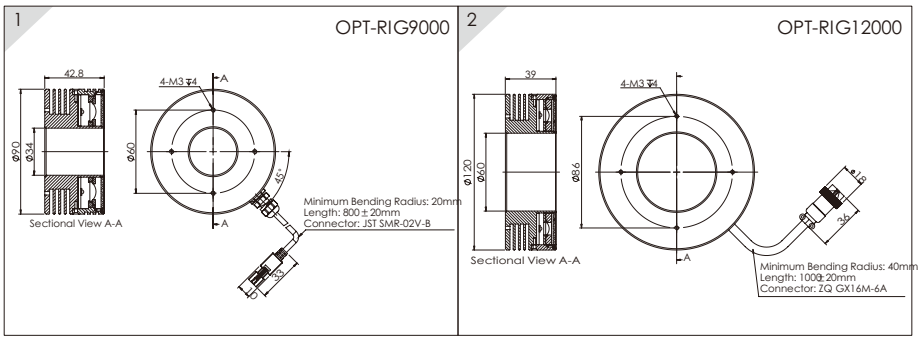


Result Image

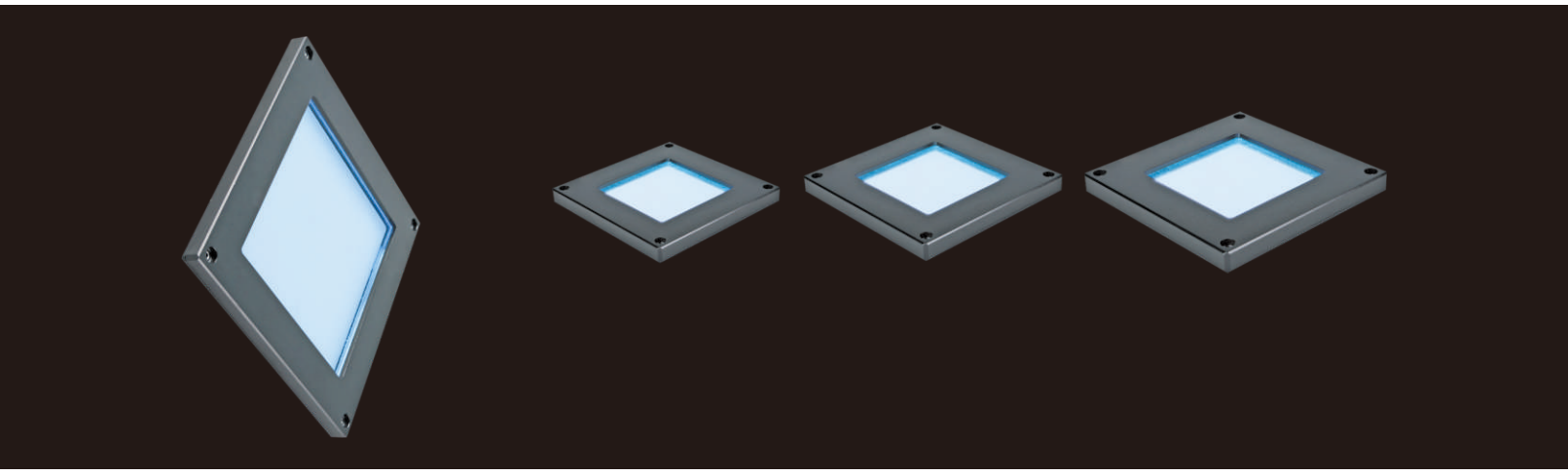
Model Table

No.	Model	Output 🔴	Output ⚪🟢🔵	Recommended controller
1	OPT-RIG9000	- -	0.29A/7W	OPT-DPA1024E
2	OPT-RIG12000	- -	0.33A/7.92W	OPT-DPA6024

Dimensional Drawings [mm]



Flat Dome Lights OPT-FC series



Product Features

1. Diffuse and highly uniform illumination
2. Easy-to-use and compact size
3. With the benefits of shadowless lights and coaxial lights

Application Cases

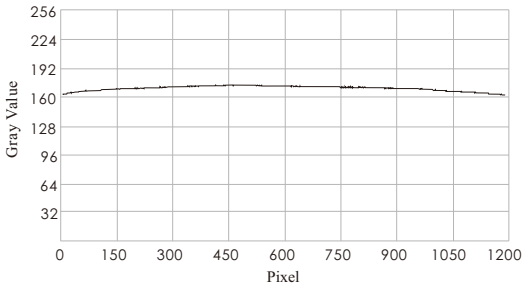
- Inspection of packages for food, cigarettes, etc
- Inspection and measurement of electronic parts
- Inspection and recognition tasks on highly reflective and uneven surfaces

Selection Guide

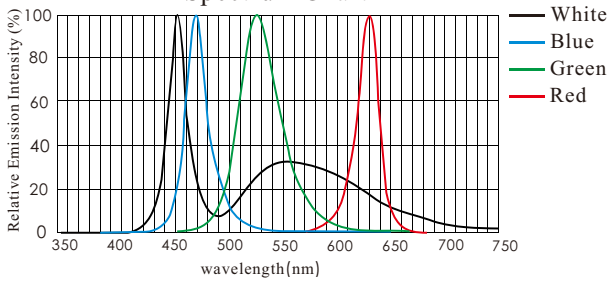
OPT-FC100

- 100 → Outside length
- FC → Flat dome light
- OPT → Brand name

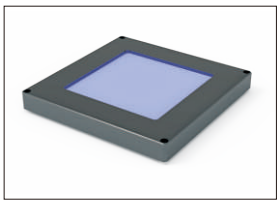
Uniformity Chart

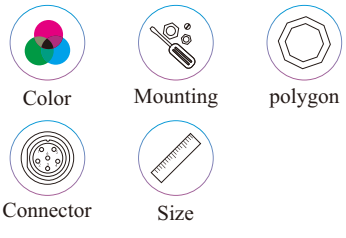


Spectrum Chart

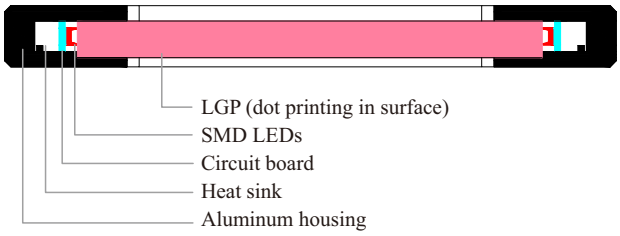


Customization Options





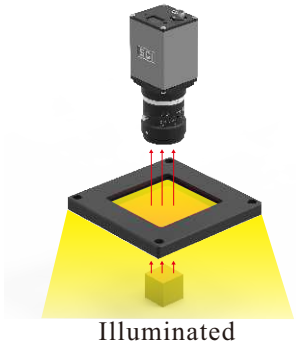
Section Structure Drawing



Application Example

Printing quality inspection

Original Image



Illuminated

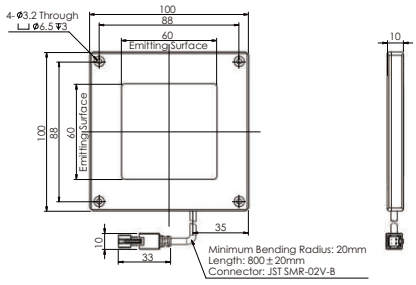
Result Image

Model Table

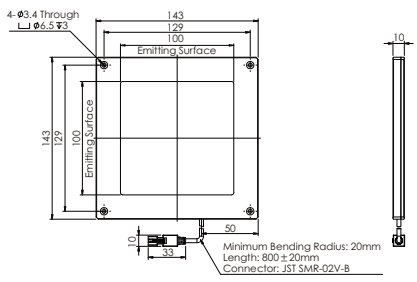
No.	Model	Output 🔴	Output ⚪🟢🔵	Recommend controller
1	OPT-FC100	24V/0.7W	24V/2.2W	OPT-DPA1024E
2	OPT-FC143	24V/1.7W	24V/3.7W	OPT-DPA1024E
3	OPT-FC180	24V/3.2W	24V/4.5W	OPT-DPA1024E
4	OPT-FC240	- -	24V/6.6W	OPT-DPA1024E

Dimensional Drawings [mm]

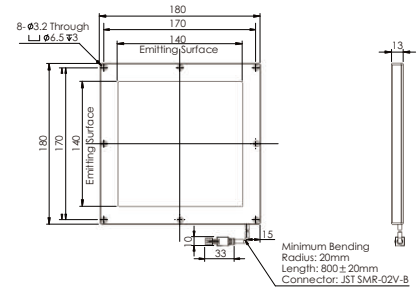
1 OPT-FC100



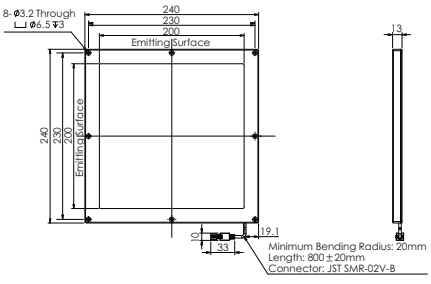
2 OPT-FC143



3 OPT-FC180



4 OPT-FC240

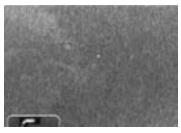


Parallel Spot Light OPT-PL series

Product Features

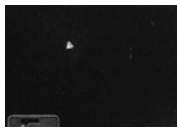
1. Telecentric optical design, highly parallel light emitting
2. Can greatly increase the image contrast of the object border, reach higher accuracy
3. Customization acceptable for installation holes position
4. Can effectively increase the depth of view when work with telecentric lens

Other Light



It's difficult to get clear image for reflective surface

PL70 Parallel Spot Light



It's easy to get clear image for reflective surface

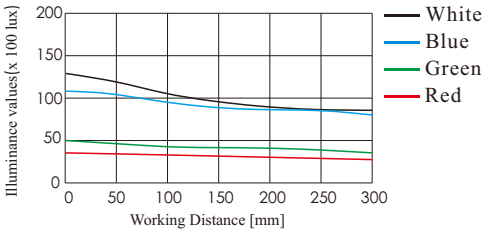
Application Cases

- Inspection of the burr on edges of rotary parts
- Inspection of gap plugs
- Inspection of card surface
- Geometric measurement of metal parts profile

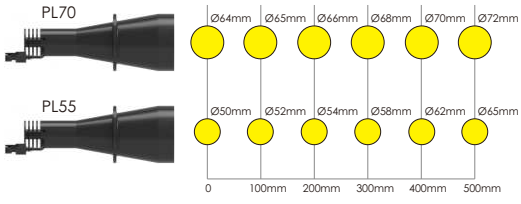
Selection Guide

OPT-PL55
- Outer diameter
- Parallel Spot Light
- Brand name

Parallel Spot Light Intensity Chart



Spot range of PL70 and PL55 at 500 mm Working Distance



Customization Options

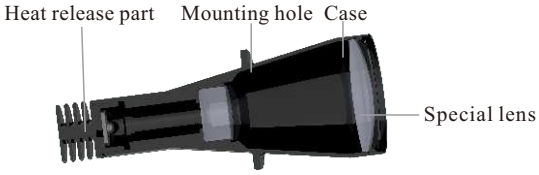
Color

Power

Mounting

Connector

Section Structure Drawing



Application Example

Measurement of metal parts profile

Original Image

Illuminated

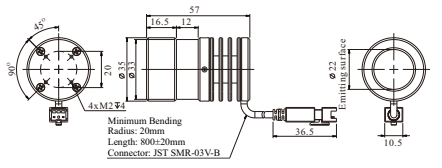
Result Image

Model Table

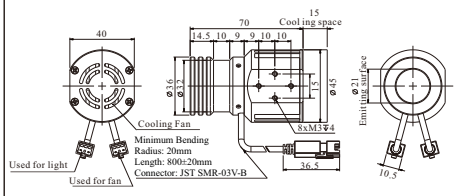
No.	Model	Output 🔴	Output ⚪🟢🔵	Recommended controller
1	OPT-PL35	0.4A/0.9W	0.4A/1.3W	DPA0405
2	OPT-PL45	0.7A/7.2W	0.7A/8.5W	DPA0405
3	OPT-PL50	0.4A/0.9W	0.4A/1.4W	DPA0405
4	OPT-PL55	0.5A/6W	0.25A/3W	DPA1012
5	OPT-PL70	0.5A/6W	0.25A/3W	DPA1012

Dimensional Drawings [mm]

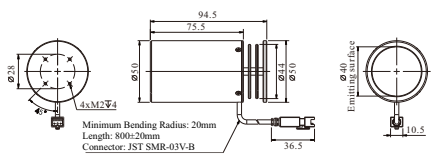
1 OPT-PL35



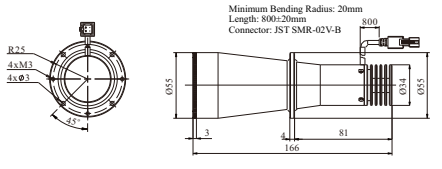
2 OPT-PL45



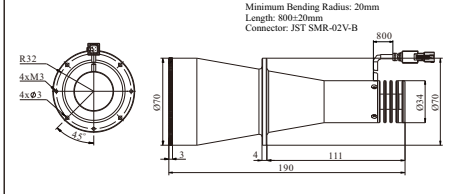
3 OPT-PL50



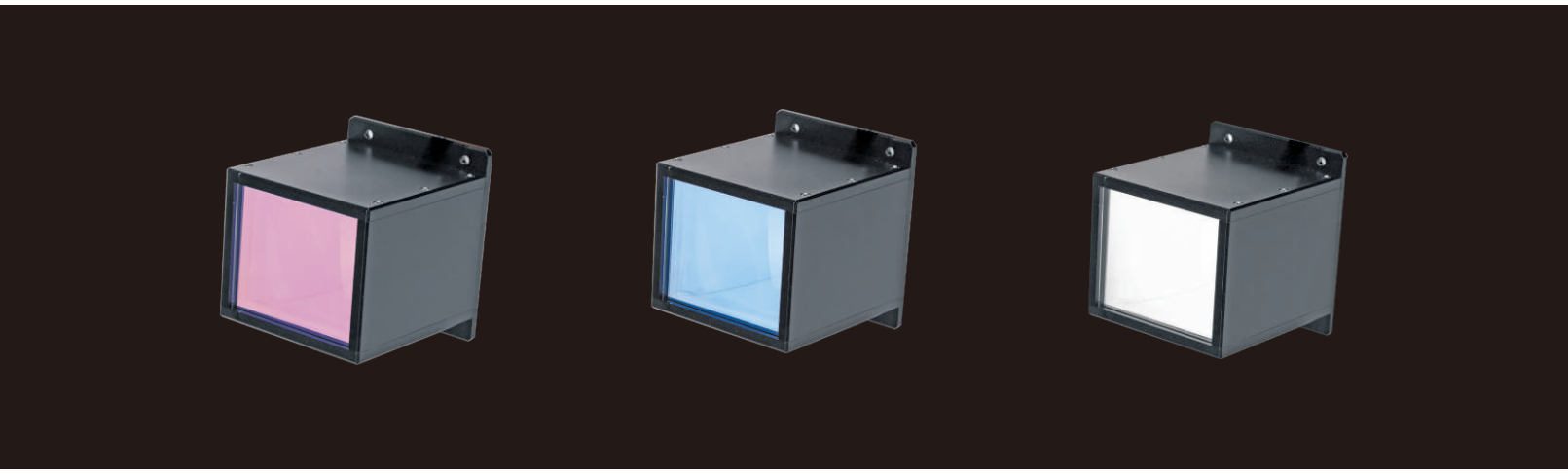
4 OPT-PL55



5 OPT-PL70



Collimated Back Lights OPT-FP series



Product Features

1. Highly parallel light providing optimal contrast of an object shape when used as back light
2. First choice for edge measurement and defect inspection of smooth surfaces
3. For use with coaxial optical systems for the inspection of scratches or other defects on smooth surfaces

Application Cases

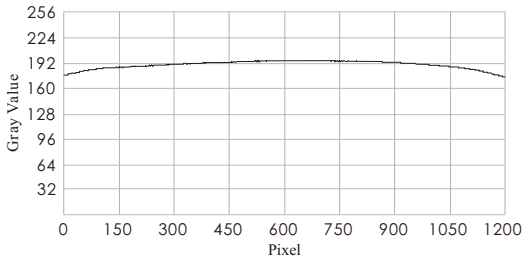
- Highly accurate geometric measurement of parts
- Electronic component outline inspection
- Inspection of objects with very small structure

Selection Guide

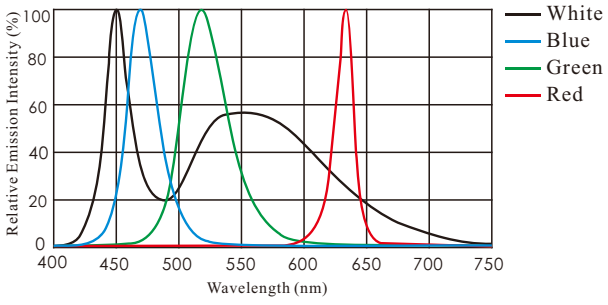
OPT-FP8272

- Width
- Length
- Collimated back light
- Brand name

Uniformity Chart



Spectrum Chart



Customization Options

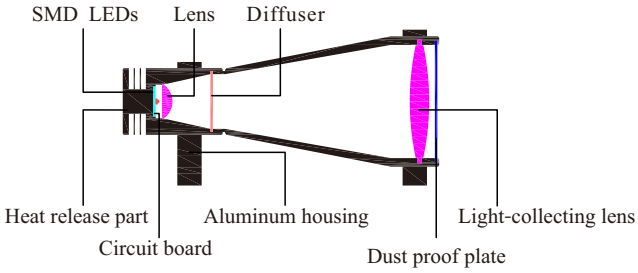

Color


Mounting


Connector

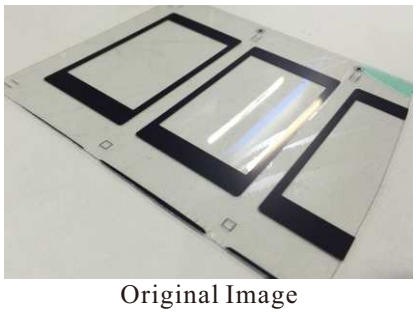

Size

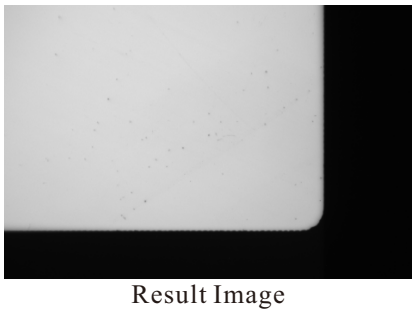
Section Structure Drawing



Application Example

Inspected item: Inner frame of a mobile phone screen


Original Image

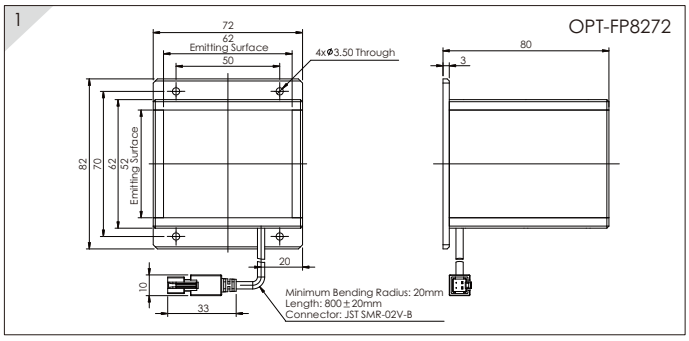

Result Image

Model Table

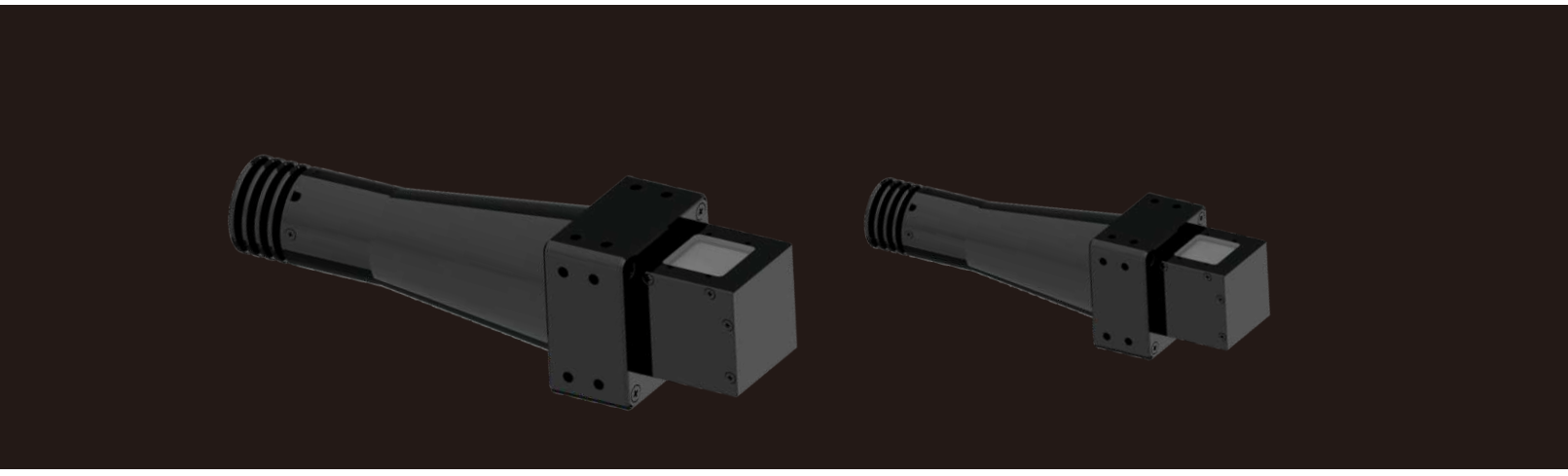
No.	Model	Output 🔴	Output ⚪🟢🔵	Recommended controller
1	OPT-FP8272	24V/0.9W	24V/3.2W	OPT-DPA1024E

Dimensional Drawings [mm]

1



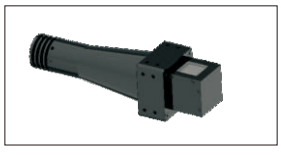
Parallel Coaxial Lights OPT-COP series

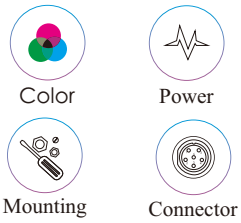


Product Features

1. Max emission deviation below 3° due to special light routing
2. Better emitting angle compared to standard coaxial lights
3. Multiple mounting options, individually customizable for each application
4. Superior reflection mirrors maximize the light intensity

Customization Options

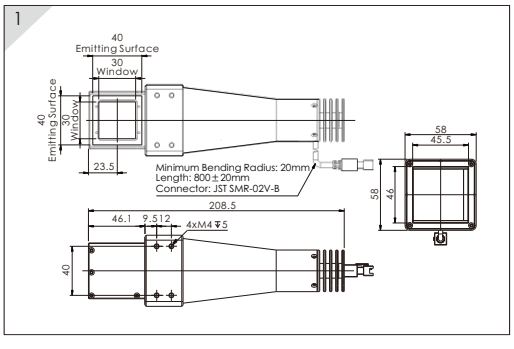




Model Table

Model	Output ●	Output ○●●●	Recomended controller
OPT-COP60	0.28A/6.7W	0.28A/6.7W	DPA1024E

Dimensional Drawings [mm]



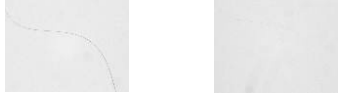
Application Cases

- Inspection of metal surfaces
- Mobile screen surface inspection for scratches
- Glass surface inspection

Selection Guide

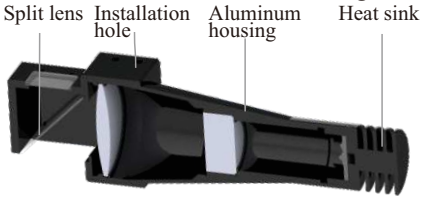
OPT-COP60
- Length
- Parallel Coaxial Light
- Brand name

Emitting Effects Comparison

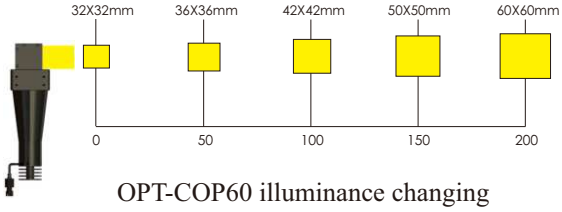


Parallel Coaxial Light Standard Coaxial Light

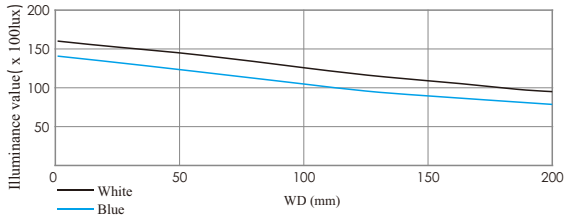
Section Structure Drawing



OPT-COP60 speckle changes

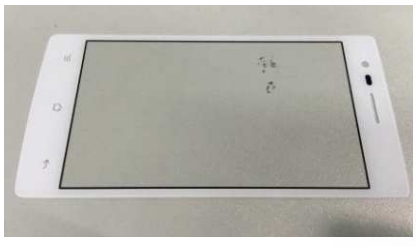


OPT-COP60 illuminance changing



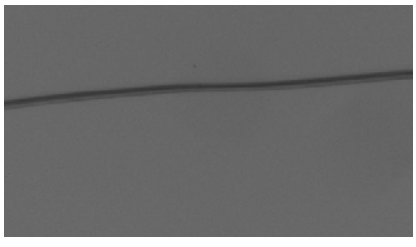
Application Example

Mobile phone screen scratches inspection



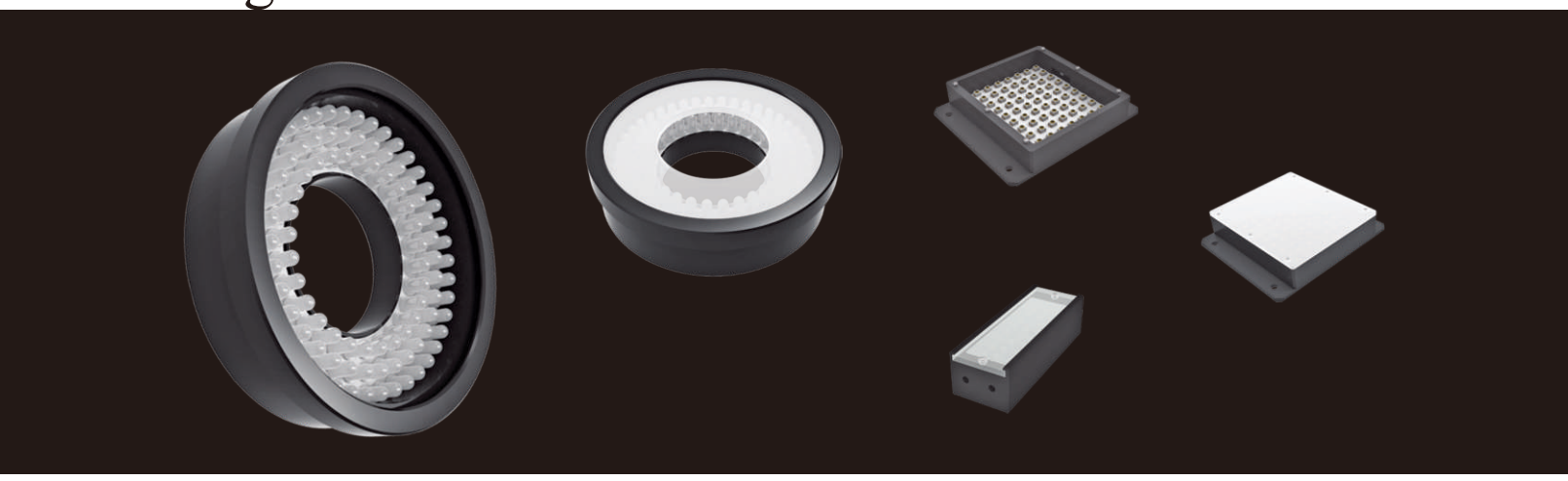
Original Image

Illuminated



Result Image

IR Lights OPT-XX-IR series



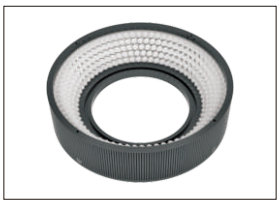
Product Features

1. Various shapes and illumination angles for choices
2. 850 nm and 940 nm wavelength for choices

Application Cases

- Medical (recognition of vascular nets; eye tracking)
- Packaging (transparent plastic materials)
- Cloth and textile
- Electronics and semiconductors
- Pharmaceutical industry
- LCD, OLED

Customization Options



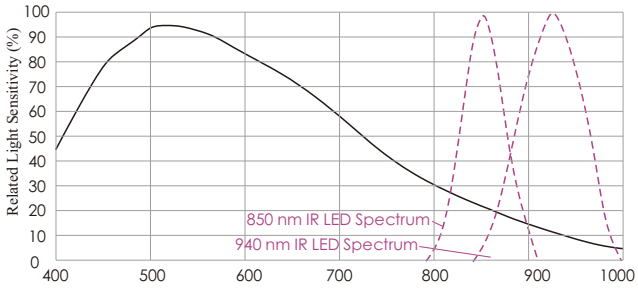
Wavelength

Mounting

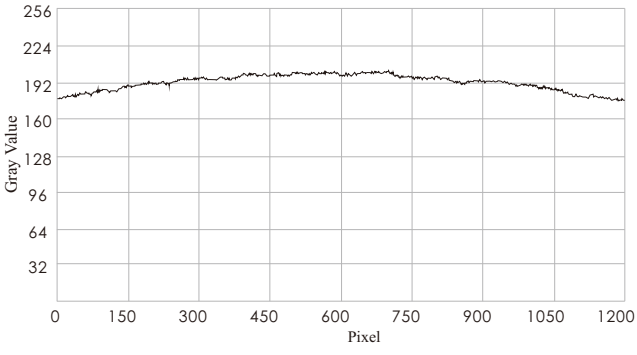
Size

Sectional control

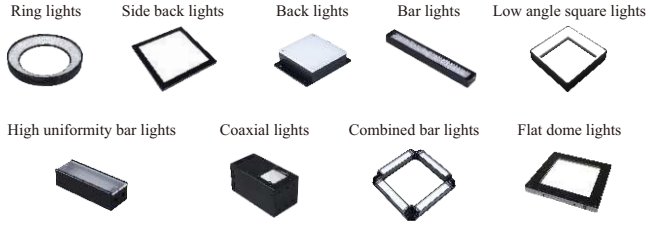
Camera Spectrum Chart



Uniformity Chart



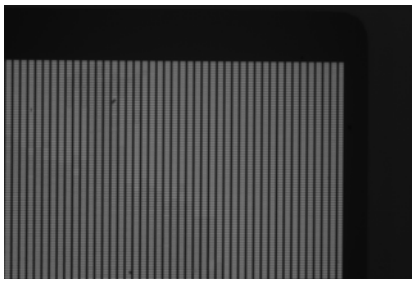
IR versions are available for the following lights with the same dimensions



Application Example

Inspected item: Localization of specific areas on screens

Original Image



Result Image

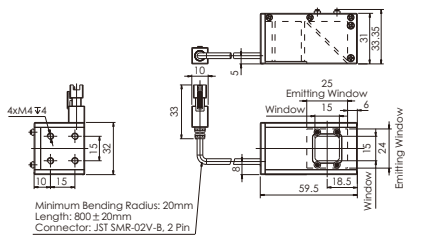
Model Table

No.	Model	Output	Wavelength	Recommended controller
1	OPT-CO30-IR	24V/1.4W	850nm/940nm	OPT-DPA1024E
2	OPT-CO40-IR	24V/1.2W	850nm/940nm	OPT-DPA1024E
3	OPT-CO50-IR	24V/3.1W	850nm/940nm	OPT-DPA1024E
4	OPT-CO60-IR	24V/3.1W	850nm/940nm	OPT-DPA1024E
5	OPT-CO70-IR	24V/5.0W	850nm/940nm	OPT-DPA1024E
6	OPT-CO80-IR	24V/7.4W	850nm/940nm	OPT-DPA1024E
7	OPT-CO100-IR	24V/10.6W	850nm/940nm	OPT-DPA1024E
8	OPT-FL3729-IR	24V/1.1W	850nm/940nm	OPT-DPA1024E
9	OPT-FL5050-IR	24V/1.4W	850nm/940nm	OPT-DPA1024E
10	OPT-FL7070-IR	24V/0.9W	850nm/940nm	OPT-DPA1024E
11	OPT-FL9090-IR	24V/3.6W	850nm/940nm	OPT-DPA1024E
12	OPT-FL10884-IR	24V/4.3W	850nm/940nm	OPT-DPA1024E
13	OPT-FL130130-IR	24V/7.7W	850nm/940nm	OPT-DPA1024E
14	OPT-FL150130-IR	24V/8.1W	850nm/940nm	OPT-DPA1024E
15	OPT-FL212230-IR	24V/21.6W	850nm/940nm	OPT-DPA1024E
16	OPT-LI6022-IR	24V/0.9W	850nm/940nm	OPT-DPA1024E
17	OPT-LI8532-IR	24V/2.6W	850nm/940nm	OPT-DPA1024E
18	OPT-LI9022-IR	24V/0.9W	850nm/940nm	OPT-DPA1024E

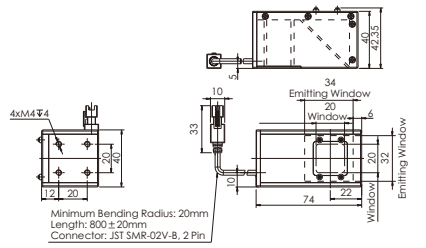
No.	Model	Output	Wavelength	Recommended controller
19	OPT-LI11222-IR	24V/0.9W	850nm/940nm	OPT-DPA1024E
20	OPT-LI15020-IR	24V/2.1W	850nm/940nm	OPT-DPA1024E
21	OPT-LI25030-IR	24V/8.9W	850nm/940nm	OPT-DPA1024E
22	OPT-LI29026-IR	24V/3.5W	850nm/940nm	OPT-DPA1024E
23	OPT-LI38037-IR	24V/6.8W	850nm/940nm	OPT-DPA1024E
24	OPT-RI3500-IR	24V/0.6W	850nm/940nm	OPT-DPA1024E
25	OPT-RI5030-IR	24V/1.0W	850nm/940nm	OPT-DPA1024E
26	OPT-RI7000-IR	24V/2.1W	850nm/940nm	OPT-DPA1024E
27	OPT-RI7030-IR	24V/2.9W	850nm/940nm	OPT-DPA1024E
28	OPT-RI9030-IR	24V/5.3W	850nm/940nm	OPT-DPA1024E
29	OPT-RI9090-IR	24V/0.7W	850nm/940nm	OPT-DPA1024E
30	OPT-RI10080-IR	24V/4.8W	850nm/940nm	OPT-DPA1024E
31	OPT-RI12000-IR	24V/8.8W	850nm/940nm	OPT-DPA1024E
32	OPT-RI12030-IR	24V/6.7W	850nm/940nm	OPT-DPA1024E
33	OPT-RI12045-IR	24V/4.9W	850nm/940nm	OPT-DPA1024E
34	OPT-RI15060-IR	24V/5.3W	850nm/940nm	OPT-DPA1024E
35	OPT-RI18030-IR	24V/11.3W	850nm/940nm	OPT-DPA1024E

Dimensional Drawings [mm]

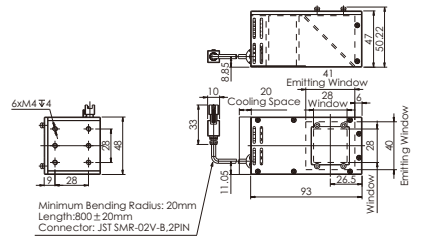
1 OPT-CO30



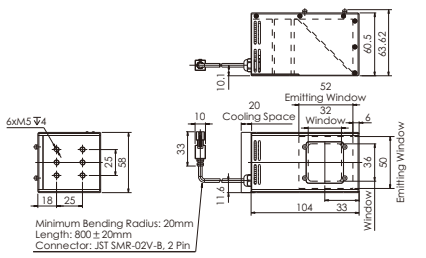
2 OPT-CO40



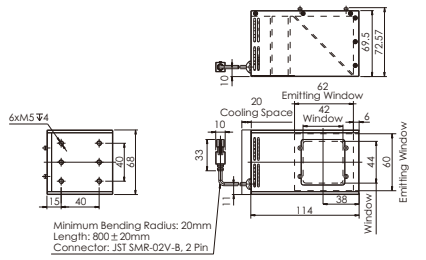
3 OPT-CO50



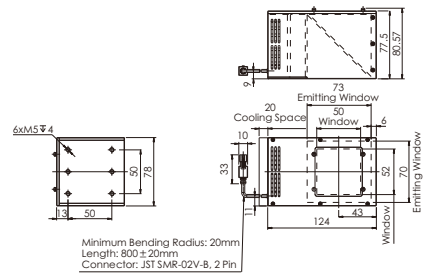
4 OPT-CO60



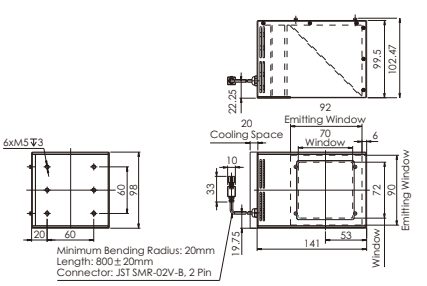
5 OPT-CO70



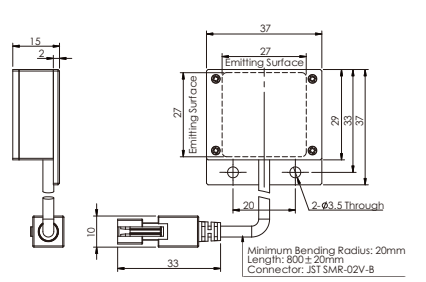
6 OPT-CO80



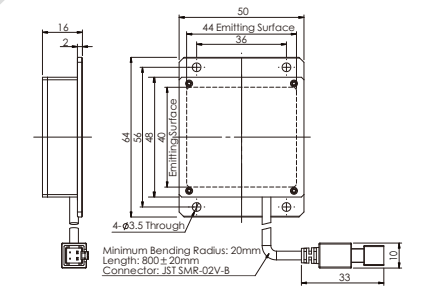
7 OPT-CO100



8 OPT-FL3729

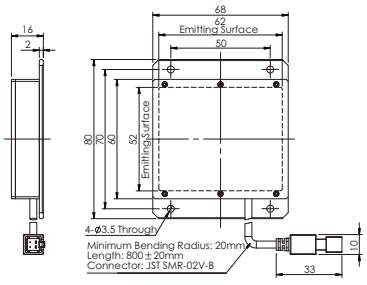


9 OPT-FL5050

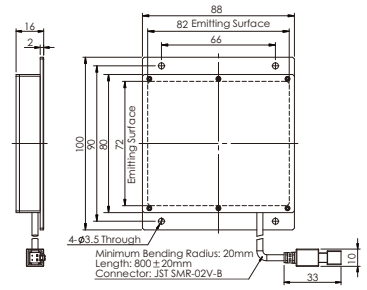


Dimensional Drawings [mm]

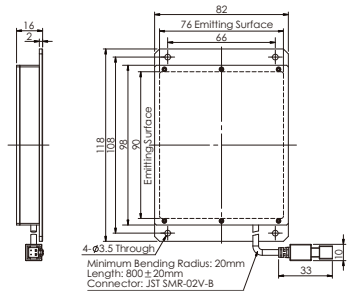
10 OPT-FL7070



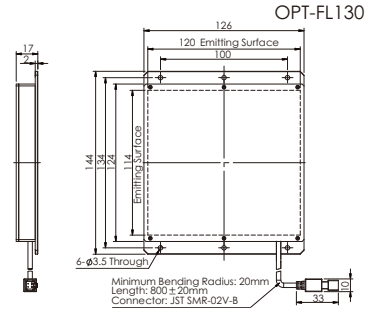
11 OPT-FL9090



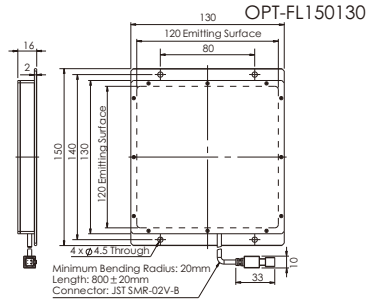
12 OPT-FL10884



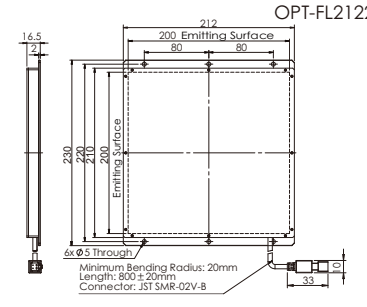
13 OPT-FL130130



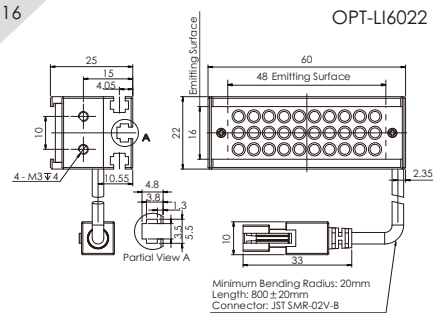
14 OPT-FL150130



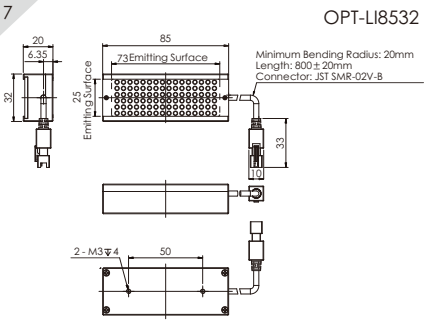
15 OPT-FL212230



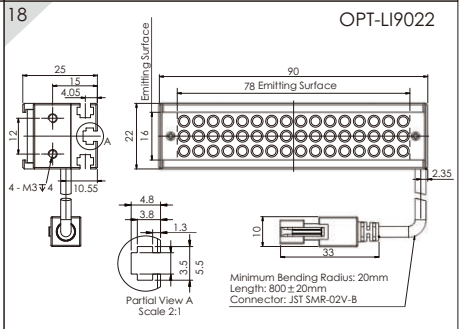
16 OPT-LI6022



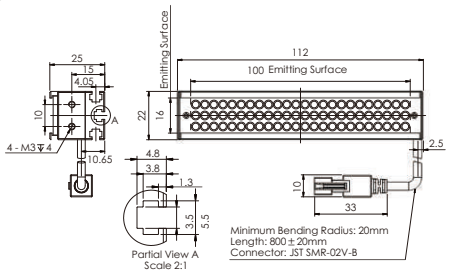
17 OPT-LI8532



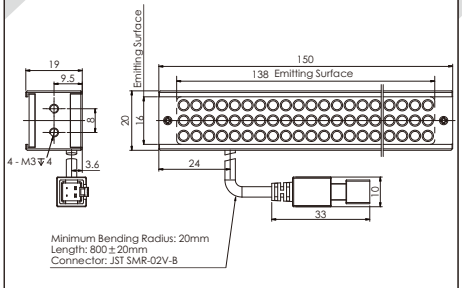
18 OPT-LI9022



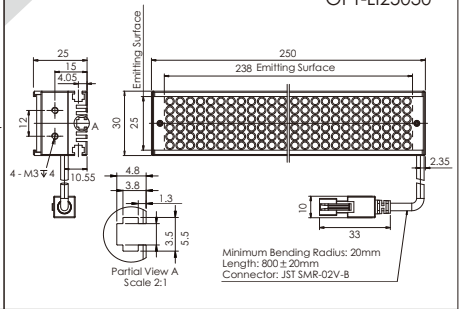
19 OPT-LI11222



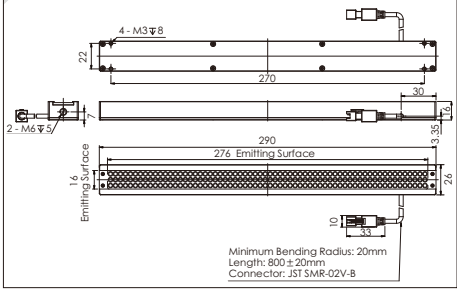
20 OPT-LI15020



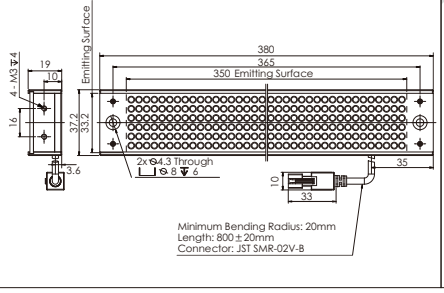
21 OPT-LI25030



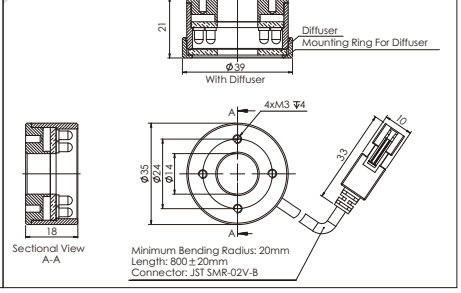
22 OPT-LI29026



23 OPT-LI38037

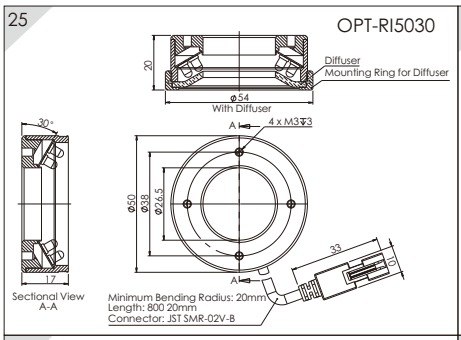


24 OPT-RI3500

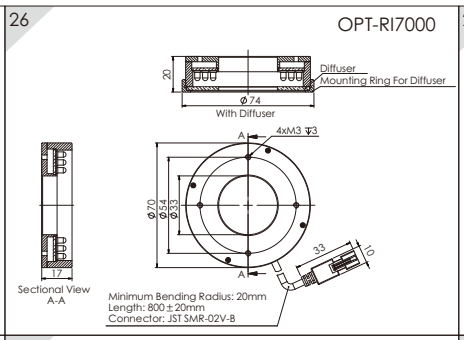


Dimensional Drawings [mm]

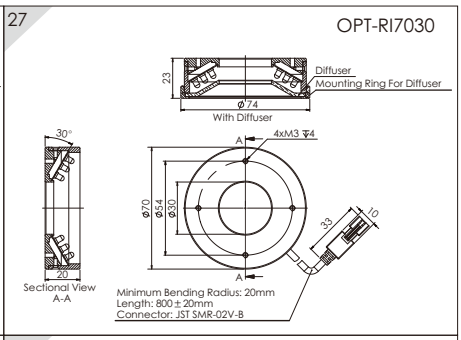
25 OPT-RI5030



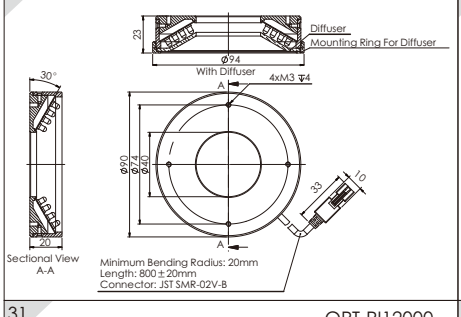
26 OPT-RI7000



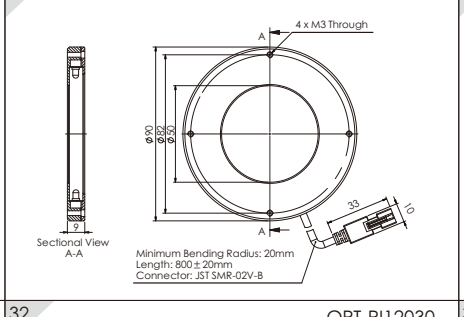
27 OPT-RI7030



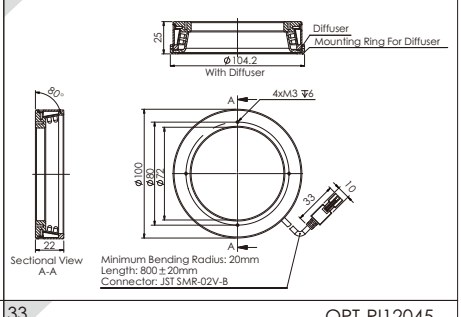
28 OPT-RI9030



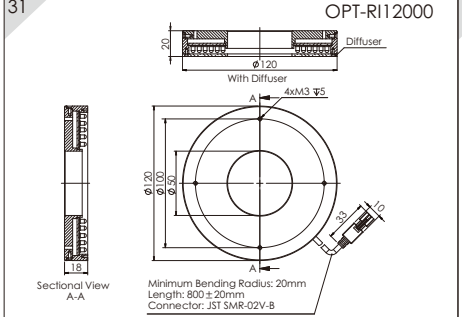
29 OPT-RI9090



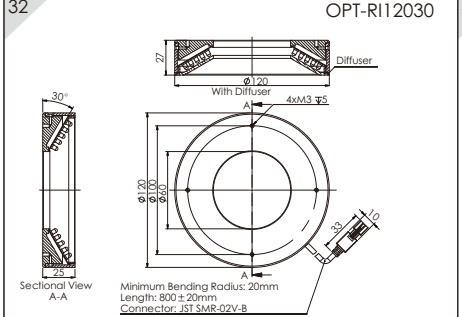
30 OPT-RI10080



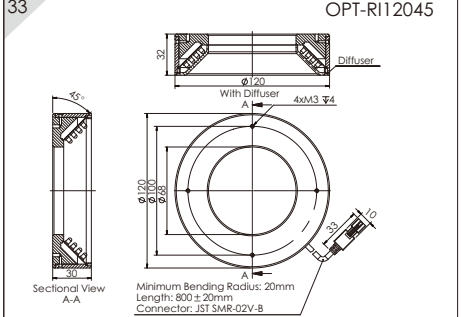
31 OPT-RI12000



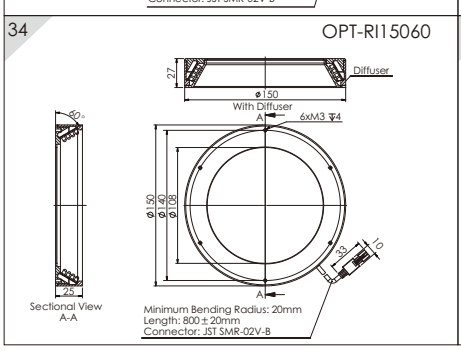
32 OPT-RI12030



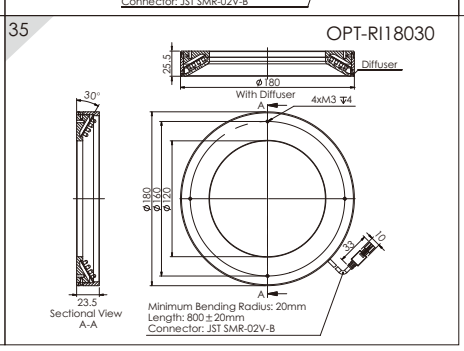
33 OPT-RI12045



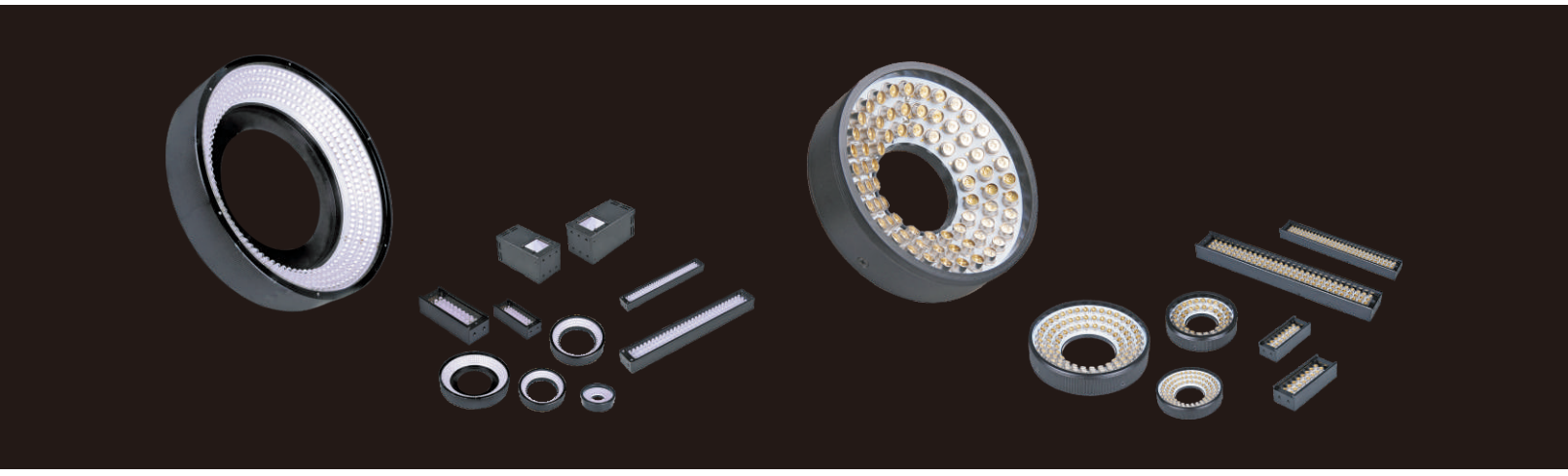
34 OPT-RI15060



35 OPT-RI18030



UV Lights OPT-XX-UV series



Product Features

1. Using UV LEDs from the global leading manufacturer
2. Utmost stability of the UV light
3. 365 nm and 385 nm wavelength for choices; shape and illumination angle customizable

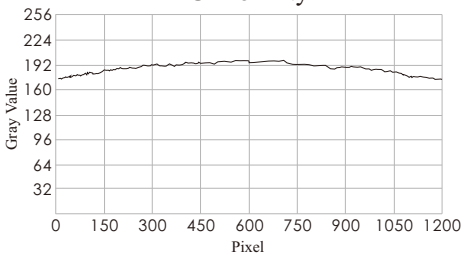
Application Cases

- Inspection of banknotes
- Fluorescence imaging
- Identification of fluorescent characters, bar codes and 2D codes
- Glass inspection for scratches
- Classification based on photochemical effects
- Defects inspection

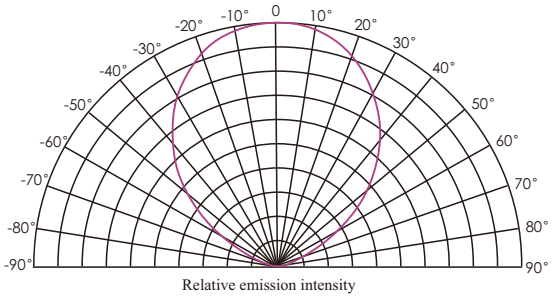
UV 385nm

UV 365nm

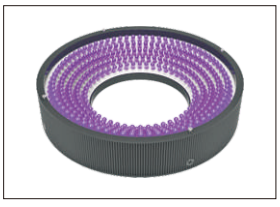
Uniformity



LED with 365 nm wavelength



Customization Options



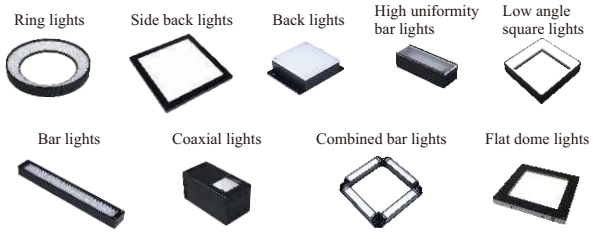
Wavelength

Mounting

Size

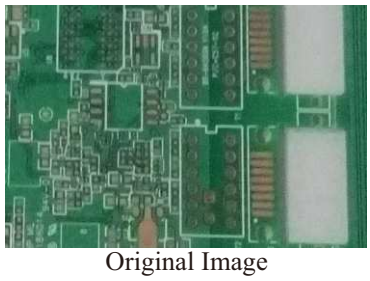
Sectional control

IR versions are available for the following lights with the same dimensions

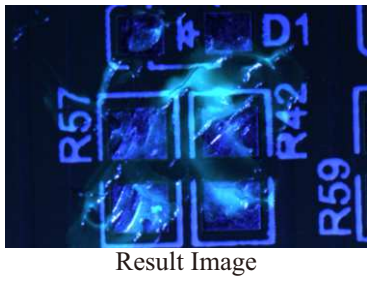


Application Example

Inspected item: Presence of glue on PCBs



Original Image



Result Image

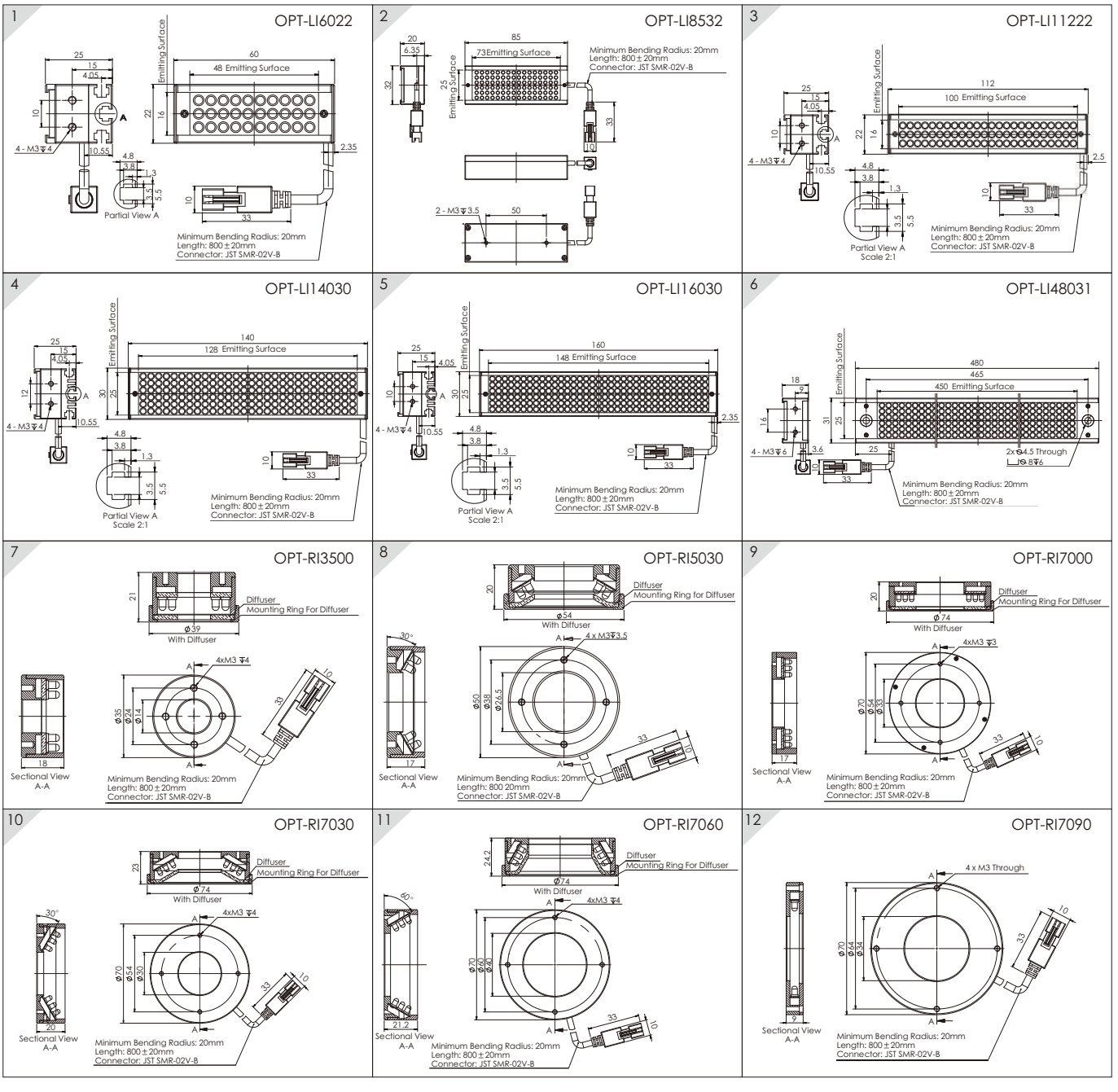
Remark: the result of the illumination is only visible with an ultra-violet camera

Model Table UV (385nm)

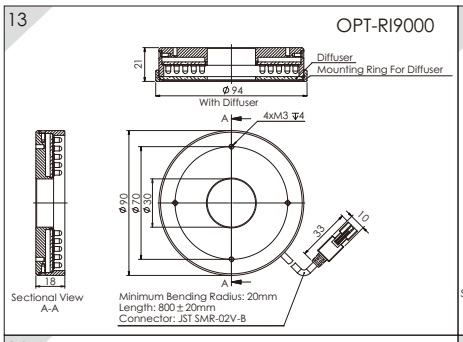
No.	Model	Output	Wavelength	Recommended controller
1	OPT-LI6022-UV	24V/1.4W	385nm	OPT-DPA1024E
2	OPT-LI8532-UV	24V/4.0W	385nm	OPT-DPA1024E
3	OPT-LI11222-UV	24V/3.2W	385nm	OPT-DPA1024E
4	OPT-LI14030-UV	24V/7.4W	385nm	OPT-DPA1024E
5	OPT-LI16030-UV	24V/9.3W	385nm	OPT-DPA1024E
6	OPT-LI48031-UV	24V/20.2W	385nm	OPT-DPA1024E
7	OPT-RI3500-UV	24V/1.1W	385nm	OPT-DPA1024E
8	OPT-RI5030-UV	24V/2.6W	385nm	OPT-DPA1024E
9	OPT-RI7000-UV	24V/4.3W	385nm	OPT-DPA1024E
10	OPT-RI7030-UV	24V/3.8W	385nm	OPT-DPA1024E

No.	Model	Output	Wavelength	Recommended controller
11	OPT-RI7060-UV	24V/5.0W	385nm	OPT-DPA1024E
12	OPT-RI7090-UV	24V/1.6W	385nm	OPT-DPA1024E
13	OPT-RI9000-UV	24V/7.2W	385nm	OPT-DPA1024E
14	OPT-RI9030-UV	24V/5.5W	385nm	OPT-DPA1024E
15	OPT-RI9045-UV	24V/6.4W	385nm	OPT-DPA1024E
16	OPT-RI9090-UV	24V/2.1W	385nm	OPT-DPA1024E
17	OPT-RI10080-UV	24V/5.6W	385nm	OPT-DPA1024E
18	OPT-RI12000-UV	24V/11.1W	385nm	OPT-DPA1024E
19	OPT-RI12030-UV	24V/12.5W	385nm	OPT-DPA1024E

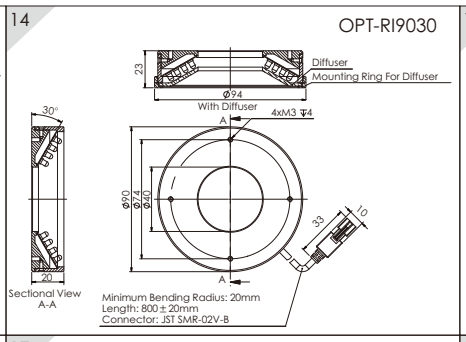
Dimensional Drawings [mm]



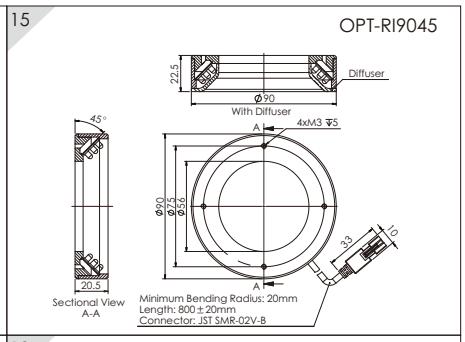
13 OPT-RI9000



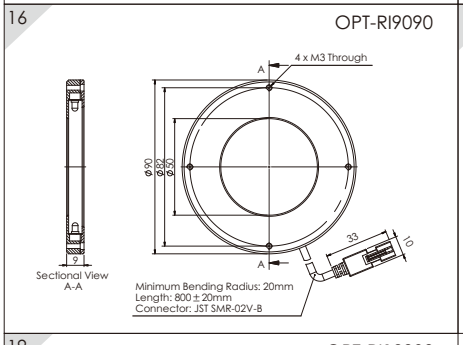
14 OPT-RI9030



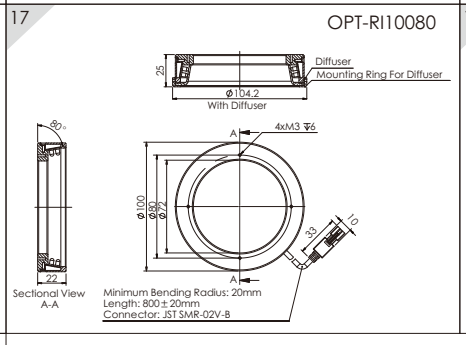
15 OPT-RI9045



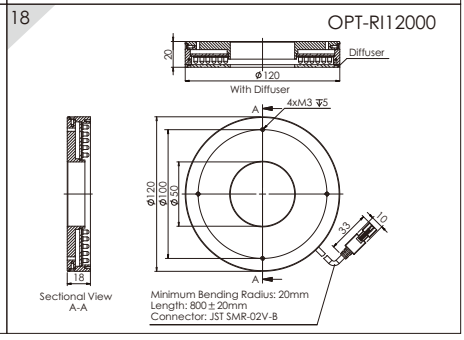
16 OPT-RI9090



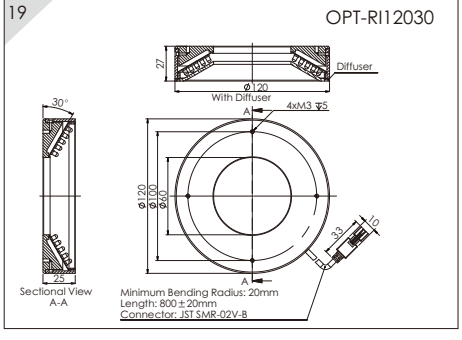
17 OPT-RI10080



18 OPT-RI12000



19 OPT-RI12030

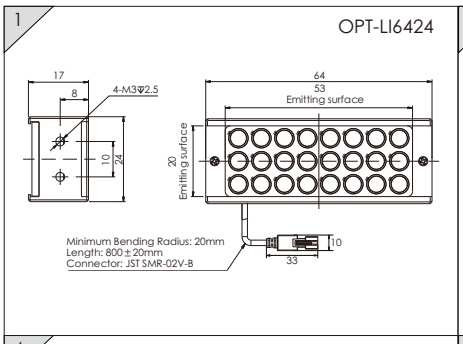


Model Table UV (365nm)

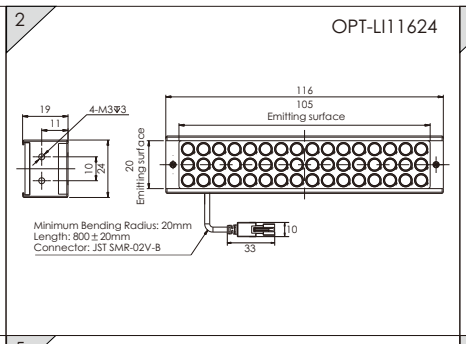
No.	Model	Output	Wavelength	Recommended controller
1	OPT-LI6424-UV	24V/1.4W	365nm	OPT-DPA1024E
2	OPT-LI11624-UV	24V/2.9W	365nm	OPT-DPA1024E
3	OPT-LI21230-UV	24V/6.5W	365nm	OPT-DPA1024E

No.	Model	Output	Wavelength	Recommended controller
4	OPT-RI6030-UV	24V/2.4W	365nm	OPT-DPA1024E
5	OPT-RI7530-UV	24V/4.3W	365nm	OPT-DPA1024E
6	OPT-RI9030-UV	24V/5.2W	365nm	OPT-DPA1024E

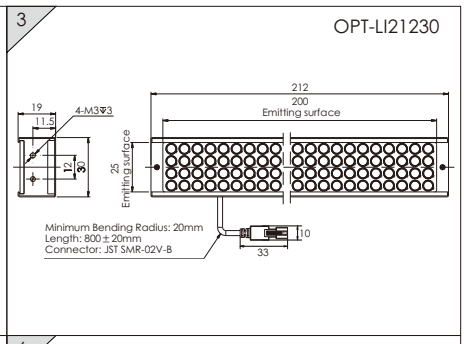
1 OPT-LI6424



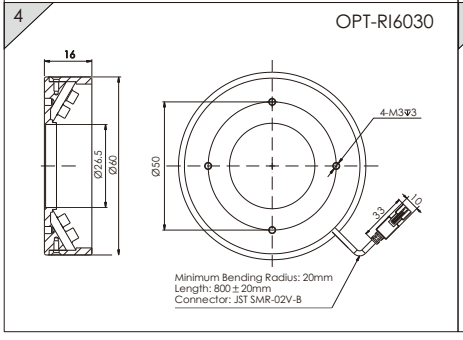
2 OPT-LI11624



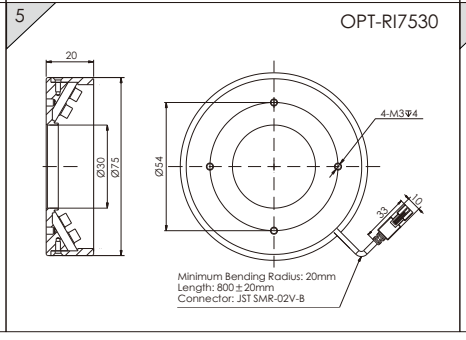
3 OPT-LI21230



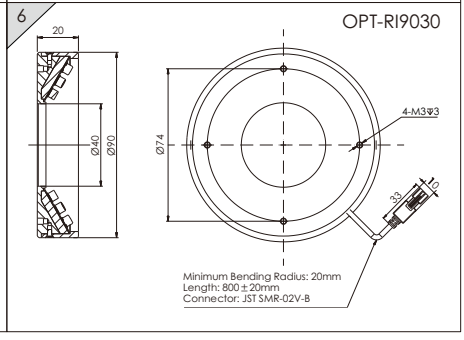
4 OPT-RI6030



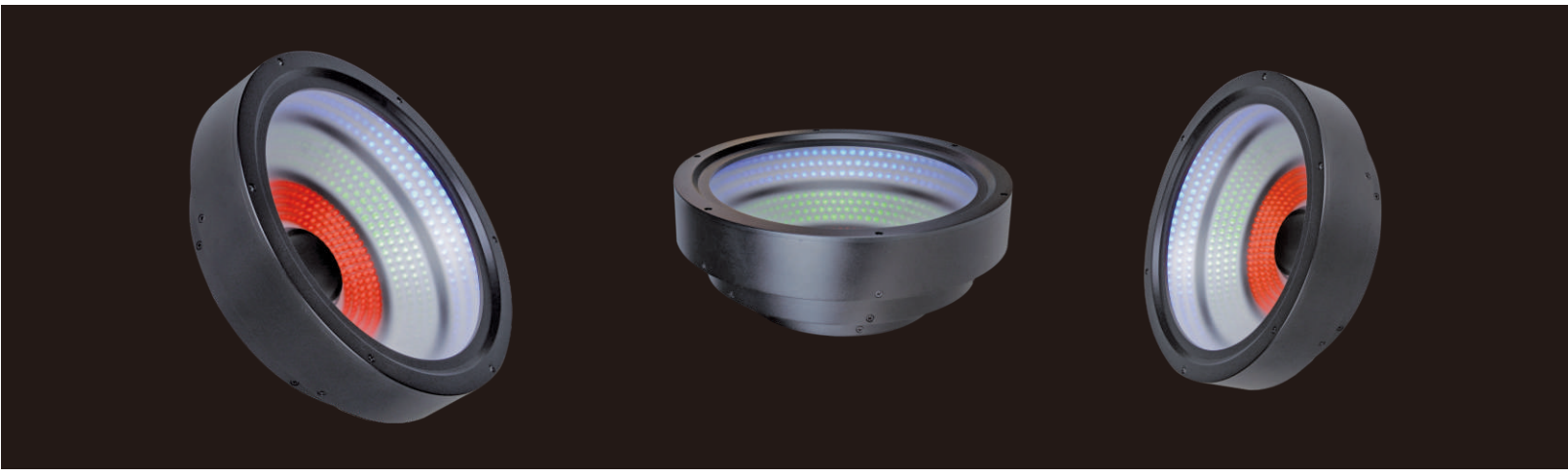
5 OPT-RI7530



6 OPT-RI9030



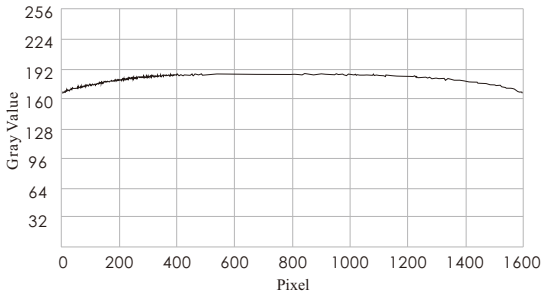
AOI Lights OPT-RIA series



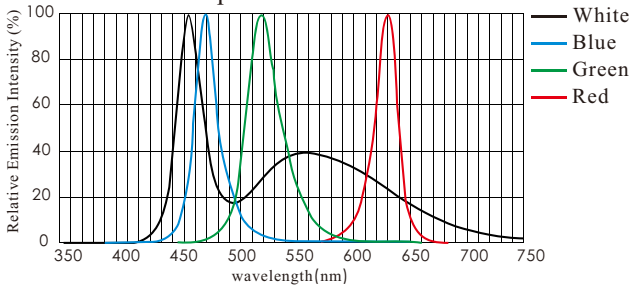
Product Features

1. High uniformity due to special diffusers
2. Multi-color illumination from different angles highlighting the 3D information e.g. of the soldering
3. Widely applied in the inspection of objects with complex shapes

Uniformity Chart



Spectrum Chart



Application Cases

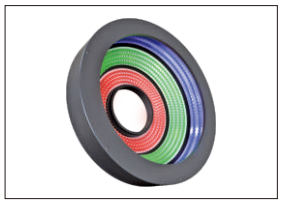
- Inspection of the soldering of circuit boards
- Inspection of round objects
- Inspection of objects with varying height

Selection Guide

OPT-RIA200

- Outer diameter
- AOI light
- Brand name

Customization Options



Color

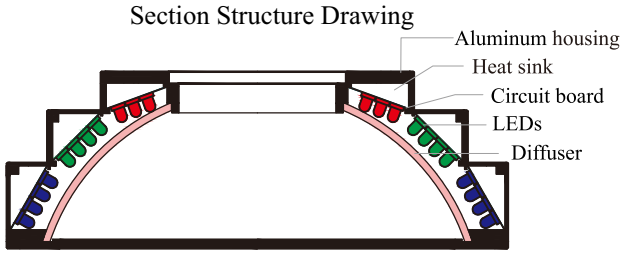
Mounting

Multi-angle emitting

Size

Sectional control

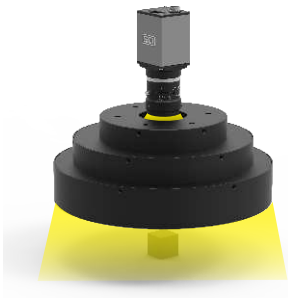
Section Structure Drawing



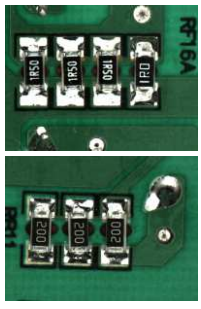
Application Example

Inspection of solder joints on PCBs

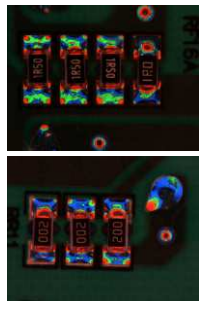
Original Image



Illuminated



Result image with white light



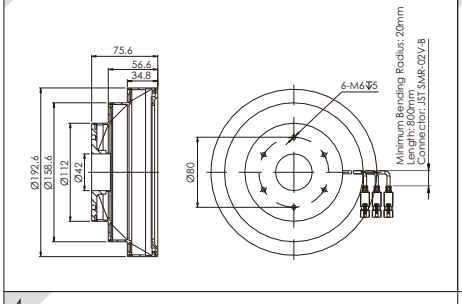
Result image with the AOI Light

Model Table

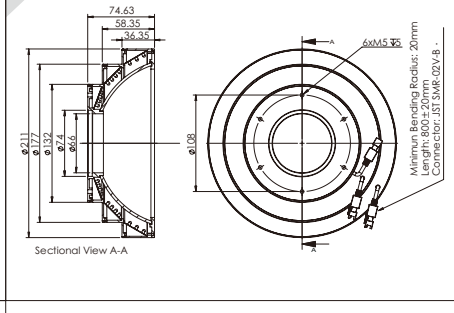
No.	Model	Output	Channels	Recommended controller
1	OPT-RIA200-RGB	24V/31.4W	3	OPT-DPA1024E
2	OPT-RIA211-RGB	24V/35.4W	3	OPT-DPA1024E
3	OPT-RIA250-RGB	24V/50.2W	3	OPT-DPA1024E
4	OPT-CO70-RIA211-RGBW	24V/47.6W	4	OPT-DPA1024E

Dimensional Drawings [mm]

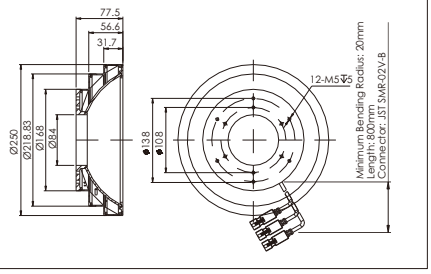
1 OPT-RIA200-RGB



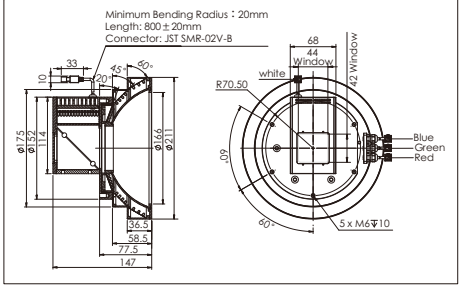
2 OPT-RIA211-RGB



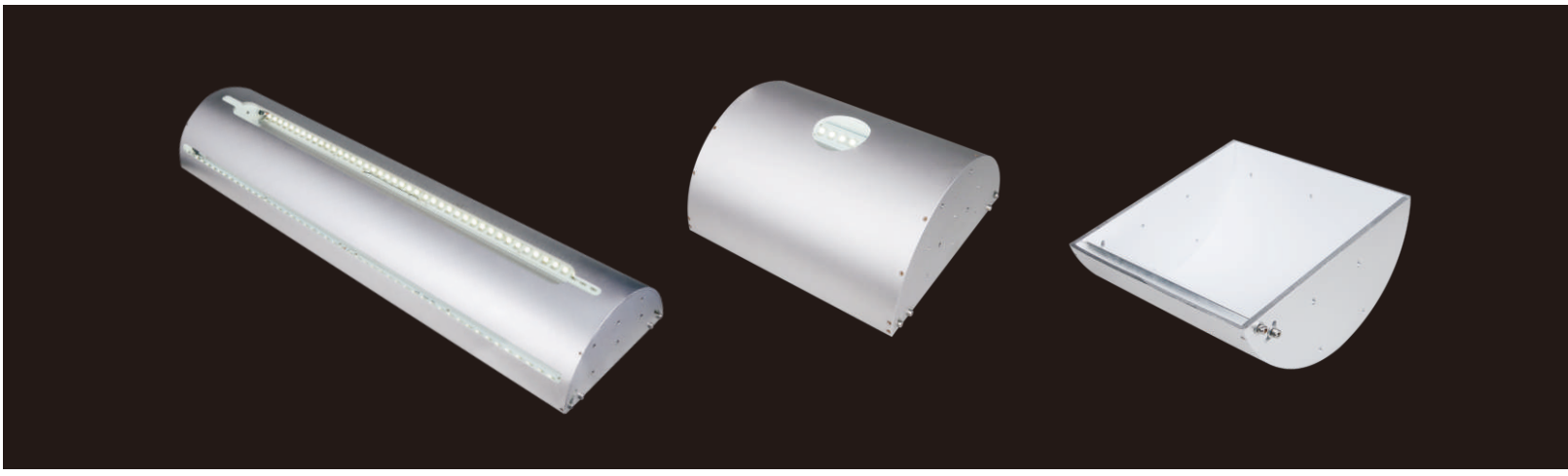
3 OPT-RIA250-RGB



4 OPT-CO70-RIA211-RGBW



Vault Lights OPT-LIU series



Product Features

1. Providing uniform illumination
2. With the features of dome lights and bar lights
3. Linear or round shaped view window on top, suitable for area scan or line scan cameras

Application Cases

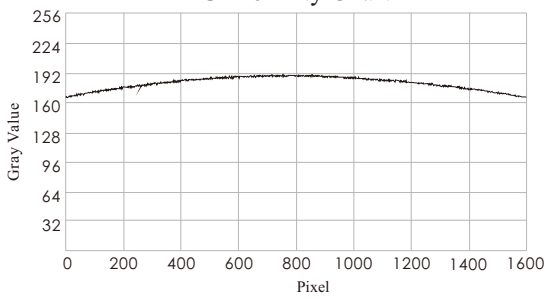
- Surface inspection of tobacco boxes
- Inspection of housings of electronic parts for defects and dirt
- Line scan AOI inspection
- Large field of view surface inspection

Selection Guide

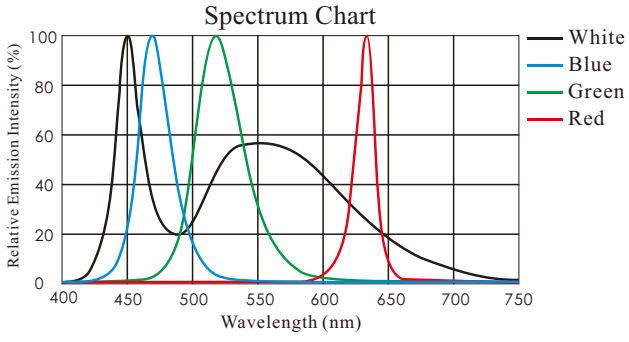
OPT-LIU205

- Length
- Vault Light
- Brand name

Uniformity Chart



Spectrum Chart

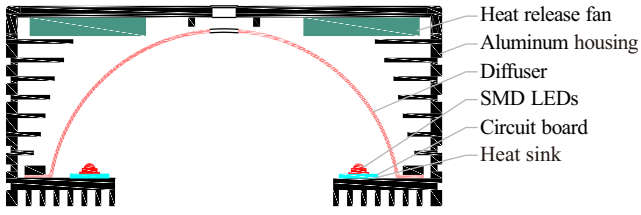


Customization Options

Color | Mounting | Multi-angle emitting

Size | Sectional control

Section Structure Drawing



Application Example

Inspection of characters on adapter

Original Image

Illuminated

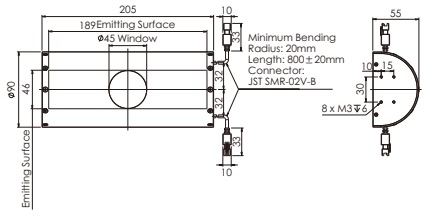
Result Image

Model Table

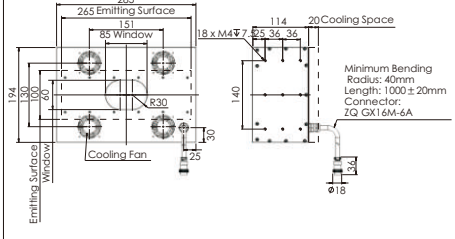
No.	Model	Output ●	Output ○●●	Channels	Recommended controller
1	OPT-LIU205	0.8A/19.2W	1.2A/28.8W	2	OPT-DPA1024E
2	OPT-LIU285	3.2A/76.8W	4.8A/115.2W	1	OPT-DPA6024
3	OPT-LIU362	2.4A/57.6W	4A/96W	1	OPT-DPA6024
4	OPT-LIU423	3.2A/76.8W	7A/168W	2	OPT-DPA6024
5	OPT-LIU500	3.2A/76.8W	4.8A/115.2W	2	OPT-DPA6024
6	OPT-LIU600	3.2A/76.8W	5.6A/134.4W	2	OPT-DPA6024

Dimensional Drawings [mm]

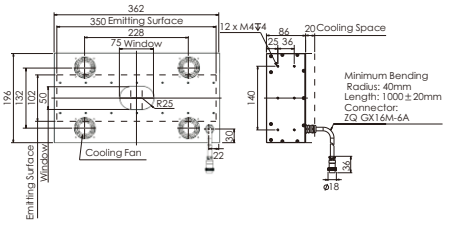
1 OPT-LIU205



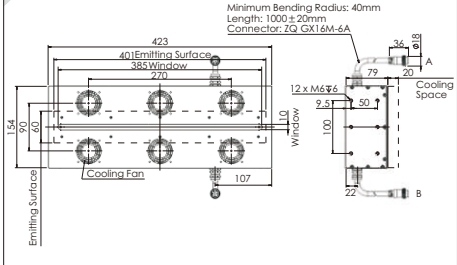
2 OPT-LIU285



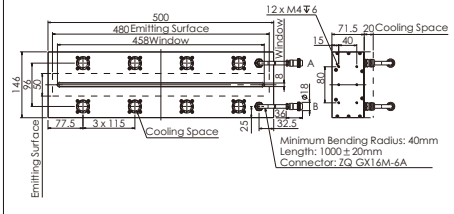
3 OPT-LIU362



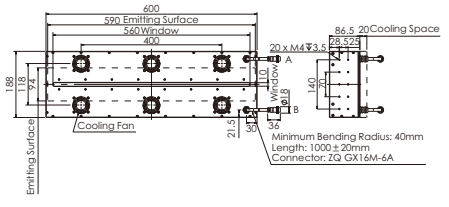
4 OPT-LIU423



5 OPT-LIU500



6 OPT-LIU600



Waterproof Lights

Used in many dusty and wet environments, compliant with IP67 rating

Product Features

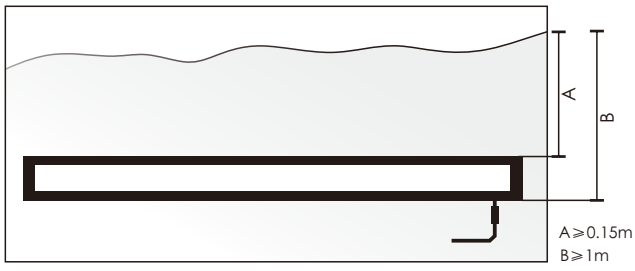
1. OPT standard items are also available as waterproof variants
2. Compliant with IP67 rating
3. Ideal for hassle-free operation in dusty and wet environments

OPT waterproof lights are thoroughly tested. They are not just applied in dusty and wet industrial environments, but also in outdoor or under-water applications.
The ultra compact design, few gaps in the housing and high-end sealing ensure the tightness. OPT waterproof lights also feature a heat transfer system to extend the lifetime of the LEDs.

Customization Options

Color | Mounting | Heat release

Size | Sectional control | IP rating



The light is tested for 2 hours in a water depth between 15 cm and 1 m.

Application Example

Screw thread inspection

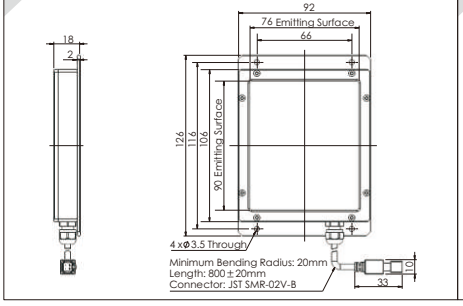
Bottle mouth inspection

Model Table

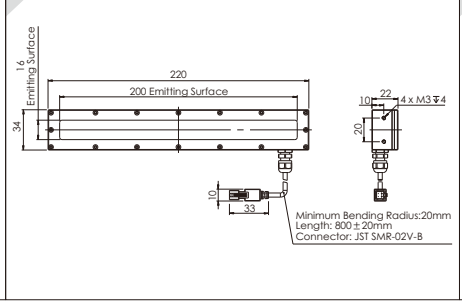
No.	Model	Output 🔴	Output ⚪🟢🔵	Recommended controller
1	OPT-FL12692-IP67	24V/4.1W	24V/6.1W	OPT-DPA1024E
2	OPT-LI22034-IP67	24V/2.4W	24V/4.6W	OPT-DPA1024E
3	OPT-RI10030-IP67	24V/4.6W	24V/5.8W	OPT-DPA1024E

Dimensional Drawings [mm]

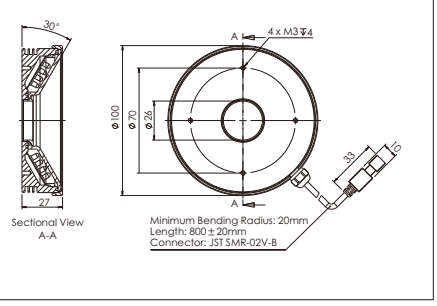
1 OPT-FL12692-IP67



2 OPT-LI22034-IP67



3 OPT-RI10030-IP67



We can provide more customized designs, please inquiry us for details!

Customized Air Cooled Lights

Product Features

1. Compact size to save installation space
2. Reduced speckles due to a special cylinder lens design
3. Suitable for dust-free or air pressure & airflow with special environment.

Customization Options


Color

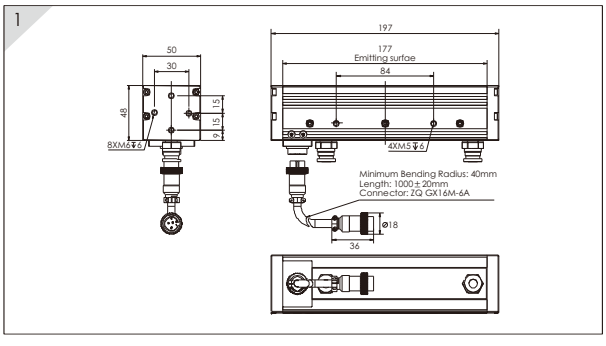

Size


Mounting

Model Table

Model	Output ●	Output ○●●●	Recommended controller
OPT-LSG197	1.2A/28.8W	3.5A/84W	DPA6024

Dimensional Drawing [mm]



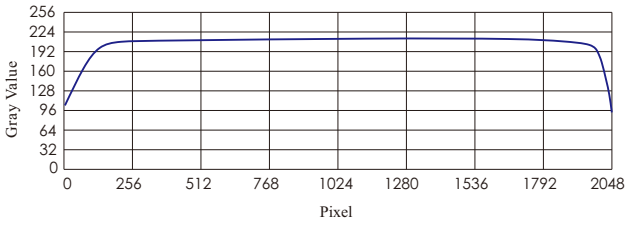
Application Cases

- Mobile screen surface defects inspection
- Aluminum surface inspection for scratches
- Steel surface defects inspection

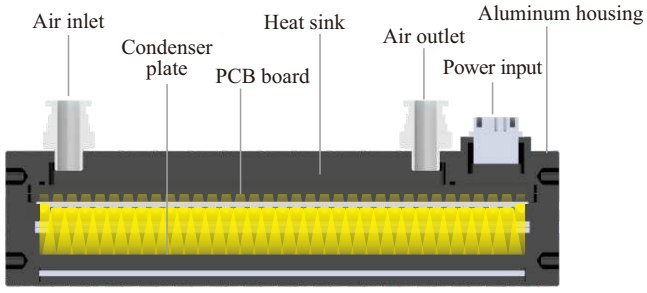
Selection Guide

OPT- XXAC197
- Length
- Air cool
- Series (Such as LSG)
- Brand name

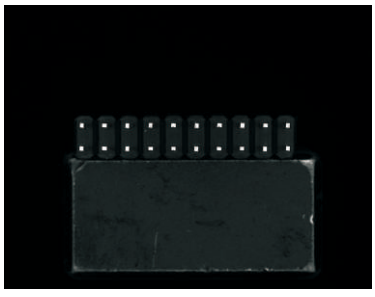
Uniformity Chart



Section Structure Drawing



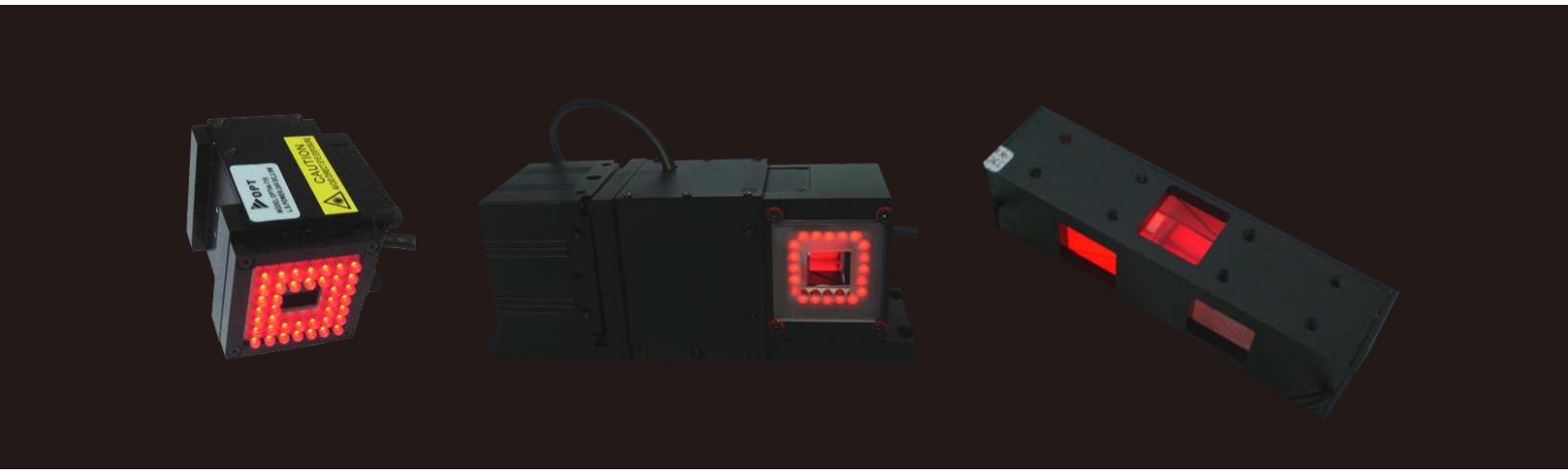
Application Example


Component pin foot location

Barcode recognition


Aluminum cover surface inspection

VA Lights OPT-VA series



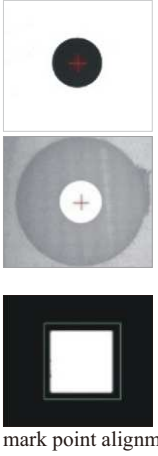
Product Features

1. Alignment at high accuracy and high speed; large field of view
2. Compact design for an easy image acquisition
3. High brightness

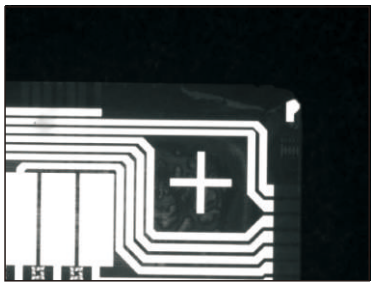
Application Cases

- Alignment of automatic PCB printing machine

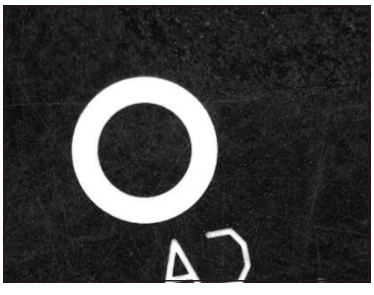
Model Table

Model	VA-S	VA-T	VA-D	VA-U	Resulting Image
Characteristics	High-speed alignment	Large FOV; ideal for integrated inspection	High-speed alignment; large FOV; easy for integration	High-speed alignment; large FOV; easy for integration	 mark point alignment
Camera connection	USB/IEEE1394/GigE			--	
Laser integrated for 3D applications	Optional			Optional	
Illumination	Coaxial light + ring light			Coaxial light or ring light (optional)	
Field of view	Available from 4 x 3mm² to 12 x 9mm²			--	
Magnification	Available from 0.5x to 2x			--	
Max. resolution	1280x1024			--	
Power consumption	2.9W			2.0 W	

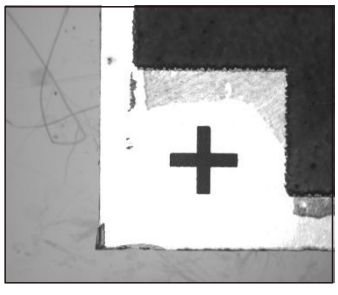
Application Example



Mobile back light localization



FPCB Marker point localization



Glass marker point localization

The Role of Light Sources

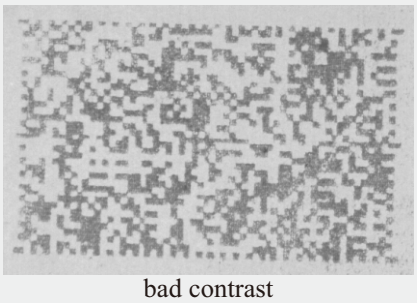
Light sources are key components in machine vision systems:

1. They illuminate the scene to enable recording with cameras
2. They can highlight the right aspects for easier and more reliable image processing
3. They make vision systems robust against influences from ambient light for consistent results
4. They can be used as measuring tool or reference models

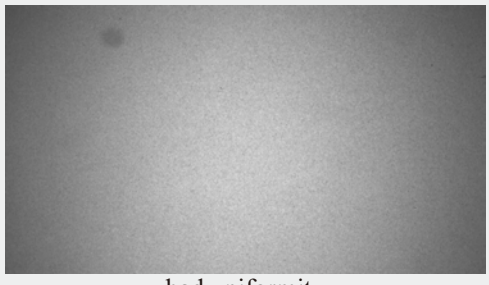
The right lighting is crucial to obtain the wanted performance and simplify the development of machine vision systems. Light sources can be used to separate an object from its background and to bring out unevenness or defects on the object edges or the surface.

Requirements on the image quality from automatic image processing:

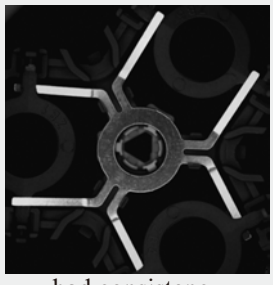
1. Clear contrast between the object and the background
2. Uniform illumination of the background
3. True color information



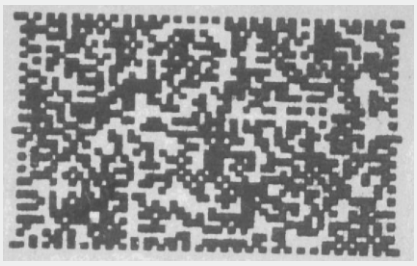
bad contrast



bad uniformity



bad consistency



good contrast

good uniformity

good consistency

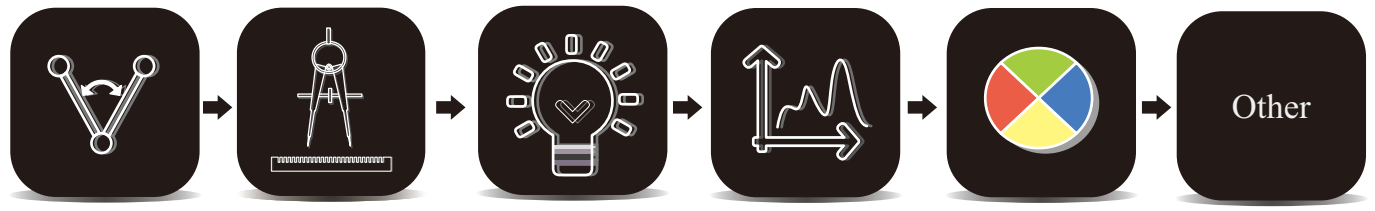
The upper images are not ideal. Bad contrast makes it hard to separate the object from the background, bad uniformity avoids a clear differentiation based on grey levels and bad consistency results in incomplete object extraction. On the other hand, the images in the second row are easy for automatic processing with imaging algorithms.

OPT has already provided over 150,000 products that were tailored to customers' needs.

OPT is the one of the leading OEMs of LED machine vision lights worldwide. We are renowned for our unbeaten ability to answer the demand of specific imaging applications with the right and individually customized lighting solutions.Our highly experienced engineering team is able to deliver the drawings of customized illumination designs within three working days.

Developing machine vision systems is challenging. OPT is the right partner for illuminations and optics with a broad range of standard illuminations and the capabilities to create individual solutions swiftly and reliably.

Customized Design Options



Illumination Angle | Size | Brightness | Wavelength | Color Temperature | Your specific needs

The Process of Customization

Your idea and inquiry

Engineering of possible solutions

Detailed discussion of the design with the customer

Prototyping and testing

Customer support during integration and operation

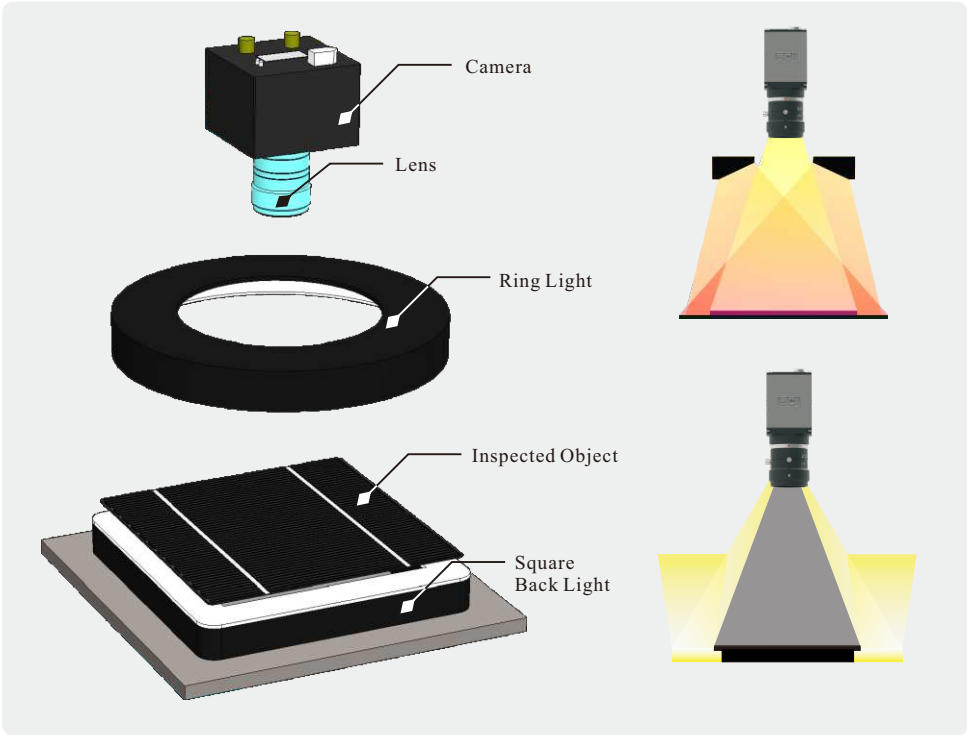
Example of a Customized Light

Example 1: Illuminator for solar battery inspection

Further applications: Carved objects (e.g. plastics, lumber, stone), polished housings of electronics, coins and other reflective objects. Suitable mainly for surface inspection, geometric measurement, PCB inspection.

Primary tasks: Geometric measurement, surface inspection, circuitry inspection

Solar batteries comprise different semiconductor components. The materials are easily broken and even strong light causes damage. Even a small defect on the critical surface area would destroy the device. Thus, high accuracy surface inspection and geometric measurement is a must. We recommend a camera and lens with at least 5-megapixel resolution. The diffuse reflection characteristics of the surfaces make this task especially challenging. With a special angle ring light and diffuser a very uniform camera image can be ensured. The geometric measurement utilizes a customized back light to obtain a very clear outline of the object.

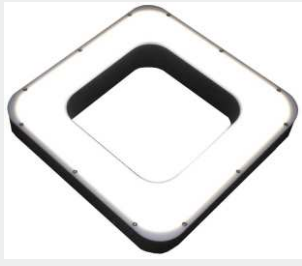


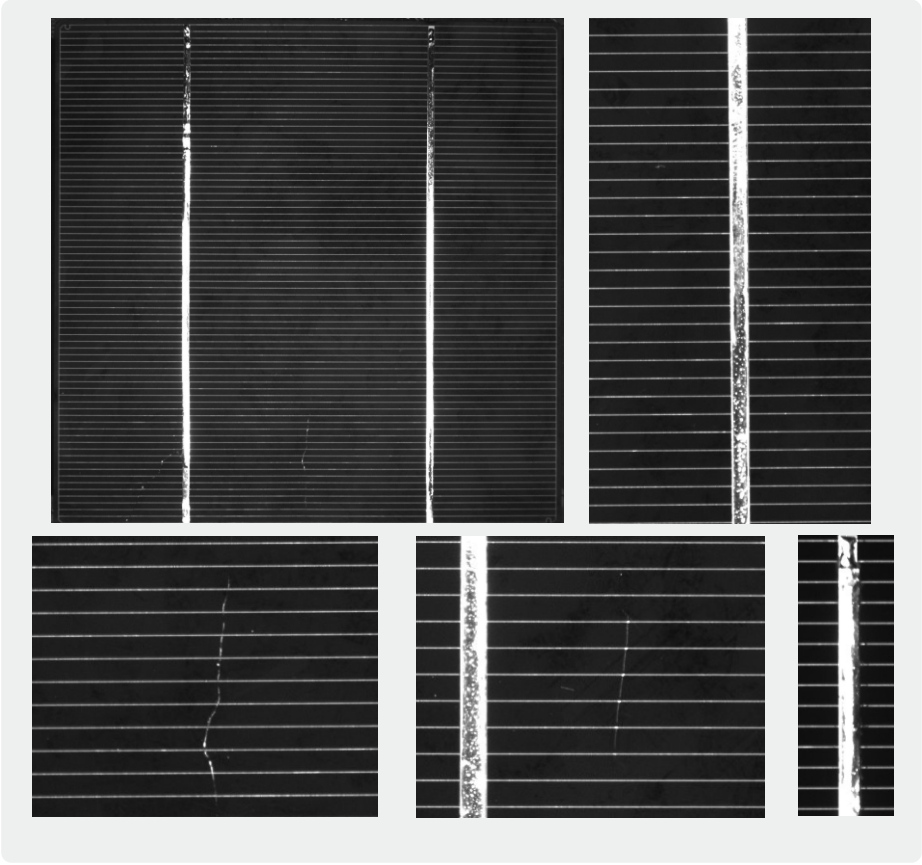
Solution Concept

We can process your inquiry for a customized light, if you provide the following information to us in advance:

1. The required object speed and robustness against ambient light, especially, when the camera needs to capture objects with short exposure times.
2. The required uniformity of the light source in each direction.
3. Size and installation requirements, e.g. mounting holes for screws.
4. Ambient conditions and operation modes: Ambient temperature range, dust and humidity, continuous operation or strobe operation. All these information allow us to suggest the right housing and heat transfer design.
5. Requirements on the illumination controller: Using the strobe operation mode, the lifetime of LED lights can be multiple times higher and much higher levels of brightness can be achieved without the need for high-power lighting solutions.

Example 1:



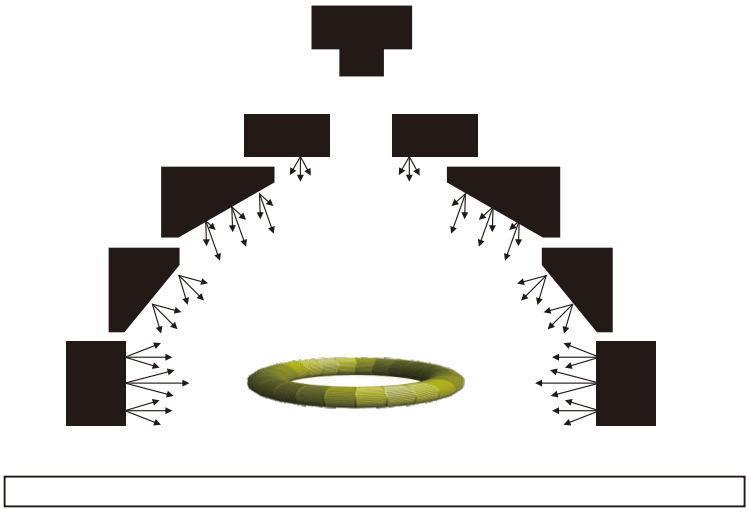


Result Image

Example 2: Illumination for O-ring inspection

Object images

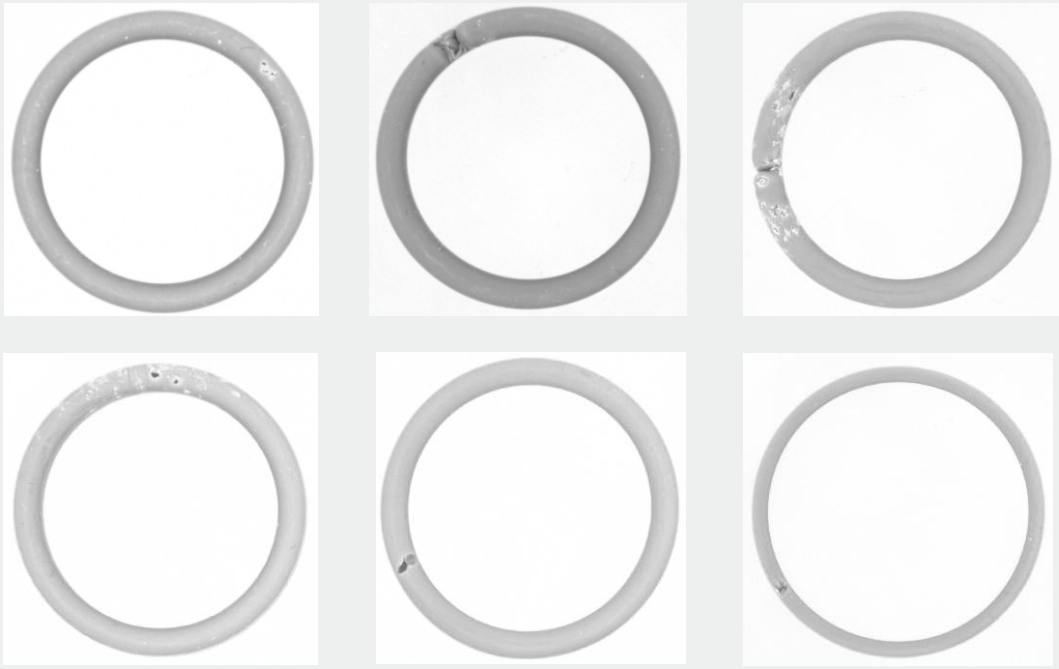
The object can appear as O-shaped ring or as a bar when viewed from the side. The angle between the camera lens and the object can vary from 0 to 90 degrees. In case of a directed illumination with just one angle the reflections of this glossy part could make the inspection impossible. Thus, a standard light is not sufficient for this application.



Design and Test

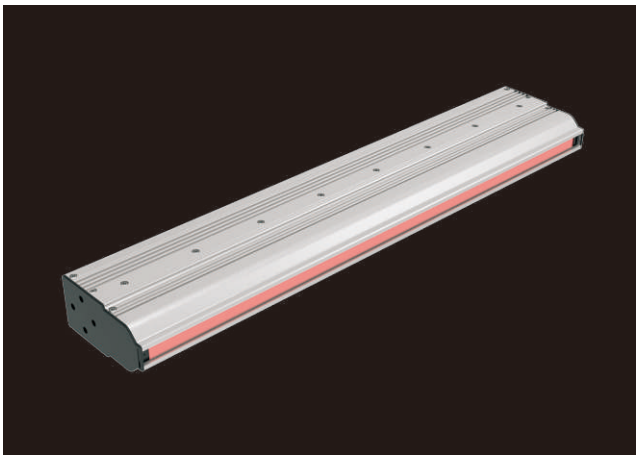
The light should meet the following requirements:

1. The customized light should provide different illumination areas from high angle to low angle emission. The brightness of each area must be individually adjustable at any time.
2. Since low angle lighting would create lower brightness levels than high angle lighting, the uniformity of the brightness must be ensured.
3. High speed inspection lines require high levels of brightness.
4. The light must be robust against vibrations, e.g. from a fast moving turntable.
5. High longevity required to meet the need for long term operation.

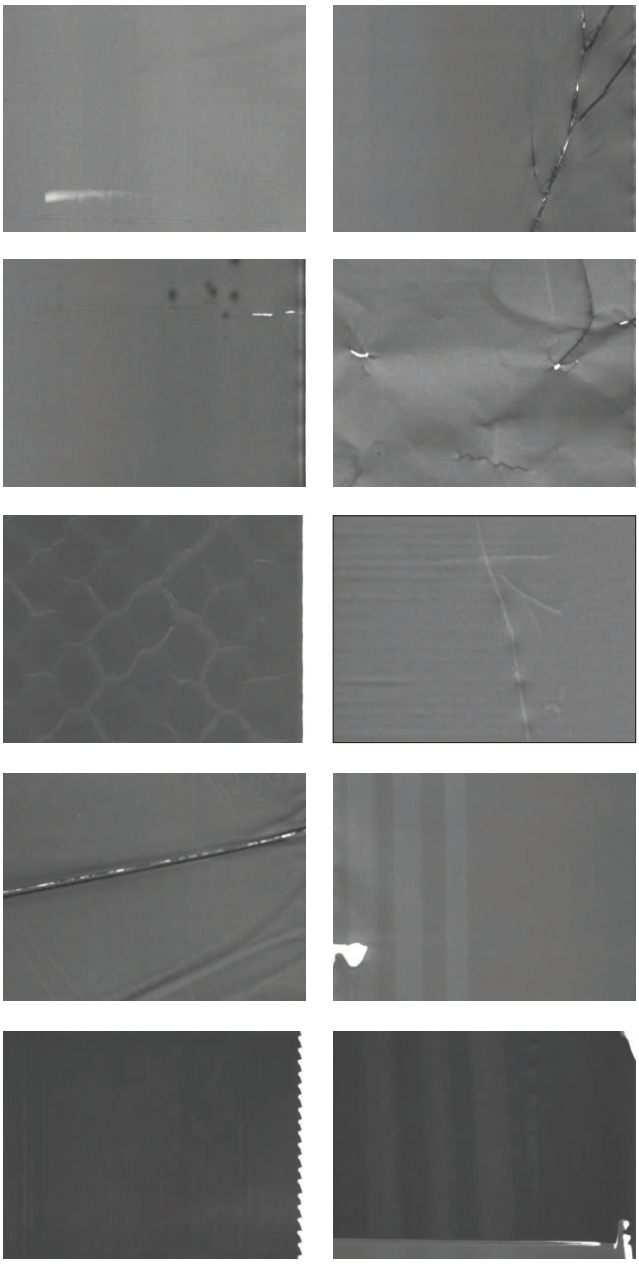


Result Image

Some of OPT Customized Lights



Illumination Result Images



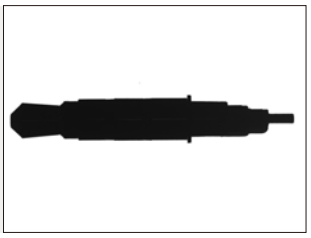
High Power Back Light

Model: OPT-FLM9886D-X

Features: using high density high power LEDs; three times of standard back light intensity, stable performance, better uniformity, longer life time; special design for overdriven.

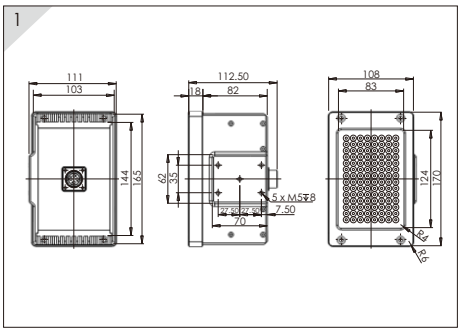
Application: for applications with long working distance and big FOV; location, measurement, and defects inspection on the high speed production line.

OPT-FLM9886D-X



Result image

Dimension (mm)



Combined Dome Lights

Model: OPT-RIDS180-X

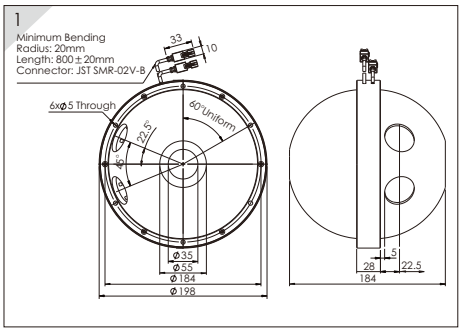
Features: extra uniform ball structure by combination of two dome lights, the lighting can be reflective from 360 degree to the ball surface and got uinform illumination.

Application: the curved or dent surface objects detection.

OPT-RIDS180-X

Result image

Dimension (mm)

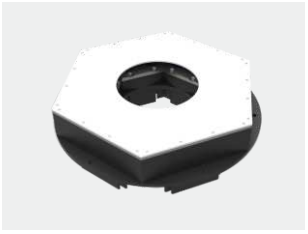


High Power Ring Light

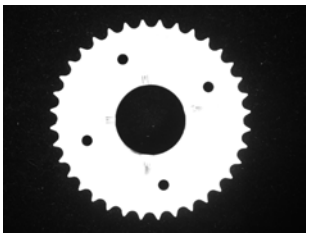
Model: OPT-RIG22015-X

Features: using high power SMD; uniformity over 80%; controlled by two channels individually; polarizer as an optional choice to reduce surface reflection.

Application: used for long working distance and high speed projects.

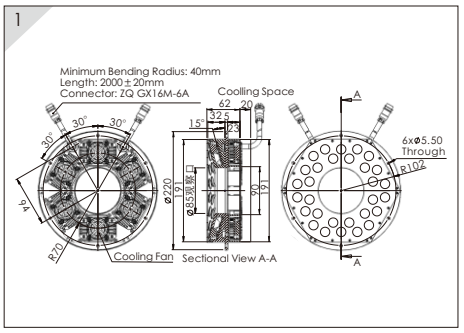


OPT-RIG22015-X



Result image

Dimension (mm)



AOI light

Model: OPT-RIA116-X

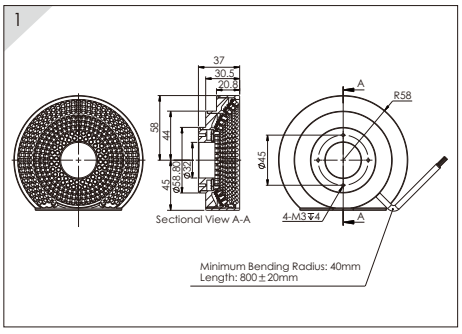
Features: using high density LEDs to reach extra intensity; different colors and layers combined to get 3D information; diffuser as an optional choice to get uniform image result.

Application: circuit board of PCB surface defects inspection, like solder joint, circuit links and so on.

OPT-RIA116-X

Result image

Dimension (mm)



Multi-areas ring light

Model: OPT-RI9060-4-X

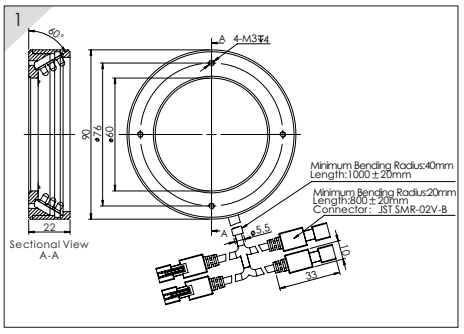
Features: using high density LEDs to reach extra intensity; multi-areas design to enhance 3D information; each area controlled individually, and any color available for choice.

Application: the surface inspection or OCR for resistor or capacitor.

OPT-RI9060-4-X

Result image

Dimension (mm)

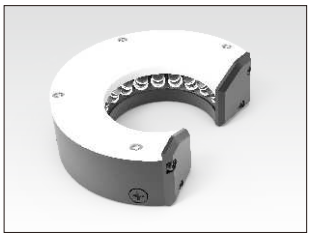


Half ring light

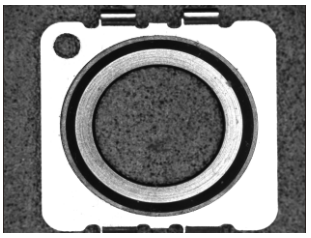
Model: OPT-RIC5030-X

Features: half ring structure design; multi colors combined and controlled individually;

Application: used for location, measurement and surface defects inspection and so on.

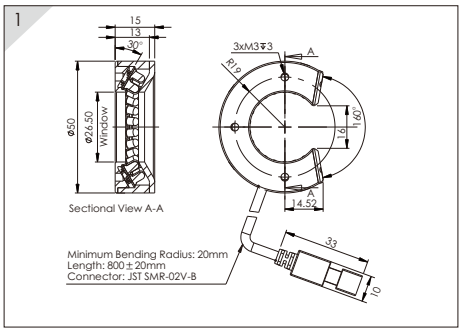


OPT-RIC5030-X



Result image

Dimension (mm)

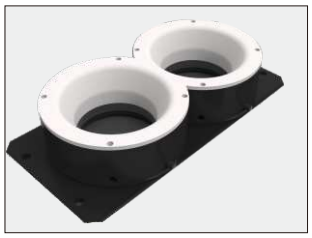


Combined ring light

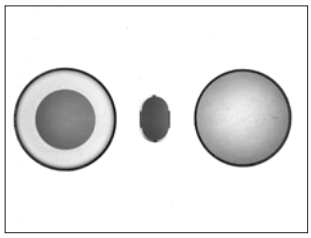
Model: OPT-RIM7060-X

Features: two ring lights combined design to save the space and make two cameras grab the pictures at the same time.

Application: surface defects inspection, measurement and some other detections.

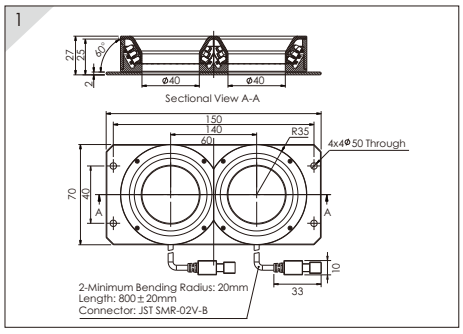


OPT-RIM7060-X



Result image

Dimension (mm)

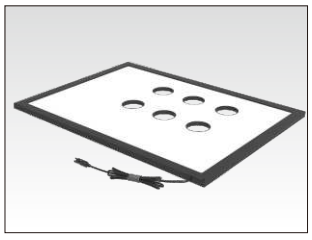


Back light with open holes

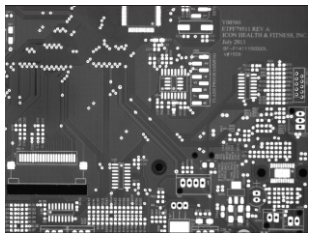
Model: OPT-FLK540390-X

Features: can be used as a front light for big FOV illumination; different hole position to get different illumination result.

Application: mechanical part measurement; electronic parts detection; surface scratches inspection and so on.

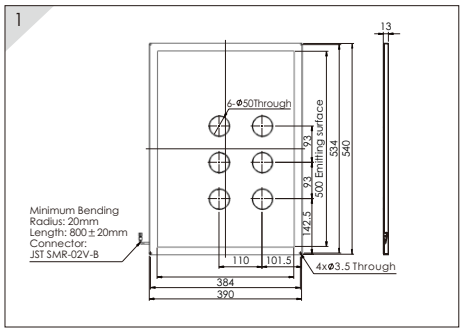


OPT-FLK540390-X



Result image

Dimension (mm)

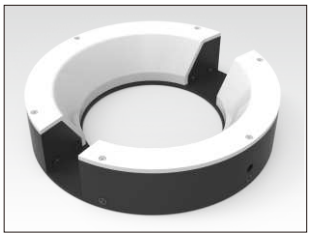


Ring light

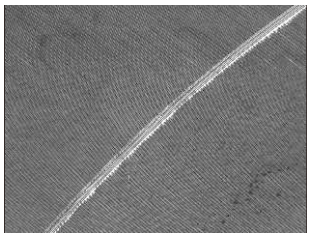
Model: OPT-RI11360-X

Features: cutting goove in the middle of ring light to compatible installation on the motion work station of the production line, this special structure design can reduce the bothering of installation.

Application: detection of small object with curved edge.

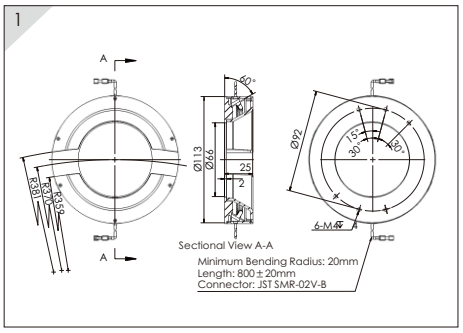


OPT-RI11360-X



Result image

Dimension (mm)

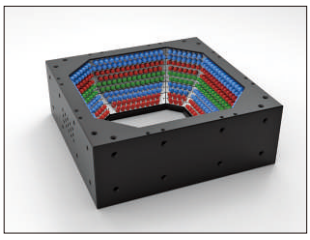


AOI special design light

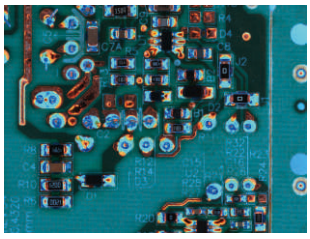
Model: OPT-RIA200-RGB

Features: providing multi-angles and multi-layers illumination; across distribution on the PCB of the LEDs, sectional control available.

Application: used for PCB detection, like the inspection of solder joint quality.

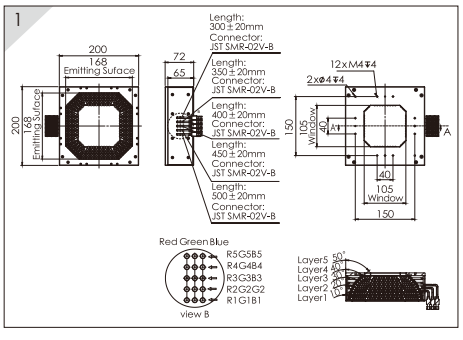


OPT-RIA200-RGB



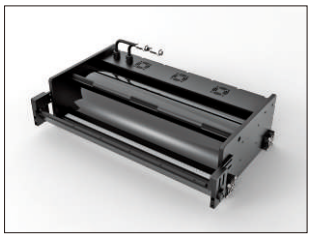
Result image

Dimension (mm)



Vault light

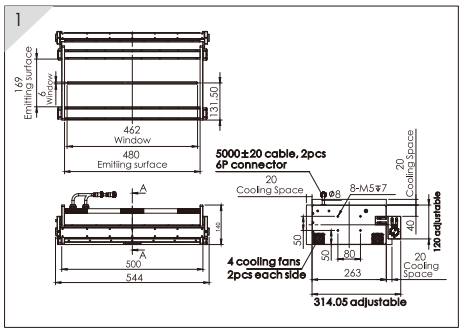
Model: LIU500C-X-V3.0.2
Features: using high power SMD to reach extra intensity; using heat transfer material and fan system to keep the light cool; flexible design to meet the working distance and illumination requirements.
Application: line scan applications, like inspection of package box surface or curved surface defects.



LIU500C-X-V3.0.2

Result image

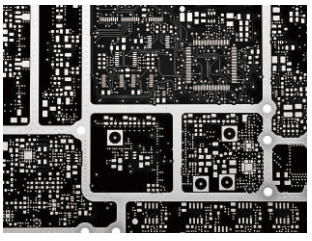
Dimension (mm)



Structure light

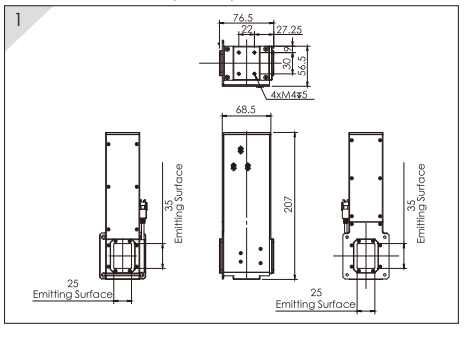
Model: ILS0013-RGBW-V1.0.1
Features: special prism structure design to make two objects image onto the same camera, integrated design to save the cost and space.
Application: used in the printing and electronic industries, including PCB hole position, mobile screen assembly.

ILS0013-RGBW-V1.0.1



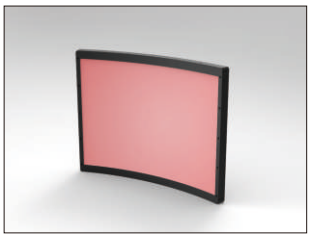
Result image

Dimension (mm)

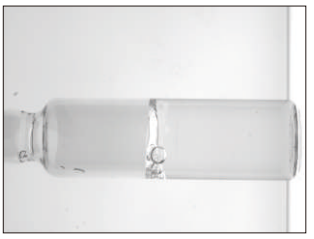


Curved light

Model: OPT-RIC62535-X-V1.0.1
Features: curved shape design to make focus illumination; large illumination area and better uniformity.
Application: used in medical industry, electronic industry and so on, including liquid level measurement, foreign object inspection.

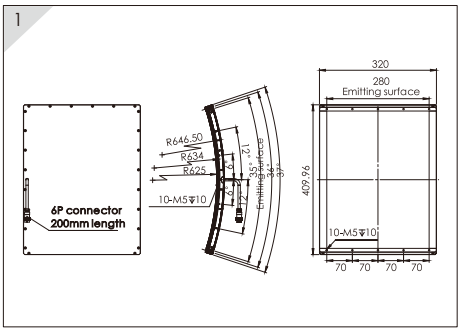


OPT-RIC62535-X-V1.0.1



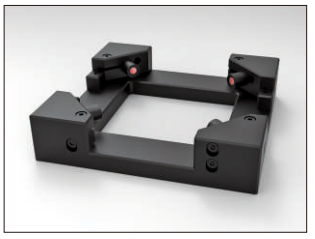
Result image

Dimension (mm)

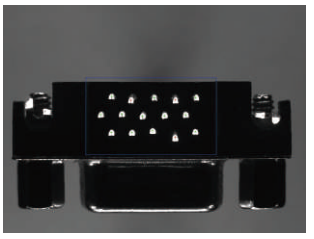


Laser light

Model: OPT-LIM130125-R-V1.0.4
Features: using laser diode to get high accuracy, line obviously, high intensity, good direction and uniformity.
Application: used for pin position and flatness inspection.

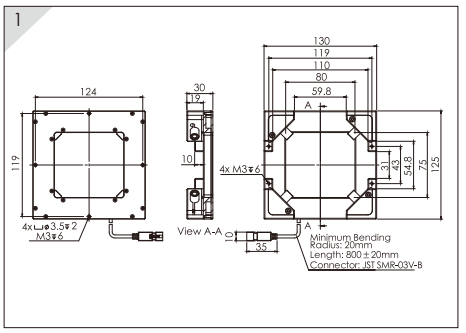


OPT-LIM130125-R-V1.0.4



Result image

Dimension (mm)



Diffusers

Diffuser is used for even illumination and to reduce reflections - optional（RI,LI, LIM)

OPT-PDFR-RI2800

- Model
- Diffuser
- Brand name

Item No	Item No	Item No
OPT-PDFR-RI2800	OPT-PDFR-RI18045	OPT-PDFR-LI21222
OPT-PDFR-RI3500	OPT-PDFR-RI7060	OPT-PDFR-LI21230
OPT-PDFR-RI5000	OPT-PDFR-RI9060	OPT-PDFR-LI26730
OPT-PDFR-RI7000	OPT-PDFR-RI12060	OPT-PDFR-LI29026
OPT-PDFR-RI9000	OPT-PDFR-RI15060	OPT-PDFR-LI29233
OPT-PDFR-RI12000	OPT-PDFR-RI18060	OPT-PDFR-LI33037
OPT-PDFR-RI15000	OPT-PDFR-LI4424	OPT-PDFR-LI38034
OPT-PDFR-RI5030	OPT-PDFR-LI6022	OPT-PDFR-LI38037
OPT-PDFR-RI7030	OPT-PDFR-LI8532	OPT-PDFR-LI46046
OPT-PDFR-RI9030	OPT-PDFR-LI9022	OPT-PDFR-LI48031
OPT-PDFR-RI12030	OPT-PDFR-LI10810	OPT-PDFR-LI58039
OPT-PDFR-RI15030	OPT-PDFR-LI11222	OPT-PDFR-LI70025
OPT-PDFR-RI18030	OPT-PDFR-LI11533	OPT-PDFR-LI71678
OPT-PDFR-RI5045	OPT-PDFR-LI11830	OPT-PDFR-LI88039
OPT-PDFR-RI7045	OPT-PDFR-LI14040	OPT-PDFR-LI133041
OPT-PDFR-RI9045	OPT-PDFR-LI15020	OPT-PDFR-LI262534
OPT-PDFR-RI12045	OPT-PDFR-LI16030	
OPT-PDFR-RI15045	OPT-PDFR-LI21221	

Polarizers for Lights

Polarizers are used to reduce surface reflections. They let through 99% of the light in the polarization direction. Size, shape and installation instructions can be provided on demand.

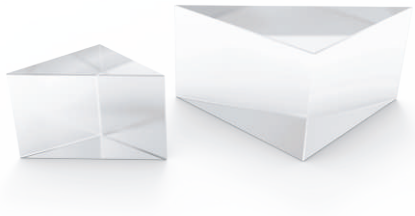
OPT-PPZ-LI6022-VE

- VE: Vertical
- HO:Horizontal
- Model
- Polizer
- Brand name

Item No	Item No	Item No
OPT-PPZ-RI3220	OPT-PPZ-RI12060	OPT-PPZ-LI15020-HO
OPT-PPZ-RI5030	OPT-PPZ-RI15060	OPT-PPZ-LI15020-VE
OPT-PPZ-RI6615	OPT-PPZ-LI6022-VE	OPT-PPZ-LI21222-VE
OPT-PPZ-RI7000	OPT-PPZ-LI6022-HO	OPT-PPZ-LI21222-HO
OPT-PPZ-RI7030	OPT-PPZ-LI8532-VE	OPT-PPZ-LI21230-VE
OPT-PPZ-RI7260	OPT-PPZ-LI8532-HO	OPT-PPZ-LI21230-HO
OPT-PPZ-RI9215	OPT-PPZ-LI11222-HO	OPT-PPZ-LI38037-HO
OPT-PPZ-RI9030	OPT-PPZ-LI11222-VE	OPT-PPZ-LI38037-VE
OPT-PPZ-RI9000	OPT-PPZ-LI14030-HO	OPT-PPZ-LI48031-VE
OPT-PPZ-RI12030	OPT-PPZ-LI14030-VE	OPT-PPZ-LI48031-HO

Prisms

Prisms are used for changing the direction and position, two combined prisms can change the focal distance.



OPT-PLJ10-10-50-ZF-FG

- FG: spectroscopic
- FS: reflection
- ZF: square
- SJ: triangle
- Sixe C
- SixeB
- SixeA
- Prism
- Brand name

Dimensions of Triangle Prisms

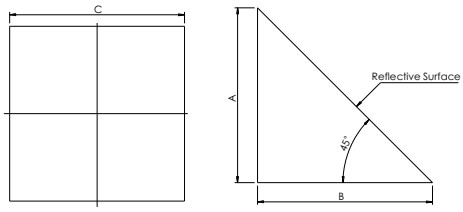


Table of Sizes of Triangle Prisms

Model	Size A(mm)	Size B(mm)	Size C (mm)
OPT-PLJ5-5-5-SJ-X	5	5	5
OPT-PLJ10-10-10-SJ-X	10	10	10
OPT-PLJ15-15-15-SJ-X	15	15	15
OPT-PLJ20-20-20-SJ-X	20	20	20
OPT-PLJ25-25-25-SJ-X	25	25	25
OPT-PLJ30-30-30-SJ-X	30	30	30
OPT-PLJ35-35-35-SJ-X	35	35	35
OPT-PLJ40-40-40-SJ-X	40	40	40
OPT-PLJ45-45-45-SJ-X	45	45	45
OPT-PLJ50-50-50-SJ-X	50	50	50

Dimensions of Square Prisms

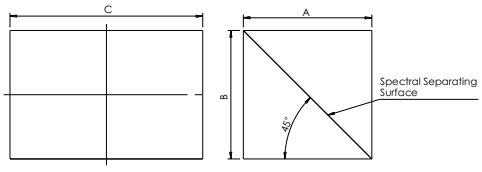


Table of Sizes of Square Prisms

Model	Size A(mm)	Size B(mm)	Size C (mm)
OPT-PLJ5-5-5-ZF-X	5	5	5
OPT-PLJ10-10-10-ZF-X	10	10	10
OPT-PLJ15-15-15-ZF-X	15	15	15
OPT-PLJ20-20-20-ZF-X	20	20	20
OPT-PLJ25-25-25-ZF-X	25	25	25
OPT-PLJ30-30-30-ZF-X	30	30	30
OPT-PLJ35-35-35-ZF-X	35	35	35
OPT-PLJ40-40-40-ZF-X	40	40	40
OPT-PLJ45-45-45-ZF-X	45	45	45
OPT-PLJ50-50-50-ZF-X	50	50	50

Extension Cables

(standard lights have 800mm cable)

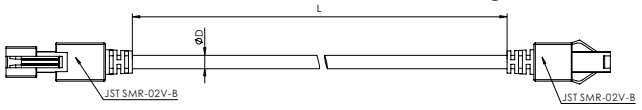
OPT-EX1M-2P-S

- S: ordinary cable, suitable for fixed installation
- D: drag chain cable, for tank chain installation
- R: robot cable, for multi-direction torsion installation
- Pin numbers of connector
- Cable length, e.g. a 1 meter
- Extension cable
- Brand name

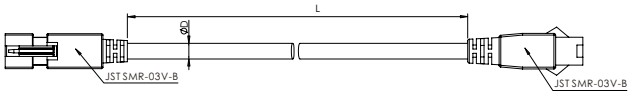
2 Pin / 3 Pin Extension Cable

Connector	Standard	Model	Length	Diameter	Min Bending Radius
2P JST connector	ordinary cable	OPT-EX1M-2P-S	L=1m	D=3.5mm	Fixed installation: 26mm
		OPT-EX2M-2P-S	L=2m		
		OPT-EX3M-2P-S	L=3m		
		OPT-EX5M-2P-S	L=5m		
		OPT-EX10M-2P-S	L=10m		
	Drag chain cable: D=4.3mm; motion installation: 22mm; fixed installation: 13mm				
	Robot cable: D=4.1mm; motion installation: 25mm; fixed installation: 25mm				
3P JST connector	ordinary cable	OPT-EX1M-3P-S	L=1m	D=4.5mm	Fixed installation: 32mm
		OPT-EX2M-3P-S	L=2m		
		OPT-EX3M-3P-S	L=3m		
		OPT-EX5M-3P-S	L=5m		
		OPT-EX10M-3P-S	L=10m		
	Drag chain cable: D=3.9mm; motion installation: 20mm; fixed installation: 12mm				
	Robot cable: D=4.3mm; motion installation: 26mm; fixed installation: 26mm				

2 Pin Connector Extension Cable Drawing



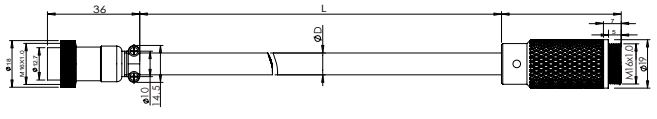
3 Pin Connector Extension Cable Drawing



6 Pin Connector Extension Cable

Model	Length	Diameter	Min Bending Radius
OPT-EX3M-6P	L=3m	D=8mm	Motion installation: 120mm Fixed installation: 48mm
OPT-EX5M-6P	L=5m		
OPT-EX10M-6P	L=10m		
OPT-EX20M-6P	L=20m		

6 Pin Connector Extension Cable Drawing



6P Connector Description

Pin	Pin Definition	Pin	Pin Definition
1	Light+	4	Fan-
2	Light-	5	Resistance+
3	Fan+	6	Resistance-

Branch Extension Cable

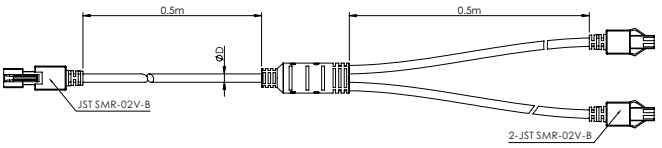
OPT-EX1M-2P-4B

- Branches, e.g.a: 4 branches
- Pin numbers of connector
- Cable length, e.g.a: 1 meter
- Extension cable
- Brand name

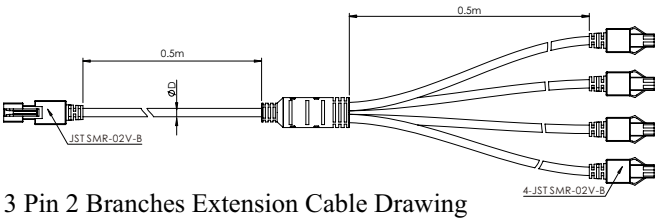
2 Pin / 3 Pin Connector Branch Extension Cable

Connector	Branches	Model	Diameter	Min Bending Radius
2P JST connector	2	OPT-EX1M-2P-2B	D=3.5mm	Fixed installation: 26mm
	4	OPT-EX1M-2P-4B		
3P JST connector	2	OPT-EX1M-3P-2B	D=4.5mm	Fixed installation: 32mm
	4	OPT-EX1M-3P-4B		

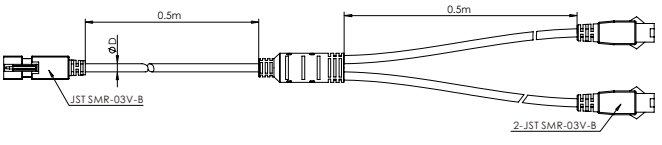
2 Pin 2 Branches Extension Cable Drawing



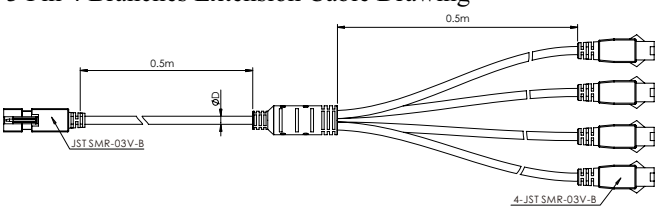
2 Pin 4 Branches Extension Cable Drawing



3 Pin 2 Branches Extension Cable Drawing

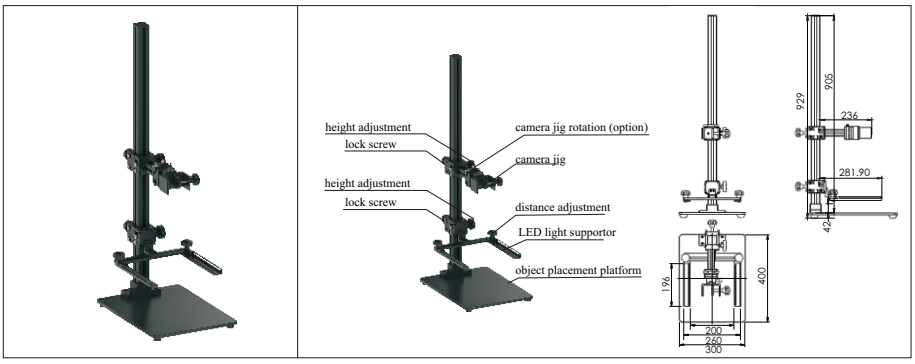


3 Pin 4 Branches Extension Cable Drawing

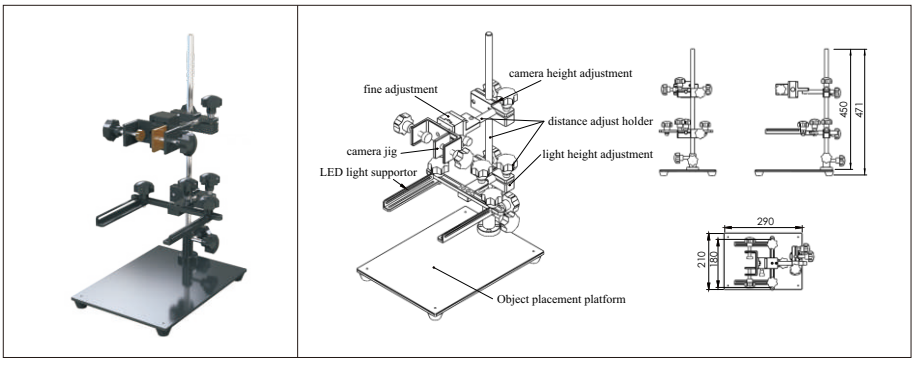


Lab Equipment

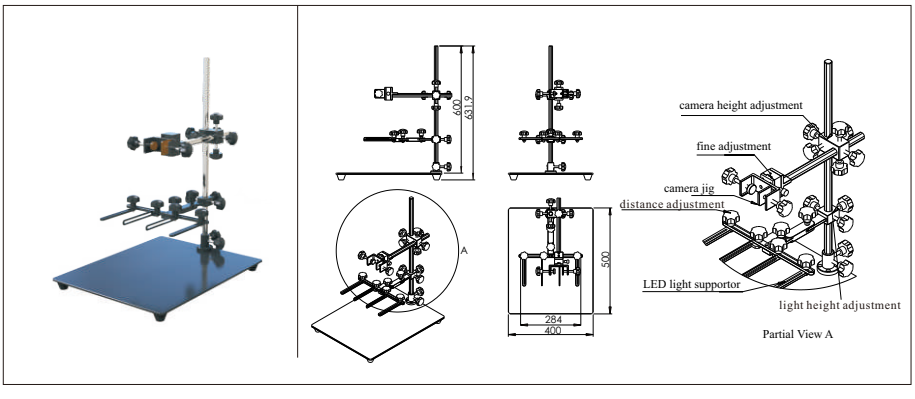
OPT-ES400 Lab Stand



OPT-ES300 Lab Stand



OPT-ES500 Lab Stand



Motion Platform

Features

Flexible installation, easy to use.

This motion platform is used to simulate the applications of high speed on-line inspection, can repeatedly detect the same or multiple work pieces, test the stability of the system. It's suitable to simulate the on-line inspection for area scan camera or low speed line scan camera.

Model	OPT-LBLS20
Y-axial servo motor model	DELTA (ECMA-C10604RS)
Y-axial servo driver model	DELTA (ASD-A20421-L)
Y-axial motion speed range	0~500mm/s
Y-axial motion distance	350.00mm
Y-axial accuracy	C5 (±20um)
Encoder interface	TTL (DB9 connector)
Z-axial motion distance	235.00mm
Camera WD adjustable range	0~500mm
Power	0.45kw
Weight	85KG

Classic Applications

Applications by Industries

Multi-Angle Illumination

Button Battery Inspection

Workpiece Description:

Diameter of 20 mm, smooth reflective surface with engraved characters, clear outer edge contour

1. Coaxial Illumination

Setup

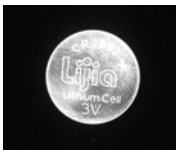
Result image

Frontal illumination with high and uniform brightness.

2. Anti-Shadow Illumination

Setup

Result image



Uniform illumination from all directions creates bright appearance of the battery surface with sharp contour at the outer edge.

3. Low Angle Illumination

Setup

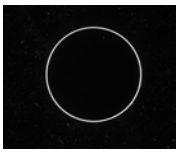
Result image

The low angle illumination of the battery surfaces brings out uneven areas such as engraved characters and the rim.

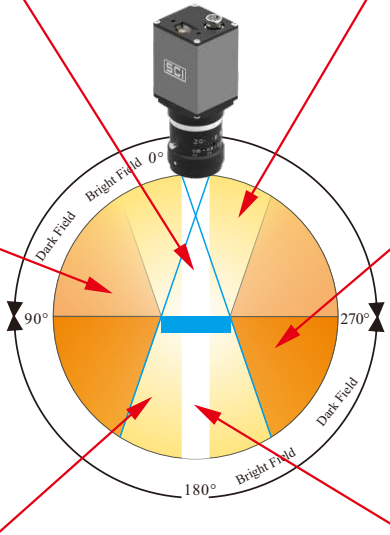
4. Negative Low Angle Illumination

Setup

Result image



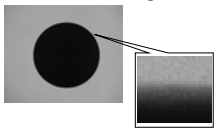
The light falls onto the part from the opposite side of the camera showing the rim in good contrast.



5. Back Light Illumination

Setup

Result image

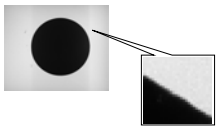


In front of a diffuse back light, the battery creates a shadow in the camera images. Due to the diffuse character of the light, the outer edge of the battery appears less crisp in the camera image.

6. Parallel Back Light Illumination

Setup

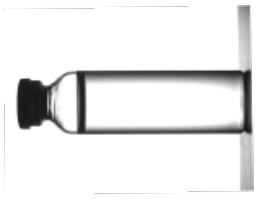
Result image



The shadow of the battery appears sharply defined in the camera image thanks to the parallel light emission.

Diffused Backlight and Parallel Backlight Comparison

Result with Diffused Backlight



Result with Parallel Backlight

Diffuse backlight illumination creates a more uniform appearance of the bottle, allowing for the detection of defects, dirt, and scratches. Parallel back light illumination clearly brings out the edges of the bottle, allowing for contour analysis, localization and high-precision geometric measurement.

Ring Light and Dome Light Comparison

Result with Ring Light

Result with Dome Light

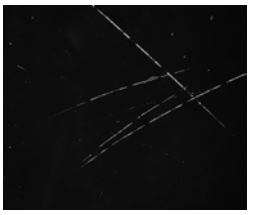
Ring lights bring out the unevenness of surfaces. In case this is unwanted, dome lights can eliminate the effects of uneven surfaces, as they are highly uniform, diffuse and omnidirectional front light sources.

Surface Inspection Applications

Industrial Applications:

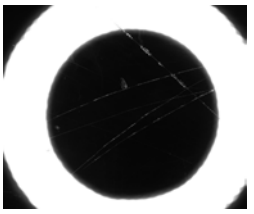
Surface inspection of glass, metal, LCD panels, mobile screens, plastics etc.
For the inspection of challenging surfaces, like transparent or highly reflective materials, coaxial lights, high angle lights, low angle lights, and back lights are widely used. Below are the related image results.

Result with coaxial light



Result with low angle light

Result with back light

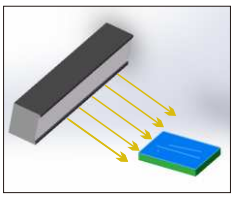


Result with high angle light

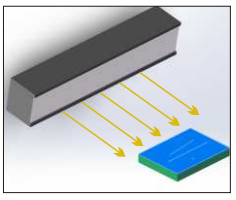
All illuminations bring out some of the scratches, but for detailed inspection high and low angle lights create the best results.

Low angle illumination from multiple directions

As the scratches can have arbitrary orientation, illumination from different directions creates different results. The illumination, which is emitting light in parallel direction to the scratches does not create good contrast in the camera image, while the illumination, which is emitting light in vertical direction to the scratches let them shine out from the background.

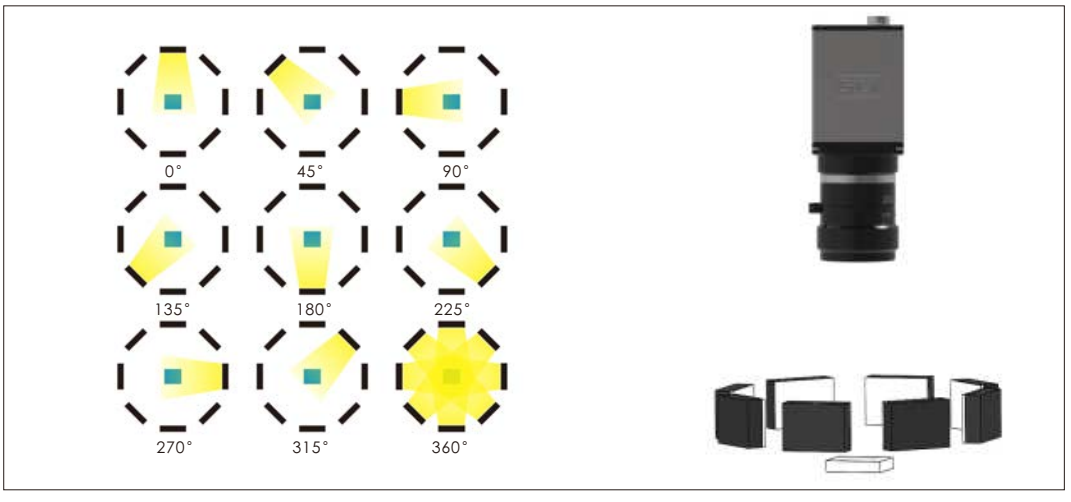


Parallel light direction

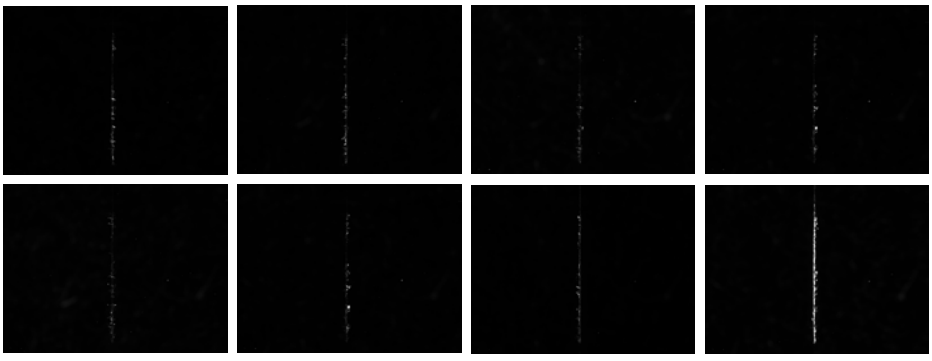


Vertical light direction

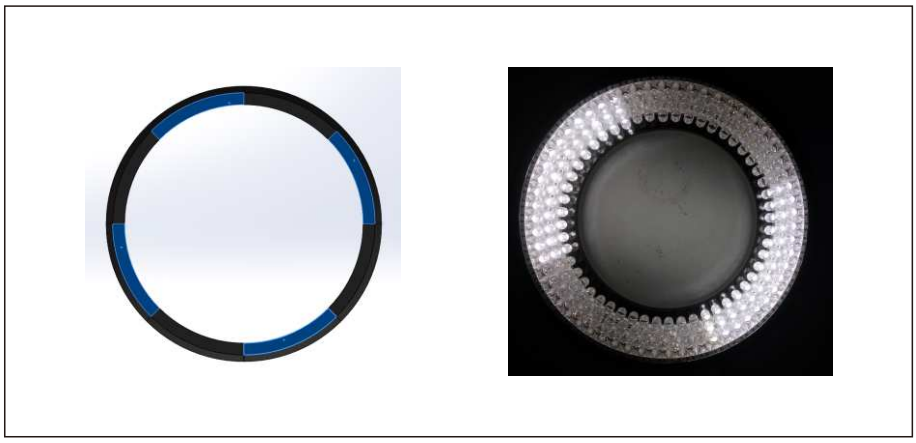
Such scratch detection can be implemented with eight bar lights, which are individually controlled. Thus, a series of 9 different images can be taken with the same camera and without the need to move the workpiece.



Another way to implement multi-directional illumination is a special ring light, with eight individually controlled areas. Again, images from all directions can be taken with the same camera for scratch detection.



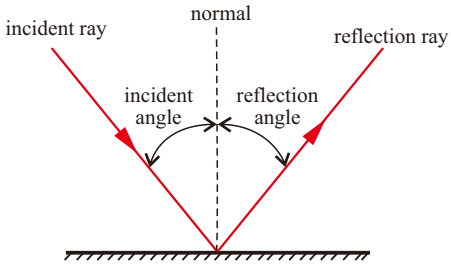
Below is the ring light we created based on the idea introduced above.

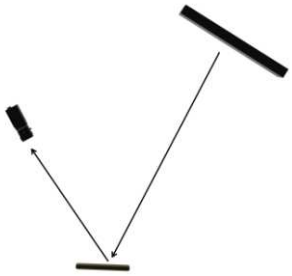


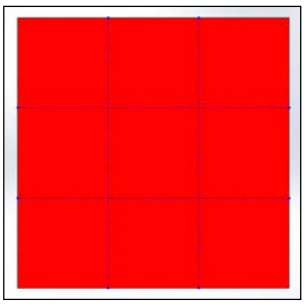
Nine-Area High-Angle LED Light

Inspectors (image to the right) examine the surface by using general lighting way to detect reflections on the surface. Therefore, they are moving the product in the light looking for speckles or shadows caused by scratches or dirt. However, very small or slight scratches remain very hard for human eyes to detect.

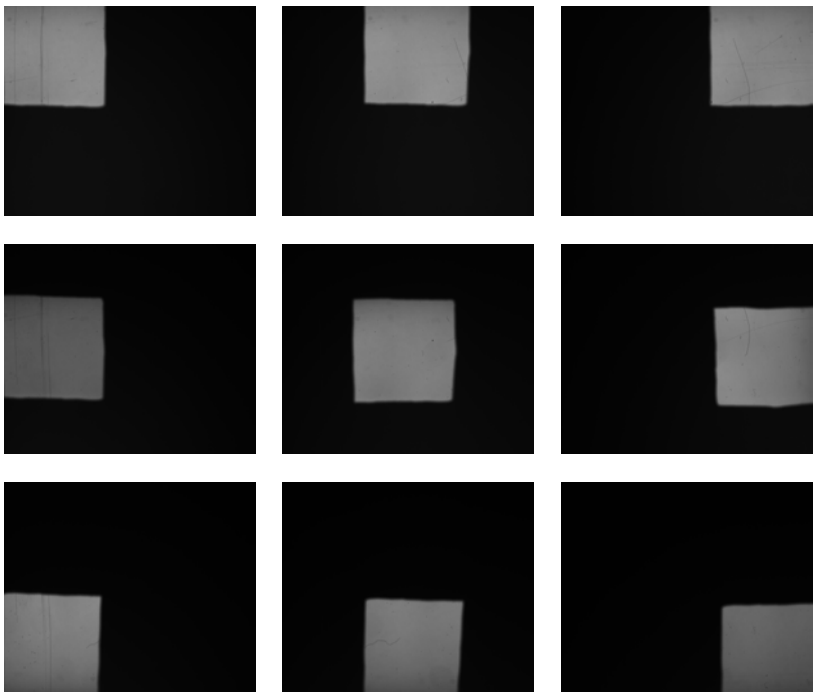
We can use the law of reflection (see image below) to implement a fast solution of the inspection of parts with reflective surfaces. Common lights can illuminate a certain field of view with high uniformity. While this is desired for many applications, it would eliminate the effects of scratches in surface inspection. The Chess Board Light (see image below) with nine independently controllable areas has been specifically developed for the effective inspection of reflective and transparent surfaces for scratches.



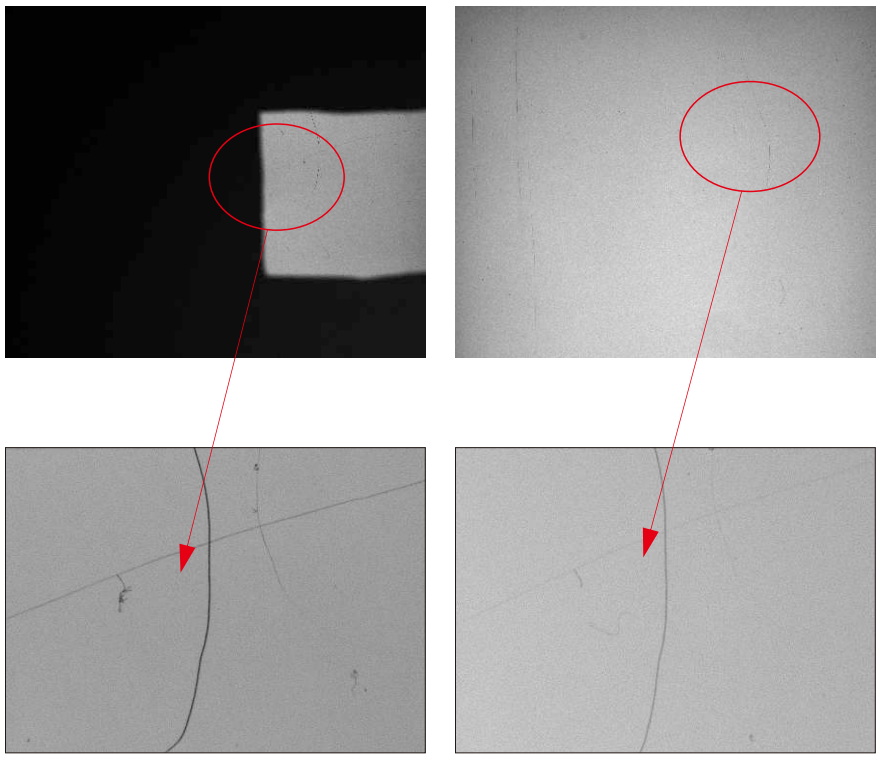




Result Images of the Chess Light



Below are the result images taken with the “Chess light” compared to a normal light. All images where taken under the same conditions, showing that the Chess Light is capable to bring out the scratches with a much higher contrast and without the need to mechanically adapt the workpiece or the lighting.



Result image of the “Chess Light”

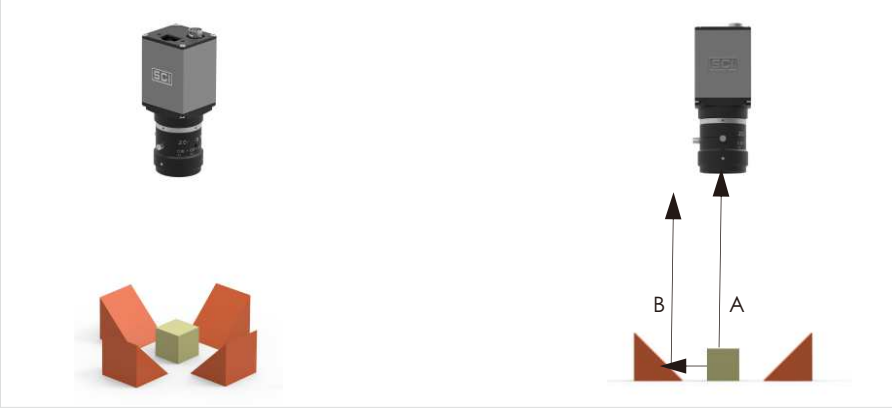
Result image of a normal light

Optical 5-Side-View Solution

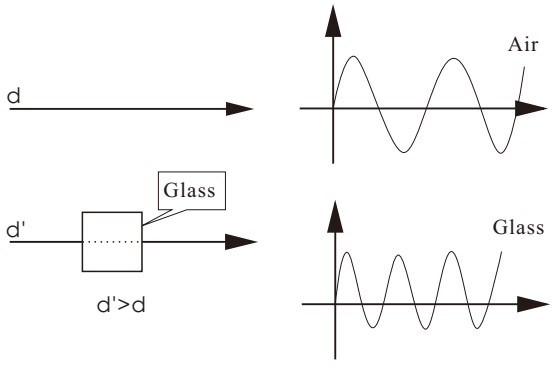
Applications: Surface inspection of metal parts in the electronics and automotive industry.

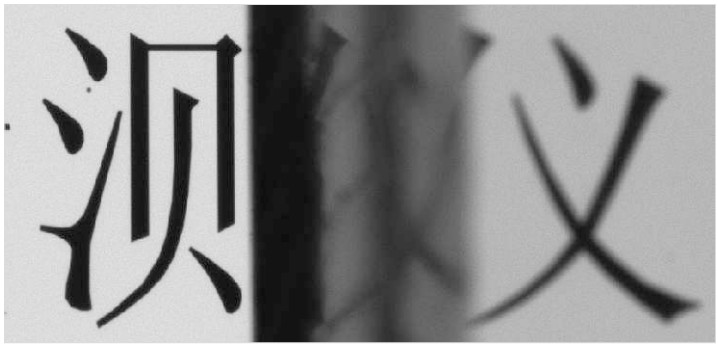
For objects with more than two sides (see left picture below) a camera takes pictures from different sides by turning the object after each capture. This requires costly mechanical equipment and is time consuming. Another option is shown in the right picture below, where five cameras capture the object from five different sides. Again a very costly approach.

However, there is another approach, which is sketched in the picture below: A single camera is able to take pictures of five sides of the object at a single shot thanks to prisms. This saves costs and time. Thereby, the images of the sides cannot be captured with the same resolution as the top side. Further optics are required to address this issue.

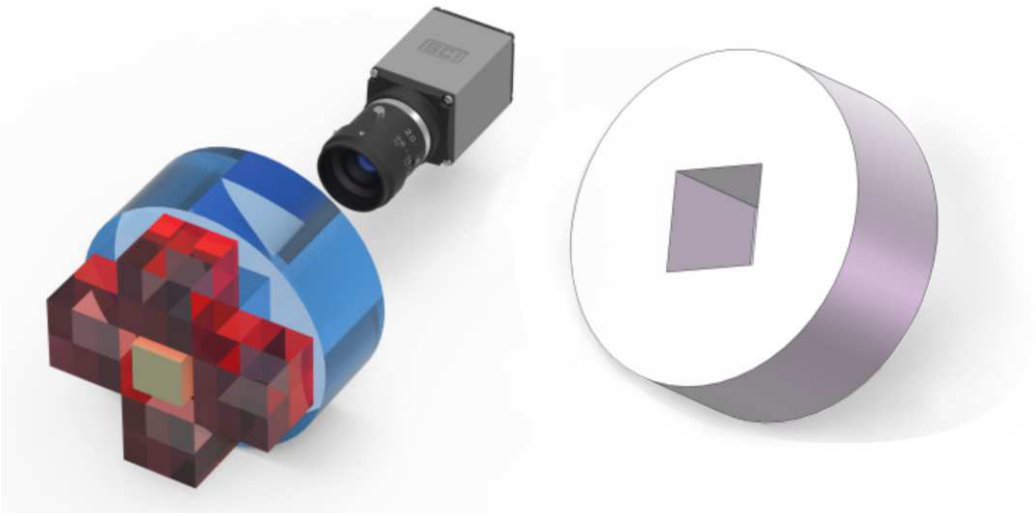


Additionally, the light refraction effect needs to be considered. This effect occurs when light is changing the medium during its travel, due to different speed levels of light in different mediums. See the picture below for illustration.

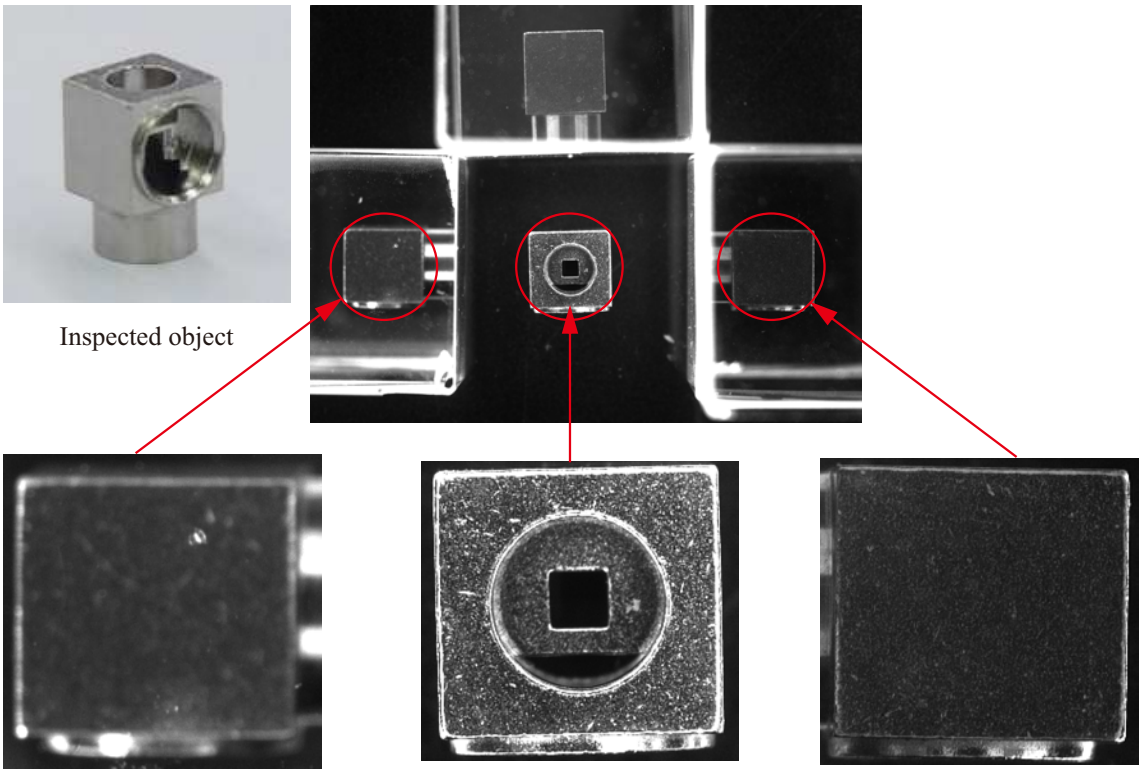




The experienced engineering team of OPT finally designed the following solution.



As shown below, the camera takes pictures from the top, and the sides, via specially reflective glasses. Thus, all sides can be captured with in the same level of detail and focus. Please note also the different results between normal reflective glasses and our specially coated reflective glasses.



Inspected object

Result image with specially coated reflective glass

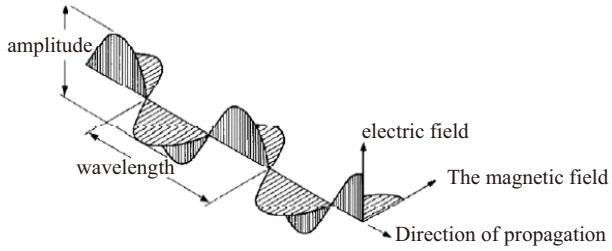
Result image without reflective glass

Result image with normal reflective glass

Polarizers: Introduction and Applications

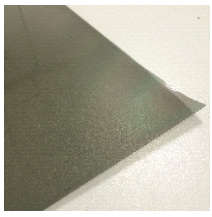
Polarized Lighting

Electromagnetic waves, such as light, can have arbitrary orientation of their oscillation orthogonal to their direction of travel. A polarization filter allows only waves of a certain orientation to pass.

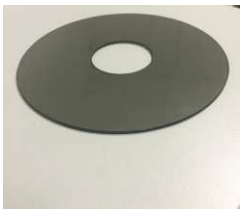


Types of Polarizers

The common types of polarizers are linear polarizers and circular polarizers. Polarizers are used by many optical techniques and instruments such as in photography and liquid crystal displays (LCD).



Polarizer film



Polarizer glass

The Effect of Polarizers

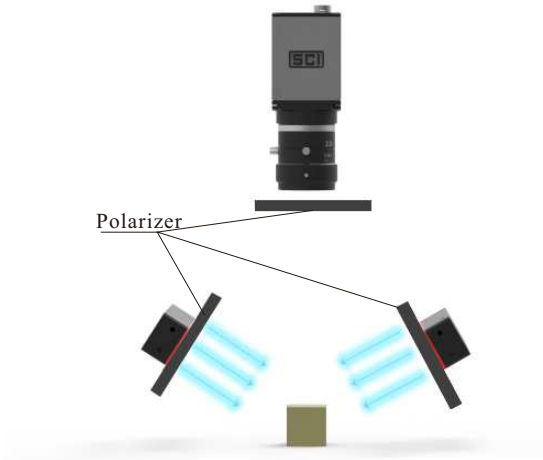
Polarizers can be used to eliminate or weaken the reflections. This exploits the characteristics of reflected light, which only comprises the vertical components of the oscillation.

Applications of Polarizers

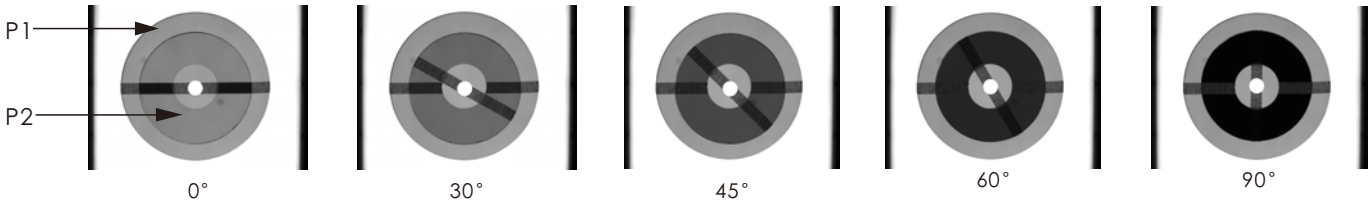
In machine vision applications, we apply linear polarizers to the lighting and another polarizer to the camera lens.

In the picture, there are two polarizers. If we keep the position of the first and turn the second, we can observe periodic changes of the intensity.

By turning any of the polarizers, we can optimize the result image.



Polarizer installation



Polarizers in Real Life Applications

Photographers apply polarizers to their lens in special conditions, e.g. to reduce reflections and make colors more vivid.

Image without polarizer

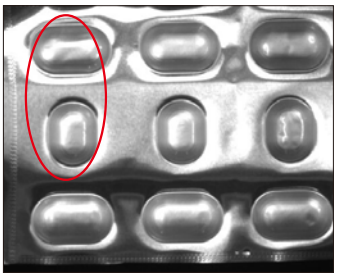
Image with polarizer

The reflections on the floor surface are reduced by the polarizer.

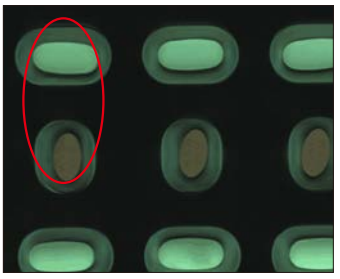
Polarizers in Machine Vision Applications

Application areas: surface inspection etc. in semiconductors, electronics, automotive and many others.
Below are some examples of images with polarizer and without polarizer.

Pill Inspection

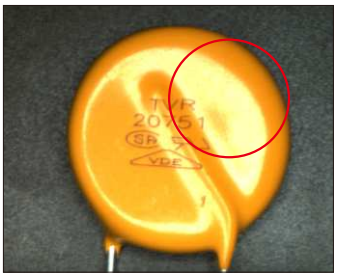


Result image without polarizer

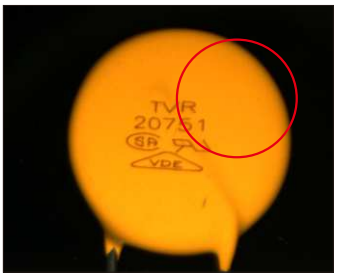


Result image with polarizer

Specular Device Inspection

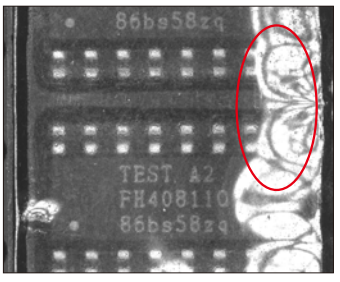


Result image without polarizer

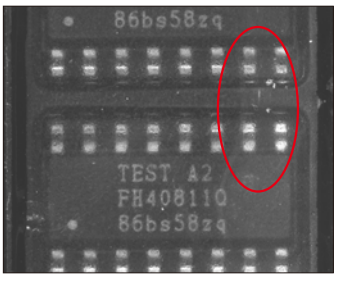


Result image with polarizer

SMD Package Inspection

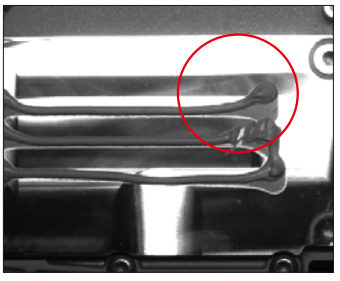


Result image without polarizer

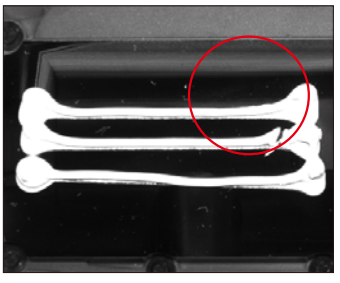


Result image with polarizer

Filmed Package Inspection

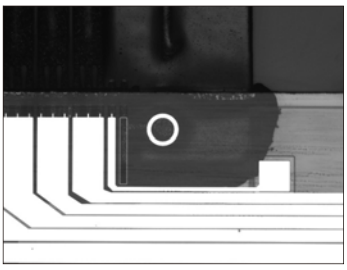


Result image without polarizer



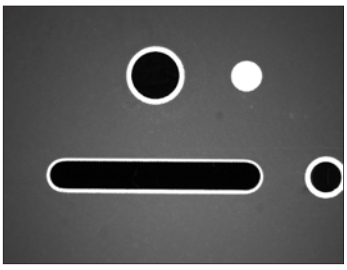
Result image with polarizer

Electronics Industry

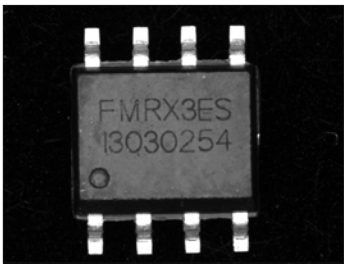


1. Localization of fiducial marks on touch screens

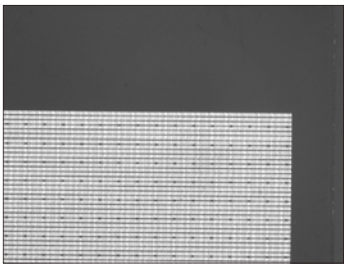
2. Detection of scratches on mobile phone screen surfaces



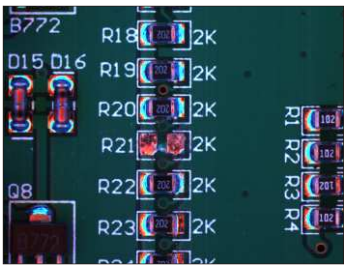
3. Localization of the microphone hole in the phone covers



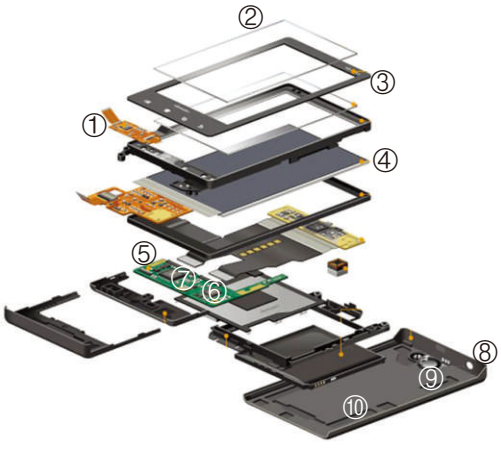
5. Pin inspection of integrated circuit(IC)

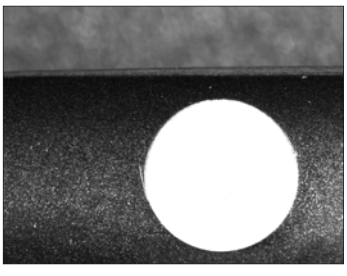


4. Localization of AA area fo LCDs

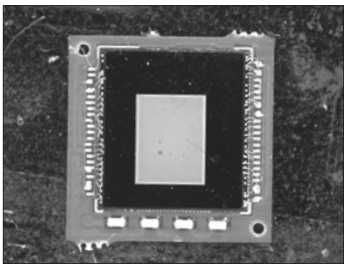


6. PCB inspection

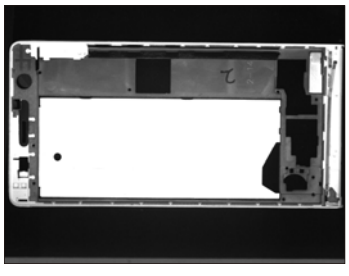




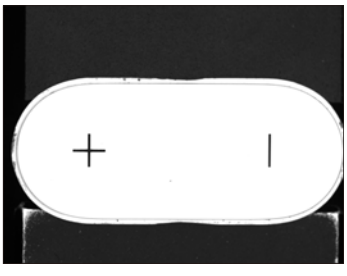
8. Localization of holes of earphone plugs



7. Defect inspection of mobile phone chips



10. Gauging of mobile phone housing



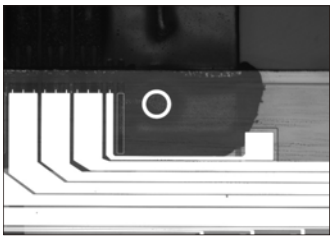
9. Inspection of signs and letters on buttons

Detection of scratches on mobile phone screen surfaces


Original Image Result Image

Line Light with high uniformity creates direct reflection on the phone surface for an 8K linear Camera . Scratches can be clearly distinguished from the even surface

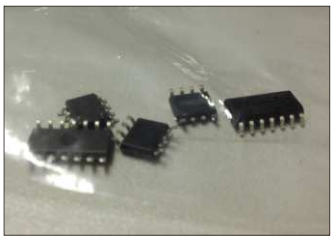
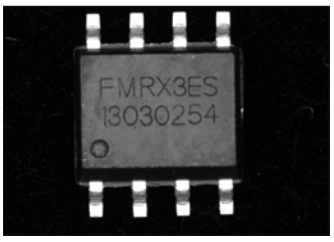
Localization of fiducial marks on touch screens

Original Image Result Image

Recognition of markers on the mobile phone screen with telecentric lens and coaxial illumination for a most compact system setup.

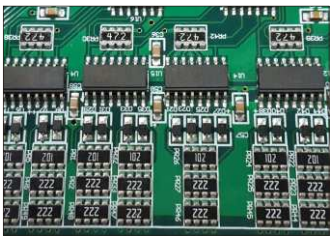
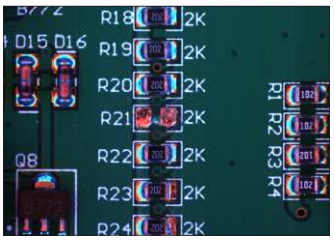
Pin inspection of integrated circuit (IC)

Original Image Result Image

Highly uniform illumination from dome light allows to detect several types of defects simultaneously, e.g. flatness, pitch of the IC feet, and laser-engraved letters.

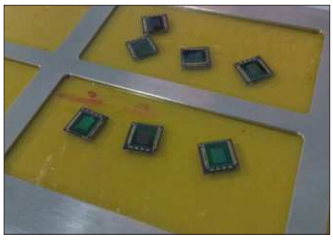
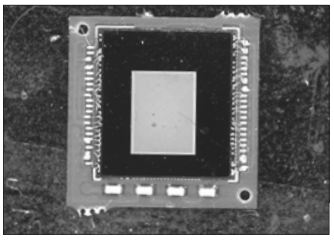
PCB inspection

Original Image Result Image

Specific AOI Lights provide illumination in different angels for enhanced 3D information to detect missing or faulty soldering points.

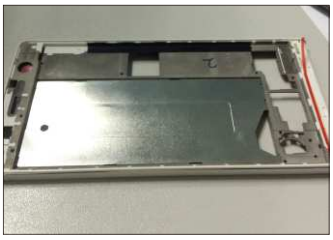
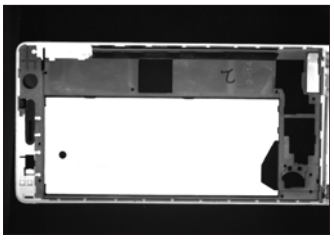
Defect inspection of mobile phone chips

Original Image Result Image

Dome lights ensure the reliable detection of dirt and scratches on the chip surface at low working distances.

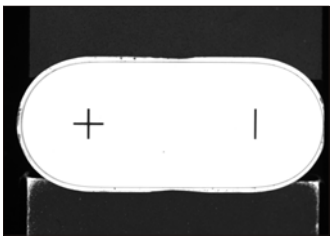
Gauging of mobile phone housing

Original Image Result Image

Coaxial Lights enable the precise measurement of mobile phone cases and their LCD window.

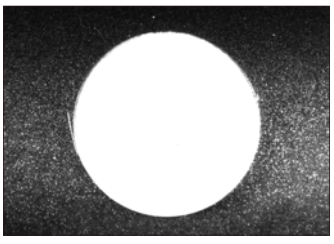
Inspection of signs and letters on buttons

Original Image Result Image

Highly uniform illumination widely eliminates the reflections of the glossy part surface for a detailed inspection of letters and signs, e.g. on the volume key.

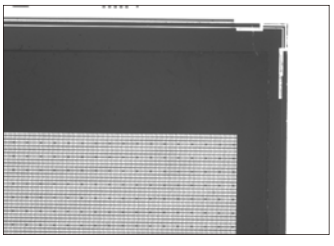
Localization of holes of earphone plugs

Original Image Result Image

A bar light illuminates from a low angle to let the light shine through the hole for the earphone plug.

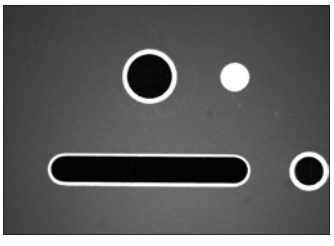
Localization of AA area for LCDs

Original Image Result Image

IR back lights shine through the AA area of the screen and allow a precise localization.

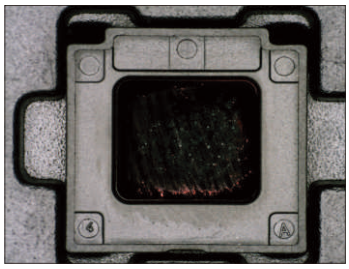
Localization of the microphone hole in the phone covers

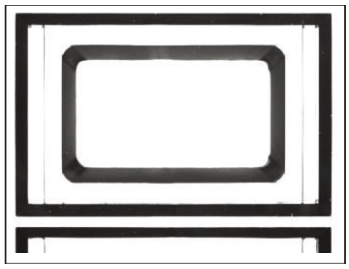
Original Image Result Image

With a 60 degree high-angle ring light, the inner edge of the microphone hole can be easily recognized by the vision system.

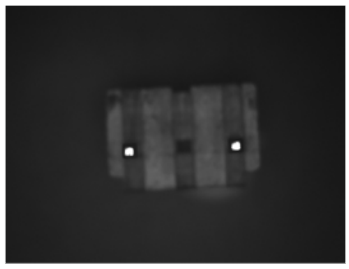
Semiconductor Industry



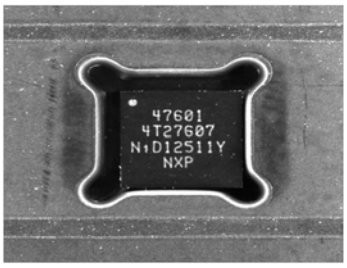
1. Detection of glue overflow and dirt on IC chips



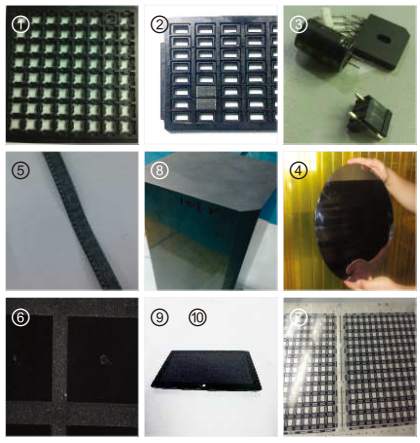
2. Localization of IC chips for pick and place



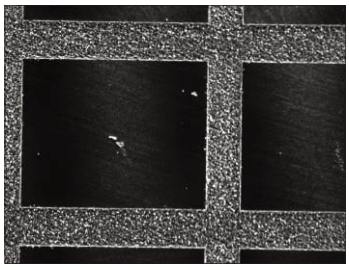
3. Localization of IC chips pins



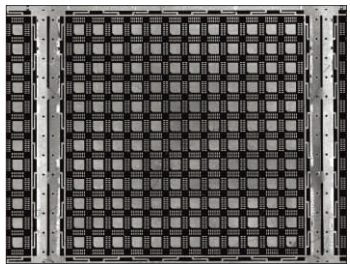
5. SMD package inspection



4. Wafer inspection

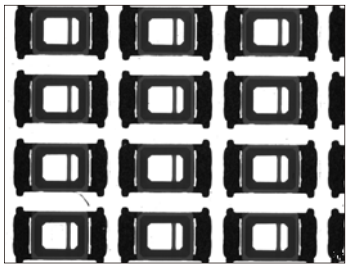


6.. Defect detection on silicon surfaces

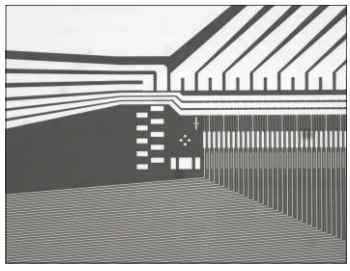


7. Defect detection of chip surfaces

8. Geometric measurement of the cross section of silicon bars

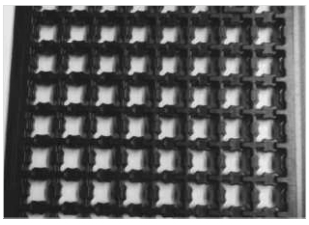


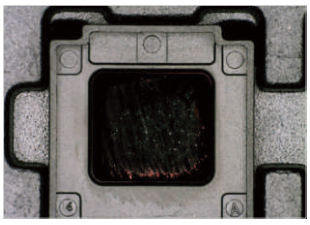
9. LED defect detection



10. Touch screen inspection

Detection of glue overflow and dirt on IC chips


Original Image


Result Image

High angle front light ensures the correct localization of an IC cell in a burn disc.

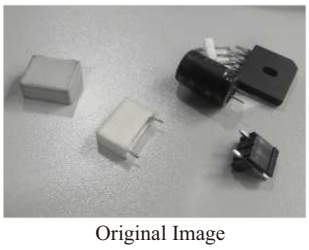
Inspection of glue overflow and dirt on IC chips

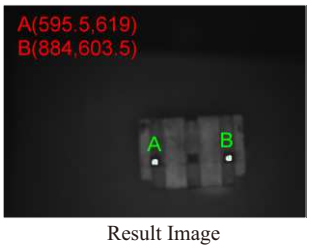

Original Image

Result Image

A dome light provides uniform illumination to inspect surplus glue and dirt on the surface.

Inspection of the flatness of IC chip pins


Original Image

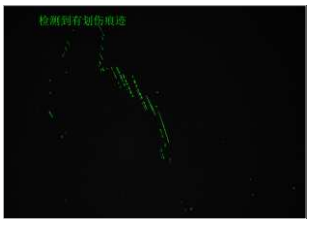


Result Image

A dome light ensures that the pins of the ICs are easily distinguished from the background to inspect their pitch and flatness.

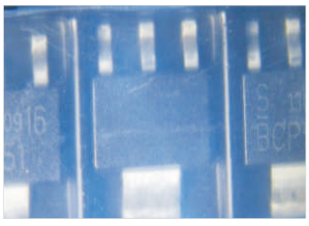
Wafer inspection

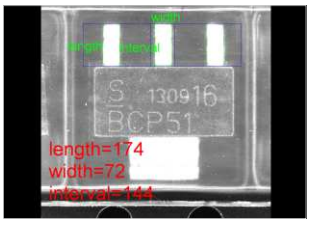

Original Image


Result Image

Wafer surface inspection to detect scratches and dirt. For these large objects, best results are achieved with 4 bar lights arranged in low angle.

SMT package inspection

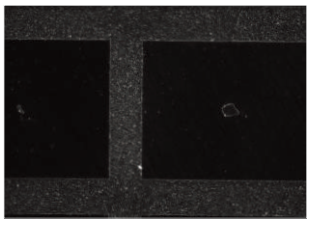

Original Image

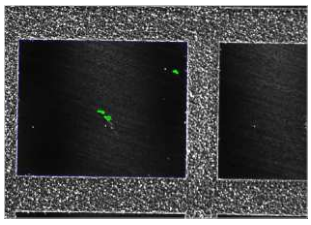


Result Image

Piece by piece inspection with 15 degree ring light analyzing the pitch and the length of each pin.

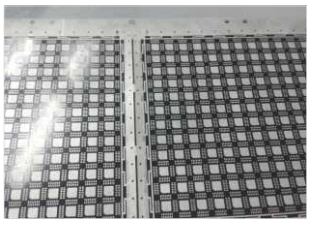
Defect detection on silicon surfaces

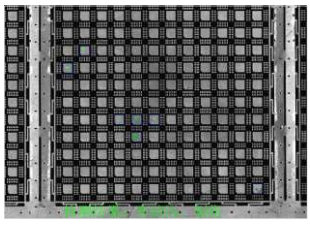

Original Image


Result Image

With a 60 degree ring light, defects like broken edges, non-filled corners, cavities, etc. can be detected from short working distances.

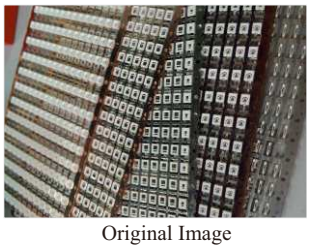
Defect detection of chip surfaces


Original Image


Result Image

Inspection of surplus copper, silver paste or other materials, bended or broken pins, scratches, faulty soldering points, etc.

LED defect inspection

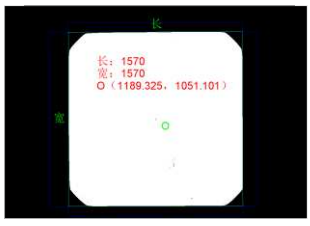

Original Image


Result Image

Inspection of damages, dirt, scratches, etc. on LEDs

Geometric measurement of the cross section of silicon bars


Original Image

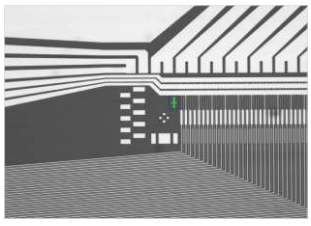


Result Image

A front light is used to inspect the dimensions of the cross section of silicon bars.

Touch screen inspection

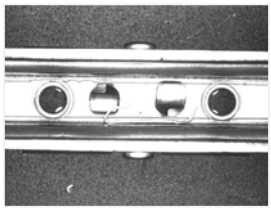

Original Image


Result Image

A spot light coupled with a telecentric lens illuminates the touch panel and allows for the localization of the circuits for automatic inspection.

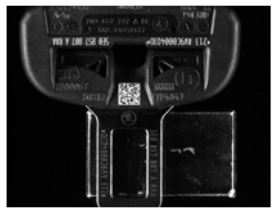
Automotive Industry

5. Recognition of letters on the label surface



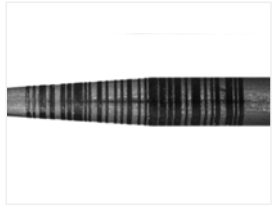
4. Inspection of windshield wipers

1. Printing inspection of signs



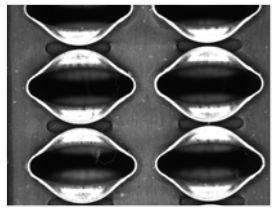
2. OCR Recognition on the surface of lock

6. Inspection of letters in lampshade

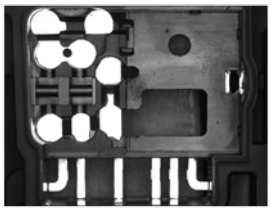


3. Bar code reading

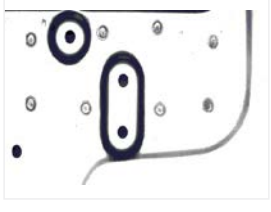
12. Inspection of markers in user panel



7. inspection of holes



11. Pitch inspection of metal parts



10. Inspection of soldering points of sheet metal

9. Bearing inspection

8. Inspection of special parts

Printing inspection of signs

Original Image


Result Image

A dome light is the ideal choice to check printed and laser marked signs regarding completeness, correctness and position.

OCR Recognition on the surface of lock


Original Image


Result Image

The light solution is highly uniform vault light to illuminate on the surface evenly and reduce the effective of uneven surface. At the same time, the angle of illumination of bar light inside the vault light can get clear image of the letters. It is recognition of the letters from the plastic surface and metal surface.

Bar code reading

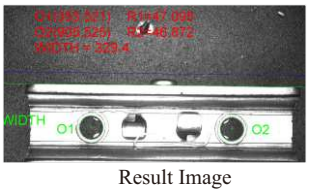

Original Image


Result Image

A blue ring light applied from the side compensates the poor contrast between the bar code and the part surface.

Inspection of windshield wipers


Original Image



Result Image

A dome light is suited to illuminate the uneven surface for the inspection of the size and the correct assembly of wipers to their holders.

Recognition of letters on the label surface

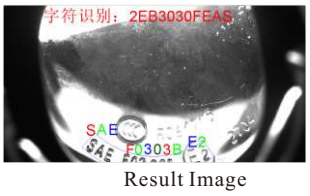
Original Image

Result Image

With a set of bar lights, the letters can be optimally distinguished from the background and reliably read. This approach avoids reflections of the plastic film.

Inspection of letters in lampshade


Original Image

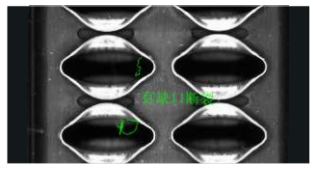


Result Image

Applying a backlight from the side ensures consistent illumination despite the changing curvature and thickness of the lampshade.

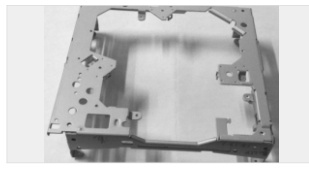
Inspection of holes


Original Image


Result Image

With a low-angle ring light, the profile information of the hole appears clearly in the camera image.

Inspection of special parts

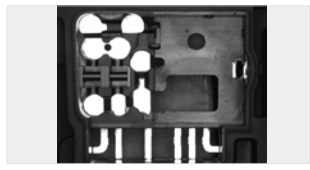

Original Image


Result Image

A large front light allow the inspection of the surface for scratches, cavities, flattened sides on different types and sizes of objects.

Pitch inspection of metal parts

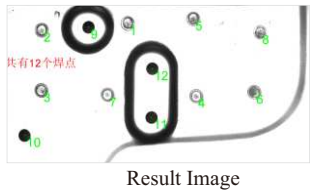

Original Image


Result Image

A Coaxial Light is best suited to measure the pitch of metal parts.

Inspection of soldering points of sheet metal


Original Image



Result Image

Several bar lights illuminate the very big parts with multiple soldering points. This approach copes the uneven surface of the sheet metal.

Bearing inspection


Original Image


Result Image

At the measurement of the bearing angle, an accuracy of 0.002 mm/pixel is achieved and edges are clearly identified. For this setup, a blue spot light used as backlight , a 5-megapixel camera and a 1.5 times telecentric zoom lens let the edges appear very clearly in the camera image.

Inspection of markers in user panel

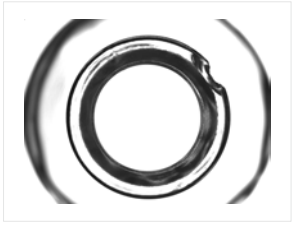

Original Image


Result Image

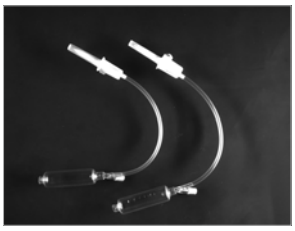
Due to the large size of the object a backlight is illuminating the user panel from the front to inspect the letters and key markers in the panel.

Medical Industry

1. Inspection of medical bottles

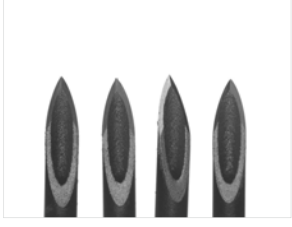


2. Inspection of bottle necks



3. Inspection of covers for VI tubes

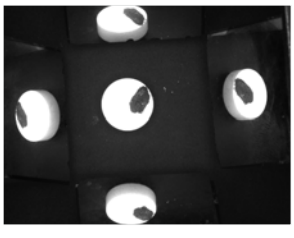
4. Inspection of injector



5. Inspection of needle tips

6. Barcode reading

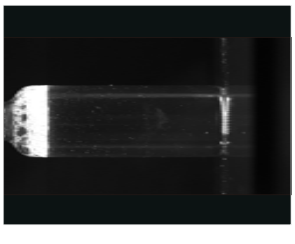
7. Dirty detection of capsules



8. Inspection of pills

9. Inspection of capsules

10. Inspection of bottle covers

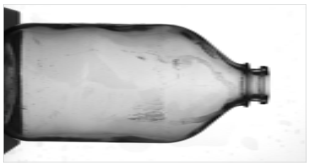


11. Detection of foreign objects in liquid

12. Bottle inspection

Inspection of medical bottles


Original Image


Result Image

With a parallel light foreign objects can be securely detected and makes it robust against interferences from dirt or scratches.

Inspection of bottle necks

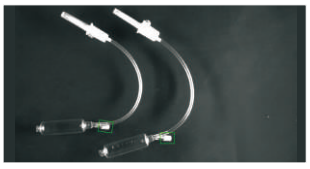

Original Image


Result Image

A collimated backlight creates sharp contrast and edges in the camera image to detect damage, bubbles, blur, etc.

Inspection of covers for VI tubes

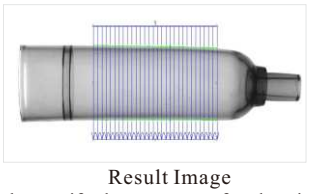

Original Image


Result Image

A large bar light allows for the presence detection of covers and connectors among the tubes.

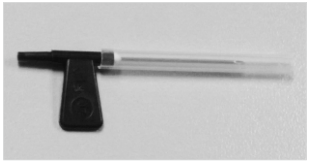
Inspection of injector

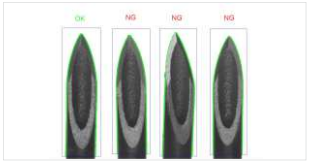

Original Image


Result Image

The goal is to measure the tube size and to verify the presence of a glue ring. Thereby, different tubes with different sizes have different transparency resulting in different gray scale values.

Inspection of needle tips


Original Image


Result Image

A dome light ensures uniform illumination to detect all types of defects on the needle tip.

Barcode reading


Original Image

Result Image

One-dimensional codes need to be checked at very high speed. For short exposure times and good contrast, a 60 degree ring light is recommended.

Dirty detection of capsules


Original Image


Result Image

Multiple defects on the surface as well as all kinds of contamination shall be recognized by this vision system. Due to the reflective surface the high uniformity in the light density is a big advantage. Furthermore, coaxial lights can bring out defects on the capsule surface.

Inspection of pills


Original Image


Result Image

With a polarizing filter, reflections from a glossy transparent plastic foil surface can be eliminated to reliably check, if pills are damaged or contaminated.

Inspection of capsules

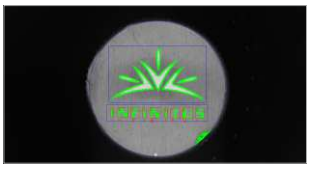

Original Image


Result Image

The vision system needs to check if each capsule is filled with medical powder. With a parallel back light bad capsules can be easily identified.

Inspection of bottle covers

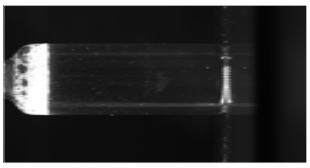

Original Image


Result Image

Verification of printed characters on glossy surfaces, detection of scratches and defects, verification of cogs and dimensions.

Detection of foreign objects in liquid

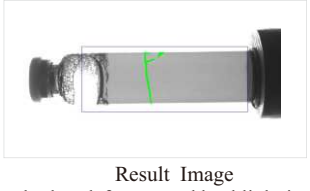

Original Image


Result Image

Detection of foreign objects, such as hair, metal splinters, dust etc. in liquids. The bottles are made of brown glass. Therefore, a high intensity red backlight creates high contrast between liquid and foreign parts.

Bottle inspection

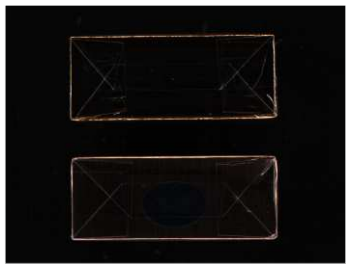

Original Image


Result Image

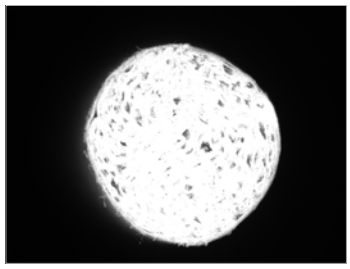
For the detection of fissures, cavities and other defects, a red backlight is the ideal choice for a perfect camera image.

Tobacco Industry

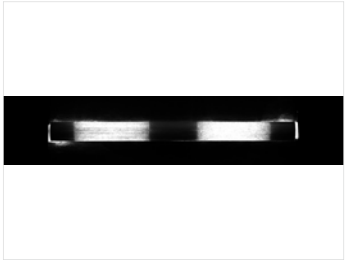
1. Inspection of printed letters in cigarette paper



2. Inspection of cigarette packs for deformation

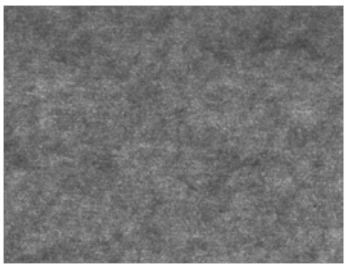


3. Filter Inspection

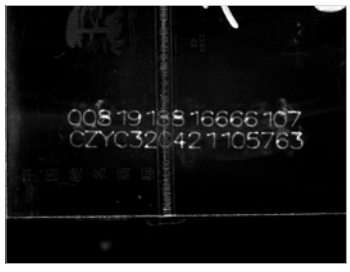


4. Filter size measurement

5. Bar code reading



6. Inspection of cigarette paper



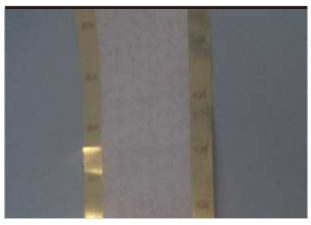
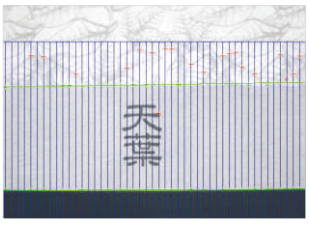
7. Inspection of laser marked character on cigarette box

8. Counting of cigarette packs

9. Surface inspection of cigarette box

10. Printing inspection on cigarette packs

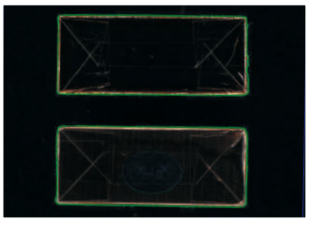
Inspection of printed letters in cigarette paper

Original Image Result Image

A low angle illumination in combination with a polarizing filter copes with the very reflective surface and multi-colored background. Thus, laser-marked letters can be reliably inspected.

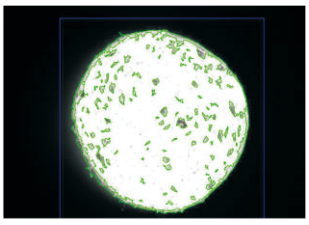
Inspection of cigarette packs for deformation



Original Image Result Image

Two cigarette packs need to be inspected at a time. The systems shall recognize if one of the packs are deformed. Best results are achieved with a low-angle light

Filter inspection

Original Image Result Image

A uniform backlight enables the fast measurement of the filters and their even distribution of material.

Filter size measurement


Original Image Result Image

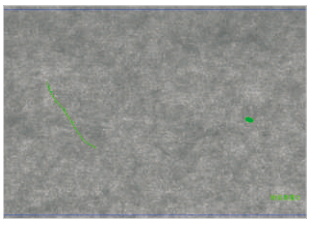
A back light shines through the filters for measurement of their geometric size. With a high intensity blue backlight best results are achieved.

Barcode reading

Original Image Result Image

A back light used from the side and a certain angle of the camera allow for the secure reading of the barcodes of cigarette packs.

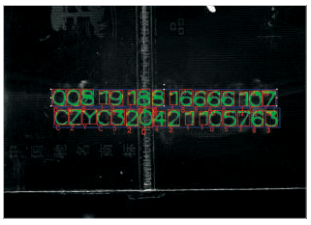
Inspection of cigarette paper

Original Image Result Image

Accurate recognition of damages and black speckles on the papers.

Inspection of laser marked character on cigarette box



Original Image Result Image

A low angle illumination in combination with a polarizing filter copes with the very reflective surface and multi-colored background. Thus, laser-marked letters can be reliably inspected.

Counting of cigarette packs


Original Image Result Image

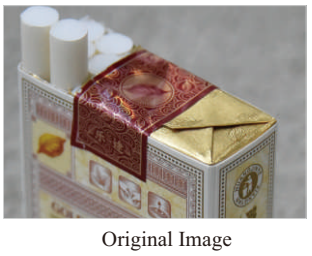
A large field of view, short working distance, short exposure times and high speed make this application a challenge. With several high intensity bar lights, it can be solved.

Surface inspection of cigarette box

Original Image Result Image

Recognition of holes and other damages of the cigarette pack and its highly reflecting foliation. A backlight used from the side and a certain angle of the camera can cope with the reflections.

Printing inspection on cigarette packs



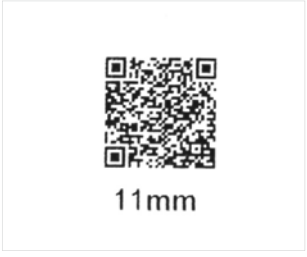

Original Image Result Image

Checking the letters and images for missing print and dirt on the surface. A vault light allows for high speed inspection of the highly reflective surface with its even surface illumination in combination with a line scan camera.

Printing Industry

1. Recognition of barcodes and letters

2. Inspection of printed logo



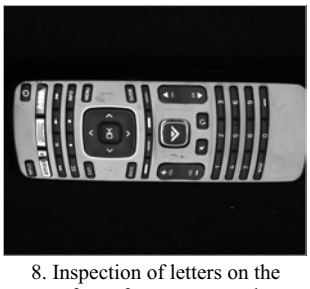
3. Reading of 2D codes

4. Inspection of labels for cosmetics

5. Inspection of beer caps

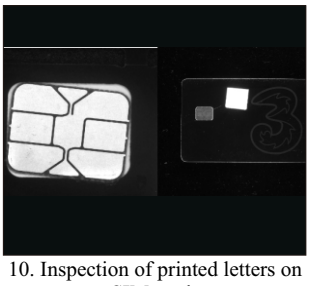
6. Printing quality inspection

7. Inspection of keyboard letters and signs



8. Inspection of letters on the surface of remote controls

9. Inspection of printed letters on cosmetics packs



10. Inspection of printed letters on SIM cards

Recognition of barcodes and letters


Original Image Result Image

A ring light illuminates the label from a certain angle to check the two-dimensional code and letters on the backside of the package bag.

Printing quality inspection


Original image Result image

The goal is to inspect color, echo, stains, and etc of catalog printing.

Inspection of logo printing


Original Image Result Image

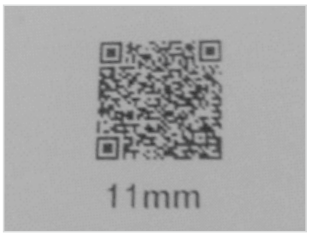
The system recognizes missing ink, uncomplete printing, uncomplete words, scratches etc. with a dome light and additional coaxial light to eliminate reflections on the label

Inspection of keyboard letters and signs


Original Image Result Image

With a flat backlight the camera can check and recognize the letters on the keyboard, also in challenging colors like red.

Reading of 2D codes



Original Image Result Image

The system recognizes and reads the 2D codes with a 75 degree ring light.

Inspection of letters on the surface of remote controls


Original Image Result Image

A red side backlight and a tilted lens in a certain angle enable the inspection of defects of letters and the plastic area.

Inspection of labels for cosmetics


Original Image Result Image

The goal is to check the QR code and character of cosmetics label. The label is illuminated by a bar light at a certain angle.

Inspection of printed letters on cosmetics packs


Original image Result image

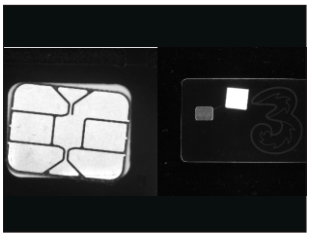
The goal is to check the cosmetics label letters and printed patterns. Within one second, two bottles can be inspected.

Inspection of beer caps

Original Image Result Image

A combined bar light allows the inspection of different items in one position; the caps are checked for scratches, cogs and letters on the surface of the beer cap.

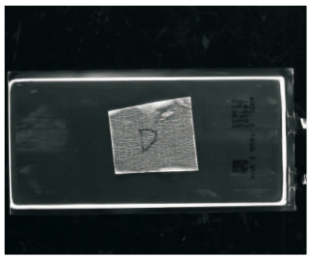
Inspection of printed letters on SIM cards

Original Image Result Image

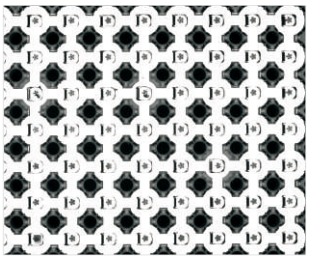
The system recognizes printing defects on the SIM card surface and chip displacements.

Lithium Battery Industry

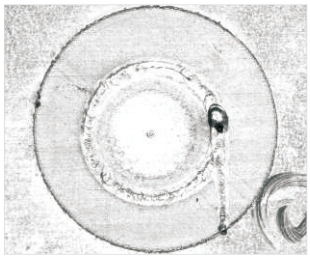


1. Cell phone batteries localization

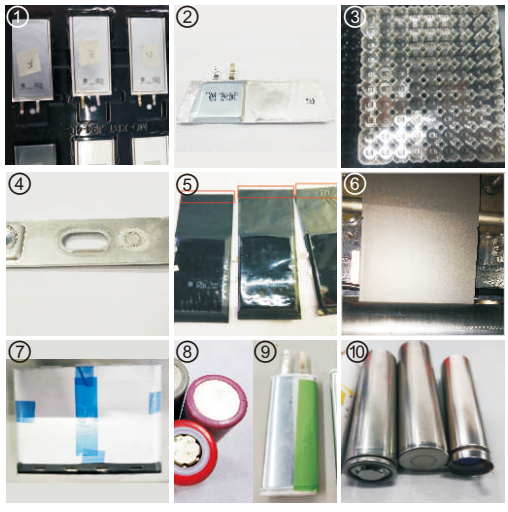
2. QR code recognition

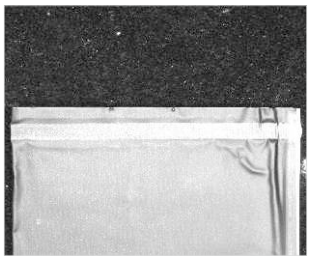


3. Cells module soldering point inspection

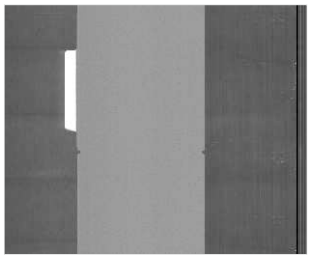


4. Battery slice soldering point inspection



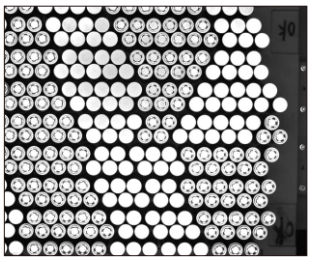


5. Battery pack edge inspection

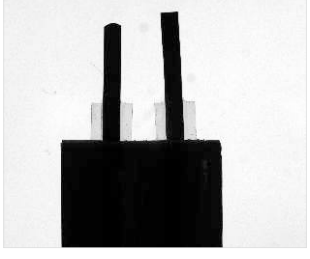


6. Electrode piece inspection on die-cutting machine

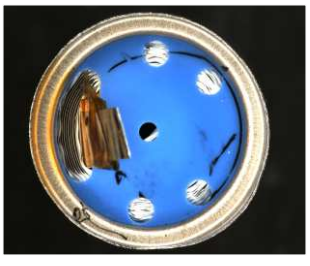
7. Square battery size measurement



8. Cells polarities detection

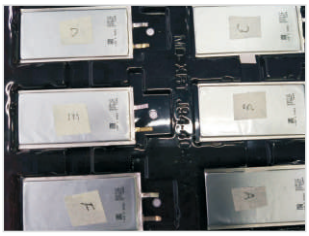


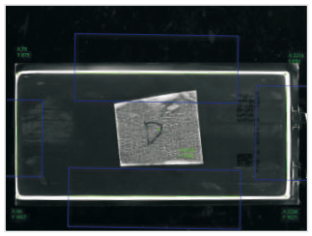
10. Electrode tab size measurement



10. Cylindrical battery bottom gasket size measurement

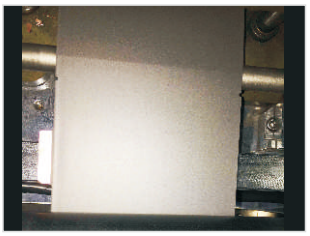
Cell phone batteries localization

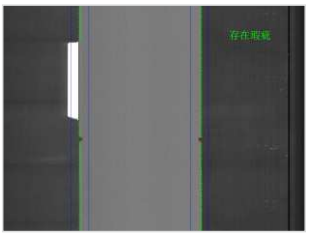

Original image


Result image

Using OPT low angle ring light can eliminate the reflection caused by curved surface, get good result.

Electrode piece inspection on die-cutting machine


Original image


Result image

It's high speed on-line inspection. Using high resolution line scan camera to work with OPT-LSS series light can get good result

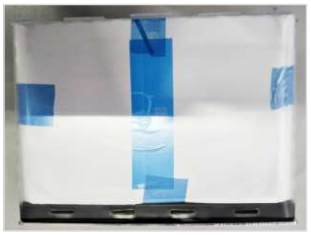
QR code recognition

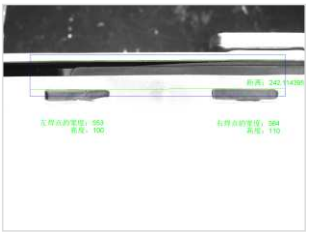

Original image

Result image

Using OPT-RID series lights to eliminate the surface reflection, can get high uniform and contrast image

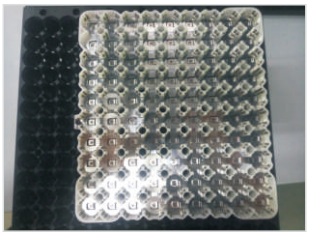
Square battery size measurement

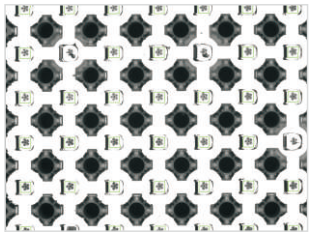

Original image


Result image

Using OPT-LIU series light to eliminate the reflection, can get uniform image for the uneven surface

Cells module soldering point inspection

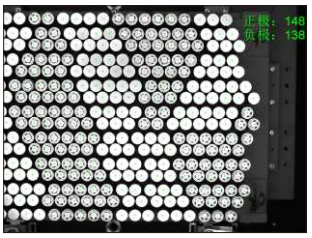

Original image


Result image

Using front back light to illuminate the work piece from top can get good result. (making a view window on center of OPT-FLC series light becomes front back light)

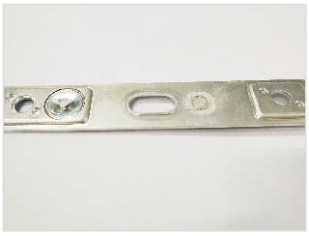
Cells polarities detection

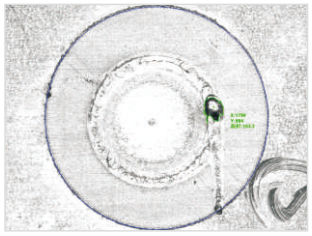

Original image


Result image

Using front back light to illuminate the work piece from top can get good result. (making a view window on center of OPT-FLC series light becomes front back light)

Battery slice soldering point inspection

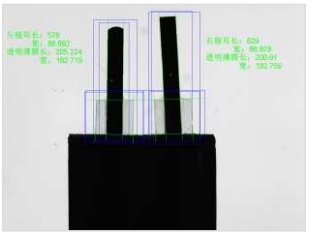

Original image


Result image

Using OPT high angle ring light to illuminate the work piece at a suitable working distance can get good result

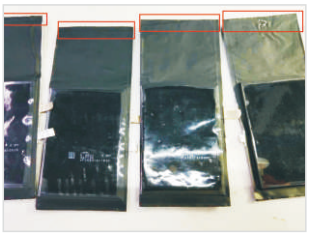
Electrode tab size measurement

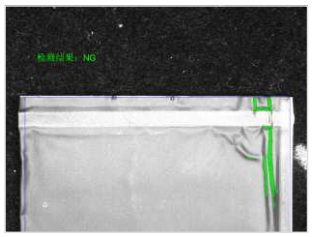

Original image


Result image

Using OPT-FL series light to illuminate the work piece from bottom can get a result.

Battery pack edge inspection

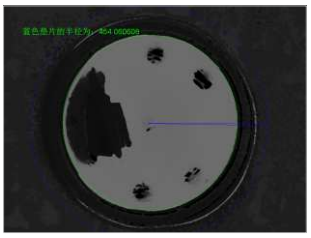

Original image


Result image

Using front back light to get big FOV and uniform result. (making a view window on center of OPT-FLC series light becomes front back light)

Cylindrical battery bottom gasket size measurement


original image


result image

The gasket is high reflective blue metal color. Using color camera and OPT high angle ring light can get can get high contrast image.

OPT Controllers

Controller Selection & Introduction

Applications of Controller

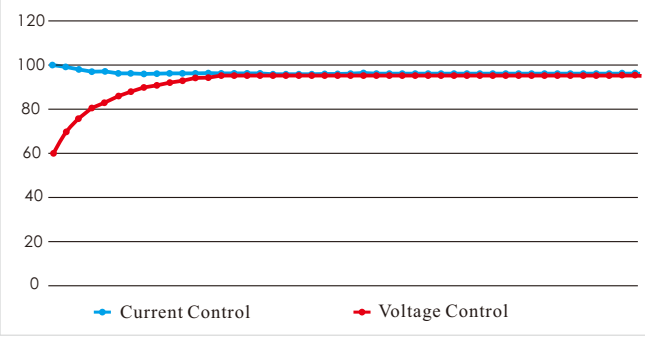
The light controllers are used to supply power for LED lights, controlemitting intensity and status (ON or OFF), strobe the light via externaltrigger signal (ON/OFF switch or level trigger), thus to extend life spanof LED lights. OPT provides two kinds of controllers: Analog Controller and Digital Controller. The digital controllers support RS232 and Ethernet communications with PC.

Features of OPT Controllers

1. Most OPT controllers using current to control
2. Autosense technology: detect the output current automatically
3. Overdrive technology: increase light intensity greatly
4. Programmable trigger
5. Efficient and flexible communication protocol
6. Short response time, high trigger frequency

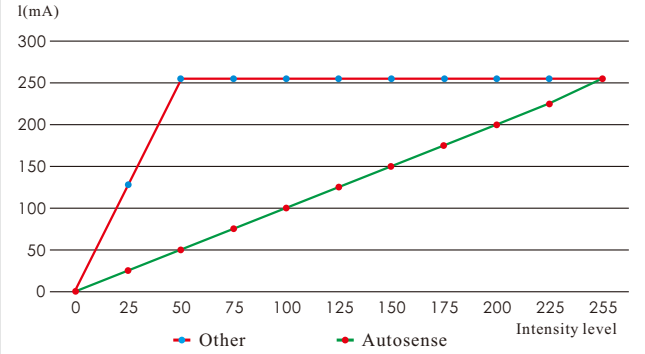
Autosense Technology

The voltage control problem: voltage controllers output constant voltage,the internal resistance of LED lights is decreased when the temperatureincreased, and thus to output current and light intensity increase. So forvoltage control, the light intensity is easily affected by temperature. Solution: using current control to control the light intensity.



Comparison of current control and voltage control

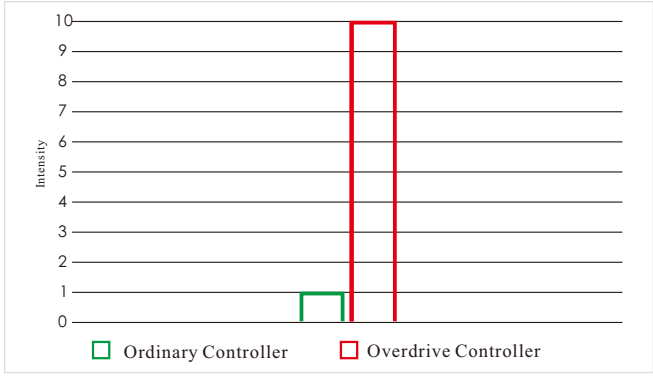
The problem of current control: the output current of controllers is not always matched with LED light rated current. For example, usingthe controller of output current 1000mA to drive the LED light ofrated current 100mA.Solution 1: optical sensor control.Solution 2: autosense of LED light rated current.



Comparison of autosense and other control ways

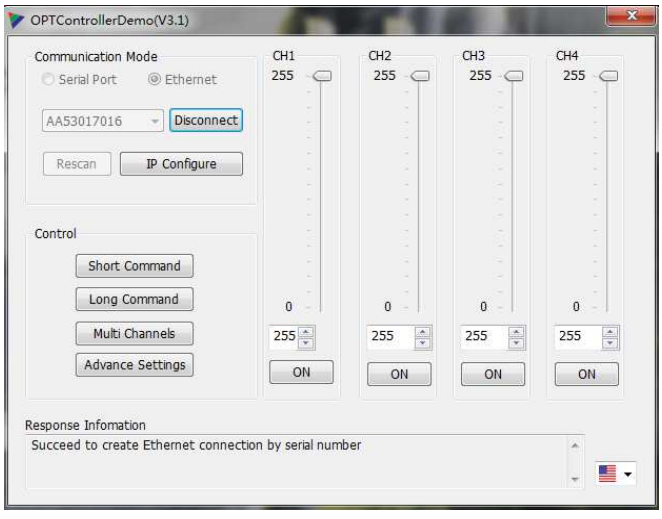
Overdrive Technology

- Providing max 20A instant current to increase light intensity
- Trigger pulse width can be set
- Short response time



Comparison of ordinary controller and overdrive controller

DEMO Software



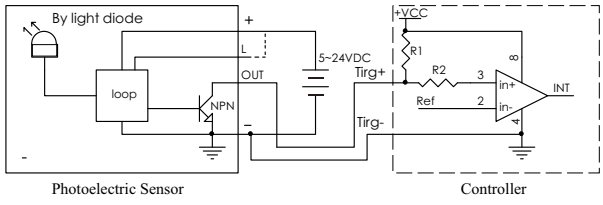
Controller SDK

- Programming language: VC, VB , C#
- OS: Windows, Mac OS X
- Development environment: VS, Xcode, Qt

Trigger Ways

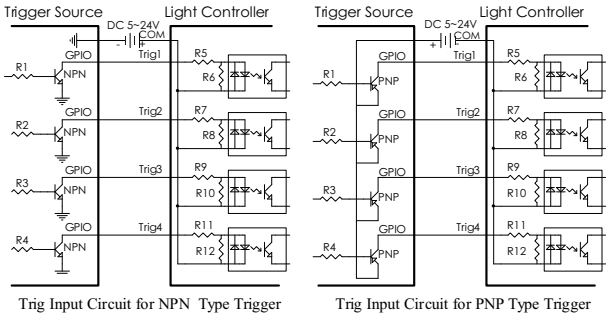
There are two trigger ways: switching value (ON / OFF) trigger and level trigger. Wiring diagram as below:

Switching Value Trigger



Wiring diagram of switching value trigger

Level Trigger



Wiring diagram of level trigger

Controller Selection Guide

OPT-DPA 20 24 E-X

- Channels: 2-2 channels; 4-4 channels; 8-8 channels;16-16channels
- Version
- Output voltage: 05~5V; 24~24V; 48~48V
- Output current: 07~0.7A; 20~2A; 60~6A
- Types: DPA-digital current; DPH-digital overdrive; AP-analog voltage; APA-analog current
- Brand name

Selection Table

Type	Control Way	Model	Channels	Trigger Mode	Output Voltage	Single Channel Power	Total Power	Compatible Light	Communication
Digital Controller	Current	OPT-DPA1024E-X	4 channels (can extend to 8or 16)	Level trigger	24V	24W	4/8 CH:48W 16 CH:180W	24V LED light	Ethernet/ RS232
		OPT-DPM0524E-4	4 channels (can extend to 8/12/16)	Level trigger	24V	12W	4 CH:48W 8/12/16 CH:96W	24V LED light	Ethernet/ RS232
		OPT-DPA6024-2	2 channels	ON/OFF switch	24V	144W	288W	OPT 6P LED light	RS232
		OPT-DPA2024E-X	4 channels (can extend to 8/16)	Level Trigger	24V	48W	4/8 CH:48W 16 CH:180W	24V LED light	Ethernet/ RS232
		OPT-DPA2005E-X	4 channels (can extend to 8)	Level Trigger	5V	10W	4 CH:30W 8 CH:50W	5V Spot light	Ethernet/ RS232
	Overdrive	OPT-DPH20048E-4	4 channels	Level Trigger	48V	Peak Power: 960W	Peak Power: 1920W	24V LED light	Ethernet/RS232
Analog Controller	Current	OPT-APA6024-2	2 channels	ON/OFF switch	24V	144W	288W	OPT 6P LED light	-
		OPT-APA0705F-X	1/2/3/4 channels	ON/OFF switch	5V	3.5W	1/2/3/4 CH: 3.5/7/10.5/14W	5V Spot light	-
		OPT-APA3024-2	2 channels	ON/OFF switch	24V	72W	144W	OPT 6P LED light	-
	Voltage	OPT-AP1024F-X	1/2/3/4 channels	ON/OFF switch	14~24V	20W	1/2 CH:30W 3/4 CH:40W	24V LED light	-
		OPT-APM0524B-2	2 channels	ON/OFF switch	14~24V	12W	24W	24V LED light	-
	Strobe	OPT-SPM2024-1	1 channel	Level Trigger	12~48V	96W	96W	12~48V LED light	-

DPA Digital Current Controller

(DPA1024E will be discontinued in October 2019 and replaced with DPA2024E)

Selection Guide

OPT - DPA 20 24 E - X

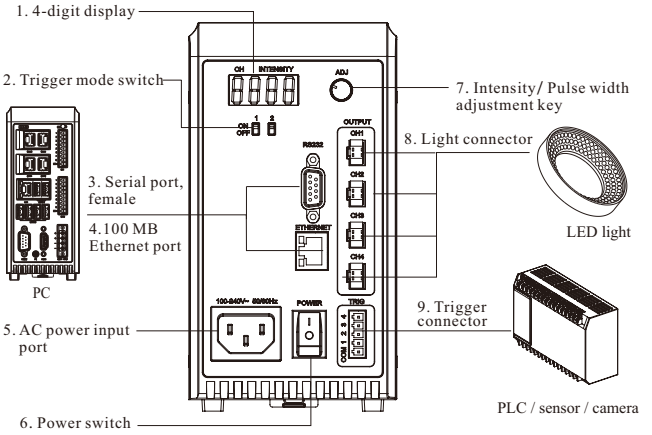
- Channels
- Communication interface: Ethernet
- Max output voltage: 24V
- Max output current: 2A
- Digital current controller
- Brand name

Model	Channels	Compatible LED Light
OPT-DPA1024E-4	4	10mA~1A 24V light
OPT-DPA2024E-4		10mA~2A 24V light
OPT-DPA1024E-8	8	10mA~1A 24V light
OPT-DPA2024E-8		10mA~2A 24V light
OPT-DPA1024E-16	16	10mA~1A 24V light
OPT-DPA2024E-16		10mA~2A 24V light

Product Features

1. Programmable trigger mode available, 32 steps at max; the trigger source, intensity and trigger pulse width of each step can be set
2. Autosense of rated current for LED light
3. Trigger response time ⩽ 15 μs
4. Max trigger frequency up to 20KHz
5. Simultaneous communication of multiple channels available
6. Manual setting for max output current
7. 256 light intensity levels
8. Trigger signal input: connect an external signal source (e.g. a camera trigger signal) to strobe the LED light, and extend life span of light
9. Support RS232 communication
10. Support 100M Ethernet communication
11. Temperature controlled fan, longer life span
12. Withstanding high voltage (AC1500V 1min, leak current <10mA)
13. High insulation resistance (DC500V >20MΩ)
14. Easy to install: screw and DIN rail mounting available.

Device Overview



No.	Item	Description
1	4-digit display	1st number indicates the channel, other 3 numbers show the value
2	Trigger mode switch	To change the trigger mode
3	Serial port, female	RS232 communication interface with the PC
4	100 MB Ethernet port	Ethernet communication interface with the PC
5	AC power input	100 - 240 V AC, 50/60 Hz
6	Power switch	To turn the controller on/off
7	Intensity/ pulse width adjustment key	To adjust intensity or trigger pulse width. Press it, the chosen channel number twinkle on digit display; press it again will chose next channel. Rotate it in clockwise, the value increased; rotate it in anti-clockwise,the value decreased
8	Light connector	In total, four lights can be controlled individually
9	Trigger connector	For connection with an external trigger source

Trigger Mode Setting

Mode	Trigger mode switch 1	Trigger mode switch 2
Continuous on	ON	ON
Autosense for current once	ON	OFF
Normal trigger mode	OFF	ON
High power trigger mode	OFF	OFF

Parameters

Model	DPA1024E	DPA2024E	Descriptions
Voltage input	AC100~240V		50/60Hz
Lighting mode	Continuous on / Strobe		Set via trigger mode switch or DEMO software
Auto sense of rated current	for 10mA-1A 24V LED light	for 10mA-2A 24V LED light	Autosense of rated current for LED light available via the DEMO software
Manual set for max output current	10mA - 1A	10mA - 2A	Choose manual set via DEMO software
Intensity control	256 levels		Set via adjustment key or DEMO software
Short circuit protection	Yes		The related channel shuts down and“ER2” appears on the display

Model	DPA1024E	DPA2024E	Descriptions
Over current protection	Yes		Once the current over 10% of set valuethe related channel shuts down and"ER1" appears on the display
Normal trigger	256 intensity levels		
High intensity trigger	1A output for single channel	2A output for single channel	
Unit of time	1ms	1μs/ 10μs 1ms/100ms	Set via DEMO software
Normal trigger pulse width	1ms~999ms	1μs~30s	Set via adjustment key or DEMO software
High intensity trigger pulse width	0.01~5.00ms		Set via adjustment key or DEMO software
Programmable trigger mode	No	Yes	Intensity, trigger pulse width, triggersource of each step can be set
Response time	≤80μs	≤15μs	
Trigger response frequency	4KHz	20KHz	
Control of fan	constant voltagetemperature		
Power output	24W/CH	48W/CH	4/8CH total output ≦ 48W; 16CH total output ≦ 180W
Communication	RS232 / Ethernet		
Standby power consumption	4CH: 8W	4CH: 9.6W	
	8CH: 9.2W	8CH:11.8WInput: 220V	
	16CH: 13.7W	16CH:16.1W	
Hi-Pot test	AC1500V 1Min		Leak current <10mA
Insulation resistance	DC500V		>20MΩ
Working temperature	-5℃~50℃		
Dimension (L×W×H)	4CH	91x132x171mm	
	8CH	108x132.5x172.1mm	Refer to drawing for details
	16CH	140x132.5x172.1mm	
Weight (kg)	4CH	1	1.1
	8CH	1.3	1.2
	16CH	1.7	1.6

ERR Code Description

Code	ERR Reason	Display	Solution
Er0	No LED light connected	"Er0" on digit display	Connect LED light
Er1	Over current protection	"Er1" on digit display	Remove ERR and reboot
Er2	Short circuit protection	"Er2" on digit display	Remove ERR and reboot
Er3	Over voltage protection	"Er3" on digit display	Remove ERR and reboot
Er4	Hardware communication ERR	"Er4" on digit display	Return to OPT for repair
Er5	Hardware communication ERR	"Er5" on digit display	Return to OPT for repair

Remark: " ----"appears on the digit display during controller startup. And value will appear after startup finished

Trigger

DPA2024 has three kind trigger modes: normal trigger, high intensity trigger, programmable trigger;
Four kind trigger polarities: rising edge trigger, falling edge trigger, real time positive trigger, real time negative trigger.
Default set is rising edge trigger

Trigger Mode	Trigger Polarity	Compatible Controller
Normal trigger	Rising edge trigger	DPA2024E DPA1024E
	Real time positive trigger	
	Real time negative trigger	
	Falling edge trigger	
High intensity trigger	Rising edge trigger	DPA2024E DPA1024E
	Real time positive trigger	
	Real time negative trigge	
	Real anegative trigger	
Programmable trigger	Rising edge trigger	DPA2024E
	Falling edge trigger	

Trigger Sequence Chart

Rising edge trigger
Illuminating time is equal to the set trigger pulse width.
Trigger pulse width set via DEMO or adjustment key.
Refer to Chart 1.1

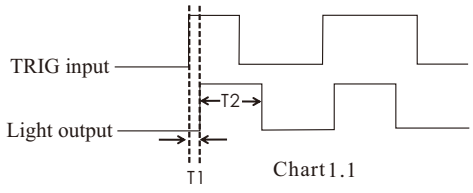


Chart 1.1

Falling edge trigger
Illuminating time is equal to the set trigger pulse width.
Trigger pulse width set via DEMO or adjustment key.
Refer to Chart 1.2

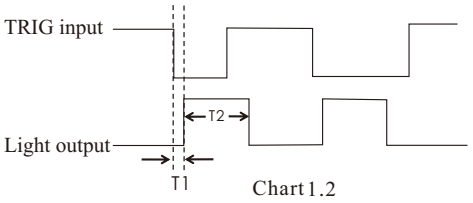


Chart 1.2

Real time positive trigger
When the trigger signal is high level, illuminating time is equal to pulse width of high level. Refer to Chart 1.3

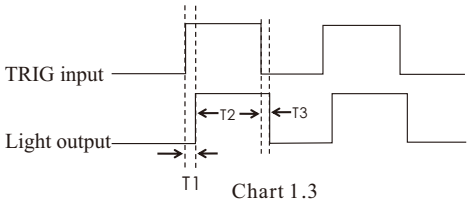


Chart 1.3

Real time negative trigger
When trigger signal is low level voltage, illuminating time is equal to low level pulse width. Refer to Chart 1.4

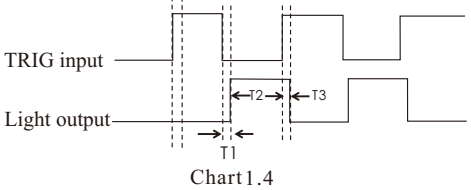


Chart 1.4

Remarks:

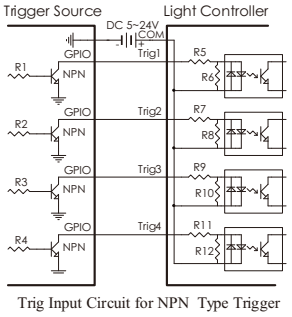
(1)T1: OFF to ON time; T2: Trigger pulse width; T3: ON to OFF time

(2)Normal trigger: DPA1024E T1≤80μs, T3≤10μs, T2 can set 1ms~999ms; DPA2024E T1≤15μs, T3≤10μs, T2 can set 1μs~30s;

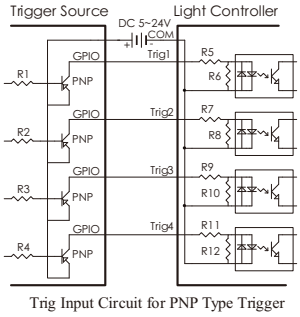
(3)High intensity trigger: DPA1024E T1≤80μs, T3≤10 μs, T2 can set 0.01-5.00ms; DPA2024E T1≤15μs,T3⩽10μs, T2 can set 0.01-5.00ms.

Trigger Wiring Diagram

4 trigger channels. "COM" is the common interface.Two -way optocoupler is inside. Input 0-2V is low level. Input 5-24V is high level. Default set is rising edge trigger. Wiring diagram as below



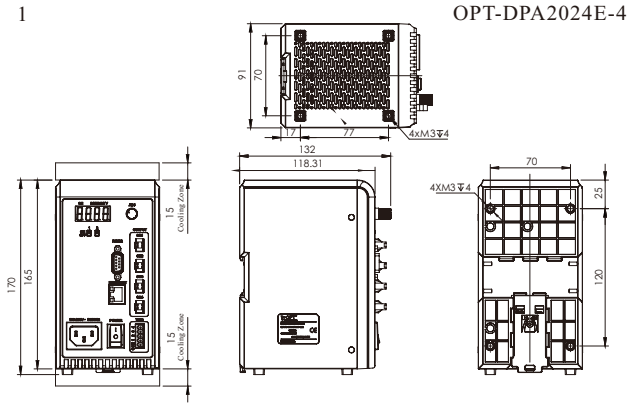
Trig Input Circuit for NPN Type Trigger



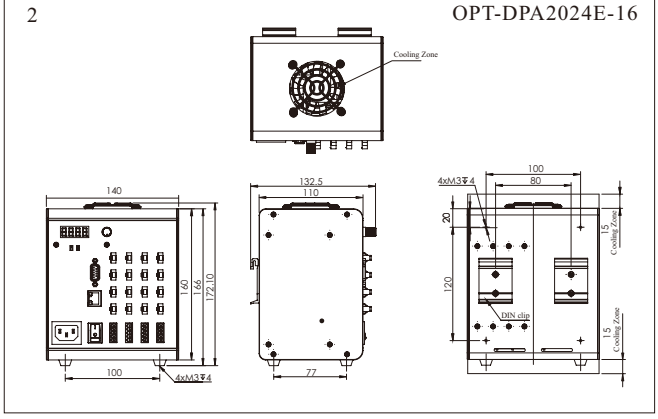
Trig Input Circuit for PNP Type Trigger

Dimensional Drawings [mm]

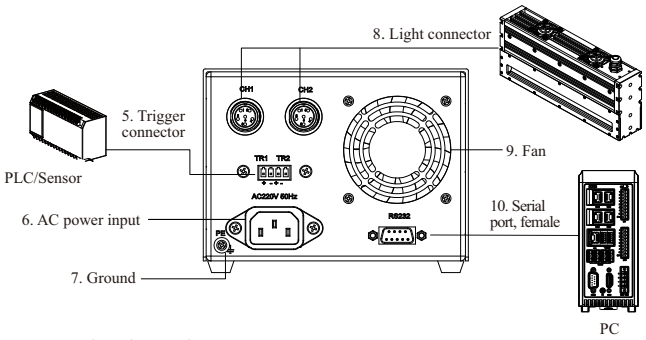
1 OPT-DPA2024E-4



2 OPT-DPA2024E-16



High Power Digital Current Controller



Selection Guide

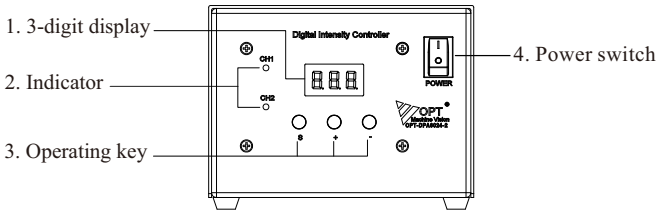
OPT - DPA 60 24 - 2

- 2 → Channels
- 24 → Max output voltage: 24 V
- 60 → Max output current: 6 A
- DPA → Digital current controller
- OPT → Brand name

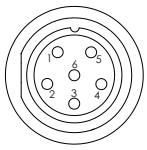
Product Features

1. 256 intensity levels
2. Short circuit protection
4. Communicate with PC via RS232 interface.
3. Manual control for the intensity on the controller available
5. Trigger signal input: connect an external signal source (e.g. a camera trigger signal) for synchronized strobe of the illumination device
6. The controller settings are stored within the device, even when switched off.

Device Overview



Description for 6P Connector



Pin	Pin Definition
1	Light+
2	Light-
3	Fan+
4	Fan-
5	Res
6	Res

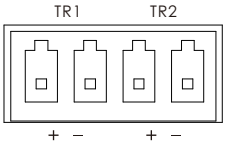
No.	Item	Description
1	3-digit screen	The first number indicates the channel and the other 2 numbers show intensity value
2	Indicator	Shows the status of the channel, ON - active, OFF - inactive.
3	Operating key	S: Set/check button, +: plus, -: minus
4	Power switch	Turns the controller on/off
5	Trigger connector	For connection with an external trigger
6	AC power input	100 - 120 V AC or 200 - 240 V AC
7	Ground	Ground protection
8	Light connector	For the connection with OPT lights with 6P connector
9	Fan	For cooling
10	Serial port, female	For the connection with PC

Parameters

Item	Parameter	Description
Input Voltage	100 - 120 V AC or 200 - 240 V AC	Switching via internal switch
Lighting mode	Continuous ON / Strobe	
Autosense of light rated current	For 100mA~6A OPT light with 6P connector	
Intensity control	256 levels	Via operating key or DEMO software
Trigger way	Switching value (ON / OFF)	
Trigger input	Synchronous strobe with trigger signal	
Short circuit protection	Yes	activate when output circuit shorted
Trigger delay time	≤100μs	
Trigger frequency	Max 1KHz	
Channels	2 CH	
Output power	144W/CH	2 CH total output ⩽288W
Hi-Pot test	AC1500V 1min	Leak current <10mA
Insulation resistance	DC500V	>20MΩ
Standby power consumption	≤11W	
Size (L x W x H)	136 x 326 x 104.5mm	
Weight(kg)	2.1	

Trigger Port

DPA6024- 2 has two trigger channels, each channel has "+" and "-" pins as input. Please refer to the drawing as below:



Work Mode Setting

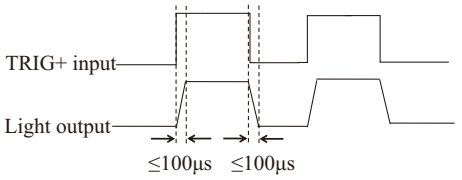
This controller has ON and OFF 2 kinds work modes, set via internal switch in the controller, can't be set by customer. Refer to below chart for details:

Work Mode	Description
ON	TRIG+ and TRIG- disconnected, the light is on; TRIG+ and TRIG- connected, the light is off.
OFF	TRIG+ and TRIG- disconnected, the light is off; TRIG+ and TRIG- connected, the light is on.

Trigger Sequence Chart

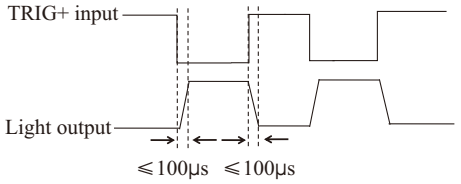
ON Mode

When connected to trigger signal, TRIG+ and TRIG- disconnected, the light is on; TRIG+ and TRIG- connected, the light is off.

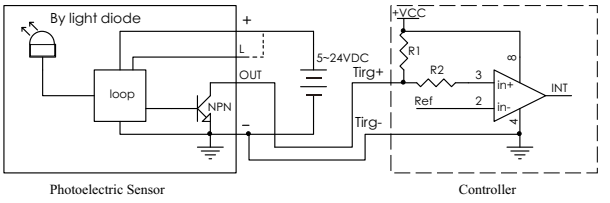


OFF Mode

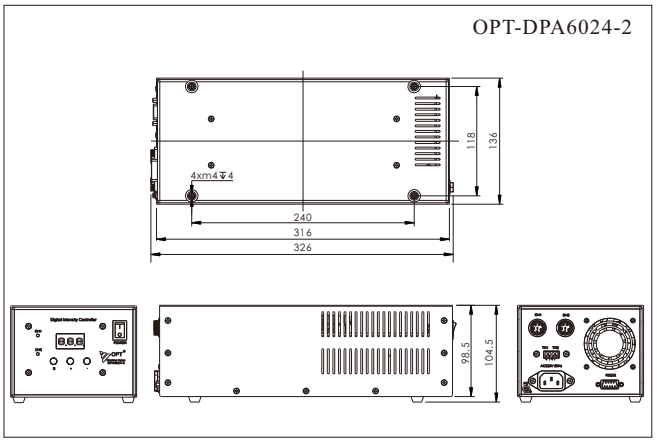
When connected to trigger signal, TRIG+ and TRIG- disconnected, the light is off; TRIG+ and TRIG- connected, the light is on.



Trigger Wiring Diagram



Dimensional Drawing [mm]



Digital Current Controller For Spot Light

Selection Guide

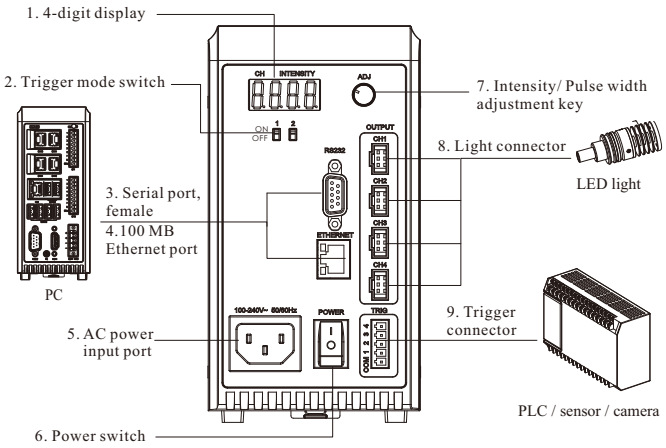
OPT - DPA 20 05 E - X

- X → Brand name
- DPA → Digital current controller
- 20 → Max output current: 2A
- 05 → Max output voltage: 5V
- E → Communication interface: Ethernet
- X → Channels

Product Features

1. Programmable trigger mode available, 32 steps at max; the trigger source, intensity and trigger pulse width of each step can be set
2. Autosense of rated current for LED light
3. Trigger response time ⩽ 20μs
4. Max trigger frequency upto 20KHz
5. Simultaneous communication of multiple channels available
6. Manual setting for max output current
7. 256 light intensity levels
8. Trigger signal input: connect an external signal source (e.g. a cameratrigger signal) to strobe the LED light, and extend life span of light
9. Support RS232 communication
10. Support 100M Ethernet communication
11. Temperature controlled fan, longer life span
12. Withstanding high voltage (AC1500V 1min, leak current<10mA)
13. High insulation resistance (DC500V >20MΩ)
14. Easy to install: screw and DIN rail mounting available.

Device Overview



No.	Item	Description
1	4-digit display	1st number indicates the channel, other 3 numbers show the value
2	Trigger mode switch	To change the trigger mode, refer to the manual for details
3	Serial port, female	RS232 communication interface with the PC
4	100 MB Ethernet port	Ethernet communication interface with the PC
5	AC power input	100 - 240 V AC, 50/60 Hz
6	Power switch	To turn the controller on/off
7	Intensity/ pulse width adjustment key	To adjust intensity or trigger pulse width. Press it, the chosen channel number twinkle on digit display; press it again will chose next channel. Rotate it in clockwise, the value increased; rotate it in anti-clockwise, the value decreased
8	Light connector	In total, four lights can be controlled individually
9	Trigger connector	For connection with an external trigger source

Trigger Mode Setting

Mode	Trigger mode switch 1	Trigger mode switch 2
Continuous on	ON	ON
Autosense for current once	ON	OFF
Normal trigger mode	OFF	ON
High power trigger mode	OFF	OFF

Parameters

Model	Parameters	Descriptions
Voltage input	AC100~240V	50/60Hz
Lighting mode	Continuous on / Strobe	Set via trigger mode switch or DEMO software
Autosense of rated current	For 10mA-2A 5V LED light	Autosense of rated current for LED light available via the DEMO software
Manual set for max outpu t current	10mA - 2A	Choose manual set via DEMO software
Intensity control	256 levels	Set via adjustment key or DEMO software
Short circuit protection	Yes	The related channel shuts down and “ER2” appears on the display
Over current protection	Yes	Once the current over 10% of set value the related channel shuts down and “ER1” appears on thedisplay

Model	Parameters	Descriptions
Normal trigger	256 intensitylevels	
High intensity trigger	2A output for single channel	
Unit of time	1μs/ 10μs/ 1ms/ 100ms	Set via DEMO software
Normal trigger pulse width	1μs~30s	Set via adjustment key or DEMO software
High intensity trigger pulse width	0.01~5.00ms	Set via adjustment key or DEMO software
Programmable trigger mode	Yes	Intensity, trigger pulse width, triggersource of each step can be set
Response time	≤20μs	
Trigger response frequency	20KHz	
Control of fan	Temperature	
Power output	10W/CH	4CH total output ≦ 30W; 8CH total output ≦ 50W
Communication	RS232 / Ethernet	
Standby power consumption	4CH: 8W	Input: 220V
	8CH: 9.2W	
Hi-Pot test	AC1500V 1Min	Leak current <10mA
Insulation resistance	DC500V	>20MΩ
Work temperature	-5℃~50℃	
Dimension (L×W×H)	4CH 91 x 132 x 171mm	Refer to drawing for details
	8CH 108 x 132.5 x 172.1mm	
Weight (kg)	4CH 1	
	8CH 1.3	

ERR Code Description

Code	ERR Reason	Display	Solution
Er0	no LED light connected	“Er0" on digit display	Connect LED light
Er1	over current protection	“Er1" on digit display	Remove ERR and reboot
Er2	short circuit protection	“Er2" on digit display	Remove ERR and reboot
Er3	over voltage protection	“Er3" on digit display	Remove ERR and reboot
Er4	hardware communication ERR	“Er4" on digit display	Return to OPT for repair
Er5	hardware communication ERR	“Er5" on digit display	Return to OPT for repair

Remark: “ ----”appears on the digit display during controller startup. And value will appear after startup finished

Trigger

DPA2005E has three kind trigger modes: normal trigger, high intensitytrigger, programmable trigger;
Four kind trigger polarities: rising edge trigger, falling edge trigger, real time positive trigger, real time negative trigger.
Default set is rising edge trigger

Trigger Mode	Trigger Polarity
Normal trigger	Rising edge trigger
	Falling edge trigger
	Real time positive trigger
	Real time negative trigger
High intensity trigger	Rising edge trigger
	Falling edge trigger
	Real time positive trigger
	Real time negative trigger
Programmable trigger	Rising edge trigger
	Falling edge trigger

Trigger Sequence Chart

Rising edge trigger
Illuminating time is equal to the set trigger pulse width.
Trigger pulse width set via DEMO or adjustment key.
Refer to Chart 1.1

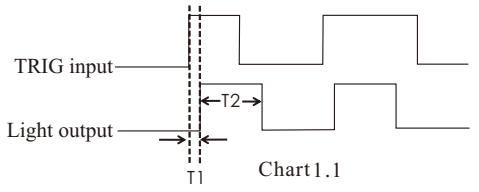


Chart 1.1

Falling edge trigger
Illuminating time is equal to the set trigger pulse width.
Trigger pulse width set via DEMO or adjustment key.
Refer to Chart 1.2

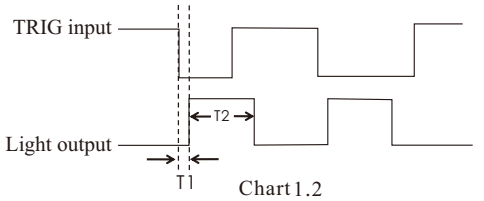


Chart 1.2

Real time positive trigger
When the trigger signal is high level, illuminating time is equal to pulse width of high level. Refer to Chart 1.3

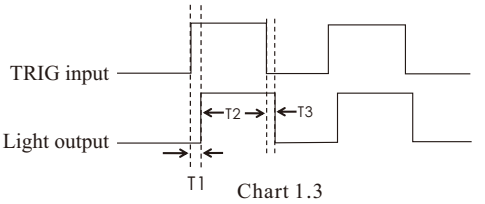


Chart 1.3

Real time negative trigger
When trigger signal is low level voltage, illuminating time is equal to low level pulse width. Refer to Chart 1.4

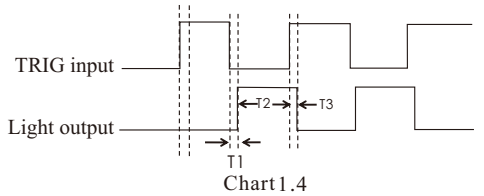


Chart 1.4

Remarks:
(1) T1: OFF to ON time; T2: Trigger pulse width; T3: ON to OFF time

Remarks:

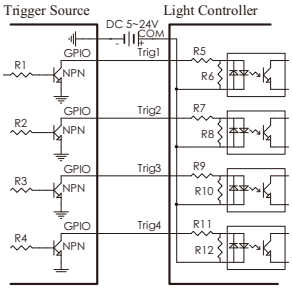
(1) T1: OFF to ON time; T2: Trigger pulse width; T3: ON to OFF time

(2) Normal trigger: T1≤20μs, T3≤10μs, T2 can set 1μs ~30s.

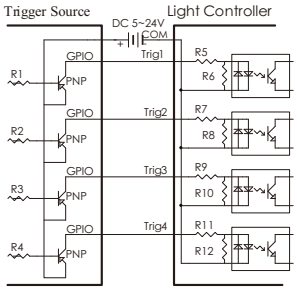
(3)High intensity trigger: T1≤20μs, T3≤10μs, T2 can \ set 0.01-5.00ms.

Trigger Wiring Diagram

4 trigger channels. "COM" is the common interface.Two -way optocoupler is inside. Input 0-2V is low level.
Input 5-24V is high level.
Default set is rising edge trigger. Wiring diagram as below

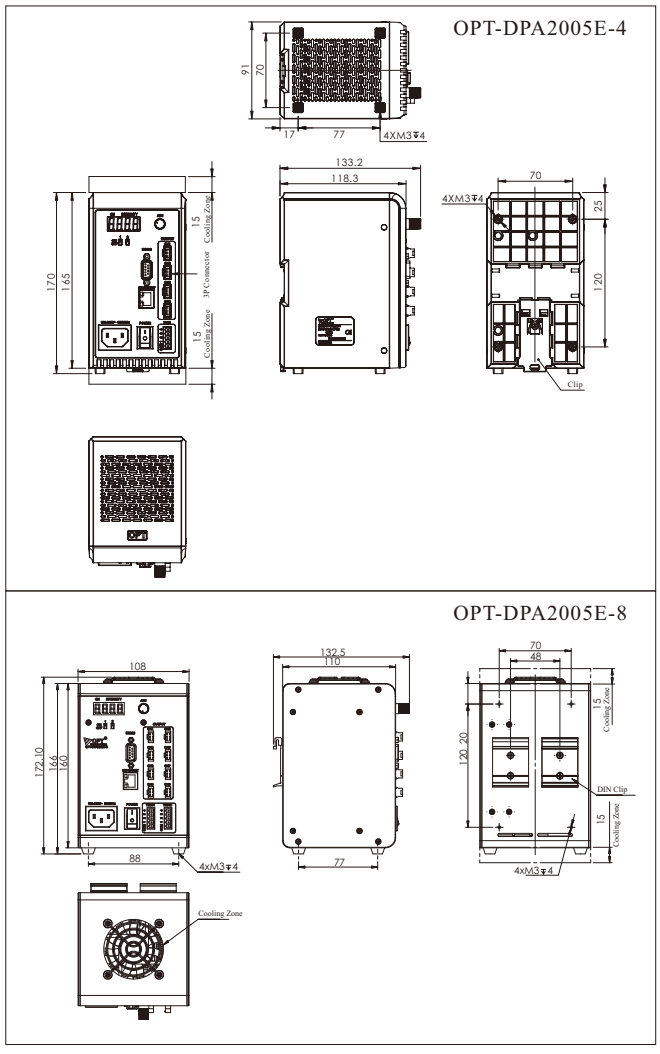


Trig Input Circuit for NPN Type Trigger



Trig Input Circuit for PNP Type Trigger

Dimensional Drawing [mm]



DPH Strobe Overdrive Digital Controller

Selection Guide

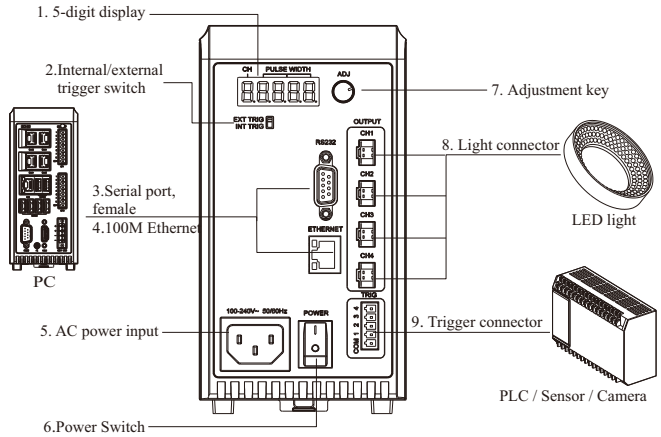
OPT - DPH 200 48 E - 4

- 4 → Channels
- E → Communication interface: Ethernet
- 48 → Output voltage: 48 V
- 200 → Max instant current: 20A
- DPH → Strobe overdrive digital controller
- OPT → Brand name

Product Features

1. Programmable trigger mode available, 32 steps at max; the trigger source, intensity and trigger pulse width of each step can be set
2. Instant overdrive the light, pulse width can set 1-1023μs
3. Short trigger response time (≤15μs)
4. Simultaneous communication of multiple channels available
5. Trigger signal input: connect an external signal source (e.g. a cameratrigger signal) to strobe the LED light, and extend life span of light
6. Internal self-trigger function, self-trigger cycle can set 15 to 1000 ms.
7. RS232 communication
8. 100M Ethernet communication
9. Trigger pulse width can be set
10. Temperature controlled fan, longer life span
11. Withstanding high voltage (AC1500V 1min, leak current <10mA)
12. High insulation resistance (DC500V >20MΩ)
13. Easy to install: screw and DIN rail mounting available.

Device Overview



No.	Item	Description
1	5-digit display	The 1st number indicates the channel and the others show the value
2	Internal/external trigger switch	INT TRIG : internal trigger EXT TRIG: external trigger
3	Serial port, female	Communicate to PC via RS232
4	100M Ethernet	Communicate to PC via Ethernet
5	AC power input	Input AC100-240V 50/60Hz
6	Power Switch	To turn the controller on/off
7	Adjustment key	To adjust value of the chosen channel. Press it, the chosen channel number twinkle on digit display; press it again will chose next channel.Rotate it in clockwise, the value increased; rotate it in anti-clockwise,the value decreased
8	Light connector	In total, four lights can be controlled individually
9	Trigger connector	For connection with an external trigger source

Internal / External Trigger Switch Setting

Switch Position	Mode
EXT TRIG	External trigger
INT TRIG	Internal trigger

Parameters

Item	Parameter	Description
Input voltage	AC100~240V	50/60Hz
Output voltage	48V	
Lighting mode	Strobe	
Internal trigger	Yes	Via Internal/external trigger switch
Internal trigger cycle	15-1000ms	Set via adjustment key or DEMO software, each channel can set in different value
External trigger	Level trigger	Default rising edge trigger
External trigger pulse width	1-1023μs	Set via adjustment key or DEMO software, each channel can set in different value
Programmable trigger	Yes	Pulse width and trigger source can set
Response time	⩽15μs	
Short circuit protection	Yes	The related channel shuts down and“ER2” appears on the display

Item	Parameter	Description
Max instant output current	20A/CH	
External trigger frequency	Can set in 1~900Hz	Default 40Hz
Communication	RS232 / Ethernet	
Standby power consumption	⩽3.4W	
Hi-Pot test	AC1500V 1min	Leak current <10mA
Insulation resistance	DC500V	>20MΩ
Work temperature	-5℃~50℃	
Size (L x W x H)	91 x 132.41 x 171mm	
Weight (kg)	1.1	

ERR Code Description

Code	ERR Reason	Display	Solution
Err2	short circuit protection	“Err2" on digit display	Remove ERR and reboot
Err4	hardware communication ERR	“Err4" on digit display	Return to OPT for repair
Err5	hardware communication ERR	“Err5" on digit display	Return to OPT for repair

Remark: “ ----”appears on the digit display during controller startup. And value will appear after startup finished

Trigger

DPH20048E has three kind trigger modes: internal trigger, external trigger, programmable trigger.
Two kind trigger polarities: rising edge trigger, falling edge trigger.
Default set is falling edge trigger.

Trigger Mode	Trigger Polarity	Description
Internal trigger	Auto trigger	Controller outputs the pulse width according to the set internal trigger cycle, no need externaltrigger signal
External trigger	Rising edge trigger	Single channel outputs 48V, trigger pulse width can set in 1-1023μs
	Falling edge trigger	
Programmable trigger	Rising edge trigger	Switch to programmable trigger mode via DEMO software; need to set trigger signal source and trigger pulse width in work flow table in advance
	Falling edge trigger	

Trigger Sequence Chart

Rising edge trigger
Illuminating time is equal to the set trigger pulse width.
Trigger pulse width set via DEMO or adjustment key.
Refer to Chart 1.1

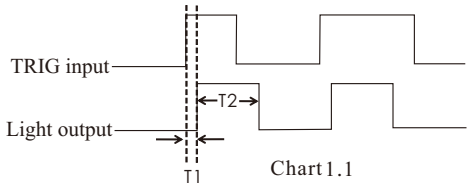


Chart 1.1

Falling edge trigger
Illuminating time is equal to the set trigger pulse width.
Trigger pulse width set via DEMO or adjustment key.
Refer to Chart 1.2

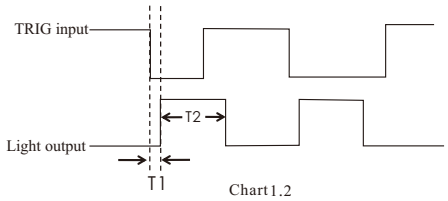
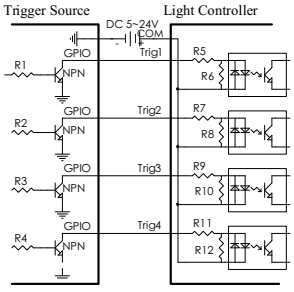


Chart 1.2

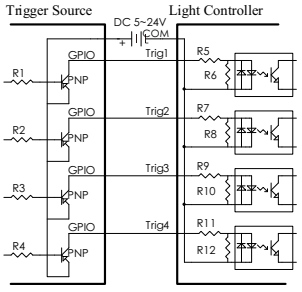
Note:
(1) T1 is OFF to ON response time, T2 is trigger pulse width
(2) T1⩽15μs, T2 can set in 1~1023μs

Trigger Wiring Diagram

4 trigger channels. "COM" is the common interface. Two-way optocoupler is inside. Input 0-2V is low level. Input 5-24V is high level. Default set is rising edge trigger. Wiring diagram as below

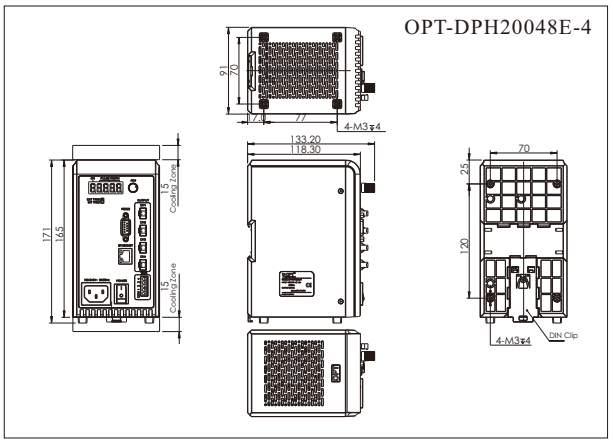


Trig Input Circuit for NPN Type Trigger



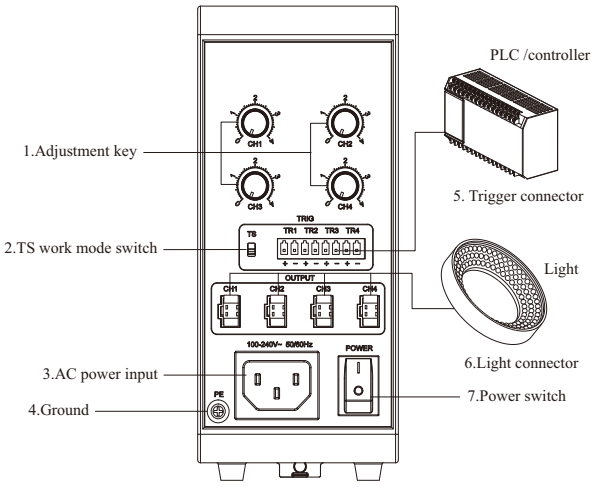
Trig Input Circuit for PNP Type Trigger

Dimensional Drawing [mm]



AP Analog Voltage Controller

Remark: above table is for AP1024F-4. Trigger connector and light connector quantity of AP1024F-1/2/3 are 1, 2, or 3 respectively



Selection Guide

OPT - AP 10 24 F - 4

- 4 → Channels
- F → Version
- 24 → Max output voltage 24V
- 10 → Max output current 1A
- AP → Analog voltage controller
- OPT → Brand name

Model	Channels	CompatibleLight
OPT-AP1024F-1	1	for 10mA - 1A 24 V lights
OPT-AP1024F-2	2	for 10mA - 1A 24 V lights
OPT-AP1024F-3	3	for 10mA - 1A 24 V lights
OPT-AP1024F-4	4	for 10mA - 1A 24 V lights

Product Features

1. Manual stepless intensity control.
2. Trigger signal input: connect an external signal source (e.g. a cameratrigger signal) to strobe the LED light, and extend life span of light
3. Easy to install: screw and DIN rail mounting available

Device Overview

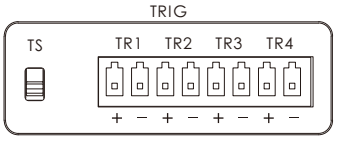
No	Item	Description
1	Adjustment key	One key per channel, clockwise rotation to increase intensity, anti-clockwise rotation to decrease intensity
2	TS work mode switch	To switch ON/OFF work mode: up - ON, down - OFF
3	AC power input	Input voltage 100 - 240 V AC, 50/60 Hz
4	Ground	Ground protection
5	Trigger connector	For connection with an external trigger source such as a PLC, sensor or camera
6	Light connector	For 24 V lights, rated current < 1A
7	Power switch	To turn the controller on/off

Parameters

Item	Parameter		Description
Input vlotage	AC100~240V		50/60Hz
Output voltage	Can set in14.0~24.0V (±0.2V)		continuous voltage change available
Lighting mode	Continuous on / Strobe		
Intensity control	Stepless		via adjustment key
Trigger input	Synchronous strobe with external signal		
Trigger way	Switching value (ON / OFF)		
Trigger depaly time	⩽80μs		
Trigger frequency	Max 1KHz		
ON/OFF mode switching	Support		Switching between ON and OFF trigger mode via TS trigger switch: up - ON, down - OFF
Output power	20W/CH		1CH / 2 CH total output ⩽ 30W 3 CH / 4 CH total output ⩽ 40W
Standby power consumption	AP1024F-1	<3.5W	test at 220V AC
	AP1024F-2	<3.6W	
	AP1024F-3	<4.5W	
	AP1024F-4	<5.0W	
Hi-Pot test	AC1500V 1min		Leak current < 10mA
Insulation resistance	DC500V		> 20MΩ
Work temperature	-5℃~50℃		
Size (L x W x H)	73.5 x 129.5 x 166mm		
Weight (kg)	AP1024F-1/2	0.6	
	AP1024F-3/4	0.7	

Trigger Connector

AP1024F-1/2/3/4 offer 1, 2, 3, or 4 channels respectively, each channel has "+" and "-" input ports. Please refer to drawing below for the trigger connector of AP1024F-4



Work Mode Setting

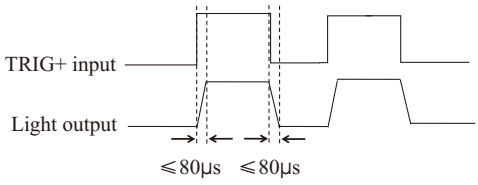
AP1024F controller has ON and OFF two work modes, set via TS work mode switch. Refer below table for details:

TS	Work Mode	Description
up	ON	TRIG+ and TRIG- disconnected, the light is on; TRIG+ and TRIG- connected, the light is off.
down	OFF	TRIG+ and TRIG- disconnected, the light is off; TRIG+ and TRIG- connected, the light is on.

Trigger Sequence Chart

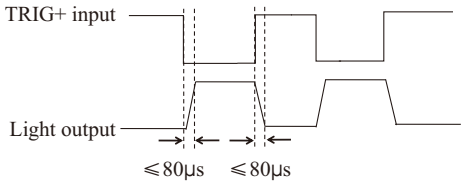
ON Mode

When connected to trigger signal, TRIG+ and TRIG- disconnected, the light is on; TRIG+ and TRIG- connected, the light is off.

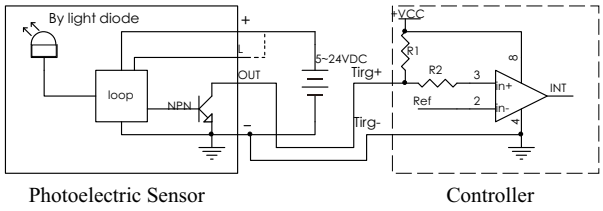


OFF Mode

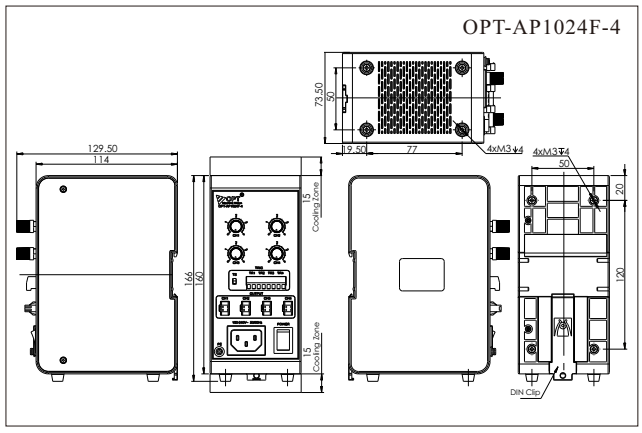
When connected to trigger signal, TRIG+ and TRIG- disconnected, the light is off; TRIG+ and TRIG- connected, the light is on.



Trigger Wiring Diagram

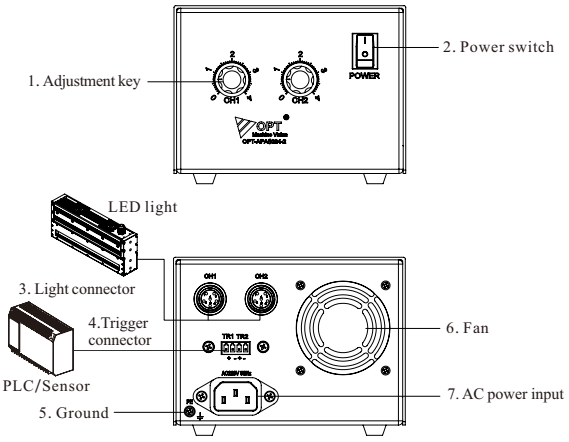


Dimensional Drawing [mm]



Note: The sizes of OPT-AP1024F-1/2/3/4 controllers are different

APA High Power Analog Current Controller



Selection Guide

OPT - APA 60 24 - 2

- 2 → Channels
- 24 → Max output voltage: 24V
- 60 → Max output current: 60~6A, 30~3A
- APA → Analog current controller
- OPT → Brand name

No.	Model	Channels	Compatible Light
1	APA6024-2	2	0.8~6A LED light with 6P connector
2	APA3024-2	2	0.8~3A LED light with 6P connector

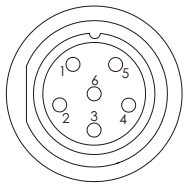
Product Features

1. Autosense for rated current of LED light
2. Stepless adjustment for output current
3. Trigger signal input: connect an external signal source (e.g. a cameratrigger signal) to strobe the LED light, and extend life span of light

Device Overview

No.	Item	Description
1	Adjustment key	One key per channel, clockwise rotation to increase intensity, anti-clockwise rotation to decrease intensity
2	Power switch	To turn the controller on/off
3	Light connector	For connection to LED light with 6P connector
4	Trigger connector	For connection with an external trigger source
5	Ground	Ground protection
6	Fan	For cooling of the device
7	AC power input	Input voltage AC100~120V or AC200~240V, switching via internal switch

Description of 6P Connector



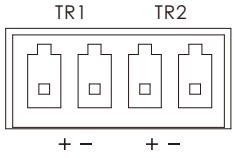
Pin	Pin Definition
1	Light+
2	Light-
3	Fan+
4	Fan-
5	Res
6	Res

Parameters

Item	Parameter		Description
Input voltage	AC100~120V or AC200~240V		Via internal switch
Lighting mode	Continuous on / Strobe		
Autosense of light rated current	APA3024 for 800mA~3A light APA6024 for 800mA~6A light		
Intensity control	Stepless		Via adjustment key
Trigger way	Switching value (ON/OFF)		
Trigger delay time	⩽100μs		
Trigger input	Synchronous strobe with external signal		
Trigger frequency	Max 1KHz		
Channels	2CH		
Output power	APA3024-2	72W/1CH	
		144W/2CH	
	APA6024-2	144W/1CH	
		288W/2CH	
Hi-Pot test	AC1500V 1min		Leak current <10mA
Insulation resistance	DC500V		>20MΩ
Work temperature	-5~50℃		
Standby power consumption	⩽11W		
Size(L x W x H)	APA3024-2	136 x 270.5 x 104.5mm	
	APA6024-2	136 x 305.8 x 104.5mm	
Weight (kg)	APA3024-2	1.8	
	APA6024-2	2.1	

Trigger Connector

OPT-APA6024-2 has two channels. Each channel has "+" and "-" input ports. Please refer to drawing of trigger connector as below:



Work Mode Setting

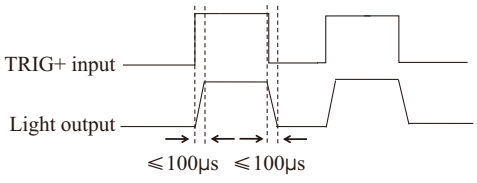
APA6024-2 controller has ON and OFF two work modes, set via internal switch in controller. Users can not set by themselves. Refer below table for details:

TS	Work Mode	Description
up	ON	TRIG+ and TRIG- disconnected, the light is on; TRIG+ and TRIG- connected, the light is off.
down	OFF	TRIG+ and TRIG- disconnected, the light is off; TRIG+ and TRIG- connected, the light is on.

Sequence Chart

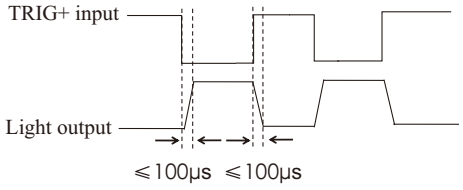
ON Mode

When connected to trigger signal, TRIG+ and TRIG- disconnected, the light is on; TRIG+ and TRIG- connected, the light is off.

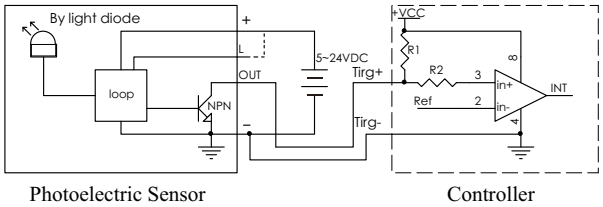


OFF Mode

When connected to trigger signal, TRIG+ and TRIG- disconnected, the light is off; TRIG+ and TRIG- connected, the light is on.

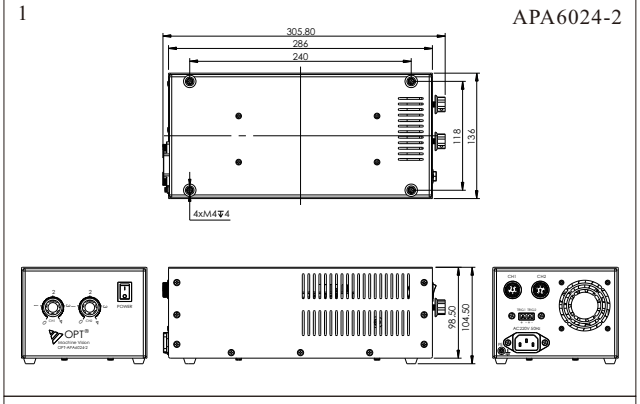


Trigger Wiring Diagram

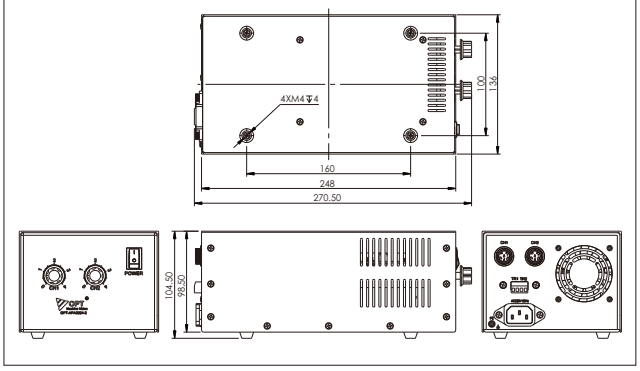


Dimensional Drawings [mm]

1 APA6024-2

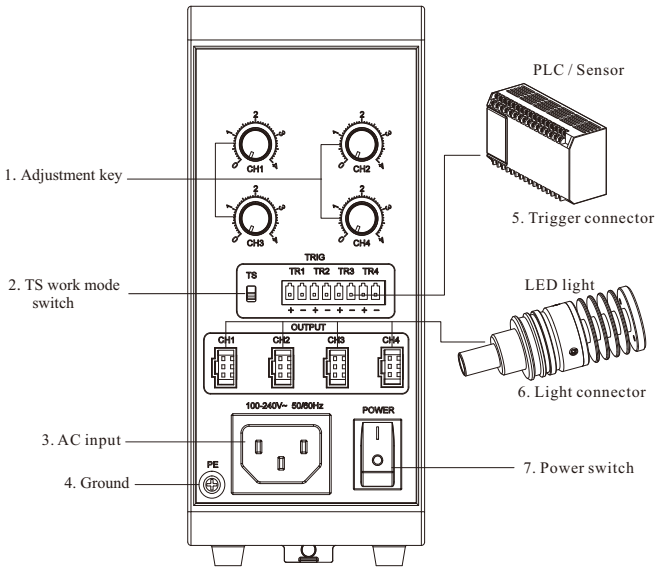


2 APA3024-2



Analog Current Controller For Spot Light

Remark: Above data is for APA0705F-4. For APA0705F-1/2/3, the quantity of intensity adjustment keys, external trigger connectors and light connectors are 1, 2,3 respectively.



Selection Guide

OPT - APA 0705 F - 4

- 4 → Channels
- F → Version
- 0705 → Max output voltage: 5V; Max output current: 0.7A
- APA → Analog current controller
- OPT → Brand name

Model	Channels	Compatible Light
OPT-APA0705F-1	1	0.7A/5V LED light
OPT-APA0705F-2	2	0.7A/5V LED light
OPT-APA0705F-3	3	0.7A/5V LED light
OPT-APA0705F-4	4	0.7A/5V LED light

Product Features

1. Manual stepless intensity control
2. Trigger signal input: connect an external signal source (e.g. a cameratrigger signal) for synchronized strobing of the illumination device
3. Easy to install: screw and DIN rail mounting available

Device Overview

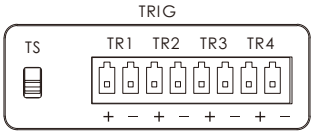
No	Item	Description
1	Adjustment key	One key per channel; Rotate it in clockwise, the intensity increase; rotate it anti-clockwise, the intensity decrease
2	TS work mode switch	To switch between "ON" and "OFF" trigger mode
3	AC power input	100 - 240 V AC, 50/60 Hz
4	Ground	Ground protection
5	Trigger connector	For connection with an external trigger source
6	Light connector	For 0.7A/5V LED light
7	Power	To turn the controller on/off

Parameters

Item	Parameter		Description
Input voltage	AC100~240V		50/60Hz
Output current	0~0.7A		Continuous adjustment
Lighting mode	Continuous ON / Strobe		
Intensity control	Stepless		Via intensity adjustment key
External trigger	Synchronized strobe with external trigger signal		
Trigger way	Switching value (ON / OFF)		
Trigger delay time	⩽80μs		
External trigger frequency	Max 1 kHz		
ON/OFF mode switching	Support		Via the TS switch to change the mode between ON and OFF
Output power	3.5W/CH		
Standby power consumption	APA0705F-1	<3.5W	input 220V AC
	APA0705F-2	<3.6W	
	APA0705F-3	<4.0W	
	APA0705F-4	<4.5W	
Hi-Pot test	AC1500V 1min		Leak current <10mA
Insulation resistance	DC500V		>20MΩ
Working temp.	-5℃~50℃		
Size (L x W x H)	73.5 x 129.5 x 166mm		
Weight (kg)	APA0705F-1/2	0.7	
	APA0705F-3/4	0.7	

Trigger Connector

APA0705F-1/2/3/4 has 1, 2, 3, or 4 channels. Each channel has two pins as input: “+” and “-”. Below drawing is the trigger connector of APA0705F-4 .



Work Mode Set

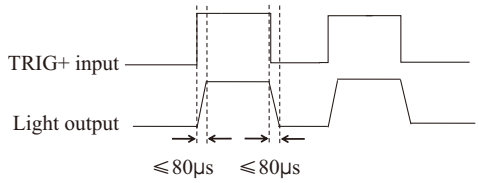
Analog controller has ON and OFF two work modes, can switch via TS work mode switch. Please refer to the table below for details:

TS Switch	Work Mode	Description
Up	ON	TRIG+ and TRIG- disconnected, the light is on; TRIG+ and TRIG- connected, the light is off.
Down	OFF	TRIG+ and TRIG- disconnected, the light off; TRIG+ and TRIG- connected, the light is on.

Trigger Sequence Chart

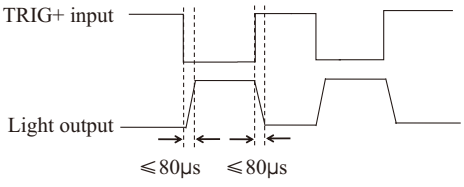
ON Mode:

When connected to external trigger signal, if TRIG + and TRIG - disconnected, the light is on; if TRIG + and TRIG - connected,the light is off.

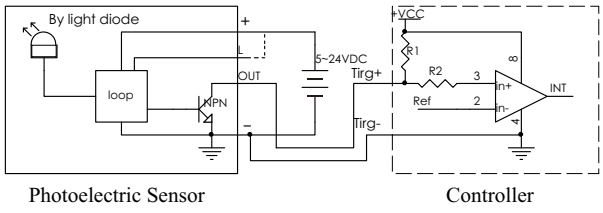


OFF Mode:

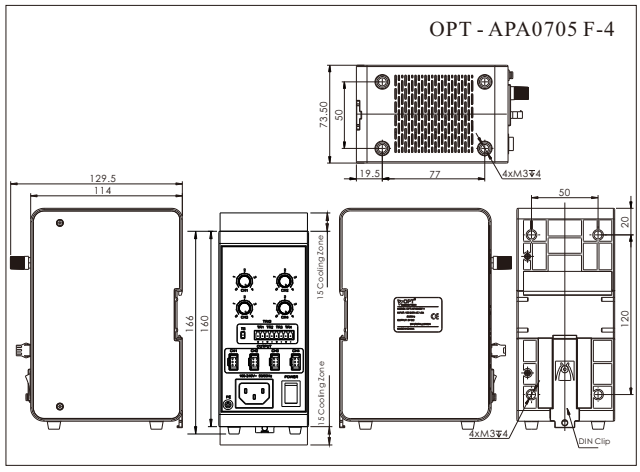
When connected to external trigger signal, if TRIG + and TRIG - disconnected, the light is off; if TRIG + and TRIG - connected, the light is on



Trigger Wiring Diagram



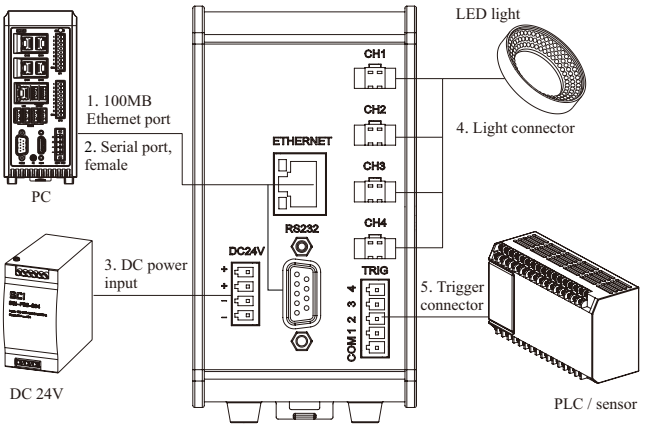
Dimensional Drawing [mm]



Note: The sizes of APA0705F-1/2/3/4 controllers are the same

DPM Mini Digital Current Controller

Device Overview



No.	Item	Description
1	100 MB Ethernet port	Ethernet communication interface with the PC
2	Serial port, female	RS232 communication interface with the PC
3	DC power input	For 20 - 24 V DC power input
4	Light connector	In total, four lights can be controlled individually
5	Trigger connector	For connection with an external trigger source such as a PLC, sensor or camera; output pulse width can be adjusted

Selection Guide

OPT - DPM 05 24 E - 4

- 4 → Channels
- E → Version
- 24 → Max output voltage: 24V
- 05 → Max output current: 0.5A
- DPM → Mini digital current controller (EMM0524E is the extension module)
- OPT → Brand name

Product Features

1. Can extend up to 16 channels via adding EMM0524 extension module
2. Input voltage DC20~24V, convenient to use DC power on the machine
3. Compact size
4. Autosense of the rated current for LED light
5. Manual set for the max output current
6. Support 100M Ethernet communication
7. Simultaneous communication of multiple channels available
8. Trigger pulse width can set
9. Trigger signal input: connect an external signal source (e.g. a camera trigger signal) to strobe the LED light, and extend life span of light
10. 256 light intensity levels
11. Support RS232 communication
12. Easy to install: screw and DIN rail mounting available.

Parameters

Item	Parameter	Description
Input voltage	DC20~24V	
Lighting mode	Continuous on / Strobe	Set via DEMO software
Autosense of rated current	For 10mA~0.5A 24V LED light	Set via DEMO software
Manual set for max output current	can set in 10mA~0.5A	Choose manual set max output currentvia DEMO software
Short circuit protection	Yes	The related channel shuts down and "ER2" appears on the display, need to remove ERR and reboot
Over current protection	Yes	Once the current over 10% of set value the related channel shuts down and "ER1" appears on the display
Normal trigger	256 intensity levels	
High intensity trigger	Output 1A for single channel	
Normal trigger pulse width	1~999ms	Set via DEMO software
High intensity trigger pulse width	0.01~5.00ms	Set via DEMO software
Output power	12W/CH 48W/4CH Total: 100W	Only for 24V 10mA~0.5A LED light
Communication	RS232 / Ethernet	
Standby power consumption	<3W	
Work temperature	-5℃~50℃	
Size (L x W x H)	59x 69 x 110mm	
Weight (kg)	0.4	

Trigger

DPM0524E has two trigger modes: normal trigger, high intensity trigger; Four kind trigger polarities: rising edge trigger, falling edge trigger, real time positive trigger, real time negative trigger. Default set is rising edge trigger

Trigger Mode	Trigger Polarity
Normal trigger	Rising edge trigger
	Falling edge trigger
	Real time positive trigger
	Real time negative trigger
High intensity trigger	Rising edge trigger
	Falling edge trigger
	Real time positive trigger
	Real time negative trigger

Trigger Sequence Chart

Rising edge trigger

Illuminating time is equal to the set trigger pulse width. Trigger pulse width set via DEMO or adjustment key. Refer to Chart 1.1

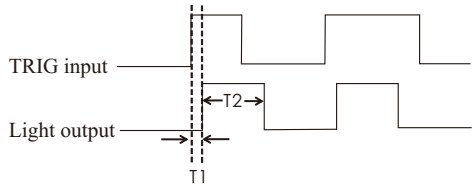


Chart 1.1

Falling edge trigger

Illuminating time is equal to the set trigger pulse width. Trigger pulse width set via DEMO or adjustment key. Refer to Chart 1.2

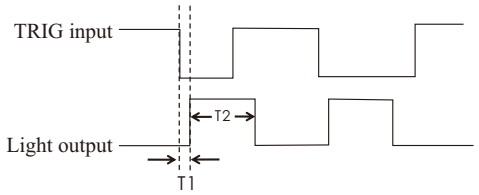


Chart 1.2

Real time positive trigger

When the trigger signal is high level, illuminating time is equal to pulse width of high level. Refer to Chart 1.3

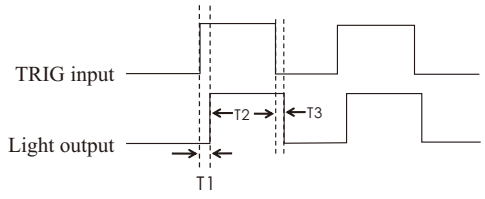


Chart 1.3

Real time negative trigger

When trigger signal is low level voltage, illuminating time is equal to low level pulse width. Refer to Chart 1.4

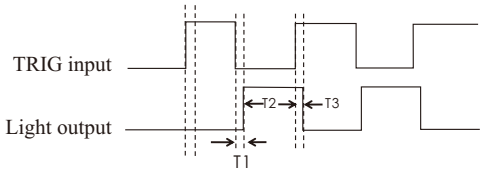


Chart 1.4

Note:

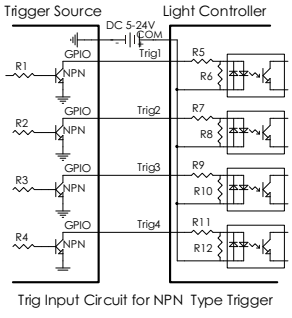
(1) T1: OFF to ON time; T2: Trigger pulse width; T3: ON to OFF time

(2) Normal trigger: T1≤80μs, T3≤10μs, T2 can set 1~999ms.

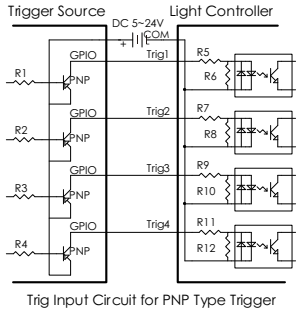
(3)High intensity trigger: T1≤80μs, T3≤10μs, T2 can set 0.01-5.00ms.

Trigger Wiring Diagram

Four trigger channels. "COM" is the common interface. Two-way optocoupler is inside. Input 0-2V is low level. Input 5-24V is high level. Default set is rising edge trigger. Wiring diagram as below:

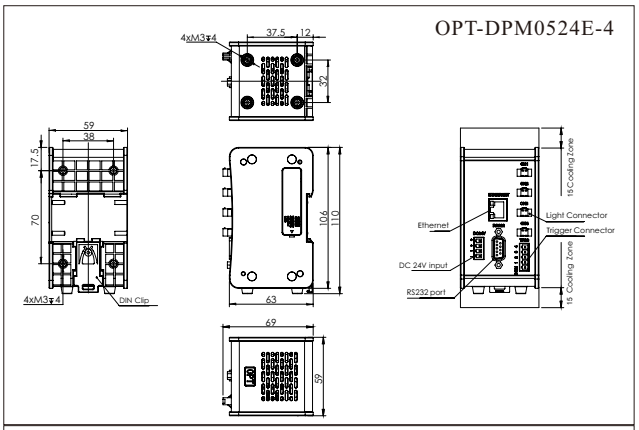


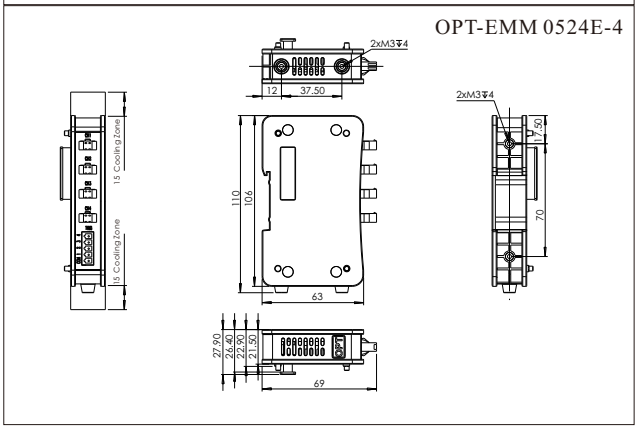
Trig Input Circuit for NPN Type Trigger



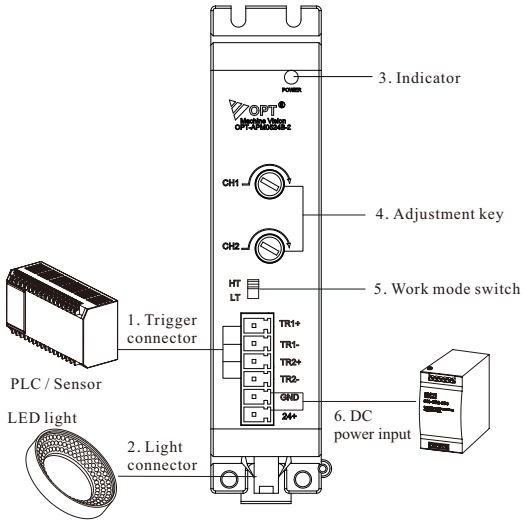
Trig Input Circuit for PNP Type Trigger

Dimensional Drawings [mm]





APM Mini Analog Voltage Controller



Selection Guide

OPT - APM 05 24 B - 2

- Channels
- Version
- Max output voltage 24V
- Max output current 0.5A
- Analog voltage controller
- Brand name

Product Features

1. Compact size
2. Input voltage DC20~24V, convenient to use DC power on the machine
3. Stepless light intensity control
4. Manual control: can adjust the light intensity manually
5. Easy to install: screw and DIN rail mounting available.
6. Trigger signal input: connect an external signal source (e.g. a cameratrigger signal) to strobe the LED light, and extend life span of light

Device Overview

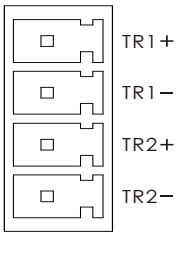
No	Item	Description
1	Trigger connnector	For connection with an external trigger source
2	Light connector	Output DC14~24V
3	Indicator	Indicates the power status: ON or OFF
4	Adjustment key	To adjust light intensity, one key per channel
5	Work mode switch	HT: ON mode LT: OFF mode
6	Dc power input	Input DC20~24V

Parameters

Item	Parameter	Description
Input voltage	DC20~24V	
Output voltage	14.0~24.0V (±0.2V)	Continuous adjustment
Lighting mode	Continuous on / Strobe	
Intensity control	Stepless	Adjust via adjustment key
Power polarity reverse protection	Yes	The input polarity reverse will not cause controller damaged
Trigger input	Synchronized strobe with external trigger signal	
Trigger delay time	⩽80μs	
Trigger frequency	Max 1KHz	
Trigger way	Switching value (ON/OFF)	
ON/OFF mode switching	Support	Set via work mode switch
Output power	12W/CH	2CH total output ⩽ 24W
Standby power consumption	⩽3W	
Work temperature	-5℃~50℃	
Size (L x W x H)	24 x 63 x 106mm	
Weight (kg)	0.1	

Trigger Connector

APM0524B has two trigger channels. Each channel has "+" and "-" input ports. Please refer to drawing of trigger connector as below:



Work Mode Setting

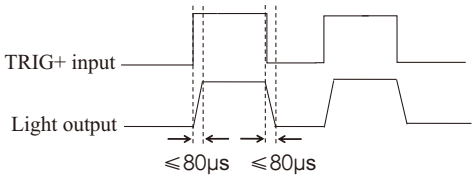
APM0524B controller has ON and OFF two work modes, can switch via work mode switch. Please refer to the table below for details:

Work Mode Switch	Work Mode	Description
HT	ON	TRIG+ and TRIG- disconnected, the light is on; TRIG+ and TRIG- connected, the light is off.
LT	OFF	TRIG+ and TRIG- disconnected, the light is off; TRIG+ and TRIG- connected, the light is on.

Trigger Sequence Chart

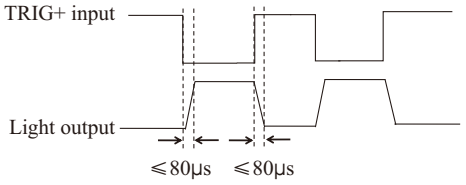
ON Mode

When connected to trigger signal, TRIG+ and TRIG- disconnected, the light is on; TRIG+ and TRIG- connected, the light is off.

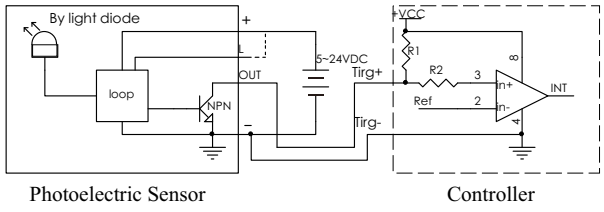


OFF Mode

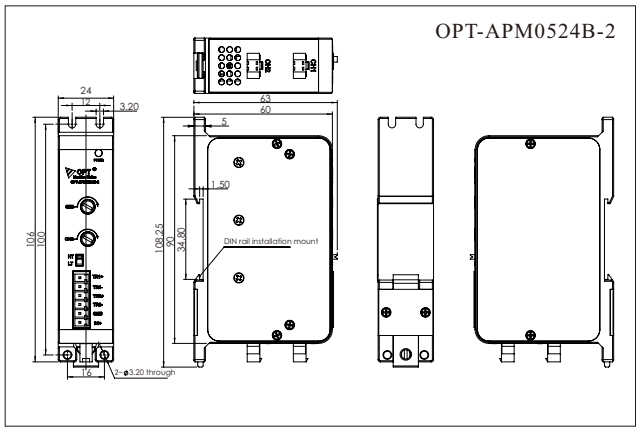
When connected to trigger signal, TRIG+ and TRIG- disconnected, the light is off; TRIG+ and TRIG- connected, the light is on.



Trigger Wiring Diagram



Dimensional Drawing [mm]



SPM Mini Strobe Controller

No.	Interface	Description
1	Input port	Including power input and trigger signal input port; See “Connection” section for details
2	Light connector	JST SMP-02V-B 2 Pin
3	10 DIP switch S2	Pulse width setting; See “Trigger Pulse Width Setting” for details
4	4 DIP switch S1	Trigger mode switching; See “Trigger Polarities Setting” for details

Input connection

Input port is comprised by 4 color wires: white, brown, green, yellow. White and brown wires are for connection with the power supply; Green and yellow wires are for connection with input trigger signal. Optical coupler isolation is inside; input voltage 0~2V is low level; input voltage 5~24V is high level.

Wire Colour	Connection Ways
White	Power+
Brown	Power-
Green	Trigger+
Yellow	Trigger-

Selection Guide

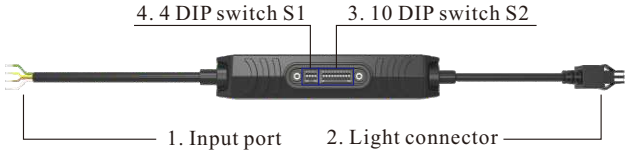
OPT - SPM 20 24 - 1

- Channels
- Output voltage: 12~48V
- Maximum output current: 2A
- Mini strobe controller
- Brand name

Product Features

1. Small size, easy for operation
2. High trigger frequency: up to 50KHz at max
3. Short trigger response time: 10μs
4. 6 trigger polarities available, adaptable for various work environment
5. Input voltage range from 12V DC to 48V DC, easy to use the DC power supply on the machine, and lights can be overdriven to increase intensity
6. Wide trigger pulse width range: 10μs ~1023ms

Device Overview



Parameters

Item	Parameter	Description
Input voltage	DC 12 ~ 48V	
Output voltage	$V_{in} = V_o - I \times R$	V_{in}=input voltage, V_o=output voltage, I=work current of light; R=controller resistance
Lighting mode	Strobe	
Power polarity reverse protection	Yes	The input polarity reverse will not cause controller damaged
Trigger input	Yes	
Trigger frequency	Max 50KHz	
Trigger polarities	Rising edge trigger; Falling edge trigger; Real time positive trigger; Real time negative trigger; Time limited positive trigger; Time limited negative trigger	Set via DIP switch S1
Trigger pulse width	10μs~1023ms	set via DIP switch S1
Trigger level	Low level 0~2V; high level5~24V	
Trigger response time	⩽10μs	
Output current	Max constant output current: 2A Max instant output current: 4A	Input I_a - Output I_a > 0.5A (must obeyed, Ia=average current)
Standby power consumption	⩽1W	
Work Temperature	-5℃ ~50℃	
Size(L x W x H)	102.0 x 22.0 x 19.8mm	
Weight (kg)	0.1	

Trigger Sequence Chart

Rising edge trigger

Illuminating time is equal to set trigger pulse width. Trigger pulse width set via DIP switch. Refer to Chart 1.1, T1 is OFF to ON time; T2 is trigger pulse width; T1⩽10μs, T2 can set 10μs ~1023ms.

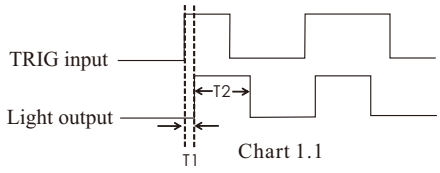


Chart 1.1

Falling edge trigger

Illuminating time is equal to set trigger pulse width. Trigger pulse width set via DIP switch. Refer to Chart 1.2, T1 is OFF to ON time; T2 is trigger pulse width; T1⩽10μs, T2 can set 10μs ~1023ms.

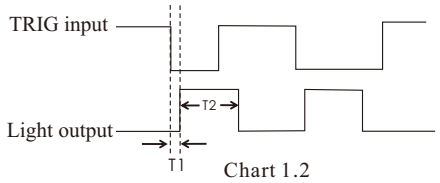


Chart 1.2

Real time positive trigger

When the trigger signal is high level, illuminating time is equal to pulse width of high level. Refer to Chart 1.3: T1 is OFF to ON time; T2 is trigger pulse width; T3 is ON to OFF time. T1⩽10μs, T2= pulse width of high level, T3⩽10μs.

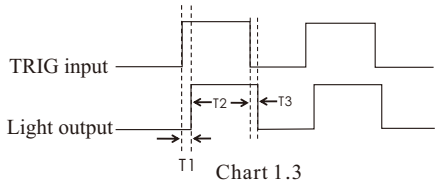


Chart 1.3

Real time negative trigger

When trigger signal is low level, illuminating time is equal to pulse width of low level. Refer to Chart 1.4: T1 is OFF to ON time; T2 is trigger pulse width; T3 is ON to OFF time. T1⩽10μs, T2 can set in pulse width of low level, T3⩽10μs.

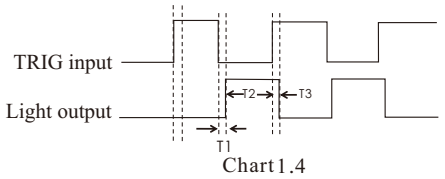


Chart 1.4

Time limited positive trigger

(1)When trigger signal is high level, if high level pulse width less than the set trigger pulse width, illuminating time will be equal to high level pulse width . Refer to Chart 1.5: T1 is OFF to ON time; T2 is trigger pulse width; T3 is ON to OFF time. T1⩽10μs, T2 can set in pulse width of high level, T3⩽10μs.

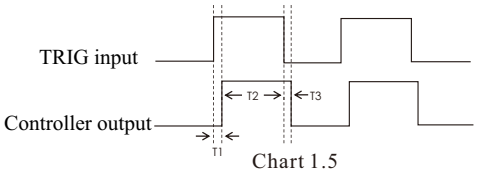


Chart 1.5

(2)When trigger signal is high level, if high level pulse width bigger or equal to the set trigger pulse width, illuminating time will be equal to the set pulse width . Refer to Chart 1.6: T1 is OFF to ON time; T2 is trigger pulse width. T1⩽10μs, T2 can set 10μs~1023ms.

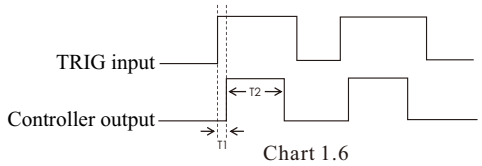


Chart 1.6

Time limited negative trigger

(1)When trigger signal is low level, if low level pulse width less than the set trigger pulse width, illuminating time will be equal to low level pulse width . Refer to Chart 1.7: T1 is OFF to ON time; T2 is trigger pulse width; T3 is ON to OFF time. T1⩽10μs, T2 can set in pulse width of low level, T3⩽10μs.

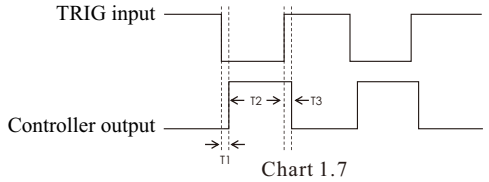


Chart 1.7

(2)When trigger signal is low level, if low level pulse width bigger or equal to the set trigger pulse width, illuminating time will be equal to the set pulse width . Refer to Chart 1.8: T1 is OFF to ON time; T2 is trigger pulse width. T1⩽10μs, T2 can set 10μs~1023ms.

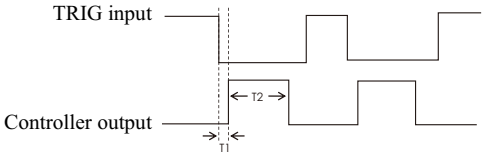


Chart 1.8

Trigger Polarities Setting

Trigger Polarities	S1.3	S1.2	S1.1
Rising edge trigger	OFF	OFF	X
Falling edge trigger	OFF	ON	OFF
Real time positive trigger	OFF	ON	ON
Real time negative trigger	ON	OFF	OFF
Time limited positive trigger	ON	OFF	ON
Time limited negative trigger	ON	ON	X

Note:

(1) Sx.x indicates the No. of the corresponded switch, such as S1.1, which represents the first bit of the switch S1, and S1.2 indicates the second bit of the switch S1,... And so on;

(2) ON means the switch is on, OFF indicates the switch is off, and X indicates the switch is on or off.

Trigger Pulse Width Setting

1. Switch

Switch	S1.4
1~1023ms	OFF
10~1023μs	ON

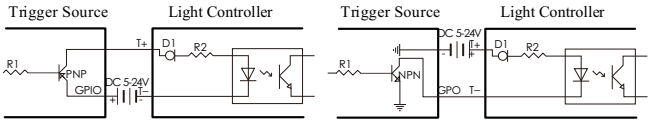
Note:
When the fourth bit of S1 switch is ON, the switch S2 is 10-1023us
When the fourth bit of S1 switch is OFF, the switch S2 is 1-1023ms

2. Value

S2.10	S2.9	S2.8	S2.7	S2.6	S2.5	S2.4	S2.3	S2.2	S2.1	Value
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	1
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	1
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	2
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	3
OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	4
…	…	…	…	…	…	…	…	…	…	…
ON	ON	ON	ON	ON	ON	ON	OFF	ON	ON	1019
ON	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	1020
ON	ON	ON	ON	ON	ON	ON	ON	OFF	ON	1021
ON	ON	ON	ON	ON	ON	ON	ON	ON	OFF	1022
ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	1023

Note: When the switch is 10~1023μs, when the set value is less than or equal to 10, the trigger pulse width is 10us.

Trigger Wiring Diagram



Trig Input Circuit for PNP Type Trigger

Trig Input Circuit for NPN Type Trigger

Dimensional Drawing [mm]