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OPT Machine Vision Tech Co., Ltd.

OPT Machine Vision (2022~2023 Rev1.0)

SSE: 688686

OPT®
Machine Vision



OPT Machine Vision

2022~2023 Rev1.0



Do One Thing and Do It Well!

OPT is a machine vision components and software supplier for factory automation. It has quickly developed to become a leader in the machine vision industry. OPT's products and solutions have reached more than 20 countries and regions, with more than 30 branches and distributors worldwide, serving more than 15000 customers. Many of these customers are Fortune 500 companies. They trust in OPT to help design and develop unique solutions to complex problems.

OPT currently has more than 2000 employees, of which more than half are technicians: over 1410 R&D and other technical personnel.

OPT products include vision system, light source, industrial camera, lens, 3D laser sensor, barcode reader, etc.

The vision system includes SciVision SDK, SCI-Smart3 machine vision software and vision controllers.

The machine vision light sources consist of 41 standard series including nearly 1000 standard models and customized series with over 30000 customized designs and solutions. OPT can deliver a customized light in as fast as 3 working days.

The industrial cameras can be mainly divided into area scan cameras which include global shutter and rolling shutter with resolution ranging from 0.3MP to 150MP, and line scan cameras which are compatible with GigE Vision protocol, USB3 Vision protocol, Camera Link protocol, CoaXPress protocol and GenlCam standard with resolution ranging from 2K to 16K.

The lenses include Coloretto/Hawk/Grampus series line scan lenses, 29MP/78MP/151MP/Cobra series/Dolphin 20MP series/10MP/5MP/2MP series fixed focal length lenses, variable magnification lenses, telecentric lenses, etc.

The 3D laser sensors include ultra high speed series, high precision series and cost-effective series.

The barcode readers are composed of manually focusing series and automatically focusing series, with resolution ranging from 0.4MP to 12MP, applying encoding algorithm of deep learning to realize multi-core data processing for ultra high reading speed.

Our goal is to be a global first-class machine vision enterprise;
And to create a platform for our staffs to succeed with self-value.

OPT's Advantages

Service

Over 230 sales staff

Over 180 imaging engineers

Over 1000 software application engineers

Professional technical service for full machine vision development cycle

Technology

Several PhDs with over 10-year experience

Over 250 patents and Over 70 software copyrights

Over 50,000 applications in 100 industries

Over 30,000 custom solutions

Flexibility

On-site technical support for 24hrs×7days

Delivery within a day for standard products

Delivery within 3 working days for customized products

Stocking according to forecast to shorten lead time

OPT's History

2021: Take the lead in undertaking the R&D plan in key areas of Guangdong Province "micron-scale real-time visual inspection technology research and system development"
Awarded the "Guangdong Province Enterprise Technology Center"
2020: Listed on SSE STAR MARKET (Sci-Tech Innovation Board)
Approved as the National Postdoctoral Research Workstation and Guangdong Doctoral Workstation
Guangdong OPT Machine Vision Engineering and Technological Research Center
2019: Awarded as 2019 National Intellectual Property Advantage Enterprise
2019 Dongguan Honorary Pilot Enterprise of Multiplication Plan -Early Completion
2018: Established Shenzhen R&D center
Founded the subsidiary: OPT Machine Vision Tech (Suzhou) Limited
Gained GB/T29490-2013 intellectual property management system certification
2017: Selected as "a pilot enterprise for the scale and benefit multiplication plan of key enterprises in Dongguan"
2016: Completed the shareholding system reform and officially changed the name to "OPT Machine Vision Tech Co., Ltd."
2015: Launched SCI-Q2 Vision Controller
Launched high-power UV curing lights of spot, line scan and area scan types
2014: Moved to the current location and scaled development
Established the lens division for the development and production of machine vision lenses
2013: Obtained ISO9001:2008 certificate
2012: Launched patented SciVision SDK and SCI-Smart Machine Vision Software
Launched waterproof lights
2011: Comprehensive product upgrade; standard lights expanded to 25 series
2010: Attended the trade show in machine vision industry at Stuttgart
2009: Become complete imaging solutions provider in machine vision industry
Named as "National High-tech Enterprise"
2008: Gained RoHS and CE certifications
Launched the light controller with auto load detection technology
2007: Named as "Guangdong Technology Private Enterprise"
2006: OPT founded

Global Service Network


OPT Headquarters


OPT Suzhou Subsidiary


OPT Taiwan Office


OPT Malaysia Office


OPT Europe R&D Center


OPT Southwest Office


OPT Hong Kong Subsidiary


OPT USA Office


OPT Germany Subsidiary


OPT Middle China Office


OPT Shenzhen R&D Center


OPT Ningde Subsidiary

Service Network in China

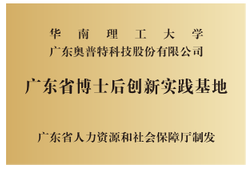


OPT's Recognitions and Awards

- Over 250 patents and over 70 software copyrights
- Famous Trademark of Guangdong Province
- National High-tech Enterprise
- More than 30 subsidiaries and distributors worldwide
- RoHS/CE certifications
- Intellectual property management system certification
- ISO14001
- ISO9001:2015
- China Machine Vision Association Membership
- AIA Membership
- EMVA Membership
- PI-China Membership



PhD Research Workstation



Postdoctoral Innovation Practice Base in Guangdong Province



PhD Workstation in Guangdong Province



Guangdong OPT Machine Vision Engineering Technology Research Center



National Intellectual Property Advantage Enterprise



High-tech Enterprise



Machine Vision Joint Laboratory



Member Unit of Machine Vision Industry Alliance



Certificate of Conformity



Certification of Product Declarations



Quality Management System Certificate



Environmental Management System Certificate



Computer Software Copyright Registration Certificate



Patent Certificate



Patent Certificate



Patent Certificate

Customer[1]

- Over 15,000 customers trust and support our products and services.
- The product quality has been verified by more than 50,000 applications.
- The above data is continuously updated.

[1] OPT's direct and indirect customers are listed as below.
Each brand belongs to its legal owner.
Listed in no particular order.

TESLA | BMW | VW | BYD | 广汽 HONDA
HUAWEI | vivo | oppo | FOXCONN | JABIL
flex | PEGATRON 和碩聯合科技 | 仁寶電腦 COMPAL | Quanta Computer | 大族激光 HAN'S LASER
CATL | ATL | LUXSHARE ICT | TE connectivity | Shinco 新科GPS
NXP | LENS | BOE | BIEL |
| 北京大学 PEKING UNIVERSITY | 清华大学 | 华南理工大学 | 同济大学 TONGJI UNIVERSITY
GREE 格力 | 美的 Midea | CETC | manz passion for efficiency | GRENZEBACH

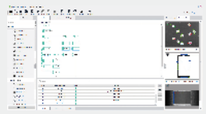
Machine Vision System

SciVision SDK P15



Highly integrated algorithm tools; support multiple programming languages; shorten the development cycle

SCI-Smart3 Machine Vision Software P19



Graphical editing; easy to operate; quickly build visual applications

SCI Vision Hardware P25



Specially designed for machine vision; passed strict tests; stable performance

SCI-Q2 Vision Controller P26



Supports several PoE GigE cameras capturing images simultaneously; high-performance multi-core CPU

SCI-Q2C Vision Controller P27



High performance and stability design, suitable for complicated applications

SCI-EVC2 Vision Controller P28



High performance, low power consumption; multiple interfaces for devices connections

Industrial Barcode Reader

SCI Standard Accessory P29



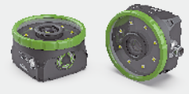
SCI-PS3-300 Power Supply

K1 Series P40



High speed reading with full resolution ranging from 1.6MP to 12MP. Enhanced with deep learning algorithm; multiple light sources with independent control.

H1 Series P42



High speed reading with full resolution ranging from 0.4MP to 1.6MP. Enhanced with deep learning algorithm; multiple light sources with independent control.

3D Laser Sensor

G1 Series P44



0.4MP pixel image sensor; support high-speed decoding, up to 60FPS.

3D Sensor Series P50



High accuracy and up to 3200 pixels at X-axis; high speed and the sampling speed up to 67000 profiles / sec

OPT Lenses

Coloretto Series Line Scan Lens P63



Compatible with line scan cameras of ≥ 7μm pixel size and Ø 30 mm-Ø 82 mm image circle

Hawk Series Line Scan Lens P66



Compatible with (16k)/3.5 μm, (12k)/5 μm and (8k)/7 μm line scan cameras

Grampus Series Line Scan Lens P68



Compatible with (16k)/5 μm, (12k)/5 μm and (8k)/7 μm line scan cameras

Line Scan Lens Accessories P70



Various size of adaptors available for different vision project requirement

29MP Fixed Focal Length Lens P72



Compatible with full frame camera and (8k)/5 μm line scan cameras

78MP Fixed Focal Length Lens P74



Compatible with cameras of ≥ 3.2 μm pixel size and ≤ Ø 44 mm full frame

151MP Fixed Focal Length Lens P76



Compatible with cameras of ≥ 3.76 μm pixel size and ≤ Ø 67 mm large format

Cobra Series Fixed Focal Length Lens P77



Compatible with cameras of ≥ 2.2 μm pixel size and ≤ 1/1.8" | 2/3" sensor format

Dolphin 20MP Series Fixed Focal Length Lens P79



Compatible with cameras of ≥ 2.4 μm pixel size and ≤ 1.1" sensor format

10MP Fixed Focal Length Lens P81



Compatible with cameras of ≥ 3.45 μm pixel size and ≤ 1.1" sensor format

5MP Fixed Focal Length Lens P83



Compatible with cameras of ≥ 3.45 μm pixel size and ≤ 2/3" sensor format

2MP Fixed Focal Length Lens P88



Compatible with cameras of ≥ 5 μm pixel size and ≤ 2/3" sensor format

M12 Fixed Focal Length Lens P93



Compatible with cameras of ≥ 3.45 μm pixel size and ≤ 1/1.7" sensor format

5MP 3X Variable Magnification Lens P95



0.3-1.0X magnification; compatible with cameras of ≥ 3.45 μm pixel size and ≤ 2/3" sensor format

Variable Magnification Telecentric Lens P96



0.5-1.0X magnification; compatible camera sensor format: ≤ 1/1.2"

Custom Lens P97



Designed for laser applications; working distance over 1000 mm

MH Series Telecentric Lens P99



Compatible camera sensor format: ≤ 2/3"

10M Series Telecentric Lens P102



Compatible camera sensor format: ≤ 1.1"

Lens Accessories P105



Various accessory such as adaptors, filters& polarizers cater for different vision project requirement

OPT Industrial Cameras

OPT Industrial Cameras P109



Rolling Shutter Cameras

OPT Industrial Cameras P110



Global Shutter Cameras

OPT Industrial Cameras P111



High Resolution C-Mount Cameras

OPT Industrial Cameras P112



High Resolution F-Mount Cameras

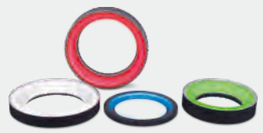
OPT Industrial Cameras P115



Line Scan Cameras

OPT Standard Lights

Ring Lights OPT-RI Series P118



Different angles uniform illumination

Ring Lights OPT-RIB Series P125



Good directivity; lower power consumption compared with OPT RI Series

Bar Lights OPT-LI Series P127



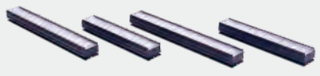
Customizable colors and sizes; suitable special illumination requirements

Combined Bar Lights OPT-LIM Series P130



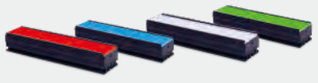
Adjustable illumination angles; sectional control; suitable for special illumination requirements

High Uniformity Bar Lights OPT-LIA Series P133



High directionality; can be used for long distance illuminating instead of LI series. Lower power consumption than LI series lights of the same size

High Uniformity Bar Lights OPT-LIT Series P135



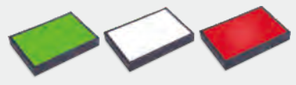
Variable bar light sizes for various environments

Direct Backlight OPT-FL Series P137



High density LED arrays for high power and uniform illumination; maximized emitting surface

Direct Backlight OPT-FLA Series P140



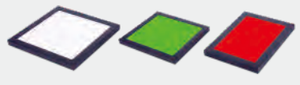
To be preferred in OPT large-sized backlights compared with OPT-FL Series

Edge Lit Backlight OPT-FLC Series P143



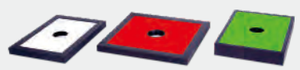
Ultra-light and thin design; minimum 6mm for narrow space, customisable sizing for large area illumination

Edge Lit Backlight OPT-FLCA Series P146



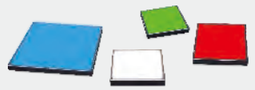
In comparison with FLC series, equipped with bigger emitting surface, first choice for big-size back lightings

Backlight With Centre Hole OPT-FLCA-K / FLA-K Series P149



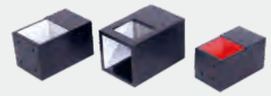
Good brightness and uniformity , first choice for big-size back lighting

Highly-directional Backlights OPT-FLP Series P154



Directional illumination; higher intensity compared with FL and FLC series lights

Coaxial Lights OPT-CO / COR Series P157



Good emitting directivity, suitable for high working distance also with significant image characters.

High Precision Coaxial Light Source OPT-COH Series P162



Ideal for high resolution imaging. Greatly decrease ghost imaging in highly reflective workpiece inspection

High Intensity Coaxial Lights OPT-COG Series P165



Intensity four times higher than OPT-CO series

Dome Lights OPT-RID Series P166



Special diffuser for uniform and shadowless illumination

Ultra High Intensity Line Scan Lights OPT-LSS Series P168



Illuminance up to 2000K lux; low divergence angle, suitable for long working distance applications

Cross Line Lights OPT-LSSX Series P171



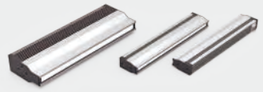
Special optical design, cross emitting from sides, used to detect damages of work piece in the moving direction

Ultra High Intensity Coaxial Line Scan Lights OPT-LSSC Series P174



Higher intensity compared to OPT-LSSC; compatible with the inspection of both reflective and rough surfaces

Passive Cooling Line Scan Lights OPT-LSNS / LSNL Series P177



Fan-free design, quiet and stable, suitable for special working environment with demand of noise, vibration and airflow

High Intensity Spot Lights OPT-PIG Series P181



Equipped with the special light-guiding tube (Up to 1400k lux illuminance with white light at 20mm WD)

Collimated Spot Lights OPT-LDS Series P183



Long work distance, large effective illumination area

Digital Fiber Spot Lights OPT-DOFP Series P184



Lighting and control-circuit are integrated, support Ethernet and com port communication, programmable trigger and external trigger

Structured Lights OPT-SL/SLS Series P186



Compatible with all C-Mount lenses; Uniform pattern with sharp edge, high illumination accuracy

Diffuse Dark Field Ring Lights OPT-RIF Series P189



Providing uniform and shadowless illumination; suitable for multiple applications at different working distances

Diffuse Ring Lights OPT-RIE Series P191



Equipped with special diffusers to reduce reflection and allow uniform illumination

Diffuse Ring Lights OPT-RIW Series P193



Equipped with special diffusers to ensure uniform illumination

Diffuse Front Ring Lights OPT-RIU Series P194



Special diffuser for uniform and shadowless illumination

Diffuse Dark Field Square Lights OPT-RIH Series P195



Providing uniform and shadowless illumination from four directions, suitable for the inspection of irregular rectangular targets

Bright Uniform Ring Lights OPT-RIP Series P197



Equipped with high power LEDs and high uniformity diffuser for high intensity and shadowless illumination

Multi-Spectrum Shadowless Ring Light OPT-RIPM Series P199



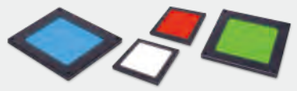
The lighting includes 8 wavelengths. Each waveband uniformly distributes in four regions

High Intensity Ring Lights OPT-RIG Series P203



Equipped with high power LEDs for more than 3 times the intensity of RI lights

Flat Dome Lights OPT-FC Series P204



Coaxial planar light source with shadowless and coaxial lighting effects

Collimated Spot Lights OPT-PL Series P206



Telecentric optical design, divergence angle ≤1°; greatly increase image edge contrast gaiwei and get higher gauging accuracy

Collimated Backlights OPT-FP Series P210



Compact design; suitable for high accuracy gauging

AOI Lights OPT-RIA Series P212



Highlight object 3D information by multi-colored (RGB) illumination from various angles

Vault Lights OPT-LIU Series P213



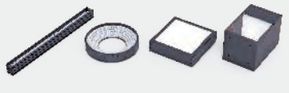
Adopting effective heat dissipation design for better diffusion effect, effectively eliminating interference of uneven surface.

High CRI Light OPT-XX-RA95W Series P215



Average CRI amounts over 95, excellent CRI, covering many types of lightings

IR Lights OPT-IXX-IR Series P217



Provide 850nm/940nm illumination; customizable shapes and illumination angles

UV Lights OPT-UXX-UV Series P231

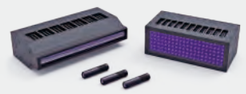


2 standard products of 365nm and 375nm are available. Using glass to cover LED and long service life

OPT Products Selection Guide | www.optmv.net

OPT Custom Lights

UV Glue Curing Lights OPT-CXXX-UV Series P237



Light spots with various diameter ranging from 4mm, 6mm, 8mm, 10mm until 15mm.

Waterproof Lights P242



IP67 rating; suitable for humid and dusty environments

Air Cooled Light Series P244



Applicable in dust-free and other environments that have special requirements for air pressure

Water Cooled Light Series P245



High power LEDs are distributed closely for uniform illumination. Adopting water cooling for better heat dissipation effect.

Custom Lights P246



OPT has developed more than 30,000 custom lights;3 business days minimum lead time for the custom prototype

OPT Other Accessories

Accessories/Lab Stand/Lab Equipment P252



Various testing platforms and machine vision accessories available

OPT Applications

Lab stand / Experimental facilities P254



Flexible installation and easy to use

Applications P256



Over 10 years of experience; more than 500,000 applications proven by various industries

OPT Controllers

DPA Digital Current Controller P281



OPT-DPA2024E-X
24V output voltage; 48W/CH output power; RS232 and Ethernet interfaces; 4CH/8CH/16CH available

Digital Current Controller P284



OPT-DPA2012E-4
12V output voltage; 24W/CH output power, total output power ≤ 48W; RS232 and Ethernet interfaces; 4CH output

Digital Current Controller for Spot Lights P287



OPT-DPA2005E-X
5V output voltage; 10W/CH output power; RS232 and Ethernet interfaces; 4CH/8CH available

High Power Digital Current Controller P290



OPT-DPA6024-2
24V output voltage; 144W/CH output power; RS232 interface; 2CH output

High Power Digital Current Controller P292



OPT-DPA6024E-2
5V-48V output voltage; 144W/CH output power; RS232 and Ethernet interfaces; 2CH output

High Power Digital Current Controller P295



OPT-DPA6024EC-2
24VDC input voltage; 5V-48V output voltage; 144W/CH output power; RS232 and Ethernet interfaces

High Power Digital Current Controller P298



OPT-DPA10024EB-1
24V output voltage; 240W/CH output power; RS232 and Ethernet interfaces

Ultra-high Power Digital Current Controller P301



OPT-DPA20024E-2
24V output voltage; 480W/CH output power; RS232 and Ethernet interfaces; 2CH output

DPH Strobe Overdrive Digital Controller P304



OPT-DPH20048E-4
48V output voltage; max. transient output current: 20A; RS232 and Ethernet interfaces; 4CH output

AP Analog Voltage Controller P306



OPT-AP1024F-X
24V output voltage; 24W/CH output power; 1CH/2CH/3CH/4CH available

APA High Power Analog Current Controller P309



OPT-APA6024-2
24V output voltage; 144W/CH output power; 2CH output

Analog Current Controller for Spot Lights P311



OPT-APA0705F-X
5V output voltage; 3.5W/CH output power; 1CH/2CH/3CH/4CH available

DPM Mini Digital Current Controller P313



OPT-DPM0524E-4
24V output voltage; 12W/CH output power; RS232 and Ethernet interfaces; 4CH/8CH/12CH/16CH available

APM Mini Analog Voltage Controller P316



OPT-APM0524B-2
24V output voltage; 12W/CH output power; 2CH output

SPM Mini Strobe Controller P318



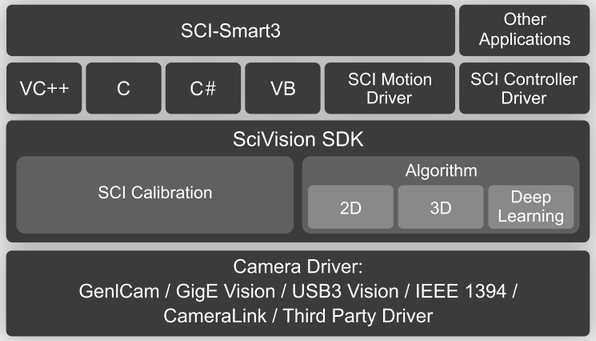
OPT-SPM2024-1
12V - 48V output voltage; 96W output power; single channel output

Machine Vision System

Software / Hardware Platform »P14
SciVision SDK »P15
SCI-Smart3 Machine Vision Software »P19
Vision System Hardware »P25
SCI-Q2 Vision Controller »P26
SCI-Q2C Vision Controller NEW »P27
SCI-EVC2 Vision Controller »P28
SCI-PS3-300 Power Supply »P29
SCI-GEP GigE Card »P30
Applications »P31
Lithium Battery Applications »P32
Consumer Electronics Applications »P33
Laser Applications »P34
Other Applications »P35

SCI is the brand of OPT. Its products mainly include vision software and controllers.

Software Platform

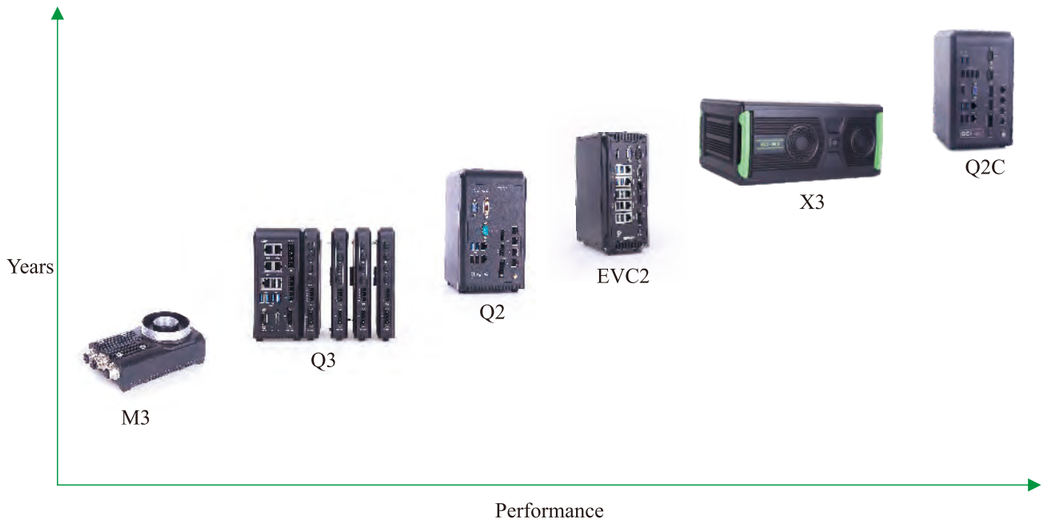


Products

- SciVision SDK is a platform of machine vision libraries and tool sets. Use it to customize your new applications.
- SCI-Smart3 machine vision software is developed based on the SciVision SDK. Users can implement a vision project via simple graphical flow editing and configuration without any coding.

Hardware Platform

SCI has optional hardware platforms for different requirements, which can support SCI-Smart3 machine Vision Software and SciVision SDK. Besides, the third-party software is also available for operation, such as the customer's existing motion control software.



SciVision SDK

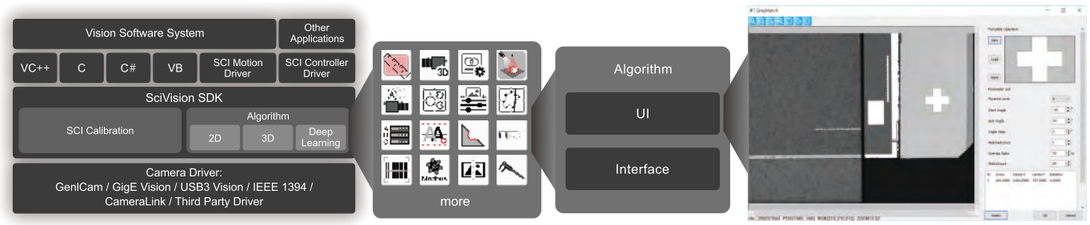


Features

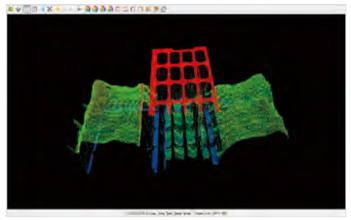
- Reliability: The stability of SDK is verified in tens of thousands of multiple industrial devices.
- Easy-to-operate: SciVision has functions of interface layer and algorithm layer, and interface layer can quickly realize interaction.
- Industrial application: Complete industrial applications, such as 3D image control, robot coordinate calibration, SPC (Statistics Process Control, including CPK), GR&R, etc.
- Support multiple programming languages: C++, C#, VB
- Optimized performance: Adopted GPU/SSE/TBB acceleration
- Professional technical support: More than 1000 engineers around the world provide technical support during project cycle.

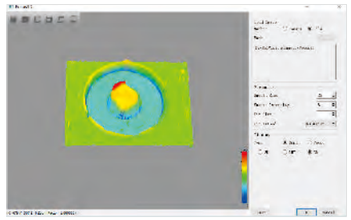
Structure

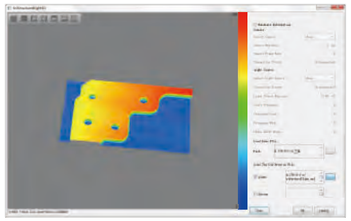
SciVision is an SDK that contains algorithm libraries, toolsets, drivers, etc. Most algorithms have function layer and UI (User Interface) layer. Users can use the UI layer provided by the SDK to implement project applications quickly, or develop their own UI (by calling the function layer) to maintain flexibility.

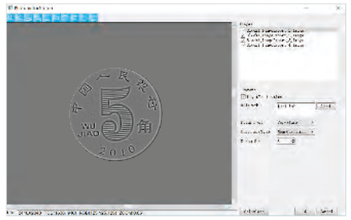


Functional Interfaces


3D display


Focusing 3D measurement

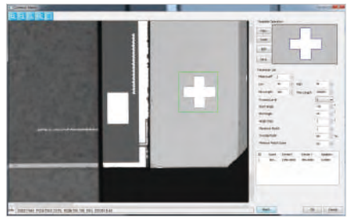

Structured light 3D measurement

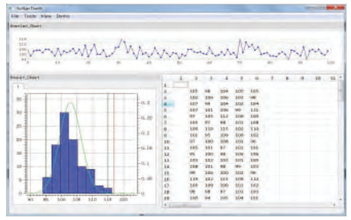

Photometric stereo

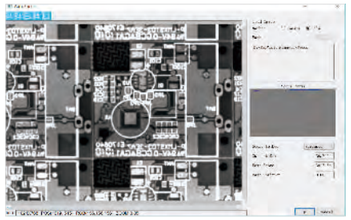

Deep learning



Deep learning OCR

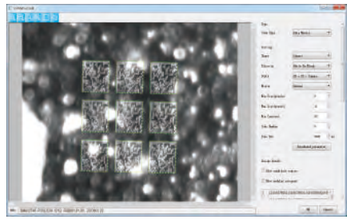

Contour match

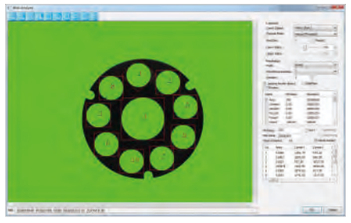

CPK


Auto focus



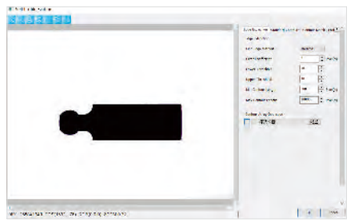
Bar code recognition

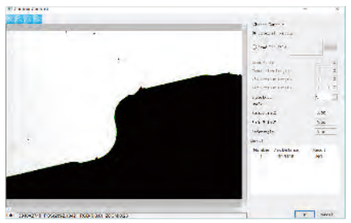

2D Code recognition and quality assessment


Blob analysis

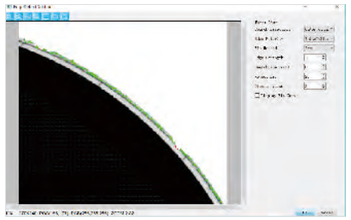


Gap measurement

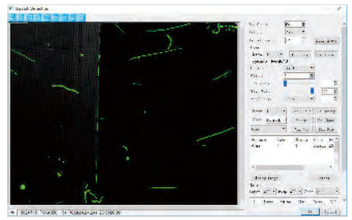

Profile tolerance

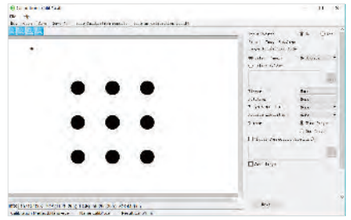

Contour contrast

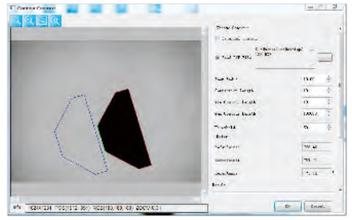
Functional Interfaces


Edge defect detection


Variation model


Scratch detection


Auto calibration

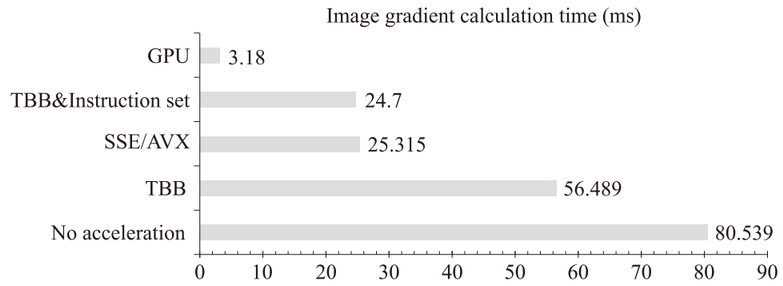

CAD import



Customized interface

Performance

- TBB/AVX/SSE/GPU acceleration



Test conditions: System: Windows7 64Bit, Memory: 8G, CPU: Intel® Core™ i5-7400 CPU@3.00GHZ 3.00GHZ, GPU: NVDIA GTX1070

- Performance improvements of common algorithms

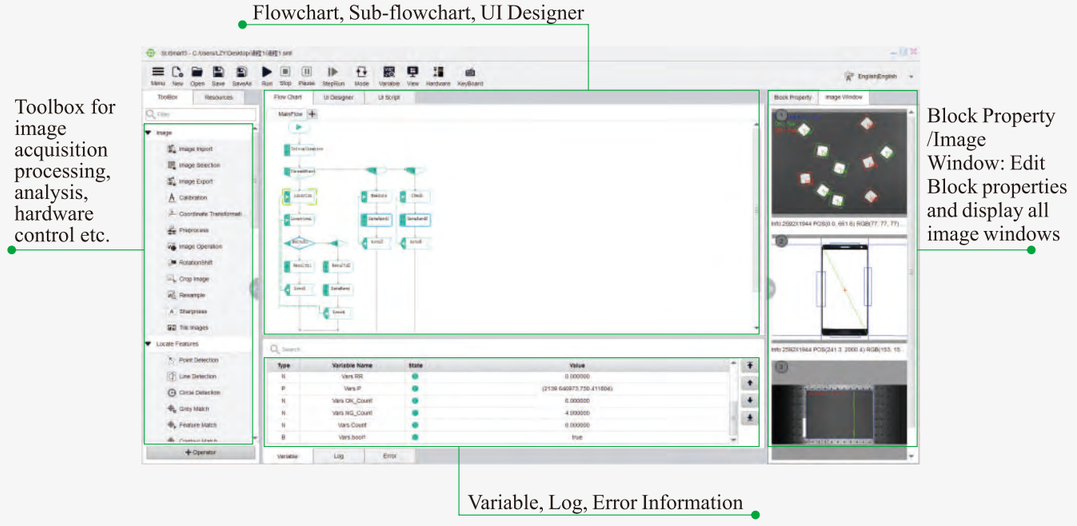
Algorithm	Time (ms)	Image size
Grey match	16.92	2448×2048, ROI
Contour match	68.19	6576×4384, ROI
Find line	1.62	2448×2048, ROI
Find circle	1.17	2448×2048, ROI
Blob analysis	4.65	2588×1940
Contours extraction	20.77	1280×960
2D code	2.87	2592×1944, ROI

Test conditions: System: Windows7 64Bit, i5-4590CPU, Memory: 8G, HD Graphics 4600

Function Table

Tool Category	Function	Description
Image	Acquisition	Compatible with various cameras, such as GenICam, GigE Vision, USB3 Vision
	Calibration	Hand-eye, Rotation, Center, Distortion
Image Enhancement	Threshold	Manual, OTSU, Double Peak Mean, Valley Floor Minimum, Fuzzy Set, Local Adaptive
	Image Filter	Gaussian, Median, Mean, Differential Laplace, Sobel, Roberts, Canny, Prewitt and Custom
	Morphology	Dilate, Erode, Closing, Opening, Hit or Miss, Gradient, Top Hat, Black Hat, Extract Boundary
	Image Operation	Arithmetic Operations, Logical Operations, Stitch, Rotate, Mirror, Zoom, Crop Image
	FFT	FFT, IFFT
	Equalize Histogram	Adjusting the histogram to enlarge the difference between foreground and background
	Photometric Stereo	Estimating surface normals via shading using different light source
Location and Alignment	Find Point	Locating the required first, last, best, and all points
	Find Line	Least Squares, RANSAC, Hough Line
	Find Circle	Least Squares, Iterative Least-Squares, Hough Circle
	Match	Grey Match, Contour Match, Feature Match
	Coordinate System Setting	Horizontal/Vertical//H&V/H&V&θ ROI recoordinate
Measurement	Caliper Measurement	Measure the distance between two parallel lines
	Pitch Measurement	Multiple edge pitch measurements within the specified area to achieve the required pitch, width, and interval
	Geometric Measurement	Point-to-Point Distance, Point-to-Contour Distance, Point-to-Contour Distance, Angle defined by four points, Bisector, The Median Line of the Triangle, The Focus of Polygon, The Area of Polygon, etc.
	Brightness Measurement	Minimum, Maximum, Average, Standard Deviation
	Auto Focus	Variance, EVA, Difference, Gradient
Surface Inspection	Blob Analysis	Center of gravity, Area, Aspect, Hole number, Hole filling, etc.
	Presence Detection	Presence Detection
	Scratch Detection	Scratch Detection
	Edge Detection	Closed edge, non-closed edge
	Contour Sequence Processing	Segment, Union, Select and Sort Contours
	Variation Model	Checks by comparing the actual model with the ideal one
	Profile Tolerance	The tested contour change with respect to the theoretical contour
	Contour Contrast	Obtain the relationship between standard and actual contours
	Edge Defect Detection	Accurately detects burrs, mutations and other anomalies on edges
Classification and Recognition	OCR/OCV	Recognition and verification of optical characters
	Classifier	Classifies objects of different shapes, colors, or textures
	Barcode	Code 39, Code 128, EAN 8, EAN 13, UPC-A, UPC-E, Code 93, ITF
	2D Barcode	QR Code, PDF 417, Data Matrix Code, Vericode
	Quality Assessment	Support ISO/IEC 15416 standard to evaluate BarCode's parameter rating; support ISO/IEC 15415 to evaluate QR Code and Data Matrix parameter rating
3D	Laser 3D scanning measurement	Use laser line scanning to measure the object
	Focus 3D measurement	Use 3D focus to measure the high precision height or dimension of small, tiny or objects with holes
	Structured light 3D measurement	Use structured light 2D reconstruction technology to obtain objects 3D information
	Binocular stereo measurement	Use two cameras to obtain the objects image information from different angles and positions and calculate its 3D information
	3D Image Window	3D image display
	Defect detection	Use deep convolution grid to locate and classify targets of pixel level
Deep learning	Target location and recognition	Use the principles of deep learning for targets' tracking, recognition and positioning
	Image classification	Use deep learning to extract image features and classify them to reduce the requirement of manual analysis features
	Character recognition	Use inherent attributes of characters and combined with the deep learning principle to locate and recognize characters
Communication and Hardware Control	Motion Control Card	Motion Control Card Interface
	Ethernet/Serial Port/USB	Instruction, Data and Image Transmission
Graphical Interface	Image and Common Tools	Display of Images, Current Mouse Coordinates and Grey Values; Image Zooming
	ROI Toolbar	Point, Rectangle, Circle, Torus and other common ROI
Others	Statistics Interface	Statistics Interface and Template: SPC, GR&R, CPK, etc.

SCI-Smart3 Machine Vision Software NEW V3

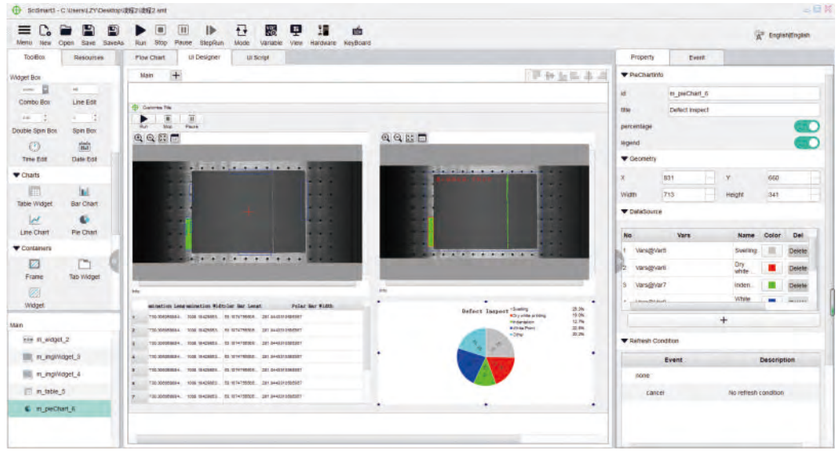


Toolbox

Image I/O	Image Import, Image Selection, Image Export, Calibration, Coordinate Transformation, Preprocess, Image Operation, Rotation Shift, Crop Image, Resample, Sharpness, Image stitching
Locate features	Point Detection, Line Detection, Circle Detection, Grey Match, Feature Match, Contour Match, ROI Alignment Setting, ROI Creation, Hough Circles, Corner Detection, Hough Lines, Contours Extraction, Data Conversion
Measure feature	Caliper, Pitch Measurement, Geometry Relationship, Color Pick, Intensity Measurement, Color Measurement
Check for presence	Blob Analysis, Scratch Detection, Variation Model, Profile Tolerance, Edge Defect
Recognition	OCR, Bar Code Reading, 2D Code Reading, Classifier
Communication	TCP/IP, Serial Port, DIO, Modbus, USB-HID, PLC
Additional tool	Scriptor, Overlay, Time, Export to CSV, Variable Logs, Queue
3D Tool	3D Image, 2D Image Conversion, 3D Image Conversion, 3D Preprocess, Height Measurement, Volume Measurement, Plane Correction, Planarity
Deep Learning	Defect Detection, Target Location and Recognition, Classifer, Character Recognition
Custom Operators	Extension of Operator Tools

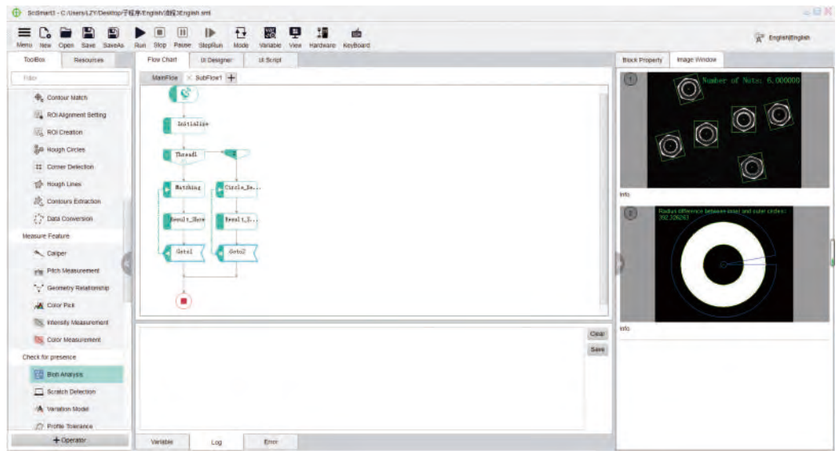
User Defined UI

UI layout is customizable via drag and drop to meet operator interface requirement. Definable UI can replicate previous operator UI environment thus reduces operator's learning curve.



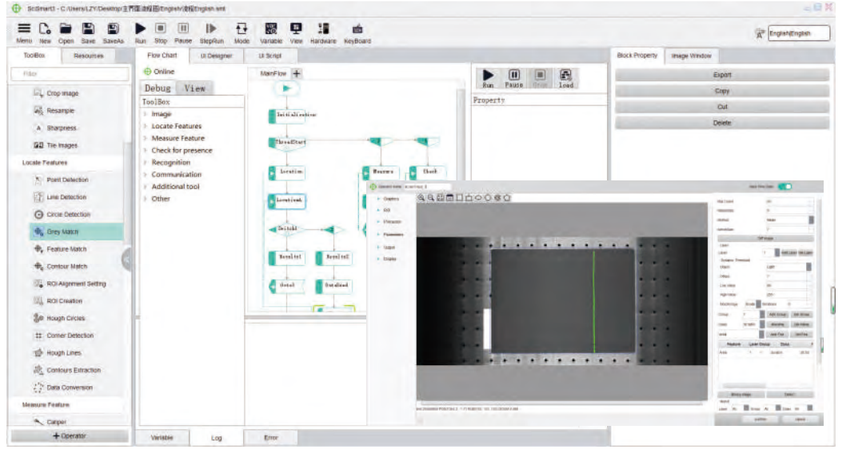
Subroutine Flow

Added subroutine flow to simplify main flow visual. Subroutine flow defines parallelism in a concise manner regardless if an event is triggered or running in background synchronously or asynchronously.



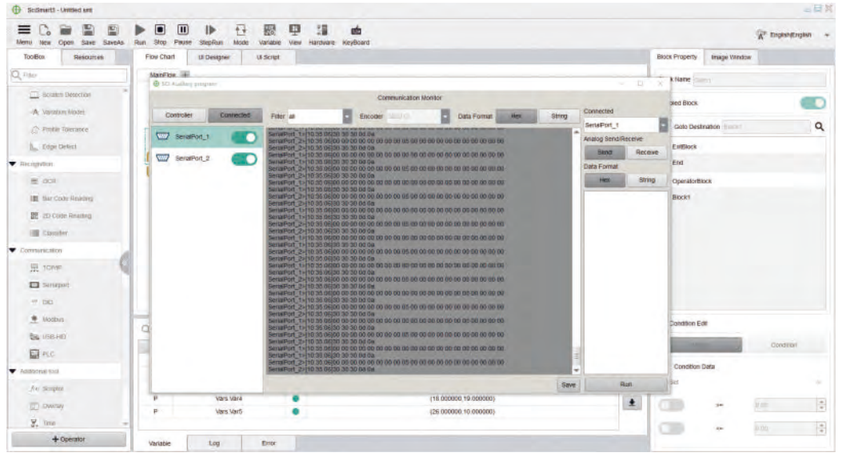
Online Debugging

Support online parameter adjustment, the tool parameters can be adjusted during operation, a better debugging method.



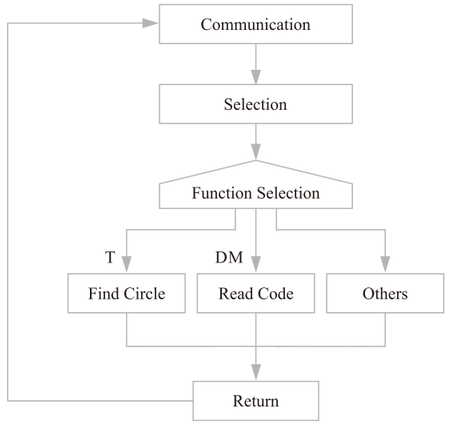
Communication Monitoring

Real time monitoring of communication sending and receiving data, when abnormalities occur, it can analyze and troubleshoot problems in time.

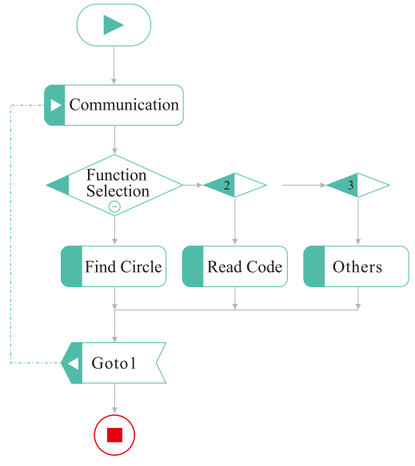


Graphical Programming

By taking circle detection and 2D code recognition tools as example.



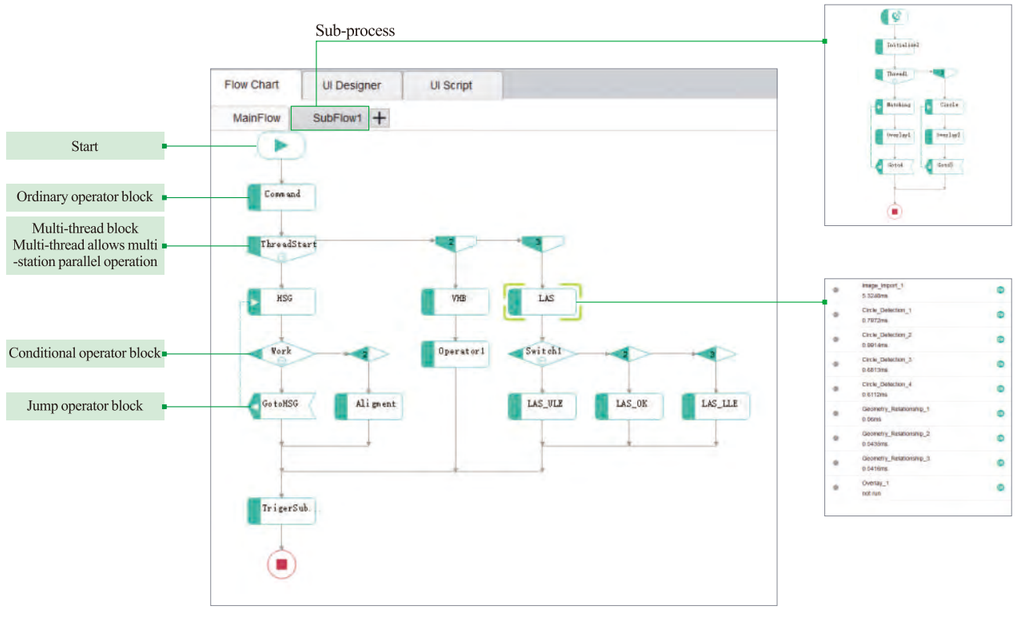
Logical Diagram for Project Requirements



Flowchart for Project by SciSmart

Concise Flowchart

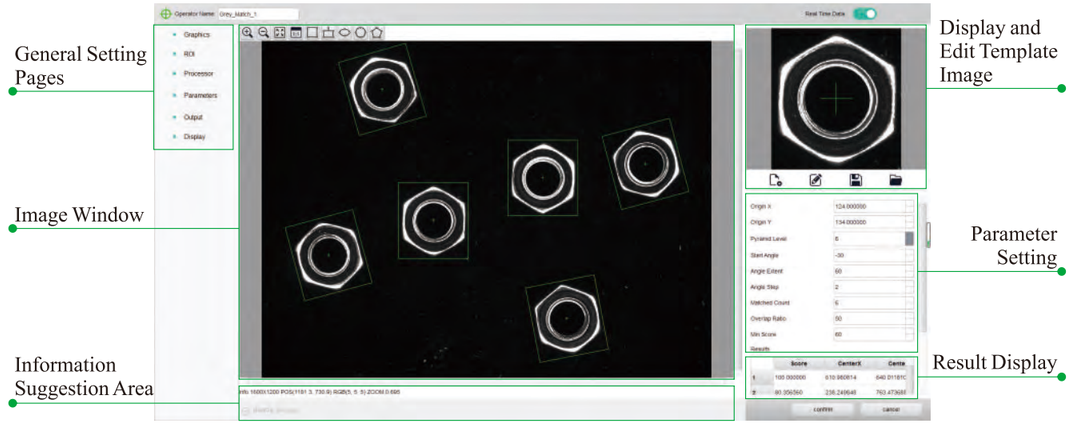
There are two types of basic elements in the flowchart, one is the operator block, and the other is the control operator block. After the process is established, it can jump to the sub-flow chart through conditional control combined with event triggering to complete the entire detection process.



Multi-thread Blocks for Multi-station Operation

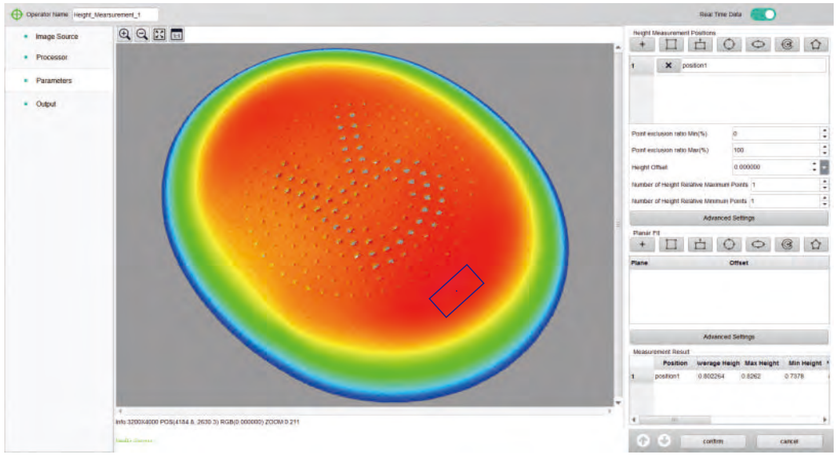
Steable & Easy to Operate

Most tools provide a unified parameter setting interface and default parameters.



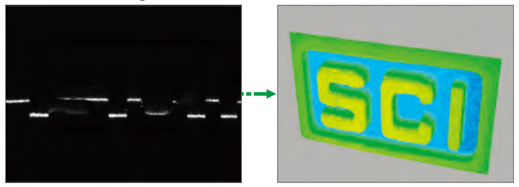
3D Height Measurement

Measure the real height between target area and datum plane by depth image. The precision is up to micrometer level.



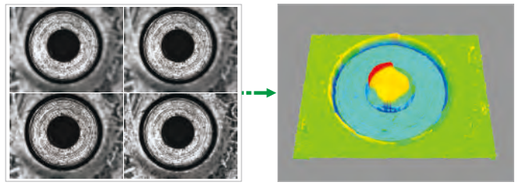
Software Features

3D Laser Triangulation



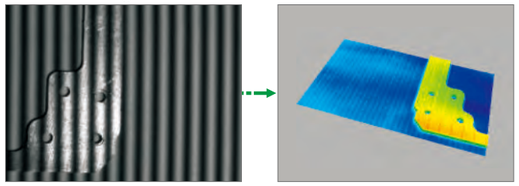
Obtain 3D information of an object with a camera and laser.

Depth from Focus 3D Reconstruction



Gauging the relative heights at different focus positions by using the maximal sharpness of related pixel.

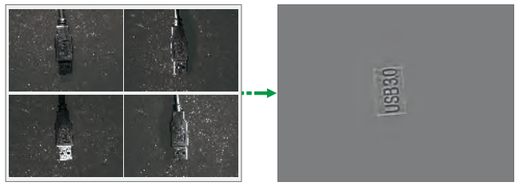
Structured Light 3D Reconstruction



Texture Image

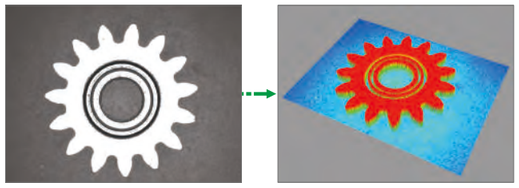
3D Visualization

Photometric Stereo



Eliminate the complex backgrounds with different angle of lighting information and then reconstruct those with bumpy targets.

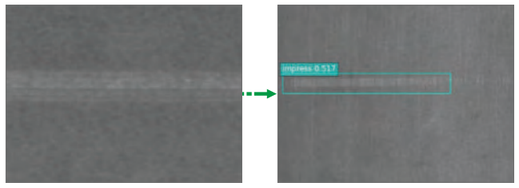
3D Viewer



Gray Image

3D Visualization

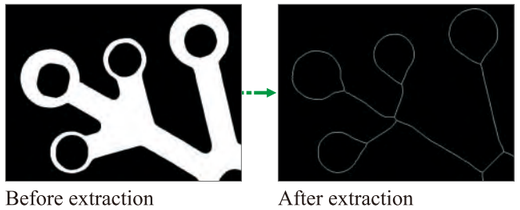
Deep learning



Original picture

Recognition effect image of deep learning

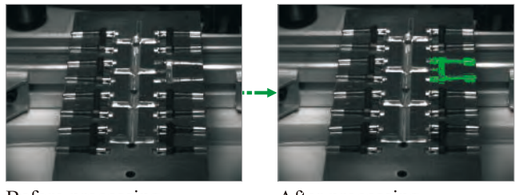
Skeleton Extraction



Before extraction

After extraction

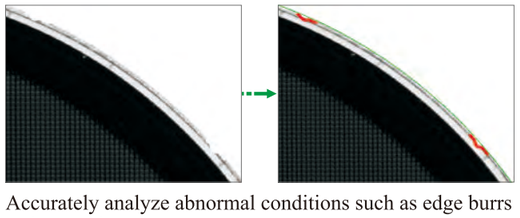
Variation Model



Before processing

After processing

Edge Defect Detection



Accurately analyze abnormal conditions such as edge burrs and anomaly

2D Code Recognition



Data Matrix

QR Code

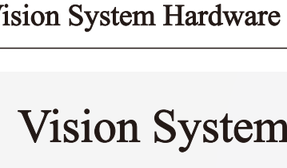
Vision System Hardware



Hardware Features

- High-performance CPU
- SSD
- Flexible Expansion
- Global Shutter
- Full Aluminum Housing
- Rigorous Testing
- Thermal Optimization
- PoE Support

High-performance CPU



Multi-core CPU for image processing

SSD (Solid State Drive)



Better reliability with faster read and write speed

Professional Thermal Design



Efficient Cooling

Multi-thread Technology

Reduce cycle time and meet the needs of multi-station

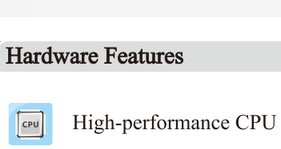
Strict Testing

Passed 200+ test specifications, including high/low temperature and humidity, drop, aging, full function tests, etc.

Expandable Configurations

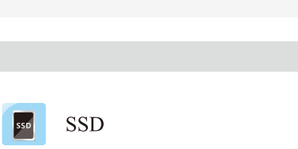
Expand modules to connect up to 16 light sources

Global Shutter



Avoid image distortion when on-the-fly capturing by using the rolling shutter

High Resolution Image



Under the same conditions, 5MP camera able to acquire higher resolution images than 1.3MP camera

PoE Support

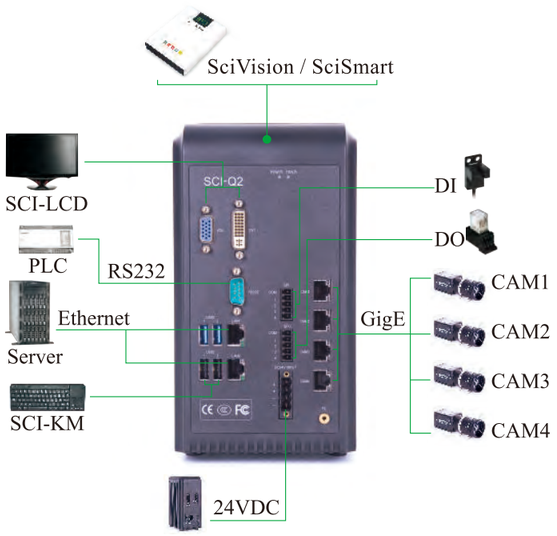


Integrated Gigabit Ethernet, USB port, DI/DO interface, light source controller interface

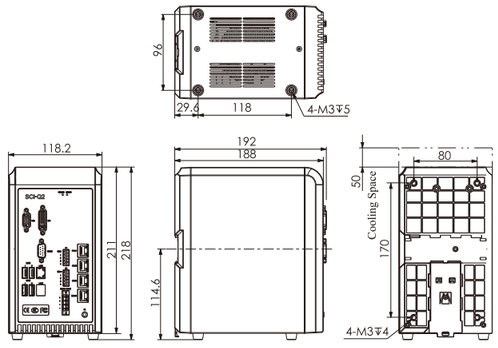
SCI-Q2 Vision Controller



Connector Description



Dimensions (mm)



Features

- Integrated functions and small footprint
- Reasonable design and excellent heat dissipation performance
- High performance multi-core CPU
- High throughput 64GB expandable SSD
- Supports several PoE GigE cameras to acquire images simultaneously

Specifications

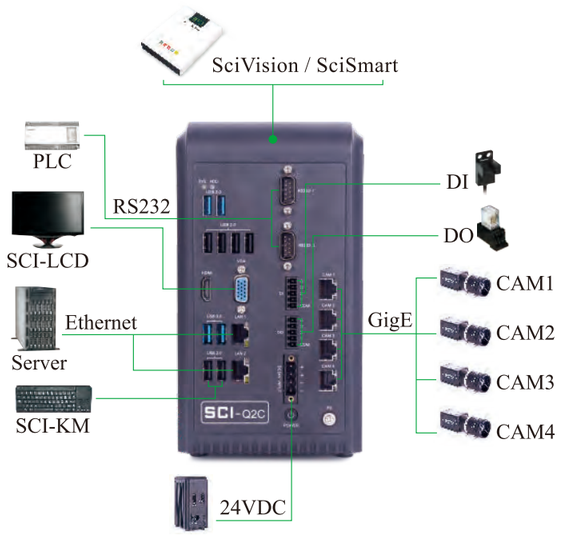
Model	SCI-Q2-72205	SCI-Q2-52205	SCI-Q2-32201
CPU	i7	i5	i3
Number of Camera Support	5 (Note:6 Network ports)[1]		1 (Note:2 Network ports)[1]
Memory	4GB (It supports up to 16GB)		
SSD	64GB SSD (Upgradable)		
HDD	Upgradable		
Power	24VDC/7A		
Cooling	By smart fan		
Video Interface	1×DVI, 1×VGA		
Serial Port	1×RS232		
USB	2×USB3.0, 2×USB2.0		
DI	4		
DO	4		
Operating Temperature	0°C - 50°C (32°F - 122°F)		
Operating RH	10% - 85%, non-condensing		
Storage Temperature and RH	-40°C - 80°C (-40°F - 176°F); 0 - 80%		

[1] One of the ports is used for other data transmission

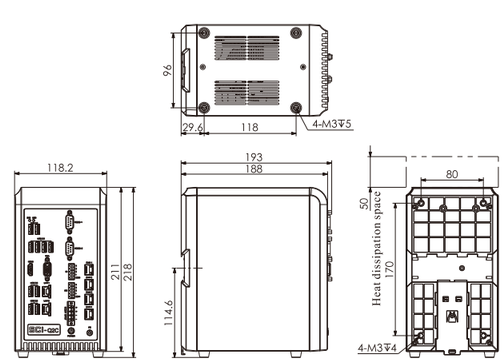
SCI-Q2C Vision Controller NEW



Connector Description



Dimensions (mm)



Features

- Integrated functions and small footprint
- High performance multi-core CPU
- SSD+HDD combining performance with capacity configuration
- Supports several PoE GigE cameras to acquire images simultaneously
- Reasonable design and excellent heat dissipation performance

Specifications

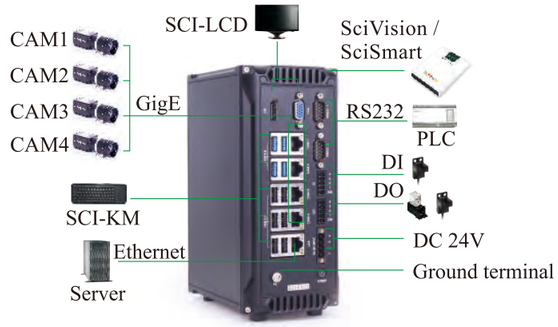
Model	SCI-Q2C-73215	SCI-Q2C-53215	SCI-Q2C-33215
CPU	i7	i5	i3
Number of Camera Support	5 (Note:6 Network ports)[1]		
Memory	8GB (It supports up to 32GB)		
SSD	64GB SSD (Upgradable)		
HDD	1TB (Upgradable)		
Power	24VDC/7A		
Cooling	By smart fan		
Video Interface	1×HDMI, 1×VGA		
Serial Port	2×RS232		
USB	4×USB3.0, 6×USB2.0		
DI	4		
DO	4		
Operating Temperature	0°C - 50°C (32°F - 122°F)		
Operating RH	10% - 85%, non-condensing		
Storage Temperature and RH	-20°C - 75°C (-4°F - 167°F); 0 - 80%		

[1] One of the ports is used for other data transmission

SCI-EVC2 Vision Controller



Connector Description

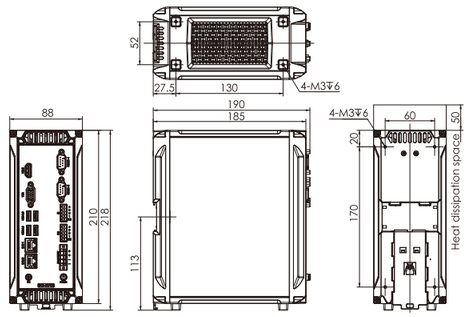


Features

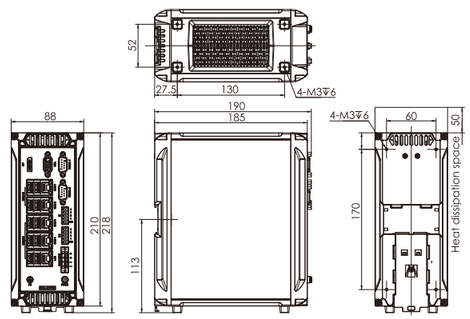
- High performance multi-core CPU
- High throughput SSD (Solid State Drive)
- Supports multiple GigE cameras to acquire images simultaneously
- Multiple interfaces for equipment connection
- Full aluminum housing

Dimensions (mm)

1. SCI-EVC2-J2202



2. SCI-EVC2-32205



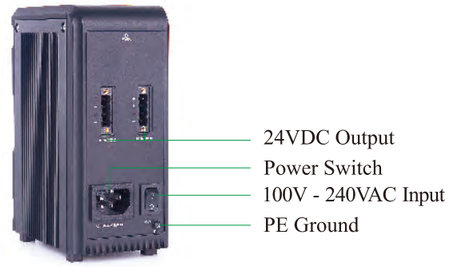
Specifications

Model	SCI-EVC2-72204	SCI-EVC2-52204	SCI-EVC2-32204	SCI-EVC2-J2201
Processor	i7	i5	i3	J1900
Number of Camera Support	4 (Note:5 Network ports, one of the ports is used for other data transmission)			1(Note:2 Network ports)
Memory	4GB (It supports up to 16GB)			4GB (It supports up to 8GB)
SSD	64GB (Upgradable)			
HDD	Upgradable			
Power	24VDC/3A			24VDC/2A
Cooling	Fan			Fanless
Video Interface	1×VGA, 1×DP			1×VGA, 1×HDMI
Serial Port	2×RS232			
USB Port	6×USB2.0, 4×USB3.0			3×USB2.0 1×USB3.0
DI/O	4×DI, 4×DO			
Operating Temperature	0°C - 50°C (32°F - 122°F)			
Operating RH	10% - 85%, non-condensing			
Storage Temperature/RH	-40°C - 80°C (-40°F - 176°F); 0 - 80%			

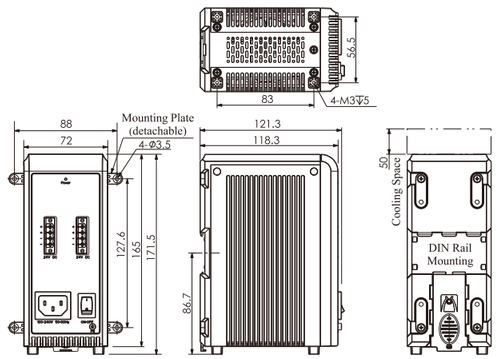
SCI-PS3-300 Power Supply



Panel description



Dimensions (mm)



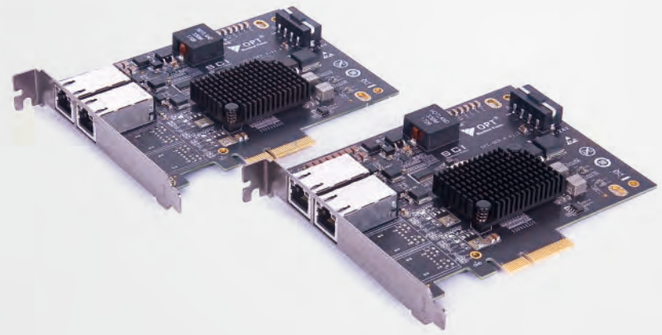
Features

- Full aluminum housing of high strength and efficient cooling
- Universal full range AC input
- Short circuit protection
- Overcurrent protection
- Overpower protection
- 100% full load aging test
- DIN rail mounting available

Specifications

Model	SCI-PS3-300
Output DC Voltage	24V±10%
Output Rated Current	12.5A
Output Rated Power	300W
Input Voltage Range	100V - 240VAC
Input Frequency Range	47 - 63Hz
Input Efficiency	92.5%
AC Current	3.5A/115VAC, 1.8A/230VAC
Input Inrush Current	Cold boot: 40A/115VAC 80A/230VAC
Overload Protection	105% - 135% of the rated outputpower Hiccup mode: auto recovering after removing loading anomalies
Overvoltage Protection	Hiccup mode: auto recovering after removing voltage anomalies
Vibration Test	10 - 500Hz, 2G 10 minutes per cycle, 60 minutes for each axis (X/Y/Z)

SCI-GEP GigE Card



Selection Guide

SCI-GEP-X
- 2: 2 ports
- 4: 4 ports
- PoE power supply
- GigE interface
- OPT brand

Features

- Intel® I350 server-grade Gigabit Ethernet controller
- Simultaneous connection of 2/4 independent PoE GigE interfaces designed with 4× PCIe gen2.0
- Complying with IEEE802.3 af and IEEE1588 standards
- PoE technology applied to greatly reduce cost in installation and maintenance

Functions

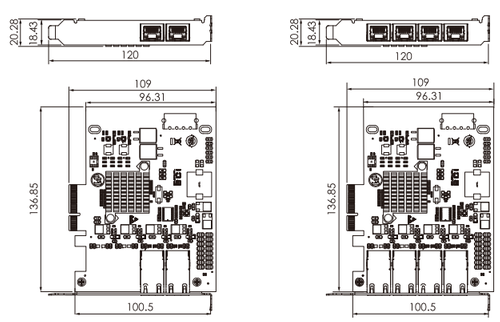
- 2 or 4 independent GigE ports available
- 15.4W 1000Mb/s provided by each port
- Max. 100m transmission via CAT-5/CAT-6 cable
- Link aggregation and 9.5KB jumbo frame
- 8 receive side scaling queues and 2048 receive and transmit buffers
- Power supplied by PCIe bus; When PoE <35W, external power supply is not required.
- Wide voltage input (12V - 24V)

Specifications

Model	SCI-GEP-4	SCI-GEP-2
Connection Interface	4× PCI Express	
Network Interface	4× GigE ports by Intel® I350-AM4 controller, supporting 9.5KB jumbo frame and (8) VMDq	2× GigE ports by Intel® I350-AM2 controller, supporting 9.5KB jumbo frame and (8) VMDq
PoE Performance	Complying with IEEE 802.3af, each port delivers up to 15.4W of power	
Cable Transmission Distance	Max. 100m via CAT-5/CAT-6 cable	
Required Power[1]	①Max. 3.3V@2.4A from PCIe slot ②Max. 12V@5.6A or 24V@3A from external power supply	①Max. 3.3V@2.4A from PCIe slot ②Max. 12V@2.8A or 24V@1.5A from external power supply
Operating Temperature	-10°C - 55°C (14°F - 131°F)	
Operating RH	10% - 85%, non-condensing	
Storage Temperature and RH	-40°C - 80°C (-40°F - 176°F); 0 - 85%	

[1] When 4 ports PoE <35W, users don't need to connect 12V/24V DC power supply.

Dimensions (mm)



Applications

SCI solutions have been successfully applied to various industries.

Lithium Battery
Electrode surface inspection
Coating and subsection surface inspection
Electrode tab solder joint inspection
Electrode tab position check & rotating angle measurement
Key size measurement of various batteries
Anode & cathode detection

Consumer Electronics
Logo pitch and contour measurement
Mobile phone parts assembly positioning
Screw assembly positioning
Mobile phone battery surface inspection
OS system vision development

Semiconductor and Electronics
LED wafer cutting positioning
PCB board, wafer and DIE inspection
LED inspection
OMM

Solar Panel
Wafer and battery inspection
Coating inspection
Panel assembly positioning
Primary/secondary printing inspection and alignment

Food and Beverage
OCR
Label inspection
Absence detection for caps, labels and sealing materials
Packaging defect inspection
Sealing inspection

Pharmaceutical
OCR
Sealing inspection
Color recognition and classification
1D and 2D codes reading
Infusion needle and bottle inspection
Liquid level gauging

Laser
IC/Glass/Panel positioning radium carving,
cutting and detection after cutting

Robot Guidance
Obtaining position and pose information
Parts assembly positioning

Automotive Industry
Size measurement and tracking of key components
Gluing tracking and inspection
Solder joint inspection
OCR

Printing Industry
Material inspection
Printing inspection
Color inspection

Machinery Industry
Parts dimension measurement
Position detection after assembly
Surface defect detection

Intelligent Traffic
Auto recognition of traffic signage
Traffic flow monitoring
Distance measurement between vehicles
License plate OCR

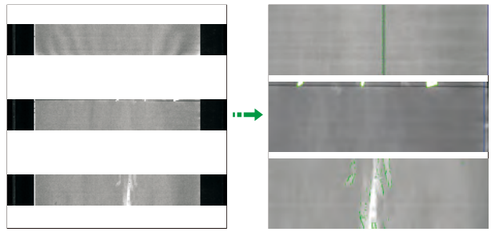
Lithium Battery Applications

Coating Machine



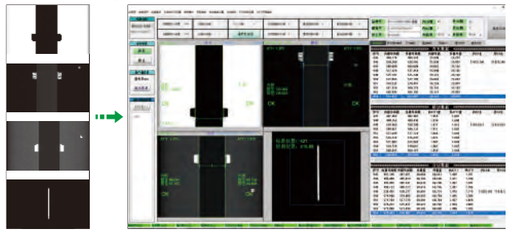
Detection of blank width and alignment of upper and lower coatings, Theoretical accuracy up to 0.1mm; operation speed ≤ 120m/min

Splitting Machine



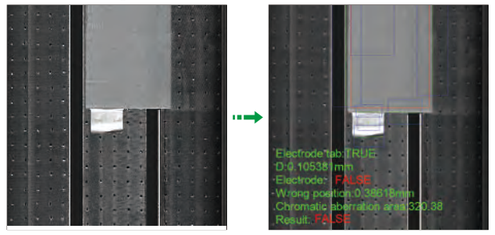
Take images to detect the coating defects such as single-sided coating, watermark perforation, bright spot, damage, powder, dirt, particles, bubbles, etc.
Max. electrode size: 800mm Speed: 120m/min

Laser Slitting and Cutting Machine



A/B sides defect detection; speed less than 90m/min; 500mm width

Electrode Inspection



Electrode surface defect detection
Up to 260pcs/min detection speed

Lamination Machine

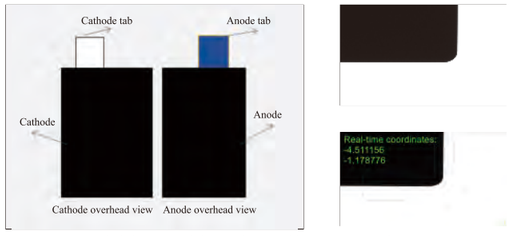
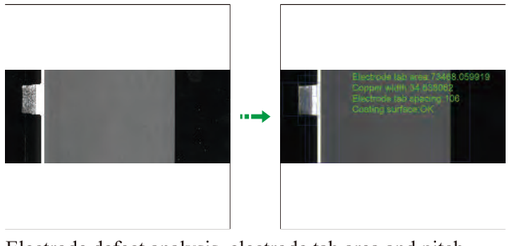


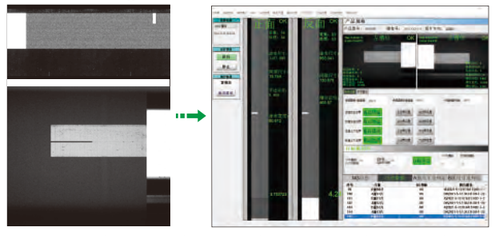
Image acquisition and location offset correction: correct the cathode (anode) to the reference position
Positioning accuracy: 0.05mm
Electrode size range: 100mm×80mm – 300mm×200mm

Laser Cutting



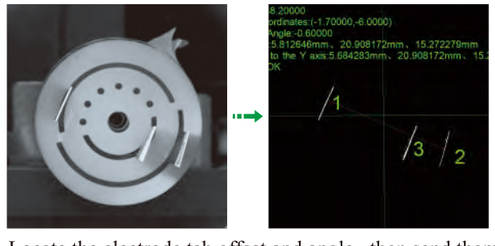
Electrode defect analysis, electrode tab area and pitch gauging, and NG product marking.
Platform motion speed: ≤60m/min

Laser Cleaning Machine



≤ 1500mm/s: Detection speed ≤ 1500mm/s, Detection accuracy ≤ ±0.05mm; Applicable to 50mm ≤ electrode width ≤ 200mm; Defect detection of upper and lower sides of electrode; Detection of electrode dimension

Electrode tabs welding

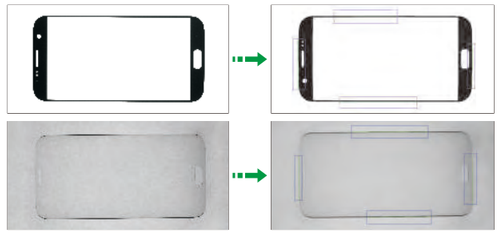


Locate the electrode tab offset and angle, then send them to the motion control section to guide the position and angle of the three electrode tabs. FOV: 48 mm

The pictures are for reference only.

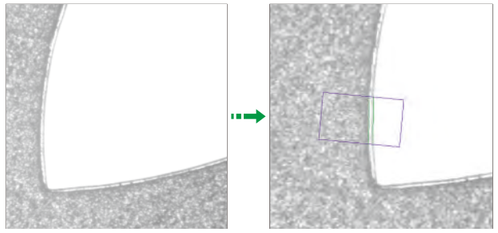
Consumer Electronics Applications

3D Lamination



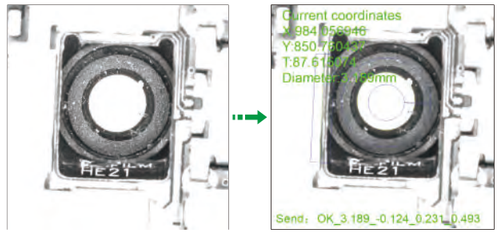
Accurately laminate the curved glass screen with a filling film

Gap Measurement



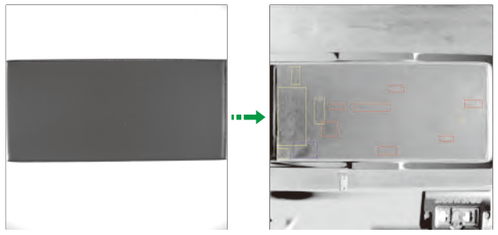
Measure the gap between 2 parts by shooting the image twice with Find Line Tool

Module Lamination



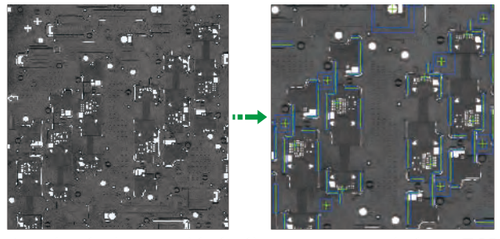
The concentric distance of LED alignment is 0.025mm. The success rate is higher than 99.7% when laminating by module alignment as the position error in X and Y directions can be eliminated.

Battery Surface Inspection



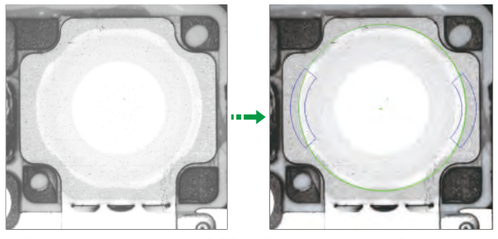
Detect battery surface defects (scratches, dirt and bump points) with various combined lights and image algorithms

Dimensions Measurement for FPC



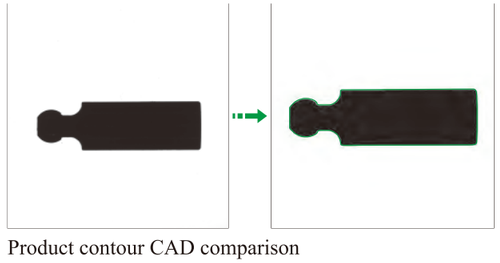
Acquire the image with the line scan camera in large FOV and through the SciSmart machine vision software, various complex dimension information can be quickly obtained.
FPC size: 320×240mm Accuracy: ±0.015mm

Camera Assembly



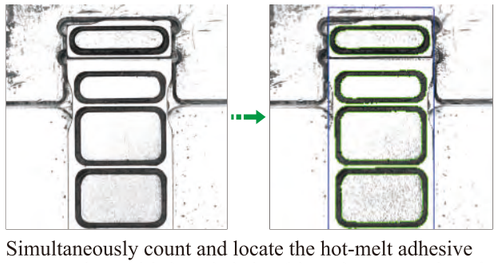
After taking an image, SCI software used the 2 short arcs on the foam to fit them into a circle for foam lamination according to the center of the circle.

Profile Tolerance Measurement



Product contour CAD comparison

Vibrator Positioning

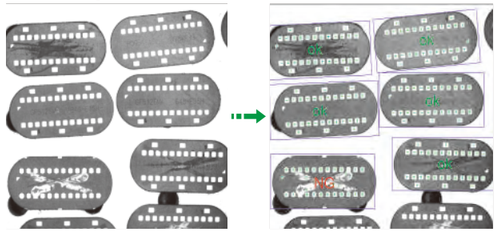


Simultaneously count and locate the hot-melt adhesive contours by multi-threaded algorithm, then zoom them in a certain level to get thousands of contour points within 500ms for laser marking

The pictures are for reference only.

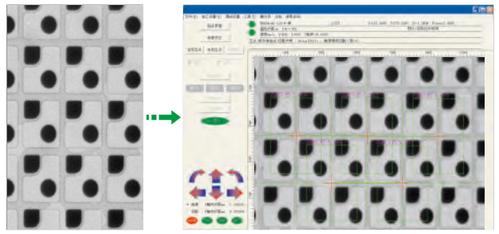
Laser Applications

IC Sorting Machine



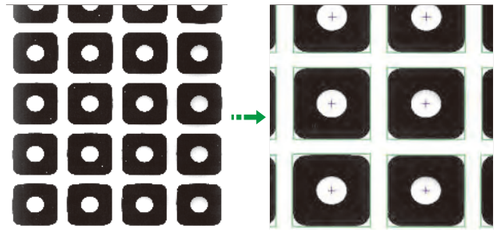
Locate ICs for their pick and place with the template matching tool; CCD camera and SciSmart software is used to pass and fail units with Blob analysis tool.

LED Wafer Cutting Positioning



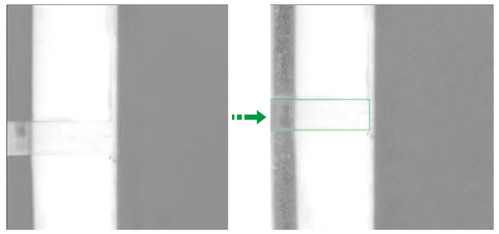
CCD camera and SciSmart software are used to correct the angle or cut track, extract contour, auto focus, etc. for guiding the laser to cut wafer.

Glass Positioning



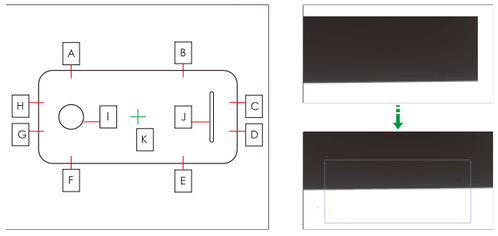
Position all the products on the glass and provide their center sites to guide laser cutting.

PVD Positioning



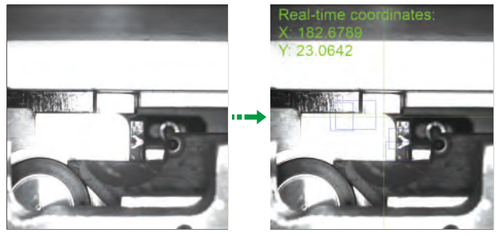
Machine Vision finds the contour of PVD. Laser subsequently follows contour outline to remove the PVD.

Glass Screen Positioning



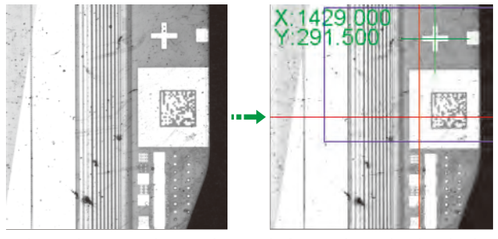
Take images from Position A to Position H with 6 cameras in each work station, 36 cameras in total; position the screen with Find Line tool, and then cut it for the phone button and receiver assembly.

Laser Pre-welding Alignment



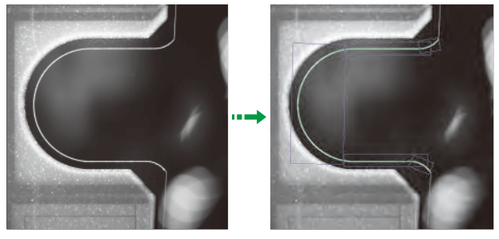
Quickly locate the battery's lower left and upper right's vertices with Find Line tool; calculate the coordinates of pre-welding points by the script, and then send them to the laser motion platform for welding.

Cutting Angle Gauging



Take an image to locate the mark for cutting; check whether the edge is damage, cracks or residue after cutting with the speed of 200mm/s and 8mm FOV.

Cutting Defect Detection

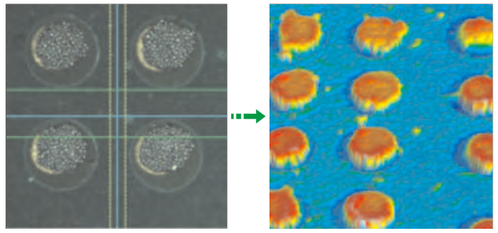


Check if the edge has damage or cracks after glass laser cutting with the contour extraction tool.

The pictures are for reference only.

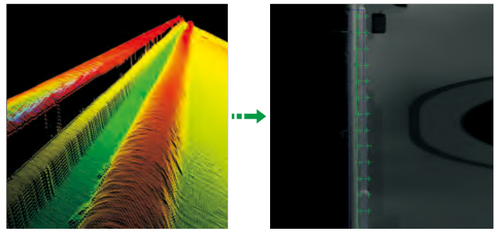
Other Applications

3D Reconstruction



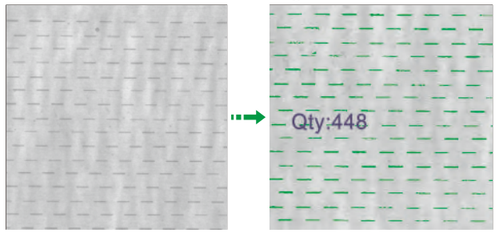
Detecting the solder paste thickness with the 3D laser triangulation tool; good repeatability, and three-dimensional uniformity.

Glue Path Inspection by 3D Guiding



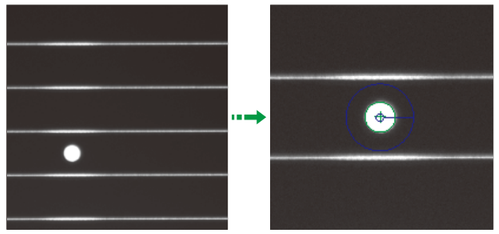
The depth image could be obtained by 3D camera. Use straight-line detection tool to calculate the glue path, and the information obtained is the volume, height and width of the glue path in specific area.

Laser-sculpture Lines Counting



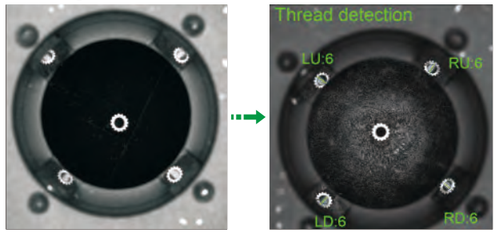
Counting qualified laser marking lines on silicon wafer by scratch detection tool. The image is acquired with line scan camera.
Motion speed: 1000mm/s FOV: 175mm.

Solar Panel Positioning



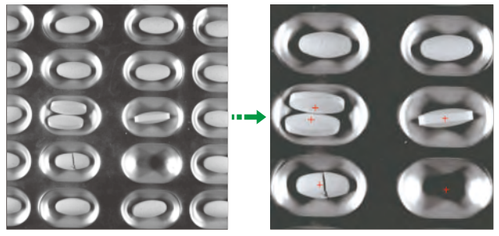
Solar panel mark locating.
FOV: 11mm; accuracy: <0.02mm; image taking and the software processing speed: <300ms.

Nut Inspection



With optical modules, it is able to inspect the front of the nut thread and the numbers of the 4 sides of internal thread at the same time. It can also detect the defects effectively.

Pills Packaging Inspection



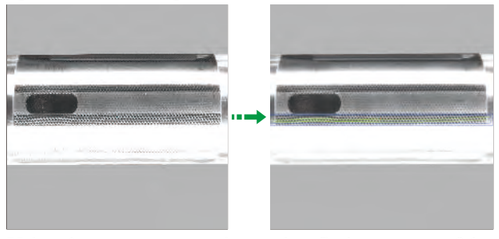
Use Blob analysis tools to analyze the broken, absent, misplaced or tilted conditions of the pills, and increase the quality of packaging.

Special-shaped Lamination



Laminate based on the midpoint and angle of the 2 marks on LCD, and the mapping point from the center of the circle to the line and the angle of the line on polarizer.

Speaker Mesh Inspection

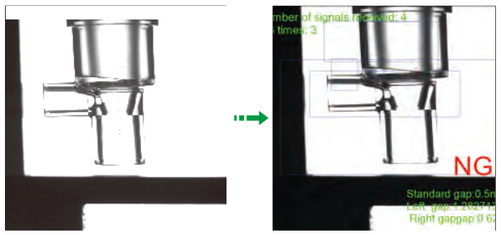


Using the contour extraction tool to fit the contour of the speaker mesh, and sort out the pass and fail products by the straightness.

The pictures are for reference only.

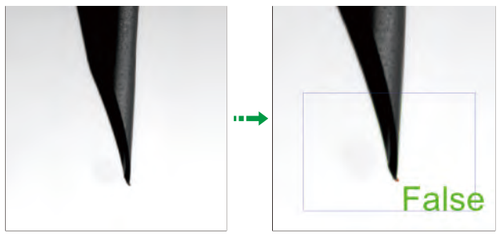
Other Applications

Pump Pipe Inspection



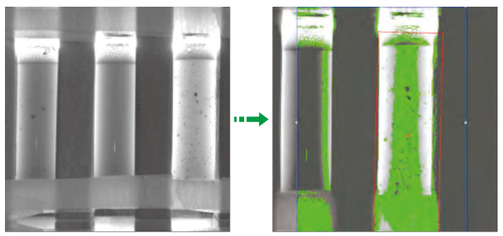
Through Find Line Tool and the geometric measurement tools, the measurement results of the distance between the left and right sides of the pump pipe to the bottom are taken as the basis to determine whether the pump pipe is well inserted into the bottom.

Tip Shape Inspection



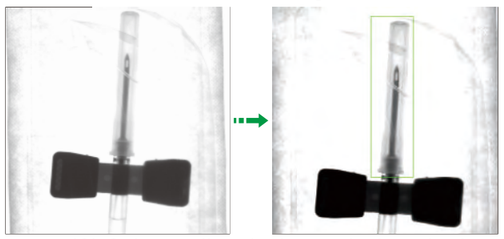
Position the tip by Grey Match, and calculate the position relationship of the tip end and contour to check if the tip is deformed

Injection Inspection



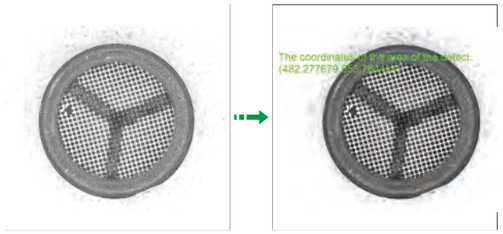
Inspect of foreign material within the injection solution with Threshold and Blob analysis tools.

Infusion Needle and Back Cover Inspection



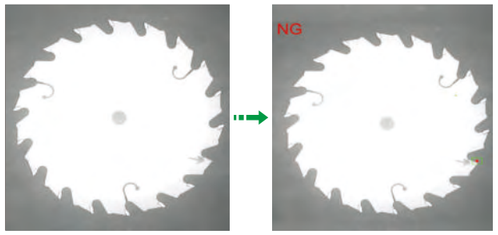
Inspect if infusion needle or back cover is absent by the character matching.

Mesh Inspection



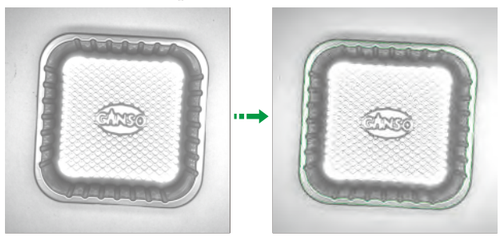
Analyse and select the defect of plastic meshes with Blob analysis tool.

Edge Defects Detection



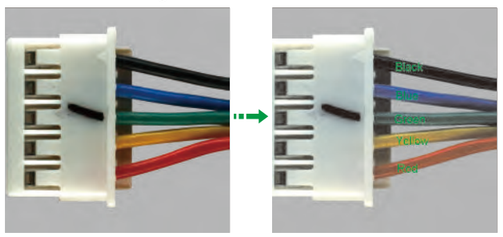
Compare the testing product with the passed product to find out the defects by using the variation model tool.

Product Contour Inspection



Extract and select the product contours, by using the contour extraction and processing tool to improve the passing rate of products sorting.

Cable Color Recognition

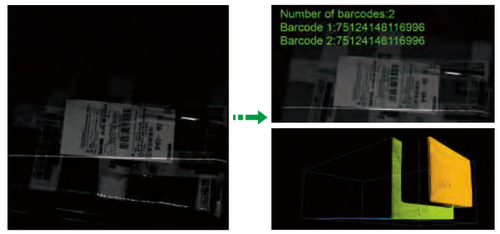


Cable color analysis with the color measuring tool ensures the accuracies of cable position.

The pictures are for reference only.

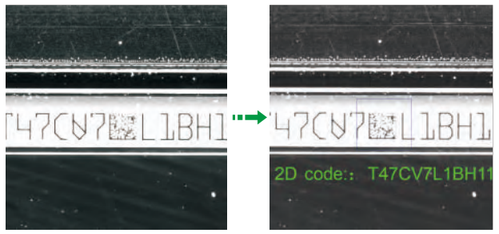
Other Applications

Barcodes Reading and Volume Measurement of Parcels



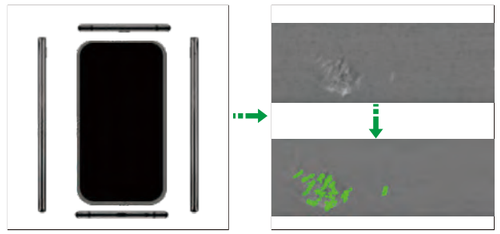
Reading the barcode on package by 2D camera; reconstructing the 3D image of the package and measuring the volume in the following station.

2D Code Reading



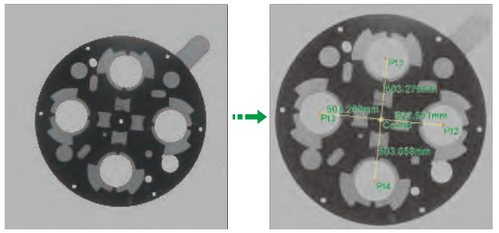
Use 2D code recognition tool to read the 2D code of the products, and then transfer the information to the server.

Mobile Phone Frame Inspection



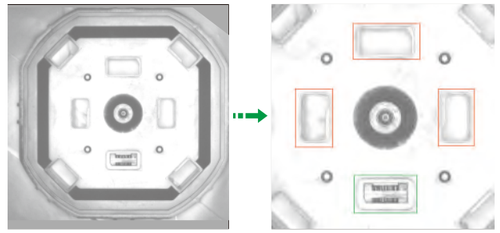
Use the scratch detection tool to detect the defects at the frame sides and ensure the defective products are screened out.

Dimensional Measurement



Use the geometric measurement results as the reference for product specifications.

Parts Assembly Inspection



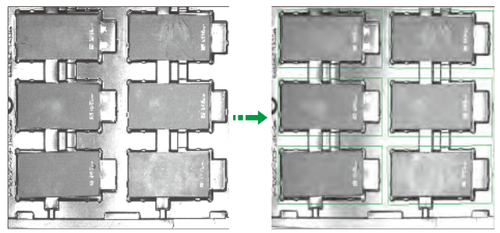
Visualize the position before components assembly by using multi-template matching which greatly improve the efficiency of the industrial robots.

Wafer OCR



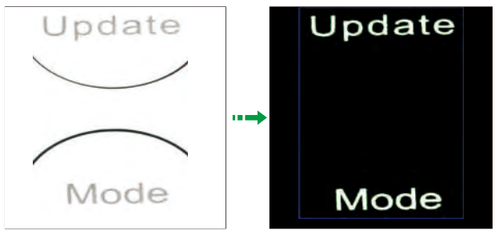
By preprocessing, filter out the target characters and sort them by blocks and use them as a sample set to recognize the characters after training.

Product Positioning



Use Grey Match tool to ensure products accurately positioned.

Characters Inspection



Use 20MP camera to acquire image, and obtain character contours after pre-processed. Use the character contours obtained to compare with the standard contour to find out the defects.
FOV:120mm Accuracy: 0.1mm

The pictures are for reference only.

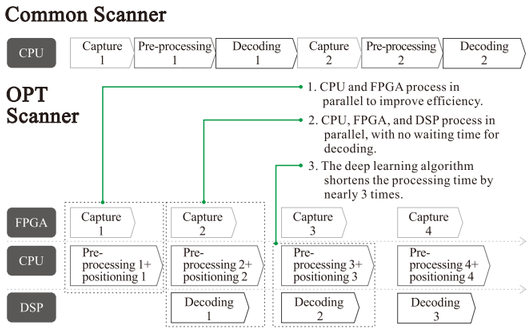
Industrial 1D/2D Code Reader

- Product Features >>P39
- K1 Series >>P40
- H1 Series >>P42
- G1 Series >>P44
- Industrial Application Examples >>P46

Deep Learning Algorithm

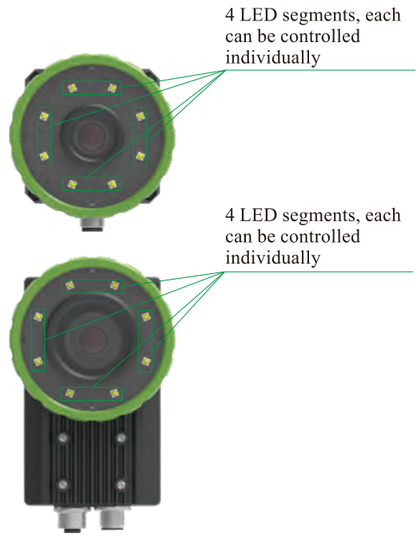
Deep learning algorithms is applied to distinguish barcode components, characters, and anomalies while coping with differences in complex symbologies.With a high-performance processor, it can reliably read all kinds of 1D and 2D codes even when the barcode is damaged, blurred, or has low contrast,poor printing quality.etc. Deep learning decoding algorithm utilizes specialized neural network model which performs with high stability.

Common Scanner



Independently Controlled Light Source

By using a controllable LED light source, The light sources segment (upper, lower, left, and right) can be independently controlled.
The available options are white, red, and blue light.
The intensity of the light source can be adjusted according to the actual application requirement, which can greatly reduce the difficulty of image processing algorithm segmentation and recognition and improve the readability of code.

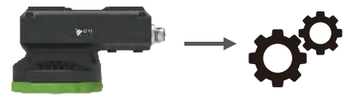


One-button Auto Focus Function

K1 series supports auto-focus function with high focusing accuracy, this allows the code reading process to be less restricted even at different working distances.
The performance of codereader will not be easily affected by the mounting position, which greatly improves the degree of freedom of mechanical and production line design.



Generally, the standard manual focus of the codereader is inconsistent and caused inconvenience



K1 only requires one click on the software to complete the auto focus and is able to be recorded in the programme

Clearer Image With High Sensitivity Sensor

The use of low-noise and high-sensitivity sensor increases the sensitivity multiple times compared to traditional sensors, which comprehensively improve the image quality.
Despite a large FOV and a short exposure time, bright images can still be obtained effortlessly.

Sustainable under harsh environment

Adopted the durable IP65 rating protection housing to prevent dust contamination and protection against water splash.
The industrial-grade design promises stable and consistent scanning results under different temperature conditions.

Selection Guide

OPT - IDH1 - 16L06

- Lens
  L06: 6 mm lens
  L08: 8 mm lens
  L12: 12.4 mm lens
  L15: 14.8 mm lens
  LS: No built-in lens, M12 mounting
  LC: No built-in lens, C-mount
- Resolution
  04: 0.4 MP, 16: 1.6 MP,
  60: 6.0 MP, 120: 12.0 MP,
  200: 20. 0 MP
- Series:H1 Series, K1 Series, G1Series
- Barcode Reader
- Brand name

K1 Series



Product Features

- Use high-sensitivity sensor to fulfill excellent image quality with high scanning rate.
- Support different IO interfaces and input & output at complex situations.
- Built-in deep learning algorithm elevates the efficiency in reading all kinds of 1D and 2D codes.
- The integrated light source on the codereader can be controlled independently.
- Support TCP/IP, Serial, FTP, HTTP, and other common communication protocols.
- The autofocusing lens can automatically perform the focusing which ease the adjustment process.

External Structure

Light Source
8 LED under lens hood to enhance illumination; May choose between wide-angle / spotlight illumination with colour selection in Red, Blue or White; 4 segments (upper, lower, left, right), each can be controlled individually

PWR Indicator
Power indicator, when the device is powered up normally, blue light will be light up.

LNK Indicator
Network connection indicator, when the device uses the network for normal transmission, green indicator will light up.

ACT Indicator
Network transmission indicator, as when the device uses the network for transmission under normal conditions, the indicator will flash in yellow. The flashing speed is according to the speed of data transmission.



Lens Cover
Transparent lens hood, detachable and upgradable with polarized lens.

Ethernet
Gigabit Ethernet port for data transmission.

Power & I/O
Power supply, I/O and serial port.

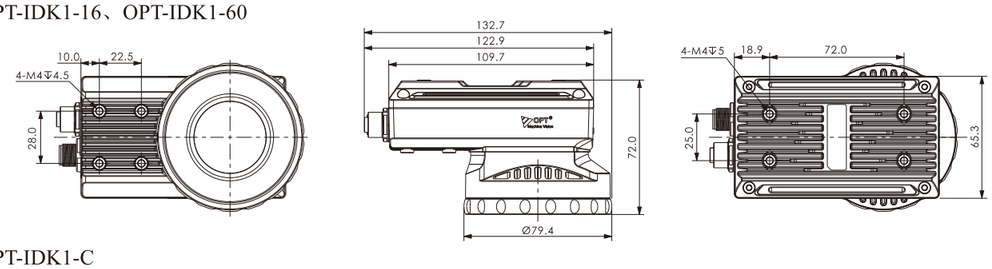
U1/U2 Indicator Light
The user 1/2 indicator light use to confirm functions are in normal working condition.

Technical Parameters

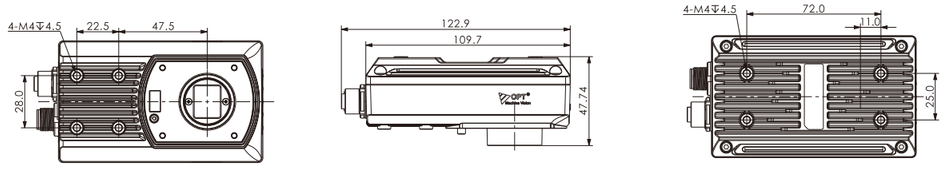
Model		OPT-IDK1-16	OPT-IDK1-60	OPT-IDK1-120
Sensor Type		CMOS, Global shutter	CMOS, Rolling shutter	CMOS, Global shutter
Pixel Size		3.45 μm×3.45 μm	2.4 μm×2.4 μm	3.2 μm×3.2 μm
Image Circle		1/2.9"	1/1.8"	1"
Maximum Processing Frame Rate		60fps	30fps	28fps
Maximum Scanning Rate		90codes/sec		84 codes/sec
Exposure Time		16μs ~1sec		60μs ~1sec
Resolution		1408×1024	3072×2048	4096×3072
Power Gain		0dB ~ 40dB		0dB ~18dB
Light Source		White light, red light or blue light can be selected		Without built-in light source
Barcode Category	1D Code	Code39, Code93, Code128, CodaBar, EAN8, EAN13, UPCA, UPCE, ITF14, ITF25, Matrix 25, MSI, China Post, Code11, etc		
	2D Code	QR, DM, etc		
	stacked code	PDF417, etc		
Data Interface		Gigabit Ethernet (1000Mbit/s)		
I/O		The 12-pin M12 connector supplying power and I/O: including optocoupler isolated inputs x 3, optocoupler isolated outputs x 3, RS232 input x1, RS232 output x 1		
Communication Protocol		SmartSDK, TCP Client, Serial, FTP, TCP Server, PROFINET, Ethernet/IP, MELSEC, Fins, ModBus, SLMP		
Power Supply (Voltage)		24 VDC		
Power Consumption		< 48W@24VDC (Enable built-in fill light)		< 12 W@24 VDC
Ambient Temperature		Working temperature 0~50℃, storage temperature -30~70℃		
Relative Humidity		20%~95%RH, non-condensing		
Lens Interface		M12-Mount, can be adjusted mechanically		C-Mount
Lens cover		Transparent lens cover, polarizing lens cover can be purchased separately		With lens hood
Protection Rating		IP65		
Weight		470g		400g

Dimensions (mm)

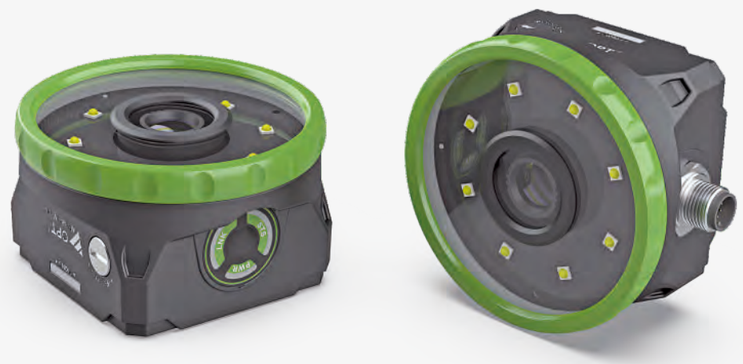
OPT-IDK1-16、OPT-IDK1-60



OPT-IDK1-C



H1 Series



Product Features

- Deep learning algorithm reliably read all kinds of 1D and 2D codes without being interfered by dirt or code damage.
- Support different IO interfaces and input & output at complex situations.
- The codereader has multiple groups of status indicators to realize multi-angle display of real-time status.
- Support TCP, Serial, FTP, Profinet and other common communication protocols.

External Structure

Light Source
8 LED under lens hood to enhance illumination; May choose between wide-angle/spotlight illumination with colour selection in Red, Blue or White; 4 segments (upper, lower, left, right), each can be controlled individually.

Trigger Button
Click button once to switch from continuous mode to trigger mode.To trigger the codereader, click the button once.

Code Reading Indicator
Also known as OK/NG indicator.
Device start up: Orange Light On
Device Powered on:/NG: Red Light On
Code Information read/OK: Green Light On



Lens Cover
Transparent lens hood, detachable and upgradable with polarized lens

Focusing Screw
Manual focus adjustment to make the scanning image clearer.

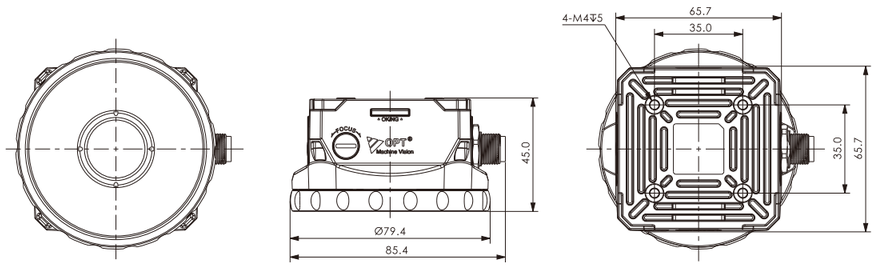
Ring Indicator
The ring indicator includes PWR indicator (power indicator), STS indicator (status indicator), LNK indicator (network status indicator).

17-PIN Interface
Power supply, I/O, ethernet and serial port.

Technical Parameters

Model		OPT-IDH1-04	OPT-IDH1-16
Sensor Type		CMOS, Global shutter	
Pixel Size		6.9 μm×6.9 μm	3.45 μm×3.45 μm
Image Circle		1/2.9"	1/2.9"
Maximum Processing Frame Rate		60fps	50fps
Maximum Scanning Rate		60codes/sec	60codes/sec
Exposure Time		16μs ~1sec	
Resolution		704×540	1408×1024
Power Gain		0 ~ 40dB	
Light Source		Spot white light, may opt for spot red light/blue light, wide-angle white light/blue light	
Barcode Category	1D Code	Code 39, Code 93, Code 128, CodaBar, EAN, ITF25, MATRIX25, MSI, CODE11, INDUSTRIAL25, CHINAPOST, etc	
	2D Code	QR, Data Matrix, etc	
	stacked code	PDF417, etc	
Interface		17-pin M12 interface supplying power, Ethernet, digital I/O, serial port functions	
Power Consumption		< 19.8 W@24 VDC	
I/O		3 non-isolated inputs (Line In 0/1/2), 3 non-isolated outputs (Line Out 0/1/2),RS-232 x 1; support device trigger via the top button	
Communication Protocol		SmartSDK, TCP Client, UDP, Serial, FTP, HTTP, TCP Server, PROFINET, Ethernet/IP, MELSEC, ModBus	
Power Supply (Voltage)		12 ~ 24 VDC	
Ethernet		Fast Ethernet (100Mbit/s)	
Ambient Temperature		Working temperature 0~50℃, storage temperature -30~70℃	
Relative Humidity		20%~95% RH, non-condensing	
Focal Length		6mm/12.4mm/14.8mm/25mm/C-Mount	
Lens Interface		M12-mount, manual focus	
Lens cover		Transparent lens cover, polarizing lens cover can be purchased separately	
Protection Rating		IP65	
Weight		240g	

Dimensions (mm)



G1 Series



Product Features

- 0.4MP pixel image sensor.
- Able to read complex code such as DPM code and tiny code.
- Support high-speed decoding, up to 60FPS.
- Compact-sized and full industrial-grade protection.
- Easy to setup.

External Structure



Light Source
LED light available to enhance image quality for better codereading performance.

Trigger Button
When the device is in trigger mode, click the button to trigger the device.

Focusing Screw
Manual focus adjustment to make the scanning image clearer.

SR Wire
The SR wire outlet provides power, Ethernet, digital IO, serial port function.

LED Aimer
Used to indicate the target field of view for easy target aiming

LNK Indicator
Network status indicator.
Normal status: green light on;
Abnormal status: light off.

PWR Indicator
Power indicator;
Normal status: green light on
Abnormal status: red light on.

Light Source
LED light available to enhance image quality for better codereading performance.

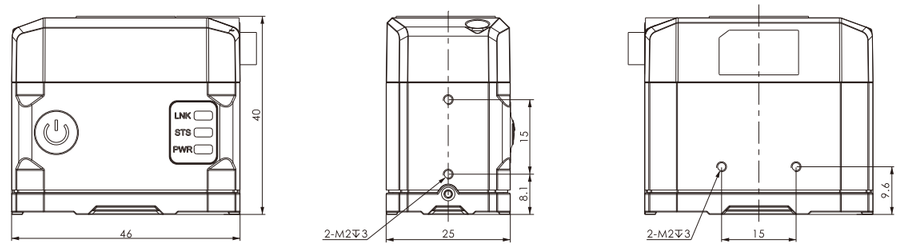
Image Sensor
Used for collecting image data

STS Indicator
Status indicator.
Normal status: green light on.
Abnormal status: red light on.

Technical Parameters

Model		OPT-IDG1-04L06-31
Sensor Type		CMOS, Global shutter
Pixel Size		6.9 μm×6.9 μm
Image Circle		1/2.9"
Maximum Processing Frame Rate		60fps
Maximum Scanning Rate		41codes/sec
Exposure Time		16 μs ~ 1 sec
Resolution		704×540
Power Gain		0 dB ~ 15 dB
Light Source		Red
Barcode Category	1D Code	Code 39 , Code93 , Code128 , CodaBar , EAN , ITF25, etc
	2D Code	QR，DM, etc
Interface		Fast Ethernet （100Mbit/s），Fast Etherent(100Mbit/s)
I/O		17-pin M12 Interface power supply IO: Including 2-way optocoupler isolation input, 2-way optocoupler isolation output, 1 channel RS232, support side button trigger.
Communication Protocol		SmartSDK，TCPClient，UDP，Serial，FTP，HTTP，TCPServer，Profinet，MELSEC，Ethernat/IP，ModBus，UDP，Fins，SLMP
Power Supply (Voltage)		12~24 VDC
Power Consumption		<10.6W@24VDC (Enable built-in fill light)
Ambient Temperature		Working temperature 0~50℃, storage temperature -30~70℃
Relative Humidity		20%~95% RH, non-condensing
Dimensions		46mm×40mm×25mm
LED Aimer		Green LED light
Focal Length		6mm/12.4mm/14.8mm/25mm
Working Distance		40~120mm, support the top focus button, manually adjust the focus distance
Protection Rating		IP65
Weight		About 160g

Dimensions (mm)



Application Industry

3C Industry
PCB board manufacturing process traceability
Connector detection
Electronic product traceability

Lithium Battery
Battery information tracking

Factory Automation
Workpiece sorting and tracking

Automotive Manufacturing
Tracking of automobile accessories
DPM code verification after marking

Medical Industry
Medicine bottle code identification
Medical device code tracking

Logistics Automation
Carton box and crate tracking
Automated warehousing

Photovoltaic Industry
Process traceability

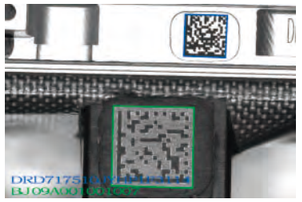
Food Industry
Product tracking

Application Example

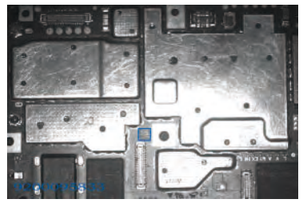
Cell phone accessories



Cell phone frame and fixture



Cell phone PCB board



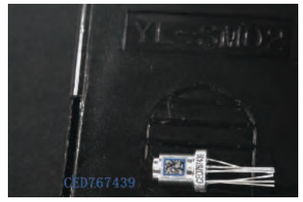
Metal processing parts



Automotive accessories



Fiber cable termination



Cell phone battery



lithium battery



Invisible QR code on glass



Bottle cap



Medical Test Tube



Logistics tracking



3D Laser Sensor

The Imaging Principle and Features of 3D Laser Sensor >>P48
3D Laser Sensor >>P50
Application Cases >>P56
Repeatability Verification >>P61

Overview

3D laser scanning technology dates from the mid-1990s, which is a new technology to help quickly build 3D model of objects,obtaining 3D coordinate data of object surface by laser scanning and triangulation.The 3D laser sensor uses this principle to achieve three-dimensional contour scanning. It has the characteristics of high precision, high speed, and non-contact. It is often applied in pipeline inspection,reverse engineering and other fields.

Operating Principle

The laser beam emitted from 3D laser sensor is magnified and stretched through a set of optical lenses into a laser line which is projected onto object surface. According to Scheimpflug principle in optical system, the diffuse reflection lights of the laser line will be projected onto the sensor and then height of object surface can be calculated via triangulation principle according to different projection positions.Besides height, the system also capable in calculate length of X-axis by this set of image data and provides a set of 2D coordinate value and finally reaches a result of 3D gauging by moving object or 3D laser sensor.

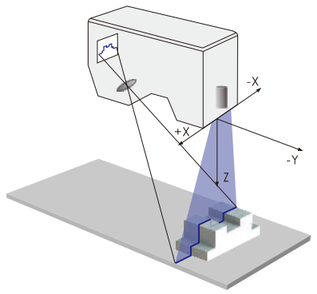
Measuring Principle

Triangular Reflection Method



As shown above

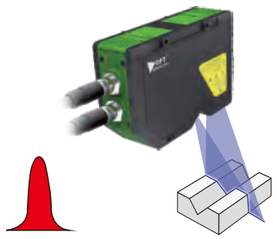
- Semiconductor laser transmitter emitting laser beam
- The laser line with uniform spot size and interval is formed after the laser beam goes through the cylindrical parallel light diffuser.
- Diffuse reflection or specular reflection on the object surface
- The reflected light passes through the light acceptance lens module and images on CMOS
- Through the photoelectric reaction of different CMOS pixels, the height value and gray value of the corresponding position will be calculated.



High Accuracy

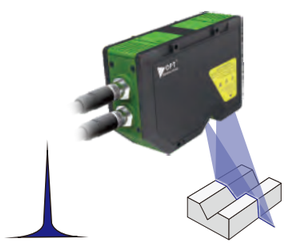
Illuminating

Using dedicated blue laser with wavelength of 405nm and a high-performance optical diffusion system, the laser can extremely focus the measurement position of the object, and can ensure it's spots' lowest diffusion within different focal lengths in order to accurately scan the subtle changes of the object.





Effect schematic diagram of the previous red light or low-performance laser system.

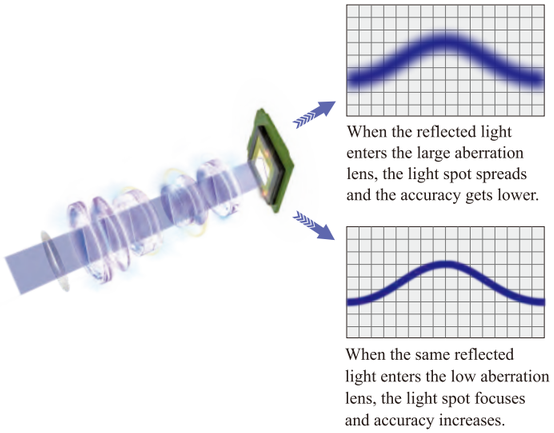




Effect schematic diagram of OPT high-performance laser optical system.

Light Acceptance

OPT low-aberration, large-aperture, high-functional light acceptance lens module can effectively increase light income and adopts special optical design to ensure that the object can be uniformly imaged on the COMS at different height, improving the linear accuracy of the sensor, and achieving precise detection to subtle changes of object.

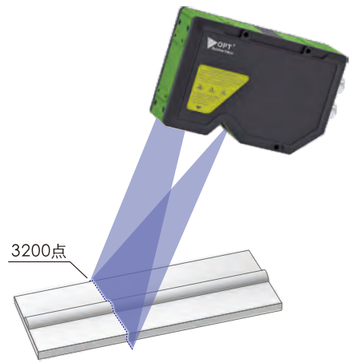


When the reflected light enters the large aberration lens, the light spot spreads and the accuracy gets lower.

When the same reflected light enters the low aberration lens, the light spot focuses and accuracy increases.

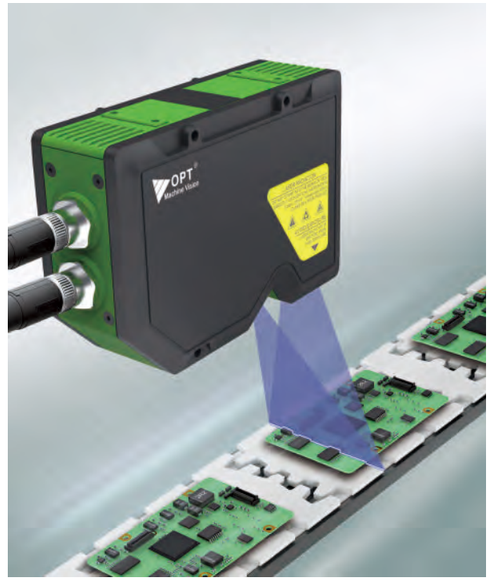
X-axis Contour Points

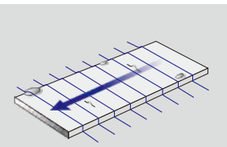
The number of X-axis contour points is up to 3200. In the case of the same X-axis width, the distance between adjacent contour points is smaller, which makes it easier to measure the subtle bulges or depressions of the object.



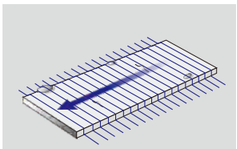
High Speed

HS-CMOS: Adopting 3D dedicated High Speed-CMOS, both high speed and large dynamic range, easy for high-speed shooting; high-performance FPGA and IC dedicated processors can perform sub-pixel and high-precision linear processing. Through high-speed multi-threaded parallel processing of sampling, reading, processing, and output, the sampling speed is up to 67,000 profiles/sec. It can easily realize the "online" high-speed on-the-fly full inspection shooting while capable in capture the abnormal size without omission.





For low-speed products, its scanning frequency is low, missed-out the detection for subtle defects on the object surface.

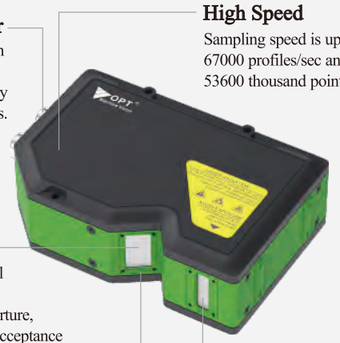


High-speed products don't missed-out the detection on any subtle defects on the object surface by its overlay scanning .

3D Laser Sensor



Product Function



IP65 Connector
With IP65 protection level, it can be used safely in wet or dusty on-site environments.

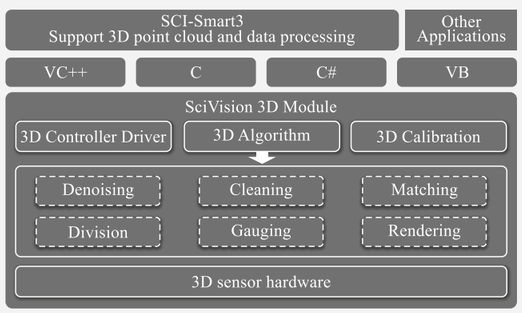
High Speed
Sampling speed is up to 67000 profiles/sec and 53600 thousand points/sec.

Large Aperture Lens Module
Using special optical design of low aberration, large aperture, high function light acceptance lens module, effectively increasing the amount of light received.

Large Dynamic Range
Simultaneously accurately measuring black objects with low reflectivity and metal objects with high reflectivity.

High Accuracy Blue Laser
Without external light source and the brightness is automatically optimized. Ultra-high line laser resolution which is up to 3200 pixels.

Simple and Easy to Use 3D Software



Product Features

High Accuracy
Up to 3200 pixels on the horizontal direction of the X axis, which can accurately detect the subtle changes in the surface contour of the product.

High Speed
The sampling speed is up to 67000 profiles/sec, which makes it easy to realize online high-speed flying shooting full inspection.

Applying to Various Materials
High dynamic range CMOS, high-speed tuning of laser power and gain, stably adapting to different materials and different colors of targets.

Free Choice of 2D/3D
2D mode: Using machine's built-in 2D standard measurement tools, and the measurement results showing OK/NG ; communicating with the PLC or IPC to realize automatic detection and reduce manpower input.
3D mode: By scanning objects and using SDK to obtain the global 3D point cloud data, the height image and grayscale image can be output simultaneously, and the altitude difference can be visually displayed using color rendering.

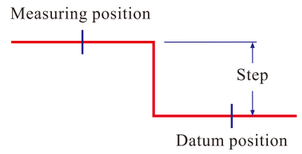
Various Specifications
13 kinds of sensors with different specifications can flexibly meet the different budget, FOV & accuracy requirement.

System & Software
A variety of SDK interfaces such as VB, C#, C++, etc. are available in this product. Besides, it supports OPT's SciSmart intelligent software, easy to use without programming.
The SCI visual process design can help achieve a very short project implementation cycle and non-programmers can also complete the visual application effortlessly by graphical programming.

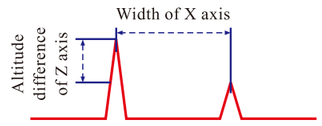
Flexible Service
Based on customer demands, OPT can supply hardware, or hardware & software services, or ODM services.

Measurement Application:various measurement modes for various detection

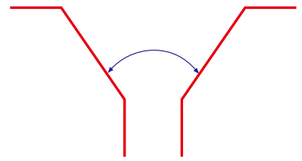
Step measurement



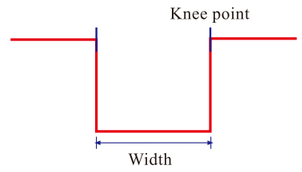
Distance measurement



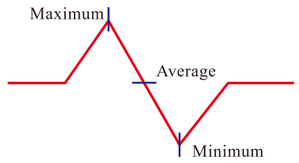
Angle measurement



Width, knee point position measurement



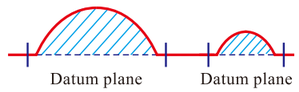
Height measurement



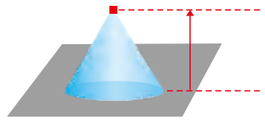
Thickness measurement



Sectional area



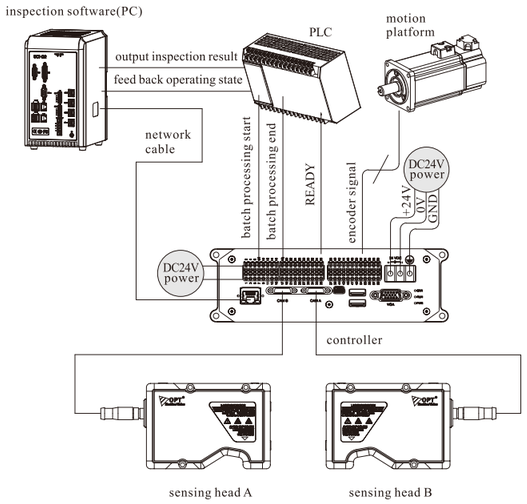
Fast 3D step measurement

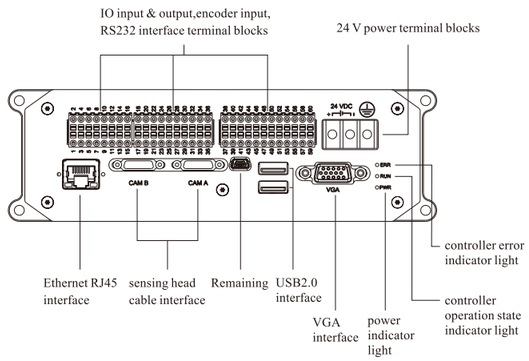


Fast 3D flatness measurement



Multi-interface trigger mode





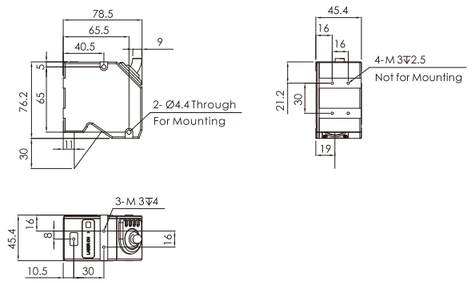
Product Model and Parameters

Model		OPT-LPA30	OPT-LPA70	OPT-LPA71	OPT-LPA130	OPT-LPA260	OPT-LPB50	OPT-LPB80	OPT-LPB140	OPT-LPB240	OPT-LPB300	OPT-LPB400	OPT-LPC20	OPT-LPC60
Reference distance(CD)		30mm	70mm	70mm	130mm	260mm	50mm	80mm	140mm	240mm	300mm	400mm	23mm	60mm
Z axis measuring range(FS)		9mm	27mm	71mm	140mm	290mm	5mm	12mm	24mm	40mm	288mm	200mm	5.2mm	18mm
Width of X axis	near-end	13.5mm	24mm	50mm	78mm	135mm	30mm	57.5mm	89mm	138mm	175mm	180mm	13mm	26mm
	Reference distance	15mm	27.5mm	66mm	105mm	190mm	30.5mm	60mm	95mm	147mm	290mm	220mm	14.5mm	31mm
	far-end	16mm	32mm	80mm	128mm	240mm	31.5mm	62.8mm	96mm	157mm	320mm	280mm	16mm	36mm
Z axis repeatability		0.5μm	0.8μm	2μm	5μm	10μm	0.2μm	0.4μm	0.5μm	1μm	8μm	5μm	0.1μm	0.2μm
X axis repeatability		2.5μm	5μm	10μm	18μm	30μm	2.5μm	5μm	8μm	13μm	45μm	20μm	1.5μm	5μm
X axis data interval		10μm	20μm	50μm	80μm	150μm	10μm	20μm	30μm	50μm	100μm	90μm	5μm	12μm
Size/mm³		78×76×45	95×82×45	95×82×45	95×82×45	132×82×45	163.5×98×55	145.2×92.7×52.6	147.5×93×53.2	195.2×92.7×54.7	197×105.5×64.2	194.5×93×55	137×85×56.2	130.2×88×57
Weight(kg)		0.4	0.55	0.55	0.55	0.58	0.9	0.9	0.9	1	0.9	1	0.8	0.8

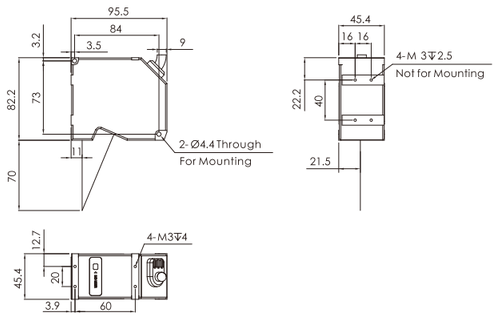
Light source wavelength	405nm
Laser class	2M
Laser output power	10mW
Z axis linearity	LPA series，LPB series±0.05% FS，LPC series±0.02% FS
Contour points on X axis	1600 points for LPA series;3200 points for LPB,LPC series
Scanning speed(Hz)	460-2500Hz for LPA series;2500-8000Hz for LPB series（1000-4000Hz for LPB300）;3200-67000Hz for LPC series
I/O interface	8 programmable input interfaces;8 programmable output interfaces
Encoder interface	Support single-ended,differential encoder
Input/Output	VGA interface*1, RS232 interface*2, USB 2.0 interface*2 , 100Base-Tx/1000Base-T Ethernet interface*1
Ambient operation temperature	0~50℃
Ambient storage temperature	-20~70℃
Ambient operation RH	35%~85%，No condensation
ESD protection	Contact discharge 4kV,air discharge 8kV,up to IEC61000-4-2 standard
EFT protection	Power port: 2kV/5 or 100kHz;signal port:1kV/5 or 100kHz,up to IEC61000-4-4 standard
Shock	15g/6ms each axis;up to IEC68-2-27Ea standard
Vibration	10-100Hz double amplitude1.5mm; 3 hours in X,Y and Z directions;up to IEC68-2-6Fc standard
Enclosure rating	IP65,up to IEC 60529 standard
Matched data cable model	OPT-LPZA1(1m straight plug)、OPT-LPZA3(3m straight plug)、OPT-LPZA6(6m straight plug)、OPT-LPZA10(10m straight plug) OPT-LPZB1(1m bent plug)、OPT-LPZB3(3m bent plug)、OPT-LPZB6(6m bent plug)、OPT-LPZB10(10m bent plug)

Dimensional Drawing for A Series(mm)

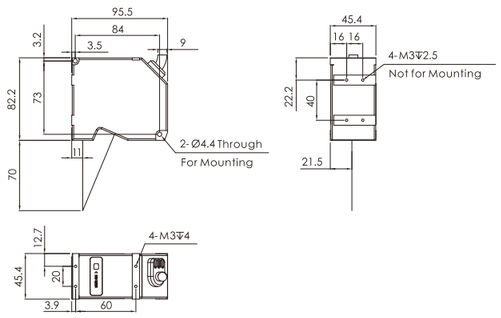
OPT-LPA30



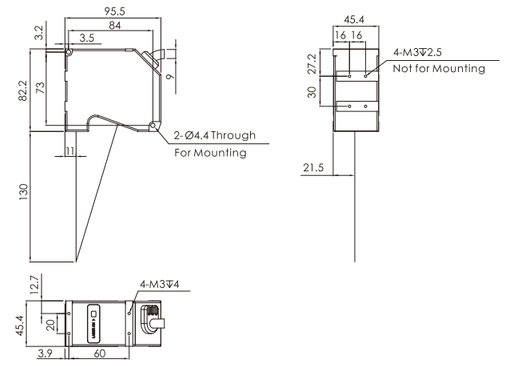
OPT-LPA70



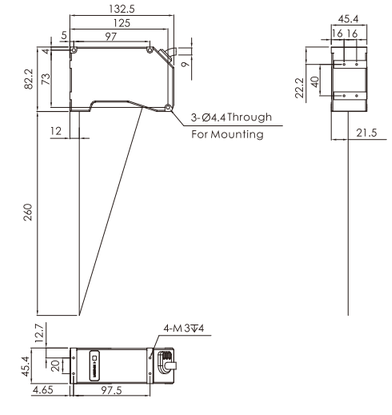
OPT-LPA71



OPT-LPA130

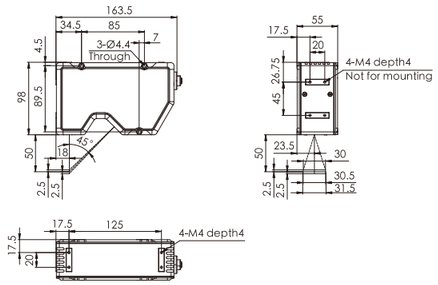


OPT-LPA260

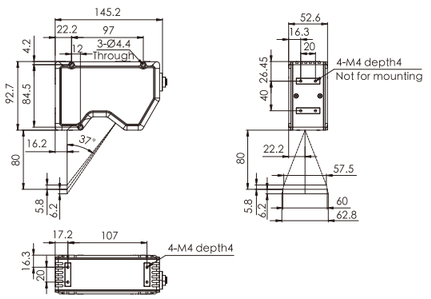


Dimensional Drawing for B Series(mm)

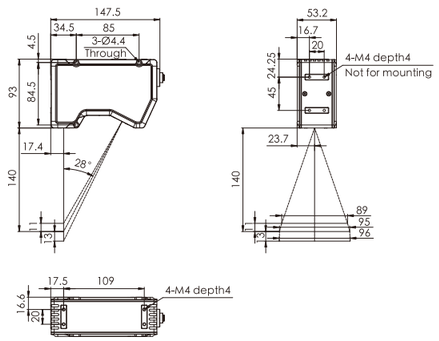
OPT-LPB50



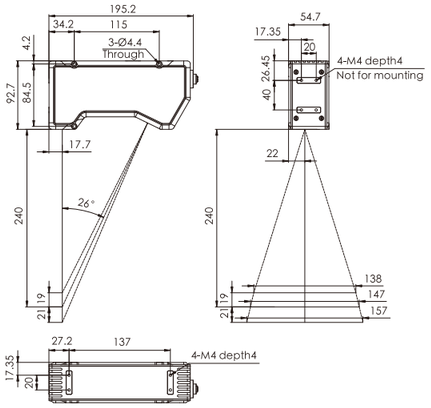
OPT-LPB80



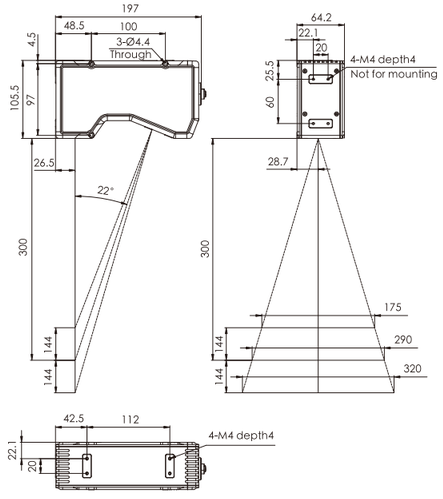
OPT-LPB140



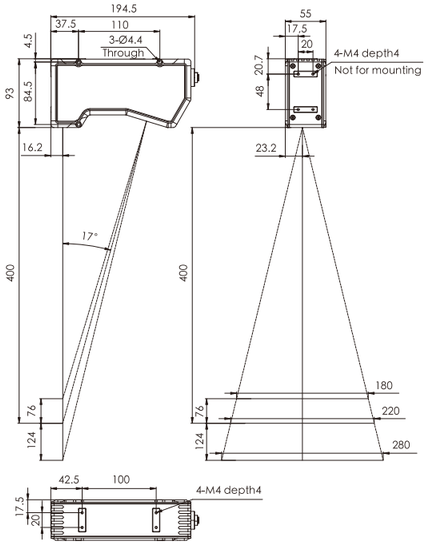
OPT-LPB240



OPT-LPB300

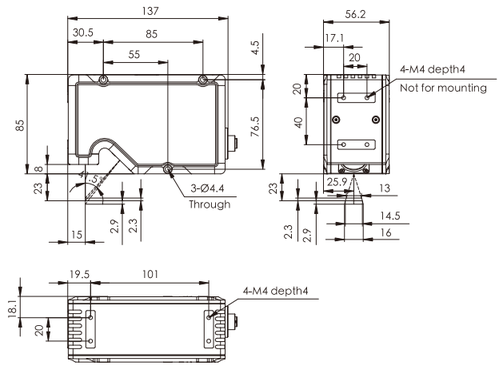


OPT-LPB400

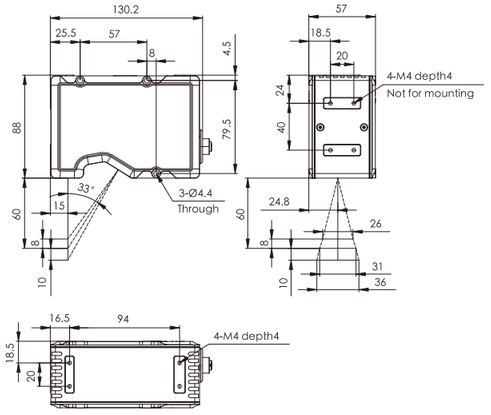


Dimensional Drawing for C Series(mm)

OPT-LPC20

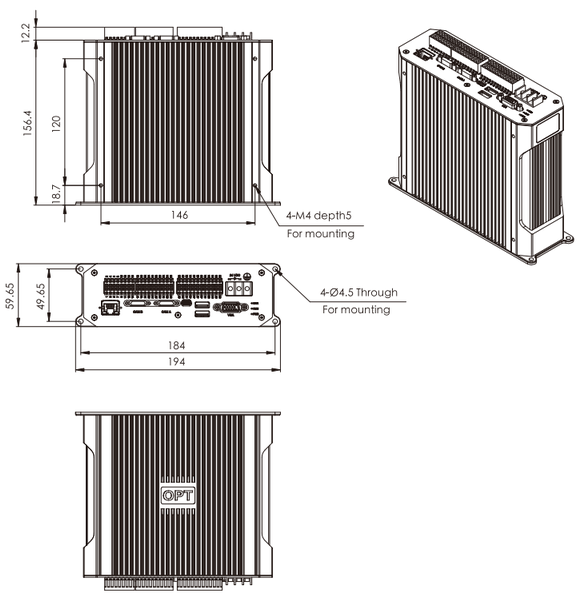


OPT-LPC60



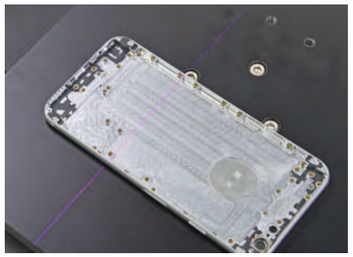
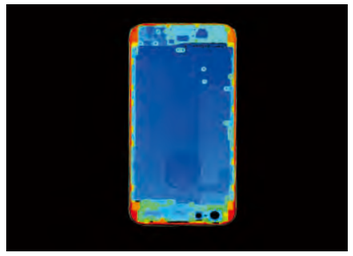
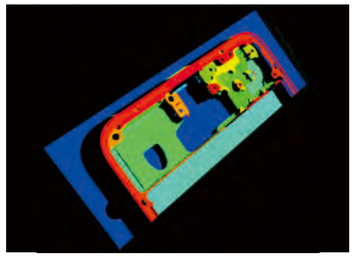
Controller size drawing(mm)

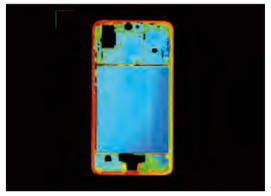
Model	Application range
OPT-LPS1	OPT-LPA、OPT-LPB Series
OPT-LPS2	OPT-LPC Series

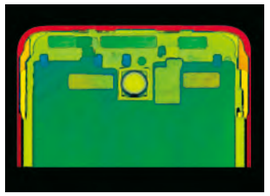


Inspection of Middle Frame

The inspection of height difference, flatness, and inner length & width of the middle frame ensures that the screen and shell of mobile phone are well-matched.
Detection of foreign material and flatness of battery compartment ; detection of LCD compartment step and LCD flatness; detection of step, flatness, missing part, screw height of structural components.

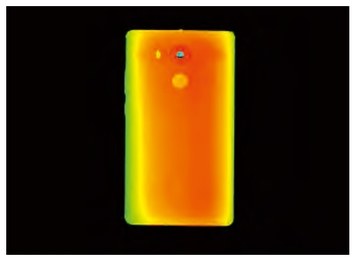






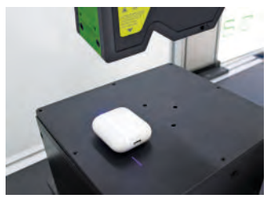
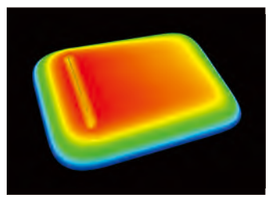


Cosmetics Inspection

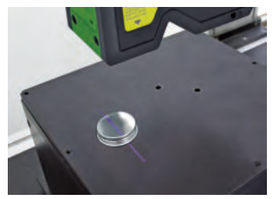
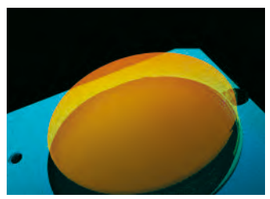
Flatness of mobile phone shell inspection; convex and concave defect detection;LOGO inspection;fingerprint module step detection.
Camera turret height difference & flatness detection; charging port, button compartment and headphone jack step detection.


Highly reflective white plastic.
High dynamic detection of reflective objects to filter out the noise caused by reflections.

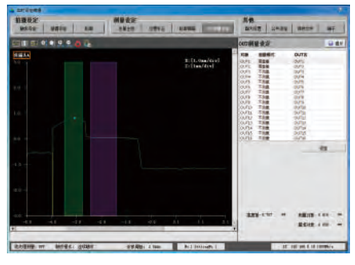
Flatness detection of highly reflective objects.
Using SCI-Smart3 software to measure flatness of the object after filtering out the noise formed by the reflection.

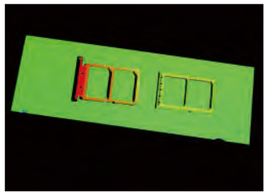
3C Precision Components detect

Inspection of height difference and flatness of rear camera holder.
The high dynamic mode can be used to measure metal and able to effectively suppress the influence of metal reflection, hence, lesser noise interference on the final imaging.

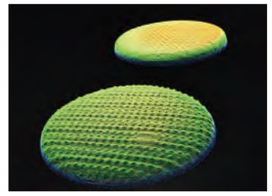




Inspection of step, flatness, gasket damage of SIM card tray.

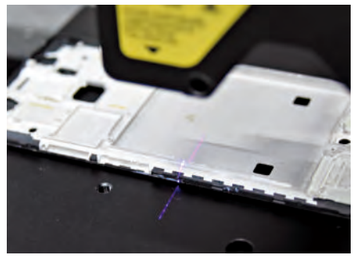
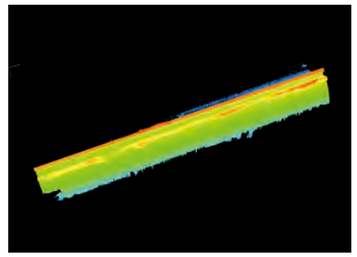
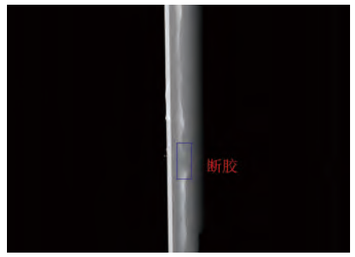



Button battery thickness and defects Inspection.

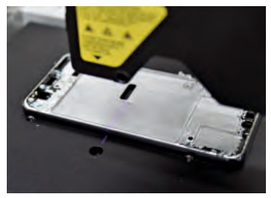
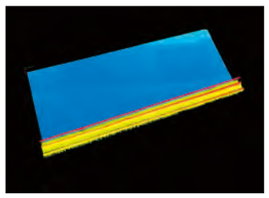
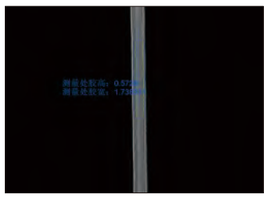
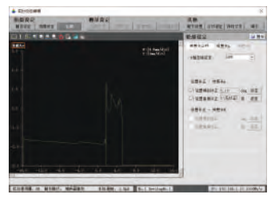



Inspection of dispensing

Inspection of path breakage.
The measurement accuracy of the OPT-LPB50 laser sensor can reach up to 0.005mm, and the acquisition speed can achieve 150mm/s while the measuring depth is 5mm.

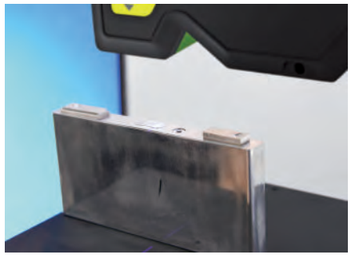
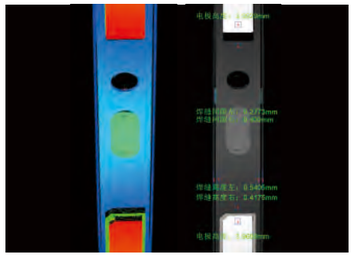
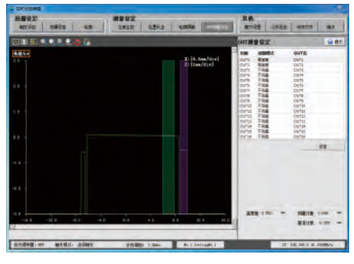
Width and height of path Inspection.
Use the calipers and height measuring tools of SCI-Smart3 software to accurately measure the width and height of the glue.

Inspection of Battery

Before soldering: height difference and gap measurement between top cover and shell; height measurement of flexible connection metal leaf spring.
After soldering: height inspection of sealing nail; inspection of solder joint, pinhole and black spot; inspection of shell flanging and pole altitude difference,height measurement of explosion-proof hole.

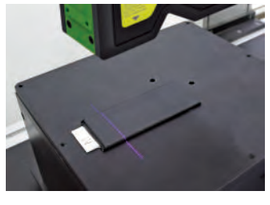
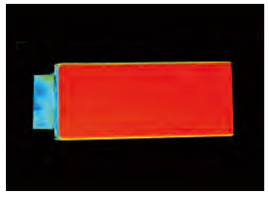
Measurement of the step difference between the top cover and the shell port.

Measurement of pole flatness and height

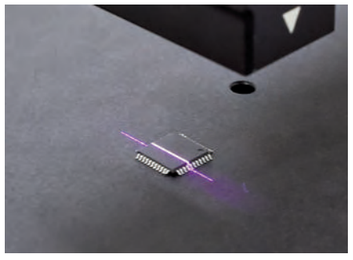
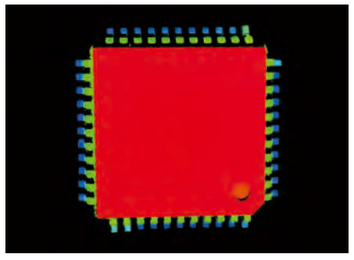
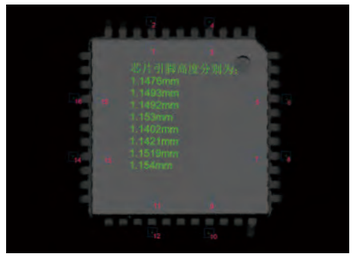



Detection of bulge, flatness, foreign matter, wrinkle, bump, scratches of cell phone battery

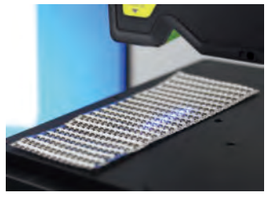
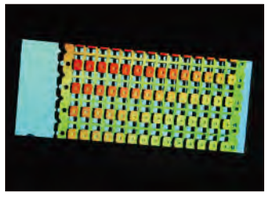



Inspection of Chip and IC

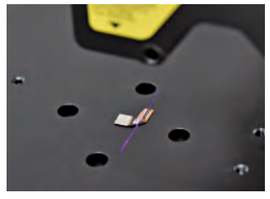
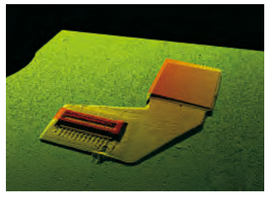
Inspection of length and flatness of chip pin.
Using the OPT-LPC20 to accurately position each pin of the chip, the length and flatness of each pin can be measured.
The data range of 20 sets repeated experiments is less than 0.01mm.

Inspection of flatness of bracket.
The OPT-LPB140 can be used to detect the flatness of the end face of the lab stand and can be compatible with 90mm measurement width to the maximum extent.

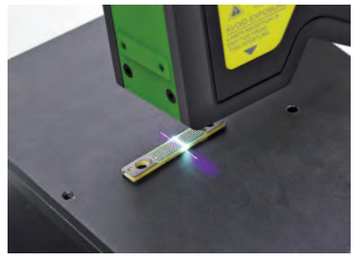
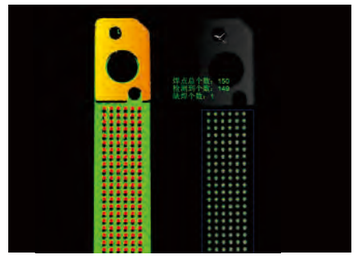
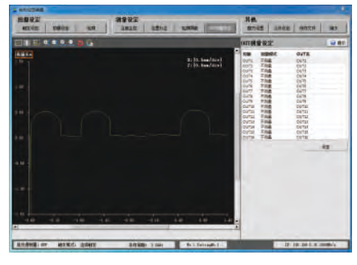



Inspection of height and flatness of chip.

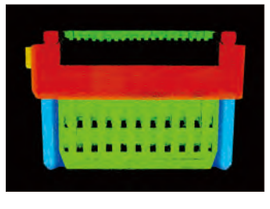
Inspection of 3C Components

Inspection of Electronic Components.
Inspection of the quantity, flatness, aliposition, pitch, and height difference to the benchmark surface of the pins by 3D scanning.

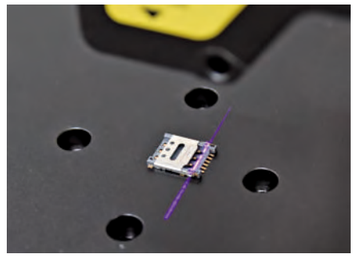
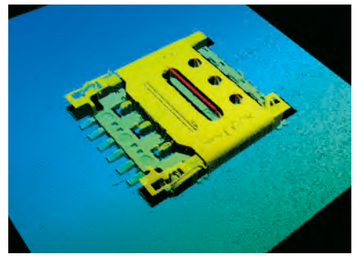
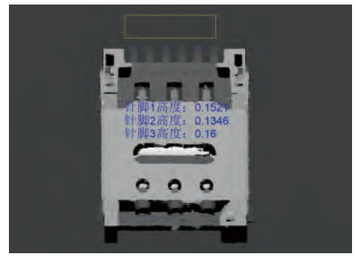
Measurement of contact switch, height difference of highest point and coplanarity.



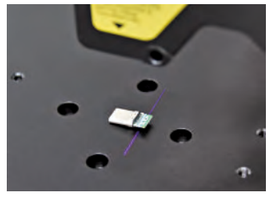
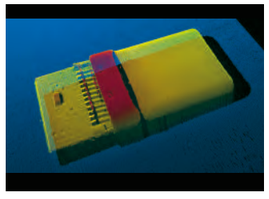
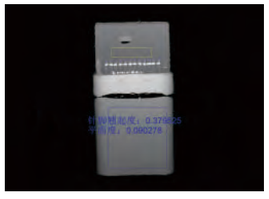
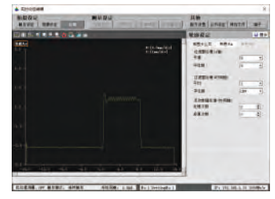



Inspection of Connector

Inspection of connector height.
Find and locate the three pins through the measurement benchmark, and output the data of pins height in real time.

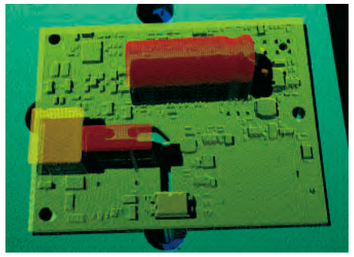
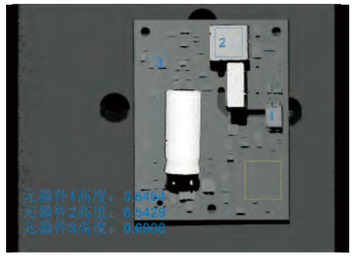




Inspection of connector pin flatness and back cover flatness.
Use the OPT-LPC20 to scan and image the object from Y-axis. The X-axis resolution can reach up to 0.005mm. The height data is used to judge the flatness of the pins.

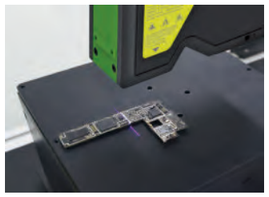
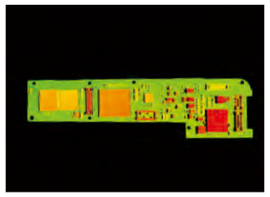





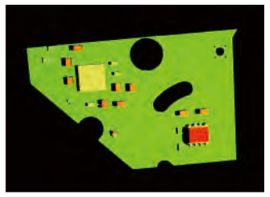
Inspection of Circuit Board

Height inspection of circuit board component.
Use the high dynamic mode imaging to greatly reduce the noise caused by the solder reflection, then use the SCI-Smart3 height measurement tool to find the highest component of the entire circuit board and calculate the maximum height.

Inspection of board flatness.
The range data of flatness is less than 0.009mm after 20 repeated experiments of flatness measurement via OPT-LPC60.

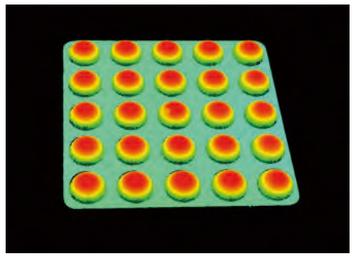
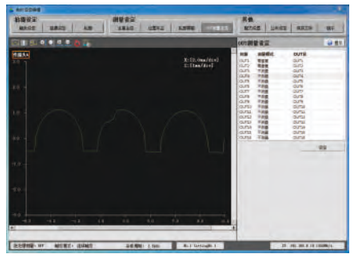





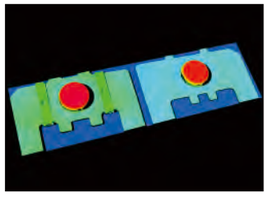
Suitable for Objects with Different Materials and Colors

High dynamic range CMOS, high sensitivity and large dynamic tuning range; able to tune key parameters such as laser power, exposure gain, and exposure time at high speed.
Able to measure stably and accurately without special adjustment even in circumstance of object's complex shapes and colors such as black, high reflective, transparent, translucent, or even mixed with different materials and colors.

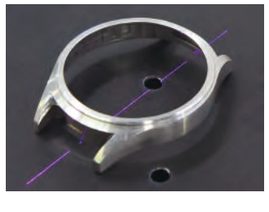
Black rubber

Simultaneous measurement of copper and silver metal parts.

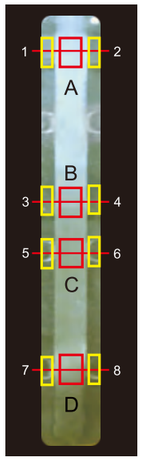



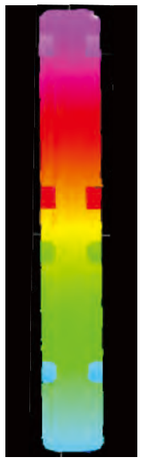
Height difference detection of waterproof groove in watch case.



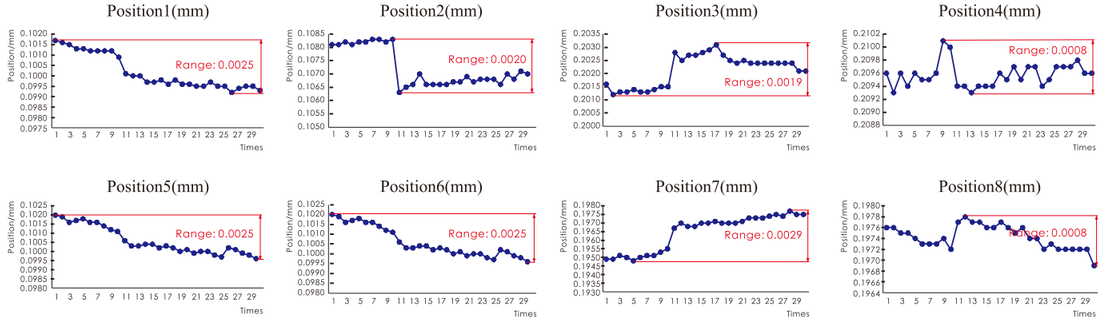

Repeatability Verification

OPT-LPC20 3D laser sensor scans the standard template and repeatedly measures the step difference of 8 positions in the four areas of ABCD for 30 times.





Times/ Position	Position1 (mm)	Position2 (mm)	Position3 (mm)	Position4 (mm)	Position5 (mm)	Position6 (mm)	Position7 (mm)	Position8 (mm)
1	0.1017	0.1081	0.2016	0.2096	0.1074	0.1020	0.1949	0.1976
2	0.1016	0.1081	0.2012	0.2093	0.1080	0.1019	0.1949	0.1976
3	0.1015	0.1082	0.2013	0.2096	0.1083	0.1016	0.1951	0.1975
4	0.1013	0.1081	0.2013	0.2094	0.1078	0.1017	0.1950	0.1975
5	0.1013	0.1082	0.2014	0.2096	0.1077	0.1018	0.1948	0.1974
6	0.1012	0.1082	0.2013	0.2095	0.1073	0.1016	0.1950	0.1973
7	0.1012	0.1083	0.2013	0.2095	0.1073	0.1016	0.1951	0.1973
8	0.1012	0.1083	0.2014	0.2096	0.1074	0.1014	0.1951	0.1973
9	0.1012	0.1082	0.2015	0.2101	0.1075	0.1012	0.1953	0.1974
10	0.1009	0.1083	0.2015	0.2100	0.1073	0.1011	0.1955	0.1972
11	0.1001	0.1063	0.2028	0.2094	0.1069	0.1006	0.1967	0.1977
12	0.1000	0.1065	0.2025	0.2094	0.1069	0.1003	0.1970	0.1978
13	0.1000	0.1066	0.2027	0.2093	0.1062	0.1003	0.1968	0.1977
14	0.0997	0.1070	0.2027	0.2094	0.1064	0.1004	0.1968	0.1977
15	0.0997	0.1066	0.2028	0.2094	0.1058	0.1004	0.1970	0.1976
16	0.0998	0.1066	0.2029	0.2094	0.1058	0.1002	0.1970	0.1976
17	0.0996	0.1066	0.2031	0.2096	0.1058	0.1003	0.1971	0.1977
18	0.0998	0.1066	0.2027	0.2095	0.1060	0.1002	0.1970	0.1976
19	0.0996	0.1067	0.2025	0.2097	0.1062	0.1000	0.1970	0.1975
20	0.0996	0.1067	0.2024	0.2095	0.1062	0.1001	0.1970	0.1976
21	0.0995	0.1069	0.2025	0.2097	0.1061	0.0999	0.1971	0.1974
22	0.0995	0.1067	0.2024	0.2097	0.1058	0.1000	0.1973	0.1974
23	0.0997	0.1068	0.2024	0.2094	0.1065	0.1000	0.1973	0.1972
24	0.0995	0.1068	0.2024	0.2095	0.1066	0.0998	0.1973	0.1973
25	0.0995	0.1068	0.2024	0.2097	0.1066	0.0997	0.1974	0.1972
26	0.0992	0.1066	0.2024	0.2097	0.1073	0.1002	0.1975	0.1972
27	0.0994	0.1070	0.2024	0.2097	0.1068	0.1001	0.1974	0.1972
28	0.0995	0.1068	0.2024	0.2098	0.1069	0.0999	0.1977	0.1972
29	0.0995	0.1071	0.2021	0.2096	0.1069	0.0998	0.1975	0.1972
30	0.0993	0.1070	0.2021	0.2096	0.1066	0.0996	0.1975	0.1969
Maximum	0.1017	0.1083	0.2031	0.2101	0.1058	0.0996	0.1948	0.1969
Minimum	0.0992	0.1063	0.2012	0.2093	0.1083	0.1020	0.1977	0.1978
Range	0.0025	0.0020	0.0019	0.0008	0.0025	0.0025	0.0029	0.0008



The maximum range is 0.0029mm and the minimum is 0.0008mm, which is in leading level in the 3D laser sensor industry.

OPT Lenses

- Line Scan Lenses >>P63
- Line Scan Lens Accessories >>P70
- Fixed Focal Length Lenses >>P72
- Variable Magnification Lenses >>P95
- Custom Lenses >>P97
- Telecentric Lenses >>P99
- Lens Accessories >>P105

Coloretto Series Line Scan Lenses



Product Features

High standard optical design
Achromatic design with wide spectrum range from 400 to 700 nm; compatible with the line scan camera of 7 µm pixel size.

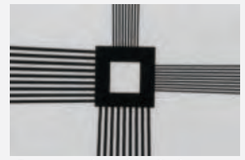
Low distortion
Total distortion < 0.60%[1].

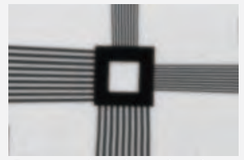
Wide image circle range
Ø30 mm - Ø82 mm.

Magnification
Range: 0.01X - 0.33X; suitable for various industrial applications.

[1] Distortion at primary magnification.

Resolution Comparison


Image taken by Coloretto


Image taken by other lens

Selection Guide

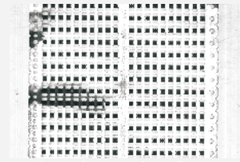
OPT-VCT60/5.6-0.17X

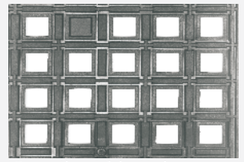
- 0.17X primary magnification
- F#: 5.6
- 60 mm±5% focal length
- Coloretto series line scan lenses
- V: V-Mount M: M-Mount
- Brand name

Application Cases


Mobile phone screen scratches inspection


Plug surface inspection


Burr inspection for LED chips


Locating objects in a tray

Model Table

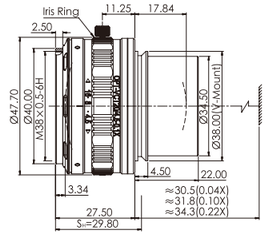
No.	Model	Focal length (mm)	Aperture range	Image circle Ø (mm)	Mount	Weight (kg)	Distortion	Mag.	WD (mm)	Flange focal distance (mm)	Object to image distance (mm)
1	OPT-VCT20/4.5-0.10X	21	F4.5-F16	30	V38	0.14	0.20%	0.04X	510.7	30.5	568.7
							0.60%	0.10X	206.2	31.8	265.5
							0.95%	0.22X	90.7	34.3	152.5
2	OPT-VCT28/2.8-0.10X	29	F2.8-F16	30	V38	0.13	0.40%	0.04X	723.0	30.9	777.9
							0.10%	0.10X	288.0	32.7	344.6
							0.50%	0.33X	85.9	39.2	149.1

Model Table

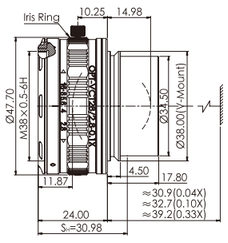
No.	Model	Focal length (mm)	Aperture range	Image circle Ø (mm)	Mount	Weight (kg)	Distortion	Mag.	WD (mm)	Flange focal distance (mm)	Object to image distance (mm)
3	OPT-MCT35/4.5-0.10X	35	F4.5-F16	30	M42	0.15	0.25%	0.04X	878.3	12	943.2
							0.20%	0.10X	355	12	420.3
							0.30%	0.16X	226.3	12	291.4
4	OPT-MCT40/4.0-0.10X	40	F4.0-F22	30	M42	0.17	0.46%	0.04X	1003.6	12	1072.7
							0.09%	0.10X	404.6	12	475.1
							0.32%	0.16X	258.4	12	329.0
5	OPT-MCT40/4.5-0.08X	40	F4.5-F22	60	M42/M58 M72	0.53	0.35%	0.01X	4146.4	46.5	4250.3
							0.22%	0.08X	522.4	46.5	629.3
							1.60%	0.26X	162.7	46.5	277
6	OPT-MCT50/4.8-0.10X	50.6	F4.8-F22	60	M58	0.50	0.18%	0.04X	1287.4	20	1388.6
							0.20%	0.10X	528.5	20	632.6
							0.22%	0.16X	338.7	20	445.8
7	OPT-VCT50/2.8-0.17X	50	F2.8-F16	44	V38	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
8	OPT-VCT60/4.0-0.17X	61.5	F4.0-F32	63	V38	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
9	OPT-VCT60/5.6-0.17X	60	F5.6-F22	63	V38	0.14	0.60%	0.05X	1232	49.8	1312.2
							0.16%	0.17X	385.5	56.9	473.9
							0.18%	0.31X	226.2	65.3	322.9
10	OPT-VCT80/5.6-0.1X	80	F5.6-F45	63	V38	0.14	0.14%	0.04X	2048.9	70.7	2149.5
							0.09%	0.10X	851.4	75.5	956.8
							0.35%	0.25X	371.4	87.4	488.7
11	OPT-VCT100/5.6-0.17X	100	F5.6-F45	82	V38	0.14	0.05%	0.08X	1269.1	100.2	1400.8
							0.05%	0.17X	672.1	108.5	812.1
							0.13%	0.33X	372.1	125.2	528.8

Dimensions (mm)

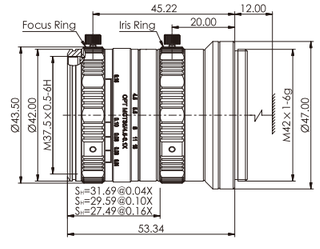
1.OPT-VCT20/4.5-0.10X



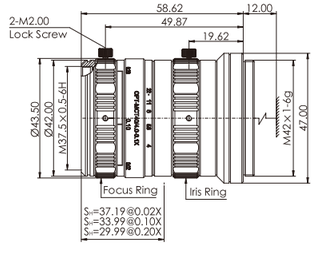
2.OPT-VCT28/2.8-0.10X



3.OPT-MCT35/4.5-0.10X

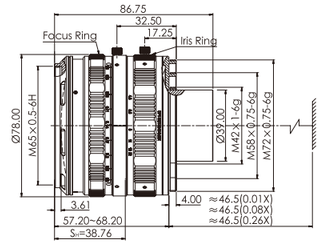


4. OPT-MCT40/4.0-0.10X

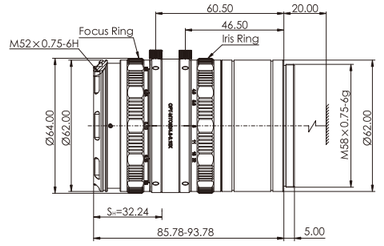


Dimensions (mm)

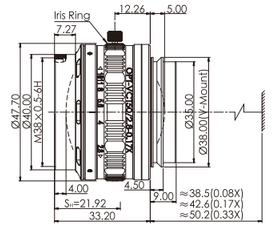
5.OPT-MCT40/4.5-0.08X



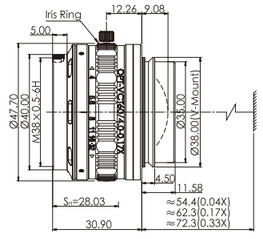
6. OPT-MCT50/4.8-0.10X



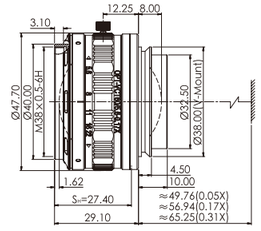
7.OPT-VCT50/2.8-0.17X



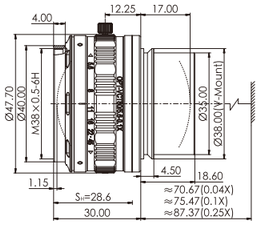
8.OPT-VCT60/4.0-0.17X



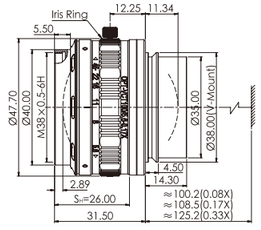
9.OPT-VCT60/5.6-0.17X



10.OPT-VCT80/5.6-0.1X



11.OPT-VCT100/5.6-0.17X



Hawk Series Line Scan Lenses



Product Features

High resolution
High resolution optical design; Ø63 mm image circle[1], compatible with (16k) 3.5 µm, (12k) 5 µm, and (8k) 7 µm line scan cameras

Low distortion
Total distortion < 0.22%[2], Min. distortion as low as 0.005%

High uniformity
High relative illumination across the entire image with low vignetting

Wide magnification range
0.02X - 2.1X

[1] Up to 126 mm image circle for OPT-VHK116/8.6-2.0X
[2] Distortion at primary magnification

Selection Guide

OPT-VHK120/5.8-1.0X

- 1.0X primary magnification
- F#: 5.8
- 120 mm±5% focal length
- Hawk series line scan lenses
- V: V-Mount M: M-Mount
- Brand name

Resolution Comparison

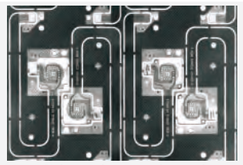


Image taken by Hawk

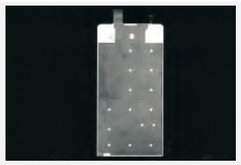


Image taken by other lens

Application Cases



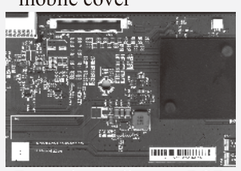
FPC locating and cutting



Film hole inspection on mobile cover



Capacitor surface inspection



Barcode reading on PCB

Model Table

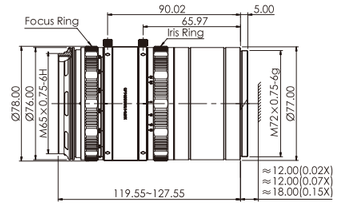
No.	Model	Focal length (mm)	Aperture range	Image circle Ø (mm)	Interface	Weight (kg)	Distortion	Mag.	WD (mm)	Flange focal distance (mm)	Object to image distance (mm)
1	OPT-MHK60/5.1-0.07X	60	F5.1-F22	63	M72	1.06	0.15%	0.02X	3017	12	3149.8
							0.22%	0.07X	874	12	1009.8
							0.28%	0.15X	417	18	557.6
2	OPT-VHK98/3.9-0.23X	98.7	F3.9-F32	63	V58	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
3	OPT-VHK116/4.3-0.5X	116	F4.3-F32	63	V58	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

Model Table

No.	Model	Focal length (mm)	Aperture range	Image circle Ø (mm)	Interface	Weight (kg)	Distortion	Mag.	WD (mm)	Flange focal distance (mm)	Object to image distance (mm)
4	OPT-VHK116/5.4-0.67X	116	F5.4-F45	63	V58	0.68	0.023%	0.64X	219.6	168	454.6
							0.018%	0.67X	212.6	171	450.6
							0.058%	0.7X	204.4	174.8	446.2
5	OPT-VHK120/5.8-1.0X	120	F5.8-F45	63	V58	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
6	OPT-VHK116/8.6-2.0X	116	F8.6-F64	126	V58	0.63	0.07%	1.9X	100.2	293.3	456.4
							0.008%	2.0X	97.1	305	465
							0.06%	2.1X	94.5	316.1	473.5

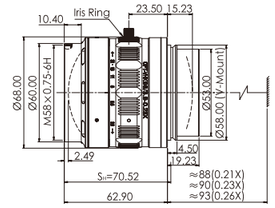
Dimensions (mm)

1.OPT-MHK60/5.1-0.07X

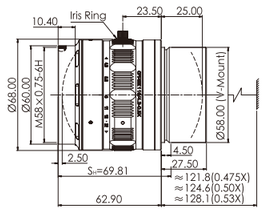


Note: Extension ring OPT-ETB-M72E6 is needed when magnification is over 0.12X.

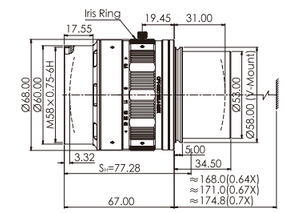
2.OPT-VHK98/3.9-0.23X



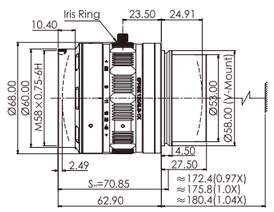
3.OPT-VHK116/4.3-0.5X



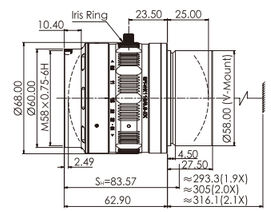
4.OPT-VHK116/5.4-0.67X



5.OPT-VHK120/5.8-1.0X



6.OPT-VHK116/8.6-2.0X



Grampus Series Line Scan Lenses NEW



Product Features

Large image circle
High resolution optical design; Ø82 mm image circle, compatible with (16k) 5 µm, (12k) 5 µm, and (8k) 7 µm line scan cameras

Low distortion
Total distortion < 0.028%[1], Min. distortion as low as 0.01%

Wide magnification range
0.22X - 1.56X

[1] Distortion at primary magnification.

Selection Guide

OPT-VGP116/3.2-1.5X

- 1.5X primary magnification
- F#: 3.2
- 116 mm±5% focal length
- Grampus series line scan lenses
- V-Mount
- Brand name

Resolution Comparison



Image taken by Grampus

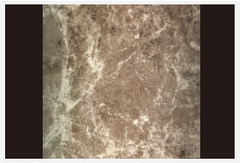


Image taken by other lens

Application Cases



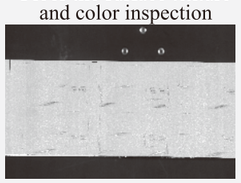
PCB board defect inspection



Floor tile surface texture and color inspection



Optical film defect inspection



Film printed circuit inspection

Model Table

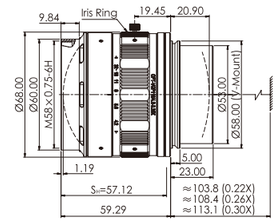
No.	Model	Focal length (mm)	Aperture range	Image circle Ø (mm)	Interface	Weight (kg)	Distortion	Mag.	WD (mm)	Flange focal distance (mm)	Object to image distance (mm)
1	OPT-VGP116/4.2-0.26X	116	F4.2-F32	82	V58	0.54	0.177%	0.22X	586.8	103.8	751.5
							0.012%	0.26X	504.8	108.4	674.5
							0.169%	0.30X	444.8	113.1	623.8
2	OPT-VGP116/4.2-0.33X	116	F4.2-F32	82	V58	0.53	0.085%	0.29X	462.5	116.4	639.5
							0.010%	0.33X	414.5	120.9	596
							0.107%	0.38X	367.5	126.8	554.8
3	OPT-VGP116/4.8-0.5X	116	F4.8-F22	82	V58	0.52	0.122%	0.425X	353.0	131.3	542.5
							0.028%	0.50X	312.1	140	510.3
							0.090%	0.60X	273.4	151.6	483.2

Model Table

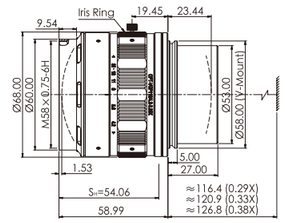
No.	Model	Focal length (mm)	Aperture range	Image circle Ø (mm)	Interface	Weight (kg)	Distortion	Mag.	WD (mm)	Flange focal distance (mm)	Object to image distance (mm)
4	OPT-VGP116/4.8-0.75X	116	F4.8-F22	82	V58	0.50	0.08%	0.65X	248.4	176.9	485.4
							0.01%	0.75X	224.6	188.5	473.2
							0.04%	0.85X	206.4	200.1	466.6
5	OPT-VGP116/4.8-1.0X	116	F4.8-F22	82	V58	0.53	0.060%	0.875X	200.4	200.1	462.4
							0.003%	1X	183.8	214.6	460.4
							0.045%	1.125X	170.9	229.1	461.9
6	OPT-VGP116/3.2-1.5X	116	F3.2-F22	82	V58	0.68	0.058%	1.43X	140.2	245.8	446.2
							0.018%	1.5X	136.4	254	450.6
							0.023%	1.56X	133.4	261	454.3

Dimensions (mm)

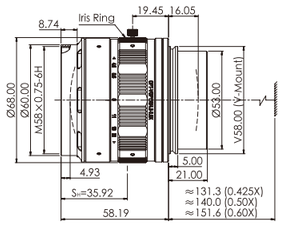
1.OPT-VGP116/4.2-0.26X



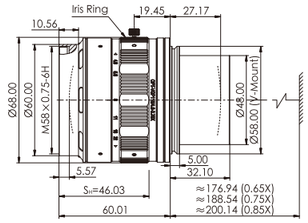
2.OPT-VGP116/4.2-0.33X



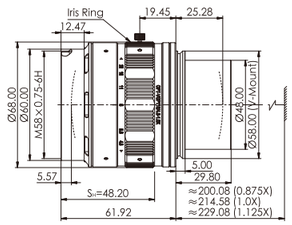
3.OPT-VGP116/4.8-0.5X



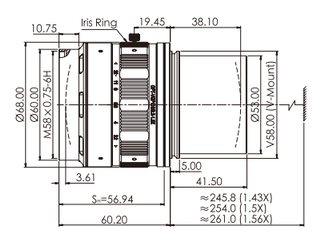
4.OPT-VGP116/4.8-0.75X



5.OPT-VGP116/4.8-1.0X



6.OPT-VGP116/3.2-1.5X



Line Scan Lenses Accessories



- Different adaptors are used to assemble with line scan cameras and line scan lenses for different magnifications, camera mounts and format dimensions in order to meet certain imaging requirements.

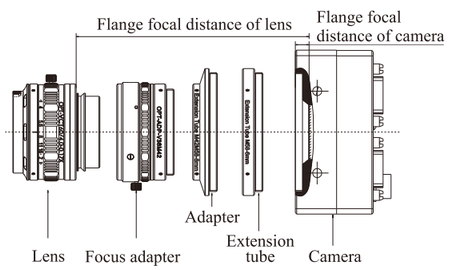
Selection Guide

OPT-ADP-V38M42-E18/23
- Length: 18-23 mm
- V38 to M42-Mount
- Focus adapter
- Brand name

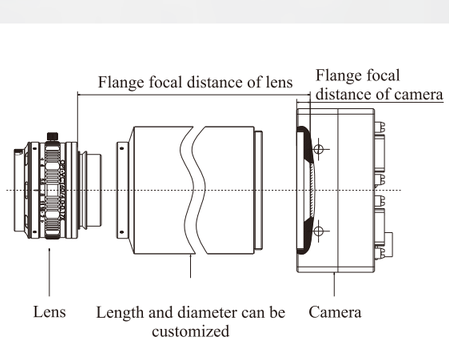
OPT-ETB-M42E10
- Length: 10 mm
- M42-Mount
- Extension tube
- Brand name

Adaptor Connecting Guide

Adaptor Connecting Diagram



Standard version



Custom version

Formula

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

$EXT = FBL - FBL_C$

$L \approx f' \div \beta + f'$

$WD = L - S_H$

Remarks:
Please refer to the diagram on the right.
1. β is target magnification, β_0 is the basic magnification given in Model Tables.
2. FBL is flange focal distance, FBL_0 is the flange focal distance given in Model Tables, FBL_C is the flange focal distance of camera.
3. EXT is the length of extension tube.
4. L is the distance between object plane and the object principal plane of lens.
5. f ' is the focal length of lens; WD is working distance.
6. S_H is the distance between the front end of the mechanics and the object principal plane. Please refer to drawings for details.

Model Table (1)

	Model	Lens mount T1	Lens mount T2	Diameter	Length
Focus adaptor	OPT-ADP-V38M42-E12/17	V38	M42×1-6g	Ø48.5	12-17
	OPT-ADP-V38M42-E18/23	V38	M42×1-6g	Ø48.5	18-23
	OPT-ADP-V58M58-E31.5/39.5	V58	M58×0.75-6g	Ø71.5	31.5-39.5
	OPT-ADP-V58M72-E31.5/39.5	V58	M72×0.75-6g	Ø76	31.5-39.5

Model Table (1)

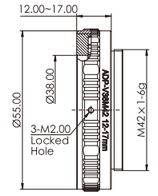
	Model	Lens mount T1	Lens mount T2	Diameter	Length
Adapter	OPT-ADP-V38M42-E5	V38	M42×1-6g	Ø47	5
	OPT-ADP-V38M42-E5.5	V38	M42×1-6g	Ø47	5.5
	OPT-ADP-V38M42-E6.5	V38	M42×1-6g	Ø47	6.5
	OPT-ADP-V38M42-E8	V38	M42×1-6g	Ø47	8
	OPT-ADP-V38M42-E9	V38	M42×1-6g	Ø47	9
	OPT-ADP-V38M42-E9.5	V38	M42×1-6g	Ø47	9.5
	OPT-ADP-V38M58-E5	V38	M58×0.75-6g	Ø47	5
	OPT-ADP-V58M72-E5	V58	M72×0.75-6g	Ø76	5
	OPT-ADP-M42M58-E8	M42×1-6H	M58×0.75-6g	Ø62	8
	OPT-ADP-M42M72-E8	M42×1-6H	M72×0.75-6g	Ø76	8
	OPT-ADP-M58M72-E8	M58×0.75-6H	M72×0.75-6g	Ø76	8
	OPT-ADP-M58M90-E8	M58×0.75-6H	M90×1-6g	Ø94	8
	OPT-ADP-M58M95-E8	M58×0.75-6H	M95×1-6g	Ø99	8
	OPT-ADP-M72M90-E8	M72×0.75-6H	M90×1-6g	Ø94	8
	OPT-ADP-M72M95-E8	M72×0.75-6H	M95×1-6g	Ø99	8
	OPT-ADP-M58M42-E8	M58×0.75-6H	M42×1-6g	Ø62	8
	OPT-ADP-FM42-E34.5	F-Mount	M42×1-6g	Ø62	34.5
	OPT-ADP-FM58-E34.5	F-Mount	M58×0.75-6g	Ø60	34.5
	OPT-ADP-M42F-E4	M42×1-6H	F-Mount	Ø59.6	4
	OPT-ADP-M58F-E8	M58×0.75-6H	F-Mount	Ø62	8
	OPT-ADP-FC-E28.97	F-Mount	C-Mount	Ø61	28.97
	OPT-ADP-CM42-E5.526	C-Mount	M42×1-6g	Ø45	5.526

Model Table (2)

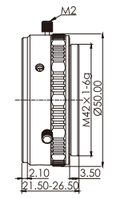
Extension tube	Model	D1	D2	L
F-Mount	OPT-ETB-FE10	F-Mount	F-Mount	10
	OPT-ETB-FE15	F-Mount	F-Mount	15
	OPT-ETB-FE20	F-Mount	F-Mount	20
M42	OPT-ETB-M42E4.8	M42×1-6H	M42×1-6g	4.8
	OPT-ETB-M42E6	M42×1-6H	M42×1-6g	6
	OPT-ETB-M42E6.5	M42×1-6H	M42×1-6g	6.5
	OPT-ETB-M42E8	M42×1-6H	M42×1-6g	8
	OPT-ETB-M42E10	M42×1-6H	M42×1-6g	10
	OPT-ETB-M42E15	M42×1-6H	M42×1-6g	15
	OPT-ETB-M42E25	M42×1-6H	M42×1-6g	25
	OPT-ETB-M42E34.5	M42×1-6H	M42×1-6g	34.5
	OPT-ETB-M42E50	M42×1-6H	M42×1-6g	50
	OPT-ETB-M42E75	M42×1-6H	M42×1-6g	75
	OPT-ETB-M42E100	M42×1-6H	M42×1-6g	100
M58	OPT-ETB-M58E6	M58×0.75-6H	M58×0.75-6g	6
	OPT-ETB-M58E6.5	M58×0.75-6H	M58×0.75-6g	6.5
	OPT-ETB-M58E8	M58×0.75-6H	M58×0.75-6g	8
	OPT-ETB-M58E10	M58×0.75-6H	M58×0.75-6g	10
	OPT-ETB-M58E15	M58×0.75-6H	M58×0.75-6g	15
	OPT-ETB-M58E25	M58×0.75-6H	M58×0.75-6g	25
	OPT-ETB-M58E50	M58×0.75-6H	M58×0.75-6g	50
	OPT-ETB-M58E75	M58×0.75-6H	M58×0.75-6g	75
	OPT-ETB-M58E100	M58×0.75-6H	M58×0.75-6g	100
M72	OPT-ETB-M72E6	M72×0.75-6H	M72×0.75-6g	6
	OPT-ETB-M72E6.5	M72×0.75-6H	M72×0.75-6g	6.5
	OPT-ETB-M72E8	M72×0.75-6H	M72×0.75-6g	8
	OPT-ETB-M72E10	M72×0.75-6H	M72×0.75-6g	10
	OPT-ETB-M72E15	M72×0.75-6H	M72×0.75-6g	15
	OPT-ETB-M72E25	M72×0.75-6H	M72×0.75-6g	25
	OPT-ETB-M72E50	M72×0.75-6H	M72×0.75-6g	50
	OPT-ETB-M72E75	M72×0.75-6H	M72×0.75-6g	75
	OPT-ETB-M72E100	M72×0.75-6H	M72×0.75-6g	100
	OPT-ETB-M72E30/50	M72×0.75-6H	M72×0.75-6g	30~50
M90	OPT-ETB-M90E6	M90×1-6H	M90×1-6g	6
	OPT-ETB-M90E6.5	M90×1-6H	M90×1-6g	6.5
	OPT-ETB-M90E8	M90×1-6H	M90×1-6g	8
	OPT-ETB-M90E10	M90×1-6H	M90×1-6g	10
	OPT-ETB-M90E15	M90×1-6H	M90×1-6g	15
M90	OPT-ETB-M90E25	M90×1-6H	M90×1-6g	25
	OPT-ETB-M90E50	M90×1-6H	M90×1-6g	50
	OPT-ETB-M90E75	M90×1-6H	M90×1-6g	75
	OPT-ETB-M90E100	M90×1-6H	M90×1-6g	100
M95	OPT-ETB-M95E6	M95×1-6H	M95×1-6g	6
	OPT-ETB-M95E6.5	M95×1-6H	M95×1-6g	6.5
	OPT-ETB-M95E8	M95×1-6H	M95×1-6g	8
	OPT-ETB-M95E10	M95×1-6H	M95×1-6g	10
	OPT-ETB-M95E15	M95×1-6H	M95×1-6g	15
	OPT-ETB-M95E25	M95×1-6H	M95×1-6g	25
	OPT-ETB-M95E50	M95×1-6H	M95×1-6g	50
	OPT-ETB-M95E100	M95×1-6H	M95×1-6g	100

Dimensions (mm)

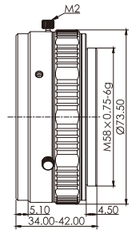
1.OPT-ADP-V38M42-E12/17



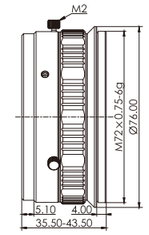
3.OPT-ADP-V38M42-E18/23



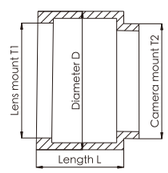
4.OPT-ADP-V58M58-E31.5/39.5



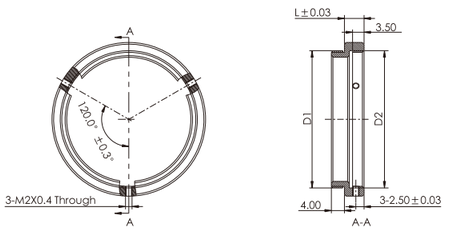
5.OPT-ADP-V58M72-E31.5/39.5



6.Dimension diagram of adaptor



7.Dimension diagram of extension tube



78MP Fixed Focal Length Lenses NEW



Product Features

- **High resolution**
  Compatible with cameras which pixel ≥ 3.2 μm and max. full frame (Ø44 mm) sensor; resolution up to 160 lp/mm in full FOV
- **Broad spectrum**
  The coating band is 400-1000 nm, compatible with visible light and near-infrared band applications.
- **Floating focus structure design**
  The floating focus structure design is adopted to effectively ensure good optical performance under a wide working distance range[1].

[1] Equipped with flange adjustment gaskets to maximize the optical performance of the lens used with the camera.

Selection Guide

OPT-F3545-78M

- 78MP
- F#: 4.5
- Focal length: 35 mm
- F: F-Mount, M: M-Mount
- Brand name

Resolution Comparison

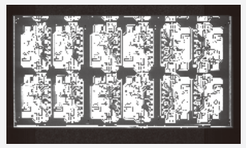


Image taken by OPT 78MP Lens

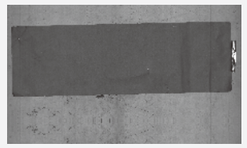


Image taken by other lens

Application Cases



Circuit board defect detection



Lithium battery pole piece defect detection



LCD screen defect detection



Printing quality inspection

Model Table

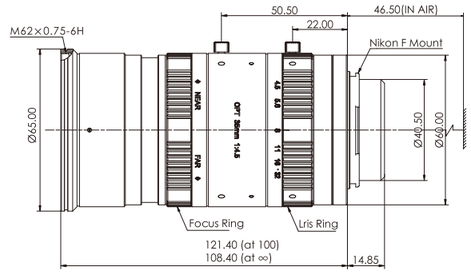
No	Model	Focal length (mm)	Aperture range	WD (mm)	Image circle Ø (mm)	Resolution (μm)	Interface	Filter thread	Flange focal distance (mm)	Back Focal Length (mm)	Weight (kg)	Optical distortion	Mag. at MOD
1	OPT-F3545-78M	35	F4.5-F32	100-∞	44	3.2	F	M62×0.75-6H	46.5	37.71	0.93	<1.25% at WD200	0.246X at WD100
												<1.00% at WD300	0.107X at WD300
												<0.80% at WD500	0.069X at WD500

Model Table

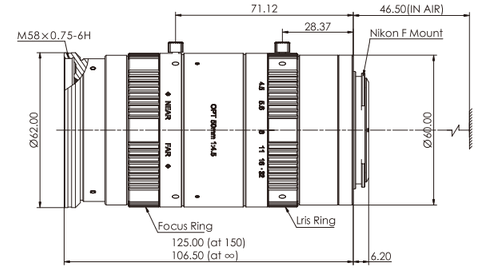
No	Model	Focal length (mm)	Aperture range	WD (mm)	Image circle Ø (mm)	Resolution (μm)	Interface	Filter thread	Flange focal distance (mm)	Back Focal Length (mm)	Weight (kg)	Optical distortion	Mag. at MOD
2	OPT-F5045-78M	50	F4.5-F32	150-∞	44	3.2	F	M58×0.75-6H	46.5	45.73	0.75	<0.42% at WD200	0.326X at WD150
												<0.16% at WD300	0.166X at WD300
												<0.28% at Wd500	0.100X at WD500
3	OPT-M3545-78M	35	F4.5-F32	100-∞	44	3.2	M58	M62×0.75-6H	46.5	37.71	0.93	<1.25% at WD200	0.246X at WD100
												<1.00% at WD300	0.107X at WD300
												<0.80% at WD500	0.069X at WD500
4	OPT-M5045-78M	50	F4.5-F32	150-∞	44	3.2	M58	M58×0.75-6H	46.5	45.73	0.75	<0.42% at WD200	0.326X at WD150
												<0.16% at WD300	0.166X at WD300
												<0.28% at WD500	0.100X at WD500

Dimensions (mm)

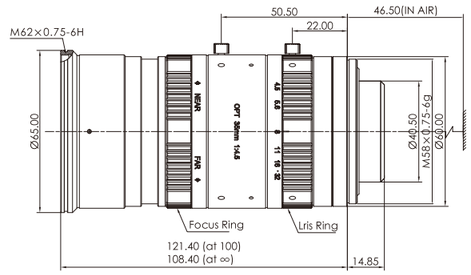
1.OPT-F3545-78M



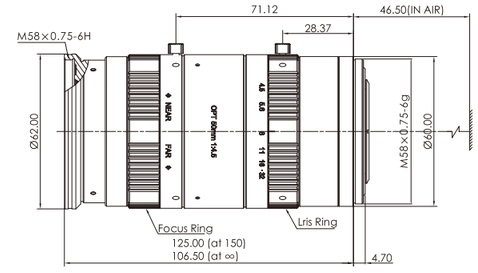
2.OPT-F5045-78M



3.OPT-M3545-78M



4.OPT-M5045-78M



29MP Fixed Focal Length Lenses

Compatible with 8K line scan cameras



Product Features

- **High resolution**
  Up to 100 lp/mm (full FOV)
- **Large format sensor**
  Compatible with 29MP camera, and line scan camera up to 8K with 5 μm pixel size
- **Low distortion**
  Total distortion < 0.9%, and min. distortion as low as 0.03%

Selection Guide

OPT-F2528-29M

- 29MP
- F#: 2.8
- Focal length: 25 mm
- F-Mount
- Brand name

Resolution Comparison

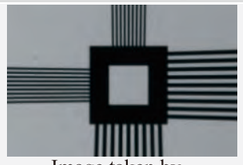


Image taken by OPT 29MP Lens

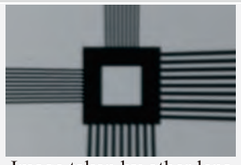
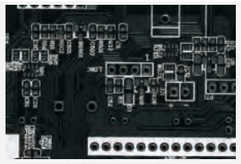


Image taken by other lens

Application Cases



Surface inspection for beverage can



OCR for PCB



OCR for plastic parts



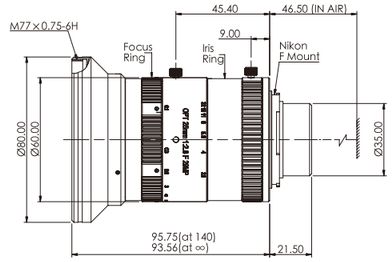
Dent detection on bearing

Model Table

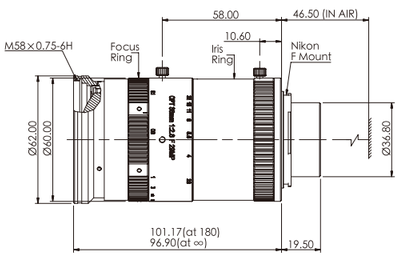
No	Model	Focal length (mm)	Aperture range	WD (mm)	Filter thread (mm)	Distortion	Back focal length (mm)	Weight (kg)	Sensor format	FOV angle (H×V×D)		
1	OPT-F2528-29M	25	F2.8-F32	140~∞	M77×0.75-6H	<0.9%	26.4	0.71	1″	28.72°	21.74°	35.49°
									4/3″	39.60°	30.22°	48.46°
									44 mm	70.29°	55.67°	82.70°
2	OPT-F3528-29M	35	F2.8-F32	180~∞	M58×0.75-6H	<0.4%	27.9	0.65	1″	20.72°	15.62°	25.75°
									4/3″	28.84°	21.83°	35.64°
									44 mm	53.39°	41.33°	64.30°
3	OPT-F5028-29M	50	F2.8-F32	180~∞	M58×0.75-6H	<0.2%	36.1	0.59	1″	14.59°	10.97°	18.18°
									4/3″	20.41°	15.38°	25.36°
									44 mm	38.78°	29.58°	47.50°
4	OPT-F7528-29M	75	F2.8-F32	300~∞	M58×0.75-6H	<0.03%	35.8	0.58	1″	9.75°	7.32°	12.18°
									4/3″	13.69°	10.29°	17.06°
									44 mm	26.41°	19.96°	32.69°

Dimensions (mm)

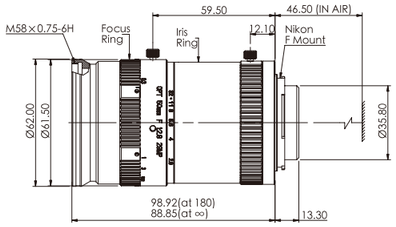
1.OPT-F2528-29M



2.OPT-F3528-29M



3.OPT-F5028-29M



4.OPT-F7528-29M

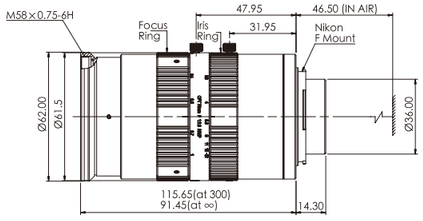
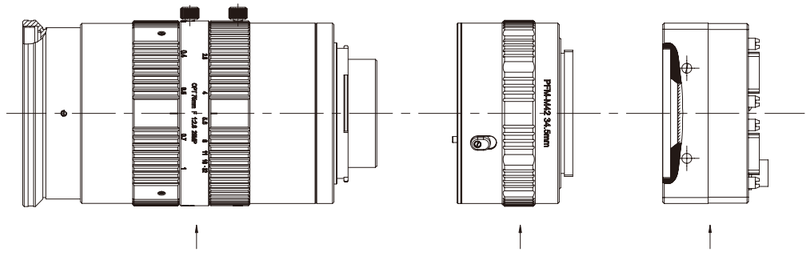


Diagram of Connecting of Area Scan Lens and Line Scan Camera



Notes: If the format and resolution of lenses are applicable, the area scan lenses can apply to line scan cameras. The imaging format of 29MP series lenses is 44 mm, for which 29MP series lenses can apply to 4k 7 μm or 8k 5 μm line scan cameras. The diagram above is about 29MP lens connecting with line scan camera by adaptor. The Flange Back Length of F-mount lenses is 46.5 mm, of line scan cameras is FBLc. The length of adaptor is 46.5-FBLc.

151MP Fixed Focal Length Lenses NEW



Product Features

- **High resolution**
  For Ø67 mm large format sensor size and 3.76 μm pixel; resolution up to 151MP.
- **Floating focus design**
  Enabling good optical performance among wide working distance by floating focusing design.
- **Low distortion**
  Full FOV Max. optical distortion <0.7% in working distance.
- **Wide spectrum coating**
  400-1000 nm coating band; compatible with visible light and near-infrared band.

Selection Guide

OPT-M6050-151M
- 151MP
- F#: 5.0
- Focal length: 60 mm
- M-Mount
- Brand name

Model Table

Model	Focal length (mm)	WD (mm)	Aperture range	Image circle Ø (mm)
OPT-M6050-151M	60	250-∞	F5.0-F32	67
	Resolution (μm)	Weight (kg)	Mount	Flange focal distance (mm)
	3.76	1.66	M72	19.55
	Back focal length (mm)	Mag. at MOD		Optical Distortion
	52.53	0.232X at WD250		<0.68% at WD250
		0.147X at WD400		<0.34% at WD400
		0.060X at WD1000		<0.57% at WD1000

Resolution Comparison



Image taken via OPT 151MP Lens

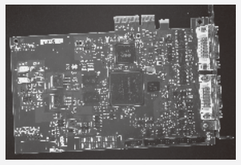


Image taken via other lens

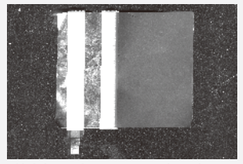
Application Cases



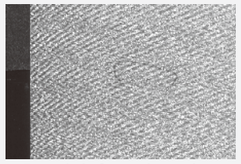
FPC positioning cutting



PCB defects detection

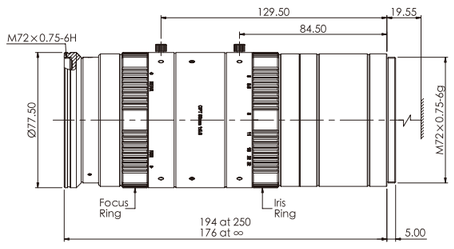


lithium battery pole piece measurement and defects detection



Panel defects detection

Dimensions (mm)



Cobra Series Fixed Focal Length Lenses NEW



Product Features

- **Compact design**
  Ø29 mm diameter compatible with camera size; lens total length less than 42 mm[1]
- **High resolution**
  Compatible with cameras which pixel size ≥ 2.2 μm and max. 1/1.8″(Ø9 mm)[2] sensor; resolution up to 230 lp/mm in full FOV
- **Wide spectrum range**
  400-1000 nm optical coating spectrum; compatible with VIS and NIR.
- **Low distortion**
  TV distortion < 0.2%
- **High relative illumination**
  Chief ray angle <5°, matching with cameras enables to realize high evenness image.

[1] OPT-COB5028 lens total length <62 mm
[2] The sensor size of applicable cameras to OPT-COB2528, OPT-COB3528 and OPT-COB5028B is up to 2/3" (Ø11 mm).

Selection Guide

OPT-COB0828
- F#: 2.8
- Focal length: 8 mm
- Cobra series lenses
- C-Mount
- Brand name

Resolution Comparison



Image taken by Cobra

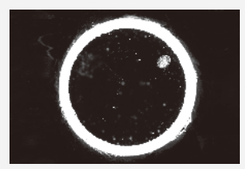


Image taken by other lens

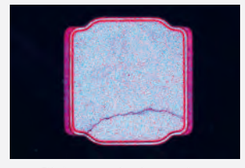
Application Cases



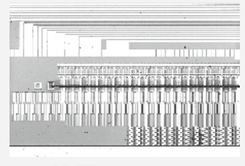
Character defect detection on plastic parts



Sand particle on lens detection



Chip crack detection



OLED screen size measurement

Model Table

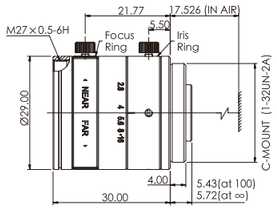
No.	Model	Focal length (mm)	Aperture	Image circle Ø (mm)	Resolution (μm)	TV Distortion	WD (mm)	Back Focal Length (mm)		Mag. at MOD	Chief Ray Angle	Filter thread (mm)	Weight (kg)
1	OPT-COB0828	8	F2.8-F16	9(1/1.8″)	2.2	< 0.18% at WD300	100-∞	12.99 at WD100	12.34 at ∞	0.071X at WD100	< 5°	M27×0.5-6H	0.05
2	OPT-COB1228	12	F2.8-F16	9(1/1.8″)	2.2	< 0.16% at WD300	100-∞	14.00 at WD100	12.76 at ∞	0.101X at WD100	< 5°	M27×0.5-6H	0.06
3	OPT-COB1628	16	F2.8-F16	9(1/1.8″)	2.2	< 0.10% at WD300	100-∞	15.76 at WD100	13.57 at ∞	0.135X at WD100	< 5°	M27×0.5-6H	0.06

Model Table

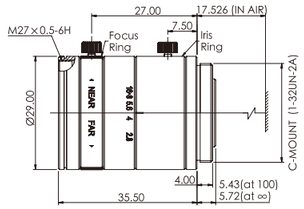
No.	Model	Focal length (mm)	Aperture	Image circle Ø (mm)	Resolution (μm)	TV Distortion	WD (mm)	Back Focal Length (mm)		Mag. at MOD	Chief Ray Angle	Filter thread (mm)	Weight (kg)
4	OPT-COB2528	25	F2.8-F16	11(2/3″)	2.2	< 0.15% at WD300	150-∞	16.63 at WD150	12.65 at ∞	0.159X at WD150	< 5°	M27×0.5-6H	0.05
5	OPT-COB3528	35	F2.8-F16	11(2/3″)	2.2	< 0.20% at WD350	210-∞	18.39 at WD210	12.87 at ∞	0.161X at WD210	< 5°	M27×0.5-6H	0.06
6	OPT-COB5028	50	F2.8-F22	9(1/1.8″)	2.2	< 0.01% at WD300	250-2000	18.11 at WD250	18.11 at WD2000	0.222X at WD250	< 5°	M27×0.5-6H	0.08
7	OPT-COB5028B	50	F2.8-F22	11(2/3″)	2.2	< 0.07% at WD500	400-∞	20.56 at WD400	13.67 at ∞	0.136X at WD400	< 5°	M27×0.5-6H	0.06

Dimensions (mm)

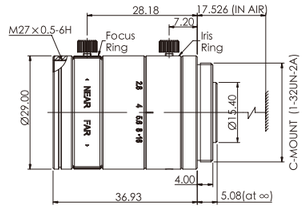
1. OPT-COB0828



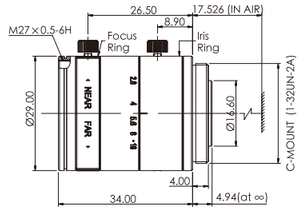
2. OPT-COB1228



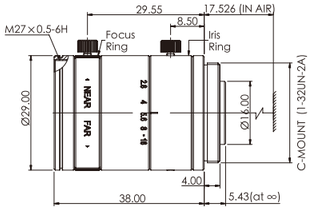
3. OPT-COB1628



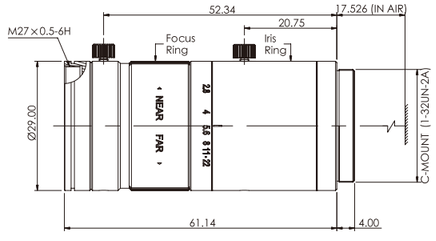
4. OPT-COB2528



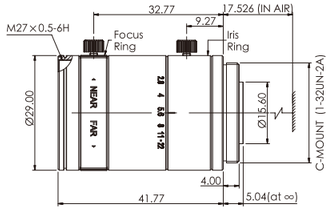
5. OPT-COB3528



6. OPT-COB5028



7. OPT-COB5028B



Dolphin 20MP Series Fixed Focal Length Lenses NEW



Product Features

- **High resolution**
  Compatible with cameras which pixel ≥ 2.4 μm and max. 1.1″ (Ø17.6 mm) sensor; resolution up to 208 lp/mm in full FOV
- **Wide spectrum range**
  Compatible with VIS and NIR (400 - 1000 nm).
- **Low distortion**
  The TV distortion of the whole series products is at a low level
- **High relative illumination**
  CRA below 5°, this guarantees a high relative illumination across the entire image without vignetting.

Selection Guide

OPT-CDP5028

- Max F/#: 2.8
- Focal length: 50 mm
- Dolphin series lenses
- C-Mount
- Brand name

Resolution Comparison



Image taken by Dolphin

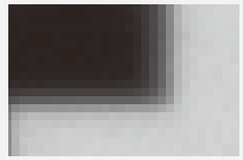
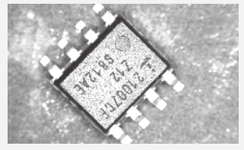


Image taken by other lens

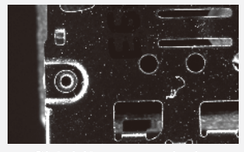
Application Cases



IC OCR



Connector PIN detection



Shielding cover hole positioning detection



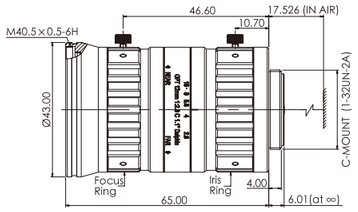
Mobile phone shell OCR

Model Table

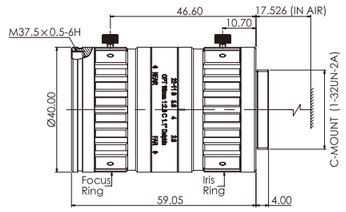
No.	Model	Focal length (mm)	Aperture	WD (mm)	Image circle Ø (mm)	Resolution (μm)	TV Distortion at WD300	Back Focal Length (mm)		Mag. at MOD	Chief Ray Angle	Filter thread (mm)	Weight (kg)
1	OPT-CDP1228	12	F2.8-F16	100-∞	17.6(1.1″)	2.4	< 0.85%	13.40 at WD100	11.79 at ∞	0.101X at WD100	< 3.8°	M40.5×0.5-6H	0.21
2	OPT-CDP1628	16	F2.8-F22	100-∞	17.6(1.1″)	2.4	< 0.41%	19.98 at WD100	17.58 at ∞	0.131X at WD100	< 5.0°	M37.5×0.5-6H	0.17
3	OPT-CDP2528	25	F2.8-F16	150-∞	17.6(1.1″)	2.4	< 0.16%	11.89		0.162X at WD150	< 5.0°	M32.5×0.5-6H	0.14
4	OPT-CDP3528	35	F2.8-F16	200-∞	17.6(1.1″)	2.4	< 0.15%	13.44		0.176X at WD200	< 4.85°	M32.5×0.5-6H	0.14
5	OPT-CDP5028	50	F2.8-F16	250-∞	17.6(1.1″)	2.4	< 0.13%	13.05		0.206X at WD250	< 3.64°	M32.5×0.5-6H	0.17

Dimensions (mm)

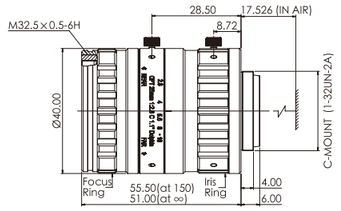
1.OPT-CDP1228



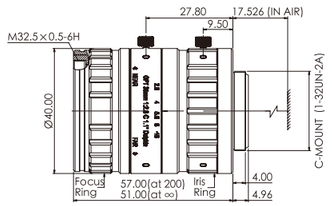
2.OPT-CDP1628



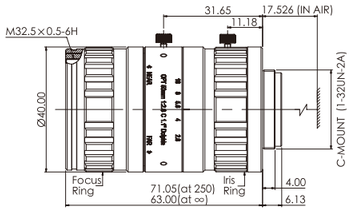
3.OPT-CDP2528



4.OPT-CDP3528



5.OPT-CDP5028



10MP Fixed Focal Length Lenses



Product Features

High resolution
Compatible with most 10MP industrial cameras, and 12MP cameras[1] which pixel ≥ 3.45 μm and max. 1.1" sensor

Low distortion
Total distortion < 0.8%, min. distortion as low as 0.1%

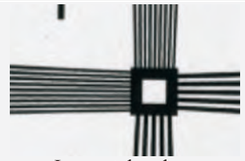
Floating focus design[2]
Achieving consistent high resolution from infinity to the closest focusing distance.

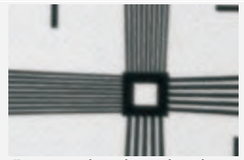
[1] OPT-C0824-10M, OPT-C1220-10M, and OPT-C1616-10M: Max. compatible with 1" sensor
[2] OPT-C5024-10M and OPT-C7528-10M are not included.

Selection Guide

OPT-C2514-10M
- 10MP
- F#: 1.4
- Focal length: 25 mm
- C-Mount
- Brand name

Resolution Comparison

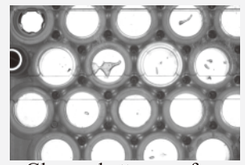

Image taken by OPT 10MP Lens

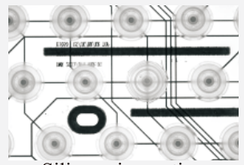

Image taken by other lens

Application Cases


Metal piece flatness inspection


Glass crack detection


Glue on battery surface inspection


Silicone inspection

Model Table

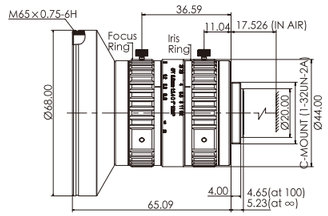
No.	Model	Focal length (mm)	Aperture range	WD (mm)	Filter thread (mm)	Distortion	Back focal length (mm)	Weight (kg)	Sensor format	FOV angle (H×V×D)		
1	OPT-C0824-10M	8.5	F2.4-F22	100~∞	M65×0.75-6H	<0.7%	12.24	0.27	2/3″	54.7°	42.4°	65.8°
									1″	73.9°	58.9°	86.5°
2	OPT-C1220-10M	12	F2.0-F16	100~∞	M37.5×0.5-6H	<0.77%	10.36	0.19	2/3″	40.2°	30.6°	49.6°
									1″	56.1°	43.6°	67.4 °
3	OPT-C1616-10M	16	F1.6-F16	100~∞	M37.5×0.5-6H	<0.68%	10.7	0.19	2/3″	30.7°	23.2°	38.4°
									1″	43.6°	33.4°	53.1 °
4	OPT-C2514-10M	25	F1.4-F16	200~∞	M37.5×0.5-6H	<0.3%	10.8	0.1	2/3″	20.1°	15.4°	24.3°
									1.1″	31.2°	23.4°	38.4°
5	OPT-C3514-10M	35	F1.4-F16	160~∞	M40.5×0.5-6H	<0.39%	11.3	0.12	2/3″	14.4°	10.8°	17.6°
									1.1″	22.4°	16.8°	27.8°

Model Table

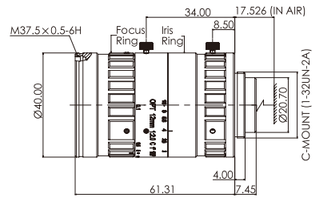
No.	Model	Focal length (mm)	Aperture range	WD (mm)	Filter thread (mm)	Distortion	Back focal length (mm)	Weight (kg)	Sensor format	FOV angle (H×V×D)		
6	OPT-C5024-10M	50	F2.4-F22	550~∞	M37.5×0.5-6H	<0.1%	16.24	0.13	2/3″	10°	7.6°	12.2°
									1.1″	15.6°	11.8°	19.4°
7	OPT-C7528-10M	75	F2.8-F32	600~∞	M37.5×0.5-6H	<0.1%	36.9	0.25	2/3″	6.7°	5.0°	8.2°
									1.1″	10.4°	7.9°	13°

Dimensions (mm)

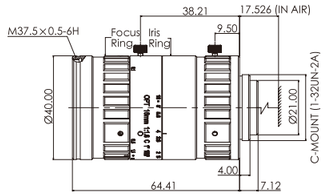
1.OPT-C0824-10M



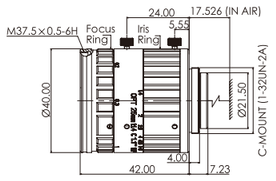
2.OPT-C1220-10M



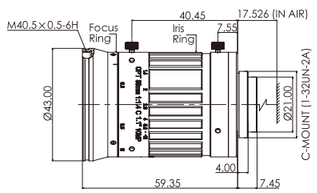
3.OPT-C1616-10M



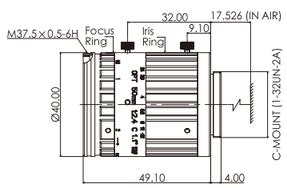
4.OPT-C2514-10M



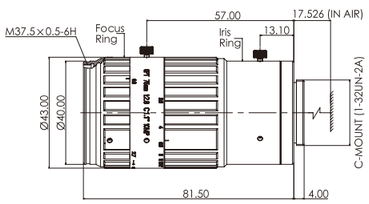
5.OPT-C3514-10M



6.OPT-C5024-10M



7.OPT-C7528-10M



5MP Fixed Focal Length Lenses



Product Features

High resolution
Compatible with 5MP industrial cameras[1] which pixel ≥ 3.45 μm and max. 2/3" sensor; resolution up to 140 lp/mm in full FOV

Low distortion
Total distortion < 0.7%, min. distortion as low as 0.02%[2]

[1] OPT-C0420-5M and OPT-C0620-5M: Compatible with 3MP cameras of max. 1/2" sensor
[2] OPT-C0420-5M and OPT-C0620-5M are not included.

Selection Guide

OPT-C2514-5M
- 5MP
- F#: 1.4
- Focal length: 25 mm
- C-Mount
- Brand name

Resolution Comparison



Image taken by OPT 5MP Lens

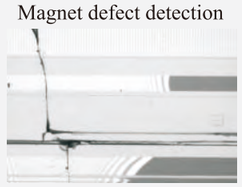


Image taken by other lens

Application Cases


Magnet defect detection


Circuit inspection


Lens surface inspection



Capacitor OCR

Model Table

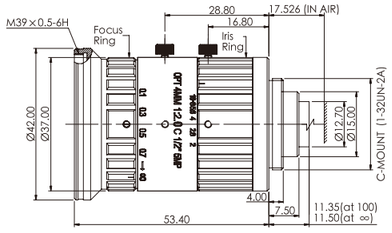
No.	Model	Focal length (mm)	Aperture range	WD (mm)	Filter thread (mm)	Distortion	Back focal length (mm)	Weight (kg)	Sensor format	FOV angle (H×V×D)		
1	OPT-C0420-5M	4	F2.0~F16	100-∞	M39×0.5-6H	<1.7%	6.46	0.13	1/3″	62.5°	48.6°	74.2°
									1/2.5″	71.4°	56.0°	83.6°
									1/2″	76.0°	60.8°	90.0°
2	OPT-C0620-5M	6	F2.0~F16	80-∞	M30.5×0.5-6H	<1.05%	7.44	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-C0828-5M	8	F2.8~F16	30-∞	M30.5×0.5-6H	<0.81%	13.06	0.12	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°

Model Table

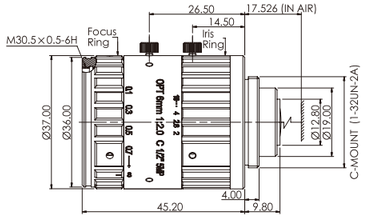
No.	Model	Focal length (mm)	Aperture range	WD (mm)	Filter thread (mm)	Distortion	Back focal length (mm)	Weight (kg)	Sensor format	FOV angle (H×V×D)		
4	OPT-C1218-5M	12	F1.8~F16	100-∞	M30.5×0.5-6H	<0.25%	13.39	0.13	1/3″	23.0°	17.3°	28.6°
									1/2.5″	27.4°	20.7°	33.9°
									1/1.8″	34.1°	25.8°	41.8°
									2/3″	40.1°	33.9°	50.9°
5	OPT-C1618-5M	16	F1.8~F16	150-∞	M30.5×0.5-6H	<0.2%	13.58	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	F1.4~F16	200-∞	M30.5×0.5-6H	<0.3%	11.54	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	F1.4~F16	390-∞	M30.5×0.5-6H	<0.1%	12.75	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	F2.5~F22	600-∞	M30.5×0.5-6H	<0.05%	13.19	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	F2.8~F32	600-∞	M30.5×0.5-6H	<0.02%	31.38	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°

Dimensions (mm)

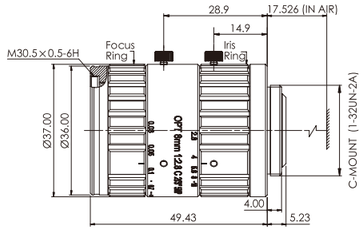
1.OPT-C0420-5M



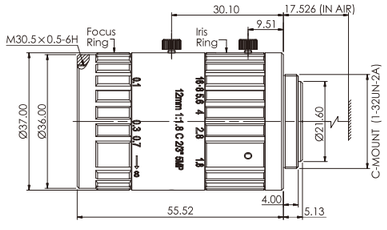
2.OPT-C0620-5M



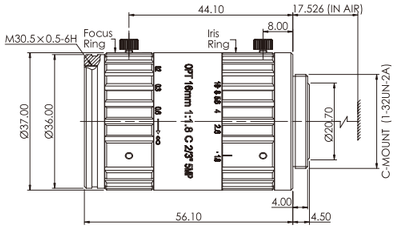
3.OPT-C0828-5M



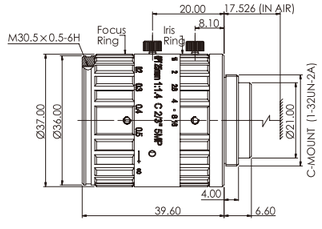
4.OPT-C1218-5M



5.OPT-C1618-5M

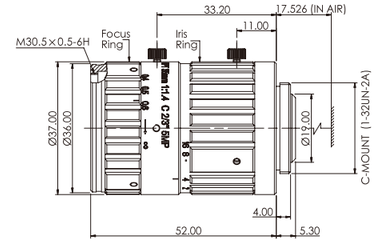


6.OPT-C2514-5M

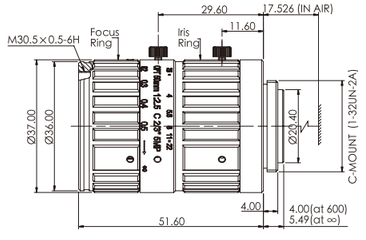


Dimensions (mm)

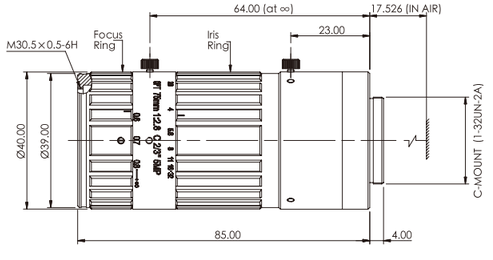
7.OPT-C3514-5M



8.OPT-C5025-5M



9.OPT-C7528-5M



Selection Guide of Extension Tube for 5MP Lenses Object size (mm×mm)

Extension tube	Model	OPT-C0420-5M		OPT-C0620-5M		OPT-C0828-5M		OPT-C1218-5M		OPT-C1618-5M	
	WD of lens	0.1 m-∞		0.08 m-∞		0.03 m-∞		0.1 m-∞		0.15 m-∞	
0 mm	WD(mm)	100		80		30		100		150	
	1/3″	129.3×97.0		72.9×54.7		35.8×26.9		49.5×37.1		47.8×35.9	
	1/2.5″	155.2×115.6		87.5×65.1		43.0×32.0		59.8×44.3		57.4×42.7	
	1/1.8″	-		-		53.6×39.7		66.0×49.5		71.5×53.0	
	2/3″	-		-		65.7×49.3		90.7×68.0		87.6×65.7	
	Mag.	0.0371X		0.0658X		0.1340X		0.0970X		0.1004X	
0.5 mm	WD(mm)	7	20	23	37	19	152	64	296	105	122
	1/3″	24.0×18.0	38.5×28.8	27.5×20.6	38.6×29.0	20.2×15.1	97.0×72.7	34.7×26.0	123.7×92.8	36.5×27.3	41.4×31.0
	1/2.5″	28.8×21.4	46.2×34.4	33.0×24.6	46.4×34.5	24.2×18.0	116.4×86.7	42.0×31.1	149.5×110.8	43.8×32.6	49.6×37.0
	1/1.8″	-	-	-	-	30.2×22.3	145.0×107.5	46.3×34.7	164.9×123.7	54.5×40.4	61.8×45.8
	2/3″	-	-	-	-	37.0×27.7	177.8×133.3	63.7×47.8	226.8×170.1	66.8×50.1	75.8×56.9
	Mag.	0.1996X	0.1246X	0.1741X	0.1241X	0.2380X	0.0495X	0.1382X	0.0388X	0.1317X	0.1160X
1 mm	WD(mm)	-	-	12	17	12	68	45	137	82	92
	1/3″	-	-	18.6×13.9	23.1×17.3	17.2×12.9	47.5×35.6	26.7×20.0	61.5×46.1	29.5×22.1	32.6×24.4
	1/2.5″	-	-	22.3×16.6	27.7×20.6	20.7×15.4	57.0×42.4	32.3×23.9	74.3×55.1	35.4×26.3	39.1×29.1
	1/1.8″	-	-	-	-	25.7×19.1	71.0×52.6	35.6×26.7	81.9×61.5	44.1×32.7	48.7×36.1
	2/3″	-	-	-	-	31.6×23.7	87.0×65.3	48.9×36.7	112.7×84.5	54.0×40.5	59.8×44.8
	Mag.	-	-	0.2575X	0.2075X	0.2787X	0.1011X	0.1798X	0.0781X	0.1629X	0.1473X
1.5 mm	WD(mm)	-	-	-	-	-	-	32	84	66	73
	1/3″	-	-	-	-	-	-	21.6×16.2	40.7×30.6	24.7×18.5	26.9×20.2
	1/2.5″	-	-	-	-	-	-	26.1×19.4	49.2×36.5	29.7×22.1	32.3×24.0
	1/1.8″	-	-	-	-	-	-	28.8×21.6	54.3×40.7	37.0×27.4	40.2×29.8
	2/3″	-	-	-	-	-	-	39.7×29.7	74.7×56.0	45.3×34.0	49.3×37.0
	Mag.	-	-	-	-	-	-	0.2219X	0.1178X	0.1942X	0.1785X
2 mm	WD(mm)	-	-	-	-	-	-	-	-	55	60
	1/3″	-	-	-	-	-	-	-	-	21.3×16.0	22.9×17.2
	1/2.5″	-	-	-	-	-	-	-	-	25.6×19.0	27.5×20.5
	1/1.8″	-	-	-	-	-	-	-	-	31.8×23.6	34.2×25.4
	2/3″	-	-	-	-	-	-	-	-	39.0×29.3	41.9×31.5
	Mag.	-	-	-	-	-	-	-	-	0.2254X	0.2098X

Extension tube	Model	OPT-C2514-5M		OPT-C3514-5M		OPT-C5025-5M		OPT-C7528-5M	
	WD of lens	0.2 m-∞		0.39 m-∞		0.57 m-∞		0.6 m-∞	
0 mm	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.	0.1257X		0.0883X		0.0877X		0.1317X	
0.5 mm	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.	0.1517X	0.1397X	0.1069X	0.0983X	0.1007X	0.0947X	0.1382X	0.1352X
1 mm	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.	0.1717X	0.1597X	0.1212X	0.1126X	0.1107X	0.1047X	0.1432X	0.1402X
1.5 mm	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.	0.1917X	0.1797X	0.1354X	0.1269X	0.1207X	0.1147X	0.1482X	0.1452X
2 mm	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.	0.2117X	0.1997X	0.1497X	0.1412X	0.1307X	0.1247X	0.1532X	0.1502X
5 mm	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.	0.3317X	0.3197X	0.2354X	0.2269X	0.1907X	0.1847X	0.1832X	0.1802X
10 mm	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.	0.5317X	0.5197X	0.3783X	0.3697X	0.2907X	0.2847X	0.2332X	0.2302X
15 mm	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.	-	-	-	-	0.3907X	0.3847X	0.2832X	0.2802X
20 mm	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.	-	-	-	-	0.4907X	0.4847X	0.3332X	0.3302X
25 mm	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.	-	-	-	-	0.5907X	0.5847X	0.3832X	0.3802X

Selection Guide of Extension Tube for 5MP Lenses Object size (mm×mm)

Extension tube	Model	OPT-C2514-5M		OPT-C3514-5M		OPT-C5025-5M		OPT-C7528-5M	
	WD of lens	0.2 m-∞		0.39 m-∞		0.57 m-∞		0.6 m-∞	
30 mm	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.	-	-	-	-	0.6907X	0.6847X	0.4332X	0.4302X
35 mm	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.	-	-	-	-	-	0.7847X	0.4832X	0.4802X
40 mm	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.	-	-	-	-	-	-	0.5332X	0.5302X
45 mm	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.	-	-	-	-	-	-	0.5832X	0.5802X

2MP Fixed Focal Length Lenses



Product Features

- **Compact, light weight and stable**
- **High resolution**
  Compatible with 2MP industrial cameras[1] which pixel ≥ 5.5 μm and max. 2/3" sensor
- **High uniformity**
  Minimized vignetting

[1] OPT-C0420-2M and OPT-C0620-2M: Max. compatible with 1/2" sensor

Resolution Comparison

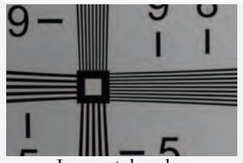


Image taken by OPT 2MP Lens

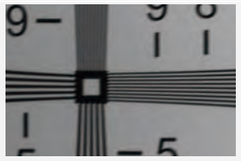
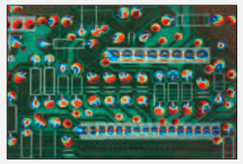


Image taken by other lens

Application Cases



PCB soldering inspection



OCR for plastic parts



Lenses on plate detection



Connector pins inspection

Selection Guide

OPT-C2514-2M

- 2MP
- F#: 1.4
- Focal length: 25 mm
- C-Mount
- Brand name

Model Table

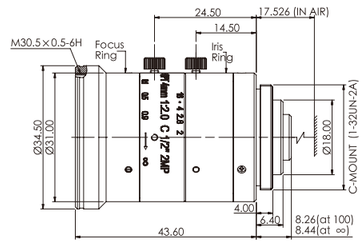
No.	Model	Focal length (mm)	Aperture range	WD (mm)	Filter thread (mm)	Distortion	Back focal length (mm)	Weight (kg)	Sensor format	FOV angle (H×V×D)		
1	OPT-C0420-2M	4	F2.0~F16	100-∞	M30.5×0.5-6H	<1.6%	9.14	0.08	1/3″	62.2°	48.6°	74.0°
									1/2.5″	71.4°	56.3°	83.7°
									1/2″	76.2°	61.6°	89.0°
2	OPT-C0620-2M	6	F2.0~F16	100-∞	M27×0.5-6H	<1.2%	9.15	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°	64.0°
3	OPT-C0814-2M	8	F1.4~F16	100-∞	M27×0.5-6H	<2.4%	8.95	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°

Model Table

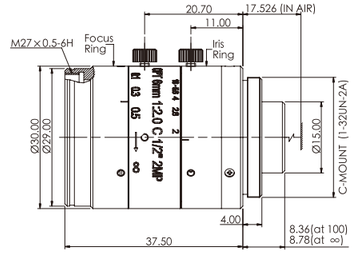
No.	Model	Focal length (mm)	Aperture range	WD (mm)	Filter thread (mm)	Distortion	Back focal length (mm)	Weight (kg)	Sensor format	FOV angle (H×V×D)		
4	OPT-C1214-2M	12	F1.4~F16	100-∞	M27×0.5-6H	<2.8%	9.33	0.06	1/3″	23.0°	17.3°	28.6°
									1/2.5″	27.4°	20.4°	33.7°
									1/1.8″	34.2°	26.2°	42.2°
									2/3″	40.1°	33.7°	50.7°
5	OPT-C1614-2M	16	F1.4~F16	100-∞	M27×0.5-6H	<2.4%	9.53	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	F1.4~F16	180-∞	M27×0.5-6H	<0.45%	11.54	0.05	1/3″	11.1°	8.3°	13.8°
									1/2.5″	13.2°	9.9°	16.5°
									1/1.8″	16.5°	12.2°	20.4°
									2/3″	20.1°	15.1°	25.0°
7	OPT-C3516-2M	35	F1.6~F16	250-∞	M27×0.5-6H	<0.25%	11	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	F2.4~F22	500-∞	M27×0.5-6H	<0.1%	15	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	F2.8~F32	700-∞	M30.5×0.5-6H	<0.02%	18	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	F2.8~F16	2700-∞	M37.5×0.5-6H	<0.05%	19.95	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°

Dimensions (mm)

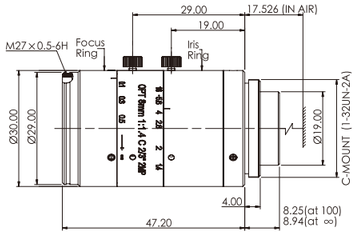
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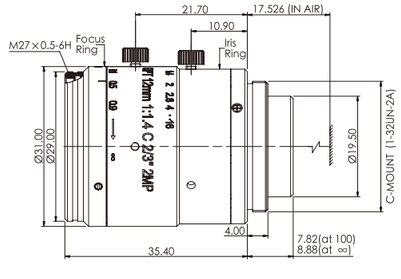
2.OPT-C0620-2M



3.OPT-C0814-2M

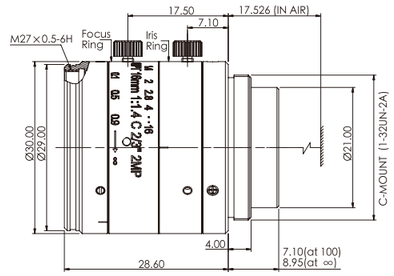


4.OPT-C1214-2M

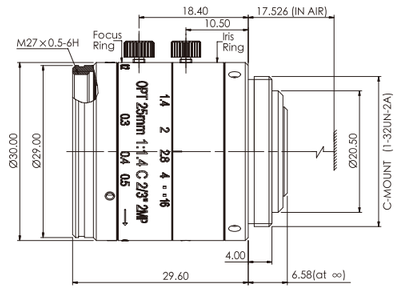


Dimensions (mm)

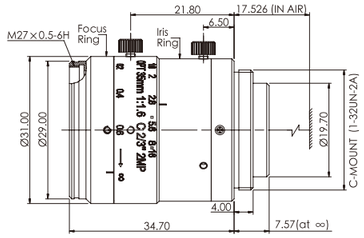
5.OPT-C1614-2M



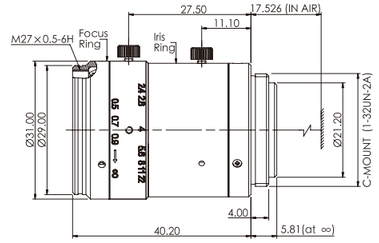
6.OPT-C2514-2M



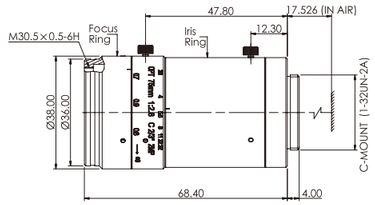
7.OPT-C3516-2M



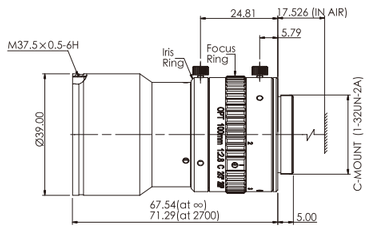
8.OPT-C5024-2M



9.OPT-C7528-2M



10.OPT-C10028-2M



Selection Guide of Extension Tube for 2MP Lenses Object size (mm×mm)

Extension tube	Model	OPT-C0420-2M		OPT-C0620-2M		OPT-C0814-2M		OPT-C1214-2M		OPT-C1614-2M	
	WD of lens	0.1 m-∞		0.1 m-∞		0.1 m-∞		0.1 m-∞		0.1 m-∞	
0 mm	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.	0.0375X		0.0595X		0.0782X		0.1065X		0.1483X	
0.5 mm	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.	0.2X	0.125X	0.1678X	0.1178X	0.1595X	0.122X	0.1607X	0.1357X	0.1889X	0.1702X
1 mm	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.	-	-	0.2512X	0.2012X	0.222X	0.1845X	0.2023X	0.1773X	0.2202X	0.2014X

Selection Guide of Extension Tube for 2MP Lenses Object size (mm×mm)

Extension tube	Model	OPT-C2514-2M		OPT-C3516-2M		OPT-C5024-2M		OPT-C7528-2M		OPT-C10028-2M	
	WD of lens	0.18 m-∞		0.25 m-∞		0.5 m-∞		0.7 m-∞		2.7 m-∞	
0 mm	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.	0.1365X		0.1382X		0.1025X		0.1176X		0.0385X	
0.5 mm	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	43.8×32.8	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	52.6×39.1	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	65.5×48.5	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	80.3×60.2	69.6×52.2	71.9×53.9	195.6×146.6	209.5×157.1
	Mag.	0.1625X	0.1505X	0.1568X	0.1482X	0.1155X	0.1095X	0.1263X	0.1223X	0.045X	0.042X
1 mm	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.	0.1825X	0.1705X	0.1711X	0.1625X	0.1255X	0.1195X	0.1329X	0.1289X	0.05X	0.047X
1.5 mm	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.	0.2025X	0.1905X	0.1853X	0.1768X	0.1355X	0.1195X	0.1396X	0.1356X	0.055X	0.052X
2 mm	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.	0.2225X	0.2105X	0.1996X	0.1911X	0.1455X	0.1395X	0.1463X	0.1423X	0.06X	0.057X
5 mm	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.	0.3425X	0.3305X	0.2853X	0.2768X	0.2055X	0.1995X	0.1863X	0.1823X	0.09X	0.087X
10 mm	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.	0.5425X	0.5305X	0.4282X	0.4196X	0.3055X	0.2995X	0.2529X	0.2489X	014X	0.137X

Extension tube	Model	OPT-C2514-2M		OPT-C3516-2M		OPT-C5024-2M		OPT-C7528-2M		OPT-C10028-2M	
	WD of lens	0.18 m-∞		0.25 m-∞		0.5 m-∞		0.7 m-∞		2.7 m-∞	
15 mm	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.	-	-	-	-	0.4055X	0.3995X	0.3196X	0.3156X	0.19X	0.187X
20 mm	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.	-	-	-	-	0.5055X	0.4995X	0.3863X	0.3823X	0.24X	0.237X
25 mm	WD(mm)	-	-	-	-	-	-	230	231	445	448
	1/3"	-	-	-	-	-	-	10.5×7.9	10.6×8.0	16.5×12.4	16.7×12.5
	1/2.5"	-	-	-	-	-	-	12.7×9.4	12.8×9.5	19.8×14.7	20.0×14.9
	1/1.8"	-	-	-	-	-	-	15.8×11.7	15.9×11.8	21.1×15.6	21.2×15.7
	2/3"	-	-	-	-	-	-	19.4×14.5	19.6×14.7	30.3×22.7	30.6×22.9
	Mag.	-	-	-	-	-	-	0.4529X	0.4489X	0.29X	0.287X
30 mm	WD(mm)	-	-	-	-	-	-	208	209	394	397
	1/3"	-	-	-	-	-	-	9.2×6.9	9.3×6.9	14.1×10.5	14.2×10.6
	1/2.5"	-	-	-	-	-	-	11.0×8.2	11.1×8.3	16.9×12.6	17.0×12.7
	1/1.8"	-	-	-	-	-	-	13.8×10.2	13.9×10.3	24.7×18.3	25.0×18.5
	2/3"	-	-	-	-	-	-	16.9×12.7	17.0×12.8	25.8×19.4	26.1×19.5
	Mag.	-	-	-	-	-	-	0.5196X	0.5156X	0.34X	0.337X
35 mm	WD(mm)	-	-	-	-	-	-	192	193	356	358
	1/3"	-	-	-	-	-	-	8.1×6.1	8.2×6.1	12.3×9.2	12.4×9.3
	1/2.5"	-	-	-	-	-	-	9.8×7.3	9.8×7.3	14.7×11.0	14.8×11.0
	1/1.8"	-	-	-	-	-	-	12.2×9.0	12.3×9.1	18.4×13.6	18.5×13.7
	2/3"	-	-	-	-	-	-	15.0×11.2	15.1×11.3	22.5×16.9	22.7×17.0
	Mag.	-	-	-	-	-	-	0.5863X	0.5823X	0.39X	0.387X
40 mm	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.	-	-	-	-	-	-	0.6529X	0.6489X	0.44X	0.437X
45 mm	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.	-	-	-	-	-	-	0.7196X	0.7156X	0.49X	0.487X
50 mm	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.	-	-	-	-	-	-	-	-	0.54X	0.537X

M12 Fixed Focal Length Lenses NEW



Product Features

- **Miniaturized structure**
  S-Mount design, small size, compact structure, total lens length <18.5 mm.
- **Large depth of field and high resolution**
  Fixed aperture F5.6 large depth of field design, full field of view resolution close to the diffraction limit, compatible with cameras with a maximum chip size of 1/1.7".
- **Low distortion**
  The working distance is wide, and full FOV Max. TV distortion <0.48%.
- **High relative illumination**
  CRA below 5.5°, this guarantees a high relative illumination across the entire image without vignetting.

Selection Guide

OPT-S1256
- F#: 5.6
- Focal length: 12 mm
- S: M12-Mount
- Brand name

Resolution Comparison

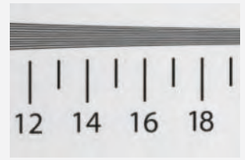


Image taken by OPT M12 Lens

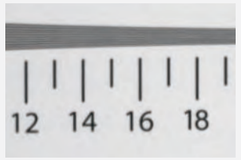
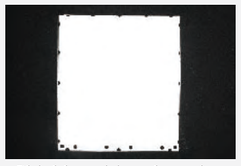


Image taken by other lens

Application Cases


Circuit board defect detection


Shield position detection



PCB code reading

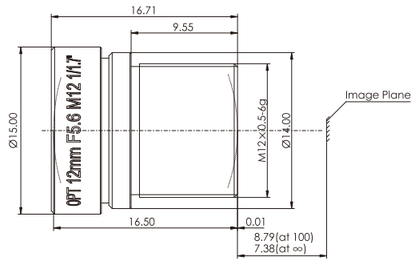

Photovoltaic glass QR code scanning

Model Table

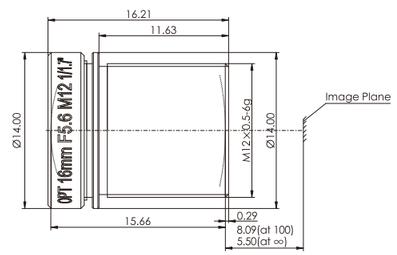
No.	Model	Focal Length (mm)	Aperture	Sensor Ø (mm)	Resolution (μm)	TV Distortion	WD (mm)	Back Focal Length (mm)		Mag. at MOD	Chief Ray Angle	Weight (kg)
1	OPT-S1256	12	F5.6	9.3 (1/1.7")	3.45	< 0.48% at WD400	100-∞	8.79 at WD100	7.38 at ∞	0.115X at WD100	< 5.4°	0.006
2	OPT-S1656	16	F5.6	9.3 (1/1.7")	3.45	< 0.19% at WD400	100-∞	8.09 at WD100	5.50 at ∞	0.160X at WD100	< 5.5°	0.005
3	OPT-S2556	25	F5.6	9.3 (1/1.7")	3.45	< 0.08% at WD400	150-∞	10.04 at WD150	5.57 at ∞	0.179X at WD150	< 5.5°	0.005

Dimensions (mm)

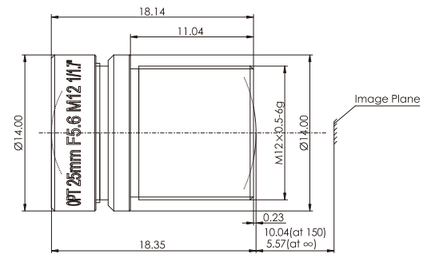
1.OPT-S1256



2.OPT-S1656



3.OPT-S2556



5MP 3X Variable Magnification Lens



Product Features

- Adjustable magnification: 0.3X-1.0X
- Large format sensor, max compatible with 2/3" sensor
- Up to 120 lp/mm resolution
- High uniformity
- Total distortion < 0.5%

Resolution Comparison

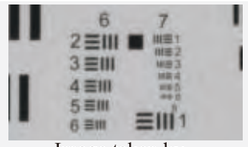


Image taken by OPT-C3X45-5M



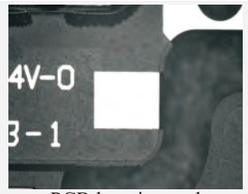
Image taken by other lens

Selection Guide

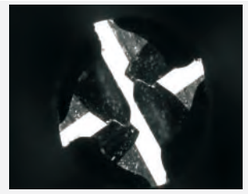
OPT-C3X45-5M

- 5MP
- F#: 4.5
- Magnification: 0.3X-1.0X
- C-Mount
- Brand name

Application Cases



PCB locating and recognition

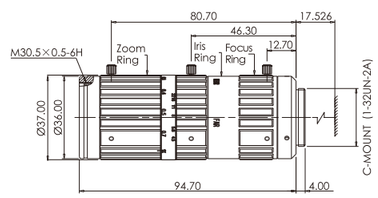


Tool inspection

Model Table

Model	Mag.	Aperture range	WD (mm)	Filter thread (mm)	Weight (kg)	Sensor format	Distortion		FOV angle (H×V×D)		
OPT-C3X45-5M	0.3X-1.0X	F4.5~F22	87±3%	M30.5×0.5-6H	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°

Dimensions (mm)



Variable Magnification Telecentric Lens



Product Features

- Adjustable magnification: 0.5X-1.0X
- Large format sensor, max. compatible with 1/1.2" sensor
- Object-space telecentric design, telecentricity: ≤ 0.05°
- Total distortion < 0.1%

Resolution Comparison



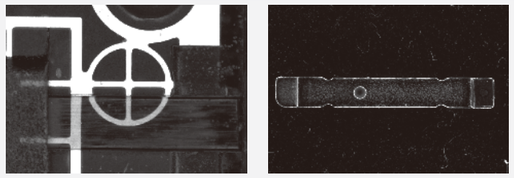
0.5X 1.0X

Selection Guide

OPT-CZT0510X

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

Application Cases

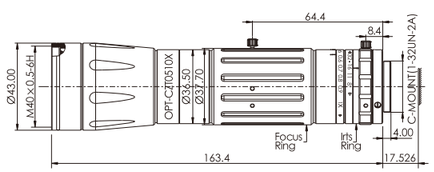


Mark locating for cutting Gauging for metal parts

Model Table

Model	Aperture range	WD (mm)	Distortion at 546 nm	Mount	Magnification	Telecentricity	MTF 30 (lp/mm)	FOV (mm×mm)			
								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
OPT-CZT0510X	F8-22	106±3%	<0.05%	C	0.5X	<0.05°	90	21.46×16.09	17.6×13.2	14.36×10.65	12.8×9.6
					0.6X	<0.04°	90	17.87×13.4	14.67×11	11.97×8.87	10.67×8
					0.7X	<0.05°	90	15.31×11.49	12.57×9.43	10.26×7.6	9.14×6.86
					0.8X	<0.03°	75	13.4×10.05	11×8.25	8.98×6.65	8×6
					0.9X	<0.02°	70	11.91×8.93	9.78×7.33	7.98×5.91	7.11×5.33
					1.0X	<0.05°	70	10.72×8.04	8.8×6.6	7.18×5.32	6.4×4.8

Dimensions (mm)



Custom Lenses



IR Fixed Focal Length Lenses

- Developed for infrared projects; used for 800-1050 nm IR band

OPT-C3514-5M-IR

- Infrared
- 5MP
- F#: 1.4
- Focal length: 35 mm
- C-Mount
- Brand name

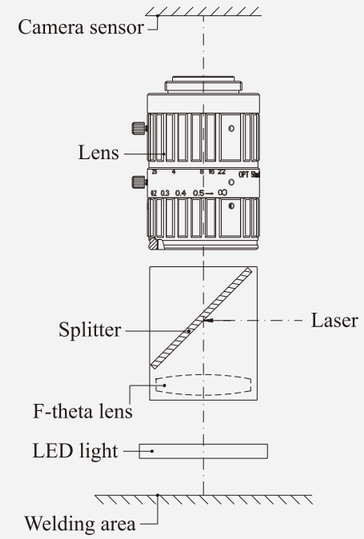
Fixed Focal Length Lenses for Laser Welding

- Designed for laser applications; working distance over 1000 mm

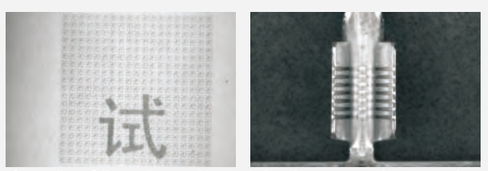
OPT-C5025-5M-LW

- Long working distance
- 5MP
- F#: 2.5
- Focal length: 50 mm
- C-Mount
- Brand name

Application Diagram



Application Case of Infrared Fixed Focal Length Lens



Security QR code reading Metal part spacing gauging

Application Case of Laser Welding Fixed Focal Lens



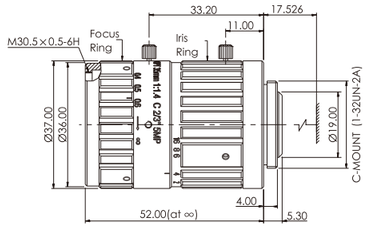
Copper foil welding inspection Battery soldering joint inspection

Model Table

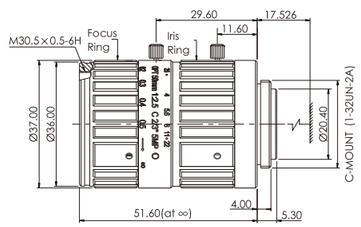
No.	Model	Focal length (mm)	Aperture range	WD (mm)	Filter thread (mm)	Distortion	Weight (kg)	Sensor format	FOV angle (H×V×D)		
1	OPT-C3514-5M-IR	35	F1.4-F16	390-∞	M30.5×0.5-6H	<0.1%	0.13	1/3″	9.7°	7.7°	5.9°
								1/2.5″	11.6°	9.3°	7.0°
								1/1.8″	14.5°	11.6°	8.9°
								2/3″	17.8°	13.7°	11.4°
2	OPT-C5025-5M-IR	50	F2.5-F22	600-∞	M30.5×0.5-6H	<0.05%	0.11	1/3″	6.6°	5.3°	3.9°
								1/2.5″	7.7°	6.2°	4.6°
								1/1.8″	9.8°	7.9°	5.9°
								2/3″	12.0°	9.1°	7.7°
3	OPT-C5025-5M-LW	50	F2.5-F22	1000-∞	M30.5×0.5-6H	<0.05%	0.11	1/3″	6.6°	5.3°	3.9°
								1/2.5″	7.7°	6.2°	4.6°
								1/1.8″	9.8°	7.9°	5.9°
								2/3″	12.0°	9.1°	7.7°
4	OPT-C7528-5M-LW	75	F2.8-F32	5000-∞	M30.5×0.5-6H	<0.02%	0.22	1/3″	4.3°	3.4°	2.6°
								1/2.5″	5.0°	4.0°	3.0°
								1/1.8″	6.4°	5.1°	3.9°
								2/3″	7.8°	6.0°	5.0°

Dimensions (mm)

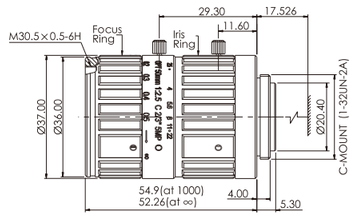
1.OPT-C3514-5M-IR



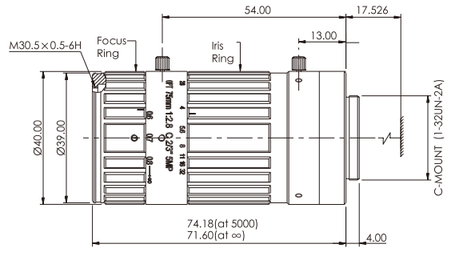
2.OPT-C5025-5M-IR



3.OPT-C5025-5M-LW



4.OPT-C7528-5M-LW



MH Series Telecentric Lenses



Product Features

- High-definition large-aperture telecentric lens, compatible with up to 2/3" sensor chip size camera.
- The magnification range of the whole series is wide, multiple magnifications are available from 0.5X to 7.5X.
- Object-oriented telecentric design, with built-in coaxial light illumination specifications optional.

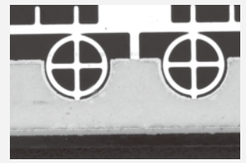
Selection Guide

OPT-MH05-65C

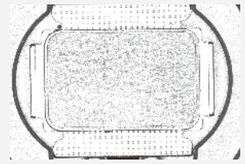
- C: Built-in coaxial light illumination
- Working distance (WD): 65 mm
- Magnification: 0.5X
- MH Series Telecentric Lenses
- Brand name

Application Cases


Wafer recognition


Mark positioning


QR code reading


Glue uniformity inspection

Model Table

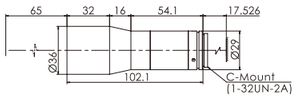
No.	Model	WD (mm)[1]	Mag.	Image circle Ø (mm)	Aperture (F#)[2]	Distortion (Max.)	DOF (mm)[3]	MTF30 (lp/mm)	Object telecentricity (Max.)	Object image distance (mm)	Weight (kg)	Object field of view (mm)
1	OPT-MH05-65	65±1	0.5	11.0(2/3″)	9.6	<0.001%	3.17	110	0.26°	184.6	0.15	22.00
2	OPT-MH05-65C	65±1	0.5	11.0(2/3″)	9.6	<0.008%	3.17	110	0.25°	187.5	0.30	22.00
3	OPT-MH08-65	65±1	0.8	11.0(2/3″)	10.0	<0.086%	1.29	100	0.08°	180.8	0.20	13.80
4	OPT-MH08-65C	65±1	0.8	11.0(2/3″)	10.0	<0.083%	1.29	100	0.07°	183.9	0.40	13.80
5	OPT-MH10-65	65±1	1	11.0(2/3″)	11.1	<0.038%	0.92	90	0.06°	190.1	0.20	11.00
6	OPT-MH10-65C	65±1	1	11.0(2/3″)	11.1	<0.039%	0.92	90	0.06°	193.0	0.20	11.00
7	OPT-MH15-65	65±1	1.5	11.0(2/3″)	11.9	<0.105%	0.44	85	0.15°	168.6	0.20	7.30
8	OPT-MH15-65C	65±1	1.5	11.0(2/3″)	11.9	<0.105%	0.44	85	0.15°	168.6	0.30	7.30
9	OPT-MH30-65	65±1	3	11.0(2/3″)	15.7	<0.038%	0.14	65	0.15°	182.0	0.10	3.70
10	OPT-MH30-65C	65±1	3	11.0(2/3″)	15.7	<0.038%	0.14	65	0.15°	182.0	0.20	3.70
11	OPT-MH40-65	65±1	4	11.0(2/3″)	17.8	<0.064%	0.09	55	0.11°	185.6	0.10	2.80
12	OPT-MH40-65C	65±1	4	11.0(2/3″)	17.8	<0.064%	0.09	55	0.11°	185.7	0.20	2.80
13	OPT-MH60-65	65±1	6	11.0(2/3″)	26.6	<0.028%	0.06	35	0.15°	211.8	0.10	1.80
14	OPT-MH60-65C	65±1	6	11.0(2/3″)	26.6	<0.028%	0.06	35	0.15°	211.8	0.20	1.80

No.	Model	WD (mm)[1]	Mag.	Image circle Ø (mm)	Aperture (F#)[2]	Distortion (Max.)	DOF (mm)[3]	MTF30 (lp/mm)	Object telecentricity (Max.)	Object image distance (mm)	Weight (kg)	Object field of view (mm)
15	OPT-MH75-65C	65±1	7.5	11.0(2/3″)	33.3	<0.021%	0.05	30	0.12°	232.8	0.30	1.47
16	OPT-MH05-110	110±2	0.5	11.0(2/3″)	9.6	<0.11%	3.17	110	0.06°	254.4	0.18	22.00
17	OPT-MH05-110C	110±2	0.5	11.0(2/3″)	9.6	<0.092%	3.17	110	0.06°	257.0	0.20	22.00
18	OPT-MH08-110	110±2	0.8	11.0(2/3″)	10.0	<0.012%	1.29	100	0.08°	244.8	0.15	13.80
19	OPT-MH08-110C	110±2	0.8	11.0(2/3″)	10.0	<0.012%	1.29	100	0.08°	247.6	0.15	13.80
20	OPT-MH10-110	110±2	1	11.0(2/3″)	11.1	<0.03%	0.92	90	0.07°	254.2	0.15	11.00
21	OPT-MH10-110C	110±2	1	11.0(2/3″)	11.1	<0.032%	0.92	90	0.07°	257.0	0.25	11.00
22	OPT-MH15-110	110±2	1.5	11.0(2/3″)	12.0	<0.07%	0.44	80	0.10°	252.2	0.20	7.33
23	OPT-MH15-110C	110±2	1.5	11.0(2/3″)	12.0	<0.06%	0.44	80	0.10°	256.5	0.22	7.33
24	OPT-MH20-110	110±2	2	11.0(2/3″)	13.0	<0.11%	0.27	66	0.10°	256.0	0.20	5.50
25	OPT-MH20-110C	110±2	2	11.0(2/3″)	13.0	<0.1%	0.27	66	0.10°	260.1	0.20	5.50
26	OPT-MH30-110	110±2	3	11.0(2/3″)	18.2	<0.037%	0.17	55	0.15°	259.7	0.15	3.70
27	OPT-MH30-110C	110±2	3	11.0(2/3″)	18.2	<0.037%	0.17	55	0.15°	259.7	0.15	3.70
28	OPT-MH40-110	110±2	4	11.0(2/3″)	22.1	<0.055%	0.11	45	0.04°	262.7	0.15	2.80
29	OPT-MH40-110C	110±2	4	11.0(2/3″)	22.1	<0.055%	0.11	45	0.04°	262.7	0.14	2.80
30	OPT-MH60-110	110±2	6	11.0(2/3″)	33.2	<0.03%	0.08	30	0.03°	297.0	0.15	1.80
31	OPT-MH60-110C	110±2	6	11.0(2/3″)	33.2	<0.03%	0.08	30	0.03°	297.0	0.30	1.80

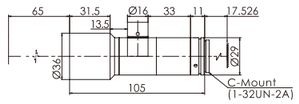
[1] WD: The distance between the front end of the mechanism and the object.
[2] F#: The real F-number of a lens when used.
[3] DOF evaluation formula for telecentric lenses: DOF(mm)=F#×P×k/β²;
P: Sensor pixel size (5.5 μm used here)
β: Lens magnification
k: The parameter based on application (measurement, k=0.015; defect detection, k=0.008; 0.015 used here)
At the borders of DOF, the image can still be use for measurement. But only half of the nominal DOF should be used to get a sharp image.

Dimensions (mm)

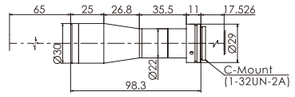
1.OPT-MH05-65



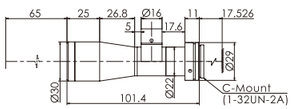
2.OPT-MH05-65C



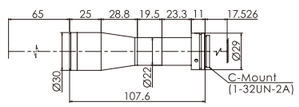
3.OPT-MH08-65



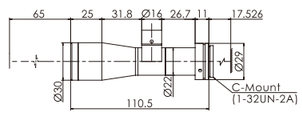
4.OPT-MH08-65C



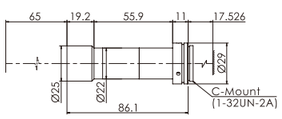
5.OPT-MH10-65



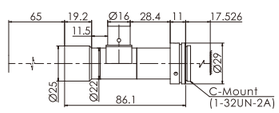
6.OPT-MH10-65C



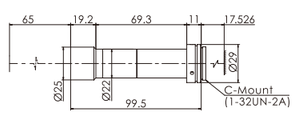
7.OPT-MH15-65



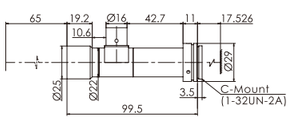
8.OPT-MH15-65C



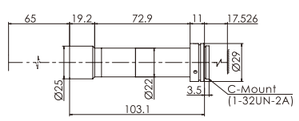
9.OPT-MH30-65



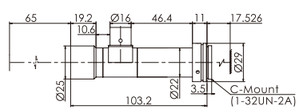
10.OPT-MH30-65C



11.OPT-MH40-65

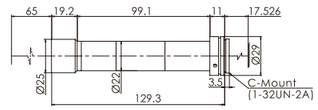


12.OPT-MH40-65C

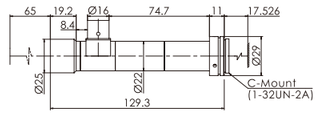


Dimensions (mm)

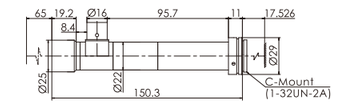
13.OPT-MH60-65



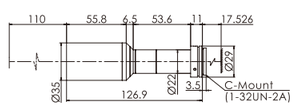
14.OPT-MH60-65C



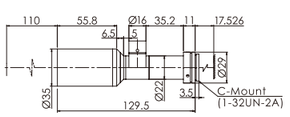
15.OPT-MH75-65C



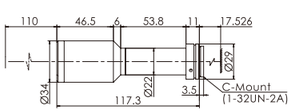
16.OPT-MH05-110



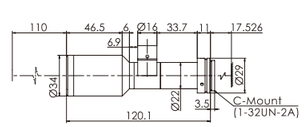
17.OPT-MH05-110C



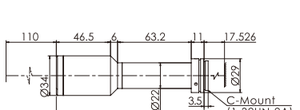
18.OPT-MH08-110



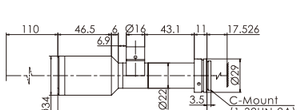
19.OPT-MH08-110C



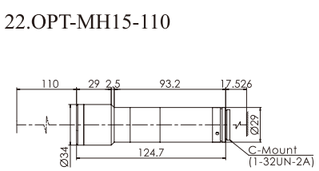
20.OPT-MH10-110



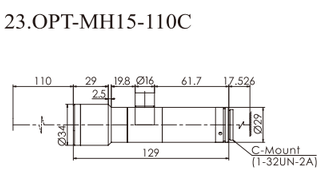
21.OPT-MH10-110C



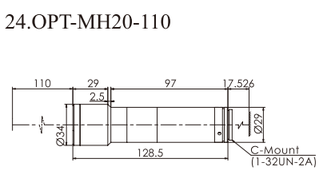
22.OPT-MH15-110



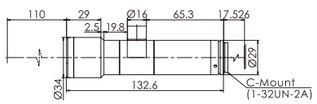
23.OPT-MH15-110C



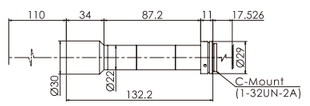
24.OPT-MH20-110



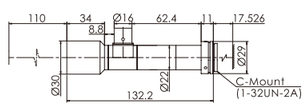
25.OPT-MH20-110C



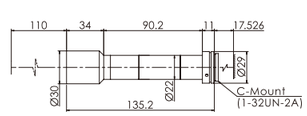
26.OPT-MH30-110



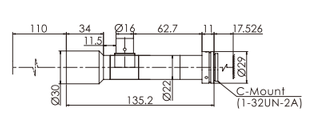
27.OPT-MH30-110C



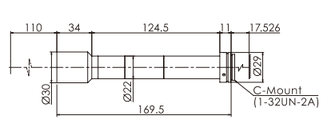
28.OPT-MH40-110



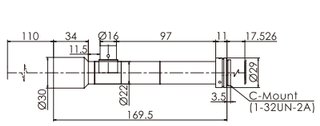
29.OPT-MH40-110C



30.OPT-MH60-110



31.OPT-MH60-110C



10M Series Telecentric Lenses



Product Features

- Large aperture and high resolution, compatible with cameras up to 1.1" sensor chip size.
- The magnification range of the whole series is wide, multiple magnifications are available from 0.2X to 4X.
- High-contrast, low-distortion design, and optional built-in coaxial lighting specifications.

Selection Guide

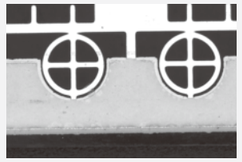
OPT-10M05-65C

- C: Built-in coaxial light illumination
- Working distance (WD): 65 mm
- Magnification: 0.5X
- 10M Series Telecentric Lenses
- Brand name

Application Cases



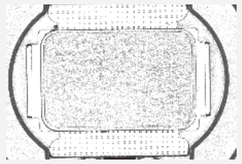
Wafer recognition



Mark positioning



QR code reading



Glue uniformity inspection

Model Table

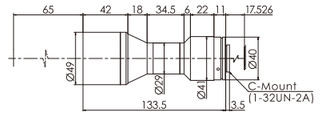
No.	Model	WD (mm)[1]	Mag.	Image circle Ø (mm)	Aperture (F#)[2]	Distortion (Max.)	DOF (mm)[3]	MTF30 (lp/mm)	Object telecentricity (Max.)	Object image distance (mm)	Weight (kg)	Object field of view (mm)
1	OPT-10M05-65	65±1	0.5	17.6(1.1")	6.0	<0.006%	1.98	170	0.38°	216.0	0.35	35.20
2	OPT-10M05-65C	65±1	0.5	17.6(1.1")	6.0	<0.005%	1.98	170	0.39°	218.8	0.36	35.20
3	OPT-10M10-65	65±1	1	17.6(1.1")	7.0	<0.007%	0.58	145	0.21°	207.9	0.25	17.60
4	OPT-10M10-65C	65±1	1	17.6(1.1")	7.0	<0.008%	0.58	145	0.19°	212.2	0.26	17.60
5	OPT-10M20-65	65±1	2	17.6(1.1")	7.1	<0.1%	0.15	135	0.20°	232.9	0.50	8.80
6	OPT-10M20-65C	65±1	2	17.6(1.1")	7.1	<0.1%	0.15	135	0.20°	232.9	0.55	8.80
7	OPT-10M30-65	65±1	3	17.6(1.1")	9.5	<0.085%	0.09	105	0.20°	240.9	0.48	5.87
8	OPT-10M30-65C	65±1	3	17.6(1.1")	9.5	<0.085%	0.09	105	0.20°	240.9	0.53	5.87
9	OPT-10M40-65	65±1	4	17.6(1.1")	11.8	<0.09%	0.06	84	0.20°	256.9	0.50	4.40
10	OPT-10M40-65C	65±1	4	17.6(1.1")	11.8	<0.09%	0.06	84	0.20°	256.9	0.55	4.40
11	OPT-10M02-68	68±1	0.2	16.4(1")	5.6	<0.084%	11.55	180	0.10°	239.1	0.20	82.00
12	OPT-10M02-68C	68±1	0.2	16.4(1")	5.6	<0.084%	11.55	180	0.10°	239.1	0.25	82.00
13	OPT-10M035-110	110±2	0.35	16.2(1")	8.0	<0.084%	5.39	120	0.10°	292.9	0.65	46.30
14	OPT-10M035-110C	110±2	0.35	16.2(1")	8.0	<0.05%	5.39	120	0.10°	296.1	0.70	46.30

No.	Model	WD (mm)[1]	Mag.	Image circle Ø (mm)	Aperture (F#)[2]	Distortion (Max.)	DOF (mm)[3]	MTF30 (lp/mm)	Object telecentricity (Max.)	Object image distance (mm)	Weight (kg)	Object field of view (mm)
15	OPT-10M04-110C	110±2	0.4	16.2(1")	8.0	<0.08%	4.13	120	0.10°	291.7	0.75	40.50
16	OPT-10M05-110	110±2	0.5	17.6(1.1")	8.0	<0.162%	2.64	125	0.06°	240.1	0.30	35.20
17	OPT-10M05-110C	110±2	0.5	16.2(1")	8.0	<0.072%	2.64	125	0.06°	240.0	0.35	32.40
18	OPT-10M10-110	110±2	1	17.6(1.1")	10.0	<0.08%	0.83	100	0.08°	279.0	0.32	17.60
19	OPT-10M10-110C	110±2	1	17.6(1.1")	10.0	<0.08%	0.83	100	0.08°	279.0	0.36	17.60
20	OPT-10M15-110	110±2	1.5	17.6(1.1")	11.5	<0.082%	0.42	85	0.10°	310.0	0.40	11.73
21	OPT-10M15-110C	110±2	1.5	17.6(1.1")	11.5	<0.082%	0.42	85	0.10°	310.0	0.45	11.73

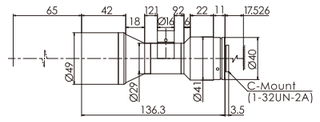
[1] WD: The distance between the front end of the mechanism and the object.
[2] F#: The real F-number of a lens when used.
[3] DOF evaluation formula for telecentric lenses: DOF(mm)=F# × P × k/β²;
P: Sensor pixel size (5.5 μm used here)
β: Lens magnification
k: The parameter based on application (measurement, k=0.015; defect detection, k=0.008; 0.015 used here)
At the borders of DOF, the image can still be use for measurement. But only half of the nominal DOF should be used to get a sharp image.

Dimensions (mm)

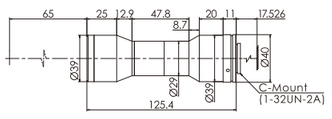
1.OPT-10M05-65



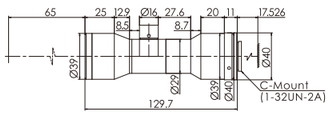
2.OPT-10M05-65C



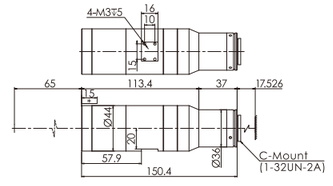
3.OPT-10M10-65



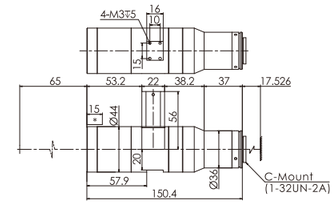
4.OPT-10M10-65C



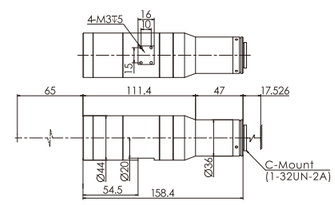
5.OPT-10M20-65



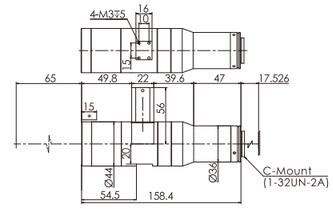
6.OPT-10M20-65C



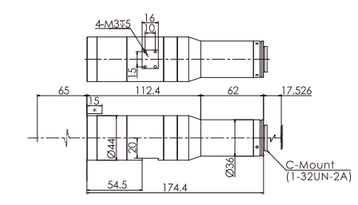
7.OPT-10M30-65



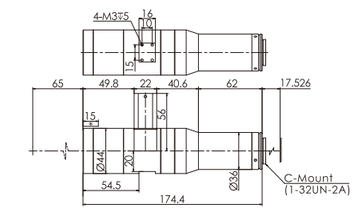
8.OPT-10M30-65C



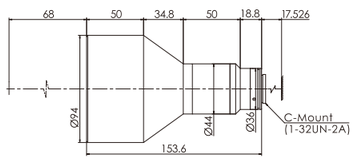
9.OPT-10M40-65



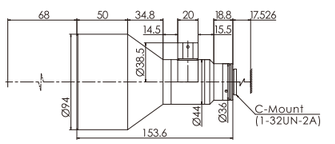
10.OPT-10M40-65C



11.OPT-10M02-68

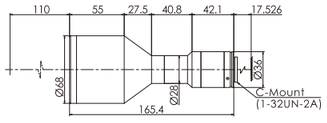


12.OPT-10M02-68C

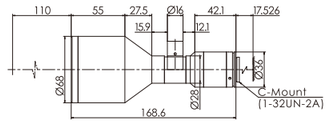


Dimensions (mm)

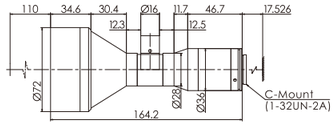
13.OPT-10M035-110



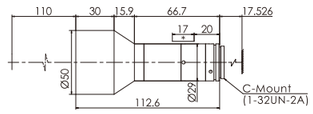
14.OPT-10M035-110C



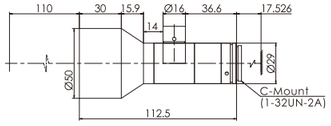
15.OPT-10M04-110C



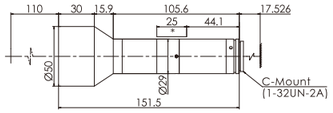
16.OPT-10M05-110



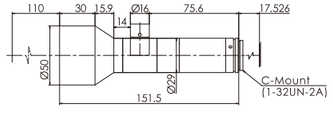
17.OPT-10M05-110C



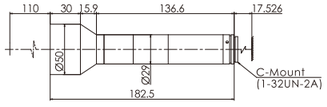
18.OPT-10M10-110



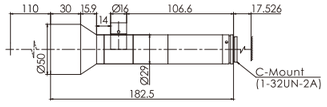
19.OPT-10M10-110C



20.OPT-10M15-110



21.OPT-10M15-110C



Note: * means that the area cannot be clamped

Lens Accessories

To optimize the lens performance in applications, OPT has designed multiple optional accessories, including extension tubes, adaptors, filters, polarizers, prism, and more.

Extension Tubes for C-Mount



Product Features

- Extension tubes enable lens to focus when practical working distance is shorter than minimum working distance of lens, barely change the lens angle of view, generally installed between lens and camera mount.
- Generally, the length of extension tubes should not be more than 1/5 of lens focal length. Extension tubes are not suggested to use on zoom lens and other special lens to avoid influencing image quality.

Selection Guide

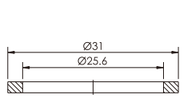
OPT-ETB-CE1

- Length: 1 mm
- C-Mount
- Extension tube
- Brand name

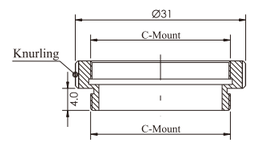
Model Table (1)

Model	Size A (mm)	Thread	Mount
OPT-ETB-CE0.3	0.3		C-Mount (Drawing 1)
OPT-ETB-CE0.5	0.5		C-Mount (Drawing 1)
OPT-ETB-CE1	1		C-Mount (Drawing 1)
OPT-ETB-CE2	2		C-Mount (Drawing 1)
OPT-ETB-CE5	5	(1-32UN-2A)	C-Mount (Drawing 2)
OPT-ETB-CE10	10	(1-32UN-2A)	C-Mount (Drawing 2)
OPT-ETB-CE20	20	(1-32UN-2A)	C-Mount (Drawing 2)
OPT-ETB-CE30	30	(1-32UN-2A)	C-Mount (Drawing 2)

Dimensions (mm)



Drawing 1



Drawing 2

Optical Filters



Product Features

- The filter blocks or partially passes a certain wavelength light, which can highlight or suppress the color characteristics of a particular object. It is usually mounted on the front end of the lens.

Selection Guide

OPT-PLG 27-BP525

- Center wavelength: 525 nm
- Bandpass filtering
- Filter thread caliber: M27
- Optical filter
- Brand name

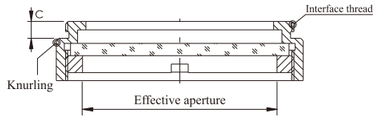
Optical Filter Model Table

Model of Optical Filter	Specifications	Transmittance
OPT-PLGXX-BP365	335-400 nm wavelength: transmitting	80%
OPT-PLGXX-BP405	375-425 nm wavelength: transmitting	85%
OPT-PLGXX-BP465	425-495 nm wavelength: transmitting	85%
OPT-PLGXX-BP525	500-555 nm wavelength: transmitting	85%
OPT-PLGXX-BP585	560-600 nm wavelength: transmitting	85%
OPT-PLGXX-BP635	615-650 nm wavelength: transmitting	85%
OPT-PLGXX-BP850	810-900 nm wavelength: transmitting	85%
OPT-PLGXX-BP940	>880 nm wavelength: transmitting; 300-850 nm: cut-off	85%
OPT-PLGXX-BPVIS	425-675 nm wavelength: transmitting; UV & near-infrared: cut-off	85%
OPT-PLGXX-BPNIR	>760 nm near-infrared: transmitting; visible light & UV light: cut-off	85%
OPT-PLGXX-BPUV	330-395 nm UV: transmitting; visible light &near-infrared: cut-off	85%

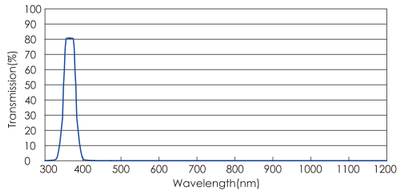
Thread Model Table

Thread Model	Thread Specifications	Effective Aperture (mm)
OPT-PLG27-BPXXX	M27×0.5-6g	> Ø23
OPT-PLG30.5-BPXXX	M30.5×0.5-6g	> Ø26.5
OPT-PLG37.5-BPXXX	M37.5×0.5-6g	> Ø33.5
OPT-PLG38-BPXXX	M38×0.5-6g	> Ø34
OPT-PLG39-BPXXX	M39×0.5-6g	> Ø35
OPT-PLG40-BPXXX	M40×0.5-6g	> Ø36
OPT-PLG40.5-BPXXX	M40.5×0.5-6g	> Ø36
OPT-PLG58-BPXXX	M58×0.75-6g	> Ø54
OPT-PLG65-BPXXX	M65×0.75-6g	> Ø60
OPT-PLG77-BPXXX	M77×0.75-6g	> Ø72

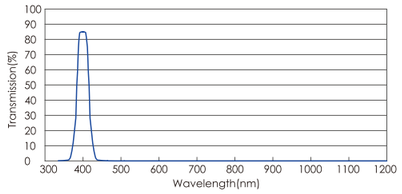
Dimensions (mm)



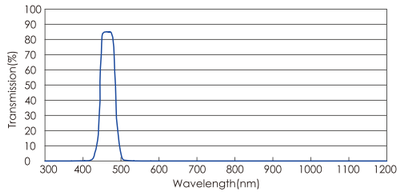
Spectral Transmittance



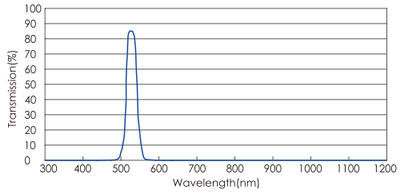
1.OPT-PLGXX-BP365



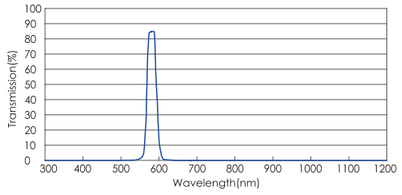
2.OPT-PLGXX-BP405



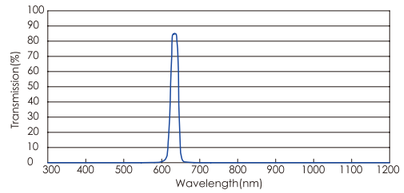
3.OPT-PLGXX-BP465



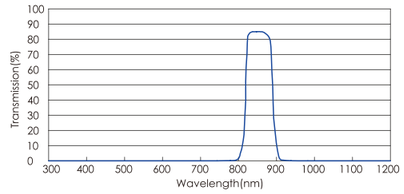
4.OPT-PLGXX-BP525



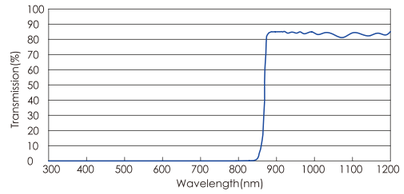
5.OPT-PLGXX-BP585



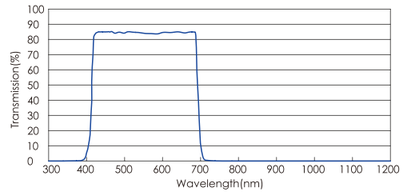
6.OPT-PLGXX-BP635



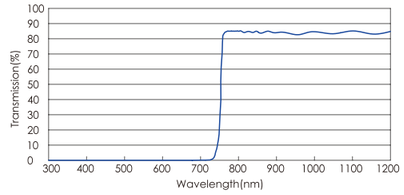
7.OPT-PLGXX-BP850



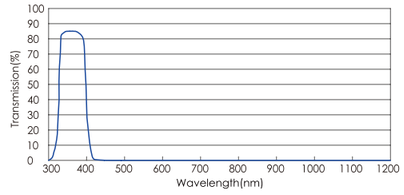
8.OPT-PLGXX-BP940



9.OPT-PLGXX-BPVIS



10.OPT-PLGXX-BPNIR



11.OPT-PLGXX-BPUV

Polarizers for Lenses



Product Features

- Polarizer is able to reduce or eliminate the unfavorable interference caused by workpiece reflection in imaging system, adding imaging contrast and enhancing image quality.

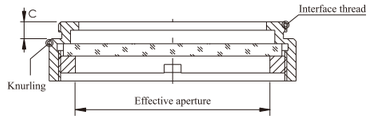
Selection Guide

OPT-PPZ 27-CPL
- Circular polarization
- Filter thread caliber: M27
- Polarizer
- Brand name

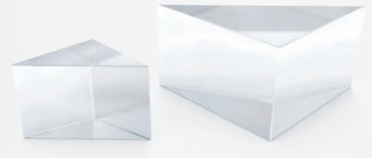
Model Table

Thread Model	Thread Specification	Effective Aperture (mm)
OPT-PPZ27-CPL	M27×0.5-6g	>Ø23
OPT-PPZ30.5-CPL	M30.5×0.5-6g	>Ø26.5
OPT-PPZ37.5-CPL	M37.5×0.5-6g	>Ø33.5
OPT-PPZ38-CPL	M38×0.5-6g	>Ø34
OPT-PPZ39-CPL	M39×0.5-6g	>Ø35
OPT-PPZ40-CPL	M40×0.5-6g	>Ø36
OPT-PPZ40.5-CPL	M40.5×0.5-6g	>Ø36
OPT-PPZ58-CPL	M58×0.75-6g	>Ø54
OPT-PPZ65-CPL	M65×0.75-6g	>Ø60
OPT-PPZ77-CPL	M77×0.75-6g	>Ø72

Dimensions (mm)



Prisms



Product Features

- Prism is applied to change viewing direction and position. Multiple prisms can be combined to change viewing distance between two points and to view more objects simultaneously or at different time.

Selection Guide

OPT-PLJ20-20-20-ZF-X
- FG: Splitting
- FS: Reflection
- ZF: Square
- SJ: Triangle
- Size C
- Size B
- Size A
- Prism
- Accessory
- Brand name

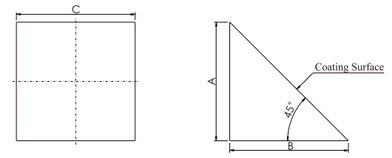
Model Table

Dimension comparison table of triangle prism

Model	A*B*C(mm) Size	Hypotenuse Coated
OPT-PLJ5-5-5-SJ-X	5*5*5	Ravg >85% @ 400 - 1200 nm
OPT-PLJ10-10-10-SJ-X	10*10*10	Ravg >85% @ 400 - 1200 nm
OPT-PLJ15-15-15-SJ-X	15*15*15	Ravg >85% @ 400 - 1200 nm
OPT-PLJ20-20-20-SJ-X	20*20*20	Ravg >85% @ 400 - 1200 nm
OPT-PLJ25-25-25-SJ-X	25*25*25	Ravg >85% @ 400 - 1200 nm
OPT-PLJ30-30-30-SJ-X	30*30*30	Ravg >85% @ 400 - 1200 nm
OPT-PLJ35-35-35-SJ-X	35*35*35	Ravg >85% @ 400 - 1200 nm
OPT-PLJ40-40-40-SJ-X	40*40*40	Ravg >85% @ 400 - 1200 nm
OPT-PLJ45-45-45-SJ-X	45*45*45	Ravg >85% @ 400 - 1200nm
OPT-PLJ50-50-50-SJ-X	50*50*50	Ravg >85% @ 400 - 1200nm

Dimensions (mm)

Dimension diagram of triangle prism



Model Table

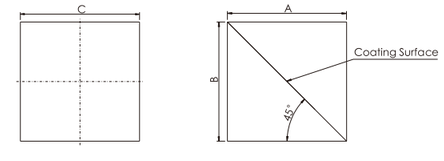
Dimension comparison table of square prism

Model	A*B*C(mm) Size	Average Reflectivity	Beam splitting ratio T:R
OPT-PLJ5-5-5-ZF-X	5*5*5	R=45%±5%@400 nm-700 nm	50:50
OPT-PLJ10-10-10-ZF-X	10*10*10	R=45%±5%@400 nm-700 nm	50:50
OPT-PLJ15-15-15-ZF-X	15*15*15	R=45%±5%@400 nm-700 nm	50:50
OPT-PLJ20-20-20-ZF-X	20*20*20	R=45%±5%@400 nm-700 nm	50:50
OPT-PLJ25-25-25-ZF-X	25*25*25	R=45%±5%@400 nm-700 nm	50:50
OPT-PLJ30-30-30-ZF-X	30*30*30	R=45%±5%@400 nm-700 nm	50:50
OPT-PLJ35-35-35-ZF-X	35*35*35	R=45%±5%@400 nm-700 nm	50:50
OPT-PLJ40-40-40-ZF-X	40*40*40	R=45%±5%@400 nm-700 nm	50:50
OPT-PLJ45-45-45-ZF-X	45*45*45	R=45%±5%@400 nm-700 nm	50:50
OPT-PLJ50-50-50-ZF-X	50*50*50	R=45%±5%@400 nm-700 nm	50:50

Note: The size is customizable.

Dimensions (mm)

Dimension diagram of square prism



OPT Industrial Cameras

- OPT Rolling Shutter Cameras »P109
- OPT Global Shutter Cameras »P110
- OPT High Resolution C-Mount Cameras »P111
- OPT High Resolution Large Format Cameras »P112
- OPT Line Scan Cameras »P115

GiGE OPT Rolling Shutter Cameras

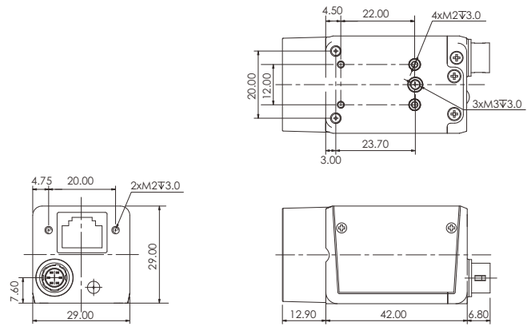


Models and Specifications

Model	Resolution	Pixel size (μm)	Sensor type	Shutter	Frame rate (fps)	Sensor size	Sensor	Interface	Lens mount	Mono/Color
OPT-CC200-GL-04	1920×1080	2.9	CMOS	Rolling	22	1/2.8"	IMX290	GigE PoE	C-Mount	C
OPT-CC/M600-GL-04	3072×2048	2.4	CMOS	Rolling	18	1/1.8"	IMX178	GigE PoE	C-Mount	C/M

Model	OPT-CC200-GL-04	OPT-CC/M600-GL-04
Image format	Mono: Mono8/10/10Packed/12Packed/12; Color: Mono8, BayerRG8/10/10Packed, BayerGB8/10/10Packed, YUV422Packed	
Gain (dB)	X1-X32	
Dynamic range (dB)	DOL WDR	66dB
GPIO (6-pin Hirose connector)	1 input/1 output (opto-isolated)	
Conformity	GigE Vision V2.0 and GenICam	
Exposure time	17.5μs-1s	25μs-1s
Temperature (℃)	Storage: -10℃-+50℃; operating: -10℃-+50℃	
Weight (kg)	0.09	
Power consumption	3.4W@12V	
Power requirements	PoE/Hirose connector, 9V-24V DC	
Housing size (mm) (Excluding connectors and lens mount)	29×29×42	

Dimensions (mm)



GiGE OPT Global Shutter Cameras

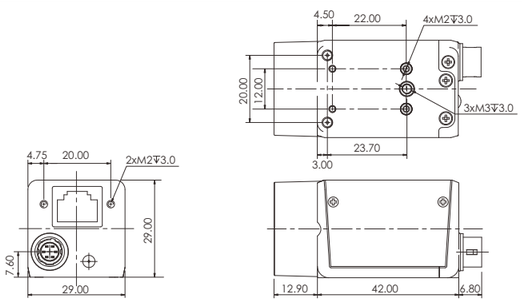


Models and Specifications

Model	Resolution	Pixel size (μm)	Sensor type	Shutter	Frame rate (fps)	Sensor size	Sensor	Interface	Lens mount	Mono/Color
OPT-CC/M40-GM-04	720×540	6.9	CMOS	Global	300	1/2.9"	IMX287	GigE POE	C-Mount	C/M
OPT-CM200-GM-0401	1624×1240	4.5	CMOS	Global	60	1/1.7"	IMX430	GigE PoE	C-Mount	M
OPT-CC/M130-GM-0402	1280×1024	4.0	CMOS	Global	85	1/2.7"	SS	GigE	C-Mount	C/M
OPT-CC/M130-GH-04	1280×960	3.75	CCD	Global	30	1/3"	RJ33J4CA0DT	GigE PoE	C-Mount	C/M
OPT-CC/M500-GM-04	2448×2048	3.45	CMOS	Global	20	2/3"	IMX264	GigE PoE	C-Mount	C/M

Model	OPT-CC/M40-GM-04	OPT-CM200-GM-0401	OPT-CC/M130-GM-0402	OPT-CC/M130-GH-04	OPT-CC/M500-GM-04
Image format	Mono: Mono8/10/10Packed/12/12Packed; Color: Mono8,BayerRG8/10/10Packed/12/12Packed, BayerGB8/10/10Packed/12/12Packed, YUV422Packed	Mono: Mono8/10/10Packed	Mono: Mono8/10/10Packed; Color: Mono8, BayerRG8/10/12Packed10Packed, BayerGB8/10/10Packed, YUV422Packed	Mono: Mono8/10/10Packed; Color: Mono8, BayerRG8/10/10Packed, BayerGB8/10/10Packed, YUV422Packed	
Gain (dB)	X1-X32				
Dynamic range (dB)	70dB	60dB	60dB	63dB	70dB
GPIO (6-pin Hirose connector)	1 input/1 output (opto-isolated), 1 configurable input & output				1 input/1 output (opto-isolated)
Conformity	GigE Vision V2.0 and GenICam				
Exposure time	20μs-1s	26μs-1s	10μs-1s	1μs-1s	34μs~1s
Temperature (℃)	Storage: - 10℃-+50℃; operating: -10℃-+50℃				
Weight (kg)	0.09				
Power consumption	4.0W@12V	3.4W@12V	3.4W@12V	3.2W@12V	3.2W@12V
Power requirements	PoE/Hirose connector, 9V-24V DC				
Housing size (mm) (Excluding connectors and lens mount)	29×29×42				

Dimensions (mm)



GiGE OPT High Resolution C-Mount Cameras



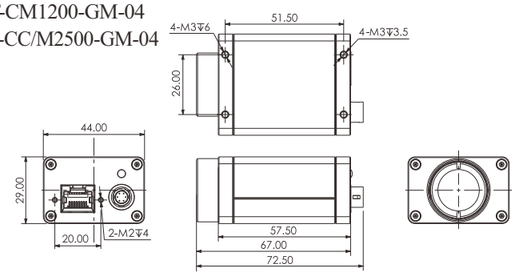
Models and Specifications

Model	Resolution	Pixel size (μm)	Sensor type	Shutter	Frame rate (fps)	Sensor size	Sensor	Interface	Lens mount	Mono/Color
OPT-CM900-GM-04	4096×2160	3.45	CMOS	Global	13	1"	IMX267	GigE PoE	C-Mount	M
OPT-CM1200-GM-04	4096×3000	3.45	CMOS	Global	9	1.1"	IMX304	GigE PoE	C-Mount	M
OPT-CM1200-GL-04	4000×3000	1.85	CMOS	Rolling	9	1/1.7"	IMX226	GigE PoE	C-Mount	M
OPT-CC1200-GL-04	4000×3000	1.85	CMOS	Rolling	9	1/1.7"	IMX226	GigE PoE	C-Mount	C
OPT-CM2000-GL-04	5472×3648	2.4	CMOS	Rolling	5.8	1"	IMX183	GigE PoE	C-Mount	M
OPT-CC/M2500-GM-04	5120×5120	2.5	CMOS	Global	4	1.1"	GMAX0505	GigE PoE	C-Mount	C/M

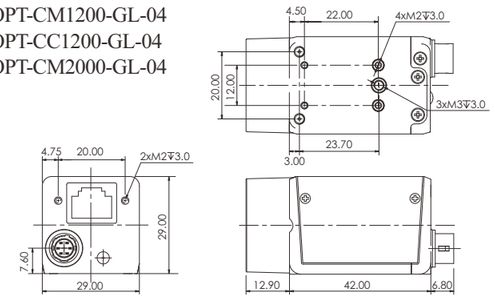
Model	OPT-CM900-GM-04	OPT-CM1200-GM-04	OPT-CM1200-GL-04	OPT-CC1200-GL-04	OPT-CM2000-GL-04	OPT-CC/M2500-GM-04
Image format	Mono: Mono8/10/10Packed;	Mono: Mono8/10/10Packed/12/12Packed;		Color: Mono8, BayerRG8/10/10Packed, BayerGB8/10/10Packed, YUV422Packed	Mono: Mono8/10/10Packed;	Mono: Mono8/10/10Packed/12/12Packed; Color: Mono8,BayerRG8/10/10Packed, BayerGB8/10/10Packed, YUV422Packed;
Gain (dB)	X1-X32					
Dynamic range (dB)	70dB	70dB	66dB	66dB		>64dB
GPIO (6-pin Hirose connector)	1 input/1 output (opto-isolated)			1 input/1 output(opto-isolated), 1 configurable input/output	1 input/1 output (opto-isolated)	1 input/1 output (opto-isolated)
Conformity	GigE Vision V2.0 and GenICam					
Exposure time	48μs-1s	48μs-1s	143μs-1s	143μs-1s	187μs-1s	5μs-1s
Temperature (℃)	Storage: - 10℃-+50℃; operating: -10℃-+50℃					
Weight (kg)	0.1	0.1	0.09	0.09		0.1
Power consumption	3.2W@12V	3.2W@12V	3.4W≈12V	3.4W@12V		4.0W@12V
Power requirements	PoE/Hirose connector, 9V-24V DC					
Housing size (mm) (Excluding connectors and lens mount)	29×44×57.5		29×29×42	29×29×42		29×44×57.5

Dimensions (mm)

OPT-CM900-GM-04
OPT-CM1200-GM-04
OPT-CC/M2500-GM-04



OPT-CM1200-GL-04
OPT-CC1200-GL-04
OPT-CM2000-GL-04



GiGE OPT High Resolution Large Format Cameras



Models and Specifications

Model	Resolution	Pixel size (μm)	Sensor type	Shutter	Frame rate (fps)	Sensor size	Sensor	Interface	Lens mount	Mono/Color
OPT-CM15000-LL-04	14160×10640	3.76	CMOS	Rolling	5.1	53.4×40.0	IMX411	CameraLink	M72×0.75	M
OPT-CM15000-XL-04	14160×10640	3.76	CMOS	Rolling	6.2	53.4×40.0	IMX411	CoaXPress-6	M72×0.75	M
OPT-CC/M2600-GM-04	5120×5120	4.5	CMOS	Global	4	23.0×23.0	PYTHON 25K	GigE	M58×0.75	C/M
OPT-CC/M3100-GM-04	6464×4852	3.45	CMOS	Global	3.6	22.3×16.6	IMX342	GigE	M58×0.75	C/M
OPT-CM5000-GM-04	9344×5000	3.2	CMOS	Global	2.6	29.9×16.0	Gpixel custom	GigE	M58×0.75	M
OPT-CM6500-GM-04	9344x7000	3.2	CMOS	Global	1.7	29.9×22.4	GMAX3265	GigE	M58×0.75	M
OPT-CC/M3000-LM-04	6240×4848	3.45	CMOS	Global	24.8	22.3×16.6	IMX342	CameraLink	M58×0.75	C/M
OPT-CM6500-LM-04	9280×6992	3.2	CMOS	Global	12.5	29.9×22.4	GMAX3265	CameraLink	M58×0.75	M
OPT-CC/M1200-XM-0402	4096×3072	5.5	CMOS	Global	188	22.5×16.9	CMV12000	CoaXPress-6	F	C/M
OPT-CC/M2500-XM-04	5120×5120	2.5	CMOS	Global	150	1.1"	GMAX0505	CoaXPress-12	M58×0.75	C/M

Model	OPT-CM15000-LL-04	OPT-CM15000-XL-04	OPT-CC/M2600-GM-04	OPT-CC/M3100-GM-04
Image format	Mono: Mono8/Mono10/Mono12	Mono: Mono8/10/12	Mono: Mono8/10/10Packed, Color: Mono8，BayerRGB8/10/10Packed，BayerGB8/10/10Packed，YUV422Packed	Mono: Mono8/10/10Packed/12/12Packed; Color: Mono8/BayerRG8/BayerGB8/BayerRG10/BayerGB10/BayerRG12/BayerGB12/BayerRG10Packed/BayerGB10Packed/BayerRG12Packed/BayerGB12Packed/YUV422Packed
Gain (dB)	x1~x32	x1~x100	x1~x32	x1~x32
Dynamic range (dB)	90dB	90dB	58dB	73dB
GPIO (6-pin Hirose connector)	12-pin Hirose connector,3 input / 3 output(opto-isolated),1 RS232 serial port(hardware preserved)	12-pin 3 input&output (opto-isolated),1 RS232	12-pin Hirose connector for connecting external power supply, 3 input/3 outout(opto-isolated)	12-pin Hirose connector for connecting external power supply, 3 input/3 output (opto-isolated), 1 RS232 Serial port
Conformity	CameralLink and GenlCam	CoaXPress and GenlCam	GigEVision V2.0 and GenlCam	GigEVision V2.0 and GenlCam
Exposure time	16μs~1s	30μs~5s	1μs~1s	3μs~15s
Temperature (℃)	Storage：-10℃~+50℃；Operating：-10℃~+50℃			
Weight (kg)	0.89	0.89	0.43	0.487
Power consumption	18W@24V	18W@24V	9W@24V	7.86W@24V
Power requirements	Hirose connector 12V-24V DC			
Housing size (mm) (Excluding connectors and lens mount)	100×100×58	100×100×58	76×76×46	72×72×64

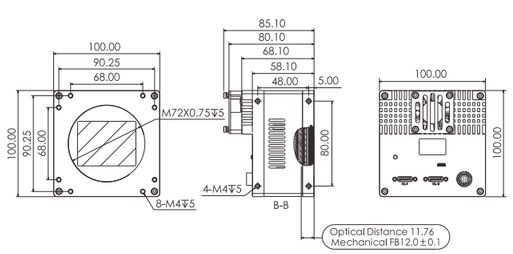
Models and Specifications

Model	OPT-CM5000-GM-04	OPT-CM6500-GM-04	OPT-CC/M3000-LM-04
Image format	Mono: Mono8/10/10Packed/ 12/12Packed	Mono: Mono8/10/10Packed/ 12/12Packed	Mono: Mono8/10/12/12Packed/12Packed Color: BayerRG8/10/12,BayerGB8/10/12
Gain (dB)	x1~x32	x1~x32	x1~x32
Dynamic range (dB)	66dB	66dB	66dB
GPIO (6-pin Hirose connector)	12-pin Hirose connector for connecting external power supply, 3 input/ 3outout(opto-isolated)	12-pin Hirose connector,external power supply,3 input/3 output (opto-isolated)	12-pin Hirose connector for connecting external power supply, 3 input/3 output (opto-isolated), 1 RS232 Serial port
Conformity	GigEVision V2.0 and GenlCam	GigE Vision V2.0 and GenlCam	CameraLink and GenlCam
Exposure time	16μs~15s	16μs~15s	3μs~10s
Temperature (℃)	Storage：-10℃~+50℃；Operating：-10℃~+50℃		
Weight (kg)	0.49	0.48	0.39
Power consumption	8.4W@24V	8.4W@24V	8W@24V
Power requirements	Hirose connector,12V-24V DC		
Housing size (mm) (Excluding connectors and lens mount)	72×72×64	72×72×64	72×72×64

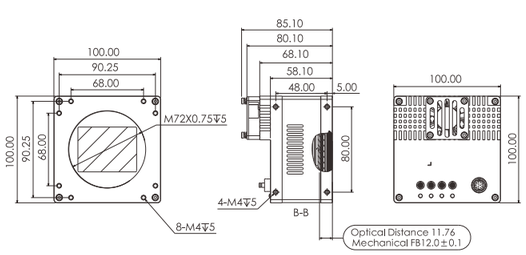
Model	OPT-CM6500-LM-04	OPT-CC/M1200-XM-0402	OPT-CC/M2500-XM-04
Image format	Mono: Mono8	Mono: Mono8/10/12 Color: BayGR8/10/12,BayerRG8/10/12/BayerGB8/10,BayGB12/BayBG8/BayerBG10/BayerBG12	Mono: Mono8/10/12 Color: BayerGR8/10/12,BayerRG8/10/12, BayerGB8/10/12,BayerBG8/10/12
Gain (dB)	x1~x32	x1~x100	x1~x100
Dynamic range (dB)	66dB	60dB	63dB
GPIO (6-pin Hirose connector)	12-pin Hirose connector,3 input / 3 output(opto-isolated),1 RS232 serial port(hardware preserved)	6-pin Hirose connector: 3 configurable input & output	12-pin Hirose connector:1 power,1 GND. 3 input & output (opto-isolated), 1 opto-isolated,1 RS232 send & receive
Conformity	CameraLink and GenlCam	CoaXPress and GenlCam	
Exposure time	16μs~15s	50μs~5s	15μs~5s
Temperature (℃)	Storage：-10℃~+50℃；Operating：-10℃~+50℃		
Weight (kg)	0.49	0.72	0.89
Power consumption	6.83W@24V	15W@24V	19.4W@24V
Power requirements	Hirose connector,12V-24V DC	Hirose connector,24V DC,support PoCXP	
Housing size (mm) (Excluding connectors and lens mount)	72×72×65	72×72×72	80×80×72

Dimensions (mm)

OPT-CM15000-LL-04

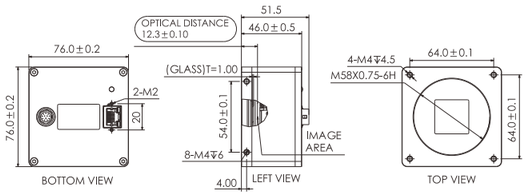


OPT-CM15000-XL-04

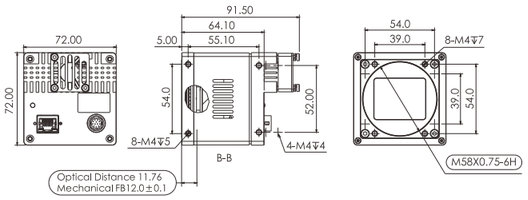


Dimensions (mm)

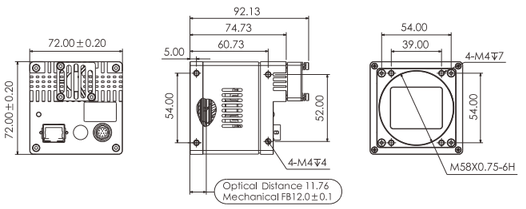
OPT-CC/M2600-GM-04



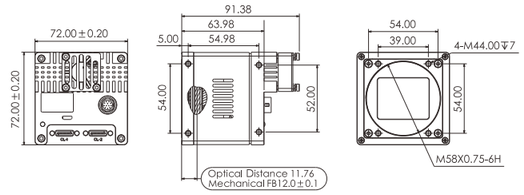
OPT-CC/M3100-GM-04



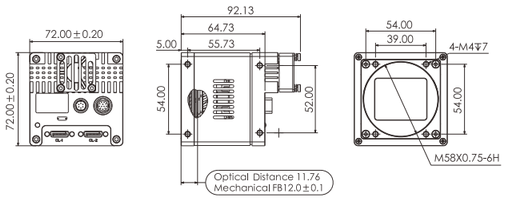
OPT-CM5000-GM-04
OPT-CM6500-GM-04



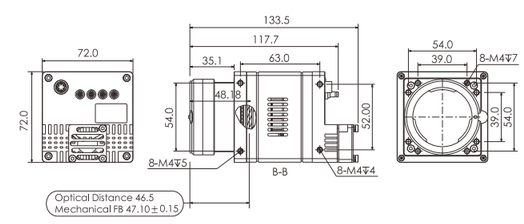
OPT-CC/M3000-LM-04



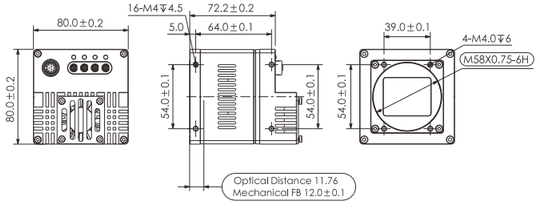
OPT-CM6500-LM-04



OPT-CC/M1200-XM-0402



OPT-CC/M2500-XM-04



OPT Line Scan Cameras





Models and Specifications

Model	Resolution	Pixel size (μm)	Sensor type	Line frequency (kHz)	Interface	Lens mount	Mono/Color
OPT-CLM102-G49-04	2048×1	14	CMOS	49	GigE	M42×1，FBL12.00mm	M
OPT-CLC202-G49-04	2048×2	14	CMOS	49	GigE	M42×1，FBL12.00mm	C
OPT-CLM104-G28-04	4096×1	7	CMOS	28	GigE	M42×1，FBL12.00mm	M
OPT-CLC204-G28-04	4096×2	7	CMOS	28	GigE	M42×1，FBL12.00mm	C
OPT-CLM104-L120-04	4096×1	7	CMOS	120	CameraLink	M42×1，FBL12.00mm	M
OPT-CLM204-G28-0401	4096×2	7	CMOS	28	GigE	M42×1，FBL12.00mm	C/M
OPT-CLM108-G13-04	8192×1	7	CMOS	13	GigE	M72×0.75	M
OPT-CLM108-L70-04	8192×1	7	CMOS	L70	Cameralink	M72(FBL 12)	M

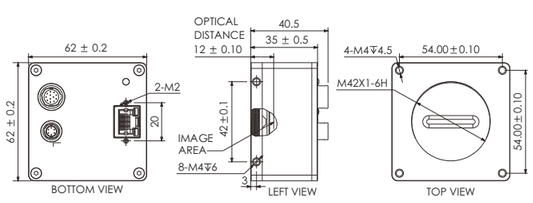
Model	OPT-CLM102-G49-04	OPT-CLC202-G49-04	OPT-CLM104-G28-04	OPT-CLC204-G28-04
Image format	Mono: Mono8/10/12/10Packed/ 12Packed	Color: BayerRG8/BayerRG10/Bayer RG12/RGB8Packed/YUV422Packed	Mono: Mono8/10/12/10Packed/ 12Packed	Color: BayerRG8/BayerRG10/Bayer RG12/RGB8Packed/YUV422Packed
Dynamic range (dB)	66dB			
GPIO	12-pin Hirose connector provide power supply and I/O,2 differential input,2 single-ended input,1 GPIO			
Conformity	GigE Vision V2.0 and GenICam			
Exposure time	8μs~100ms			
Temperature (℃)	Storage temperature：-10℃~+50℃；Operating temperature：-10℃~+50℃			
Weight (kg)	0.25			
Power consumption	4.5W@12V			
Power requirements	12-pin Hirose connector 12V-24V DC			
Housing size (mm) (Excluding connectors and lens mount)	62×62×35.3			

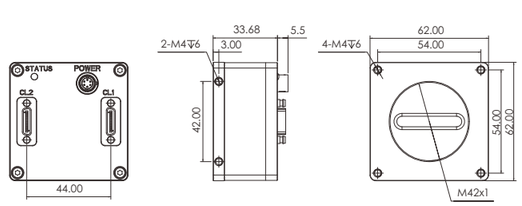
Models and Specifications

Model	OPT-CLM104-L120-04	OPT-CLM204-G28-0401	OPT-CLM108-G13-04	OPT-CLM108-L70-04
Image format	Mono: Mono8/10	Mono: Mono8/10/12/10Packed/ 12Packed; Color: BayerRG8/ BayerRG10/BayerRG12/ RGB8Packed/YUV422Packed	Mono: Mono8/10/10Packed/12/ 12Packed	Mono: Mono8/10
Dynamic range (dB)	66dB		65.9dB	
GPIO	6-pin Hirose connector 12V-24V	12-pin Hirose connector provide power supply and I/O,2 differential input,2 single-ended input,1 GPIO	6-pin Hirose connector for external power supply; 12-pin Hirose external trigger connector,2 channels for RS422/singleEnded input、2channels for RS422/singleEnded output,1 channel for Rs422/ singleEnded is able to configure input /output,and 1 channel for GPIO	6-pin Hirose connector for external power supply; 12-pin Hirose external trigger connector,2 channels for RS422/singleEnded input、2channels for RS422/singleEnded output,1 channel for Rs422/ singleEnded is able to configure input /output,and 1 channel for GPIO
Conformity	CameraLink and GenICam	GigE Vision V2.0 and GenICam	GigE Vision V2.0 and GenICam	CameraLink and GenICam
Exposure time	8μs~100ms	8μs~100ms	8μs~1s	8μs~100ms
Temperature (℃)	Storage temperature: -10℃~+50℃; Operating temperature: -10℃~+50℃			
Weight (kg)	0.25	0.26	0.39	0.39
Power consumption	4.5W	4.5W	6W@12V	4.5W@12V
Power requirements	6-pin Hirose connector 12V-24V DC	12-pin Hirose connector 12V-24V DC	6-pin Hirose connector 12V-24V DC	DC12V-24V
Housing size (mm) (Excluding connectors and lens mount)	62×62×33.68	62×62×43.5	80×80×48	80×80×48

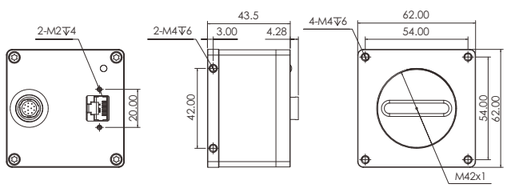
Dimensions (mm)

OPT-CLM102-G49-04 OPT-CLM104-G28-04 OPT-CLM104-L120-04
OPT-CLC202-G49-04 OPT-CLC204-G28-04

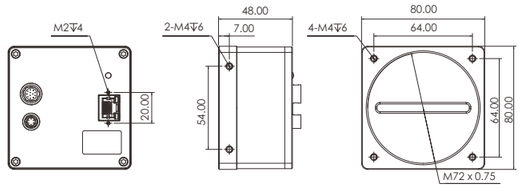




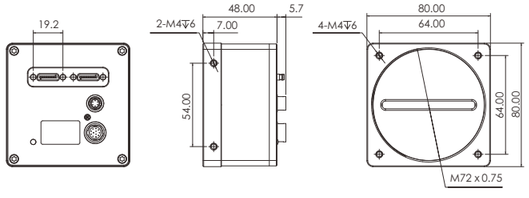
OPT-CLM204-G28-0401



OPT-CLM108-G13-04



OPT-CLM108-L70-04



OPT Lights

OPT Standard Lights ≫P118
OPT Custom Lights ≫P242
Accessories ≫P252

Ring Lights OPT-RI Series

Patented



Product Features

Main Features

- Providing extremely bright, uniform and diffuse illumination with different emitting angles.
- Profile design with expanded heat dissipation area for improving performance

Application Cases

- PCB & plastic containers inspection
- Electronic components inspection; OCR for integrated circuits
- Microscope illumination; surface inspection

Selection Guide

OPT-RI12000

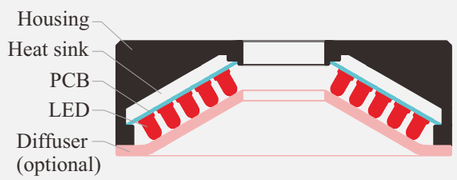
- Emitting angle
- Outer diameter
- Ring light
- Brand name

Customizable Items

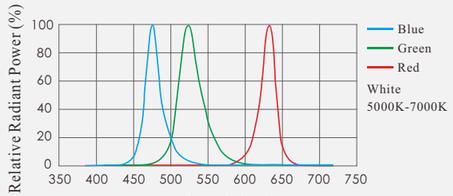


Color | Emitting angle | Size | Sectional control | Mounting | Connector

Section Structure Drawing



Spectrum Chart



Note: The data is for reference only.

Series features

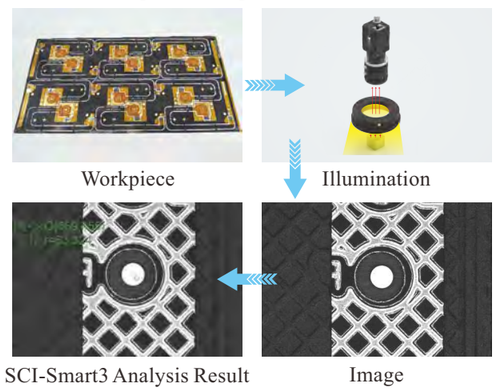
- Optional diffusers for uniform illumination



Transparent | Standard | Uniform

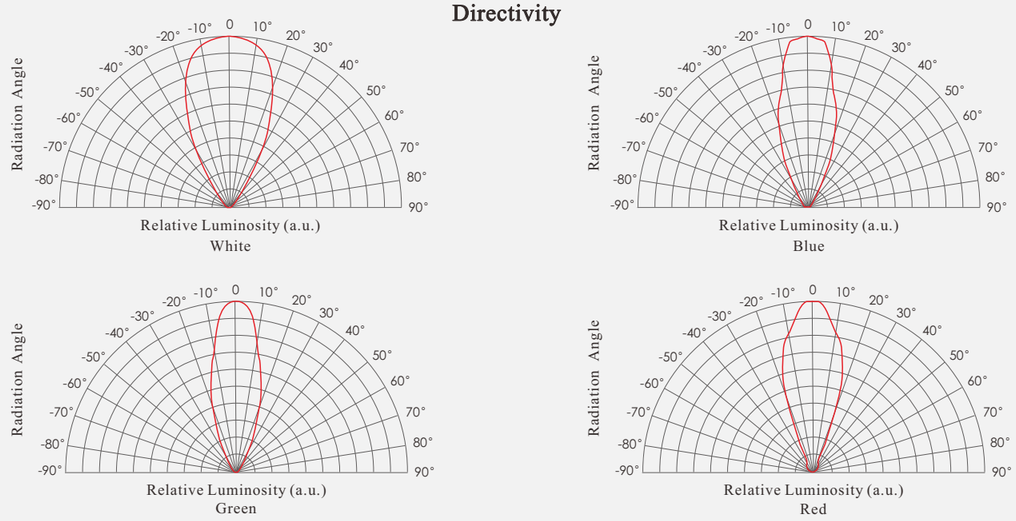
Application Cases

- FPC mark positioning



Series features

Directivity



Note: The data is for reference only.

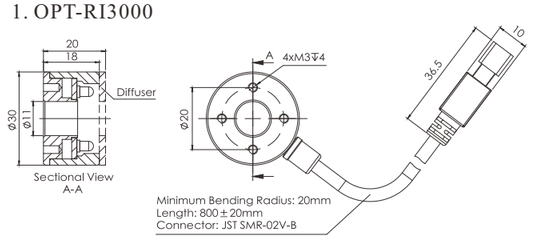
Model Table

No.	Model	∗ Power ○	∗ Power ●	∗ Power ●	∗ Power ●	Emitting angle	Recommended controller
1	OPT-RI3000	0.8W@24V	0.3W@24V	0.8W@24V	0.8W@24V	0°	OPT-DPA2024E
2	OPT-RI5000	2.5W@24V	1.7W@24V	2.8W@24V	2.5W@24V		
3	OPT-RI7000	4.3W@24V	4W@24V	4.4W@24V	4.3W@24V		
4	OPT-RI9000	6.8W@24V	6.7W@24V	7.6W@24V	7.2W@24V		
5	OPT-RI12000	9.1W@24V	7.5W@24V	10W@24V	9.7W@24V		
6	OPT-RI15000	15.3W@24V	15.1W@24V	14.2W@24V	17W@24V		

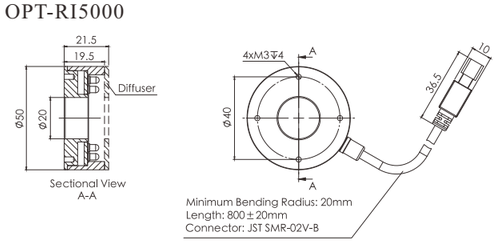
∗ Note: The data is for reference only.

Dimensions (mm)

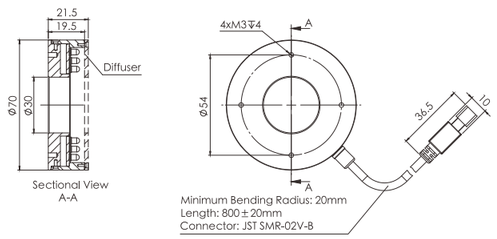
1. OPT-RI3000



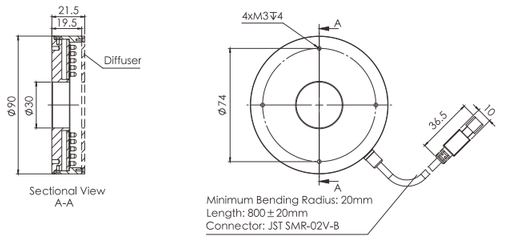
2. OPT-RI5000



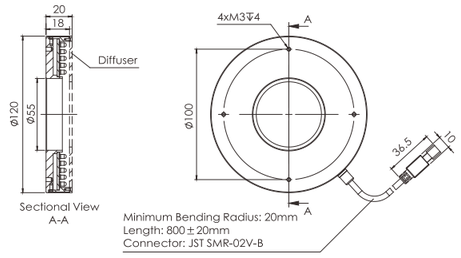
3. OPT-RI7000



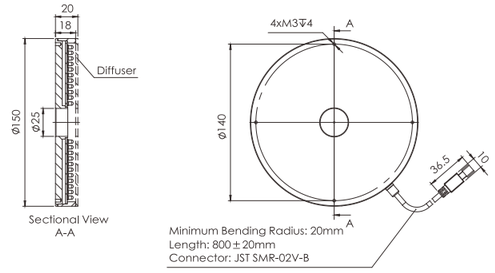
4. OPT-RI9000



5. OPT-RI12000



6. OPT-RI15000



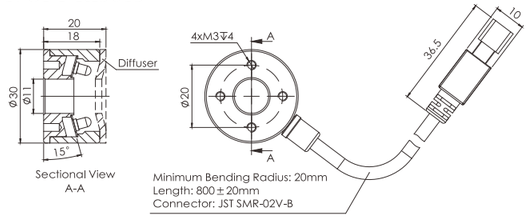
Model Table

No.	Model	∗ Power ○	∗ Power ●	∗ Power ●	∗ Power ●	Emitting angle	Recommended controller
1	OPT-RI3015	0.7W@24V	0.4W@24V	0.8W@24V	0.8W@24V	15°	OPT-DPA2024E
2	OPT-RI5015	2.5W@24V	1.7W@24V	2.8W@24V	2.5W@24V		
3	OPT-RI7015	4.4W@24V	3.8W@24V	4.6W@24V	4.5W@24V		
4	OPT-RI9015	6.1W@24V	5.8W@24V	6.8W@24V	6.4W@24V		
5	OPT-RI12015	10.6W@24V	8.2W@24V	10.3W@24V	10.2W@24V		
6	OPT-RI15015	14.1W@24V	11.9W@24V	15.7W@24V	15W@24V		

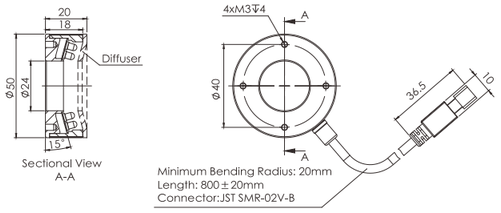
∗ Note: The data is for reference only.

Dimensions (mm)

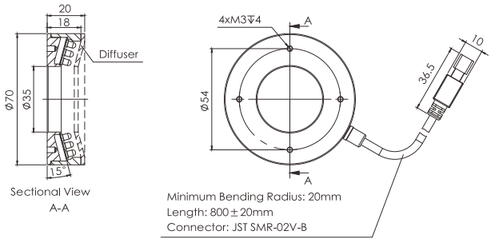
1. OPT-RI3015



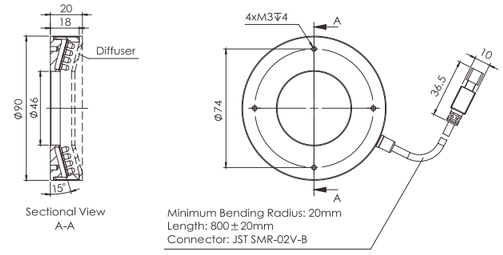
2. OPT-RI5015



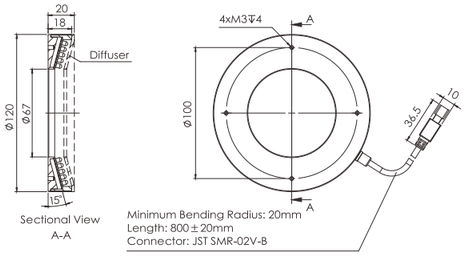
3. OPT-RI7015



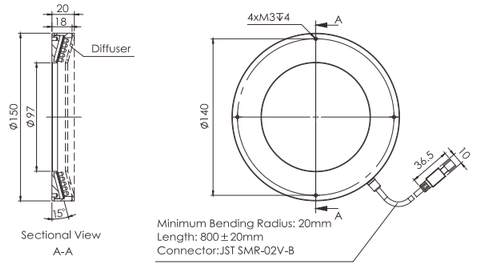
4. OPT-RI9015



5. OPT-RI12015



6. OPT-RI15015



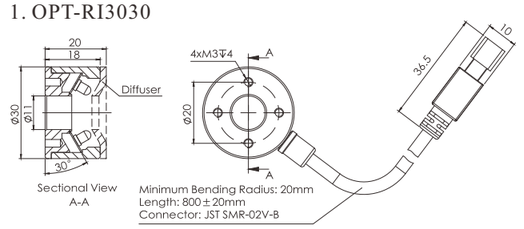
Model Table

No.	Model	∗ Power ○	∗ Power ●	∗ Power ●	∗ Power ●	Emitting angle	Recommended controller
1	OPT-RI3030	0.7W@24V	0.4W@24V	0.8W@24V	0.8W@24V	30°	OPT-DPA2024E
2	OPT-RI5030	2.5W@24V	1.7W@24V	2.8W@24V	2.5W@24V		
3	OPT-RI7030	4W@24V	3.7W@24V	4.2W@24V	4.1W@24V		
4	OPT-RI9030	6.6W@24V	5.7W@24V	6.3W@24V	6W@24V		
5	OPT-RI12030	11.4W@24V	9.3W@24V	10.9W@24V	10.6W@24V		
6	OPT-RI15030	13.4W@24V	10.3W@24V	15W@24V	13.7W@24V		

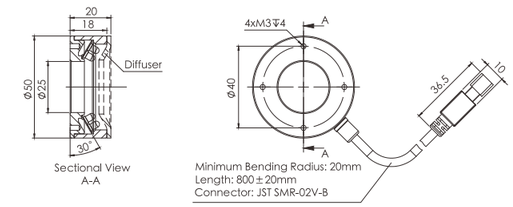
∗ Note: The data is for reference only.

Dimensions (mm)

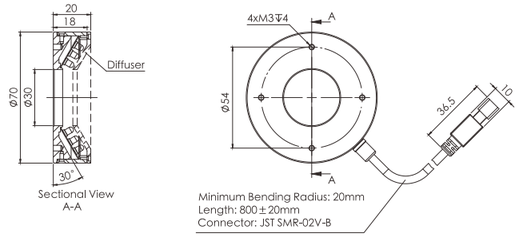
1. OPT-RI3030



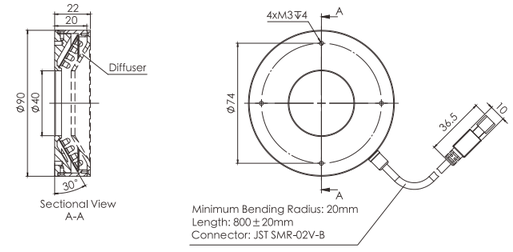
2. OPT-RI5030



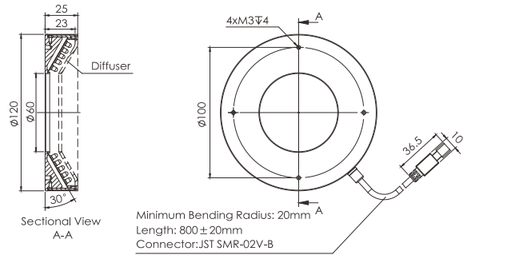
3. OPT-RI7030



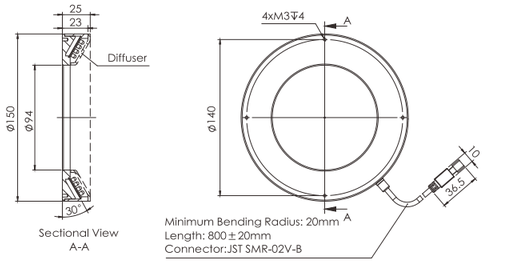
4. OPT-RI9030



5. OPT-RI12030



6. OPT-RI15030



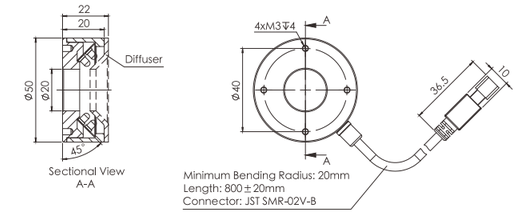
Model Table

No.	Model	∗ Power ○	∗ Power ●	∗ Power ●	∗ Power ●	Emitting angle	Recommended controller
1	OPT-RI5045	2.6W@24V	1.8W@24V	2.8W@24V	2.5W@24V	45°	OPT-DPA2024E
2	OPT-RI7045	4.8W@24V	3.7W@24V	4.7W@24V	4.7W@24V		
3	OPT-RI9045	6.3W@24V	5.1W@24V	6.8W@24V	6.1W@24V		
4	OPT-RI12045	9.6W@24V	8W@24V	11.6W@24V	10.6W@24V		
5	OPT-RI15045	13.7W@24V	12.2W@24V	15.6W@24V	14.9W@24V		

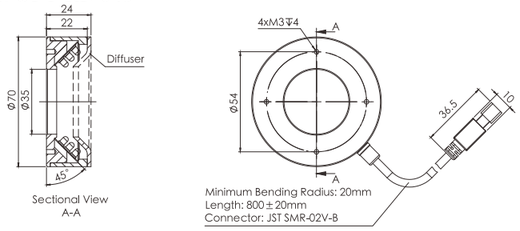
∗ Note: The data is for reference only.

Dimensions (mm)

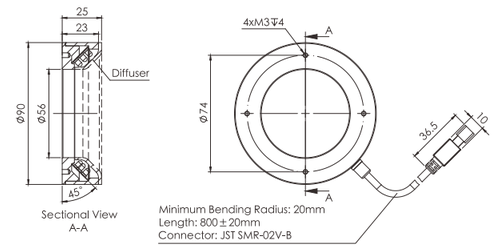
1. OPT-RI5045



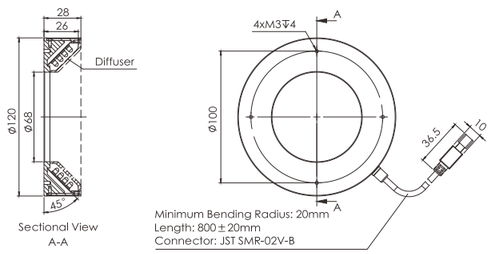
2. OPT-RI7045



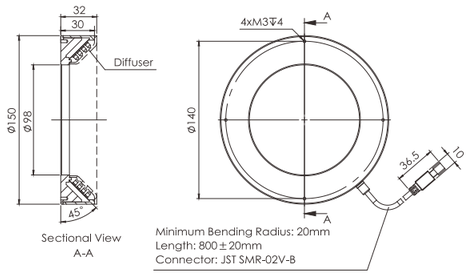
3. OPT-RI9045



4. OPT-RI12045



5. OPT-RI15045



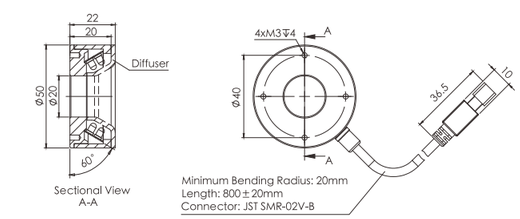
Model Table

No.	Model	∗ Power ○	∗ Power 🔴	∗ Power 🔵	∗ Power 🟢	Emitting angle	Recommended controller
1	OPT-RI5060	2.6W@24V	2W@24V	2.8W@24V	2.5W@24V	60°	OPT-DPA2024E
2	OPT-RI7060	4.7W@24V	3.5W@24V	4.8W@24V	4.7W@24V		
3	OPT-RI9060	5.6W@24V	4.7W@24V	6.7W@24V	6.2W@24V		
4	OPT-RI12060	9.9W@24V	9.6W@24V	11.6W@24V	10.5W@24V		
5	OPT-RI15060	14.2W@24V	12W@24V	15.3W@24V	15.2W@24V		

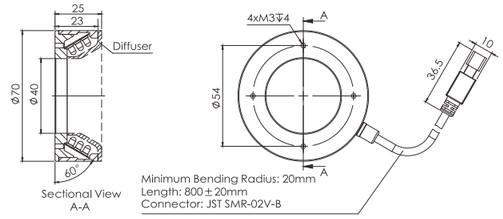
∗ Note: The data is for reference only.

Dimensions (mm)

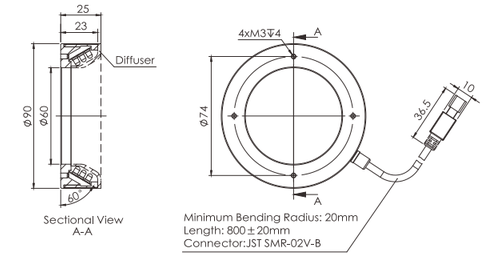
1. OPT-RI5060



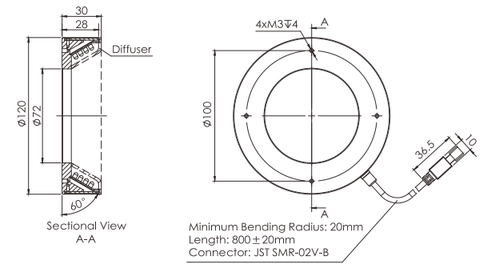
2. OPT-RI7060



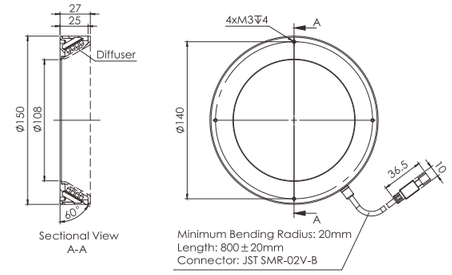
3. OPT-RI9060



4. OPT-RI12060



5. OPT-RI15060



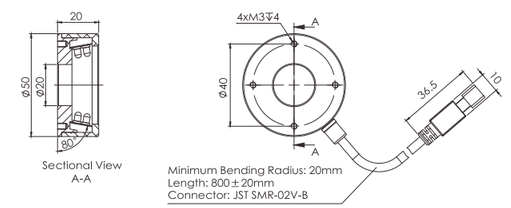
Model Table

No.	Model	∗ Power ○	∗ Power 🔴	∗ Power 🔵	∗ Power 🟢	Emitting angle	Recommended controller
1	OPT-RI5080	2.6W@24V	1.6W@24V	2.8W@24V	2.7W@24V	80°	OPT-DPA2024E
2	OPT-RI7080	4.2W@24V	3.8W@24V	4.1W@24V	4.1W@24V		
3	OPT-RI9080	7.6W@24V	5.8W@24V	7.9W@24V	7.3W@24V		
4	OPT-RI12080	10W@24V	7.5W@24V	9.5W@24V	9.9W@24V		
5	OPT-RI15080	11.4W@24V	10.2W@24V	12.6W@24V	12.4W@24V		

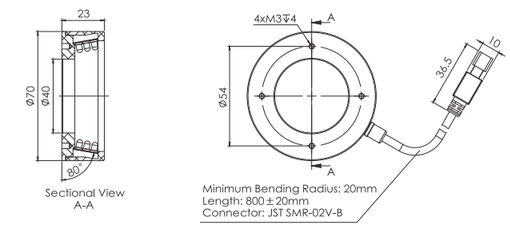
∗ Note: The data is for reference only.

Dimensions (mm)

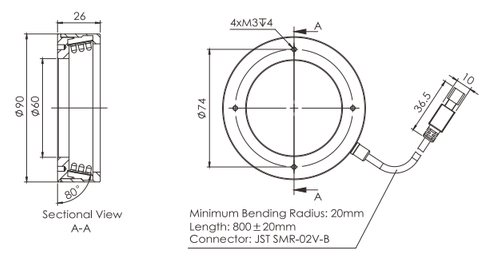
1. OPT-RI5080



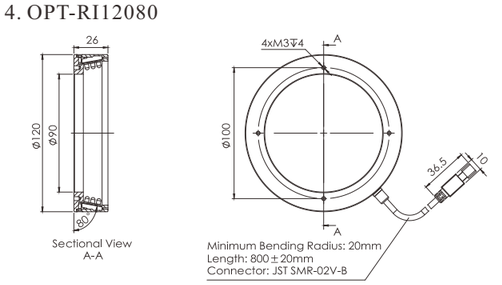
2. OPT-RI7080



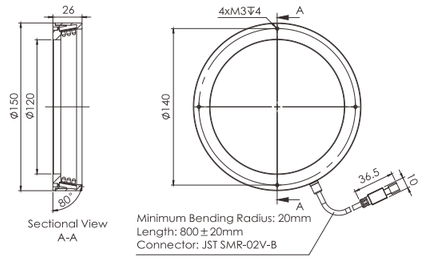
3. OPT-RI9080



4. OPT-RI12080



5. OPT-RI15080



Model Table

No.	Model	∗ Power ○	∗ Power 🔴	∗ Power 🔵	∗ Power 🟢	Emitting angle	Recommended controller
1	OPT-RI5090	1.3W@24V	0.8W@24V	1.2W@24V	1.3W@24V	90°	OPT-DPA2024E
2	OPT-RI7090	1.6W@24V	1.3W@24V	1.6W@24V	1.6W@24V		
3	OPT-RI9090	2.4W@24V	1.8W@24V	2.5W@24V	2.4W@24V		
4	OPT-RI12090	3.8W@24V	2.1W@24V	4.2W@24V	4.2W@24V		
5	OPT-RI15090	6W@24V	4W@24V	5.7W@24V	5.5W@24V		

∗ Note: The data is for reference only.

Dimensions (mm)

1. OPT-RI5090

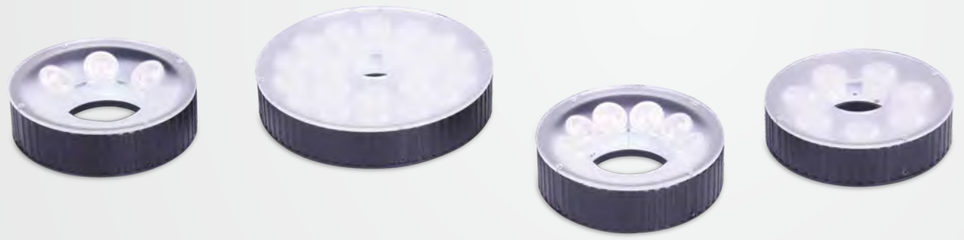
2. OPT-RI7090

3. OPT-RI9090

4. OPT-RI12090

5. OPT-RI15090

Ring Lights OPT-RIB Series



Product Features

Main Features

- Good directivity, lower power consumption compared to OPT RI series, ideal for illumination applications with long working distances.

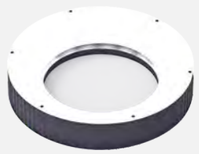
Application Cases

- PCB inspection
- Electronic components inspection
- IC components inspection
- Plastic containers inspection

Selection Guide

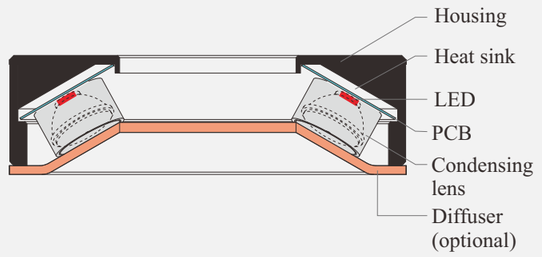
OPT-RIB12030
- Emitting angle
- Outer diameter
- Ring light
- Brand name

Customizable Items

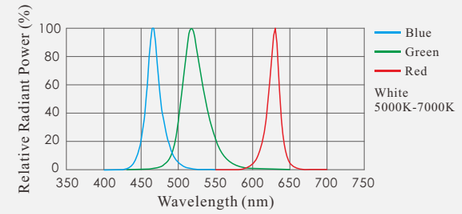


Color
Mounting
Connector
Size

Section Structure Drawing



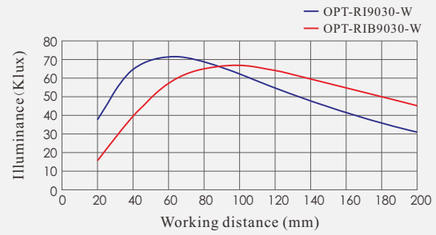
Spectrum Chart



Note: The data is for reference only.

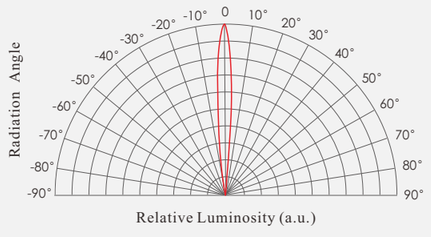
Series features

Illuminance Change over Working Distance



Note: The data is for reference only.

Directional Characteristics



Application Cases

Motor accessories inspection



Workpiece | Illumination | Image | SCI-Smart3 Analysis Result

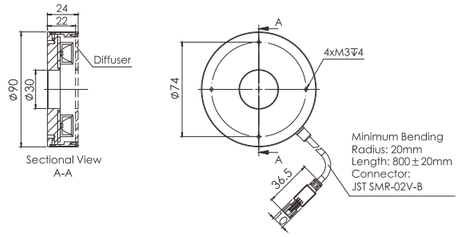
Model Table

No.	Model	∗ Power ○	∗ Power 🔴	∗ Power 🔵	∗ Power 🟢	Emitting angle	Recommended controller
1	OPT-RIB9000	2.9W@24V	2.9W@24V	2.4W@24V	2.9W@24V	0°	OPT-DPA2024E
2	OPT-RIB12000	8.6W@24V	8.6W@24V	7.2W@24V	5.8W@24V		
3	OPT-RIB15000	10.8W@24V	10.8W@24V	8.6W@24V	8.6W@24V		
4	OPT-RIB9030	2.9W@24V	2.9W@24V	2.4W@24V	2.9W@24V	30°	
5	OPT-RIB12030	5.8W@24V	5.8W@24V	4.8W@24V	2.6W@24V		
6	OPT-RIB15030	8.6W@24V	8.6W@24V	7.2W@24V	5.8W@24V		

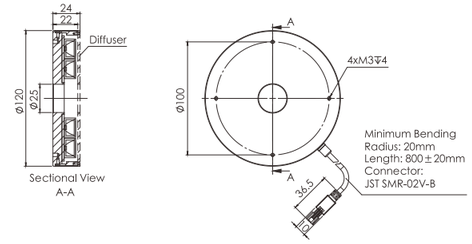
∗ Note: The data is for reference only.

Dimensions (mm)

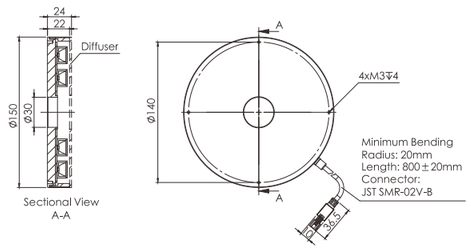
1. OPT-RIB9000



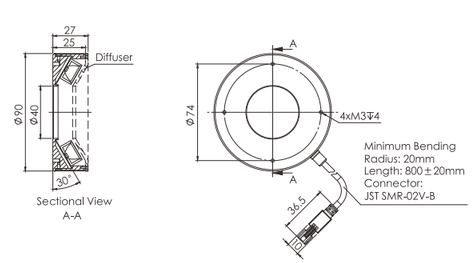
2. OPT-RIB12000



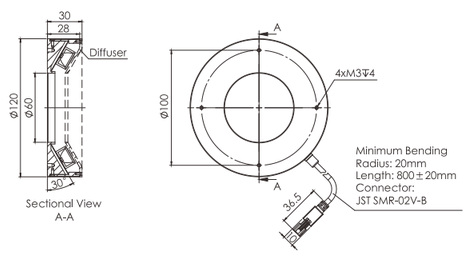
3. OPT-RIB15000



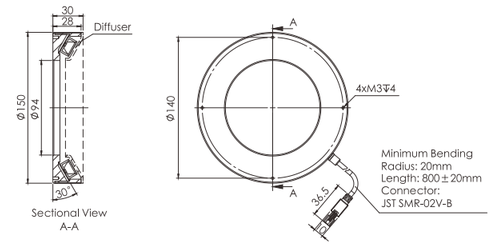
4. OPT-RIB9030



5. OPT-RIB12030



6. OPT-RIB15030



Bar Lights OPT-LI Series



Product Features

Main Features

- Suitable for special illumination requirements, can be combined flexibly
- Adjustable mounting angle
- Available for different colors and customized size

Application Cases

- Metal surface inspection
- Image scanning
- Surface crack detection
- LCD panel inspection

Selection Guide

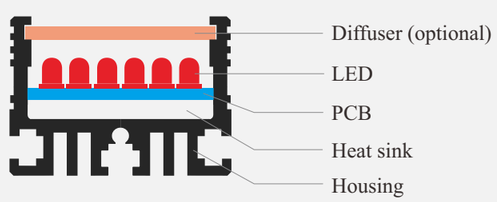
OPT-LI11532
- Width
- Length
- Bar light
- Brand name

Customizable Items

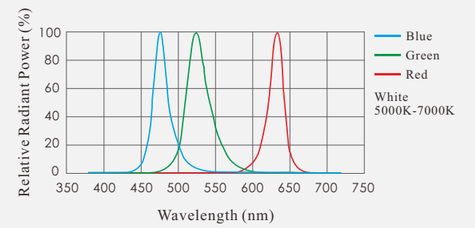


Color | Mounting | Connector | Size

Section Structure Drawing



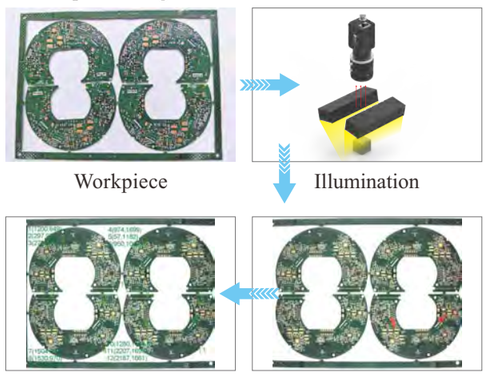
Spectrum Chart



Note: The data is for reference only.

Application Cases

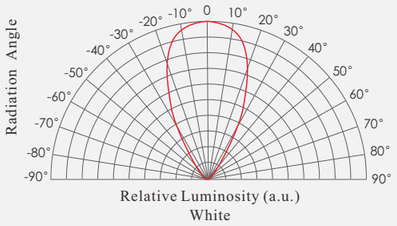
PCB positioning

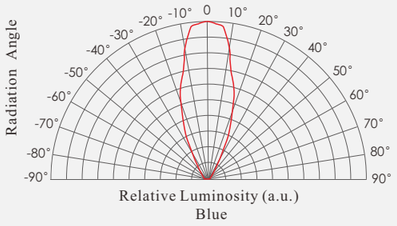


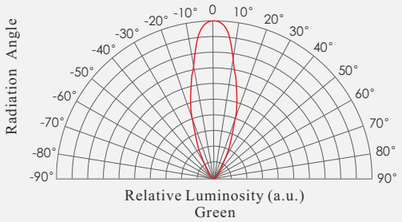
Workpiece | Illumination | SCI-Smart3 Analysis Result | Image

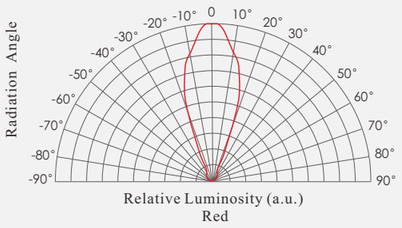
Series features

Directional Characteristics



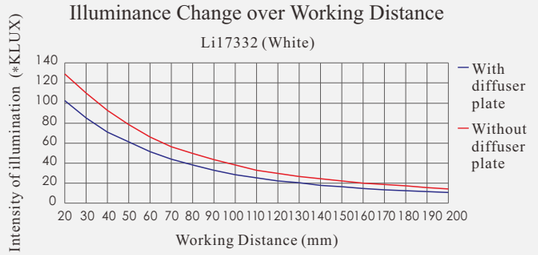






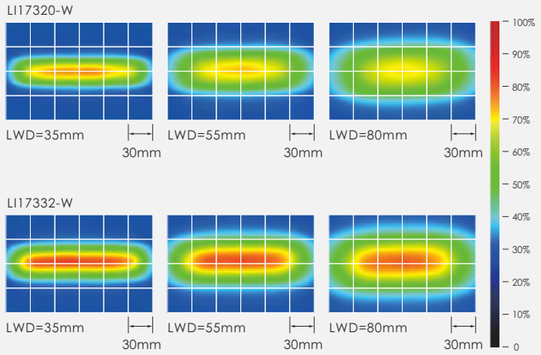
Note: The data is for reference only.

Illuminance Change over Working Distance



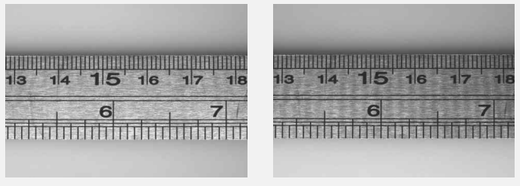
Note: The data is for reference only.

Relative Radiant Power Distribution



Note: The data is for reference only.

Matching with diffuser plate for reflective surfaces, workpiese example to improve image uniformity



With diffuser plate

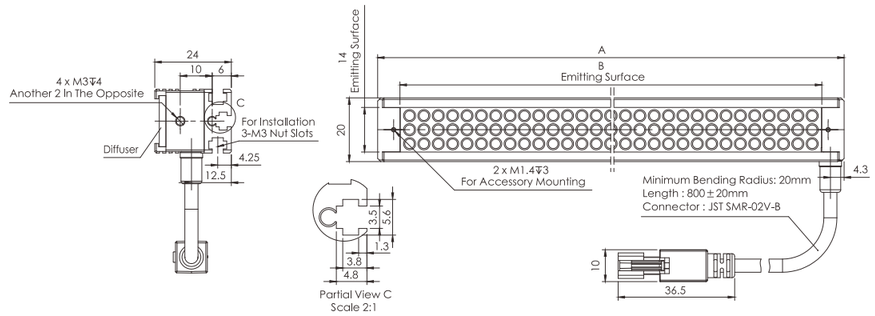
Without diffuser plate

Model Table

No.	Model	∗ Power ○	∗ Power 🔵	∗ Power 🟢	∗ Power 🔴	Length A (mm)	Emitting B (mm)	Light source width (mm)	Recommended controller
1	OPT-LI6120	2.8W@24V	2.9W@24V	2.7W@24V	1.7W@24V	61	47	20	OPT-DPA2024E
2	OPT-LI11520	4.2W@24V	4.9W@24V	3.7W@24V	3.2W@24V	115	101		
3	OPT-LI17320	6.7W@24V	6.7W@24V	5.8W@24V	4.8W@24V	173	159		
4	OPT-LI21820	7.2W@24V	7.8W@24V	6.2W@24V	6.9W@24V	218	204		
5	OPT-LI26820	10.5W@24V	10.9W@24V	8.3W@24V	7.9W@24V	268	254		
6	OPT-LI31320	10.7W@24V	11.7W@24V	9.3W@24V	10.4W@24V	313	299		
7	OPT-LI36220	12.3W@24V	12.9W@24V	11.5W@24V	11W@24V	362	348		
8	OPT-LI43620	15W@24V	15W@24V	12.4W@24V	12.6W@24V	436	422		
9	OPT-LI53620	17.3W@24V	17.3W@24V	15W@24V	15.8W@24V	536	522		

∗ Note: The data is for reference only.

Dimensions (mm)

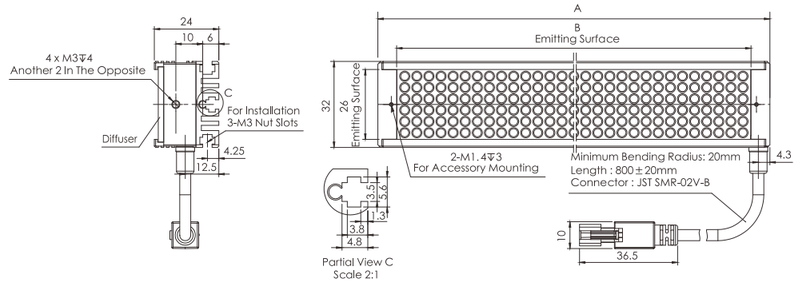


Model Table

No.	Model	∗ Power ○	∗ Power 🔵	∗ Power 🟢	∗ Power 🔴	Length A (mm)	Emitting B (mm)	Light source width (mm)	Recommended controller
1	OPT-LI3832	2W@24V	2W@24V	1.8W@24V	2W@24V	38	24	32	OPT-DPA2024E
2	OPT-LI6132	4W@24V	4W@24V	3.5W@24V	3.3W@24V	61	47		
3	OPT-LI8332	5.9W@24V	6.1W@24V	5W@24V	4.9W@24V	83	69		
4	OPT-LI11532	6W@24V	7W@24V	5.5W@24V	6.3W@24V	115	101		
5	OPT-LI17332	8.5W@24V	8.4W@24V	8W@24V	7.2W@24V	173	159		
6	OPT-LI21832	13W@24V	13W@24V	9W@24V	9.1W@24V	218	204		
7	OPT-LI26832	13.9W@24V	13.9W@24V	10.5W@24V	12.8W@24V	268	254		
8	OPT-LI31332	15.6W@24V	15.6W@24V	12W@24V	13W@24V	313	299		
9	OPT-LI36232	16.1W@24V	16.1W@24V	14.4W@24V	15W@24V	362	348		
10	OPT-LI43632	18.8W@24V	18.8W@24V	16W@24V	17.3W@24V	436	422		
11	OPT-LI53632	21W@24V	21W@24V	19W@24V	18.7W@24V	536	522		

∗ Note: The data is for reference only.

Dimensions (mm)



Combined Bar Lights OPT-LIM Series

Patented



Product Features

Main Features

- Adjustable illumination angle (0-90°)
- Intensity of each light bar can be controlled individually.
- Wide range of applications

Application Cases

- PCB inspection
- Electronic components inspection
- Inspection of solder joints
- Positioning of markers
- Microscope illumination
- Package barcodes reading

Selection Guide

OPT-LIM6120

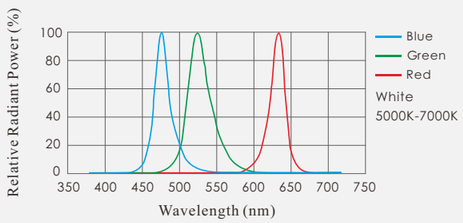
- Bar light width
- Bar light length
- Combined bar light
- Brand name

Customizable Items



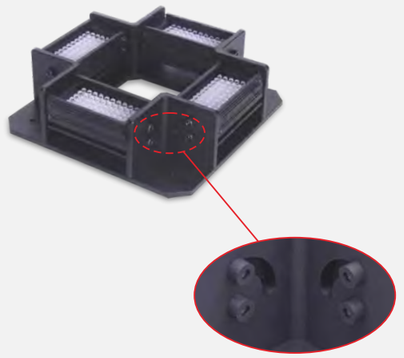
Color | Mounting | Connector | Size | Sectional control | Polygon

Spectrum Chart



Note: The data is for reference only.

Series features



The installation angle of single side light source can adjusted with 90°C

Application Cases

- OCR for keyboards



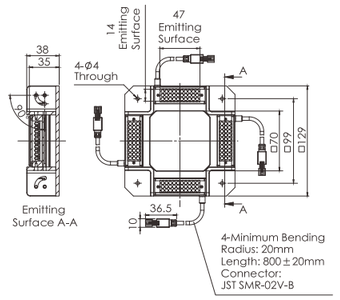
Model Table

No.	Model	∗ Power 🔴	∗ Power ⚪	∗ Power 🔵	∗ Power 🟢	LED Raw No.	Recommended controller
1	OPT-LIM6120	6.9W@24V	11.2W@24V	11.2W@24V	10.8W@24V	3	OPT-DPA2024E
2	OPT-LIM11520	12.9W@24V	16.7W@24V	19.7W@24V	14.7W@24V		
3	OPT-LIM17320	19.2W@24V	27W@24V	27W@24V	23W@24V		
4	OPT-LIM21820	27.6W@24V	28.6W@24V	31.1W@24V	24.9W@24V		
5	OPT-LIM26820	31.6W@24V	42W@24V	42W@24V	33W@24V		
6	OPT-LIM31320	41.4W@24V	42.9W@24V	46.7W@24V	37.2W@24V		
7	OPT-LIM36220	48W@24V	49.3W@24V	51.6W@24V	47.8W@24V		
8	OPT-LIM3832	8W@24V	8W@24V	8W@24V	7W@24V	6	
9	OPT-LIM6132	13.2W@24V	15.8W@24V	15.8W@24V	13.9W@24V		
10	OPT-LIM8332	19.7W@24V	23.5W@24V	24.5W@24V	20.2W@24V		
11	OPT-LIM11532	25.2W@24V	23.8W@24V	28.1W@24V	21.9W@24V		
12	OPT-LIM17332	28.8W@24V	34.2W@24V	33.6W@24V	32.2W@24V		
13	OPT-LIM21832	36.5W@24V	52W@24V	40W@24V	38W@24V		
14	OPT-LIM26832	51.2W@24V	55.6W@24V	43.6W@24V	40W@24V		
15	OPT-LIM31332	54.8W@24V	62.4W@24V	53.2W@24V	51.6W@24V		
16	OPT-LIM36232	64W@24V	64.4W@24V	64.4W@24V	62.8W@24V		

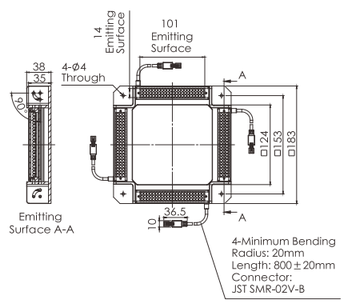
Note:∗4CH total power data is for reference only.

Dimensions (mm)

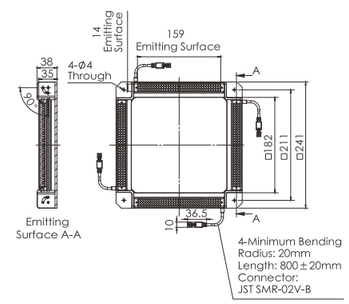
1. OPT-LIM6120



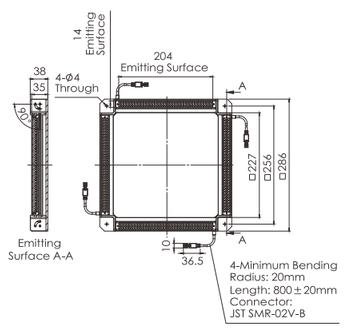
2. OPT-LIM11520



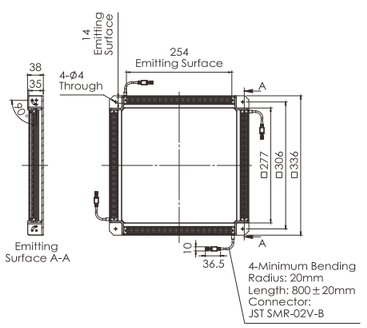
3. OPT-LIM17320



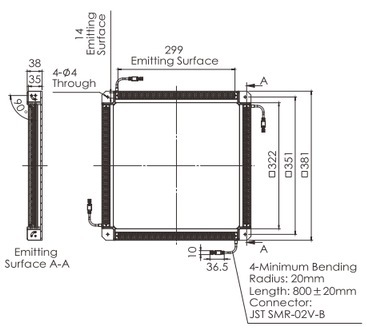
4. OPT-LIM21820



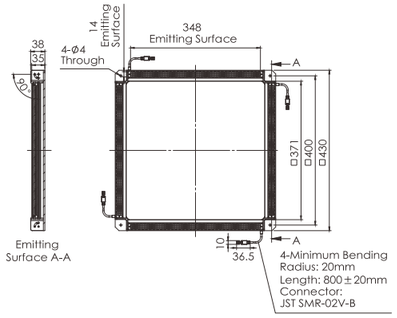
5. OPT-LIM26820



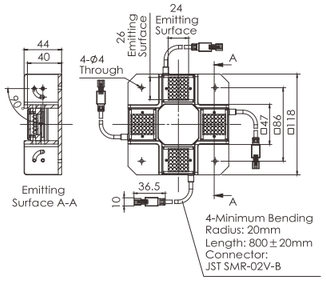
6. OPT-LIM31320



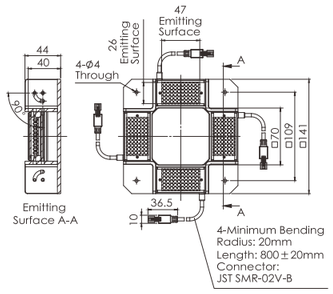
7. OPT-LIM36220



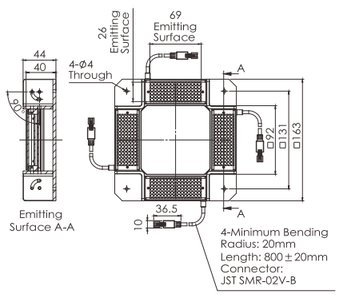
8. OPT-LIM3832



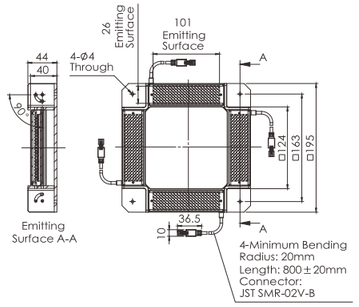
9. OPT-LIM6132



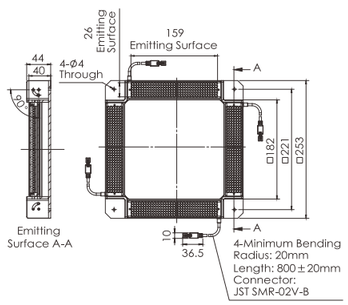
10. OPT-LIM8332



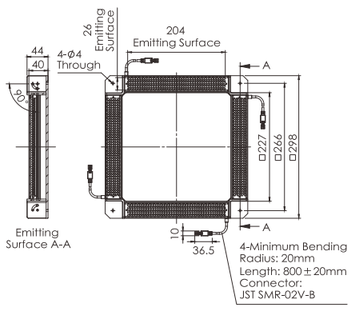
11. OPT-LIM11532



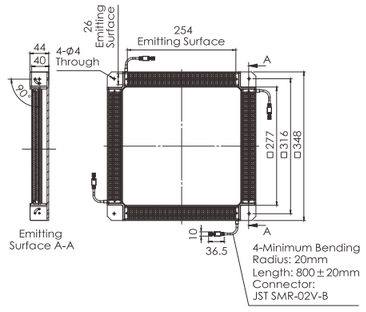
12. OPT-LIM17332



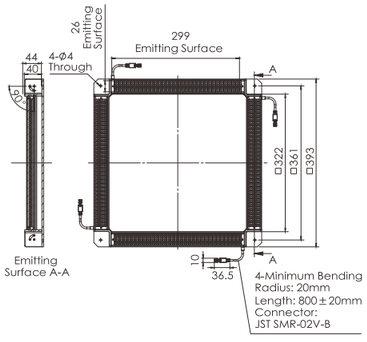
13. OPT-LIM21832



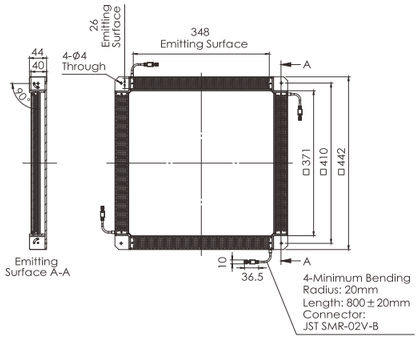
14. OPT-LIM26832



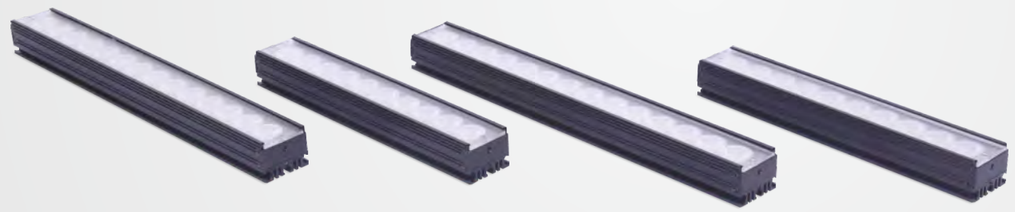
15. OPT-LIM31332



16. OPT-LIM36232



Bar Lights OPT-LIA Series



Product Features

Main Features

- High directivity, substituting OPT- LI series bar lights for illumination with long working distances
- Lower power consumption compared to the same size OPT- LI series bar lights

Application Cases

- Metal surface inspection
- Image scanning
- Surface crack detection
- LCD inspection

Selection Guide

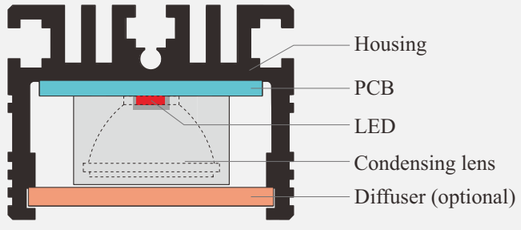
OPT-LIA140 32
- 32 → Width
- 140 → Length
- LIA → Bar light
- OPT → Brand name

Customizable Items

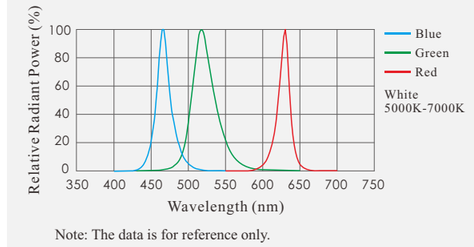


Color
Mounting
Connector
Size

Section Structure Drawing



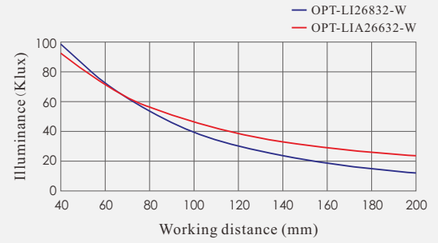
Spectrum Chart



Note: The data is for reference only.

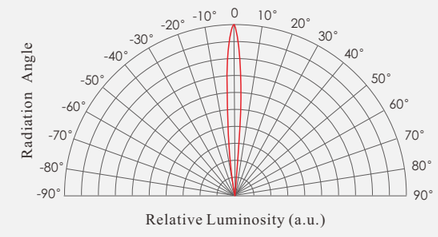
Series features

Illuminance Change over Working Distance



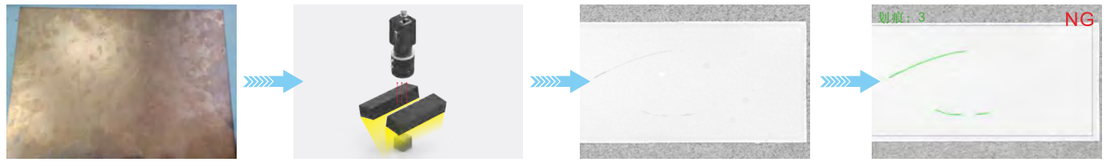
Note: recommend working distance≥60mm,the data is for reference only.

Directional Characteristics



Application Cases

Scratch inspection on metal surface



Workpiece | Illumination | Image | SCI-Smart3 Analysis Result

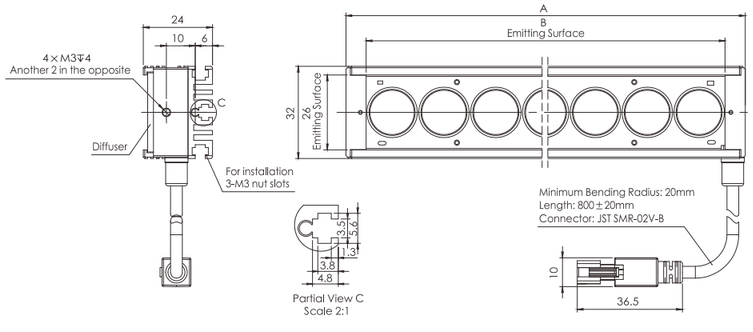
Model Table

No.	Model	Color	∗ Power	Length A (mm)	Emitting B (mm)	Recommended controller
1	OPT-LIA14032	○ ● ●	3W@24V	140	126	OPT-DPA2024E
2	OPT-LIA26632	○ ● ●	6W@24V	266	252	
3	OPT-LIA39232	○ ● ●	9W@24V	392	378	
4	OPT-LIA51832	○ ● ●	12W@24V	518	504	
5	OPT-LIA64432	○ ● ●	15W@24V	644	630	
6	OPT-LIA77032	○ ● ●	18W@24V	770	756	
7	OPT-LIA89632	○ ● ●	21W@24V	896	882	
8	OPT-LIA102232	○ ● ●	24W@24V	1022	1008	
9	OPT-LIA19432	●	3W@24V	194	180	
10	OPT-LIA37432	●	6W@24V	374	360	
11	OPT-LIA55432	●	9W@24V	554	540	
12	OPT-LIA73432	●	12W@24V	734	720	
13	OPT-LIA91432	●	15W@24V	914	900	
14	OPT-LIA109432	●	18W@24V	1094	1080	

Note:1.∗The data is for reference only.

Dimensions (mm)

Cusomom size: light source in white, blue and green are increased by 126 mm and the red ones are increased by 180 mm.
W/G/B: A=126n+14, B=126n.
R: A=180n+14, B=180n.



Bar Lights OPT-LIT Series



Product Features

Main Features

- Hidden LED particles. Can be used as back lights.
- Flexible for mounting. Can be installed with thread or insert nut into the extrusion groove.
- Customized length up to 2000 mm.

Application Cases

- Electronic components inspection
- Package inspection
- Printing inspection; light source for light boxes

Selection Guide

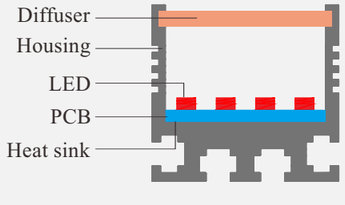
OPT-LIT 98 32
- Width
- Length
- Bar lights
- Brand name

Customizable Items

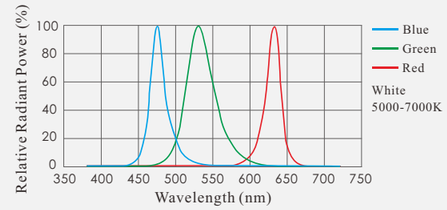


Color | Mounting | Connector | Size | Sectional control

Section Structure Drawing



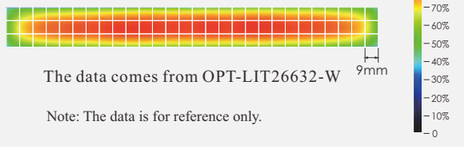
Spectrum Chart



Note: The data is for reference only.

Series features

Relative Radiation Luminance Distribution

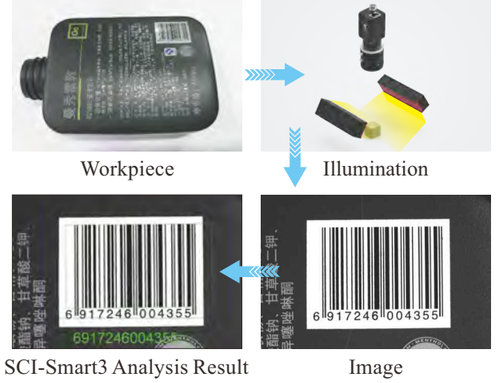


The data comes from OPT-LIT26632-W

Note: The data is for reference only.

Application Cases

Plastic bottle barcode reading



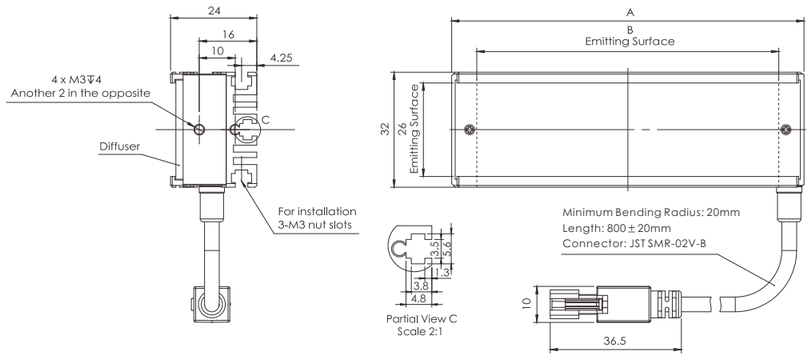
Workpiece | Illumination | SCI-Smart3 Analysis Result | Image

Model Table

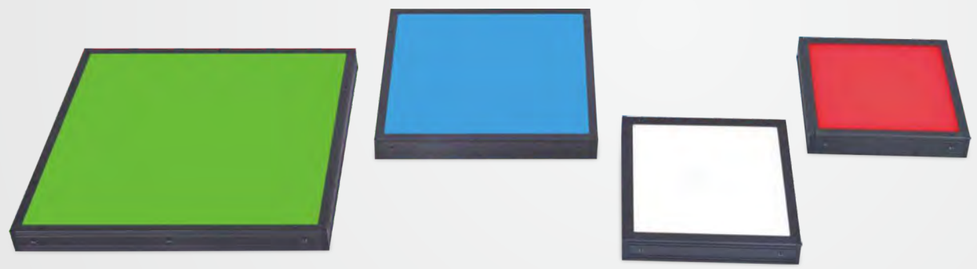
No.	Model	∗ Power 🔴	∗ Power ○	∗ Power 🔵	∗ Power 🟢	Length A (mm)	Emitting B (mm)	Recommended controller
1	OPT-LIT9832	5.5W@24V	6.0W@24V	5.3W@24V	4.3W@24V	98	84	
2	OPT-LIT14032	6.5W@24V	7.2W@24V	6.9W@24V	6.2W@24V	140	126	
3	OPT-LIT18232	6.4W@24V	9.8W@24V	9.1W@24V	6.8W@24V	182	168	
4	OPT-LIT22432	7.9W@24V	10.3W@24V	10.7W@24V	8.4W@24V	224	210	
5	OPT-LIT26632	9.5W@24V	12.4W@24V	12.9W@24V	10.0W@24V	266	252	
6	OPT-LIT30832	11.0W@24V	14.2W@24V	13.6W@24V	11.8W@24V	308	294	OPT-DPA2024E
7	OPT-LIT35032	10.6W@24V	16.3W@24V	15.6W@24V	13.4W@24V	350	336	
8	OPT-LIT39232	12.0W@24V	17.9W@24V	17.7W@24V	15.0W@24V	392	378	
9	OPT-LIT43432	13.1W@24V	18.1W@24V	19.4W@24V	16.5W@24V	434	420	
10	OPT-LIT47632	14.2W@24V	19.6W@24V	21.1W@24V	18.1W@24V	476	462	
11	OPT-LIT51832	15.2W@24V	21.5W@24V	22.8W@24V	19.1W@24V	518	504	

∗ Note: The data is for reference only.

Dimensions (mm)



Direct Backlight OPT-FL Series



Product Features

Main Features

- High intensity and uniformity. Standard models uniformity >85%，customized product can reach 95%.
- Maximized emitting surface for applications in constrained space.
- Flexible mounting, can be installed from the front, back and side.

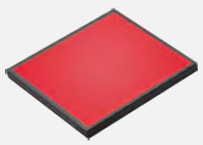
Application Cases

- Gauging for mechanical parts
- Electronic components/IC package inspection
- Film stain detection
- Scratches detection on transparent objects

Selection Guide

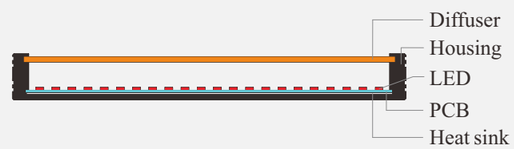
OPT-FL 90 90
- 90 → Width
- 90 → Length
- FL → Direct Backlight
- OPT → Brand name

Customizable Items

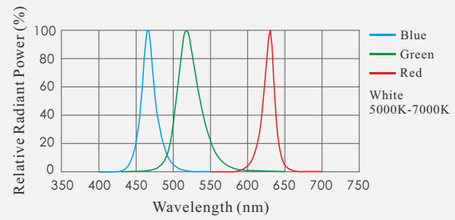


Color, Mounting, Connector, Size, Sectional control

Section Structure Drawing



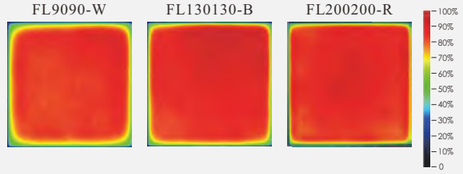
Spectrum Chart



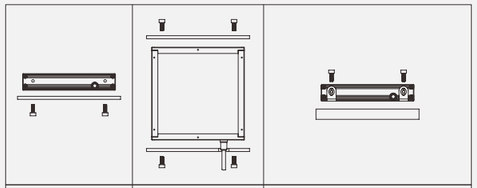
Note: The data is for reference only.

Series features

Uniformity



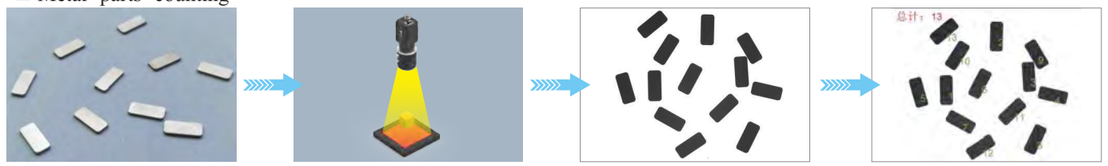
Various way of installation



Back screw installation	Side screw installation	Front through-hole installation (Please refer to OPT-PRIN1515 drawing for the needed adapter size.)

Application Cases

Metal parts counting



Workpiece | Illumination | Image | SCI-Smart3 Analysis Result

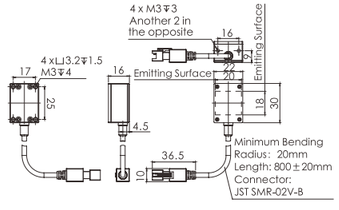
Model Table

No.	Model	Color	∗ Power	Recommended controller
1	OPT-FL3022	○	1.6W@24V	OPT-DPA2024E
		●	1.3W@24V	
		●	1.2W@24V	
		●	1.4W@24V	
2	OPT-FL4336	○	2.7W@24V	
		●	2.0W@24V	
		●	2.3W@24V	
		●	2.6W@24V	
3	OPT-FL5244	○	3.4W@24V	
		●	3W@24V	
		●	2.9W@24V	
		●	3.3W@24V	
4	OPT-FL6254	○	4.9W@24V	
		●	4.4W@24V	
		●	4.1W@24V	
		●	4.3W@24V	
5	OPT-FL7070	○	6.3W@24V	
		●	4.7W@24V	
		●	4.6W@24V	
		●	5.3W@24V	
6	OPT-FL9090	○	8W@24V	
		●	6.6W@24V	
		●	6.4W@24V	
		●	8W@24V	
7	OPT-FL110110	○	11.4W@24V	
		●	9.7W@24V	
		●	8.8W@24V	
		●	12.4W@24V	
8	OPT-FL130130	○	16W@24V	OPT-DPA2024E
		●	14W@24V	
		●	11W@24V	
		●	14.8W@24V	
9	OPT-FL150150	○	18.6W@24V	
		●	15.7W@24V	
		●	13.6W@24V	
		●	18.9W@24V	
10	OPT-FL175175	○	24.5W@24V	
		●	18.9W@24V	
		●	18.4W@24V	
		●	21.5W@24V	
11	OPT-FL200200	○	29W@24V	
		●	23.4W@24V	
		●	21.3W@24V	
		●	26.2W@24V	
12	OPT-FL225225	○	36.7W@24V	
		●	28.9W@24V	
		●	21.3W@24V	
		●	31.1W@24V	
13	OPT-FL250250	○	41.5W@24V	
		●	33.8W@24V	
		●	27.3W@24V	
		●	39.5W@24V	

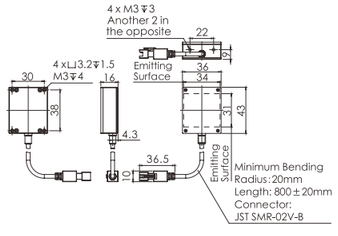
∗ Note: The data is for reference only.

Dimensions (mm)

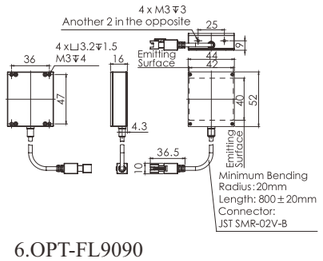
1.OPT-FL3022



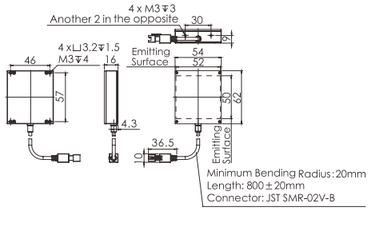
2.OPT-FL4336



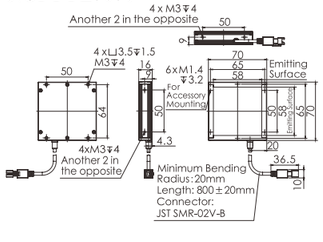
3.OPT-FL5244



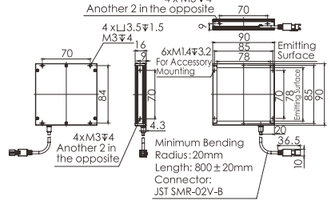
4.OPT-FL6254



5.OPT-FL7070

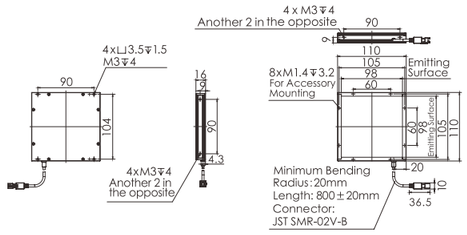


6.OPT-FL9090

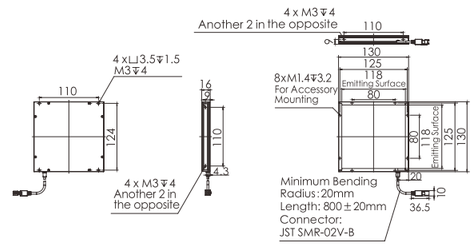


Dimensions (mm)

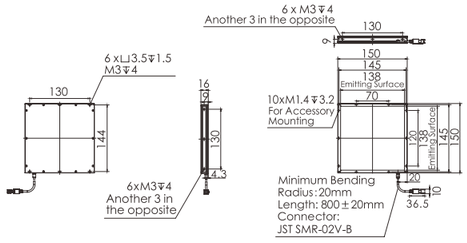
7.OPT-FL110110



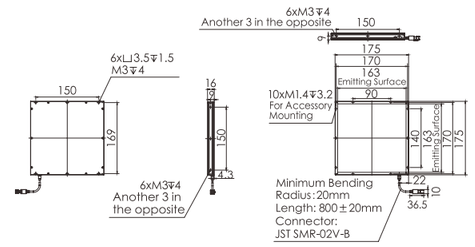
8.OPT-FL130130



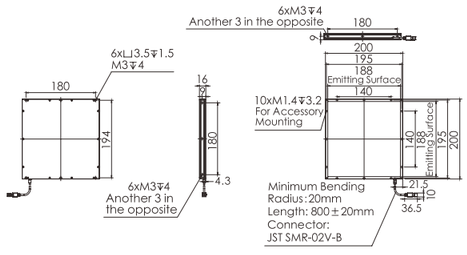
9.OPT-FL150150



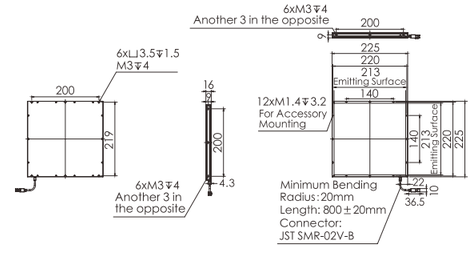
10.OPT-FL175175



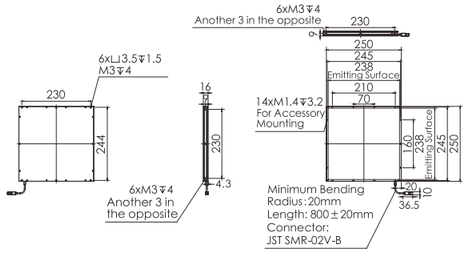
11.OPT-FL200200



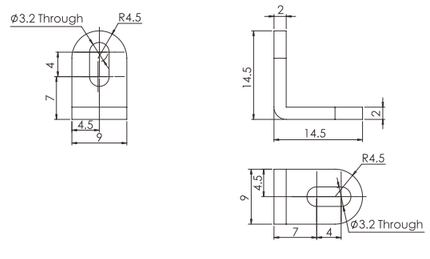
12.OPT-FL225225



13.OPT-FL250250



14.OPT-PRIN1515



Direct Backlight OPT-FLA Series New



Product Features

Main Features

- Preferred for OPT backlights with large dimensions compared to OPT-FL series.

Application Cases

- 3C components optical measurement
- Large coverage for electronic components inspection and recognition
- Contamination & foreign particles detection on transparent objects
- Multiple transparent objects positioning and inspection

Selection Guide

OPT-FLA 110 80

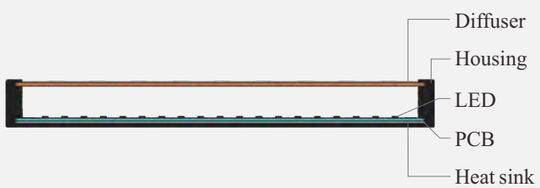
- 110 → Width
- 80 → Length
- FLA → Direct Backlight
- OPT → Brand name

Customizable Items

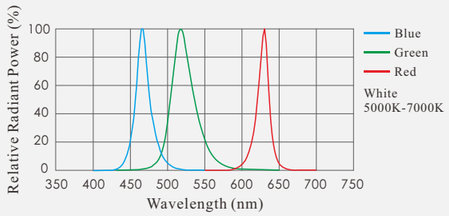


Color | Mounting | Connector | Size

Section Structure Drawing

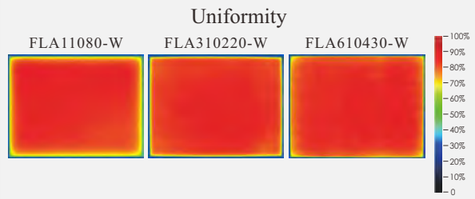


Spectrum Chart



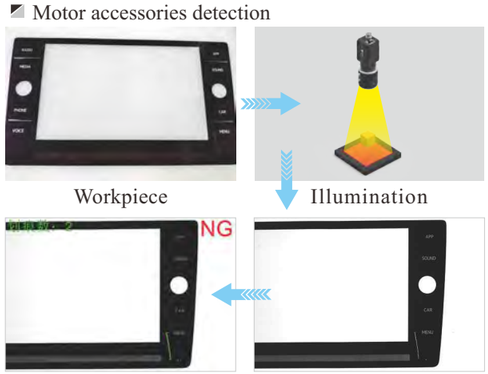
Note: The data is for reference only.

Series features



Application Cases

- Motor accessories detection



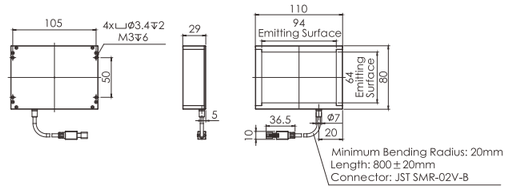
Model Table

No.	Model	∗ Power ○	∗ Power ●	∗ Power ●	∗ Power ●	Standard light source cable	Recommended controller
1	OPT-FLA11080	12.2W@24V	8.4W@24V	8.4W@24V	12W@24V	Provided within light source.	OPT-DPA2024E
2	OPT-FLA150110	19.2W@24V	16.2W@24V	15.4W@24V	19.2W@24V		
3	OPT-FLA210150	34.5W@24V	31W@24V	26.9W@24V	30.7W@24V		
4	OPT-FLA220210	47.5W@24V	42.4W@24V	30.3W@24V	46.1W@24V		
5	OPT-FLA310220	64.8W@2.7A	52.8W@2.2A	48W@2A	64.8W@2.7A	OPT-DGYX1M-6P-S-6A	OPT-DPA6024
6	OPT-FLA310290	84W@3.5A	67.2W@2.8A	57.6W@2.4A	84W@3.5A		
7	OPT-FLA410290	108W@4.5A	81.6W@3.4A	72W@3A	108W@4.5A		
8	OPT-FLA430410	144W@6A	115.2W@4.8A	96W@4A	144W@6A		
9	OPT-FLA510360	156W@6.5A	120W@5A	96W@4A	156W@6.5A		
10	OPT-FLA510500	204W@8.5A	156W@6.5A	132W@5.5A	204W@8.5A		
11	OPT-FLA610430	206.4W@8.6A	158.4W@6.6A	139.2W@5.8A	206.4W@8.6A		
12	OPT-FLA610570	259.2W@10.8A	201.6W@8.4A	172.8W@7.2A	259.2W@10.8A		

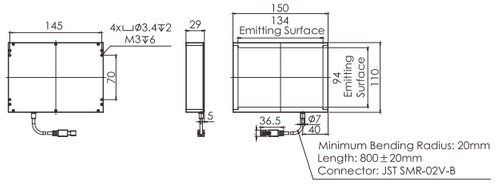
Note:1. ∗ The data is for reference only.
2. Light source cable is required accessory, see P252 in details.

Dimensions (mm)

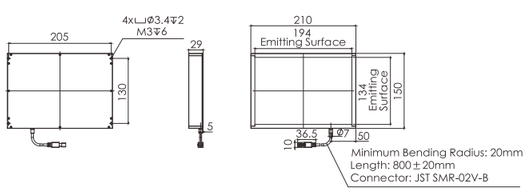
1. OPT-FLA11080



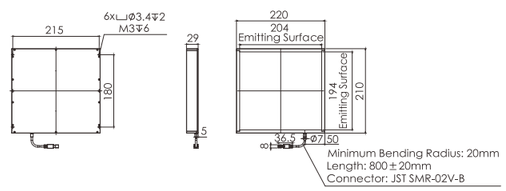
2. OPT-FLA150110



3. OPT-FLA210150

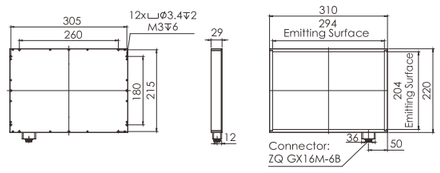


4. OPT-FLA220210

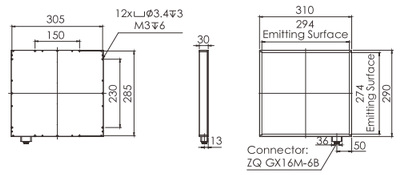


Dimensions (mm)

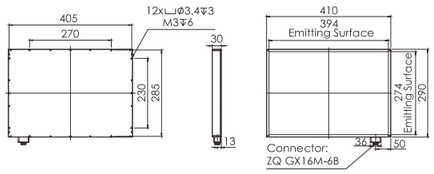
5. OPT-FLA310220



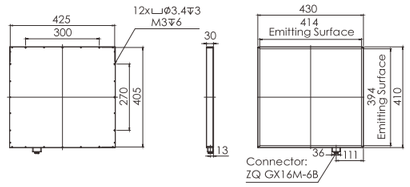
6. OPT-FLA310290



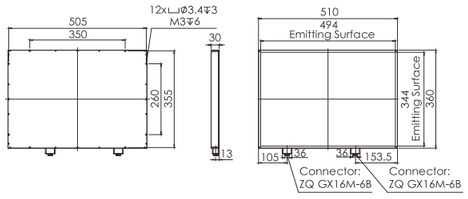
7. OPT-FLA410290



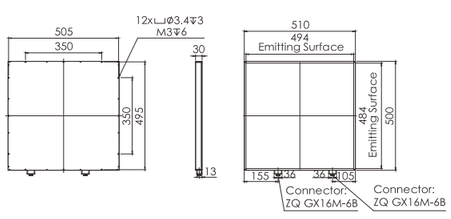
8. OPT-FLA430410



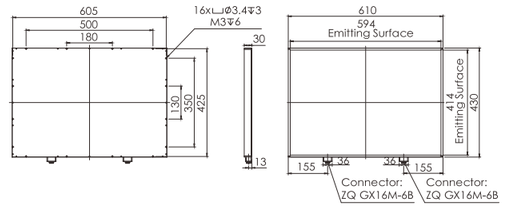
9. OPT-FLA510360



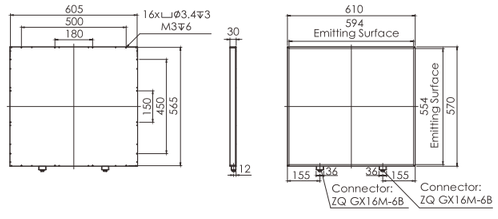
10. OPT-FLA510500



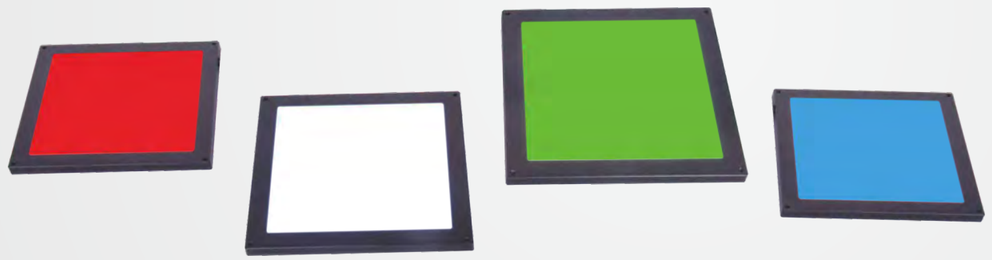
11. OPT-FLA610430



12. OPT-FLA610570



Edge Lit Backlight OPT-FLC Series



Product Features

Main Features

- High intensity and uniformity
- Ultra-light and thin design, minimum 6mm, for compact space
- Customized design available for large area uniform illumination

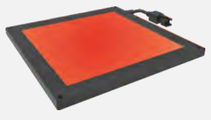
Application Cases

- Identification and inspection for PCBs
- Gauging for workpieces
- LED defects detection

Selection Guide

OPT-FLC9090
- Width
- Length
- Edge Lit Backlight
- Brand name

Customizable Items

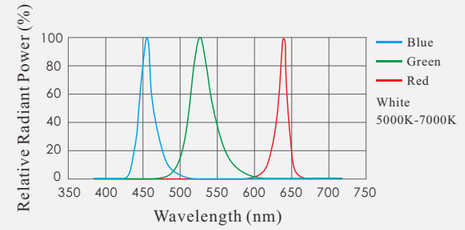


Color
Mounting
Connector
Size

Section Structure Drawing



Spectrum Chart



Note: The data is for reference only.

Series features

Customization options: Bright Enhancement Film (BEF)

Standard FLC light without BEF



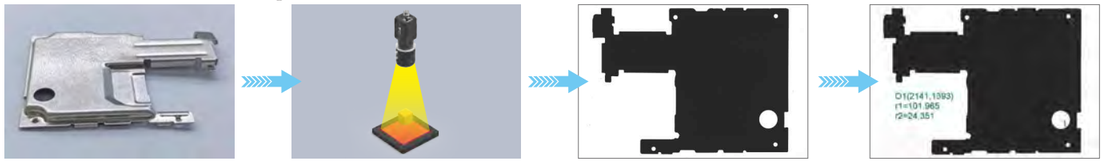
Customized FLC Light with BEF



BEF helps improvement of light collimation and intensity.

Application Cases

Contour detection for metal parts



Workpiece | Illumination | Image | SCI-Smart3 Analysis Result

Model Table

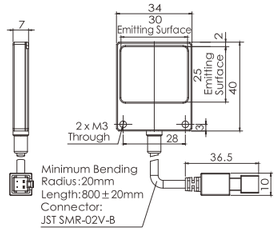
No.	Model	Color	∗ Power	Recommended controller
1	OPT-FLC4034	○	1.4W@24V	OPT-DPA2024E
		●	1.7W@24V	
		●	1.7W@24V	
		●	1.4W@24V	
2	OPT-FLC5039	○	1.8W@24V	
		●	1.7W@24V	
		●	1.7W@24V	
		●	1.7W@24V	
3	OPT-FLC7070	○	3.7W@24V	
		●	4.1W@24V	
		●	3.6W@24V	
		●	4.4W@24V	
4	OPT-FLC9090	○	6.5W@24V	
		●	5.4W@24V	
		●	4.7W@24V	
		●	6W@24V	
5	OPT-FLC110110	○	8W@24V	
		●	6.7W@24V	
		●	7W@24V	
		●	7.2W@24V	
6	OPT-FLC130130	○	10.8W@24V	
		●	9W@24V	
		●	9.1W@24V	
		●	11.3W@24V	

No.	Model	Color	∗ Power	Recommended controller
7	OPT-FLC150150	○	14.1W@24V	OPT-DPA2024E
		●	12.1W@24V	
		●	12.1W@24V	
		●	14.9W@24V	
8	OPT-FLC175175	○	14.1W@24V	
		●	14.9W@24V	
		●	14.4W@24V	
		●	14.9W@24V	
9	OPT-FLC200200	○	18.3W@24V	
		●	17W@24V	
		●	16.8W@24V	
		●	19.9W@24V	
10	OPT-FLC225225	○	22.8W@24V	
		●	20.6W@24V	
		●	22.4W@24V	
		●	24W@24V	
11	OPT-FLC250250	○	32W@24V	
		●	26.7W@24V	
		●	24.2W@24V	
		●	26.7W@24V	

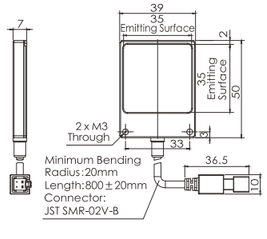
∗ Note: The data is for reference only.

Dimensions (mm)

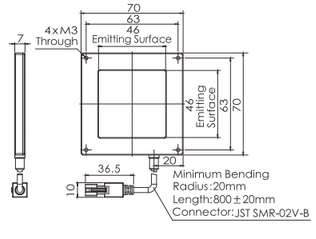
1.OPT-FLC4034



2.OPT-FLC5039

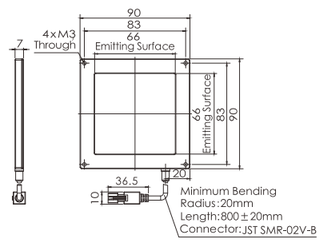


3.OPT-FLC7070

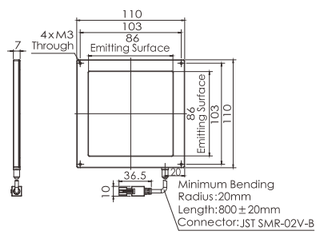


Dimensions (mm)

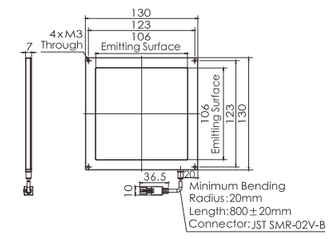
4.OPT-FLC9090



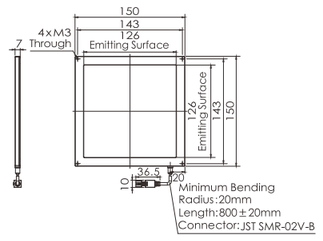
5.OPT-FLC110110



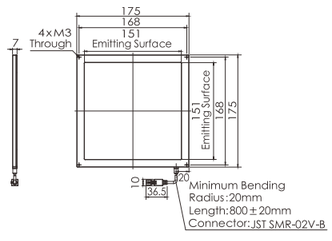
6.OPT-FLC130130



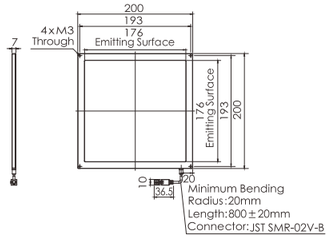
7.OPT-FLC150150



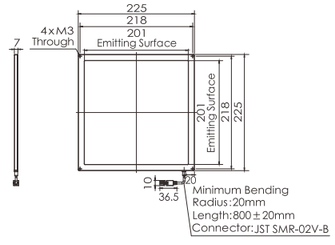
8.OPT-FLC175175



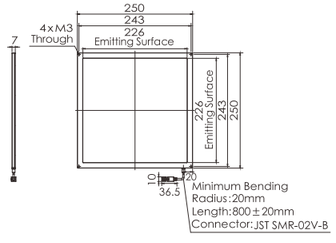
9.OPT-FLC200200



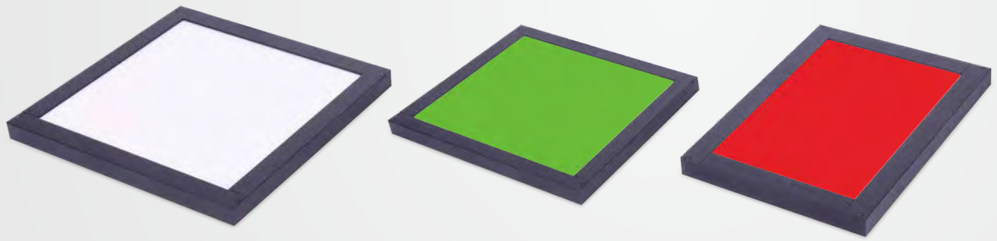
10.OPT-FLC225225



11.OPT-FLC250250



Edge Lit Backlight OPT-FLCA Series NEW



Product Features

Main Features

- Larger light emitting area compared to FLC series, preferred choice for large area backlighting

Application Cases

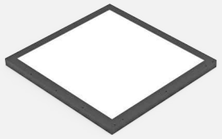
- Electronic components OMM & contour identification
- Cutting of plastic objects and positioning
- Mobile phone cover OMM
- Tray position identification
- Film transmittance inspection

Selection Guide

OPT-FLCA 210 150

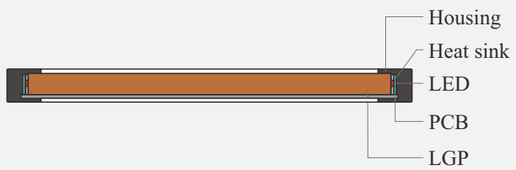
- 210 → Width
- 150 → Length
- FLCA → Edge Lit Backlight
- OPT → Brand name

Customizable Items

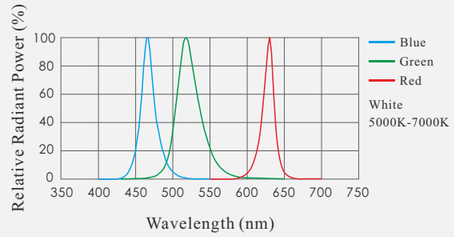


Color | Mounting | Connector | Size

Section Structure Drawing



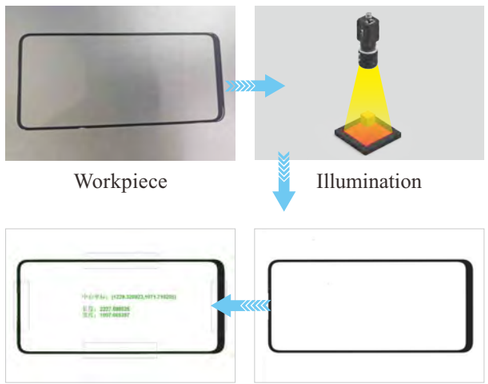
Spectrum Chart



Note: The data is for reference only.

Application Cases

- CG ink measurement.



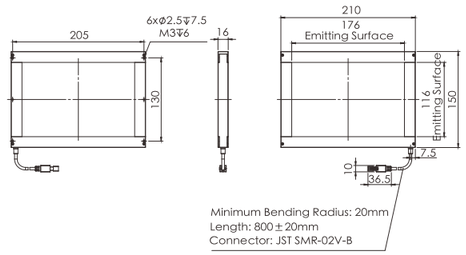
Model Table

No.	Model	∗ Power ○	∗ Power ●	∗ Power ●	∗ Power ●	Recommended controller
1	OPT-FLCA210150	24W@24V	20.1W@24V	24W@24V	24W@24V	OPT-DPA2024E
2	OPT-FLCA220210	28.8W@24V	23.1W@24V	28.8W@24V	31.6W@24V	
3	OPT-FLCA310220	43.2W@24V	31.2W@24V	39.6W@24V	43.2W@24V	
4	OPT-FLCA310290	47.7W@24V	37.4W@24V	44.5W@24V	47.7W@24V	
5	OPT-FLCA410290	62.4W@2.6A	50.4W@2.1A	57.6W@2.4A	62.4W@2.6A	OPT-DPA6024
6	OPT-FLCA430410	74.9W@3.1A	65.3W@2.7A	69.1W@2.9A	74.9W@3.1A	
7	OPT-FLCA510360	78W@3.2A	65.3W@2.7A	72W@3A	78W@3.2A	
8	OPT-FLCA510500	93.6W@3.9A	81.6W@3.4A	86.4W@3.6A	93.6W@3.9A	
9	OPT-FLCA610430	93.6W@3.9A	85.7W@3.5A	86.4W@3.6A	93.6W@3.9A	
10	OPT-FLCA610570	114W@4.7A	103.5W@4.3A	106.1W@4.4A	114W@4.7A	

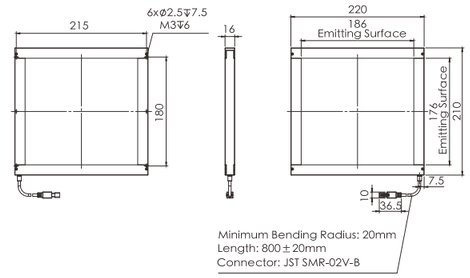
∗ Note: The data is for reference only.

Dimensions (mm)

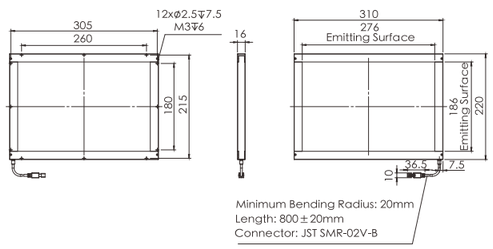
1. OPT-FLCA210150



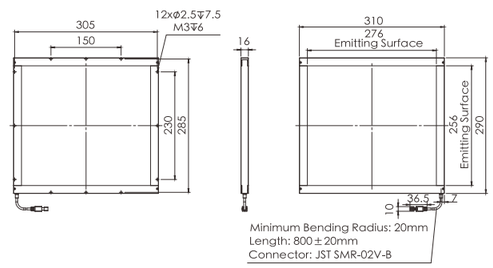
2. OPT-FLCA220210



3. OPT-FLCA310220

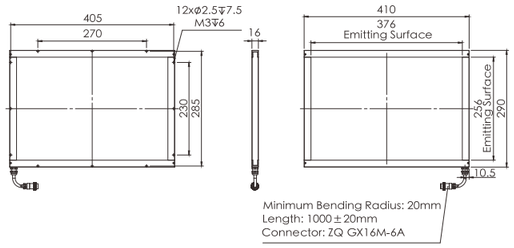


4. OPT-FLCA310290

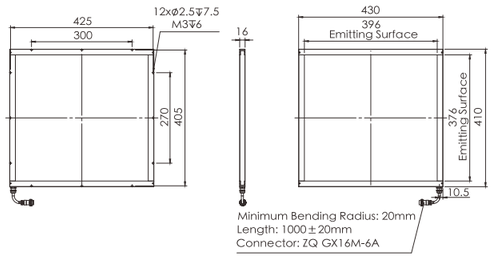


Dimensions (mm)

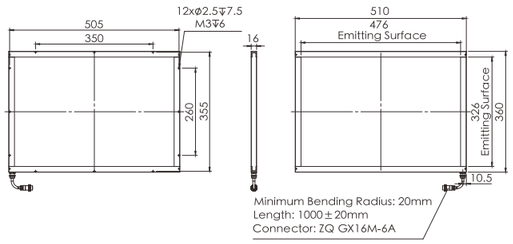
5. OPT-FLCA410290



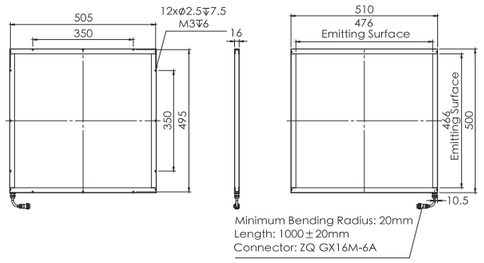
6. OPT-FLCA430410



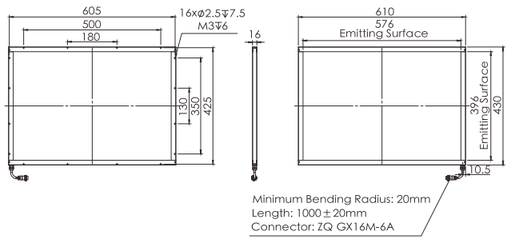
7. OPT-FLCA510360



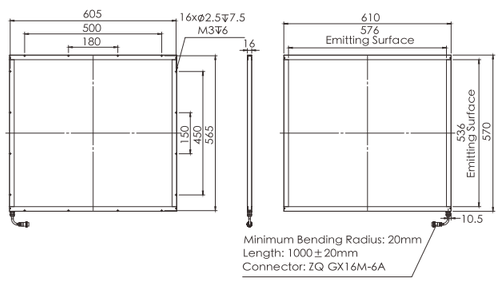
8. OPT-FLCA510500



9. OPT-FLCA610430



10. OPT-FLCA610570



Backlight With Centre Hole OPT-FLCA-K/OPT-FLA-K Series NEW



Product Features

Main Features

- Direct backlight and edge lit backlights are available
- Good luminosity and uniformity, best choice for large area backlights

Application Cases

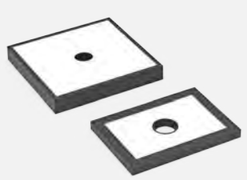
- Defect detection in printing industry
- Contour positioning of automotive parts
- Positioning for product sorting
- OCR for electronic products
- Electronic components positioning identification

Selection Guide

OPT - FLA 210 150 K

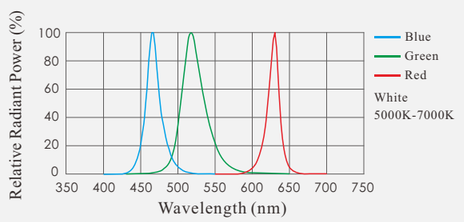
- With center hole
- Width
- Length
- FLA: direct backlight
  FLCA: edge lit backlight
- Brand name

Customizable Items



Color Mounting Connector Size

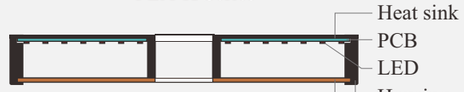
Spectrum Chart



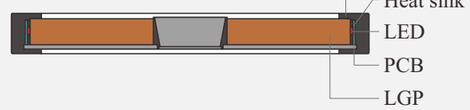
Note: The data is for reference only.

Section Structure Drawing

FLA-K Series

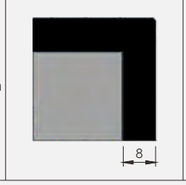
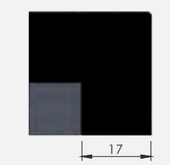


FLCA-K Series



Series features

Size comparison

	FLA-K Series	FLCA-K Series
Thickness comparison (mm)		
Border Comparison (mm)		

Illumination contrast

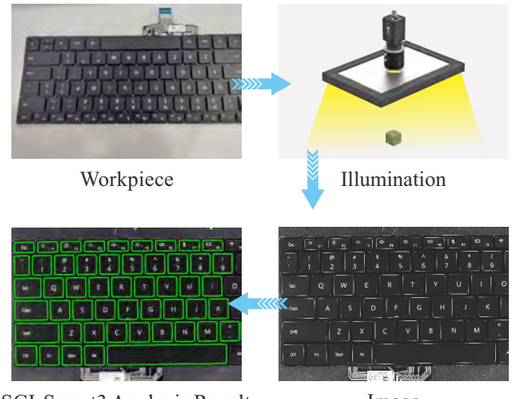
Direct backlight with centre hole	FLA210150K-W	FLA410290K-W	FLA610570K-W
Illuminance			
Illuminance value kLux	146	106	89
Edge lit backlight with centre hole	**FLCA210150K-W**	**FLCA410290K-W**	**FLCA610570K-W**
Illuminance			
Illuminance value kLux	54	32	31

Note: 1. FLA-K series has higher illuminance than FLCA-K series under the same conditions.
2. As the size of the light source increases, the illuminance of the light source decreases.

Note: The above performance varies due to the actual test workpiece and operating conditions and are for reference only.

Application Cases

Keycap positioning.



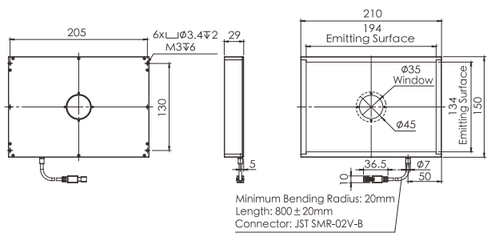
Model Table

No.	Model	∗ Power ○	∗ Power 🔴	∗ Power 🟢	∗ Power 🔵	Standard light source cable	Recommended controller
1	OPT-FLA210150K	34.5W@24V	31W@24V	26.9W@24V	30.7W@24V	Provided within light source.	OPT-DPA2024E
2	OPT-FLA220210K	47.5W@24V	42.4W@24V	30.3W@24V	46.1W@24V		
3	OPT-FLA310220K	64.2W@2.7A	52.8W@2.2A	48W@2A	64.8W@2.7A	OPT-DGYX1M-6P-S-6A	OPT-DPA6024E
4	OPT-FLA310290K	84W@3.5A	67.2W@2.8A	57.6W@2.4A	84W@3.5A		
5	OPT-FLA410290K	108W@4.5A	81.6W@3.4A	72W@3A	108W@4.5A		
6	OPT-FLA430410K	144W@6A	115.2W@4.8A	96W@4A	144W@6A		
7	OPT-FLA510360K	156W@6.5A	120W@5A	96W@4A	156W@6.5A		
8	OPT-FLA510500K	204W@8.5A	156W@6.5A	132W@5.5A	204W@8.5A		
9	OPT-FLA610430K	206.4W@8.6A	158.4W@6.6A	139.2W@5.8A	206.4W@8.6A		
10	OPT-FLA610570K	259.2W@10.8A	201.6W@8.4A	172.8W@7.2A	259.2W@10.8A		

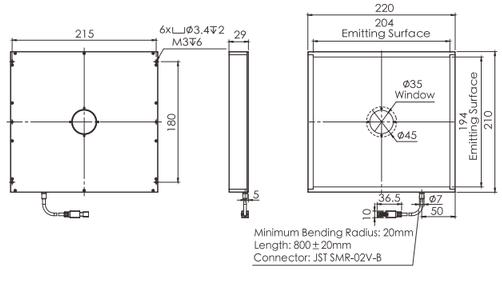
Note:1. ∗ The data is for reference only.
2. Light source cable is required accessory, see P252 in details.

Dimensions (mm)

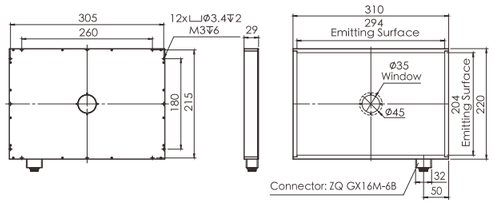
1. OPT-FLA210150K



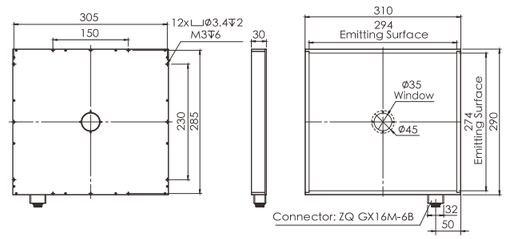
2. OPT-FLA220210K



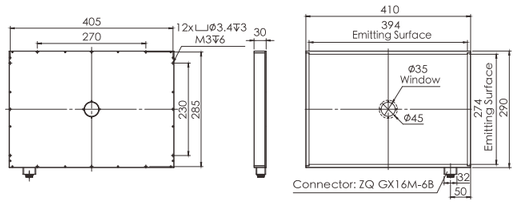
3. OPT-FLA310220K



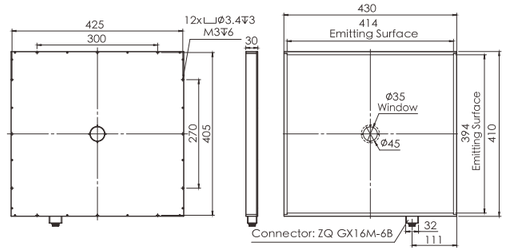
4. OPT-FLA310290K



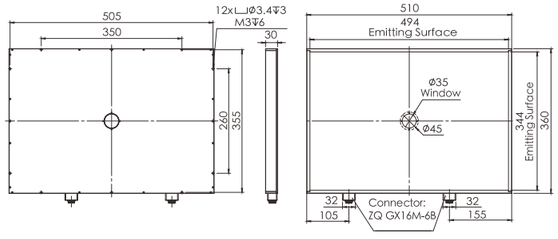
5. OPT-FLA410290K



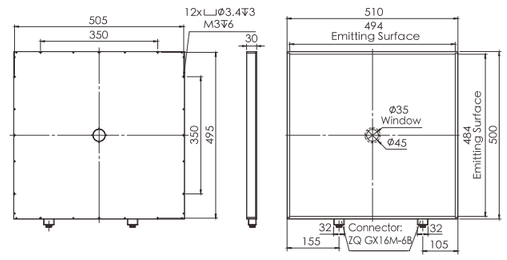
6. OPT-FLA430410K



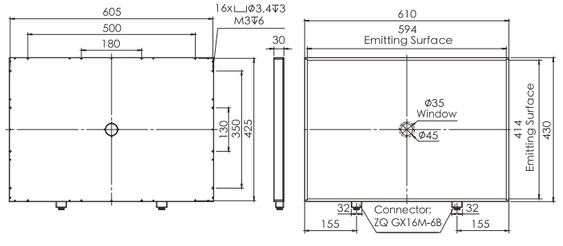
7. OPT-FLA510360K



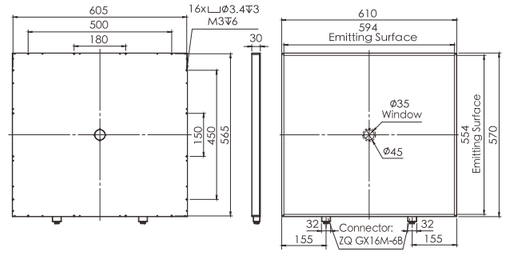
8. OPT-FLA510500K



9. OPT-FLA610430K



10. OPT-FLA610570K



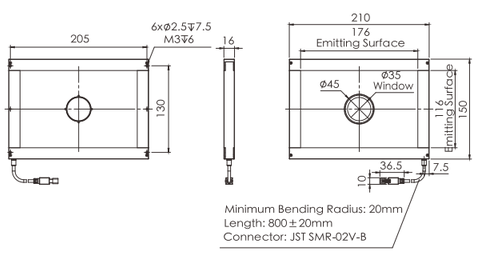
Model Table

No.	Model	∗ Power○	∗ Power●	∗ Power●	∗ Power●	Recommended controller
1	OPT-FLCA210150K	24W@24V	20.1W@24V	24W@24V	24W@24V	OPT-DPA2024E
2	OPT-FLCA220210K	28.8W@24V	23.1W@24V	28.8W@24V	31.6W@24V	
3	OPT-FLCA310220K	43.2W@24V	31.2W@24V	39.6W@24V	43.2W@24V	
4	OPT-FLCA310290K	47.7W@24V	37.4W@24V	44.5W@24V	47.7W@24V	
5	OPT-FLCA410290K	62.4W@2.6A	50.4W@2.1A	57.6W@2.4A	62.4W@2.6A	OPT-DPA6024E
6	OPT-FLCA430410K	74.9W@3.1A	65.3W@2.7A	69.1W@2.9A	74.9W@3.1A	
7	OPT-FLCA510360K	78W@3.2A	65.3W@2.7A	72W@3A	78W@3.2A	
8	OPT-FLCA510500K	93.6W@3.9A	81.6W@3.4A	86.4W@3.6A	93.6W@3.9A	
9	OPT-FLCA610430K	93.6W@3.9A	85.7W@3.5A	86.4W@3.6A	93.6W@3.9A	
10	OPT-FLCA610570K	114W@4.7A	103.5W@4.3A	106.1W@4.4A	114W@4.7A	

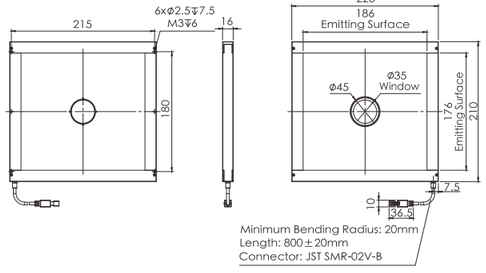
∗ Note: The data is for reference only.

Dimensions (mm)

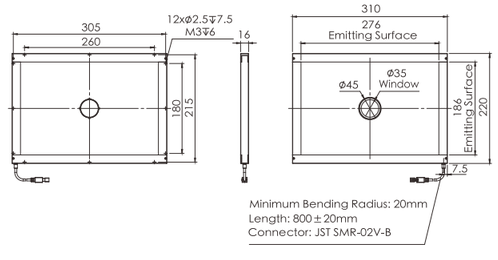
1. OPT-FLCA210150K



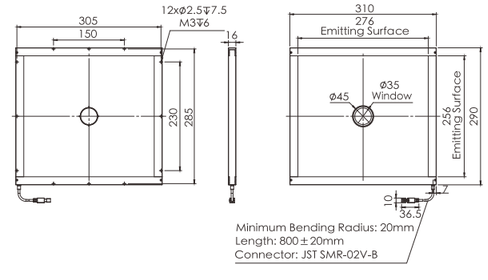
2. OPT-FLCA220210K



3. OPT-FLCA310220K

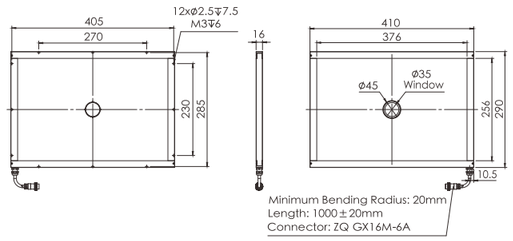


4. OPT-FLCA310290K

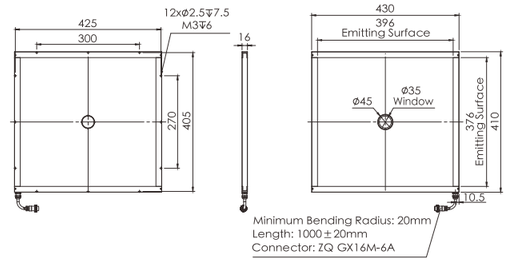


Dimensions (mm)

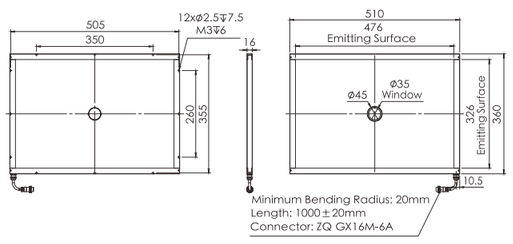
5. OPT-FLCA410290K



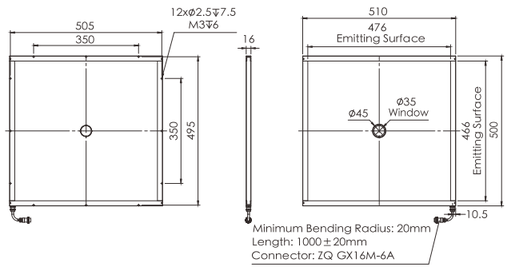
6. OPT-FLCA430410K



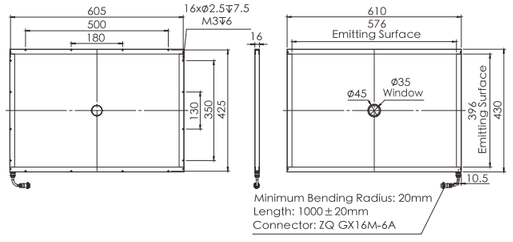
7. OPT-FLCA510360K



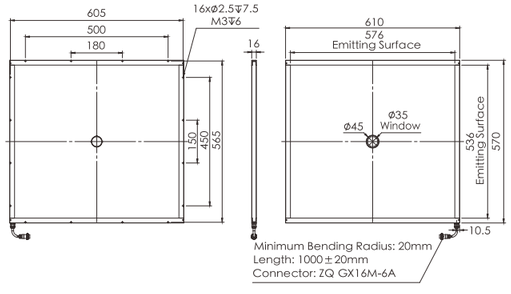
8. OPT-FLCA510500K



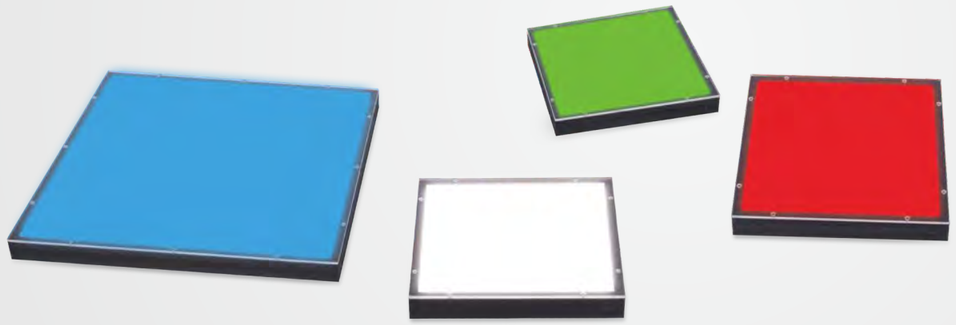
9. OPT-FLCA610430K



10. OPT-FLCA610570K



Highly-directional Backlights OPT-FLP Series



Product Features

Main Features

- Suppresses the diffused light in a specific direction so that more light falls on the camera sensor, so the relative brightness is higher than conventional backlight.
- Suppresses light diffraction, improves curve edge detection and image acquisition. Suitable for high precision and curved products

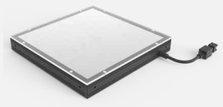
Application Cases

- PCB inspection
- Transparent objects OMM
- LCD defects detection

Selection Guide

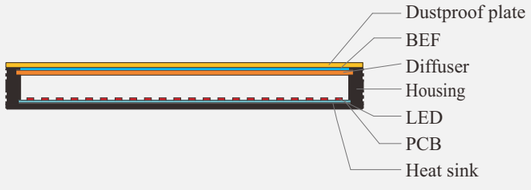
OPT - FLP9090
- Width
- Length
- Highly directional backlight
- Brand name

Customizable Items

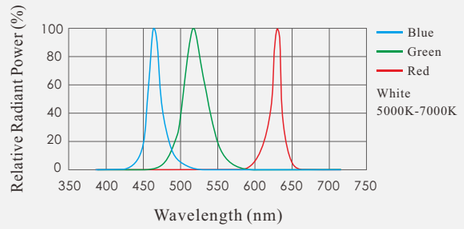


Color | Mounting | Connector | Size

Section Structure Drawing



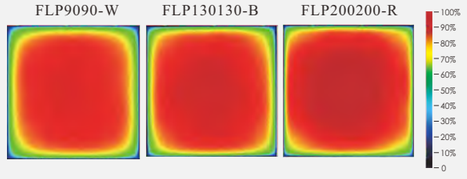
Spectrum Chart



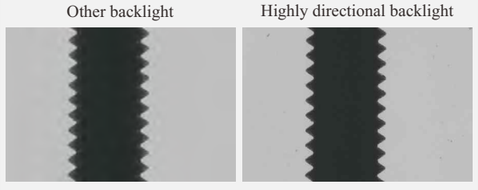
Note: The data is for reference only.

Series features

Uniformity

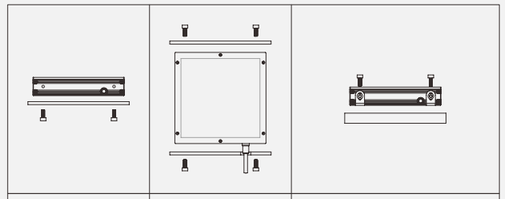


Imaging Result Comparison



The highly directional backlight can reduce light diffraction for clear contour imaging.

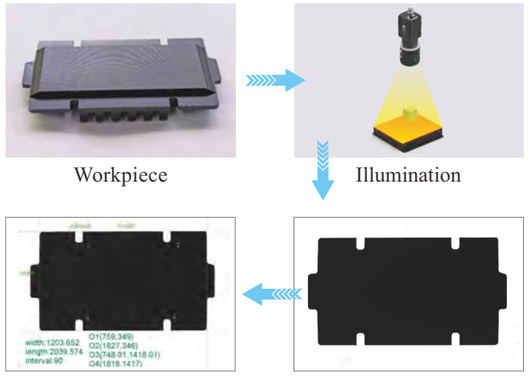
Various ways of installation



Back screws installation	Side screws installation	Front through-holes installation (Please refer to OPT-PRIN1515 drawing on P139 for the needed adapter size.)

Application Cases

Plastic part geometric measurement



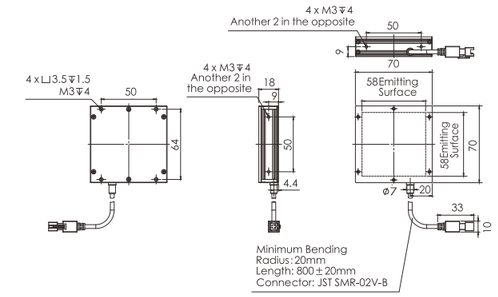
Model Table

No.	Model	Color	∗ Power	Recommended controller
1	OPT-FLP7070	○	6.3W@24V	OPT-DPA2024E
		🔴	4.7W@24V	
		🟢	4.6W@24V	
		🔵	5.3W@24V	
2	OPT-FLP9090	○	8W@24V	
		🔴	6.6W@24V	
		🟢	6.4W@24V	
		🔵	8W@24V	
3	OPT-FLP110110	○	11.4W@24V	
		🔴	9.7W@24V	
		🟢	8.8W@24V	
		🔵	10.5W@24V	
4	OPT-FLP130130	○	12.7W@24V	
		🔴	14W@24V	
		🟢	11W@24V	
		🔵	14.8W@24V	
5	OPT-FLP150150	○	18.6W@24V	
		🔴	15.7W@24V	
		🟢	13.6W@24V	
		🔵	18.9W@24V	
6	OPT-FLP175175	○	24.5W@24V	
		🔴	18.9W@24V	
		🟢	18.4W@24V	
		🔵	21.5W@24V	
7	OPT-FLP200200	○	26.2W@24V	
		🔴	20.6W@24V	
		🟢	21.8W@24V	
		🔵	26.2W@24V	
8	OPT-FLP225225	○	33.8W@24V	
		🔴	28.3W@24V	
		🟢	21.3W@24V	
		🔵	28.8W@24V	
9	OPT-FLP250250	○	35.5W@24V	
		🔴	30.9W@24V	
		🟢	27.3W@24V	
		🔵	31.9W@24V	

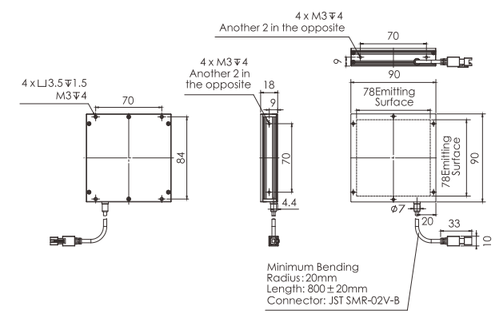
∗ Note: The data is for reference only.

Dimensions (mm)

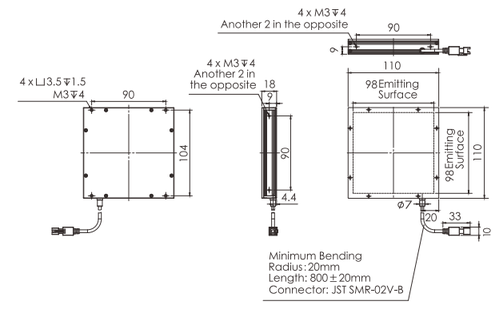
1.OPT-FLP7070



2.OPT-FLP9090

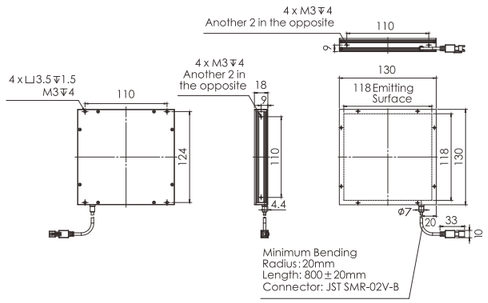


3.OPT-FLP110110

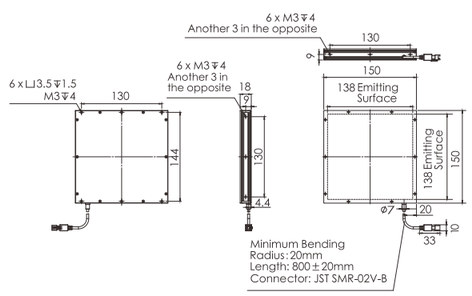


Dimensions (mm)

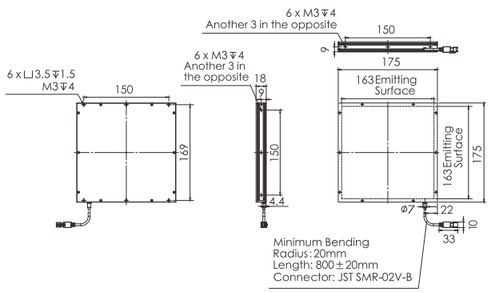
4.OPT-FLP130130



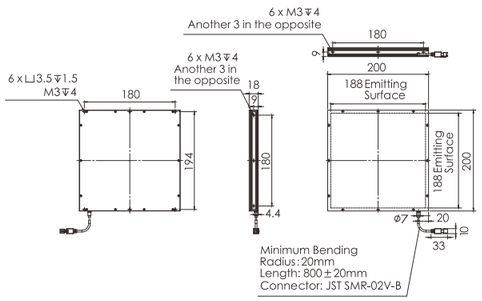
5.OPT-FLP150150



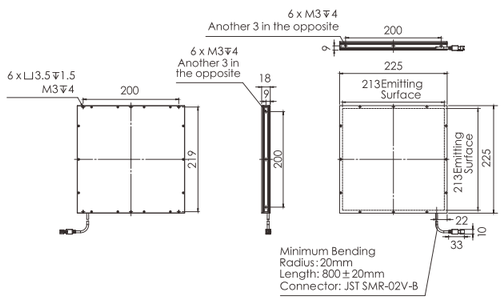
6.OPT-FLP175175



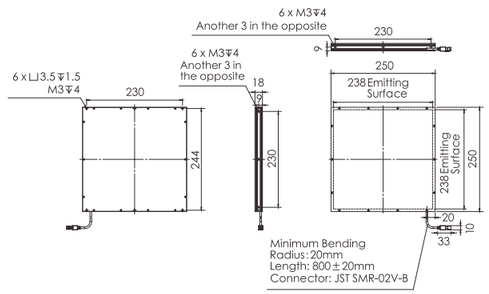
7.OPT-FLP200200



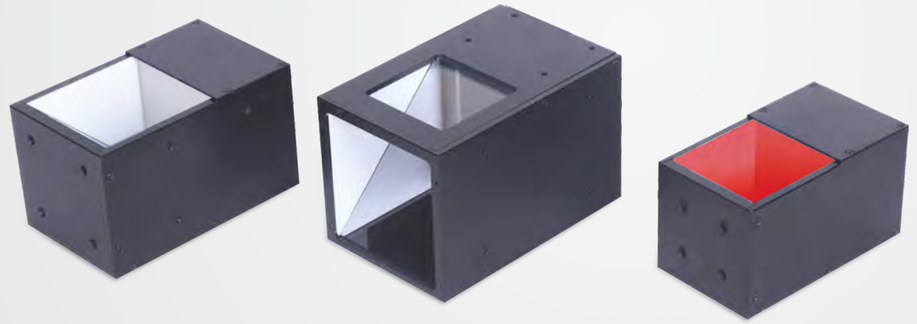
8.OPT-FLP225225



9.OPT-FLP250250



Coaxial Lights OPT-CO/OPT-COR Series



Product Features

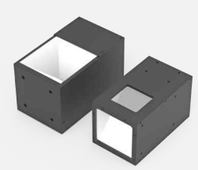
Main Features

- Excellent directional emitting light suitable for long working distances that improves image characteristics.
- The high density LED arrays and special heat dissipation design ensure the illumination intensity and long lifespan.
- For surface detection of reflective workpieces, it can highlight the surface irregularities

Application Cases

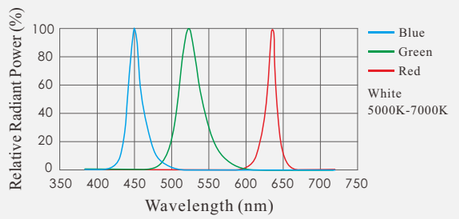
- Detection of scratche on highly reflective surfaces
- Defect detection on silicon wafers
- Positioning of markings
- Reading of barcodes
- Reading of laser marked OCR codes
- Edge positioning and gauging of workpiece
- LCD glue inspection

Customizable Items



Color | Mounting | Connector
Size | Intensity | Uniformity

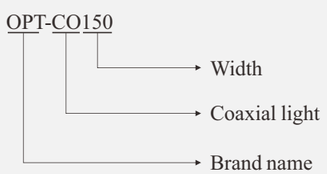
Spectrum Chart



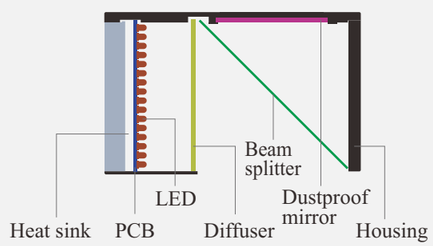
Note: The data is for reference only.

OPT− CO Coaxial Lights

Selection Guide

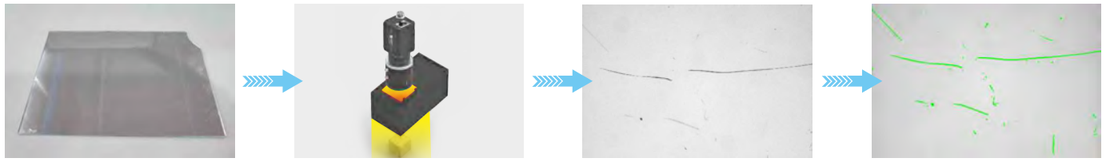


Section Structure Drawing



Application Cases

Detection of defects on reflective glass surface



Workpiece　Illumination　Image　SCI-Smart3 Analysis Result

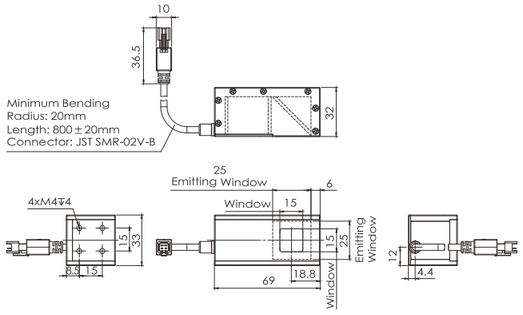
Model Table

No.	Model	* Power 🔴	* Power ⚪🔵🟢	Recommended controller
1	OPT-CO30	1.4W@24V	1.8W@24V	OPT-DPA2024E
2	OPT-CO40	2.2W@24V	3.3W@24V	
3	OPT-CO50	4W@24V	5.9W@24V	
4	OPT-CO60	5.3W@24V	8.0W@24V	
5	OPT-CO70	8.9W@24V	10.5W@24V	
6	OPT-CO80	8W@24V	12W@24V	
7	OPT-CO100	16.8W@24V	17.5W@24V	
8	OPT-CO150	31W@24V	36W@24V	
9	OPT-CO200	52.8W@2.2A	60W@2.5A	OPT-DPA6024

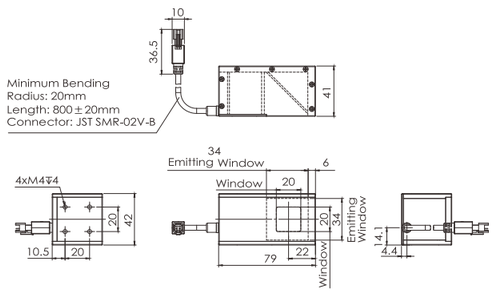
* Note: The data is for reference only.

Dimensions (mm)

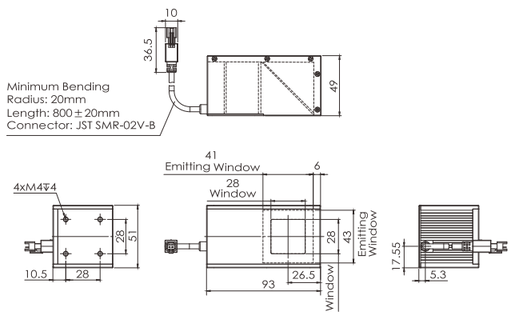
1.OPT-CO30



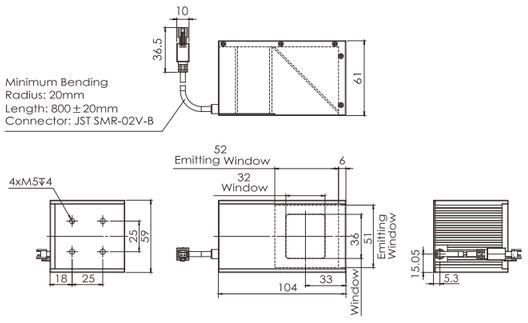
2.OPT-CO40



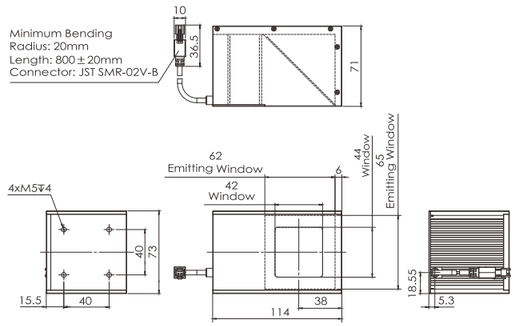
3.OPT-CO50



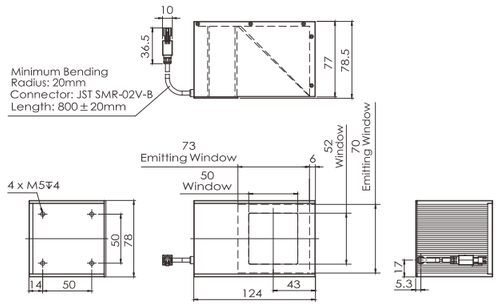
4.OPT-CO60



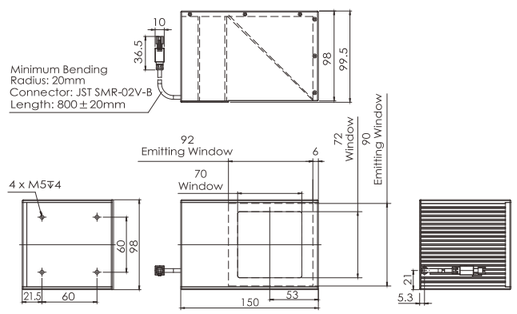
5.OPT-CO70



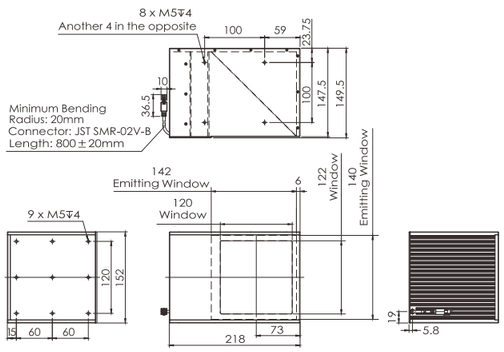
6.OPT-CO80



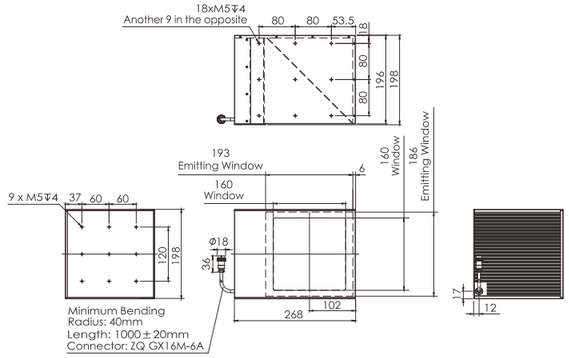
7.OPT-CO100



8.OPT-CO150



9.OPT-CO200

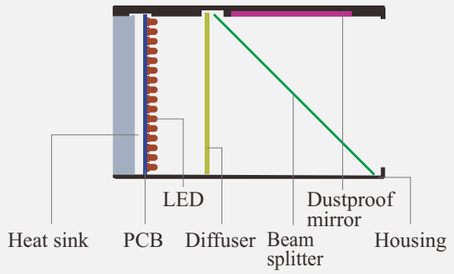


OPT-COR Right-Angle Coaxial Light Source

Selection Guide

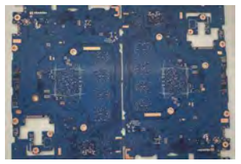
OPT-COR 40
- Width
- Right-Angle Coaxial Light Source
- Brand name

Section Structure Drawing

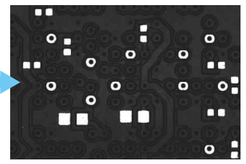


Application Cases

Application: positioning of PCB solder pads


Workpiece


Illumination


Image



SCI-Smart3 Analysis Result

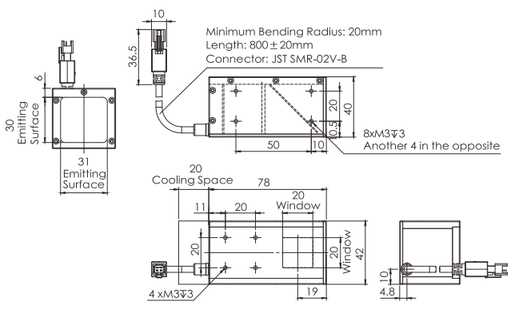
Model Table

No.	Model	∗ Power○	∗ Power🔴	∗ Power🟢	∗ Power🔵	Recommended controller
1	OPT-COR40	3.3W@24V	2.2W@24V	3.6W@24V	3.4W@24V	OPT-DPA2024E
2	OPT-COR50	5.9W@24V	4W@24V	5.1W@24V	6W@24V	
3	OPT-COR60	7.5W@24V	5.3W@24V	8.1W@24V	8.1W@24V	
4	OPT-COR70	9.9W@24V	8.9W@24V	9.5W@24V	10.1W@24V	
5	OPT-COR80	11.6W@24V	10.5W@24V	10.9W@24V	11.7W@24V	

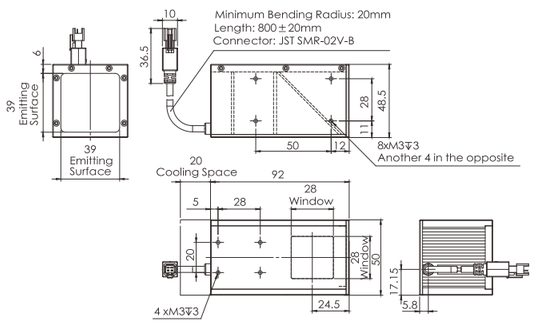
∗ Note: The data is for reference only.

Dimensions (mm)

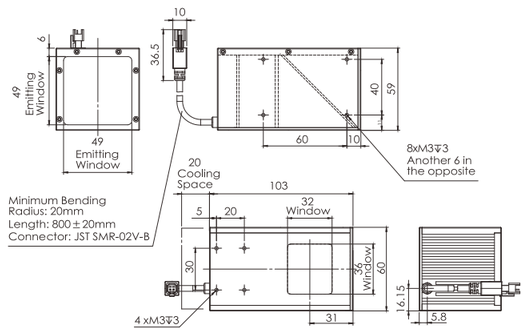
1.OPT-COR40



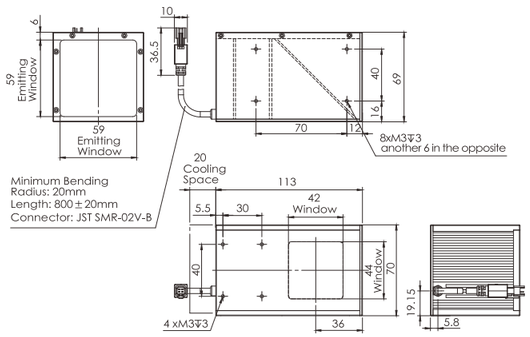
2. OPT-COR50



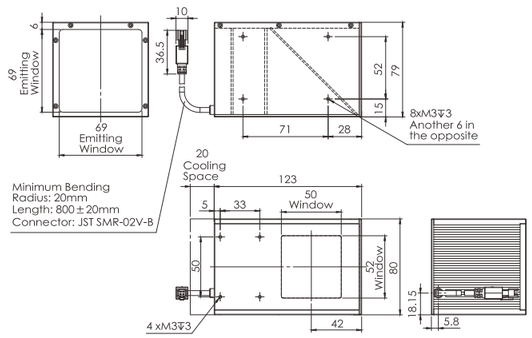
3. OPT-COR60



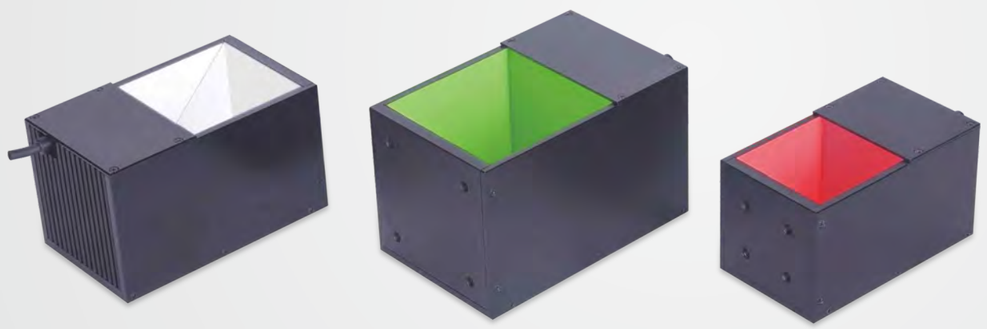
4. OPT-COR70



5. OPT-COR80



High Precision Coaxial Light Source OPT-COH Series NEW



Product Features

Main Features

- Ideal for high-resolution Images
- Ghosting is greatly reduced when inspecting highly reflective workpieces.

Application Cases

- Defect detection on precision components
- High-precision OMM
- Wafer OMM and defect detection
- Contamination detection for precision medical equipment components

Selection Guide

OPT-COH 50

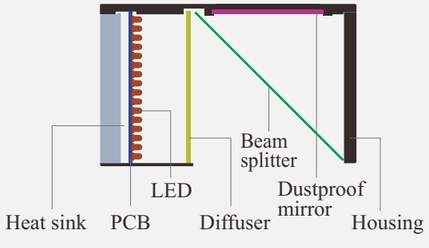
- 50 → Width
- COH → High Precision Coaxial Light Source
- OPT → Brand name

Customizable Items

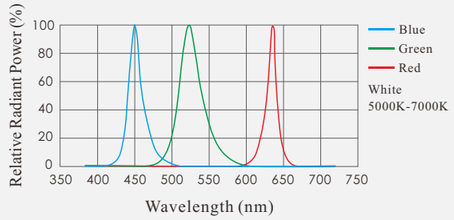


Color, Mounting, Connector, Size, Intensity, Uniformity

Section Structure Drawing



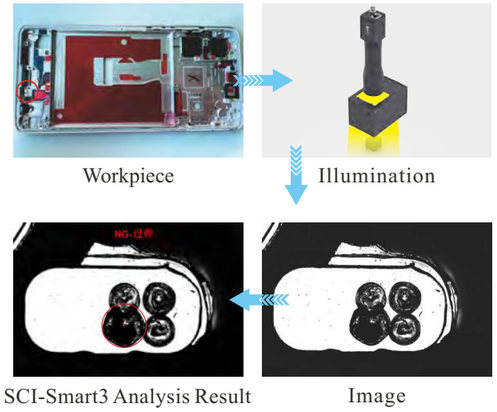
Spectrum Chart



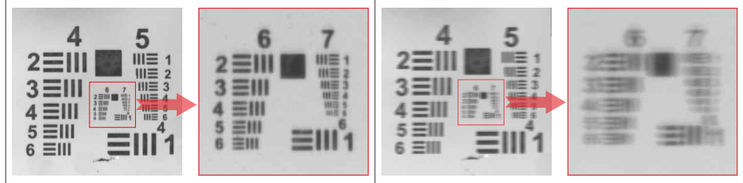
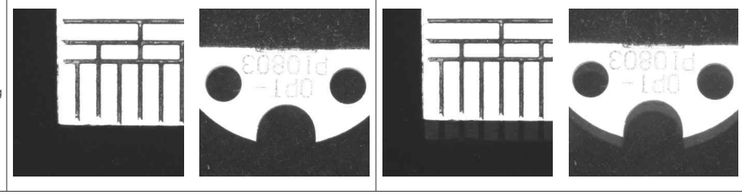
Note: The data is for reference only.

Application Cases

- Inspection of small parts for spot weld defects in cell phones.



Series features

	COH60-W	CO60-W	Imaging configuration	Description
Clarity			Camera: OPT-CM600-GL-04 2.4 μm, 3072x2048 pixel Lens: 2x telecentric lens FOV: 3.68 x 2.46 mm² Resolution: 1.2μm/pixel WD: 110mm WD light source: 30mm	By using a telecentric lens and with a pixel resolution of 1.2μm, you still get a sharp image with the COH series.
Ghosting			Camera: OPT-CM600-GL-04 2.4 μm, 3072x2048 pixel Lens: 75mm, 5MP Adapter: 15mm Aperture: 4 FOV: 27 x 18 mm² WD: 300mm WD light source: 30mm	When testing highly reflective workpieces, the ghost image of the COH series is greatly reduced and there is no obvious double image.

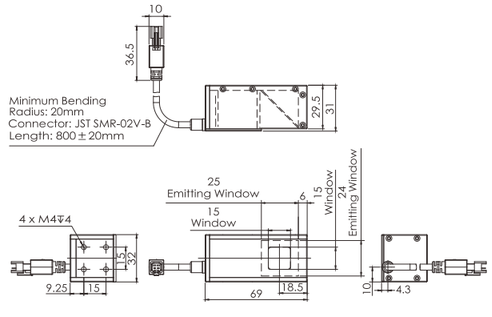
Model Table

No.	Model	* Power ●	* Power ○●●	Recommended controller
1	OPT-COH30	1.4W@24V	1.8W@24V	OPT-DPA2024E
2	OPT-COH40	2.0W@24V	3.0W@24V	
3	OPT-COH50	3.4W@24V	5.4W@24V	
4	OPT-COH60	4.7W@24V	7.6W@24V	
5	OPT-COH70	7.2W@24V	10.5W@24V	
6	OPT-COH80	8.0W@24V	12.0W@24V	

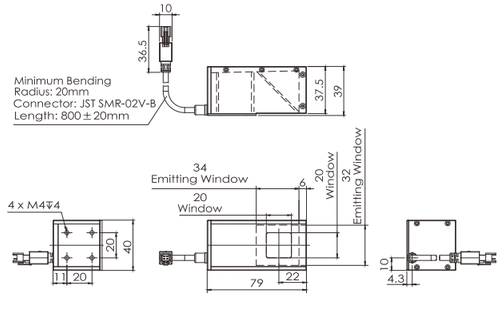
* Note: The data is for reference only.

Dimensions (mm)

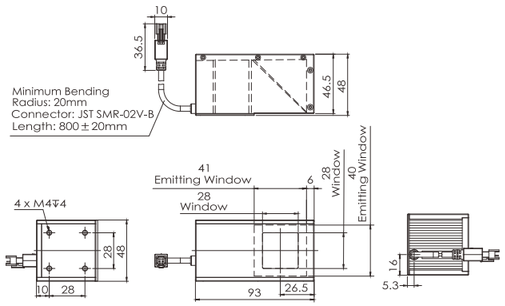
1. OPT-COH30



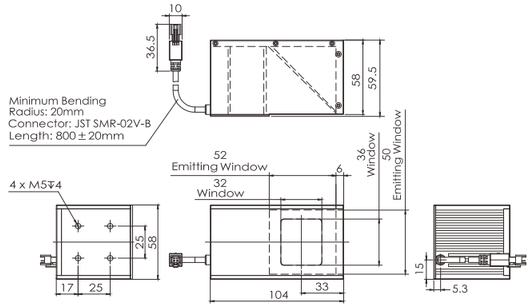
2. OPT-COH40



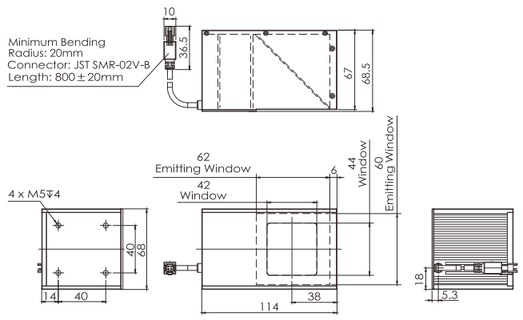
3. OPT-COH50



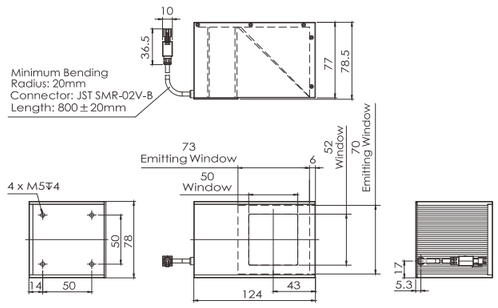
4. OPT-COH60



5. OPT-COH70



6. OPT-COH80



High Intensity Coaxial Lights OPT-COG Series



Product Features

Main Features

- Four times higher intensity than OPT-CO series
- Heat sink and fan for cooling
- Viewing window and beam splitter are customized.

Application Cases

- Detection of defects on reflective surfaces
- PCB OCR and pattern inspection
- Positioning of markers
- QR code reading

Selection Guide

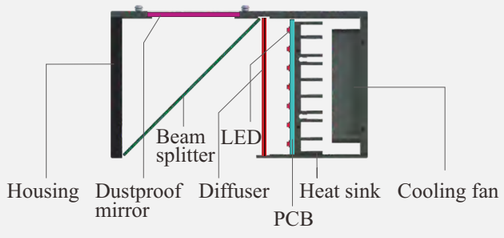
OPT-COG 50
- 50 → Width
- COG → High intensity coaxial light
- OPT → Brand name

Customizable Items

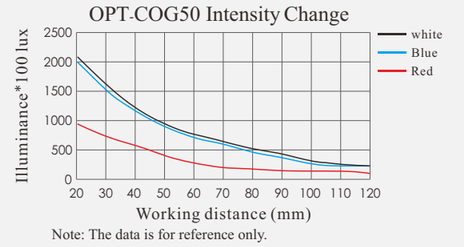


Color
Mounting
Connector
Size
View window

Section Structure Drawing



Spectrum Chart



Note: The data is for reference only.

Application Cases

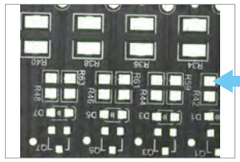
PCB pad positioning



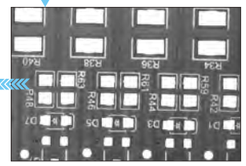
Workpiece



Illumination



SCI-Smart3 Analysis Result



Image

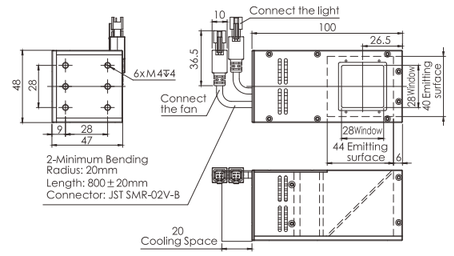
Model Table

No.	Model	∗ Power 🔴	∗ Power ⚪🔵🟢	Recommended controller
1	OPT-COG50	24W@24V	15.1W@24V	OPT-AP1024F
2	OPT-COG80	48W@2A	48W@2A	OPT-DPA6024

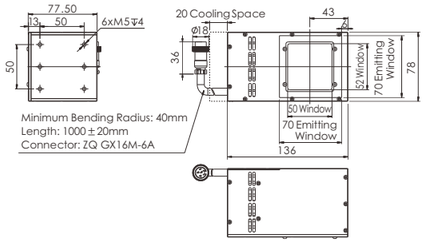
∗ Note: The data is for reference only.

Dimensions (mm)

1.OPT-COG50



2.OPT-COG80



Dome Lights OPT-RID Series

Patented



Product Features

Main Features

- Suitable for eliminating interference caused by uneven surface
- Combined with OPT-RI Series and OPT-CO Series to achieve better detection

Application Cases

- Curved and uneven surfaces inspection
- Highly reflective metal and glass surfaces inspection

Selection Guide

OPT-RID180
- 180 → Diffuser diameter
- RID → Dome light
- OPT → Brand name

Customizable Items





Size



View window

Combined with OPT-CO Series

Complemented by coaxial lights, the camera bore is also well illuminated, which would result in darkening in the center of highly reflective workpieces.



Without facula | With facula

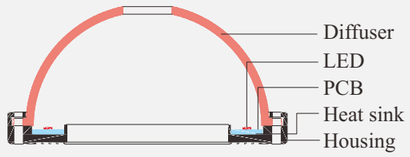
Combined with OPT-RI Series

Combined with ring lights can increase the brightness or create special lighting characteristics.

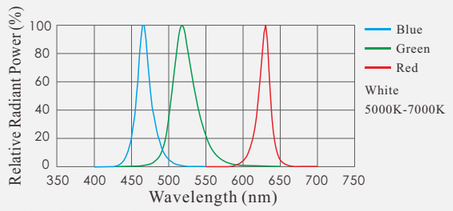


Use image RID gray value individually | Use image gray value combined with RI Series

Section Structure Drawing



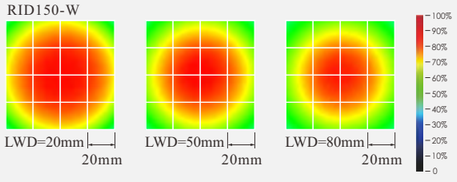
Spectrum Chart



Note: The data is for reference only.

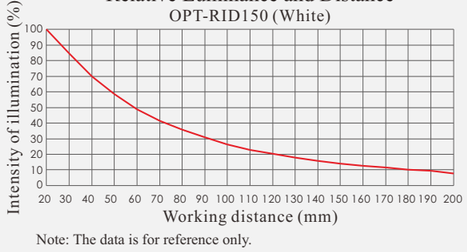
Series features

Relative Radiation Luminance Distribution



Relative Luminance and Distance

OPT-RID150 (White)



Note: The data is for reference only.

Application Cases

OCR on calculators



Workpiece | Illumination | Image | SCI-Smart3 Analysis Result

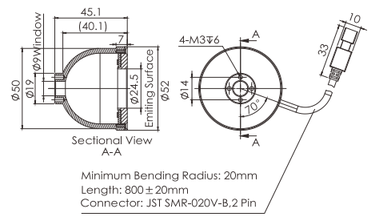
Model Table

No.	Model	∗ Power 🔴	∗ Power ⚪	∗ Power 🟢	∗ Power 🔵	Recommended controller
1	OPT-RID52	2.9W@24V	3.1W@24V	2.6W@24V	3.1W@24V	OPT-DPA2024E
2	OPT-RID80	5.1W@24V	5.8W@24V	4.8W@24V	5.8W@24V	
3	OPT-RID100	6.5W@24V	7.9W@24V	6.5W@24V	7.7W@24V	
4	OPT-RID150	14.2W@24V	14.2W@24V	11.8W@24V	13.2W@24V	
5	OPT-RID180	15.4W@24V	16.8W@24V	15.6W@24V	17.5W@24V	
6	OPT-RID240	22.1W@24V	25.2W@24V	17.8W@24V	26.6W@24V	
7	OPT-RID350	49.5W@2.2A	57W@2.5A	50.2W@2.2A	49.5W@2.2A	OPT-DPA6024

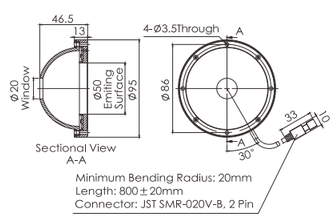
∗ Note: The data is for reference only.

Dimensions (mm)

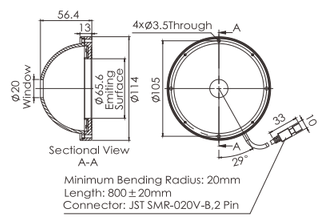
1.OPT-RID52



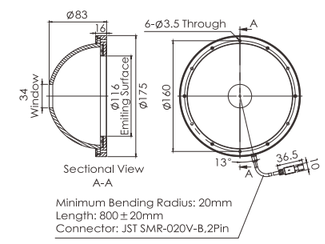
2.OPT-RID80



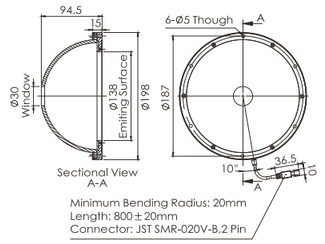
3.OPT-RID100



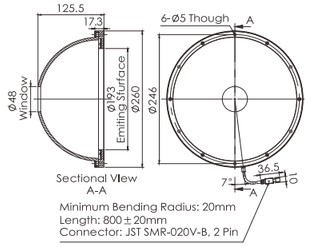
4.OPT-RID150



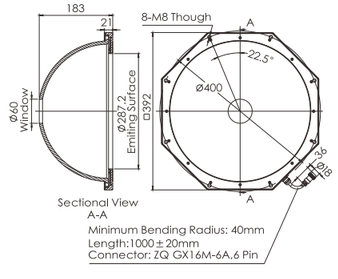
5.OPT-RID180



6.OPT-RID240



7.OPT-RID350



High Intensity Line Scan Lights OPT-LSS Series



Product Features

Main Features

- Illuminance up to 2000 kLux (WD=50mm)
- Low divergence angle, suitable for applications with large working distance
- Diffuser film optional, suitable for highly reflected workpiece illumination, or used as backlight

Application Cases

- Ultra high speed line scan camera inspection
- Long distance line scan inspection
- High-speed print inspection

Selection Guide

OPT-LSS104

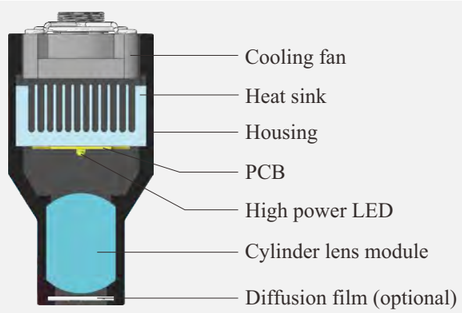
- Length
- Ultra high intensity line scan light
- Brand name

Customizable Items

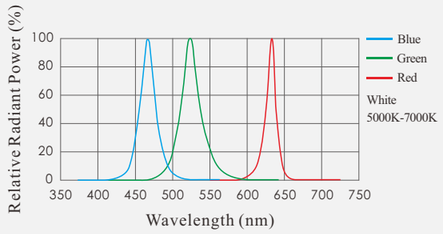


Color, Mounting, Connector, Size, Heat dissipation

Section Structure Drawing



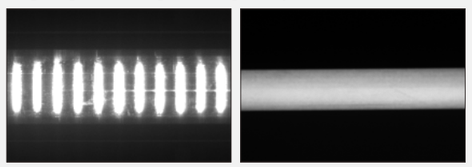
Spectrum Chart



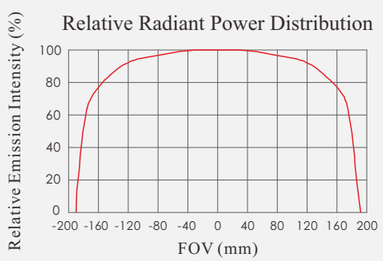
Note: The data is for reference only.

Series features

Surface reflective workpiece can use diffusion film to help improve image homogeneity.

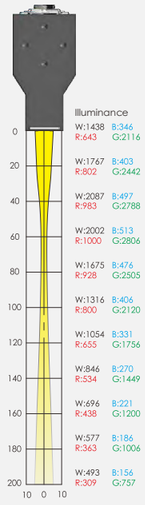


Without diffusion film | With diffusion film



Note: The data above is tested with OPT-LSS398-W at 50mm WD. It is for reference only.

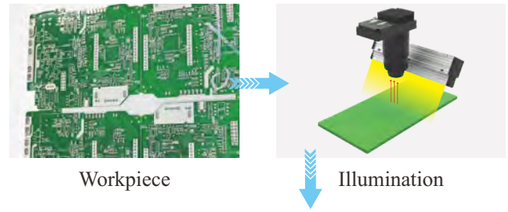
Light Spot and Illuminance at Different WDs



Notes: 1. Distance and width unit (mm)
Illuminance unit (kLux)
2. Models below are used in the test,
OPT-LSS272-W
OPT-LSS290-R
OPT-LSS272-B
OPT-LSS272-G
3. The test data is for reference only.

Application Cases

OCR for PCB



Model Table

No.	Model	Color	* Power	Total Length A (mm)	Emitting Length B (mm)	Standard light source cable	Recommended controller
1	OPT-LSS104	○ ● ●	33.6W@1.4A	104	86	OPT-DGYX1M-6P-S-6A	OPT-DPA6024
2	OPT-LSS146	○ ● ●	50.4W@2.1A	146	128		
3	OPT-LSS188	○ ● ●	67.2W@2.8A	188	170		
4	OPT-LSS230	○ ● ●	84W@3.5A	230	212		
5	OPT-LSS272	○ ● ●	100.8W@4.2A	272	254		
6	OPT-LSS314	○ ● ●	117.6W@4.9A	314	296		
7	OPT-LSS356	○ ● ●	134.4W@5.6A	356	338		
8	OPT-LSS398	○ ● ●	151.2W@6.3A	398	380	OPT-DGYX1M-6P-S-20A	OPT-DPA10024
9	OPT-LSS440	○ ● ●	168W@7A	440	422		
10	OPT-LSS482	○ ● ●	184.8W@7.7A	482	464		
11	OPT-LSS524	○ ● ●	201.6W@8.4A	524	506		
12	OPT-LSS566	○ ● ●	218.4W@9.1A	566	548		
13	OPT-LSS608	○ ● ●	235.2W@9.8A	608	590		
14	OPT-LSS650	○ ● ●	252W@10.5A	650	632		OPT-DPA20024
15	OPT-LSS692	○ ● ●	268.8W@11.2A	692	674		
16	OPT-LSS128	●	33.6W@1.4A	128	110	OPT-DGYX1M-6P-S-6A	OPT-DPA6024
17	OPT-LSS182	●	50.4W@2.1A	182	164		
18	OPT-LSS236	●	67.2W@2.8A	236	218		

Model Table

No.	Model	Color	＊Power	Total Length A (mm)	Emitting Length B (mm)	Standard light source cable	Recommended controller
19	OPT-LSS290	●	84W@3.5A	290	272	OPT-DGYX1M-6P-S-6A	OPT-DPA6024
20	OPT-LSS344	●	100.8W@4.2A	344	326		
21	OPT-LSS398	●	117.6W@4.9A	398	380		
22	OPT-LSS452	●	134.4W@5.6A	452	434		
23	OPT-LSS506	●	151.2W@6.3A	506	488	OPT-DGYX1M-6P-S-20A	OPT-DPA10024
24	OPT-LSS560	●	168W@7A	560	542		
25	OPT-LSS614	●	184.8W@7.7A	614	596		
26	OPT-LSS668	●	201.6W@8.4A	668	650		
27	OPT-LSS722	●	218.4W@9.1A	722	704		

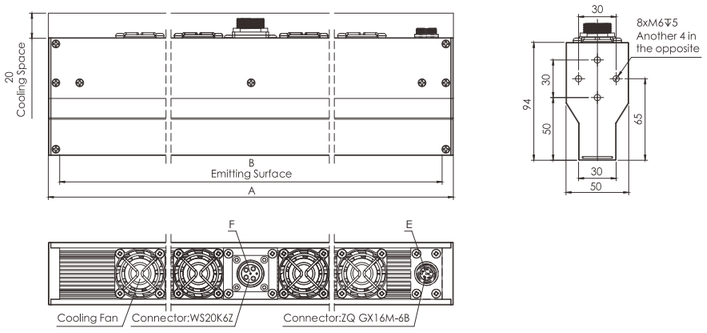
Notes: 1. ＊The data above is for reference only.
2. Light cables are required. Please refer to P252 for more details.

Dimensions (mm)

Customizable size: Lengths of white, blue and green lights are increased by multiples of 42mm; length of red lights is increased by multiples of 54mm.

W/G/B: A=42n+20, B=42n+2.

R: A=54n+20, B=54n+2.



＊1.Rated current ≤ 6A: only Port E available
＊2.Rated current > 6A: only Port F available

Crossing Line Scan Lights OPT-LSSX Series New



Product Features

Main Features

- Special optical design with cross illumination on two sides, which can detect the damage of a workpiece in the running direction.
- Compatible with inspection of mirror surfaces and matte surfaces.

Application Cases

- Transparent glass objects defect detection
- Scratch detection on surface of metal objects
- Aluminum foil objects surface defect detection

Selection Guide

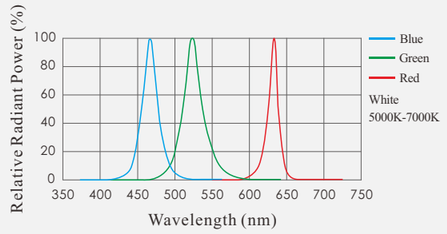
OPT-LSSX 104
- 104 → Length
- LSSX → Crossing Line Scan Lights
- OPT → Brand name

Customizable Items



Color, Mounting, Connector, Size, Heat dissipation

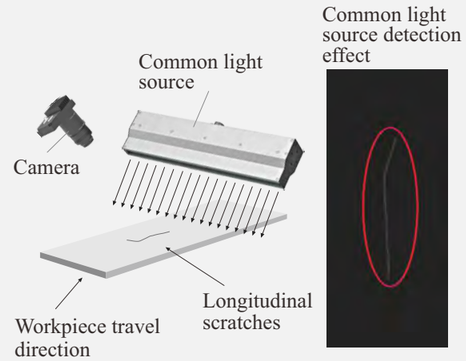
Spectrum Chart



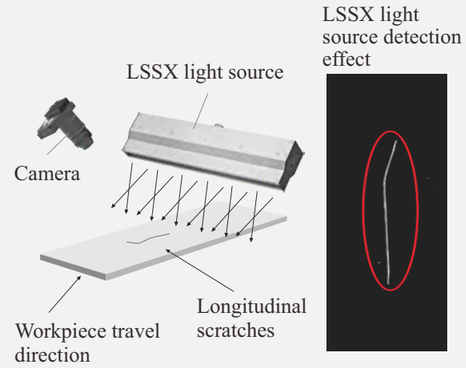
Note: The data is for reference only.

Series features

Comparison of effects between common light source and LSSX light source



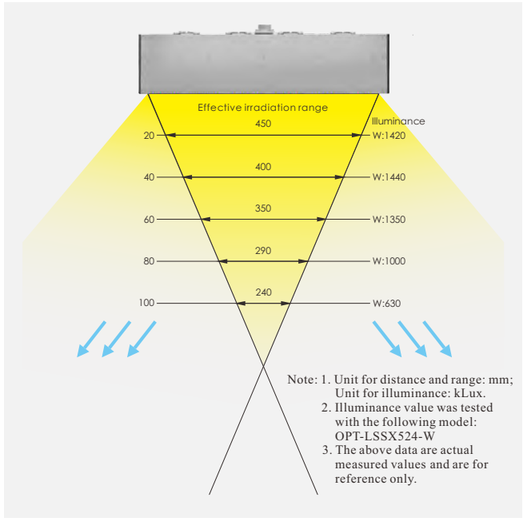
Note: Common light sources have difficulty highlighting longitudinal scratches.



Note: Using the LSSX light source can highlight the longitudinal scratches much more clearly.

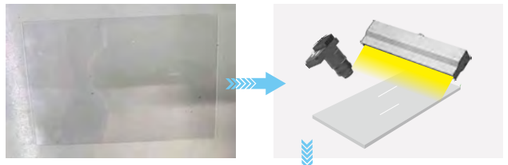
No.	Model	Exposure ranges for different working distances				
		20	40	60	80	100
1	OPT-LSSX104	30				
2	OPT-LSSX146	70	20			
3	OPT-LSSX188	110	60			
4	OPT-LSSX230	160	100	40		
5	OPT-LSSX272	200	150	100	40	
6	OPT-LSSX314	240	180	130	70	
7	OPT-LSSX356	280	230	170	120	60
8	OPT-LSSX398	320	270	210	160	100
9	OPT-LSSX440	370	310	250	200	140
10	OPT-LSSX482	410	350	300	240	180
11	OPT-LSSX524	450	400	350	290	240
12	OPT-LSSX566	490	440	380	320	270
13	OPT-LSSX608	530	480	420	370	310
14	OPT-LSSX650	580	520	460	410	350
15	OPT-LSSX692	620	560	510	450	390
16	OPT-LSSX128	50				
17	OPT-LSSX182	110	50			
18	OPT-LSSX236	160	110	50		
19	OPT-LSSX290	220	160	100	50	
20	OPT-LSSX344	270	210	160	100	50
21	OPT-LSSX398	320	270	210	160	100
22	OPT-LSSX452	380	320	270	210	150
23	OPT-LSSX506	430	380	320	260	210
24	OPT-LSSX560	490	430	370	320	260
25	OPT-LSSX614	540	480	430	370	320
26	OPT-LSSX668	590	540	480	430	370
27	OPT-LSSX722	650	590	540	480	420

Note: The data are simulated values for reference purpose, differences from actual values may occur.



Application Cases

Detection of scratches in transparent glass



SCI-Smart3 Analysis Result　　Image

Model Table

No.	Model	Color	* Power	Total Length A (mm)	Emitting Length B (mm)	Standard light source cable	Recommended controller
1	OPT-LSSX104	○ ● ●	33.6W@1.4A	104	86	OPT-DGYX1M-6P-S-6A	OPT-DPA6024
2	OPT-LSSX146	○ ● ●	50.4W@2.1A	146	128		
3	OPT-LSSX188	○ ● ●	67.2W@2.8A	188	170		
4	OPT-LSSX230	○ ● ●	84W@3.5A	230	212		
5	OPT-LSSX272	○ ● ●	100.8W@4.2A	272	254		
6	OPT-LSSX314	○ ● ●	117.6W@4.9A	314	296		
7	OPT-LSSX356	○ ● ●	134.4W@5.6A	356	338		
8	OPT-LSSX398	○ ● ●	151.2W@6.3A	398	380	OPT-DGYX1M-6P-S-20A	OPT-DPA10024
9	OPT-LSSX440	○ ● ●	168W@7A	440	422		
10	OPT-LSSX482	○ ● ●	184.8W@7.7A	482	464		

Model Table

No.	Model	Color	* Power	Total Length A (mm)	Emitting Length B (mm)	Standard light source cable	Recommended controller
11	OPT-LSSX524	○ ● ●	201.6W@8.4A	524	506	OPT-DGYX1M-6P-S-20A	OPT-DPA10024
12	OPT-LSSX566	○ ● ●	218.4W@9.1A	566	548		
13	OPT-LSSX608	○ ● ●	235.2W@9.8A	608	590		
14	OPT-LSSX650	○ ● ●	252W@10.5A	650	632		OPT-DPA20024
15	OPT-LSSX692	○ ● ●	268.8W@11.2A	692	674		
16	OPT-LSSX128	●	33.6W@1.4A	128	110	OPT-DGYX1M-6P-S-6A	OPT-DPA6024
17	OPT-LSSX182	●	50.4W@2.1A	182	164		
18	OPT-LSSX236	●	67.2W@2.8A	236	218		
19	OPT-LSSX290	●	84W@3.5A	290	272		
20	OPT-LSSX344	●	100.8W@4.2A	344	326		
21	OPT-LSSX398	●	117.6W@4.9A	398	380		
22	OPT-LSSX452	●	134.4W@5.6A	452	434		
23	OPT-LSSX506	●	151.2W@6.3A	506	488	OPT-DGYX1M-6P-S-20A	OPT-DPA10024
24	OPT-LSSX560	●	168W@7A	560	542		
25	OPT-LSSX614	●	184.8W@7.7A	614	596		
26	OPT-LSSX668	●	201.6W@8.4A	668	650		
27	OPT-LSSX722	●	218.4W@9.1A	722	704		

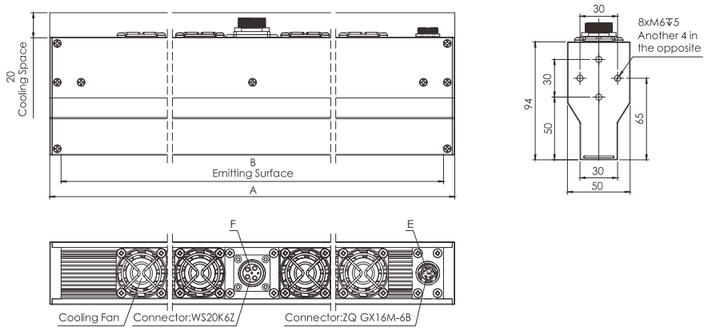
Notes: 1. * The data above is for reference only.
2. Light cables are required. Please refer to P252 for more details.

Dimensions (mm)

Customizable size: Lengths of white, blue and green lights are increased by multiples of 42mm; length of red lights is increased by multiples of 54mm.

W/G/B: A=42n+20, B=42n+2.

R: A=54n+20, B=54n+2.



*1.Rated current ≤ 6A: only Port E available
*2.Rated current > 6A: only Port F available

High Intensity Coaxial Line Scan Lights OPT-LSSC Series



Product Features

Main Features

- Higher intensity compared with OPT-LSGC
- Compatible with the inspection of both reflective and matt surfaces
- Highly directional illumination

Application Cases

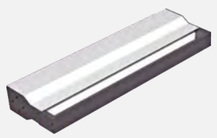
- Illumination for line scan cameras
- Film and glass surface inspection; foreign objects detection
- High-speed print inspection

Selection Guide

OPT-LSSC104

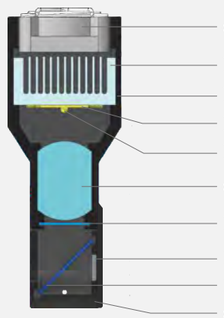
- 104 → Length
- LSSC → Ultra high intensity coaxial line scan light
- OPT → Brand name

Customizable Items

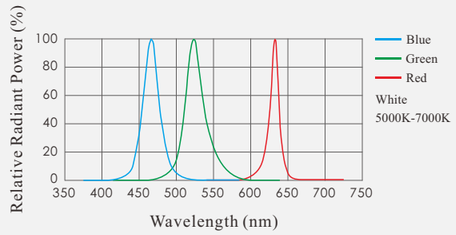


Color | Mounting | Size | Heat dissipation

Section Structure Drawing



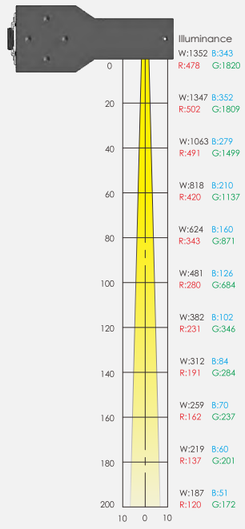
Spectrum Chart



Note: The data is for reference only.

Series features

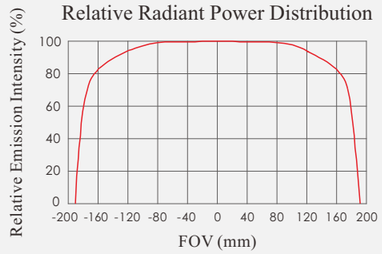
Light Spot and Illuminance at Different WDs



Notes:

1. Unit for distance and range: mm; Unit for illuminance: kLux.
2. Models below are used in the test,
   OPT-LSSC272-W
   OPT-LSSC290-R
   OPT-LSSC272-B
   OPT-LSSC272-G
3. The test data is for reference only.

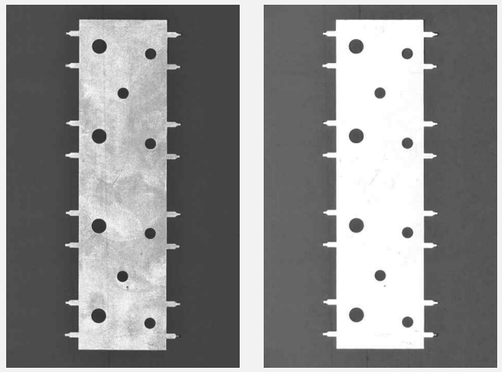
Relative Radiant Power Distribution



Note: The data above is tested with OPT-LSSC398-W at 30mm WD. It is for reference only.

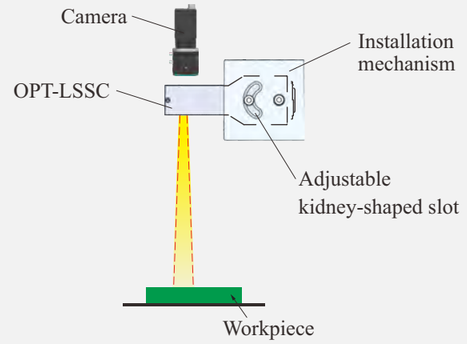
Detection effect comparison between OPT-LSGC Series and OPT-LSSC Series

LSCG detection effect | LSSC detection effect



Note: The image brightness with LSCG is not enough because there are many bright and dark disturbances on the inspected workpiece surface. As soon as the brightness is increased with LSSC, the disturbances on the workpiece surface are eliminated.

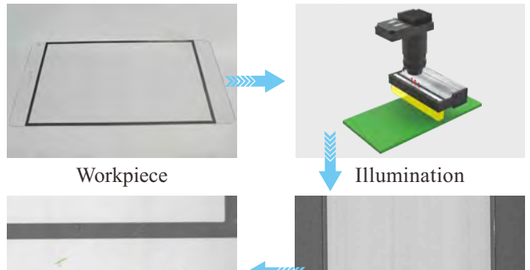
Suggested installation way



It is suggested that the installation mechanism be equipped with adjustable angle to facilitate the calibration of the spot position.

Application Cases

Scratches detection on transparent glass surface



Workpiece | Illumination

SCI-Smart3 Analysis Result | Image

Model Table

No.	Model	Color	* Power	Total Length A (mm)	Emitting Length B (mm)	Standard light source cable	Recommended controller
1	OPT-LSSC104	○ ● ●	33.6W@1.4A	104	86	OPT-DGYX1M-6P-S-6A	OPT-DPA6024
2	OPT-LSSC146	○ ● ●	50.4W@2.1A	146	128		
3	OPT-LSSC188	○ ● ●	67.2W@2.8A	188	170		
4	OPT-LSSC230	○ ● ●	84W@3.5A	230	212		
5	OPT-LSSC272	○ ● ●	100.8W@4.2A	272	254		
6	OPT-LSSC314	○ ● ●	117.6W@4.9A	314	296		
7	OPT-LSSC356	○ ● ●	134.4W@5.6A	356	338		
8	OPT-LSSC398	○ ● ●	151.2W@6.3A	398	380	OPT-DGYX1M-6P-S-20A	OPT-DPA10024
9	OPT-LSSC440	○ ● ●	168W@7A	440	422		
10	OPT-LSSC482	○ ● ●	184.8W@7.7A	482	464		
11	OPT-LSSC524	○ ● ●	201.6W@8.4A	524	506		

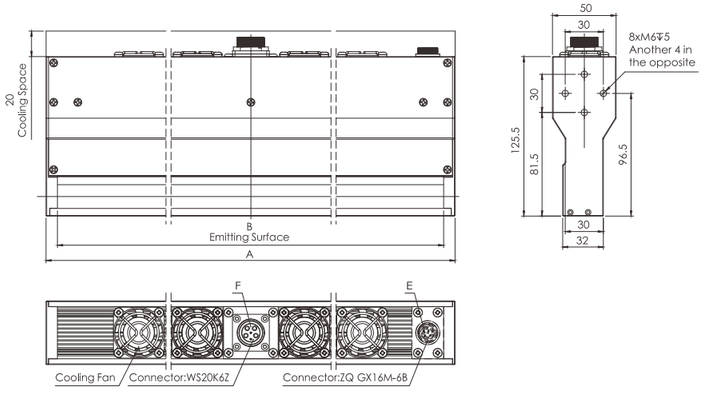
Model Table

No.	Model	Color	* Power	Total Length A (mm)	Emitting Length B (mm)	Standard light source cable	Recommended controller
12	OPT-LSSC566	○ 🔵 🟢	218.4W@9.1A	566	548	OPT-DGYX1M-6P-S-20A	OPT-DPA10024
13	OPT-LSSC608	○ 🔵 🟢	235.2W@9.8A	608	590		
14	OPT-LSSC128	🔴	33.6W@1.4A	128	110	OPT-DGYX1M-6P-S-6A	OPT-DPA6024
15	OPT-LSSC182	🔴	50.4W@2.1A	182	164		
16	OPT-LSSC236	🔴	67.2W@2.8A	236	218		
17	OPT-LSSC290	🔴	84W@3.5A	290	272		
18	OPT-LSSC344	🔴	100.8W@4.2A	344	326		
19	OPT-LSSC398	🔴	117.6W@4.9A	398	380		
20	OPT-LSSC452	🔴	134.4W@5.6A	452	434		
21	OPT-LSSC506	🔴	151.2W@6.3A	506	488	OPT-DGYX1M-6P-S-20A	OPT-DPA10024
22	OPT-LSSC560	🔴	168W@7A	560	542		
23	OPT-LSSC614	🔴	184.8W@7.7A	614	596		

Notes: 1. The data above is for reference only.
2. Light cables are required. Please refer to P252 for more details.

Dimensions (mm)

Customizable size: Lengths of white, blue and green lights are increased by multiples of 42mm; length of red lights is increased by multiples of 54mm.
W/G/B: A=42n+20, B=42n+2.
R: A=54n+20, B=54n+2.



* 1.Rated current ≤ 6A: only Port E available
* 2.Rated current > 6A: only Port F available

Passive Cooling Line Scan Lights OPT-LSNS/OPT-LSNL Series New



Product Features

Main Features

- Fanless design which are quiet and stable, suitable for environment with special requirements for noise, vibration, and airflow.
- LSNS series has a max illuminance value of 1 million Lux (WD=20mm), while the LSNL series has a max illuminance value of 1.1 million Lux (WD=50mm).

Application Cases

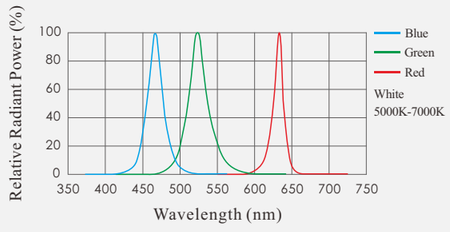
- Inspection for PCB
- Inspection for Li-ion pole piece
- Inspection for printing
- Inspection for display screen

Customizable Items



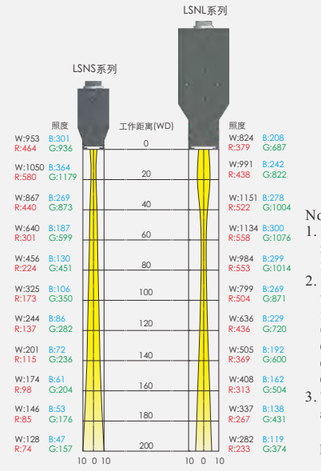
Color
Mounting
Connector
Size
Heat dissipation

Spectrum Chart



Note: The data is for reference only.

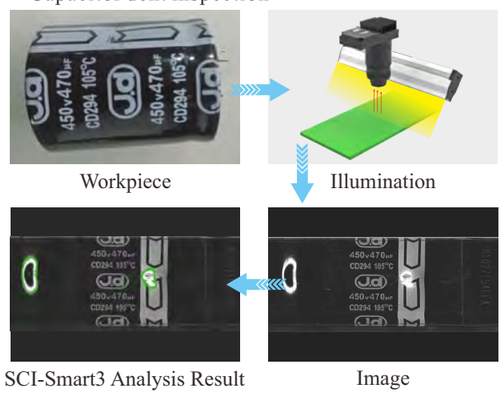
Series features



Note:
1. Unit for distance and range: mm; Unit for illuminance: kLux.
2. Illuminance value was tested with the following models:
OPT-LSNS272-W/B/G
OPT-LSNL272-W/B/G
OPT-LSNS290-R
OPT-LSNL290-R
3. The above data are actual measured values and only for reference purpose.

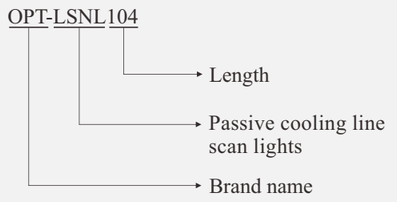
Application Cases

- Capacitor dent inspection

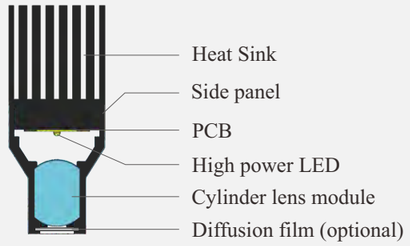


OPT-LSNL Passive Cooling Line Scan Lights

Selection Guide



Section Structure Drawing



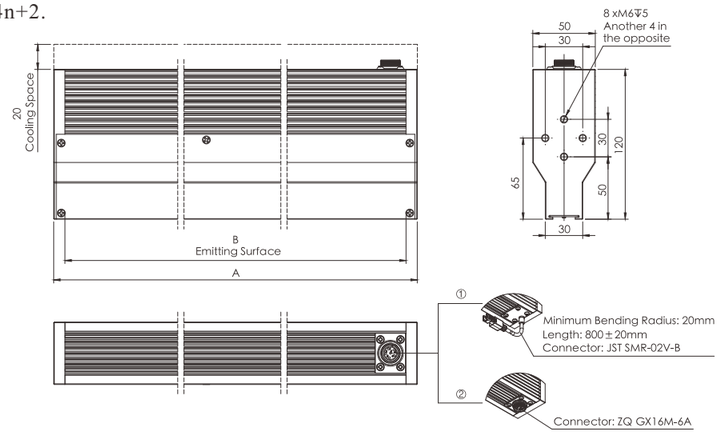
Model Table

No.	Model	Color	* Power	Total Length A (mm)	Emitting Length B (mm)	Connector port	Standard light source cable	Recommended controller
1	OPT-LSNL104	○ ● ●	14.4W@24V	104	86	①	Provided within light source.	OPT-DPA2024E
2	OPT-LSNL146	○ ● ●	21.6W@24V	146	128			
3	OPT-LSNL188	○ ● ●	28.8W@24V	188	170			
4	OPT-LSNL230	○ ● ●	36W@24V	230	212			
5	OPT-LSNL272	○ ● ●	43.2W@24V	272	254			
6	OPT-LSNL314	○ ● ●	50.4W@2.1A	314	296	②	OPT-DGYX1M-6P-S-6A	OPT-DPA6024E
7	OPT-LSNL356	○ ● ●	57.6W@2.4A	356	338			
8	OPT-LSNL398	○ ● ●	64.8W@2.7A	398	380			
9	OPT-LSNL440	○ ● ●	72W@3A	440	422			
10	OPT-LSNL482	○ ● ●	79.2W@3.3A	482	464			
11	OPT-LSNL524	○ ● ●	86.4W@3.6A	524	506			
12	OPT-LSNL566	○ ● ●	93.6W@3.9A	566	548			
13	OPT-LSNL608	○ ● ●	100.8W@4.2A	608	590			
14	OPT-LSNL650	○ ● ●	108W@4.5A	650	632			
15	OPT-LSNL692	○ ● ●	115.2W@4.8A	692	674			
16	OPT-LSNL128	●	16.8W@24V	128	110	①	Provided within light source.	OPT-DPA2024E
17	OPT-LSNL182	●	25.2W@24V	182	164			
18	OPT-LSNL236	●	33.6W@24V	236	218			
19	OPT-LSNL290	●	42W@24V	290	272			
20	OPT-LSNL344	●	50.4W@2.1A	344	326	②	OPT-DGYX1M-6P-S-6A	OPT-DPA6024E
21	OPT-LSNL398	●	57.6W@2.4A	398	380			
22	OPT-LSNL452	●	67.2W@2.8A	452	434			
23	OPT-LSNL506	●	74.4W@3.1A	506	488			
24	OPT-LSNL560	●	84W@3.5A	560	542			
25	OPT-LSNL614	●	91.2W@3.8A	614	596			
26	OPT-LSNL668	●	100.8W@4.2A	668	650			
27	OPT-LSNL722	●	108W@4.5A	722	704			

Notes: 1. * The data above is for reference only.
2. Light cables are required. Please refer to P252 for more details.

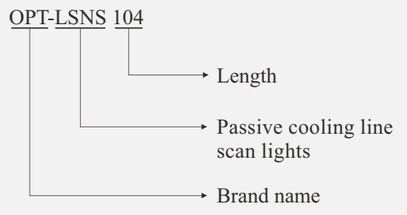
Dimensions (mm)

Customizable size: Lengths of white, blue and green lights are increased by multiples of 42mm; length of red lights is increased by multiples of 54mm.
W/G/B: A=42n+20, B=42n+2.
R: A=54n+20, B=54n+2.

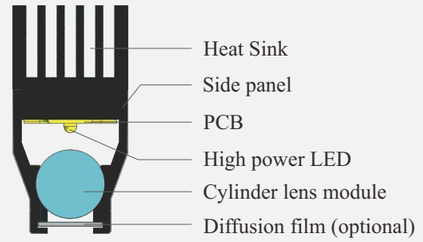


OPT-LSNS Passive Cooling Line Scan Lights

Selection Guide



Section Structure Drawing



Model Table

No.	Model	Color	* Power	Total Length A (mm)	Emitting Length B (mm)	Connector port	Standard light source cable	Recommended controller
1	OPT-LSNS104	○ ● ●	9.6W@24V	104	86	①	Provided within light source.	OPT-DPA2024E
2	OPT-LSNS146	○ ● ●	12W@24V	146	128			
3	OPT-LSNS188	○ ● ●	16.8W@24V	188	170			
4	OPT-LSNS230	○ ● ●	21.6W@24V	230	212			
5	OPT-LSNS272	○ ● ●	24W@24V	272	254			
6	OPT-LSNS314	○ ● ●	31.2W@24V	314	296			
7	OPT-LSNS356	○ ● ●	33.6W@24V	356	338			
8	OPT-LSNS398	○ ● ●	38.4W@24V	398	380			
9	OPT-LSNS440	○ ● ●	43.2W@24V	440	422			
10	OPT-LSNS482	○ ● ●	48W@2A	482	464	②	OPT-DGYX1M-6P-S-6A	OPT-DPA6024E
11	OPT-LSNS524	○ ● ●	52.8W@2.2A	524	506			
12	OPT-LSNS566	○ ● ●	55.2W@2.3A	566	548			
13	OPT-LSNS608	○ ● ●	60W@2.5A	608	590			

Model Table

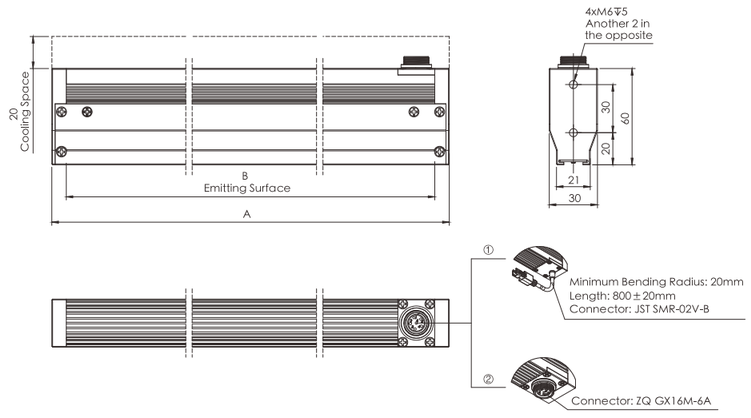
No.	Model	Color	* Power	Total Length A (mm)	Emitting Length B (mm)	Connector port	Standard light source cable	Recommended controller
14	OPT-LSNS650	○ 🔵 🟢	64.8W@2.7A	650	632	②	OPT-DGYX1M-6P-S-6A	OPT-DPA6024E
15	OPT-LSNS692	○ 🔵 🟢	69.6W@2.9A	692	674			
16	OPT-LSNS128	🔴	9.6W@24V	128	110	①	Provided within light source.	OPT-DPA2024E
17	OPT-LSNS182	🔴	12W@24V	182	164			
18	OPT-LSNS236	🔴	16.8W@24V	236	218			
19	OPT-LSNS290	🔴	21.6W@24V	290	272			
20	OPT-LSNS344	🔴	24W@24V	344	326			
21	OPT-LSNS398	🔴	31.2W@24V	398	380			
22	OPT-LSNS452	🔴	33.6W@24V	452	434			
23	OPT-LSNS506	🔴	38.4W@24V	506	488			
24	OPT-LSNS560	🔴	43.2W@24V	560	542			
25	OPT-LSNS614	🔴	48W@2A	614	596	②	OPT-DGYX1M-6P-S-6A	OPT-DPA6024E
26	OPT-LSNS668	🔴	52.8W@2.2A	668	650			
27	OPT-LSNS722	🔴	55.2W@2.3A	722	704			

Notes: 1. *The data above is for reference only.
2. Light cables are required. Please refer to P252 for more details.

Dimensions (mm)

Customizable size: Lengths of white, blue and green lights are increased by multiples of 42mm; length of red lights is increased by multiples of 54mm.

W/G/B: A=42n+20, B=42n+2.
R: A=54n+20, B=54n+2.



High Intensity Spot Lights OPT-PIG Series



Product Features

Main Features

- Efficient heat dissipation design for effective control of the light source temperature
- Equipped with the special light-guiding tube (up to 1400 kLux at WD of 20mm)
- Combined with concentrating module as front light

Application Cases

- Capacitor surface inspection
- Screw surface inspection
- Pitch gauging for connectors
- Solder joints inspection

Selection Guide

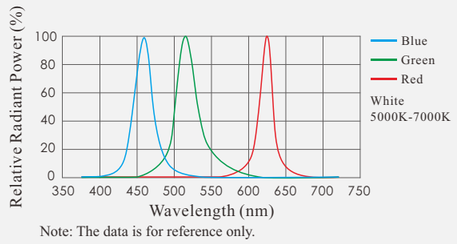
OPT-PIG0803
- Power
- Emitting surface diameter
- High intensity spot light
- Brand name

Customizable Items



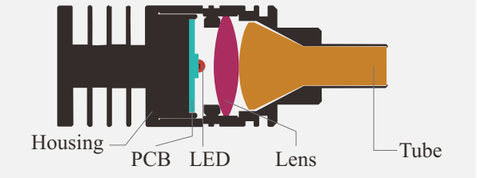
Color
Mounting
Size
Heat dissipation

Spectrum Chart



Note: The data is for reference only.

Section Structure Drawing



Application Cases

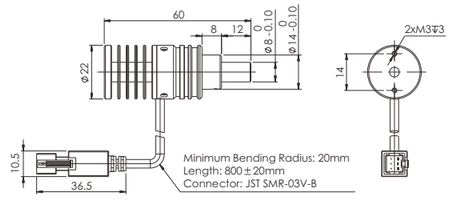
- Surface defects detection for fingerprint scanners



Model Table

No.	Model	*Power 🔴	*Power ○🟢🔵	Recommended controller
1	OPT-PIG0803	1.8W@0.7A	2.3W@0.7A	OPT-DPA2005E

Dimensions (mm)

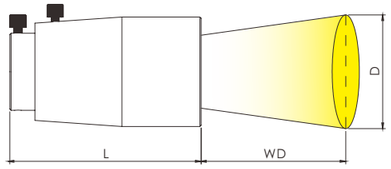


Accessory

OPT-PPIG27 Concentrating Module



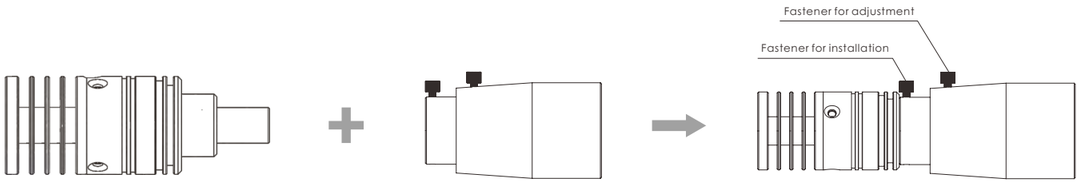
Application



Parameters (mm)										
Working distance (WD)	100	200	300	400	500	600	700	800	900	1000
Accessory length (L)	67	64	62	61	60.7	60.4	60	59.8	59.5	59
＊Spot diameter (D)	15	30	50	67	85	105	120	140	160	180

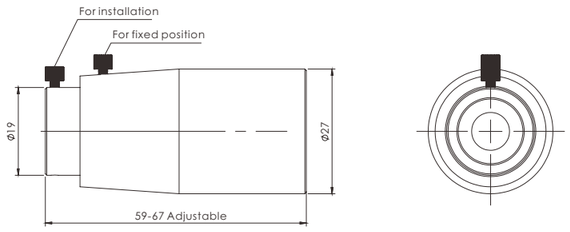
Notes: 1.The data above is tested with OPT-PIG0803 mounted with the module.
2. Recommended working distance: 100-000mm
＊3. The test data is for reference only.

Mounting



Dimensions (mm)

1.OPT-PPIG27



Collimated Spot Lights

OPT-LDS Series



Product Features

Main Features

- Long working distance, large effective illumination area
- Customized working distance and lighting area

Application Cases

- Outline gauging
- Surface scratches detection

Selection Guide

OPT -LDS50
- Outer diameter
- Collimated spot light
- Brand name

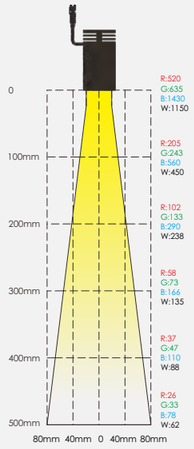
Customizable Items



Color | Mounting | Connector | Size

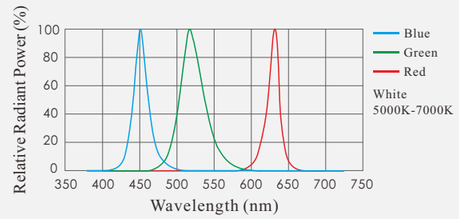
Series features

Light Spot and Illuminance at Different WDs



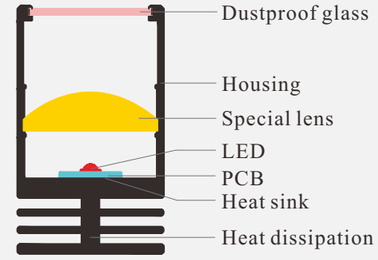
Note: The data is tested with OPT-LDS50 (Unit: 100Lux).
It is for reference only.

Spectrum Chart



Note: The data is for reference only.

Section Structure Drawing

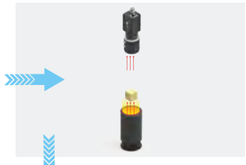


Application Cases

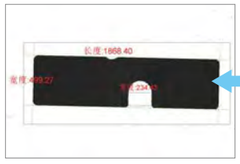
- Gauging for metal parts



Workpiece



Illumination



SCI-Smart3 Analysis Result



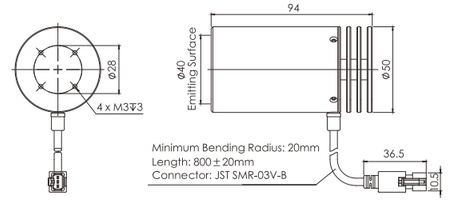
Image

Model Table

Model	＊Power○	＊Power●	＊Power●	＊Power●	Recommended controller
OPT-LDS50	3.2W@1A	2.7W@1A	3.75W@1A	3.3W@1A	OPT-DPA2005E

＊ Note: The data is for reference only.

Dimensions (mm)



Digital Fiber Spot Lights OPT-DOFP Series




Product Features

Main Features

- Up to 4000 kLux @ WD 20 mm
- Integrated light and control circuit design
- Ethernet and RS232 interfaces
- Programmable and external triggers available; up to 50kHz trigger frequency

Application Cases

- Replacement of halogen lights with fiber
- Medical illumination
- Semiconductor equipment
- General industrial illumination

Selection Guide

OPT-DOFP150
- Power
- Digital fiber spot light
- Brand name

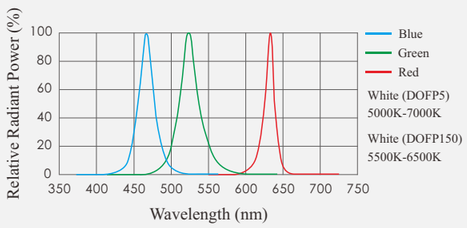
Customizable Items



Fiber length

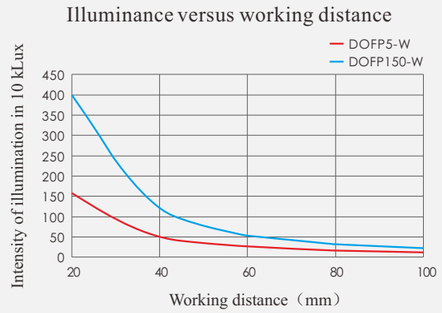
Fiber emitting surface diameter

Spectrum Chart



Note: The Red, Green, Blue in the diagram refer to red, green, blue light of DOFP5. The data is for reference only.

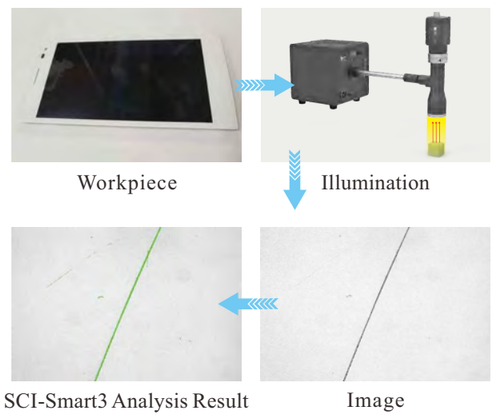
Series features



Note: 1 M optical fiber is adapted to the light source which clear diameter is 6.5mm. Adjusting results are entirely measured value and only for reference.

Application Cases

- Mobile phone LCD screen defects detection

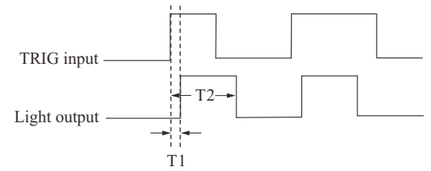


Specifications

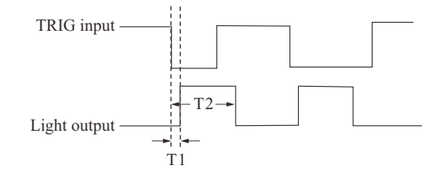
Item	Parameter		Description
	DOFP150	DOFP5	
Always-on trigger mode	8 A	1 A	
Response time	≤15 μs	≤20 μs	
Trigger frequency	50 kHz	20 kHz	
Output power	150 W	5 W	
Standby power consumption	18.2 W	3.2 W	220V input
Dimensions (mm)	164*178*186	124*118*178	Please refer to the drawing for details.
Weight (kg)	3.72	1.84	
Color	White	White, Red, Green, Blue	
Input voltage	100-240 VAC		50/60Hz
Light intensity	256 levels		Set via the adjustment knob or DEMO software
Short circuit protection	Yes		Protective shuts down the related channel and “ER2” displays.
Overcurrent protection	Yes		When the current is over 110% of the set value, the related channel is shut down and “ER1” displays.
Trigger mode	Level trigger		High level: 5-24V; low level: 0-2V
Normal trigger	256 intensity levels settable		
Normal trigger pulse width	1μs-30s		Set via the adjustment knob or DEMO software (The time unit can only be set via the software.)
High-intensity trigger pulse width	0.01 - 5.00 ms		Set via the adjustment knob or DEMO software
Hi-Pot test	1500VAC, 1min		Leakage current < 10mA
Insulation	500 VDC		Insulation resistance > 20MΩ
Operating temperature	-5 - 50°C		
Programmable trigger	Yes		Both the intensity and pulse width can be set.
Communication	RS232 / Ethernet		

Response Time and Sequence

Rising edge trigger



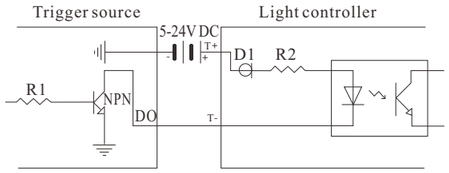
Falling edge trigger



Notes: T1 refers to the enabling response time; T2 refers to the trigger pulse width.
T1 of DOFP150 ≤ 15μs; T1 of DOFP5 ≤ 20μs
T2 can be set in the range of 1 μs - 30 s.

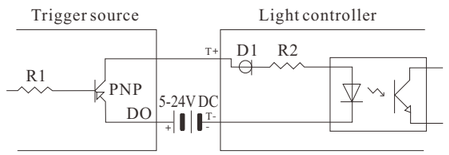
Trigger Wiring Reference

(1)NPN Wiring



Trig input circuit for NPN type trigger

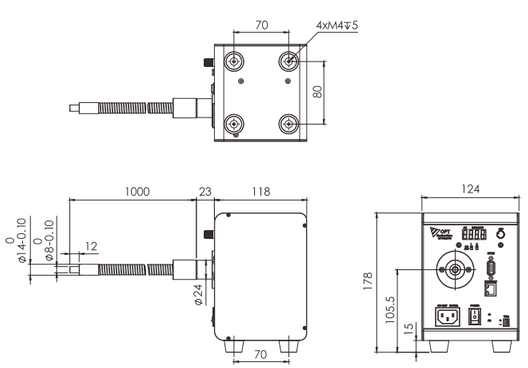
(2)PNP Wiring



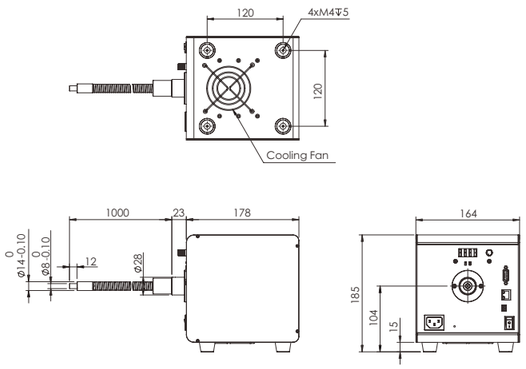
Trig input circuit for PNP type trigger

Dimensions (mm)

1. OPT-DOFP5



2. OPT-DOFP150



Structured Lights OPT-SL/OPT-SLS Series

Patented



OPT-SL Direct Structured Lights

Product Features

Main Features

- Compatible with all C-Mount lenses. Adjustable back focal length, without requiring additional adapter rings
- Uniform pattern with sharp edge, high illumination accuracy
- Perpendicular to the measured surface (For tilt illumination, please refer to OPT-SLS).

Application Cases

- 3D analysis and reconstruction
- Gauging for objects with complex structures or bevels
- Gauging for electronic components
- Checking the flatness of products
- Pick and place with robot

Selection Guide

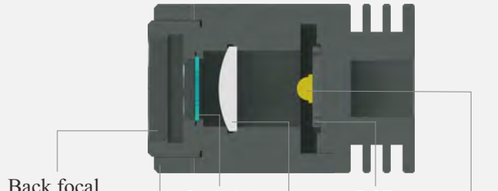
OPT-SL03
- Power
- Direct structured light
- Brand name

Customizable Items

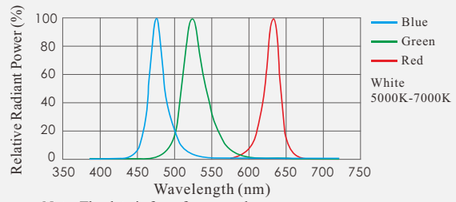


Color | Mounting | Size | Power

Section Structure Drawing



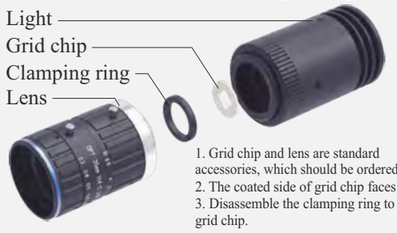
Spectrum Chart



Note: The data is for reference only.

Series features

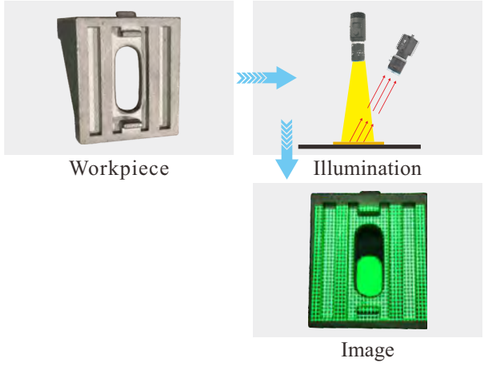
Lens assembly with grid chip



1. Grid chip and lens are standard accessories, which should be ordered separately.
2. The coated side of grid chip faces the lens.
3. Disassemble the clamping ring to replace the grid chip.

Application Cases

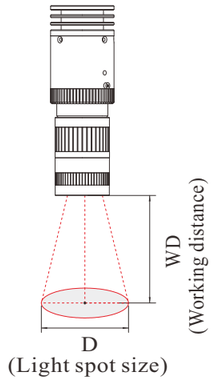
- Height gauging for metal parts



Lens and spot size

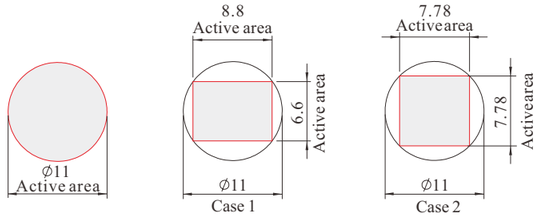
Lens Model	Working Distance (WD)						
	50mm	100mm	150mm	200mm	300mm	400mm	500mm
	Light Spot Size (mm)						
OPT-C0825-5M	90	160	220	280	420	460	–
OPT-C1216-5M	70	110	160	200	290	380	490
OPT-C1614-5M	–	90	120	150	220	300	360
OPT-C2514-5M	–	–	70	100	140	170	210
OPT-C3514-5M	–	–	–	–	100	130	160

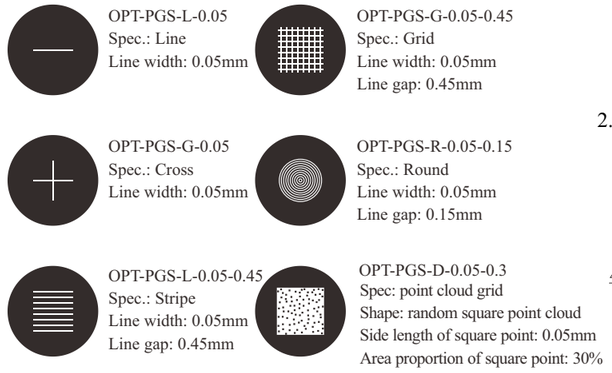
Notes:1. The data is tested with OPT-SL03 and OPT-SL10, which is for reference only.
2. The light is also compatible with other C-Mount lenses with 2/3" image circle.



Customization for Grid Chip

- Grid chip active area





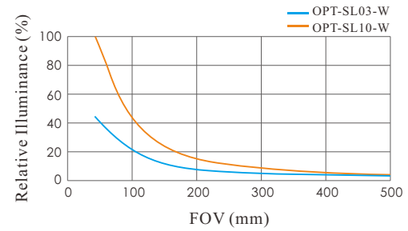
1. Grid chip accuracy can be ≤2μm.
2. Grid chip is customizable with provided precise geometric parameters.
3.The minimum line width and line spacing of grid can be as low as 0.02mm.

Illuminance

Model	Illuminance (Unit:100 Lux)	Model	Illuminance (Unit:100 Lux)
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: The data is obtained with the 25mm focal length lens (F#=1.4, WD=100mm) and no grid chip. It is for reference only.

Relative Illuminance Comparison



Note: The data is obtained in the same testing conditions. It is for reference only.

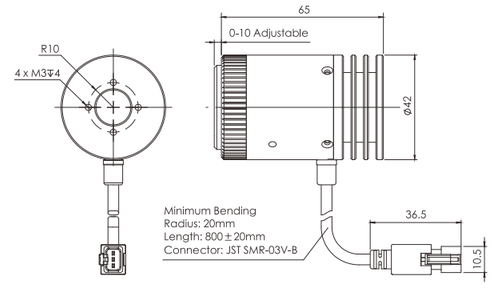
Model Table

No.	Model	*Power 🔴	*Power ○🟢🔵	Recommended controller
1	OPT-SL03	2.6W@1A	3.5W@1A	OPT-DPA2005E
2	OPT-SL10	7.4W@0.7A	9.1W@0.7A	OPT-DPA2012E

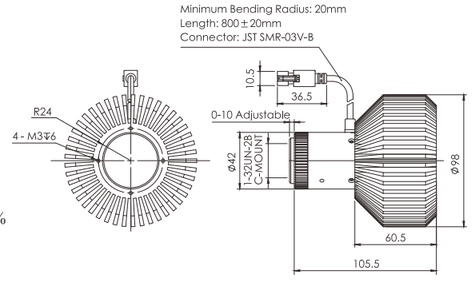
* Note: The data is for reference only.

Dimensions (mm)

1.OPT-SL03



2.OPT-SL10

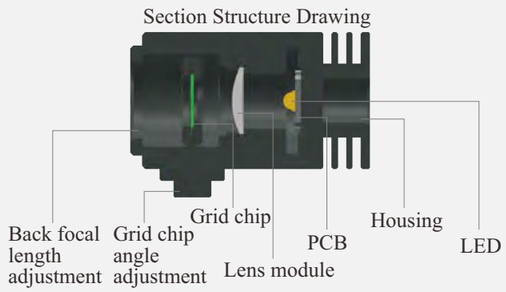


OPT-SLS Slant Structured Lights

Selection Guide

OPT-SLS03
- Power
- Slant structured light
- Brand name

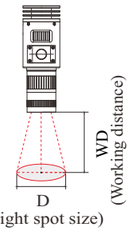
Section Structure Drawing



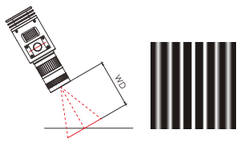
Lens and Spot Size

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

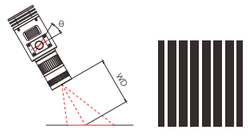
Above test data is obtained with OPT-SLS03 and OPT-SLS10 at zero grid chip angle.



Instructions



Only partial features can be focused when the grid chip is not adjusted.

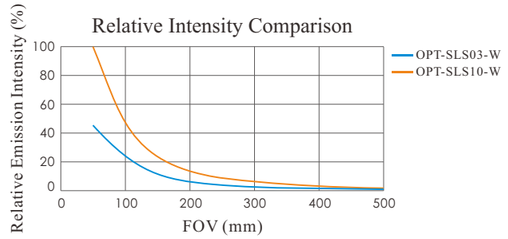


All the features can be focused after adjusting the grid chip.
(Adjustment range: ⩽ 45 degrees)

Model Table

No.	Model	∗Power●	∗Power○●●	Recommended controller
1	OPT-SLS03	2.6W@1A	3.5W@1A	OPT-DPA2005E
2	OPT-SLS10	7.4W@0.7A	9.1W@0.7A	OPT-DPA2012E

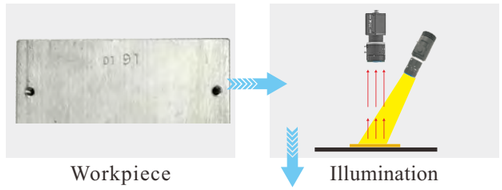
∗ Note: The data is for reference only.



Note: The test data is obtained at zero grid chip angle. It is for reference only.

Application Cases

- Character depth inspection on metal surface



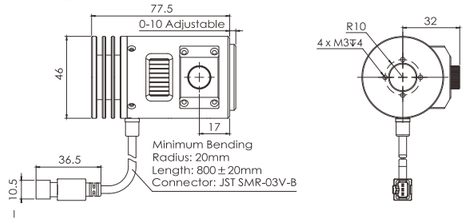
Illuminance

Model	Illuminance (Unit: 100 Lux)	Model	Illuminance (Unit: 100 Lux)
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

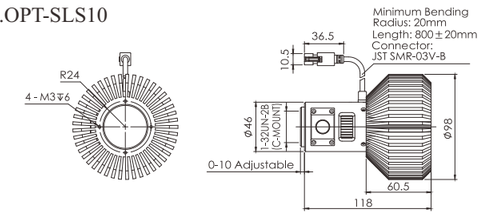
Note: The data is obtained with the 25mm focal length lens (F#=1.4, WD=100mm) and no grid chip. It is for reference only.

Dimensions (mm)

1.OPT-SLS03



2.OPT-SLS10



Diffuse Dark Field Ring Lights OPT-RIF series



Product Features

Main Features

- Suitable for large round and small irregular objects
- Higher uniformity compared with OPT-RI series
- Providing uniform and shadowless illumination
- Suitable for multiple applications at different working distances

Application Cases

- Surface defects detection
- OCR, logos, barcodes and fingerprints recognition

Selection Guide

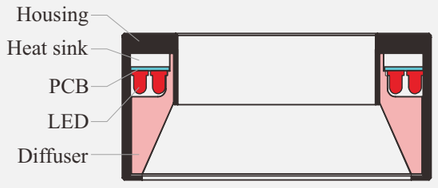
OPT-RIF88
- Outer diameter
- Diffuse dark field ring light
- Brand name

Customizable Items

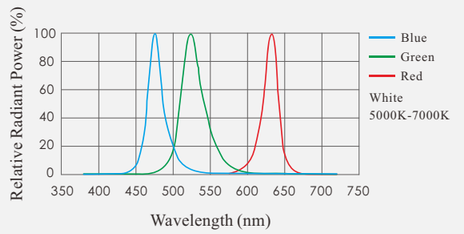


Color | Mounting | Size

Section Structure Drawing



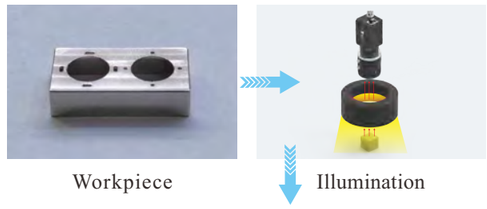
Spectrum Chart



Note: The data is for reference only.

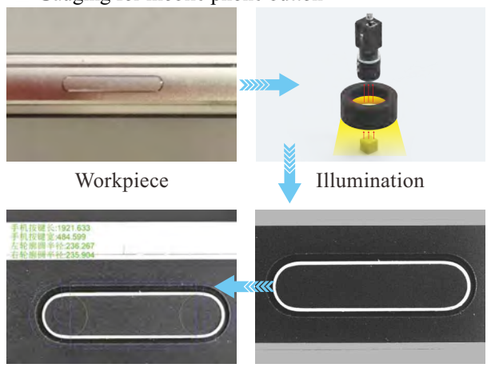
Application Cases

- Dual camera positioning



Application Cases

Gauging for mobile phone button



Gauging for glass parts



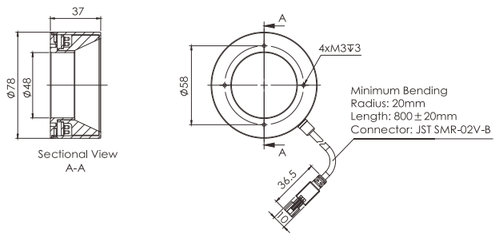
Model Table

No.	Model	＊Power ○	＊Power 🔴	＊Power 🟢	＊Power 🔵	Recommended controller
1	OPT-RIF78	5.8W@24V	4.6W@24V	5.7W@24V	5.8W@24V	OPT-DPA2024E
2	OPT-RIF88	6.5W@24V	5.2W@24V	6.5W@24V	6.7W@24V	
3	OPT-RIF130	9.2W@24V	7.9W@24V	9.1W@24V	9.5W@24V	
4	OPT-RIF160	12.0W@24V	10.8W@24V	11.2W@24V	12.2W@24V	

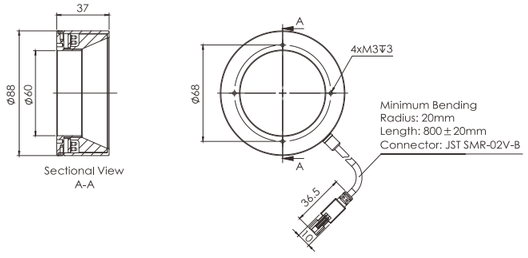
＊Note: The data is for reference only.

Dimensions (mm)

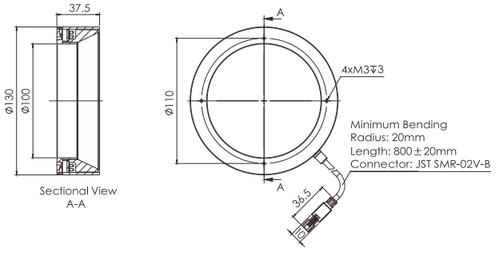
1.OPT-RIF78



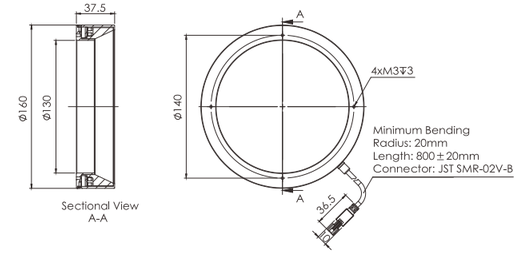
2.OPT-RIF88



3.OPT-RIF130



4.OPT-RIF160



Diffuse Ring Lights OPT-RIE series



Product Features

Main Features

- Higher uniformity than OPT-RI series ring lights
- Providing uniform illumination for rough surfaces, eliminating stray light and highlighting 3D information
- Equipped with special diffuser that reduces reflections and allows uniform illumination

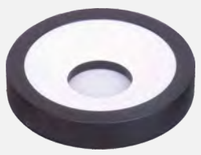
Application Cases

- Positioning and gauging for metal parts
- Detection of surface defects

Selection Guide

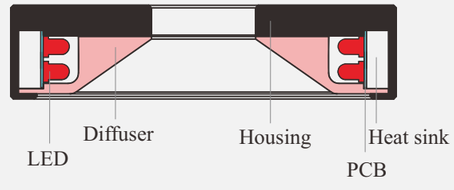
OPT-RIE74
- Outer diameter
- Flat dome ring light
- Brand name

Customizable Items

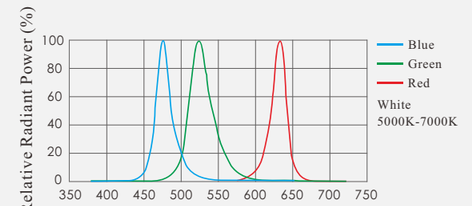


Color | Mounting | Size

Section Structure Drawing



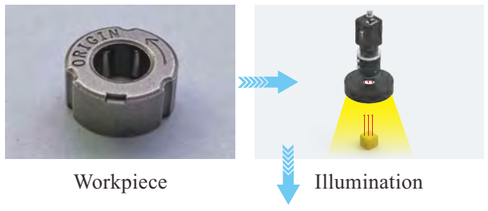
Spectrum Chart



Note: The data is for reference only.

Application Cases

OCR for metal parts

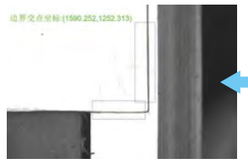


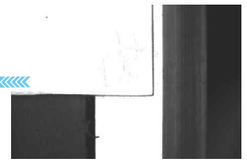
Application Cases

Gauging for metal parts


Workpiece


Illumination

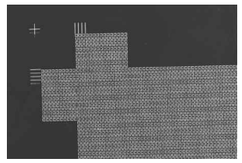

SCI-Smart3 Analysis Result


Image

Circuit inspection


Workpiece


Illumination


Image

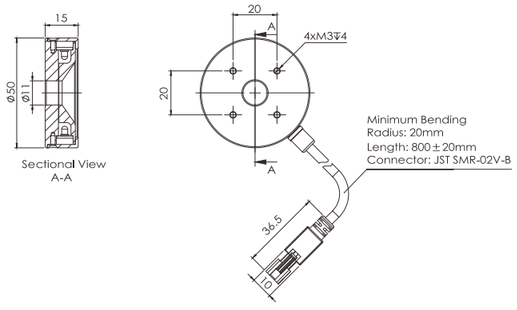
Model Table

No.	Model	＊Power ○	＊Power 🔴	＊Power 🟢	＊Power 🔵	Recommended controller
1	OPT-RIE50	2.3W@24V	1.6W@24V	2.3W@24V	2.0W@24V	OPT-DPA2024E
2	OPT-RIE74	5.0W@24V	4.2W@24V	4.9W@24V	5.0W@24V	
3	OPT-RIE100	6.5W@24V	5.6W@24V	5.3W@24V	6.1W@24V	
4	OPT-RIE150	14.4W@24V	10.8W@24V	11.3W@24V	13.5W@24V	

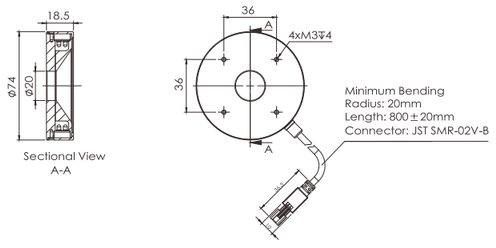
＊Note: The data is for reference only.

Dimensions (mm)

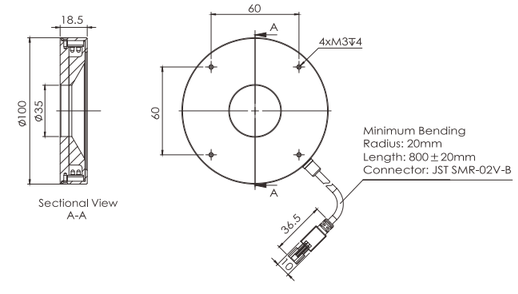
1.OPT-RIE50



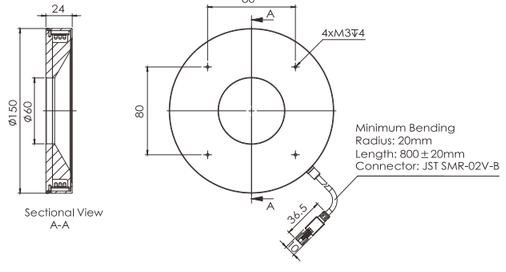
2.OPT-RIE74



3.OPT-RIE100



4.OPT-RIE150



Diffuse Ring Lights

OPT-RIW series



Product Features

Main Features

- Uniform illumination of objects with multiple angles of inclination, eliminates differences caused by the different angles of reflection.
- Equipped with special diffuser to ensure diffuse and uniform illumination

Application Cases

- Electronic parts Inspection
- Parts alignment
- OCR
- OMM

Selection Guide

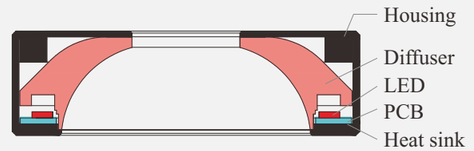
OPT-RIW90
- Outer diameter
- Diffuse ring light
- Brand name

Customizable Items

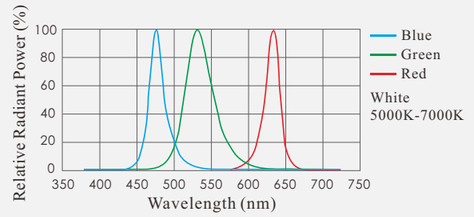


Color | Mounting | Size

Section Structure Drawing



Spectrum Chart

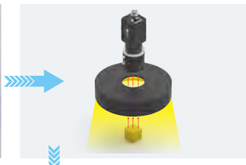


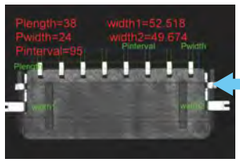
Note: The data is for reference only.

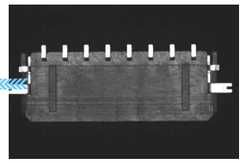
Application Cases

Adaptor pin inspection


Workpiece


Illumination


SCI-Smart3 Analysis Result


Image

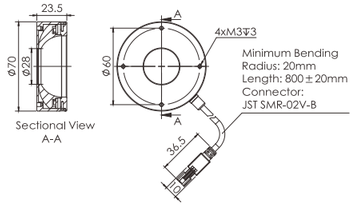
Model Table

No.	Model	＊Power ○	＊Power 🔴	＊Power 🟢	＊Power 🔵	Recommended controller
1	OPT-RIW70	6.0W@24V	4.1W@24V	4.0W@24V	8.8W@24V	OPT-DPA2024E
2	OPT-RIW90	7.9W@24V	5.3W@24V	5.0W@24V	8.8W@24V	
3	OPT-RIW120	11.5W@24V	8.4W@24V	7.9W@24V	13.4W@24V	

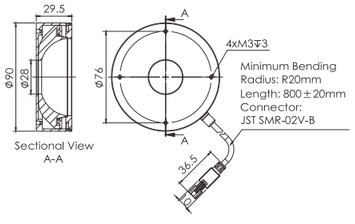
＊Note: The data is for reference only.

Dimensions (mm)

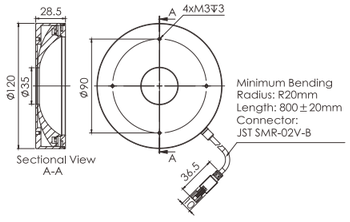
1.OPT-RIW70



2.OPT-RIW90



3.OPT-RIW120



Diffuse Front Ring Lights

OPT-RIU series



Product Features

Main Features

- Effective elimination of reflections caused by complex small objects.
- Special diffuser for uniform and shadowless illumination

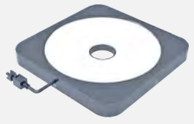
Application Cases

- OCR and patterns on reflective surfaces Inspection
- Electronic parts and glass products Inspection
- Stamping parts Inspection
- Injection Inspection molding parts

Selection Guide

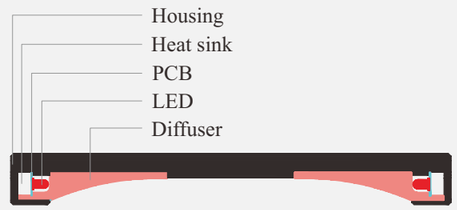
OPT-RIU114
- Outer diameter
- Diffuse front ring light
- Brand name

Customizable Items

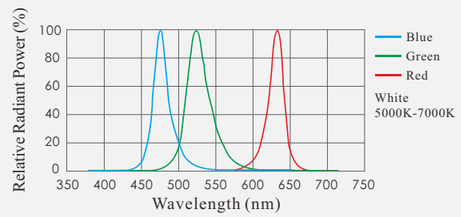


Color | Mounting | Size

Section Structure Drawing



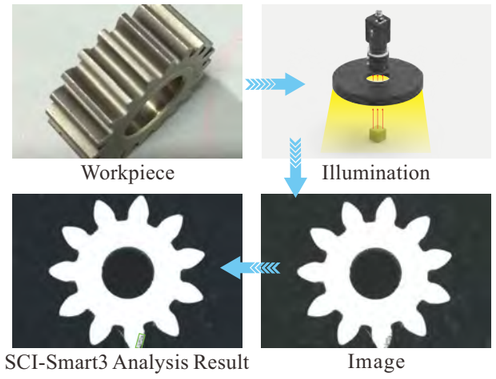
Spectrum Chart



Note: The data is for reference only.

Application Cases

- Gear defects detection



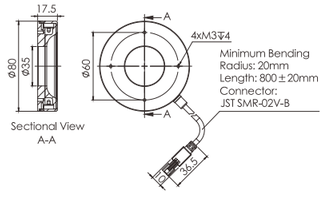
Model Table

No.	Model	∗Power ○	∗Power 🔴	∗Power 🟢	∗Power 🔵	Recommended controller
1	OPT-RIU80	3.2W@24V	2.3W@24V	3.5W@24V	3.6W@24V	OPT-DPA2024E
2	OPT-RIU114	5.2W@24V	3.5W@24V	4.7W@24V	5.6W@24V	
3	OPT-RIU150	6.5W@24V	4.6W@24V	6.0W@24V	7.4W@24V	

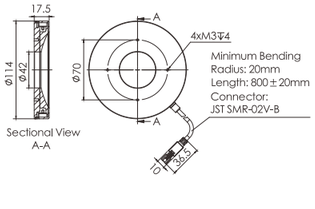
∗ Note: The data is for reference only.

Dimensions (mm)

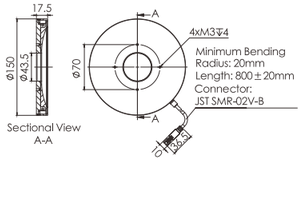
1.OPT-RIU80



2.OPT-RIU114



3.OPT-RIU150



Diffuse Dark Field Square Lights OPT-RIH series



Product Features

Main Features

- Uniform and shadowless illumination from four directions
- For the use on irregular rectangular targets
- Suitable for multiple applications at different working distances

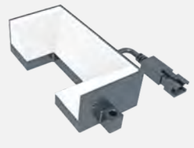
Application Cases

- Detection of surface defects
- OCR, logos, barcodes, and fingerprints recognition

Selection Guide

OPT-RIH48
- Length
- Diffuse dark field square light
- Brand name

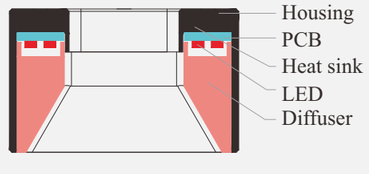
Customizable Items



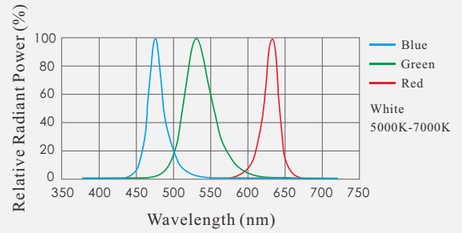
Color | Mounting | Size

Sectional control

Section Structure Drawing



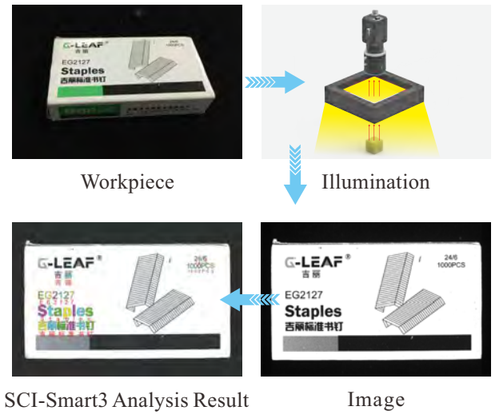
Spectrum Chart



Note: The data is for reference only.

Application Cases

- Packaging box surface inspection



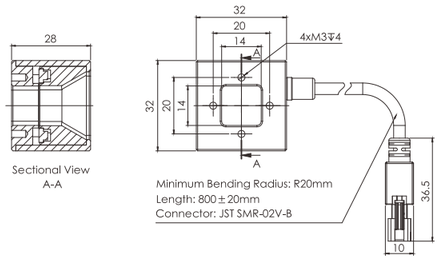
Model Table

No.	Model	＊Power ○	＊Power 🔴	＊Power 🟢	＊Power 🔵	Recommended controller
1	OPT-RIH32	2.4W@24V	1.7W@24V	2.1W@24V	2.5W@24V	OPT-DPA2024E
2	OPT-RIH48	4.4W@24V	3.3W@24V	4.3W@24V	4.7W@24V	
3	OPT-RIH118	11.2W@24V	9.7W@24V	10.8W@24V	12.1W@24V	
4	OPT-RIH150	12.9W@24V	9.5W@24V	15.2W@24V	13.1W@24V	
5	OPT-RIH9585	8.7W@24V	7.5W@24V	7.6W@24V	9.5W@24V	
6	OPT-RIH12570	10.3W@24V	8.7W@24V	8.2W@24V	11.4W@24V	

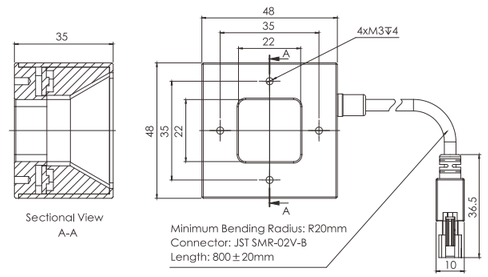
＊Note: The data is for reference only.

Dimensions (mm)

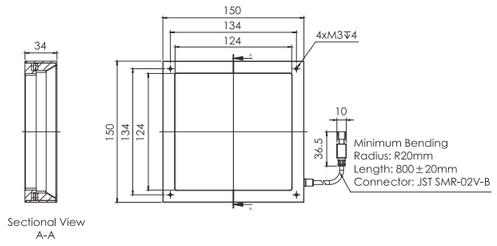
1.OPT-RIH32



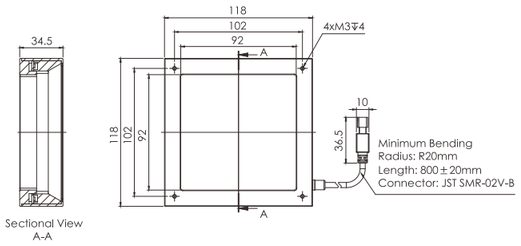
2.OPT-RIH48



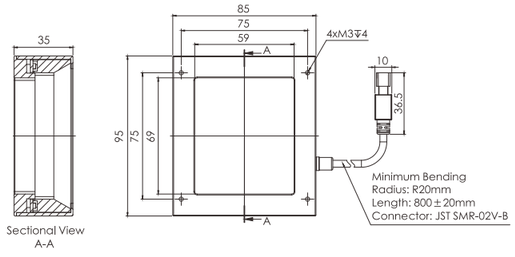
4.OPT-RIH150



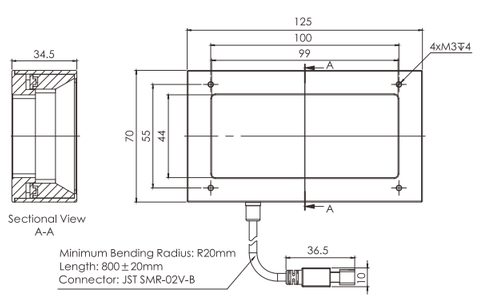
3.OPT-RIH118



5.OPT-RIH9585



6.OPT-RIH12570



Bright Uniform Ring Lights OPT-RIP Series



Product Features

Main Features

- Use of high opacity diffuser, which guarantees high light intensity and shadow-free illumination effect.

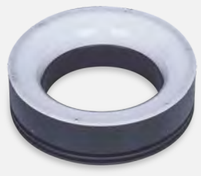
Application Cases

- Electronic components surface inspection
- Detection of contamination on cylindrical inner surfaces

Selection Guide

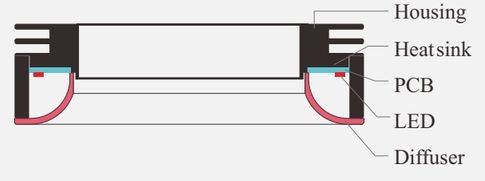
OPT-RIP120
- Outer diameter
- Bright uniform ring light
- Brand name

Customizable Items

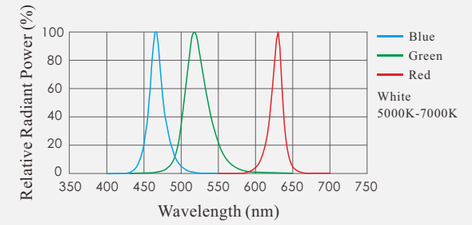


Color
Mounting
Size
Zoned control

Section Structure Drawing



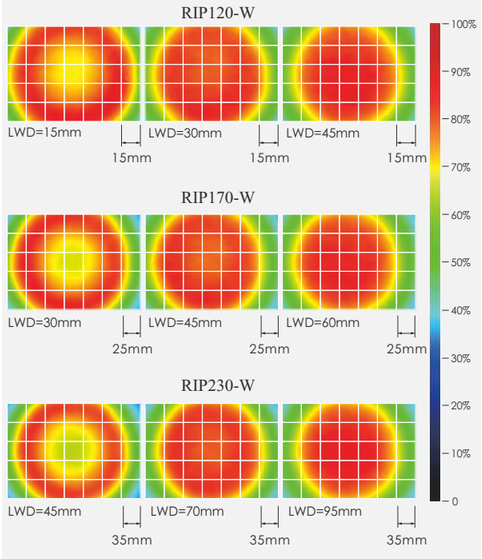
Spectrum Chart



Note: The data is for reference only.

Series features

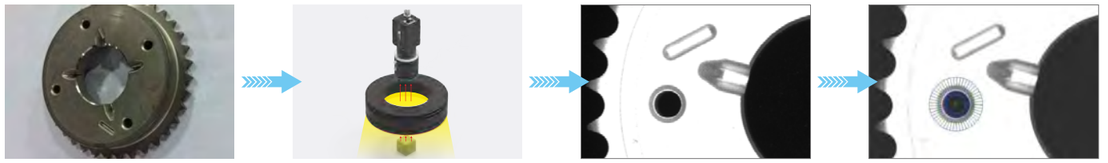
Relative Radiant Power Distribution



Note: The data is for reference only.

Application Cases

Gear surface inspection



Workpiece | Illumination | Image | SCI-Smart3 Analysis Result

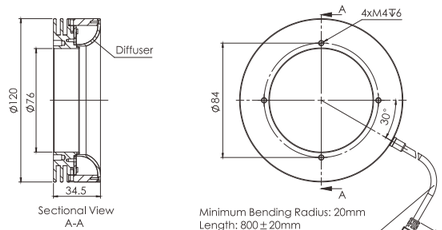
Model Table

No.	Model	* Power ○	* Power 🔵	* Power 🟢	* Power 🔴	Recommended controller
1	OPT-RIP120	13W@24V	13.4W@24V	9.6W@24V	11.6W@24V	OPT-DPA2024E
2	OPT-RIP170	19.9W@24V	20.6W@24V	17W@24V	15.1W@24V	
3	OPT-RIP230	26W@24V	27.4W@24V	22.3W@24V	20.4W@24V	

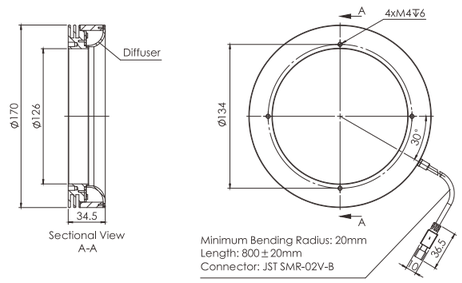
* Note: The data is for reference only.

Dimensions (mm)

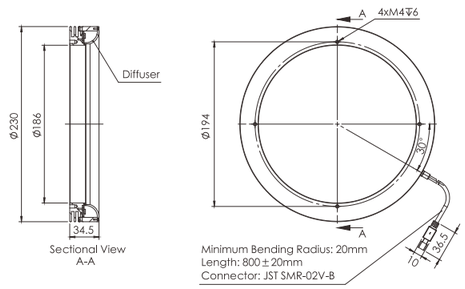
1. OPT-RIP120



2. OPT-RIP170



3. OPT-RIP230



Multi-Spectrum Shadowless Ring Light OPT-RIPM Series New



Product Description

Main Features

- Including 8 wavelengths, such as 405nm(UV), 475nm(B), 530nm(G), 590nm(orange), 660nm(R), 850nm(NIR).
- Each waveband uniformly distributes in four regions; each waveband in each region can be controlled separately.
- Suitable for complex applications such as color recognition and extraction of 3D information from surfaces of an object.

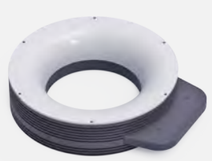
Application Cases

- Quality control of food and medicine
- Control of color differences on packages characters recognition on reflective and transparent packages
- Detection of reflective, textured, irregular objects
- 3D defect detection (Photometric Stereo)
- Detection of contours of transparent objects

Selection Guide

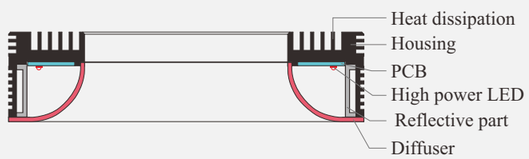
OPT-RIPM 175
- 175 → Outer diameter
- RIPM → Multi-Spectrum Shadowless Ring Light
- OPT → Brand name

Customizable Items



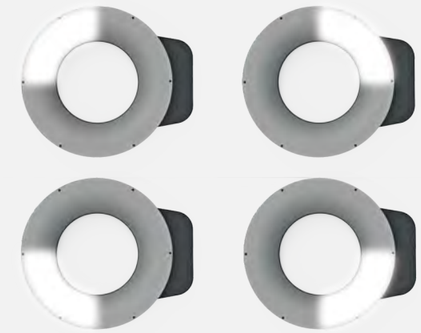
Color | Mounting | Size | Heat dissipation

Section Structure Drawing



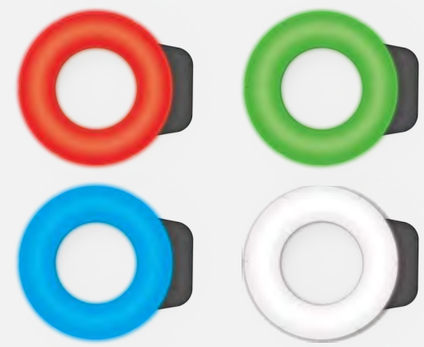
Series features

Local control



Four areas are evenly distributed and include 8 colors each

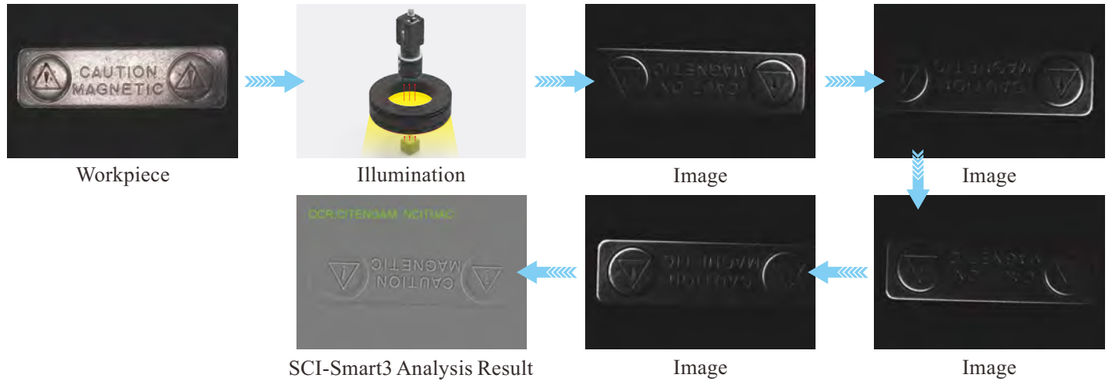
Wavelength control



Each color can be controlled separately depending on the application.

Application Cases

Gear surface inspection



Workpiece | Illumination | Image | Image | Image | Image | SCI-Smart3 Analysis Result

Model Table

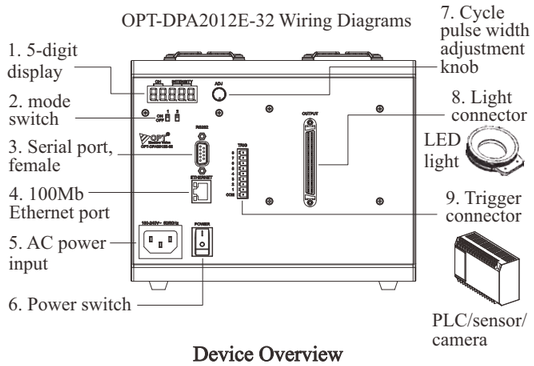
No.	Model	central wavelength	* Power	Recommended controller
1	OPT-RIPM175	405nm	16W	OPT-DPA2012E-32
		475nm	16W	
		530nm	16W	
		590nm	10W	
		660nm	16W	
		730nm	16W	
		850nm	16W	
		3000K	16W	

* Multicolor lights are not supported at the same time.
* Note: The data is for reference only.

Dedicated controller

Item	Parameter	Description
Input voltage	100 - 240 VDC,@ 3.5A, 50/60 Hz	
Lighting mode	Continuous/strobe	Set via the working mode switch or DEMO software
Manual setting for max. output current	10mA - 2A	Enabled via DEMO software
Intensity control	256 levels	Set via the adjustment key or DEMO software
Short-circuit protection	Yes	The related channel is shut down and “Er2” displays.
Overcurrent protection	Yes	Enabled when the output current is higher than 110% of the set value: the related channel is shut down and “Er1” displays.
Normal trigger	256 intensity levels settable	
High intensity trigger	2A output per channel	
Normal trigger time unit	1μs/10μs/1ms/100ms	Set via DEMO software
Normal trigger pulse width	1μs - 30s	Set via the adjustment knob or DEMO software
High intensity trigger pulse width	0.01-5.00ms	Set via the adjustment knob or DEMO software
Programmable trigger	Yes	The intensity, pulse width, and trigger source of each step can be set.
Trigger response time	⩽15μs	
Trigger response frequency	20kHz	
Output power	24W/CH	total output ≤ 260W
Communication	RS232/Ethernet	
Standby power consumption	30W	220V
Hi-Pot test	1500VAC 1min	Leakage current < 10mA
Insulation	500VDC	Insulation resistance > 20MΩ
Operating temperature	-5 - 50°C	
Dimensions (mm) (L x W x H)	206.4x132.4x172.1	Refer to the drawing for details
Weight (kg)	2.6	

Controller wiring instructions



Device Overview

No.	Item	Description
1	5-digit display	Current operation channels:1st and 2nd bits from left, corresponding values: 3th, 4th and 5th bits.
2	working mode switch	Switching function
3	Serial port, female	Communication with PC via the RS232 interface
4	100Mb Ethernet port	Communication with PC via the Ethernet interface
5	AC power input	100 - 240 VAC, 50/60Hz
6	Power switch	Turns on/off the controller
7	Cycle pulse width adjustment knob	Press the knob, the flashing digit is selected; press it again, the next digit is selected; turn the knob clockwise to increase the value and counterclockwise to decrease the value.
8	Light connector	Connect with Multi-Spectrum Ring Shadowless Light
9	Trigger connector	Connects external trigger for strobe; trigger pulse width settable

Trigger

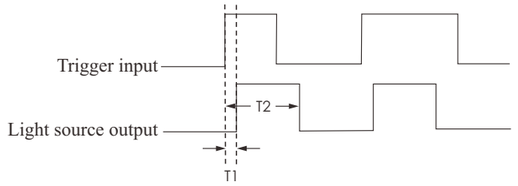
The controller has three trigger modes: common trigger, high intensity trigger and programmable trigger, and four trigger polarities: rising edge trigger, falling edge trigger, positive follow trigger and negative follow trigger, see the following details:

Trigger Mode	Trigger Polarity
Normal trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode
High intensity trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode
Programmable trigger	Rising edge trigger
	Falling edge trigger

Trigger Sequence

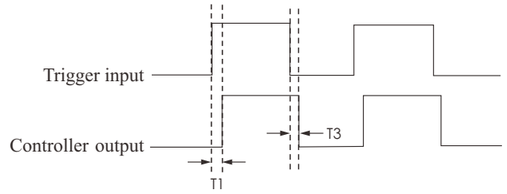
Rising edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software.



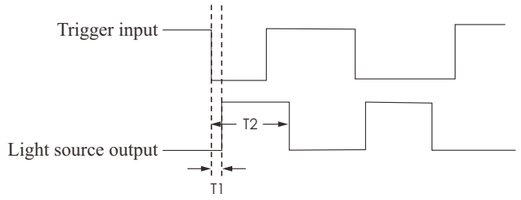
Positive follow trigger mode

When the trigger signal is at high level, the illumination time is the same as the high-level pulse width.



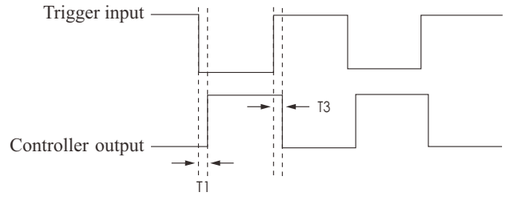
Falling edge trigger

The illumination time is equal to the trigger pulse width,which is set via DEMO software.



Negative follow trigger mode

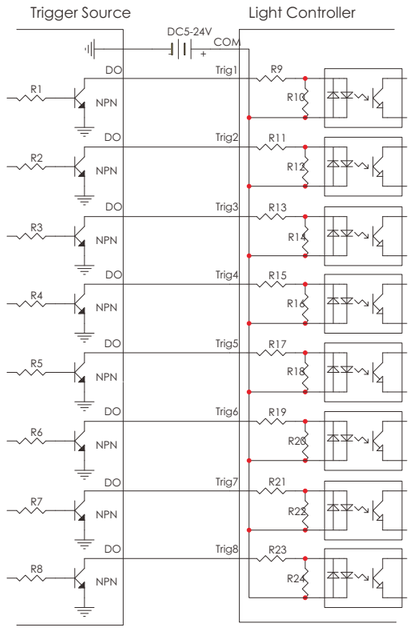
When the trigger signal is at low level, the illumination time is the same as the low-level pulse width.



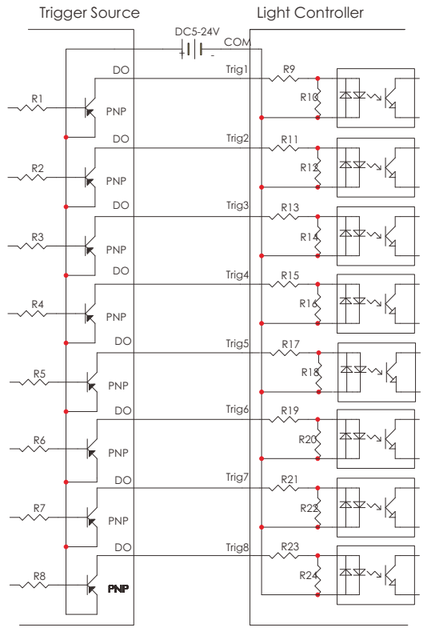
Remarks
1. T1: Enabling response time; T2: Trigger pulse width; T3: Disabling response time
2. Normal trigger: T1 ≤ 15μs; T3 ≤ 10μs; T2 setting range: 1μs - 30s
3. High intensity trigger: T1 ≤ 15μs; T3 ≤ 10μs; T2 setting range: 0.01 - 5.00ms

Level Trigger Wiring Diagrams

4 trigger channels, and bidirectional optocoupler inside Low level: 0 - 2V input voltage; high level: 5 - 24V input voltage. The diagrams are as shown below.



Trig Input Circuit for NPN Type Trigger

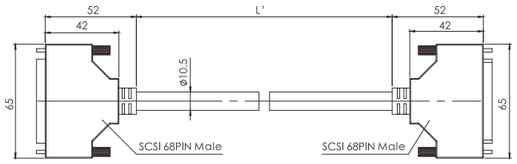


Trig Input Circuit for PNP Type Trigger

Light source line

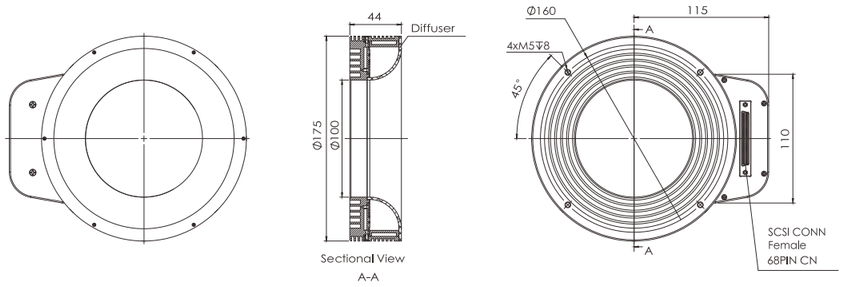
Model	Cable length (L)
OPT-DGYX1M-68P-S	1m
OPT-DGYX2M-68P-S	2m
OPT-DGYX3M-68P-S	3m

Note:Light source cable is a required accessory and must be ordered separately.

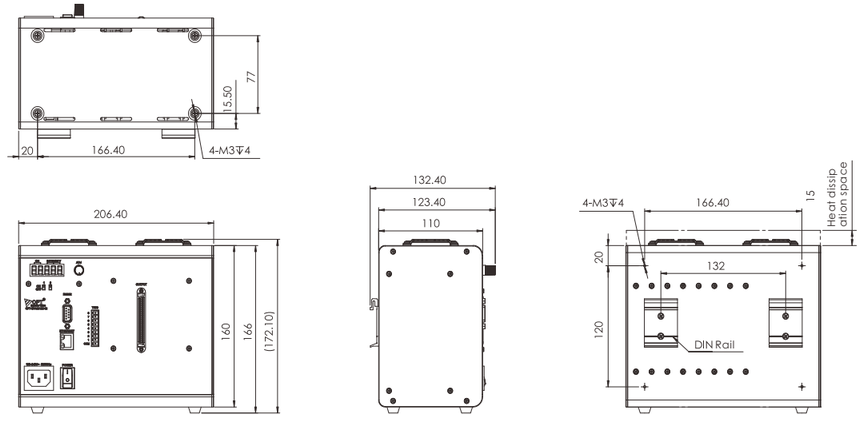


Dimensions (mm)

1.OPT-RIPM175



2.OPT-DPA2012E-32



High Intensity Ring Lights

OPT-RIG Series



Product Features

Main Features

- High density LED arrays and special lens design, brightness is more than 2 times higher than OPT-RI series ring lights.
- Suitable for special illumination requirements

Application Cases

- Longer illumination distance (compared to OPT-RI series)
- Illumination for high speed production lines

Selection Guide

OPT-RIG9000

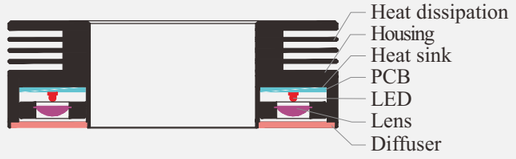
- OPT
- RIG
- 9000
  - Emitting angle
  - Outer diameter
  - High intensity ring light
  - Brand name

Customizable Items

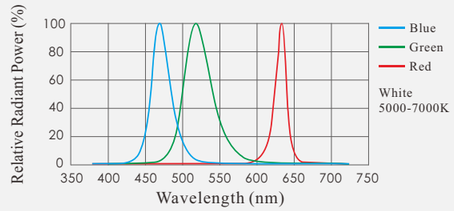


Color | Mounting | Connector | Size | Diameter | Emitting angle

Section Structure Drawing



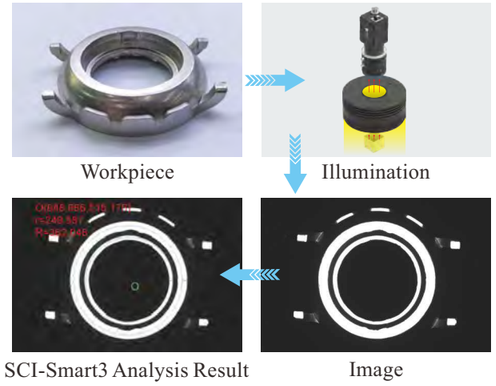
Spectrum Chart



Note: The data is for reference only.

Application Cases

- Metal parts diameter measurement



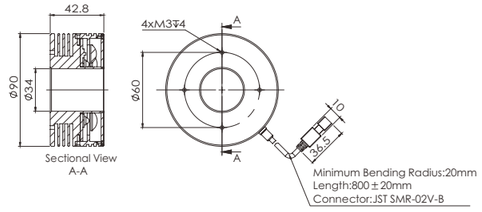
Model Table

No.	Model	*Power 🔴	*Power ⚪🟢🔵	Recommended controller
1	OPT-RIG9000	7.2W@24V	7.2W@24V	OPT-DPA2024E
2	OPT-RIG12000	11.9W@24V	14.4W@24V	
3	OPT-RIG18000	20.4W@24V	21.6W@24V	

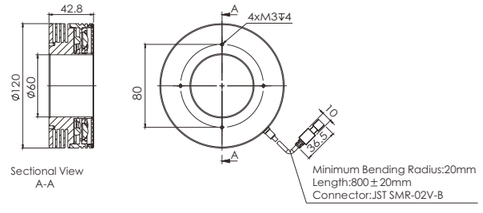
* Note: The data is for reference only.

Dimensions (mm)

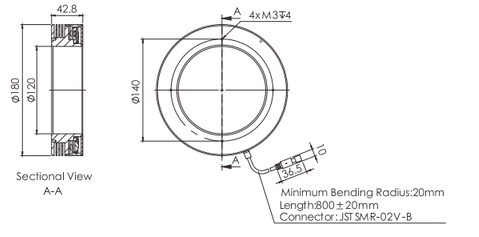
1.OPT-RIG9000



2.OPT-RIG12000

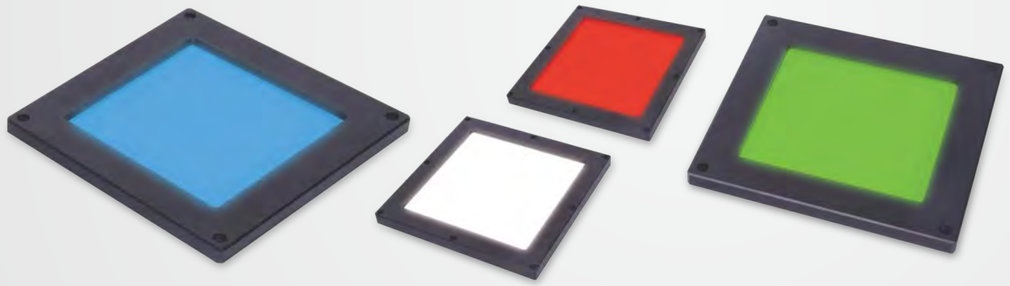


3.OPT-RIG18000



Flat Dome Lights OPT-FC Series

Patented



Product Features

Main Features

- Provides diffuse and uniform illumination
- Lightweight, compact and easy to use
- Coaxial planar light source with shadowless and coaxial lighting effects

Application Cases

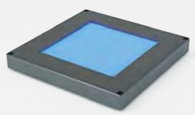
- Package inspection for food and beverage, tobacco and printing industries
- Inspection and measurement for electronic parts
- Pattern inspection and OCR on uneven and highly reflective surfaces

Selection Guide

OPT-FC100

- Length
- Flat dome light
- Brand name

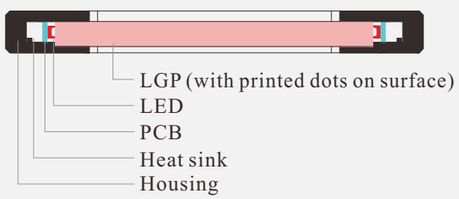
Customizable Items



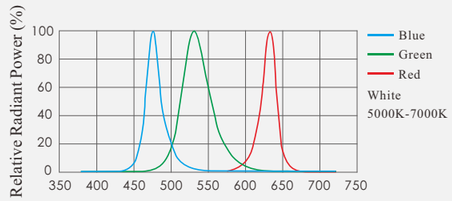
Color | Mounting | Connector

Size | Polygon

Section Structure Drawing



Spectrum Chart



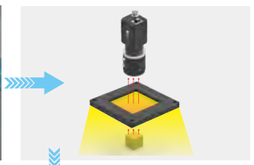
Note: The data is for reference only.

Application Cases

- Printing inspection



Workpiece



Illumination



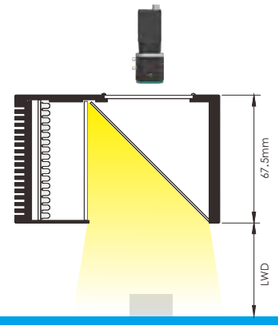
SCI-Smart3 Analysis Result



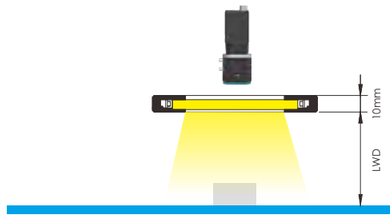
Image

Size Comparison

Coaxial light OPT-CO70



Flat dome light OPT-FC100



Note: The flat dome light is more compact than the standard coaxial light and enables illumination with shorter working distances.

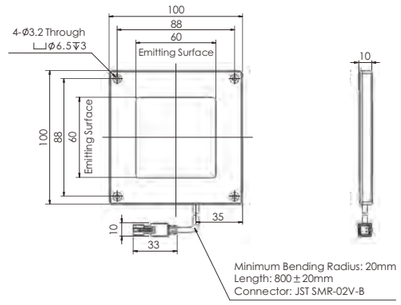
Model Table

No.	Model	∗Power●	∗ Power○●●	Recommended controller
1	OPT-FC100	0.7W@24V	2.2W@24V	OPT-DPA2024E
2	OPT-FC143	1.7W@24V	3.7W@24V	
3	OPT-FC180	3.2W@24V	4.5W@24V	
4	OPT-FC240	–	6.6W@24V	

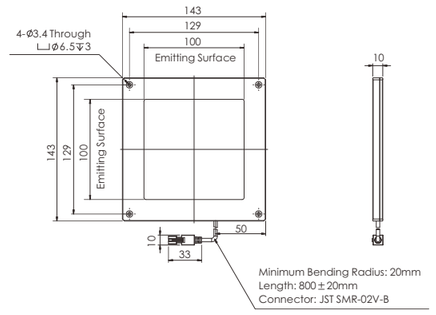
∗ Note: The data is for reference only.

Dimensions (mm)

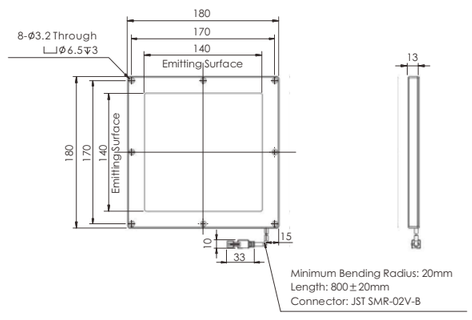
1.OPT-FC100



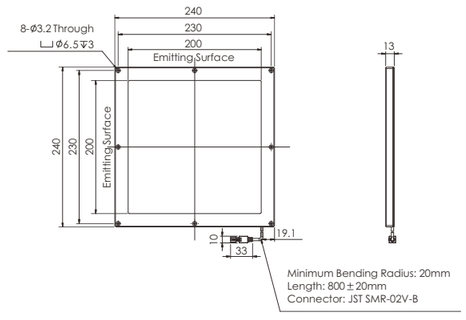
2.OPT-FC143



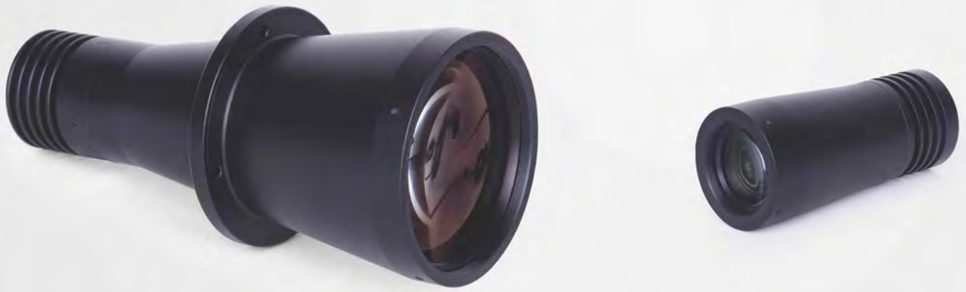
3.OPT-FC180



4.OPT-FC240



Collimated Spot Lights OPT-PL Series



Product Features

Main Features

- Telecentric optical design, divergence angle ≤1°
- Significant increase in image edge contrast for higher measurement accuracy
- Mounting of hole position is customizable
- Can be combined with telecentric lens

Application Cases

- Burr inspection
- Detection of gap obstructions
- Inspection of card surface
- Gauging for metal parts

Selection Guide

OPT-PL70
- 70 → Emitting surface diameter
- PL → Collimated spot light
- OPT → Brand name

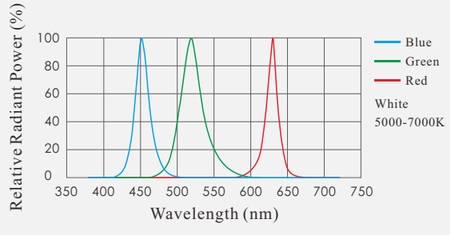
Customizable Items



Color | Mounting | Connector

Emitting surface diameter

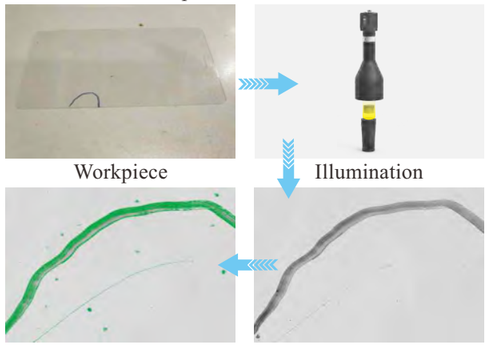
Spectrum Chart



Note: The data is for reference only.

Application Cases

Glass surface inspection



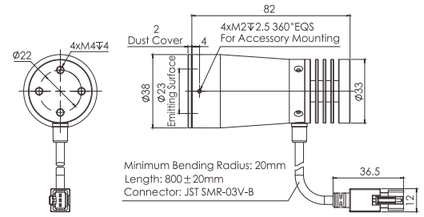
Model Table

Model	Color	*Power	Emitting surface diameter (ø/mm)	Working distance (mm)	Controller	Optional accessory
OPT-PL23	○	3.2W@1A	23	45-90	OPT-DPA2005E	OPT-PPL23
	●	2.7W@1A				
	●	3.75W@1A				
	●	3.3W@1A				
OPT-PL35	○	3.2W@1A	35	45-90	OPT-DPA2005E	OPT-PPL35
	●	2.7W@1A				
	●	3.75W@1A				
	●	3.3W@1A				
OPT-PL50	○	3.2W@1A	50	70-140	OPT-DPA2005E	OPT-PPL50
	●	2.7W@1A				
	●	3.75W@1A				
	●	3.3W@1A				
OPT-PL70	○	3.2W@1A	70	100-200	OPT-DPA2005E	OPT-PPL70
	●	2.7W@1A				
	●	3.75W@1A				
	●	3.3W@1A				
OPT-PL100	○	3.2W@1A	100	150-300	OPT-DPA2005E	OPT-PPL100
	●	2.7W@1A				
	●	3.75W@1A				
	●	3.3W@1A				

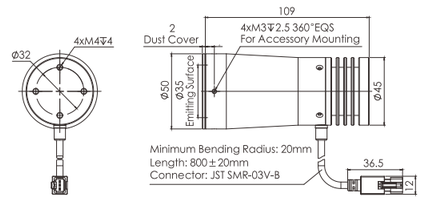
* Note: The data is for reference only.

Dimensions (mm)

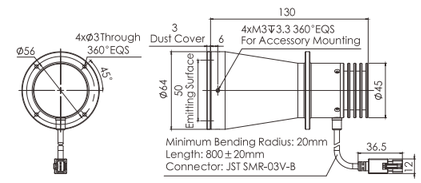
1.OPT-PL23



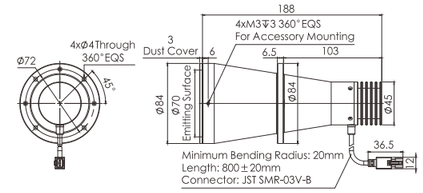
2.OPT-PL35



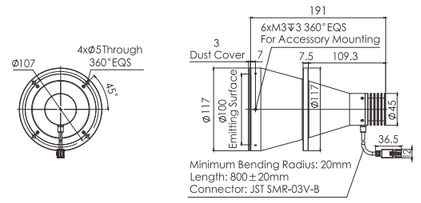
3.OPT-PL50



4.OPT-PL70



3.OPT-PL100



Coaxial Accessory



Product Features

Main Feature

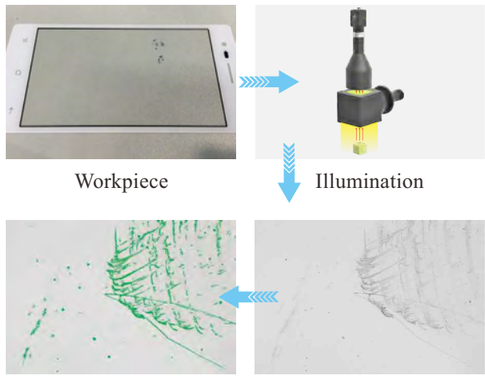
- Advanced coated beam splitter inside to minimize light loss for ideal illumination

Application Cases

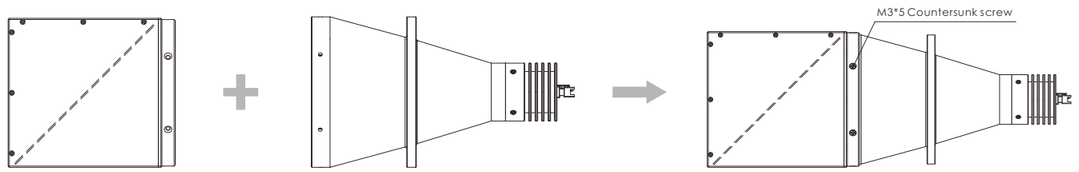
- Defects detection on metal surface
- Detection of scratches on cell phone displays
- Defects detection on glass surface

Application Cases

- Dirt detection on glass surface



Accessory Assembly

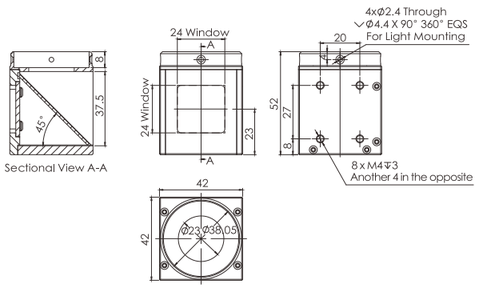


Model Table

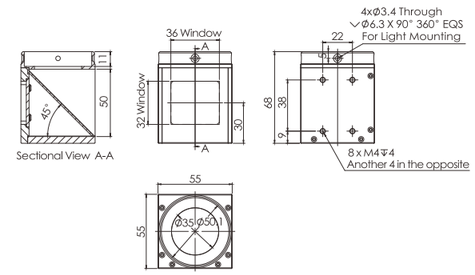
Model	Matching light	Emitting surface diameter (⌀/mm)	Working distance (mm)
OPT-PPL23	OPT-PL23	23	5-50
OPT-PPL35	OPT-PL35	35	5-50
OPT-PPL50	OPT-PL50	50	10-70
OPT-PPL70	OPT-PL70	70	10-100
OPT-PPL100	OPT-PL100	100	10-160

Dimensions (mm)

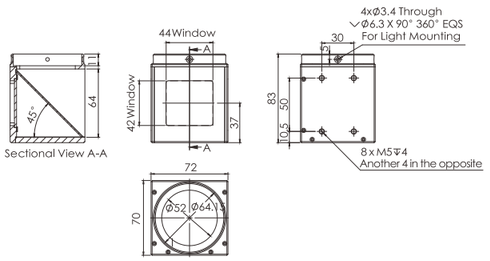
1.OPT-PPL23



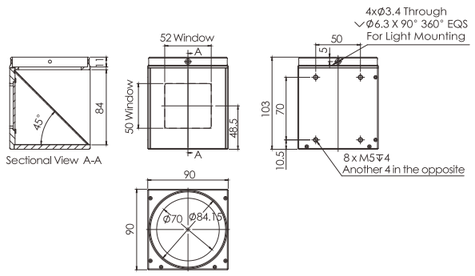
2.OPT-PPL35



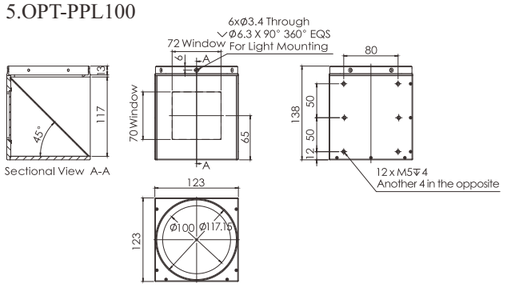
3.OPT-PPL50



4.OPT-PPL70

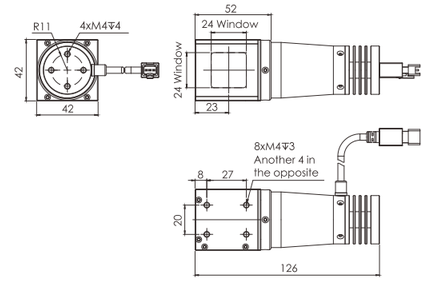


5.OPT-PPL100

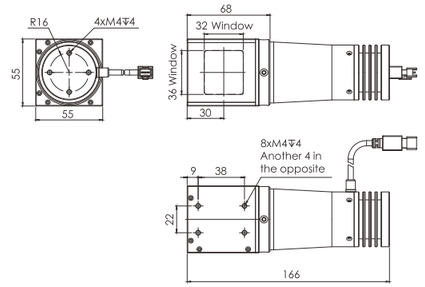


Assembled Unit Dimensions (mm)

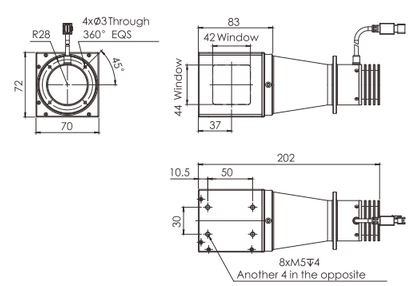
1.OPT-PL23
OPT-PPL23



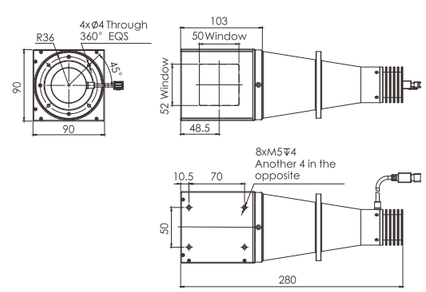
2.OPT-PL35
OPT-PPL35



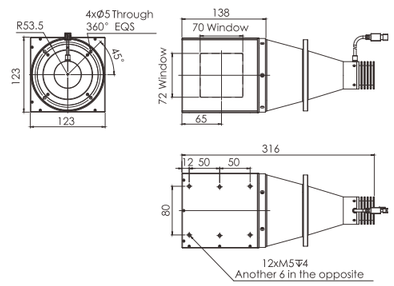
3.OPT-PL50
OPT-PPL50



4.OPT-PL70
OPT-PPL70



5.OPT-PL100
OPT-PPL100



Collimated Backlights OPT-FP Series



Product Features

Main Features

- Highly collimated illumination
- Compact design; suitable for high-precision measurement operations
- Used in conjunction with the coaxial optical system to detect small defects and damages on smooth surfaces

Application Cases

- Gauging for mechanical parts
- Outline inspection for electronic parts
- Surface scratches detection

Selection Guide

OPT-FP8272
- Width
- Length
- Collimated backlight
- Brand name

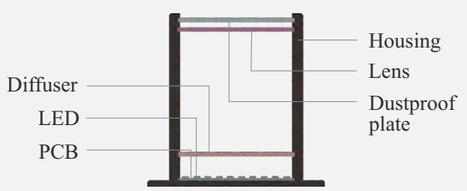
Customizable Items



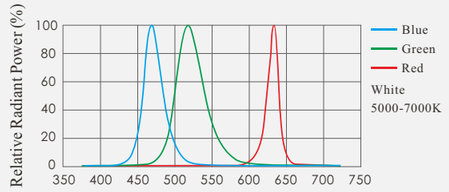
Color Mounting Connector

Size

Section Structure Drawing



Spectrum Chart



Note: The data is for reference only.

Application Cases

- Inner frame positioning of mobile phone screen



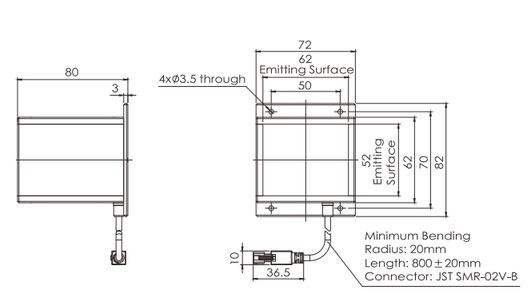
Model Table

No.	Model	∗Power 🔴	∗Power ⚪🟢🔵	Recommended controller
1	OPT-FP8272	5.8W@24V	7.2W@24V	OPT-DPA2024E
2	OPT-FP120100	6.9W@24V	8.6W@24V	
3	OPT-FP180160	17.3W@24V	21.6W@24V	

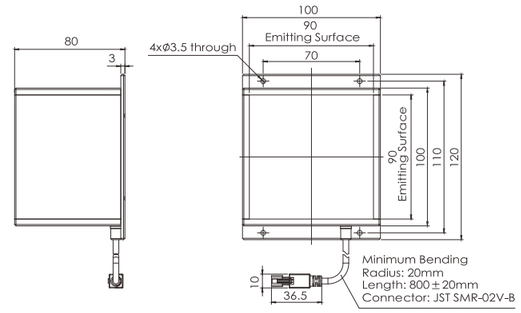
∗ Note: The data is for reference only.

Dimensions (mm)

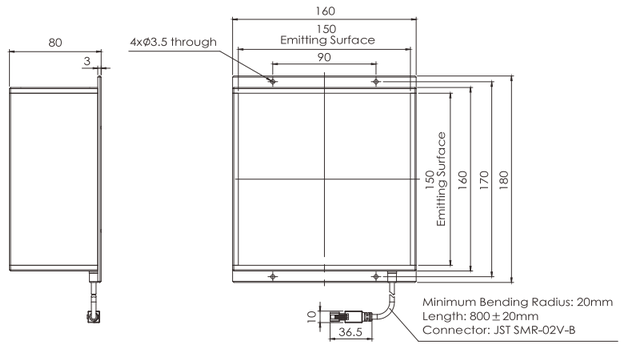
OPT-FP8272



OPT-FP120100

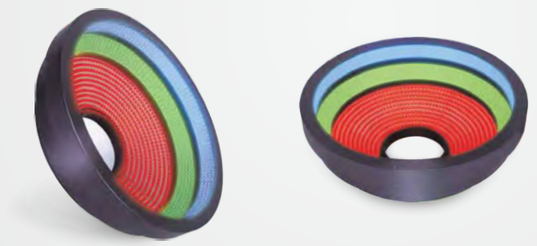


OPT-FP180160



AOI Lights OPT-RIA Series

Patented



Product Features

Main Features

- Special diffuser designed to improve homogeneity
- Highlighting of 3D object information through multicolor (RGB) illumination from various angles

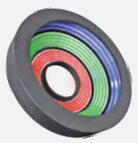
Application Cases

- Solder inspection of PCB
- Inspection of round objects
- Inspection of objects with varying heights

Selection Guide

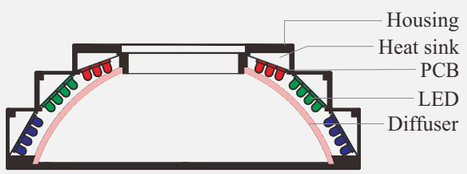
OPT-RIA200
- Outer diameter
- AOI light
- Brand name

Customizable Items

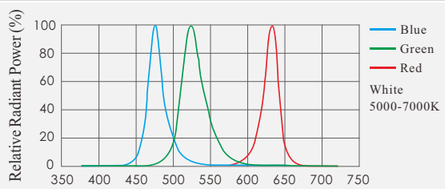


Color, Mounting, Sectional control, Emitting angle, Size

Section Structure Drawing



Spectrum Chart



Note: The data is for reference only.

Application Cases

- Soldering inspection



Workpiece



Illumination



Image

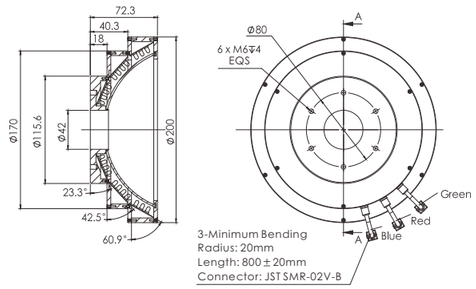
Model Table

No.	Model	∗ Power	Working distance (mm)	Channels	Recommended controller
1	OPT-RIA200-RGB	31W@24V	31.0	3	OPT-DPA2024E
2	OPT-RIA263-RGB	50W@24V	52.5	3	

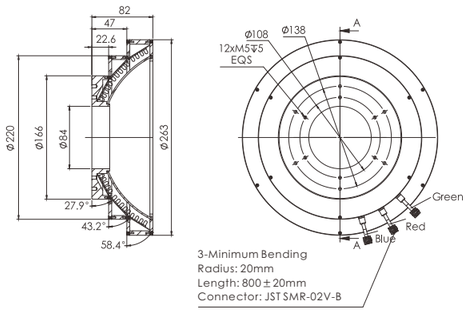
∗ Note: The data is for reference only.

Dimensions (mm)

1. OPT-RIA200-RGB



2. OPT-RIA263-RGB



Vault Lights OPT-LIU Series

Patented



Product Features

Main Features

- Efficient heat dissipation design guarantee full product brightness and life time.
- Good light diffusion can effectively eliminate interference caused by the irregular surface.

Application Cases

- Surface inspection of tobacco packaging
- Detection of package defects of electronic parts
- AOI for line scan camera applications
- Surface inspection with large field of view

Selection Guide

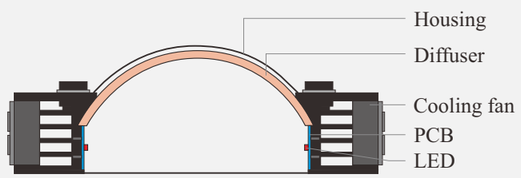
OPT-LIU275
- Length
- Vault light
- Brand name

Customizable Items

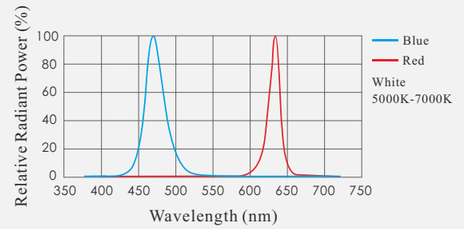


Color, Mounting, Size, Heat dissipation

Section Structure Drawing



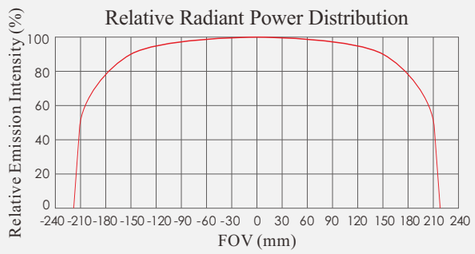
Spectrum Chart



Note: The data is for reference only.

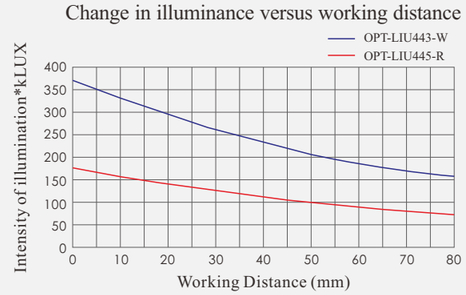
Series features

Relative Radiant Power Distribution



Note: The data above is tested with OPT-LIU443-W at 20mm WD. It is for reference only.

Change in illuminance versus working distance



Note: The data is for reference only.

Application Cases

- OCR for power adaptors



Workpiece | Illumination | Image | SCI-Smart3 Analysis Result

Model Table

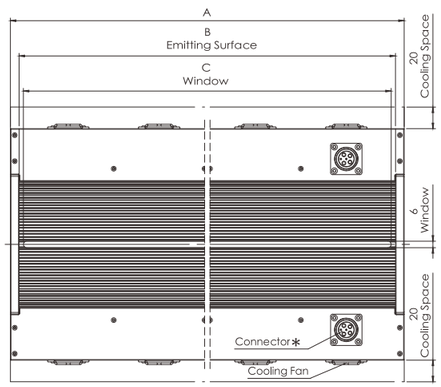
No.	Model	Color	∗ Power	Length A (mm)	Emitting B (mm)	View window length C (mm)	Channels	Standard light source cable	Recommended controller
1	OPT-LIU275	○ ●	230.4W@9.6A	275	259	251	2	OPT-DGYX1M-6P-S-6A	OPT-DPA6024
2	OPT-LIU359	○ ●	307.2W@12.8A	359	343	335		OPT-DGYX1M-6P-S-20A	OPT-DPA20024
3	OPT-LIU443	○ ●	384W@16A	443	427	419			
4	OPT-LIU527	○ ●	460.8W@19.2A	527	511	495			
5	OPT-LIU611	○ ●	537.6W@22.4A	611	595	584			
6	OPT-LIU303	●	192W@8A	303	287	279		OPT-DGYX1M-6P-S-6A	OPT-DPA6024
7	OPT-LIU415	●	268.8W@11.2A	415	399	385			
8	OPT-LIU527	●	345.6W@14.4A	527	511	501		OPT-DGYX1M-6P-S-20A	OPT-DPA20024
9	OPT-LIU639	●	422.4W@17.6A	639	623	612			

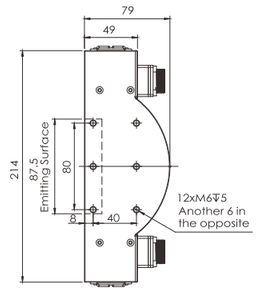
Note: 1. ∗ The data above is for reference only.
2. Light source cable is required accessory,see the details in P252.

Dimensions (mm)

Customizable size:Length of white and blue lights is increased by multiples of 84mm;length of red lights is increased by multiples of 12mm.

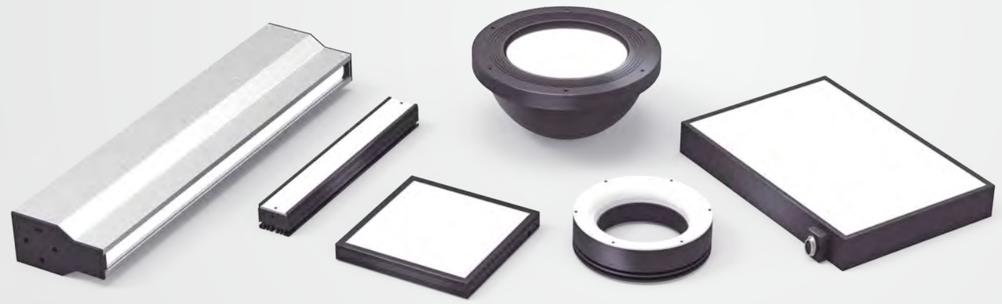
W/B: A=84n+23, B=84n+7, C=84n-1.
R: A=112n+79, B=112n+63, C=84n-1.





∗1.Single channel rated current≤6A,connector is ZQ GX16M-6B
∗2.Single channel rated current > 6A,connector is WS20K6Z

High CRI Light Source OPT-XX-RA95W Series New



Product Features

Main Features

- The average color rendering index (CRI) is above 95; desirable for color critical applications
- The High CRI series offers various types and shapes from OPT standard lighting series.

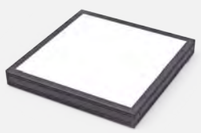
Application Cases

- Color separation, color measurement and inspection in printing industry
- Quality inspection and appearance sorting for food and agricultural industry.
- Applications for color sorters

Selection Guide

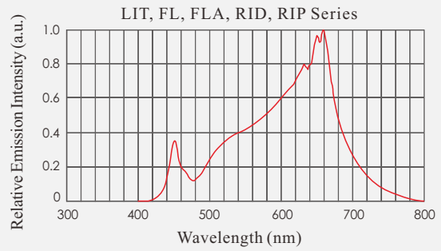
OPT-XX-RA95W
- XX → Color Rendering Index (CRI)
- XX → Lights model series
- XX → Brand name

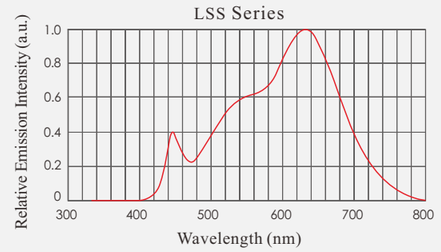
Customizable Items



Mounting | Connector | Sectional control | Size | Color temperature customizable

Spectrum Chart





Note: The data is for reference only.

Series features

What is color renderin

The degree to which the light source reproduces the color of an object is called color rendering, which is the degree of color fidelity. Light sources with high color rendering have better color reproduction, and the colors we see are closer to natural colors. Light sources with low color rendering have poor color reproduction, and the color deviations we see are also larger.

Common CRI light source rendering effect

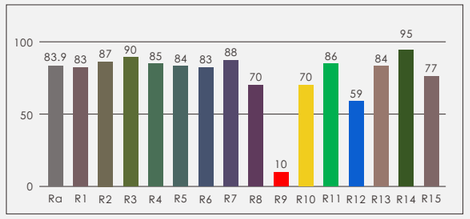


High CRI light source rendering effect

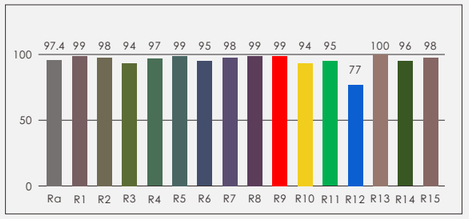


The average color rendering index is above Ra95, which is close to sunlight.

Common white LED spectrum
FLA11080-W



High CRI LED Spectrum
FLA11080-RA95W



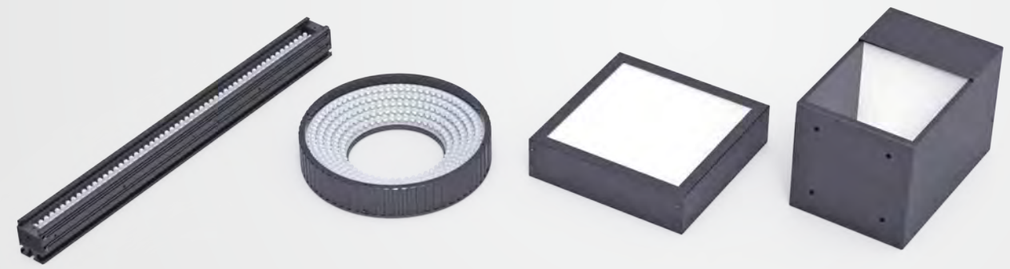
Remarks: The color rendering index refers to the index used to evaluate the color rendering properties of 15 colors (standard = 100). The average color rendering index Ra is the average value of R1-R8.

Model List

No.	Light source series	Models	Details related models and dimension drawings page reference
1	FLA Series	OPT-FLA11080	P140
		OPT-FLA150110	
		OPT-FLA210150	
2	FL Series	OPT-FL7070	P137
		OPT-FL9090	
		OPT-FL110110	
3	LIT Series	OPT-LIT9832	P135
		OPT-LIT14032	
		OPT-LIT18232	
4	RID Series	OPT-RID80	P166
		OPT-RID100	
		OPT-RID150	
5	RIP Series	OPT-RIP120	P197
		OPT-RIP170	
		OPT-RIP230	
6	LSS Series	OPT-LSS104	P168
		OPT-LSS272	
		OPT-LSS398	

Note: All models and parameters refer to the corresponding series of white light, the dimension drawings refer to the corresponding model.

IR Lights OPT-IXX-IR Series



Product Features

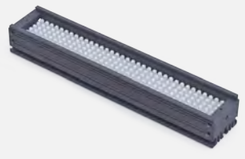
Main Features

- Standard products with 850nm and 940nm wavelengths.
- Two levels of radiation intensity of standard products of the same size are optionally available.
- Wavelength, size and radiation intensity can be flexibly customized.

Application Cases

- Medical industry (vascular mesh detection/eye tracking)
- Packaging (transparent plastic materials)
- Clothing and textiles
- Electronics/semiconductors
- Pharmaceutical industry
- LCD/OLED

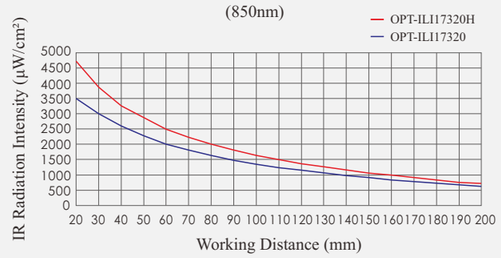
Customizable Items



Mounting
Size
Wavelength
Light source type

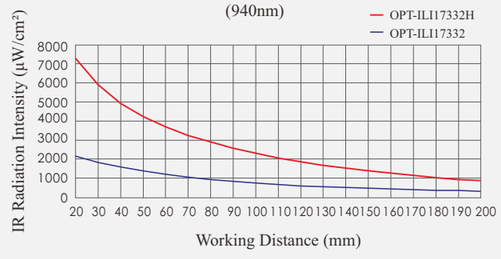
Series features

Change of Radiation Intensity versus Working Distance
(850nm)



Note: The data is for reference only.

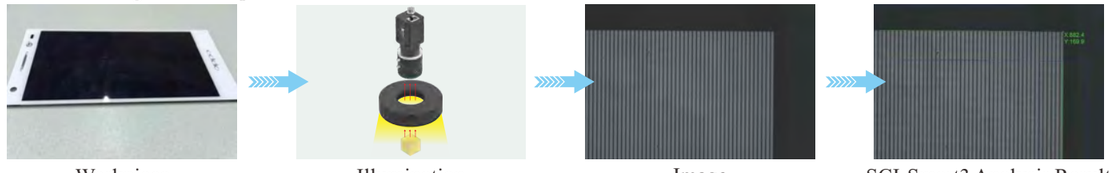
Change of Radiation Intensity versus Working Distance
(940nm)



Note: The data is for reference only.

Application Cases

- Positioning of screen-specific areas

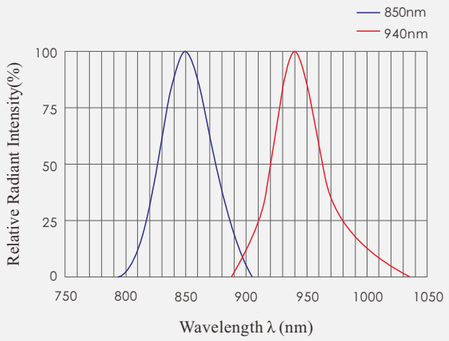


Workpiece | Illumination | Image | SCI-Smart3 Analysis Result

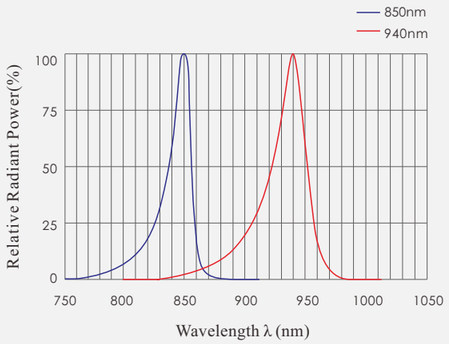
Series features

Spectrum Chart

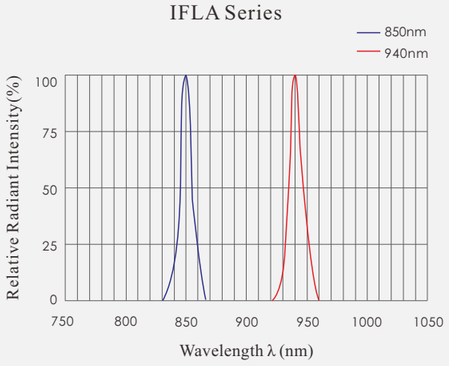
ILI, IRI, ICO Series Standard Model



ILI, IRI, ICO Series Intensive Model



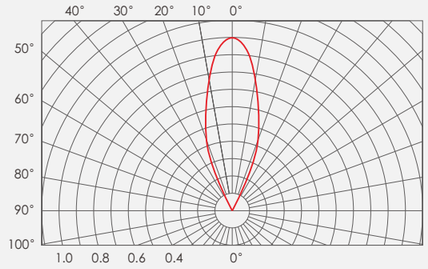
IFLA Series



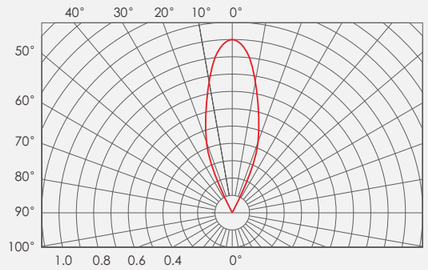
Note: The data is for reference only.

LED Directivity

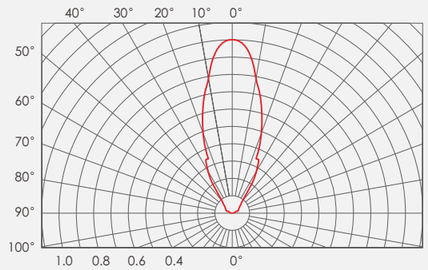
ILI, IRI, ICO Series Standard Model 850nm Band



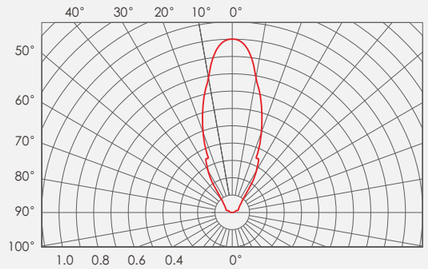
ILI, IRI, ICO Series Standard Model 940nm Band



ILI, IRI, ICO Series Intensive Model 850nm Band



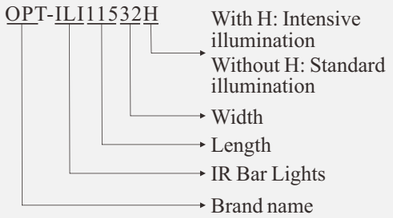
ILI, IRI, ICO Series Intensive Model 940nm Band



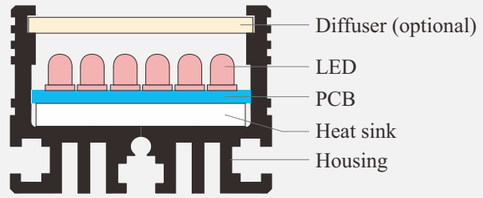
Note: The data is for reference only.

ILI IR Bar Lights

Selection Guide



Section Structure Drawing

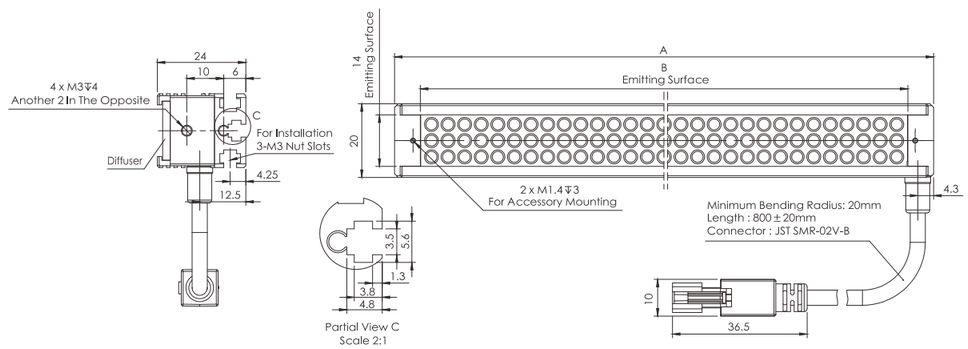


Model Table

No.	Model	∗ Power@850nm	∗ Power@940nm	Length A(mm)	Emitting B(mm)	Light source width(mm)	Recommended controller
1	OPT-ILI6120	1.9W@24V	1.7W@24V	61	47	20	OPT-DPA2024E
2	OPT-ILI6120H	3.3W@24V	3.2W@24V				
3	OPT-ILI11520	3.7W@24V	3.4W@24V	115	101		
4	OPT-ILI11520H	6.5W@24V	6.5W@24V				
5	OPT-ILI17320	6.3W@24V	5.7W@24V	173	159		
6	OPT-ILI17320H	7.9W@24V	8.6W@24V				
7	OPT-ILI21820	8W@24V	7.2W@24V	218	204		
8	OPT-ILI21820H	10.2W@24V	11.2W@24V				
9	OPT-ILI26820	9.8W@24V	8.9W@24V	268	254		
10	OPT-ILI26820H	12.4W@24V	13.6W@24V				
11	OPT-ILI31320	11.5W@24V	10.5W@24V	313	299		
12	OPT-ILI31320H	14.7W@24V	16.0W@24V				
13	OPT-ILI36220	13.4W@24V	12.1W@24V	362	348		
14	OPT-ILI36220H	14.9W@24V	18.5W@24V				

∗ Note: The data is for reference only.

Dimensions (mm)

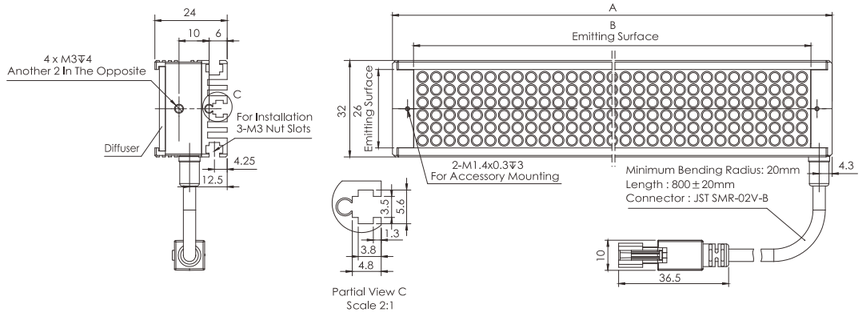


Model Table

No.	Model	∗ Power@850nm	∗ Power@940nm	Length A(mm)	Emitting B(mm)	Light source width(mm)	Recommended controller
1	OPT-ILI3832	1.8W@24V	1.7W@24V	38	24	32	OPT-DPA2024E
2	OPT-ILI3832H	2.2W@24V	2.4W@24V				
3	OPT-ILI6132	3.6W@24V	3.4W@24V	61	47		
4	OPT-ILI6132H	4.4W@24V	4.9W@24V				
5	OPT-ILI8332	5.5W@24V	5.0W@24V	83	69		
6	OPT-ILI8332H	6.6W@24V	7.3W@24V				
7	OPT-ILI11532	6.7W@24V	6.5W@24V	115	101		
8	OPT-ILI11532H	8.6W@24V	9.6W@24V				
9	OPT-ILI17332	6.5W@24V	6.6W@24V	173	159		
10	OPT-ILI17332H	10.1W@24V	9.9W@24V				
11	OPT-ILI21832	8.4W@24V	8.4W@24V	218	204		
12	OPT-ILI21832H	13W@24V	12.7W@24V				
13	OPT-ILI26832	10.2W@24V	10.3W@24V	268	254		
14	OPT-ILI26832H	13.6W@24V	15.5W@24V				
15	OPT-ILI31332	12W@24V	12.2W@24V	313	299		
16	OPT-ILI31332H	16W@24V	18.3W@24V				
17	OPT-ILI36232	13.9W@24V	14W@24V	362	348		
18	OPT-ILI36232H	18.5W@24V	21.2W@24V				

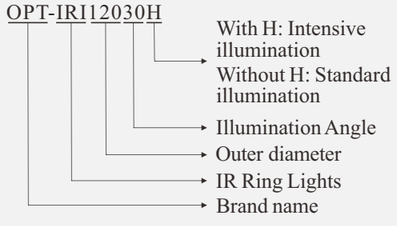
∗ Note: The data is for reference only.

Dimensions (mm)

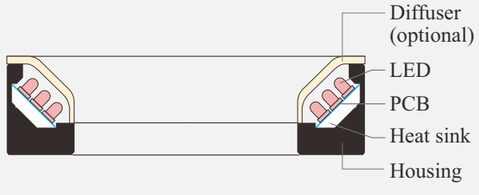


IRI IR Ring Lights

Selection Guide



Section Structure Drawing



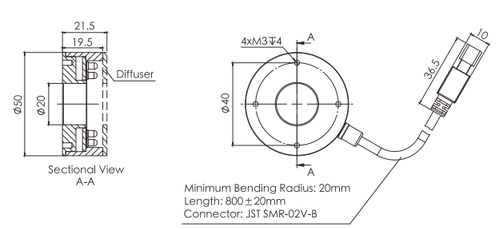
Model Table

No.	Model	∗ Power@850nm	∗ Power@940nm	Emitting angle	Recommended controller
1	OPT-IRI5000	2.8W@24V	2.5W@24V	0°	OPT-DPA2024E
2	OPT-IRI5000H	3W@24V	3.3W@24V		
3	OPT-IRI7000	5W@24V	4.1W@24V		
4	OPT-IRI7000H	5.3W@24V	5.5W@24V		
5	OPT-IRI9000	6.3W@24V	6.3W@24V		
6	OPT-IRI9000H	8.3W@24V	8.5W@24V		
7	OPT-IRI12000	9.2W@24V	8.5W@24V		
8	OPT-IRI12000H	9.4W@24V	12W@24V		

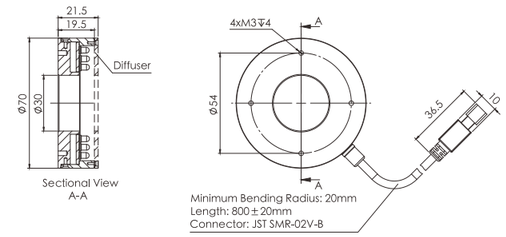
∗ Note: The data is for reference only.

Dimensions (mm)

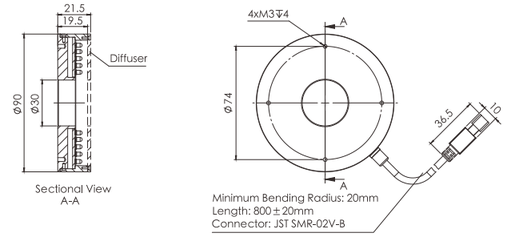
1. OPT-IRI5000
2. OPT-IRI5000H



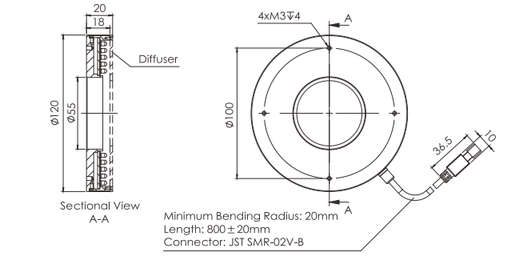
3. OPT-IRI7000
4. OPT-IRI7000H



5. OPT-IRI9000
6. OPT-IRI9000H



7. OPT-IRI12000
8. OPT-IRI12000H



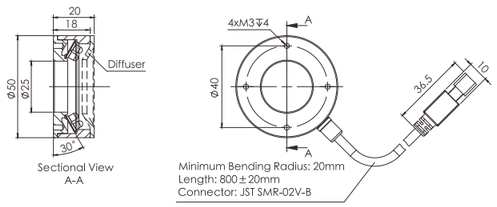
Model Table

No.	Model	∗ Power@850nm	∗ Power@940nm	Emitting angle	Recommended controller
1	OPT-IRI5030	2.8W@24V	2.5W@24V	30°	OPT-DPA2024E
2	OPT-IRI5030H	3W@24V	3.3W@24V		
3	OPT-IRI7030	5.1W@24V	4.1W@24V		
4	OPT-IRI7030H	5.3W@24V	5.5W@24V		
5	OPT-IRI9030	5.4W@24V	5.4W@24V		
6	OPT-IRI9030H	7.1W@24V	7.3W@24V		
7	OPT-IRI12030	11.5W@24V	9.9W@24V		
8	OPT-IRI12030H	12.7W@24V	14W@24V		

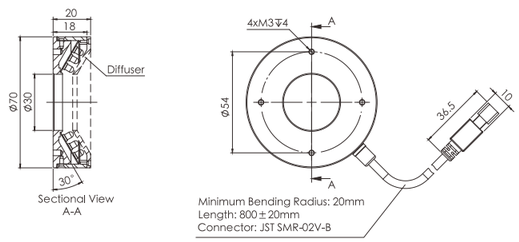
∗ Note: The data is for reference only.

Dimensions (mm)

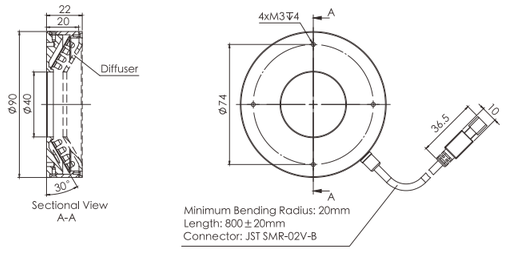
1. OPT-IRI5030
2. OPT-IRI5030H



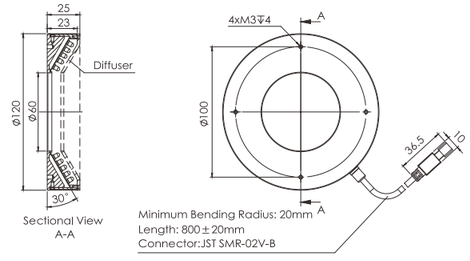
3. OPT-IRI7030
4. OPT-IRI7030H



5. OPT-IRI9030
6. OPT-IRI9030H



7. OPT-IRI12030
8. OPT-IRI12030H



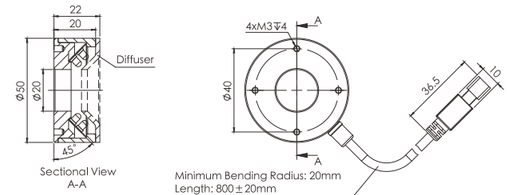
Model Table

No.	Model	∗ Power@850nm	∗ Power@940nm	Emitting angle	Recommended controller
1	OPT-IRI5045	2.8W@24V	2.5W@24V	45°	OPT-DPA2024E
2	OPT-IRI5045H	3W@24V	3.3W@24V		
3	OPT-IRI7045	5.1W@24V	4.1W@24V		
4	OPT-IRI7045H	5.3W@24V	5.5W@24V		
5	OPT-IRI9045	5.8W@24V	5.7W@24V		
6	OPT-IRI9045H	7.4W@24V	7.7W@24V		
7	OPT-IRI12045	10W@24V	8.5W@24V		
8	OPT-IRI12045H	11W@24V	12.1W@24V		

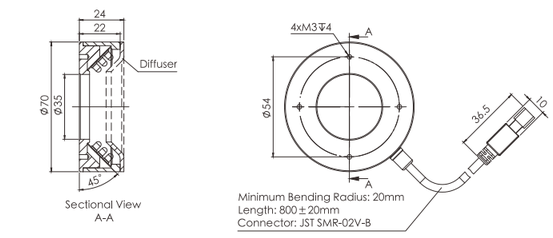
∗ Note: The data is for reference only.

Dimensions (mm)

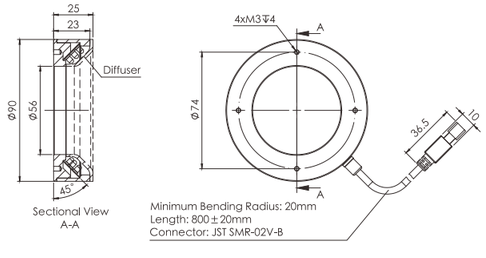
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2. OPT-IRI5045H



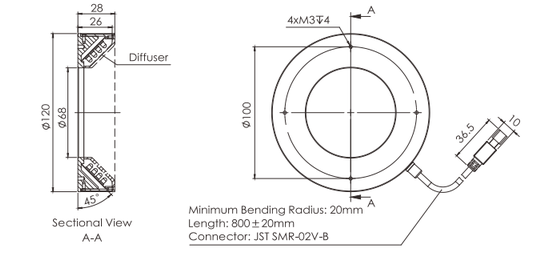
3. OPT-IRI7045
4. OPT-IRI7045H



5. OPT-IRI9045
6. OPT-IRI9045H



7. OPT-IRI12045
8. OPT-IRI12045H



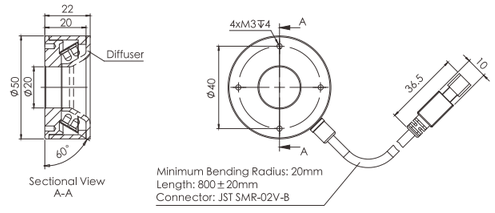
Model Table

No.	Model	∗ Power@850nm	∗ Power@940nm	Emitting angle	Recommended controller
1	OPT-IRI5060	2.8W@24V	2.5W@24V	60°	OPT-DPA2024E
2	OPT-IRI5060H	3W@24V	3.3W@24V		
3	OPT-IRI7060	5.1W@24V	4.1W@24V		
4	OPT-IRI7060H	5.3W@24V	5.5W@24V		
5	OPT-IRI9060	6.4W@24V	6.3W@24V		
6	OPT-IRI9060H	8.1W@24V	8.5W@24V		
7	OPT-IRI12060	10W@24V	8.5W@24V		
8	OPT-IRI12060H	11W@24V	12.1W@24V		

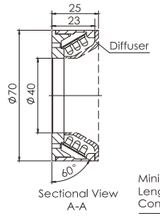
∗ Note: The data is for reference only.

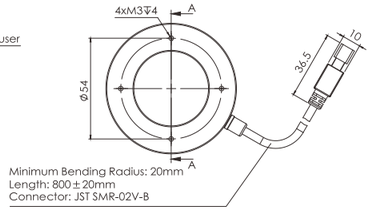
Dimensions (mm)

1. OPT-IRI5060
2. OPT-IRI5060H

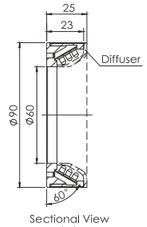


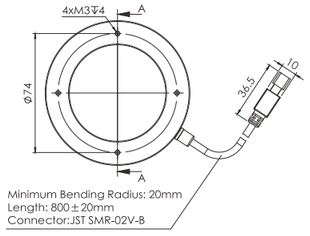
3. OPT-IRI7060
4. OPT-IRI7060H



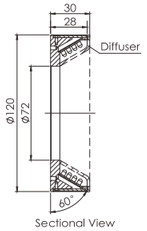


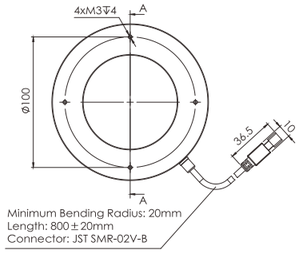
5. OPT-IRI9060
6. OPT-IRI9060H





7. OPT-IRI12060
8. OPT-IRI12060H





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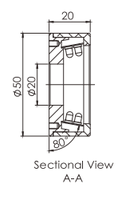
Model Table

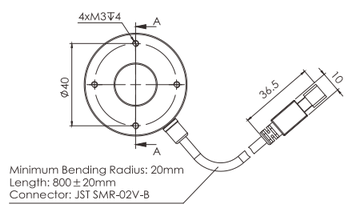
No.	Model	∗ Power@850nm	∗ Power@940nm	Emitting angle	Recommended controller
1	OPT-IRI5080	2.8W@24V	2.5W@24V	80°	OPT-DPA2024E
2	OPT-IRI5080H	3W@24V	3.3W@24V		
3	OPT-IRI7080	5.1W@24V	4.1W@24V		
4	OPT-IRI7080H	5.3W@24V	5.5W@24V		
5	OPT-IRI9080	6.4W@24V	6.3W@24V		
6	OPT-IRI9080H	8.1W@24V	8.5W@24V		
7	OPT-IRI12080	7.8W@24V	6.6W@24V		
8	OPT-IRI12080H	8.6W@24V	9.5W@24V		

∗ Note: The data is for reference only.

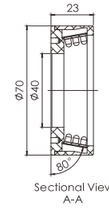
Dimensions (mm)

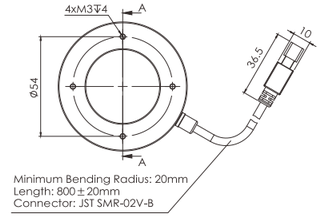
1. OPT-IRI5080
2. OPT-IRI5080H



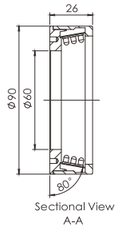


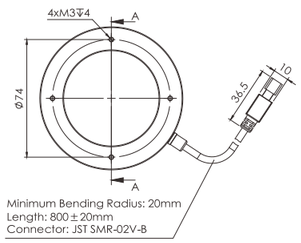
3. OPT-IRI7080
4. OPT-IRI7080H



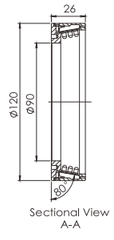


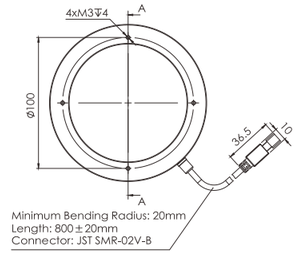
5. OPT-IRI9080
6. OPT-IRI9080H





7. OPT-IRI12080
8. OPT-IRI12080H





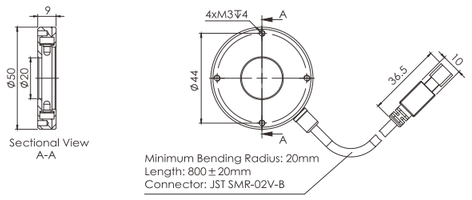
Model Table

No.	Model	∗ Power@850nm	∗ Power@940nm	Emitting angle	Recommended controller
1	OPT-IRI5090	1.1W@24V	1W@24V	90°	OPT-DPA2024E
2	OPT-IRI5090H	1W@24V	1W@24V		
3	OPT-IRI7090	2.2W@24V	2.1W@24V		
4	OPT-IRI7090H	1.8W@24V	2.3W@24V		
5	OPT-IRI9090	3.3W@24V	2.6W@24V		
6	OPT-IRI9090H	3W@24V	3.4W@24V		
7	OPT-IRI12090	5.3W@24V	4.3W@24V		
8	OPT-IRI12090H	5W@24V	5.5W@24V		

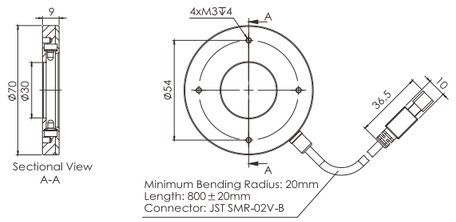
∗ Note: The data is for reference only.

Dimensions (mm)

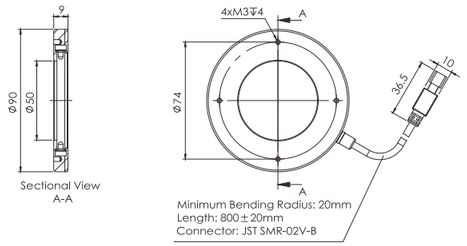
1. OPT-IRI5090
2. OPT-IRI5090H



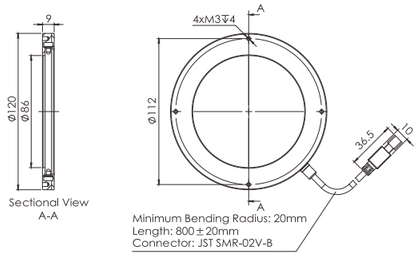
3. OPT-IRI7090
4. OPT-IRI7090H



5. OPT-IRI9090
6. OPT-IRI9090H

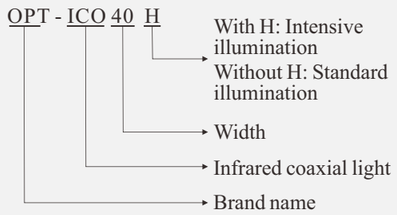


7. OPT-IRI12090
8. OPT-IRI12090H

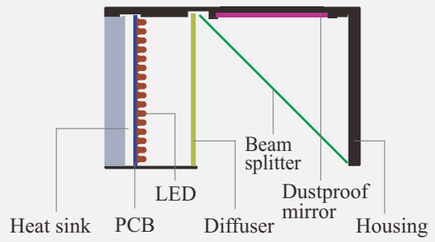


ICO Infrared Coaxial Light

Selection Guide



Section Structure Drawing



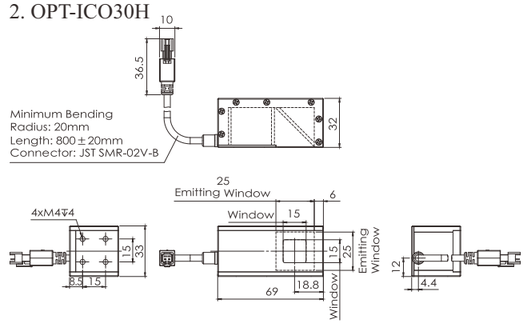
Model Table

No.	Model	∗ Power@850nm	∗ Power@940nm	Recommended controller
1	OPT-ICO30	1.9W@24V	1.9W@24V	OPT-DPA2024E
2	OPT-ICO30H	3.1W@24V	3.3W@24V	
3	OPT-ICO40	2.7W@24V	2.6W@24V	
4	OPT-ICO40H	4.1W@24V	4.3W@24V	
5	OPT-ICO50	4.8W@24V	4.6W@24V	
6	OPT-ICO50H	5.7W@24V	6.1W@24V	
7	OPT-ICO60	5.5W@24V	5.7W@24V	
8	OPT-ICO60H	6.7W@24V	7.2W@24V	
9	OPT-ICO70	7.9W@24V	8.2W@24V	
10	OPT-ICO70H	8.5W@24V	8.5W@24V	
11	OPT-ICO80	9.1W@24V	9.1W@24V	
12	OPT-ICO80H	10.8W@24V	10.8W@24V	
13	OPT-ICO100	13.1W@24V	13.2W@24V	
14	OPT-ICO100H	15.5W@24V	15.6W@24V	
15	OPT-ICO150	24W@24V	24W@24V	
16	OPT-ICO150H	31.2W@24V	28.8W@24V	
17	OPT-ICO200	45.6W@1.9A	45.6W@1.9A	OPT-DPA6024
18	OPT-ICO200H	52.8W@2.2A	52.8W@2.2A	

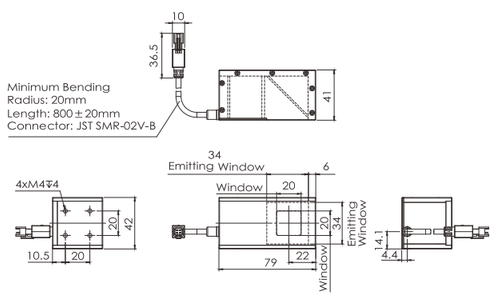
∗ Note: The data is for reference only.

Dimensions (mm)

1. OPT-ICO30
2. OPT-ICO30H

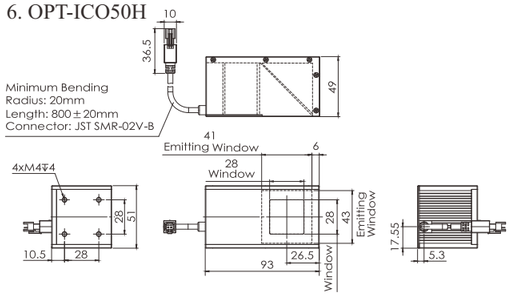


3. OPT-ICO40
4. OPT-ICO40H

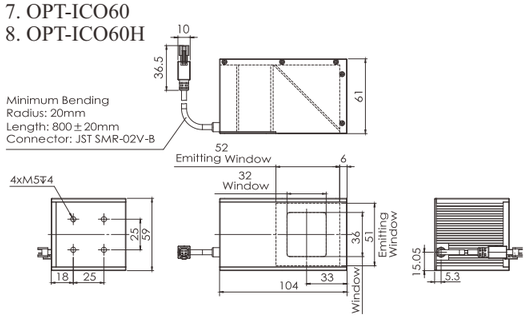


Dimensions (mm)

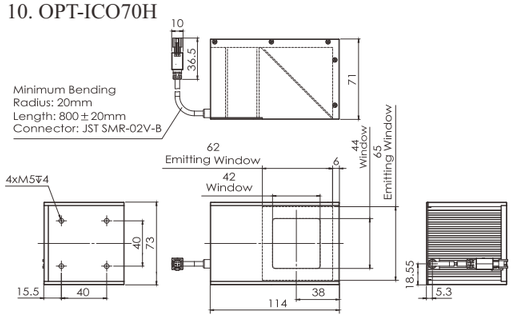
5. OPT-ICO50
6. OPT-ICO50H



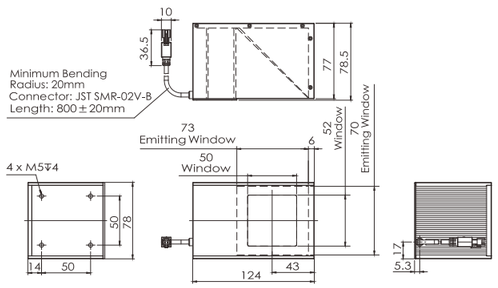
7. OPT-ICO60
8. OPT-ICO60H



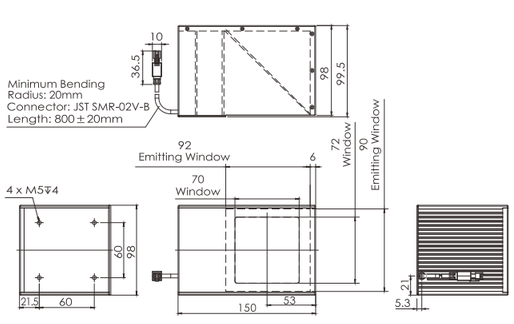
9. OPT-ICO70
10. OPT-ICO70H



11. OPT-ICO80
12. OPT-ICO80H

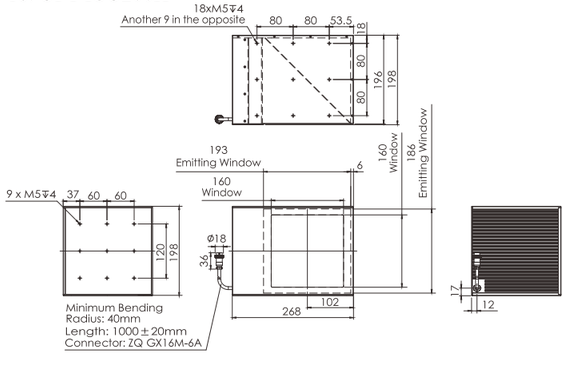


13. OPT-ICO100
14. OPT-ICO100H



15. OPT-ICO150
16. OPT-ICO150H

17. OPT-ICO200
18. OPT-ICO200H



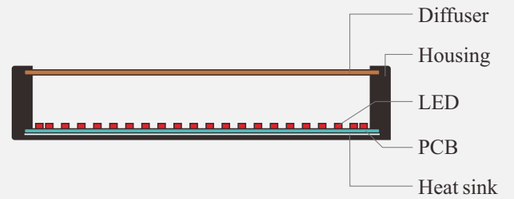
IFLA Infrared Direct Backlight

Selection Guide

OPT - IFLA 90 90

- Width
- Length
- Infrared direct backlight
- Brand name

Section Structure Drawing



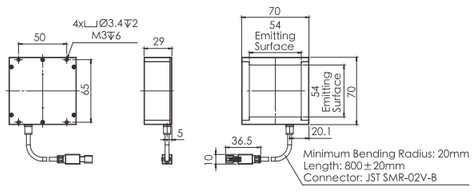
Model Table

No.	Model	∗ Power@850nm	∗ Power@940nm	Recommended controller
1	OPT-IFLA7070	7.2W@24V	7.0W@24V	OPT-DPA2024E
2	OPT-IFLA9090	9.4W@24V	8.2W@24V	
3	OPT-IFLA110110	12.5W@24V	11.3W@24V	
4	OPT-IFLA130130	16.3W@24V	14.4W@24V	
5	OPT-IFLA150150	19.7W@24V	18.5W@24V	
6	OPT-IFLA175175	26.2W@24V	24.2W@24V	
7	OPT-IFLA200200	33.4W@24V	32.6W@24V	
8	OPT-IFLA225225	40.3W@24V	40.8W@24V	
9	OPT-IFLA250250	41.3W@24V	42.7W@24V	

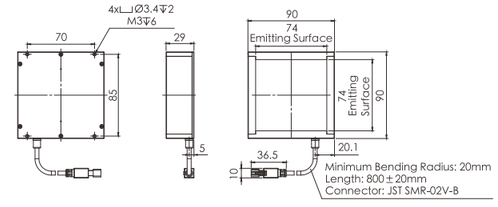
∗ Note: The data is for reference only.

Dimensions (mm)

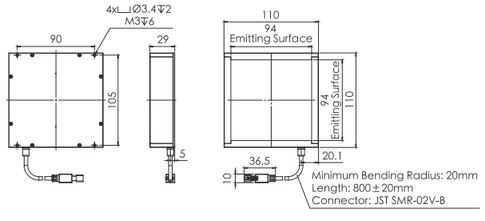
1. OPT-IFLA7070



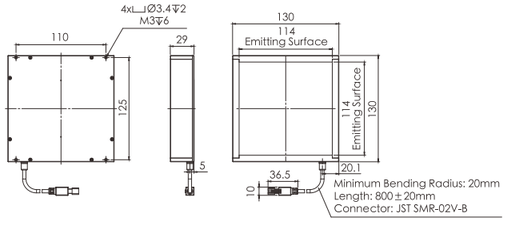
2. OPT-IFLA9090



3. OPT-IFLA110110

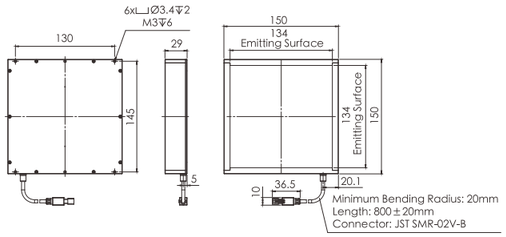


4. OPT-IFLA130130

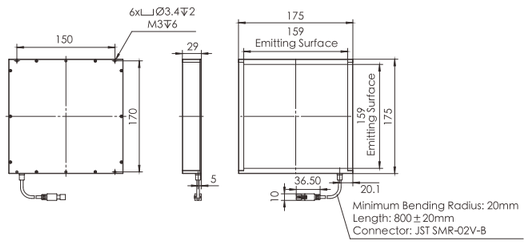


Dimensions (mm)

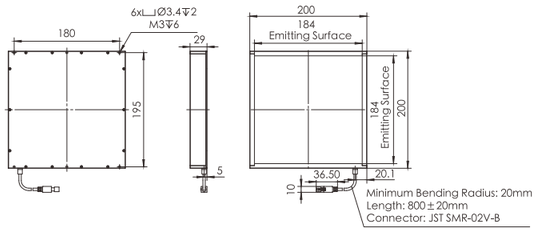
5. OPT-IFLA150150



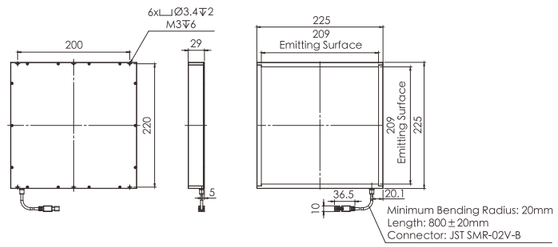
6. OPT-IFLA175175



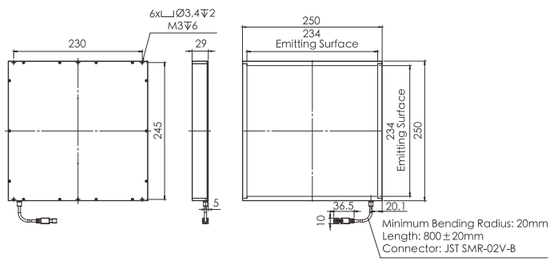
7. OPT-IFLA200200



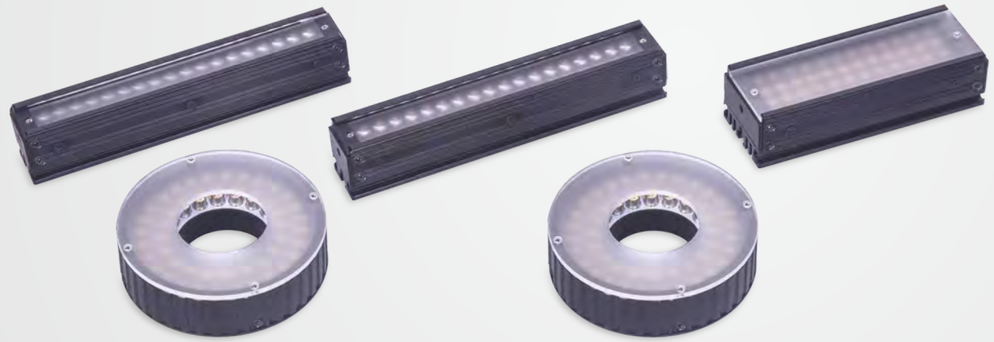
8. OPT-IFLA225225



9. OPT-IFLA250250



UV Lights OPT-UXX-UV Series



Product Features

Main Features

- Standard products of 365nm and 375nm are provided.
- LED with glass housing, long lifecycle.
- Wide irradiation with large radiation range and uniform illumination,narrow irradiation with concentrated light, long irradiation and high radiation intensity.
- Diffuser plate is optional to improve image uniformity.

Application Cases

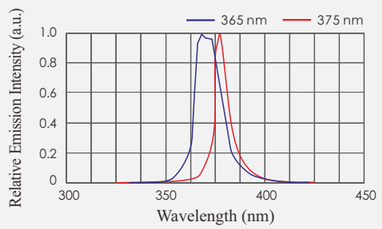
- Banknote/ticket inspection
- Inspection of fluorescent material
- Fluorescent OCR, barcodes and QR codes reading Recognition
- Detection of small case scratches and damage
- UV glue inspection

Customizable Items



Mounting
Light source type
Wavelength
Size

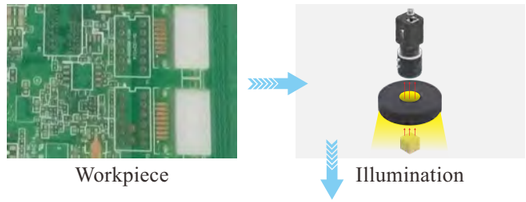
Spectrum Chart



Note: The data is for reference only.

Application Cases

Glue detection on PCB



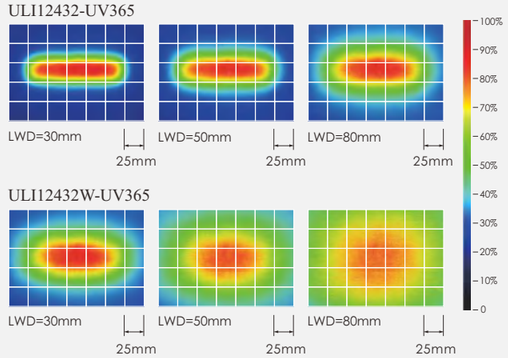
Remark: Users can get clear result image of the transparent UV glue with UV light.



Image

Series features

Relative Radiant Power Distribution

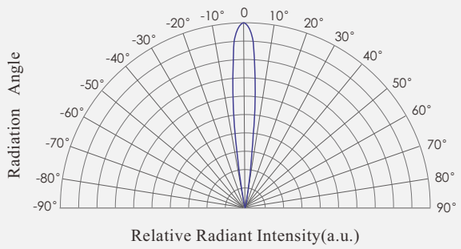


Note: The data is for reference only.

Series features

Narrow radiation

Directional feature

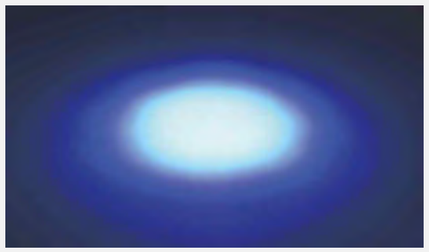


Relative Radiant Intensity(a.u.)

Spot contrast



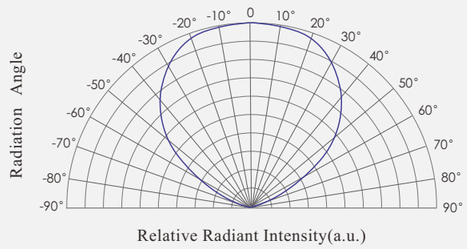
OPT-ULI12432 (375nm)



OPT-URI9030 (375nm)

Wide radiation

Directional feature

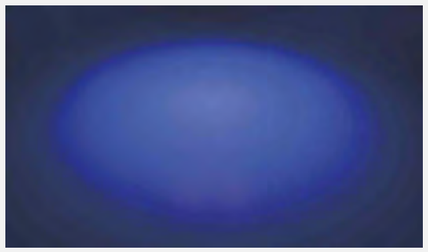


Relative Radiant Intensity(a.u.)

Spot contrast

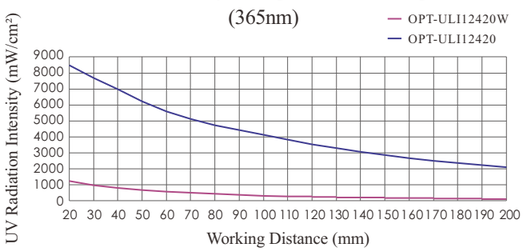


OPT-ULI12432W (375nm)



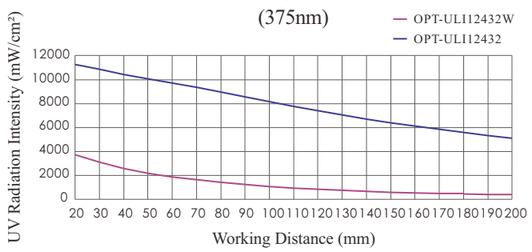
OPT-URI9030W (375nm)

Radiation Intensity Change versus Working Distance (365nm)



Note: The data is for reference only.

Radiation Intensity Change versus Working Distance (375nm)



Note: The data is for reference only.

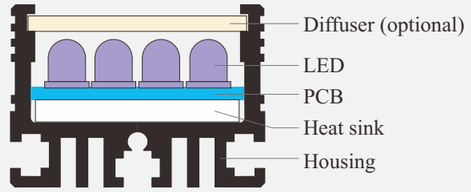
ULI UV Bar Lights

Selection Guide

OPT-ULI37632W

- With W:Wide radiation / Without W:Narrow radiation
- Width
- Length
- UV Bar Lights
- Brand name

Section Structure Drawing

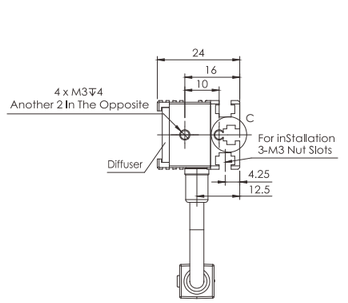


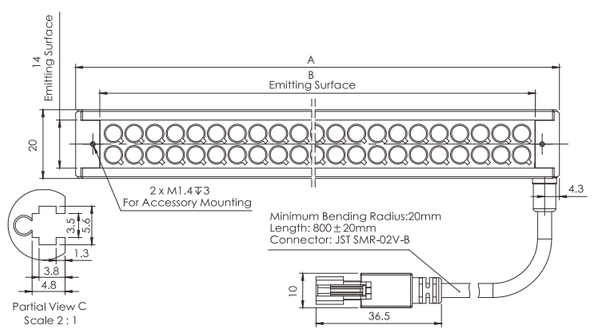
Model Table

No.	Model	∗ Power@365nm	∗ Power@375nm	Length A (mm)	Emitting B (mm)	Light source width (mm)	Recommended controller
1	OPT-ULI5220	1W@24V	1W@24V	52	38	20	OPT-DPA2024E
2	OPT-ULI5220W						
3	OPT-ULI8820	1.9W@24V	2W@24V	88	74		
4	OPT-ULI8820W						
5	OPT-ULI12420	2.8W@24V	2.9W@24V	124	110		
6	OPT-ULI12420W						
7	OPT-ULI16020	3.6W@24V	3.9W@24V	160	146		
8	OPT-ULI16020W						
9	OPT-ULI19620	4.6W@24V	4.8W@24V	196	182		
10	OPT-ULI19620W						
11	OPT-ULI23220	5.5W@24V	5.8W@24V	232	218		
12	OPT-ULI23220W						
13	OPT-ULI26820	6.4W@24V	6.7W@24V	268	254		
14	OPT-ULI26820W						
15	OPT-ULI30420	6.5W@24V	6.6W@24V	304	290		
16	OPT-ULI30420W						
17	OPT-ULI34020	7.3W@24V	7.4W@24V	340	326		
18	OPT-ULI34020W						
19	OPT-ULI37620	8.2W@24V	8.3W@24V	376	362		
20	OPT-ULI37620W						

∗ Note: The data is for reference only.

Dimensions (mm)



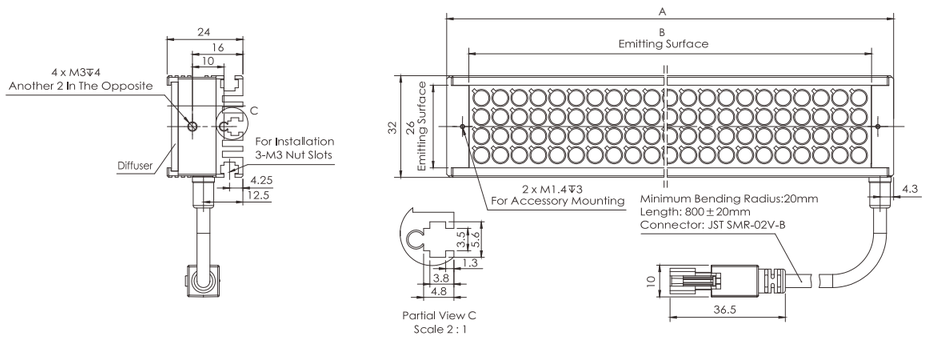


Model Table

No.	Model	∗ Power@365nm	∗ Power@375nm	Length A (mm)	Emitting B (mm)	Light source width (mm)	Recommended controller
1	OPT-ULI5232	1.8W@24V	1.9W@24V	52	38	32	OPT-DPA2024E
2	OPT-ULI5232W						
3	OPT-ULI8832	3.3W@24V	3.4W@24V	88	74		
4	OPT-ULI8832W						
5	OPT-ULI12432	4.7W@24V	5.1W@24V	124	110		
6	OPT-ULI12432W						
7	OPT-ULI16032	6.8W@24V	7.3W@24V	160	146		
8	OPT-ULI16032W						
9	OPT-ULI19632	7.9W@24V	8.2W@24V	196	182		
10	OPT-ULI19632W						
11	OPT-ULI23232	10.7W@24V	10.5W@24V	232	218		
12	OPT-ULI23232W						
13	OPT-ULI26832	11.6W@24V	12.2W@24V	268	254		
14	OPT-ULI26832W						
15	OPT-ULI30432	12.7W@24V	13.1W@24V	304	290		
16	OPT-ULI30432W						
17	OPT-ULI34032	14.3W@24V	14.8W@24V	340	326		
18	OPT-ULI34032W						
19	OPT-ULI37632	15.8W@24V	16.4W@24V	376	362		
20	OPT-ULI37632W						

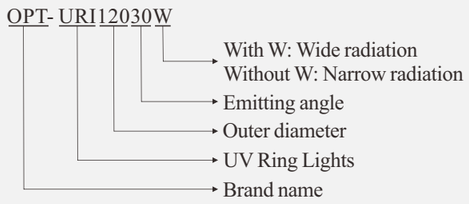
∗ Note: The data is for reference only.

Dimensions (mm)

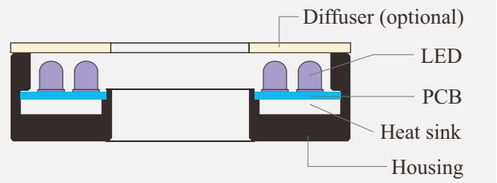


URI UV Ring Lights

Selection Guide



Section Structure Drawing



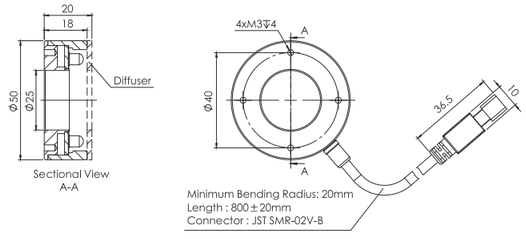
Model Table

No.	Model	∗ Power@365nm	∗ Power@375nm	Emitting angle	Recommended controller
1	OPT-URI5000	1.3W@24V	1.4W@24V	0°	OPT-DPA2024E
2	OPT-URI5000W				
3	OPT-URI7000	3.3W@24V	3.4W@24V		
4	OPT-URI7000W				
5	OPT-URI9000	5.2W@24V	5.6W@24V		
6	OPT-URI9000W				
7	OPT-URI12000	7.4W@24V	7.8W@24V		
8	OPT-URI12000W				

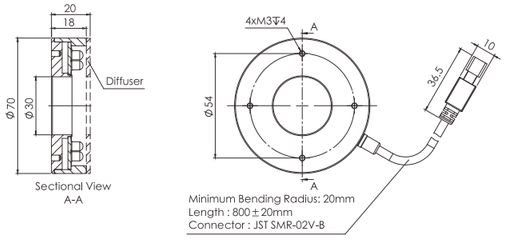
∗ Note: The data is for reference only.

Dimensions (mm)

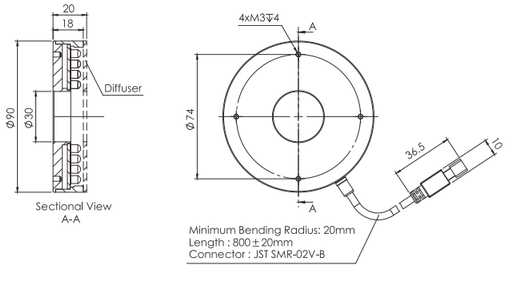
1. OPT-URI5000
2. OPT-URI5000W



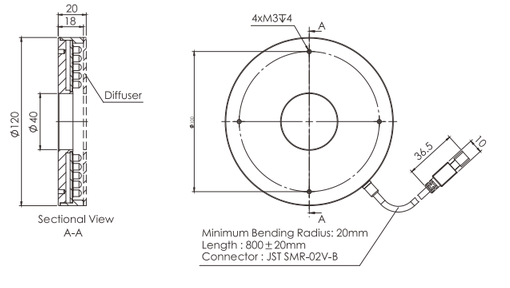
3. OPT-URI7000
4. OPT-URI7000W



5. OPT-URI9000
6. OPT-URI9000W



7. OPT-URI12000
8. OPT-URI12000W



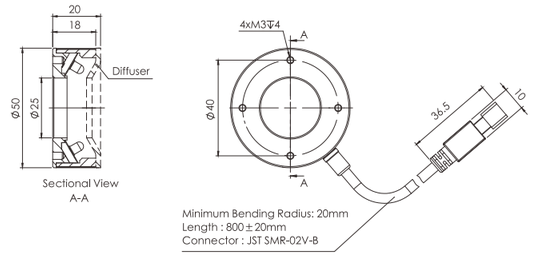
Model Table

No.	Model	∗ Power@365nm	∗ Power@375nm	Emitting angle	Recommended controller
1	OPT-URI5030	1.4W@24V	1.4W@24V	30°	OPT-DPA2024E
2	OPT-URI5030W				
3	OPT-URI7030	3.4W@24V	3.6W@24V		
4	OPT-URI7030W				
5	OPT-URI9030	5.5W@24V	5.8W@24V		
6	OPT-URI9030W				
7	OPT-URI12030	7.6W@24V	8W@24V		
8	OPT-URI12030W				

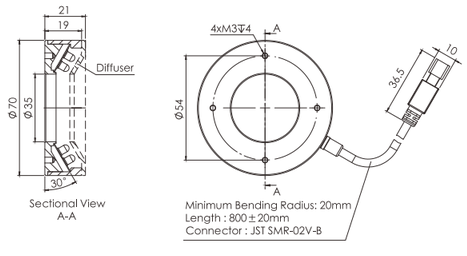
∗ Note: The data is for reference only.

Dimensions (mm)

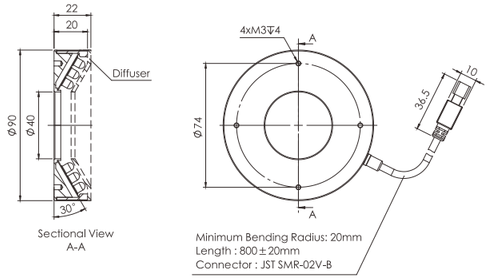
1. OPT-URI5030
2. OPT-URI5030W



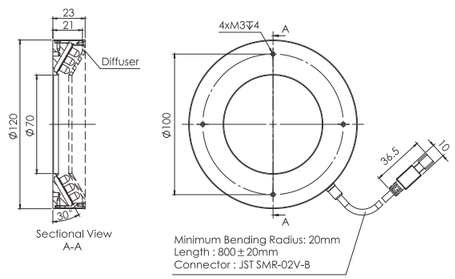
3. OPT-URI7030
4. OPT-URI7030W



5. OPT-URI9030
6. OPT-URI9030W



7. OPT-URI12030
8. OPT-URI12030W



UV Glue Curing Lights OPT-CXXX-UV Series



OPT-CPIG Glue Curing Spot Lights

Product Features

Main Features

- Light spots with 4mm/6mm/8mm/10mm/15mm diameter available
- Special lens for focused and powerful illumination
- Equipped with the flexible and durable cable for multiple motion applications
- Up to 4700mW/cm^2 light intensity at 10mm working distance (Tested with OPT-CPIG1203-04-UV405)

Application Cases

- Camera lens bonding
- Chip encapsulation; sensor production; bonding of hard disk heads
- Bonding of medical injection heads
- Bonding of small parts

Selection Guide

OPT-CPIG12 03-04-UV405

- UV wavelength
- Light spot size
- Power
- Outer diameter
- High intensity spot light
- Curing light series
- Brand name

Customizable Items



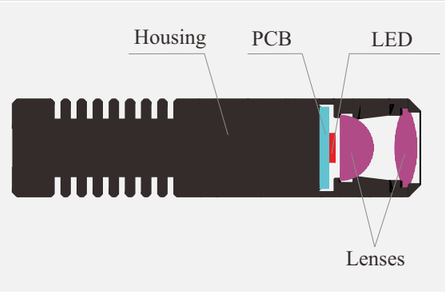


Mounting

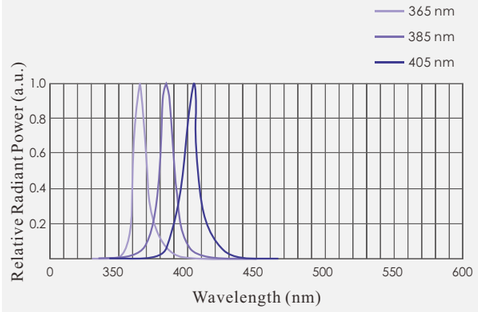


Size

Section Structure Drawing



Spectrum Chart



Note: The data is for reference only.

Application Cases



Light spot



Illumination

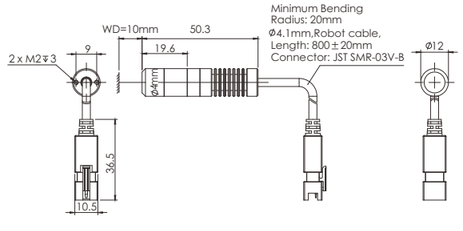
Model Table

No.	Model	Wavelength	* Power	Channels	Recommended controller
1	OPT-CPIG1203-04	365nm/385nm/405nm	3.5W@1.0A	1	OPT-DPA2005E
2	OPT-CPIG1203-06	365nm/385nm/405nm	3.5W@1.0A	1	
3	OPT-CPIG1203-08	365nm/385nm/405nm	3.5W@1.0A	1	
4	OPT-CPIG1203-10	365nm/385nm/405nm	3.5W@1.0A	1	
5	OPT-CPIG1203-15	365nm/385nm/405nm	3.5W@1.0A	1	

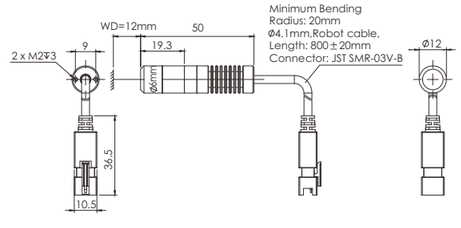
* Note: The data is for reference only.

Dimensions (mm)

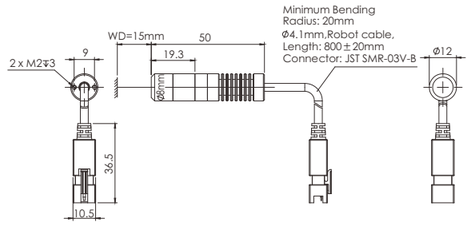
1.OPT-CPIG1203-04



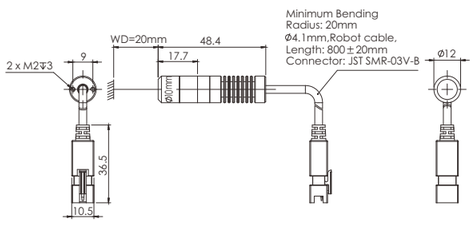
2.OPT-CPIG1203-06



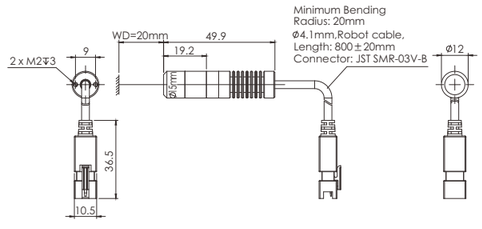
3.OPT-CPIG1203-08



4.OPT-CPIG1203-10



5.OPT-CPIG1203-15



OPT-CLSG Glue Curing Line Lights

Product Features

Main Features

- With special cylinder lens for focused and powerful light
- Stable heat dissipation by cooling fan, allow for continuous mode
- Up to 5500mW/cm^2 light intensity at 20mm working distance (Tested with OPT-CLSG195-UV405)

Application Cases

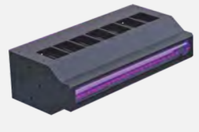
- Bonding PCB chips with UV glue
- Sealing of touch screen with glue; LCD panel encapsulation
- Bonding of medical instruments
- Curing of ink, varnish and paint

Selection Guide

OPT-CLSG195-UV405

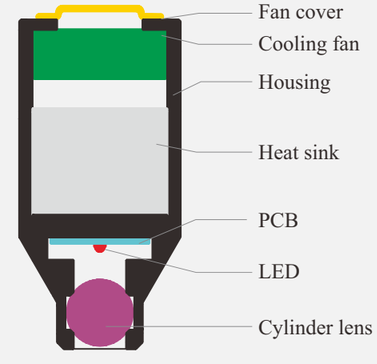
- UV wavelength
- Length
- High intensity line scan light
- Curing light series
- Brand name

Customizable Items

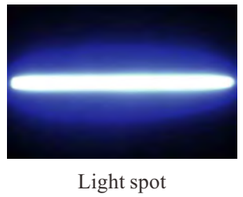


Mounting | Size | Heat dissipation

Section Structure Drawing



Application Cases



Light spot



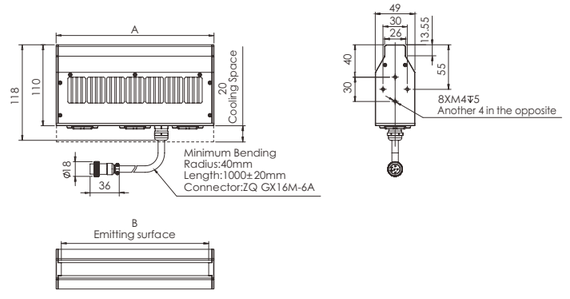
Illumination

Model Table

No.	Model	Wavelength	* Power	Total length A (mm)	Emitting surface B (mm)	Channels	Recommended controller
1	OPT-CLSG60	365nm/385nm/405nm	24W@24V	60	47	1	OPT-DPA2024E
2	OPT-CLSG105	365nm/385nm/405nm	48W@2.0A	105	92	1	OPT-DPA6024
3	OPT-CLSG150	365nm/385nm/405nm	72W@3.0A	150	137	1	
4	OPT-CLSG195	365nm/385nm/405nm	96W@4.0A	195	182	1	
5	OPT-CLSG240	365nm/385nm/405nm	120W@5.0A	240	227	1	
6	OPT-CLSG285	365nm/385nm/405nm	144W@6.0A	285	272	2	
7	OPT-CLSG330	365nm/385nm/405nm	168W@7.0A	330	317	2	
8	OPT-CLSG375	365nm/385nm/405nm	192W@8.0A	375	362	2	
9	OPT-CLSG420	365nm/385nm/405nm	216W@9.0A	420	407	2	
10	OPT-CLSG465	365nm/385nm/405nm	240W@10.0A	465	452	2	

Note:*The data of multi-channel total power is only for reference.

Dimensions (mm)



OPT-CFLG Glue Curing Flat Lights

Product Features

Main Features

- Equipped with compact high power LED arrays for uniform illumination
- Up to 2200 mW/cm^2 light intensity at 10mm working distance
  (Tested with OPT-CFLG15658-UV405)

Application Cases

- Secondary curing of cell phones and optical communication components
- Film printing
- Curing of ink, varnish and paint
- Coating curing of building materials

Selection Guide

OPT-CFLG15658-UV405

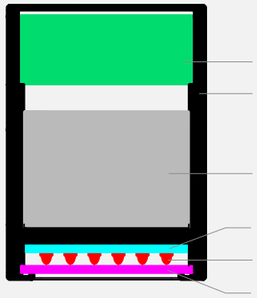
- UV wavelength
- Length and width
- High intensity area scan light
- Curing light series
- Brand name

Customizable Items

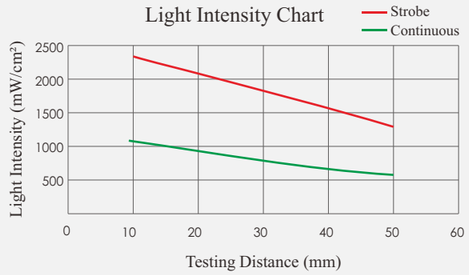


Mounting | Size | Heat dissipation

Section Structure Drawing



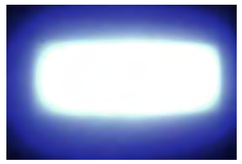
Series features



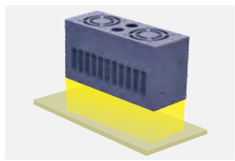
(Tested with OPT-CFLG15658-UV405)

Application Cases

- Height gauging for metal parts



Light spot



Illumination

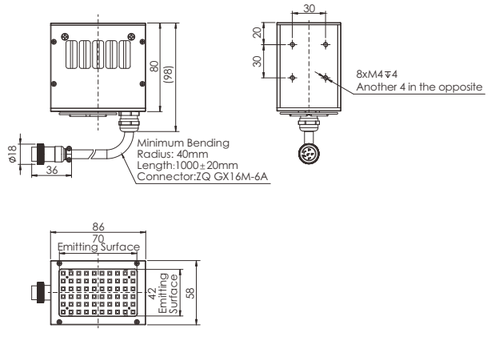
Model Table

No.	Model	Wavelength	＊Power	Channels	Recommended controller
1	OPT-CFLG8658	365nm/385nm/405nm	120W@5A	1	OPT-DPA6024
2	OPT-CFLG15658	365nm/385nm/405nm	240W@10A	2	
3	OPT-CFLG22658	365nm/385nm/405nm	360W@15A	1	OPT-DPA20024E
4	OPT-CFLG29658	365nm/385nm/405nm	480W@20A	1	
5	OPT-CFLG156100	365nm/385nm/405nm	480W@20A	1	

Note:＊The data of multi-channel total power is only for reference.

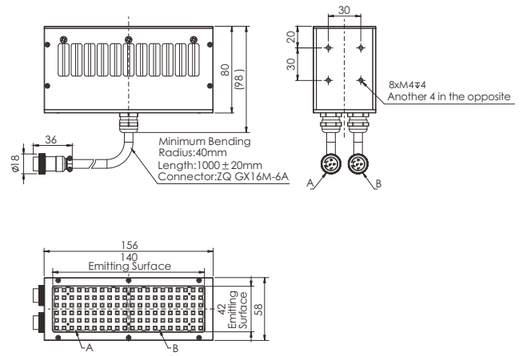
Dimensions (mm)

1.OPT-CFLG8658

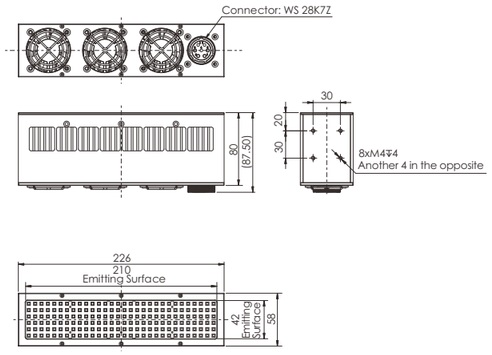


Dimensions (mm)

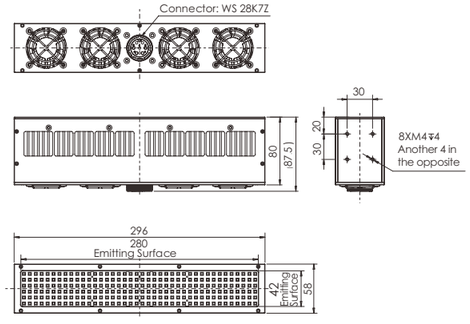
2.OPT-CFLG15658



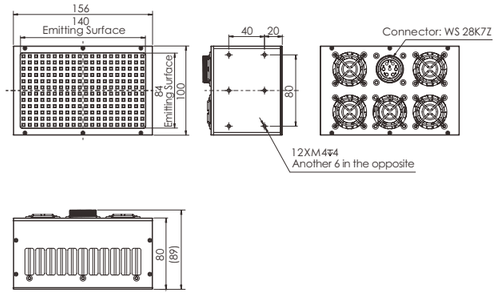
3.OPT-CFLG22658



4.OPT-CFLG29658



5.OPT-CFLG156100



Waterproof Lights

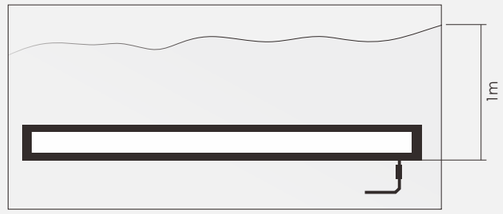
IP67 dustproof and waterproof



Product Features

Main Features

- IP67 rating
- Applicable in humid and dusty environments
- Most of OPT lights can be designed to be waterproof.
- OPT waterproof lights have passed multiple rigorous tests and their performance has been optimized.
- Good cooling performance, long lifespan



- The distance between the light and the water surface in a tank should be ≤1m.
- Test time: 2 hours

Customizable Items




Color


Mounting


Size


Heat dissipation


IP rating

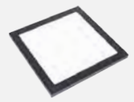

Sectional control

Lights Customizable to be Waterproof

Ring lights



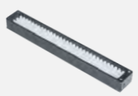
Highly directional backlights



Backlights



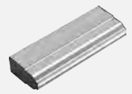
Bar lights



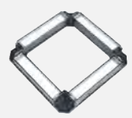
High uniformity bar lights



High intensity line scan lights



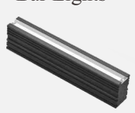
Combined bar lights



High intensity ring lights



High Intensity Bar Lights



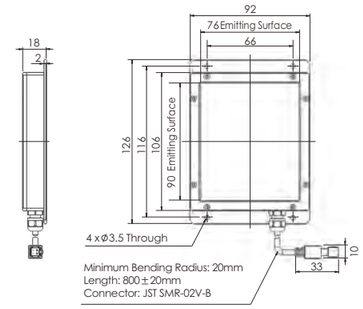
Model Table

No.	Model	∗Power 🔴	∗Power ⚪🟢🔵	Recommended controller
1	OPT-FL12692-IP67	4.1W@24V	6.1W@24V	OPT-DPA2024E
2	OPT-LI22034-IP67	2.4W@24V	4.6W@24V	
3	OPT-RI10030-IP67	4.6W@24V	5.8W@24V	

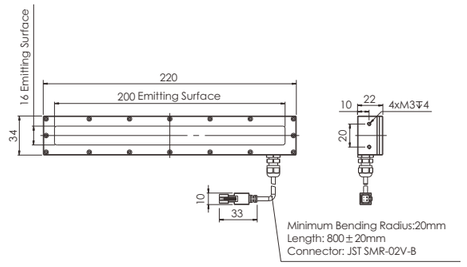
∗ Note: The data is for reference only.

Dimensions (mm)

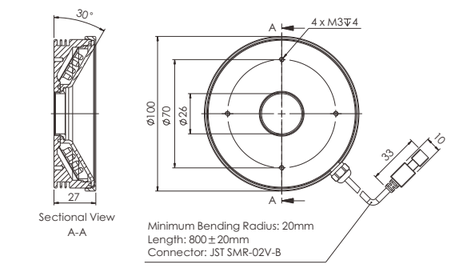
1.OPT-FL12692-IP67



2.OPT-LI22034-IP67

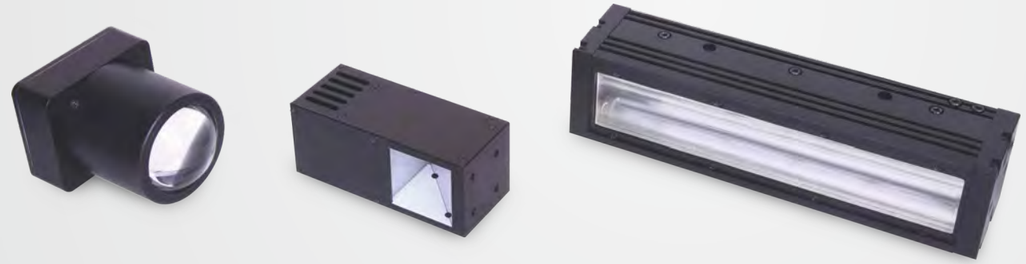


3.OPT-RI10030-IP67



Note: Please contact us for more custom designs.

Air Cooled Lights Series



Product Features

Main Features

- Efficient air cooling
- Very compact design saves space during installation
- Equipped with special cylinder lens for uniform illumination
- Applicable in dust-free and other environments that have special requirements for air pressure & air flow

Application Cases

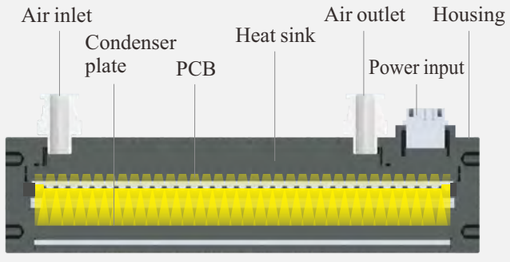
- Detection of defects on the surface of the cell phone screen
- Detection of scratches on the surface of aluminum foil
- Detection of defects on the surface of steel plates

Customizable Items



Color Size Mounting

Section Structure Drawing



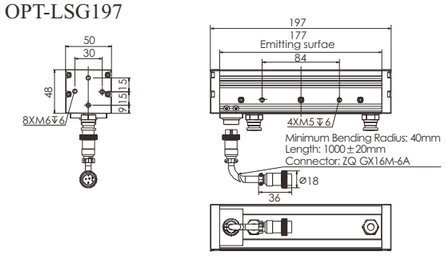
Model Table

Model	∗Power 🔴	∗Power ○	∗Power 🟢🔵	Recommended controller
OPT-LSG197	28.8W@1.2A	84W@3.5A	84W@3.5A	OPT-DPA6024
OPT-PIG5280	-	43.2W@1.8A	-	OPT-DPA6024
OPT-COG40	19.2W@24V	19.2W@24V	19.2W@24V	OPT-DPA2024E

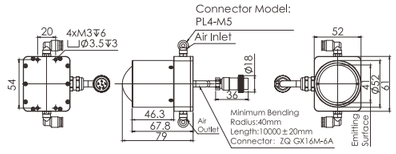
∗ Note: The data is for reference only.

Dimensions (mm)

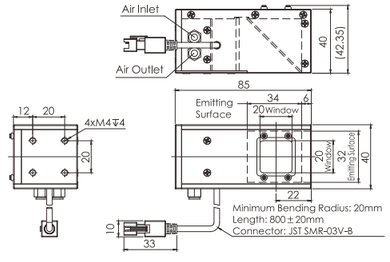
OPT-LSG197



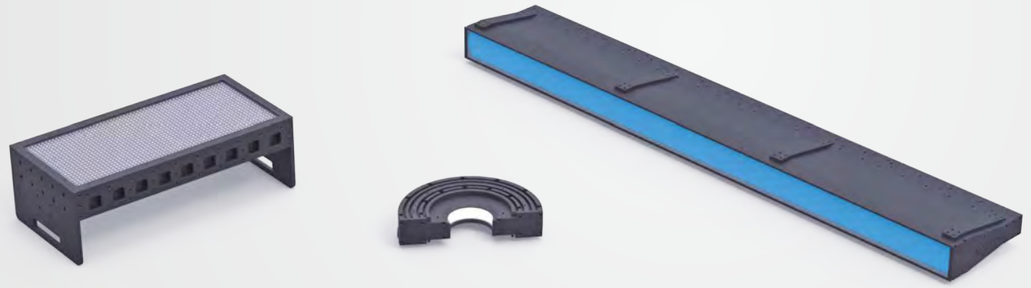
OPT-PIG5280



OPT-COG40



Water Cooled Lights Series



Product Features

Main Features

- Equipped with compact arrangement and uniform illumination high power LED.
- Efficient heat dissipation of water cooling.
- A light weight,stable and reliable alloy design.
- Applicable in dust-free and other environments that have special requirements for air pressure & air flow

Application Cases

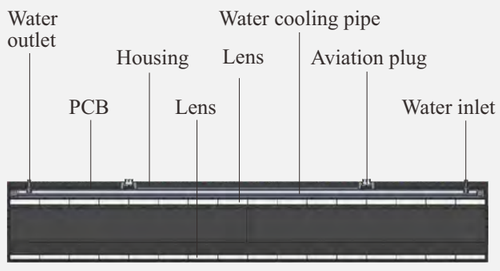
- Steel plate crack detection
- Hole defect detection

Customizable Items



Color Size Mounting

Section Structure Drawing



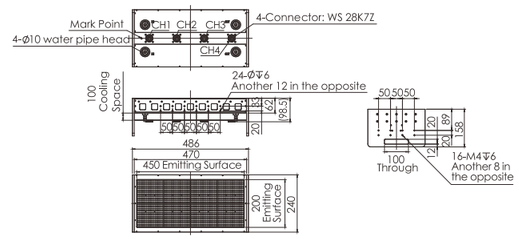
Model Table

Model	∗Power ○	∗Power 🟢🔵	Power-UV	Recommended controller
OPT-CFLG486240-UV	-	-	4x480W@4x20A	OPT-DPA20024
OPT-LSF1820	-	2x16.8W/2x403.2W	-	
OPT-RIC19390	144W@6A	-	-	OPT-DPA6024E

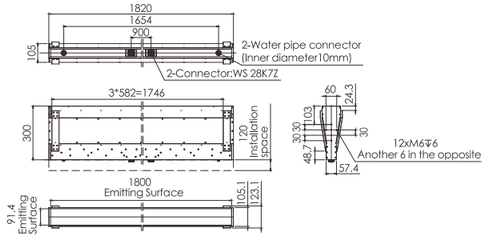
∗ Note: The data is for reference only.

Dimensions (mm)

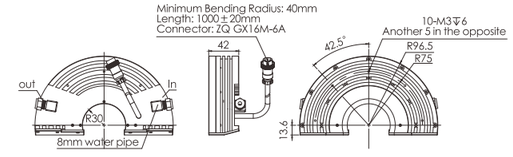
OPT-CFLG486240-UV



OPT-LSF1820



OPT-RIC19390



OPT supplied more than 30,000 lights customized to meet the needs of customers.

As one of the leading vision companies for customized lighting, OPT has developed a complete customization process and is able to deliver the customized products within 3 business days.

Customizable items



Emitting angle | Size | Light intensity | Wavelength | Color temperature

Customization process



Your idea and requirements | Engineering of possible solutions | Details discussion | Pilot production | Customer support during operation

Customization cases

Case 1: Illumination for solar battery inspection

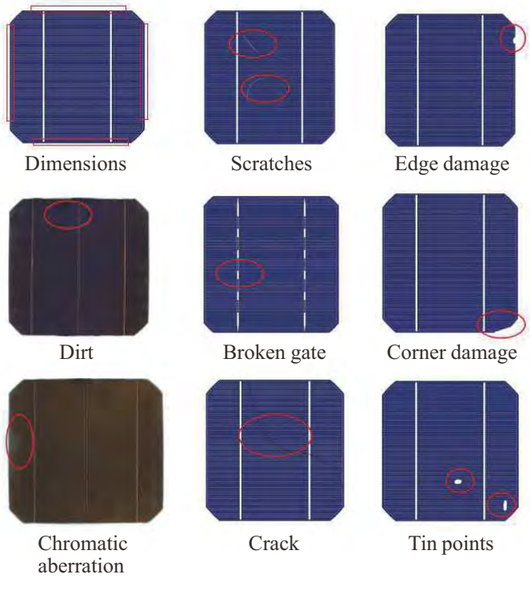
During the mass production, some invisible defects such as cracks, contamination, uneven diffusion, etc. may inevitably appear on the silicon wafer. OPT can provide the machine vision system for accurate automatic optical inspection (AOI), reduce cost and improve yield rate.

Customer requirement

The customer is a large manufacturer of silicon solar batteries. As it is difficult for operators to detect the various defects, such as debris, edge/corner damage, scratches, wrong position, broken gate, etc., a machine vision system is urgently needed for inspection to ensure quality.

Inspection items

1. Debris/edge damage that generally appears on battery edge in irregular shape.
2. Broken gate on surface, the grid line disconnects during the printing of the battery, which may lead to an open circuit.
3. Visible fingerprints or other greasy dirt on surface.
4. Scratches and cracks are mostly linear defects, mainly distributed on the surface layer and inner layer of the batteries; Defects in the inner layer are not visible to the human eyes.

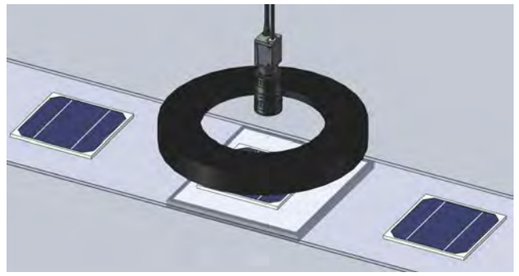


Dimensions | Scratches | Edge damage
Dirt | Broken gate | Corner damage
Chromatic aberration | Crack | Tin points

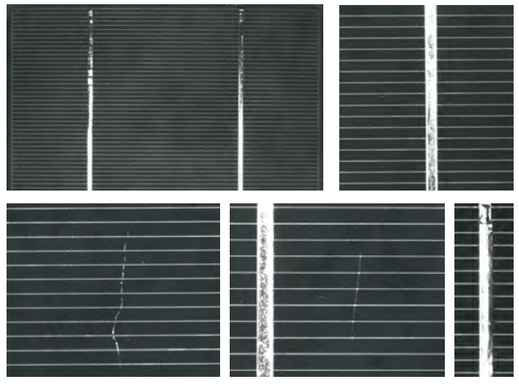
Customization requirements

1. Adequate light intensity for short exposure to ensure high-speed and stable production.
2. Uniform emitting and clear image with high contrast; eliminating bright spots and glare.
3. Threaded mounting holes on the side.
4. The light keeps on stably for a long period (24hrs) with well-designed heat sink; the intensity decreasing should be within a small range, and no frequent intensity adjustment is needed in a year.
5. The controller should have strobe function to trigger the light for photo-taking.

The OPT design can meet the above requirements.



Illumination result images



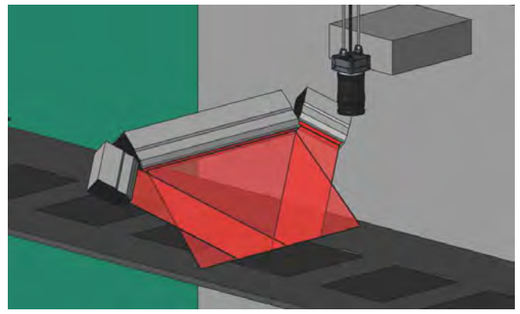
Case 2: Illuminator for Li-ion battery inspection

Li-ion battery is a must in daily life. The electrode, raw material of the battery can be easily damaged during the production. In order to ensure the quality of the battery, the surface inspection of the electrode for cracks, spots, scratches, etc. should be improved. Manual inspection, which is popular all over the country, is inefficient. Most users usually need to spend a lot buying the equipment from abroad for automated on-line inspection. The following are some features of OPT automated optical inspection system (AOI).

1. Provides efficient inspection without affecting any production conditions.
2. Reduces operators' workload and increases capacity.
3. Reduces companies' loss and protects their fame.

Customer requirement

The Li-ion battery manufacturer wants to inspect the defects on electrode surface with machine vision system to enhance the quality control efficiency. For example, the detection of copper exposure, pinhole, greasy dirt, scratches, powders, wrinkling, etc.



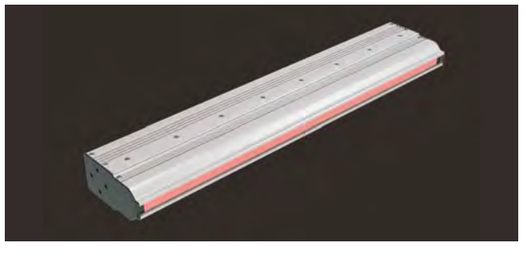
Inspection items

1. Dirt, fingerprints and foreign objects on electrode surface
2. Exposure of the copper
3. Powders (width: ≤0.1mm; length >one-sixth of the side or one-half of the shortest side)
4. Electrode damage; bubble area >3mm^2 or more than 3 bubbles
5. Burrs or curly edges

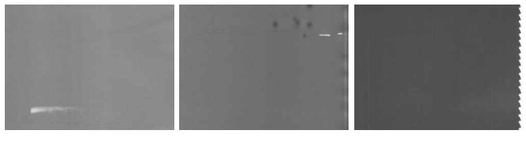
Customization requirements

1. Real-time inspection during production and 500mm inspection of products
2. 100m/min inspection speed; above 1300kLux light intensity
3. Uniform illumination and clear imaging
4. Threaded mounting holes on both sides of the light
5. The light keeps on stably for a long period (24hrs) with well-designed heat sink; the intensity error should be within a small range, and no frequent intensity adjustment is needed in a year.

The OPT design can meet the above requirements.

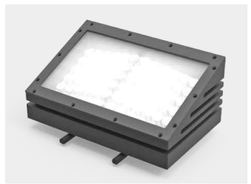


Illumination result images



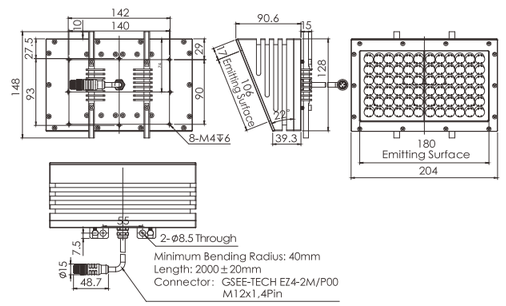
High Intensity Strobe Back Light

Model: OPT-FLG204128-X
Features: Adjustable pulse width of 1-1023μs with max. frequency of 66Hz, two-way tilt angle light. The light source is dust-proof and waterproof, IP64 protection class.
Application: Suitable for detecting scratches and cracks on high speed rails.


OPT-FLG204128-X


Image

Dimensions (mm)



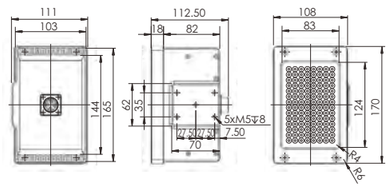
High Power Front Light

Model: OPT-FLM9886D-X
Features: Equipped with high density LED arrays and special lens; over 3 times the intensity compared to OPT-FL series lights; stable and uniform illumination; long service life; special for strobe; suitable for special illumination requirements
Applications: Contour locating; geometric measurement; surface defects detection and other high speed line scan applications


OPT-FLM9886D-X


Image

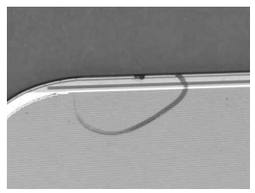
Dimensions (mm)



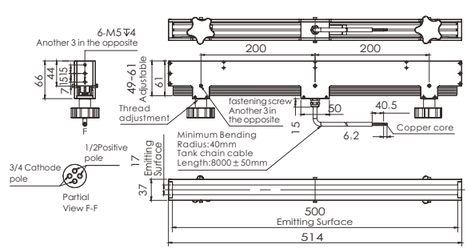
Angle Adjustable High Intensity Line Scan Light

Model: OPT-LSG514-X
Features: Adjustable illumination angles from 5° to 45°; obtains images with clear contrast; up to 90% uniformity at zero or 1m working distance
Applications: LCD scratches and dirt detection


OPT-LSG514-X

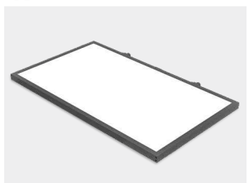

Image

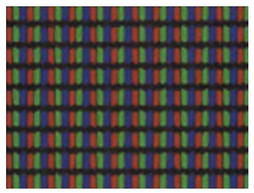
Dimensions (mm)



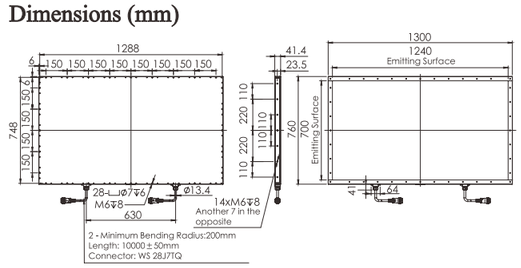
Large High Uniformity Backlight

Model: OPT-FL1300760-X
Features: High uniformity (above 95%) illumination; low flashing value within 0.02%; used for strobe, 50% duty ratio and above 30 kcd/m² light intensity; standard color temperature: 5700K±500K, customization available
Applications: Defects detection on large LCDs


OPT-FL1300760-X


Image

Dimensions (mm)



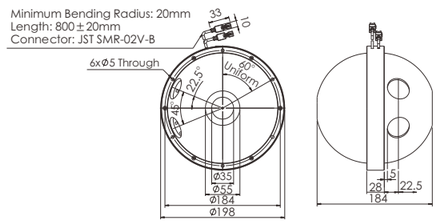
Spherical Shadowless Light

Model: OPT-RID180-X
Features: Uniform 360-degree illumination
Applications: Defects detection on curved and uneven surfaces


OPT-RID180-X


Image

Dimensions (mm)



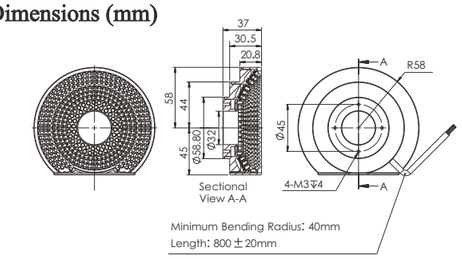
AOI Light

Model: OPT-RIA116-X
Features: Equipped with high density LED arrays and a special diffuser for high intensity and multi-color illumination; provides accurate 3D information about an object.
Applications: Soldering inspection for PCB; circuit connection inspection


OPT-RIA116-X

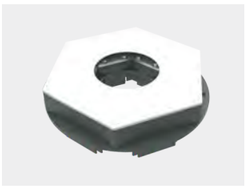

Image

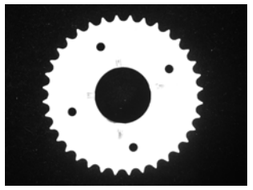
Dimensions (mm)



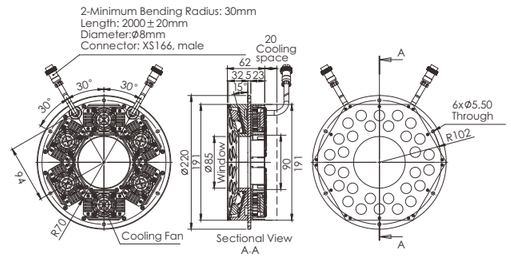
High Intensity Ring Light

Model: OPT-RIG22015-X
Features: Equipped with high power LEDs; up to 80% uniformity; 2 individually controlled channels; detachable polarizer to eliminate surface reflections
Applications: Longer distance illumination (compared to OPT-RI series); high-speed line scan illumination


OPT-RIG22015-X


Image

Dimensions (mm)



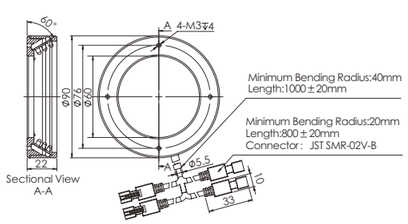
Multi-area Ring Light

Model: OPT-RI9060-4-X
Features: High density LED arrays; highlights object 3D information; each group of lighting areas is independently controlled; optional monochrome for objects of different sizes
Applications: OCR and surface inspection for capacitors and resistors


OPT-RI9060-4-X


Image

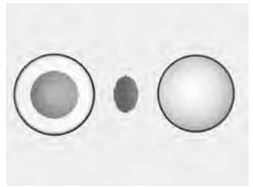
Dimensions (mm)



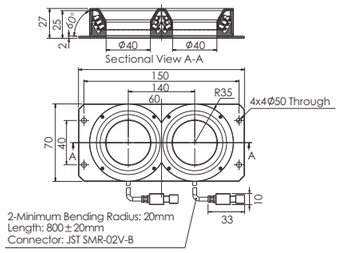
Combined Ring Light

Model: OPT-RIM7060-X
Features: Two ring light combination design, to reduce the installation space of the light source. Can be used for two cameras to improve the working efficiency.
Applications: Surface defects detection; contour positioning


OPT-RIM7060-X

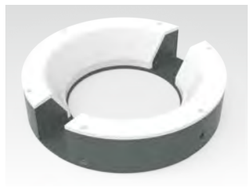

Image

Dimensions (mm)



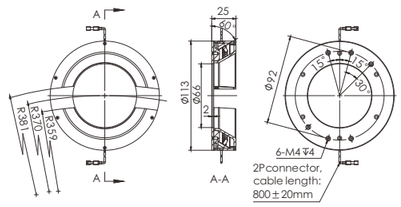
Ring Light

Model: OPT-RI11360-X
Features: Grooved in the middle for direct mounting on a motion inspection station; provides uniform illumination.
Applications: Small objects with curved edges Inspection


OPT-RI11360-X


Image

Dimensions (mm)



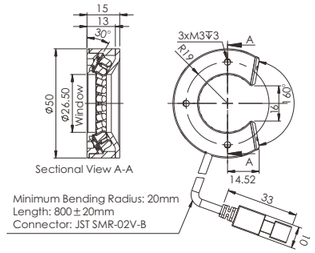
Half Ring Light

Model: OPT-RIC5030-X
Features: LED arrays in multiple colors; individually controlled channels; customizable sizes.
Applications: Contour positioning of electronic components; gauging for metal parts; surface defects detection.


OPT-RIC5030-X

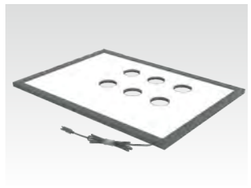

Image

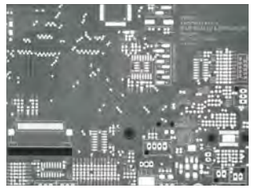
Dimensions (mm)



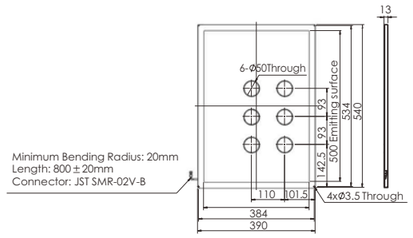
Backlight with View Windows

Model: OPT-FLC540390K-X
Features: Used as a front light to provide a large FOV uniform illumination; view windows available for clear imaging.
Applications: Inspection of mechanical parts; inspection of electronic parts inspection; detection of scratches.


OPT-FLC540390K-X


Image

Dimensions (mm)



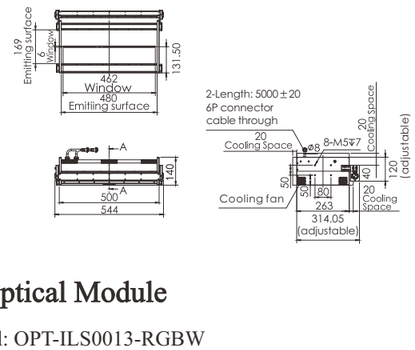
Vault Light

Model: OPT-LIU500C-X
Features: Provides high intensity illumination with high power LEDs; heat sink and cooling fan available; adjustable illumination angles and sizes.
Applications: Surface inspection of packaging cartons; detection of defects on curved surfaces.


OPT-LIU500C-X


Image

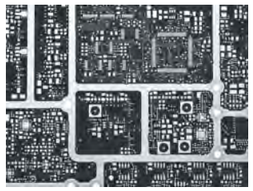
Dimensions (mm)



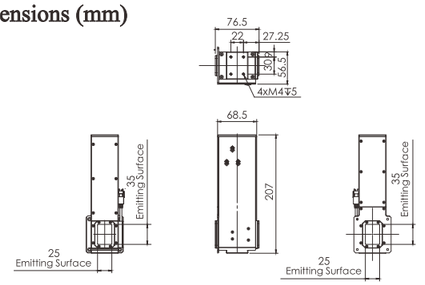
Optical Module

Model: OPT-ILS0013-RGBW
Features: For imaging 2 objects simultaneously with the lens module; integrated design; easy to install.
Applications: PCB alignment, mobile phone screen lamination in printing and consumer electronics industries.


OPT-ILS0013-RGBW

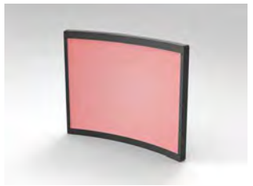

Image

Dimensions (mm)



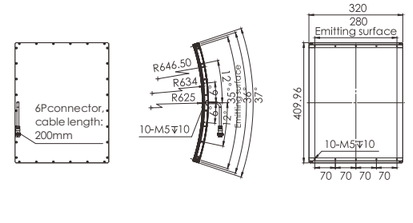
Curved Backlight

Model: OPT-RIC62535-X
Features: Special curved emitting surface for focused and uniform illumination.
Applications: Liquid level gauging, foreign objects detection, and positioning of cell phone antennas in medical and consumer electronics industries.


OPT-RIC62535-X

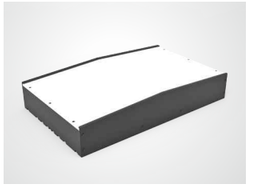

Image

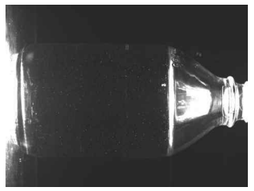
Dimensions (mm)



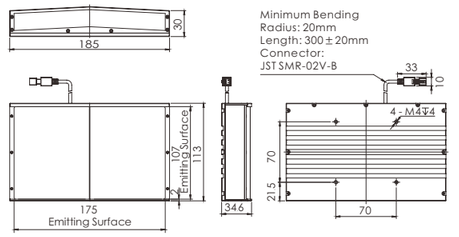
Bi-directional Backlight

Model: OPT-FLG185113-IR
Features: Bi-directional illuminating backlight, high brightness, and designed to dissipate heat. The manufacturing of the diffuser is complex and unique.
Applications: Detection of foreign objects in liquids in the machine vision medical industry.


OPT-FLG185113-IR


Image

Dimensions (mm)



Extension Cables



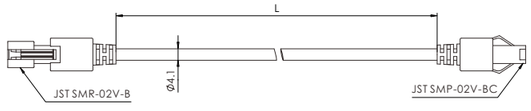
OPT-EX1M-2P-S-6A

- Max current
- S: Ordinary cable, for fixed installation
- D: Drag chain cable, for tank chain installation
- R: Robot cable, for multi-directional torsion installation
- Number of connector pins
- Cable length
- Extension cable
- Brand name

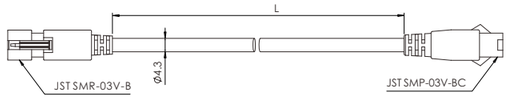
2 Pin / 3 Pin Extension Cable

Connector	Model	Length	Diameter D	Min. Bending Radius	
				Fixed Installation	Motion Installation
2 Pin JST connector	OPT-EX1M-2P-D/R	1m	4.1mm	5D	10D
	OPT-EX2M-2P-D/R	2m			
	OPT-EX3M-2P-D/R	3m			
	OPT-EX5M-2P-D/R	5m			
	OPT-EX10M-2P-D/R	10m			
3 Pin JST connector	OPT-EX1M-3P-D/R	1m	4.3mm		
	OPT-EX2M-3P-D/R	2m			
	OPT-EX3M-3P-D/R	3m			
	OPT-EX5M-3P-D/R	5m			
	OPT-EX10M-3P-D/R	10m			

2 Pin Connector Extension Cable Drawing



3 Pin Connector Extension Cable Drawing

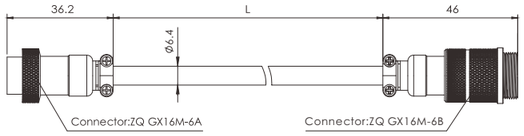


6 Pin Connector Extension Cable

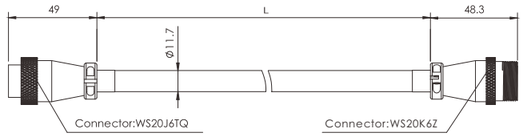
Connector	Model	Length	Diameter D	Min. Bending Radius
6 Pin connector (6A)	OPT-EX3M-6P-S-6A	3m	6.4mm	Fixed Installation: 5D
	OPT-EX5M-6P-S-6A	5m		
	OPT-EX10M-6P-S-6A	10m		
	OPT-EX20M-6P-S-6A	20m		
6 Pin connector (20A)	OPT-EX3M-6P-S-20A	3m	11.7mm	
	OPT-EX5M-6P-S-20A	5m		
	OPT-EX10M-6P-S-20A	10m		
	OPT-EX20M-6P-S-20A	20m		

Note: Different controller may need to be matched with different cable length,please confirm with engineer in advance.

6 Pin Connector Extension Cable Drawing (6A)



6 Pin Connector Extension Cable Drawing (20A)



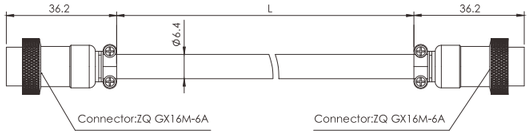


6 Pin Connector Light Source Cable

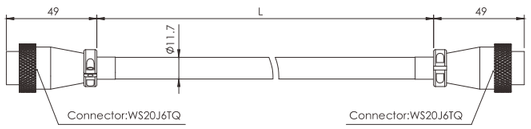
Connector	Model	Length	Diameter D	Min. Bending Radius
6 Pin connector (6A)	OPT-DGYX1M-6P-S-6A	1m	6.4mm	Fixed Installation: 5D
	OPT-DGYX2M-6P-S-6A	2m		
	OPT-DGYX3M-6P-S-6A	3m		
	OPT-DGYX5M-6P-S-6A	5m		
	OPT-DGYX10M-6P-S-6A	10m		
6 Pin connector (20A)	OPT-DGYX1M-6P-S-20A	1m	11.7mm	
	OPT-DGYX2M-6P-S-20A	2m		
	OPT-DGYX3M-6P-S-20A	3m		
	OPT-DGYX5M-6P-S-20A	5m		
	OPT-DGYX10M-6P-S-20A	10m		

Note: Different controller may need to be matched with different cable length, please confirm with engineer in advance.

6 Pin Connector Extension Cable Drawing (6A)



6 Pin Connector Extension Cable Drawing (20A)



Branched Extension Cables

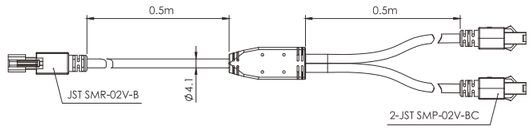
OPT-EX1M-2P-4B

- Branches, e.g.: 4 branches
- Number of connector pins
- Cable length, e.g.: 1 meter
- Extension cable
- Brand name

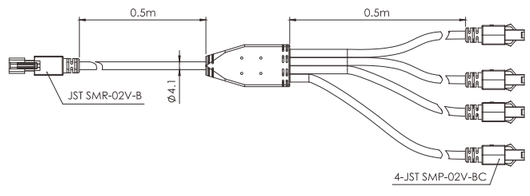
2 Pin / 3 Pin Connector Branched Extension Cable

Connector	Branches	Model	Diameter D	Min. Bending Radius	
				Fixed Installation	Motion Installation
2 Pin JST connector	1 to 2	OPT-EX1M-2P-2B	4.1mm	5D	10D
	1 to 4	OPT-EX1M-2P-4B			
3 Pin JST connector	1 to 2	OPT-EX1M-3P-2B	4.3mm		
	1 to 4	OPT-EX1M-3P-4B			

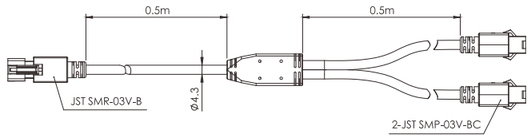
2 Pin 2 Branch Extension Cable Drawing



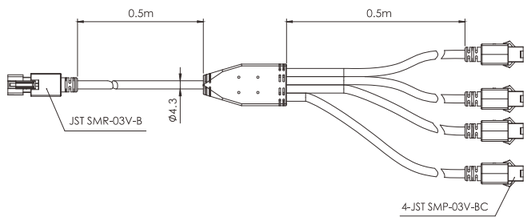
2 Pin 4 Branch Extension Cable Drawing



3 Pin 2 Branch Extension Cable Drawing

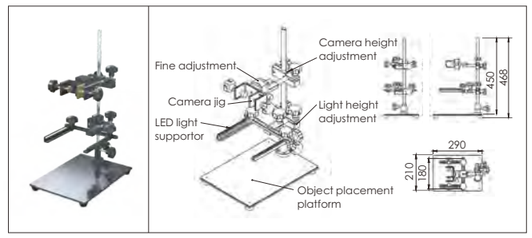


3 Pin 4 Branch Extension Cable Drawing

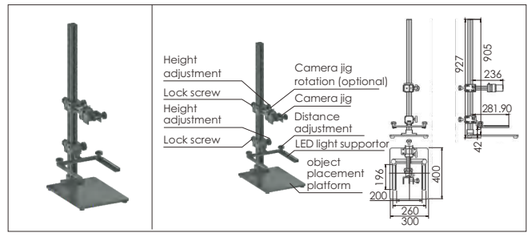


Lab Equipment

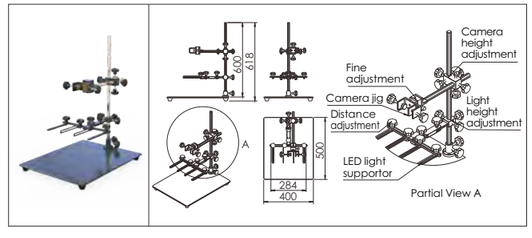
OPT-ES300 Lab Stand



OPT-ES400 Lab Stand



OPT-ES500 Lab Stand



Motion Platform

Features

- Flexible installation and easy to use.
- This system simulates the equipment of high-speed motion lines. It can capture the same or multiple workpieces continuously and stably, which is suitable for simulating line and area testing.



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 (±20μm)
Encoder interface	TTL (DB9)
Z-axial motion distance	235.00mm
Camera WD range	0-500mm
Power	0.45kW
Weight	85kg

Classic Applications

- Multi-Angle Illumination »P256
- Surface Inspection Applications »P257
- Optical 5-Side-View Solution »P258
- Light Wavelength and Applications »P259
- Polarizers: Introduction and Applications »P260

Industrial Applications

- Consumer Electronics Industry »P262
- Semiconductor Industry »P264
- Automotive Industry »P266
- Medical Industry »P268
- Tobacco Industry »P270
- Printing Industry »P272
- Lithium Battery Industry »P274
- Food and Beverage Industry »P276

Multi-Angle Illumination

Button Battery Inspection

Workpiece Description:
Diameter of 20mm, smooth reflective surface with engraved characters, clear outer edge contour.



1. Coaxial Illumination

Setup | Result



Frontal illumination with high and uniform brightness.

2. Anti-Shadow Illumination

Setup | Result



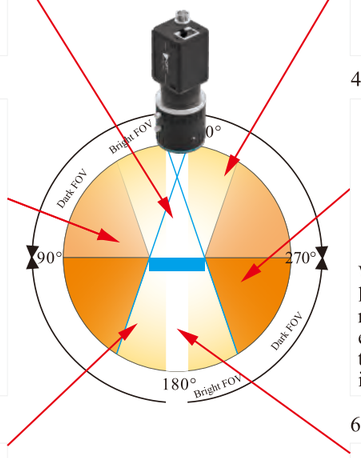
Light diffuses from the battery surface in multiple directions, showing a uniform surface of the battery.

3. Low Angle Illumination

Setup | Result

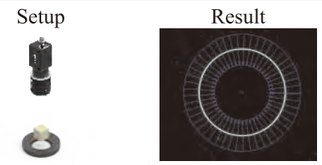


The low angle illumination of the battery surfaces brings out uneven areas such as engraved characters and the rim.



4. Negative Low Angle Illumination

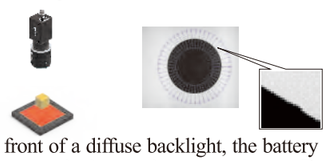
Setup | Result



When the light enters the battery at a negative low angle from bottom to top, there are no reflected light from the surface of the battery enters the lens, showing that the surface of the battery is dark and the chamfer of the arc is highlighted.

5. Backlight Illumination

Setup | Result



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

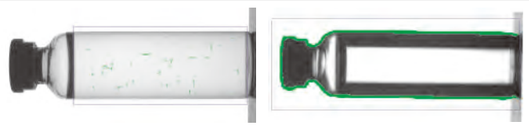
6. Collimated Backlight Illumination

Setup | Result



When the collimated light is incident perpendicularly from the bottom of the battery, the corners of the cell chamfer are sharp and with fewer pixel transitions.

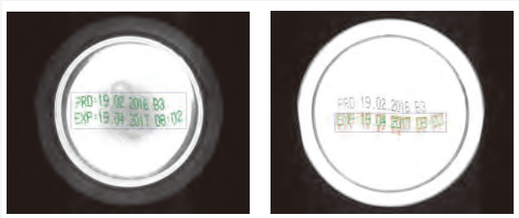
Diffuse Backlight and Collimated Backlight Comparison



Result with Diffuse Backlight | Result with Collimated Backlight

Diffuse backlight illumination creates a more uniform appearance of the bottle, allowing for the detection of defects, dirt, and scratches. Under the illumination of the collimated backlight, the light is refracted through the edge of the bottle body, the outline is black, fewer transition pixels, sharp edge, obvious contrast and the accuracy of the edge inspection, positioning and size measurement of the object is higher.

Ring Light and Dome Light Comparison



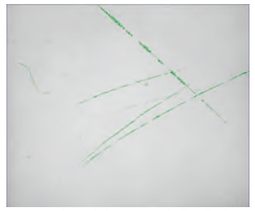
Result with Ring Light | Result with Dome Light

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.

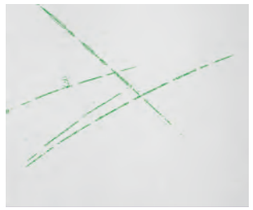
Surface Inspection Applications

Industrial Applications

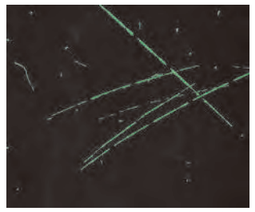
Glass, metal, LCD panels, mobile screens, plastics surface inspection etc.
For the scratches, stains, etc. on the surface of highly reflective materials inspection, coaxial/low angle lights and backlights are widely used. The result images are shown as below.



Result with Coaxial Light



Result with Backlight

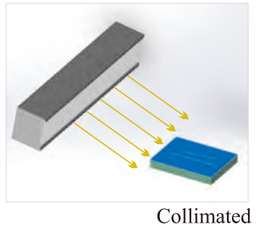


Result with Low Angle Light

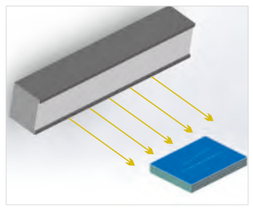
The above method has obvious effects for hard scratches, but the effect on soft scratching is not obvious. However, for detailed inspection, low angle lights create the best results.

Low Angle Illumination from Multiple Directions

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

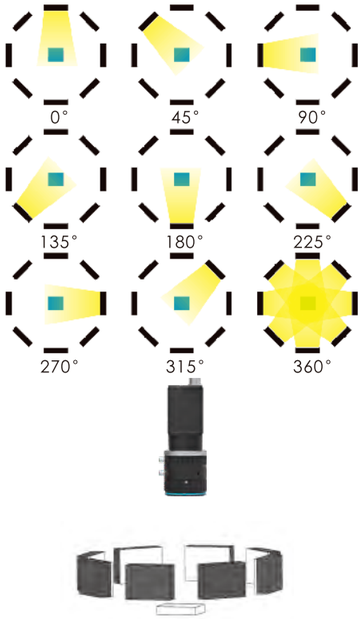


Collimated illumination

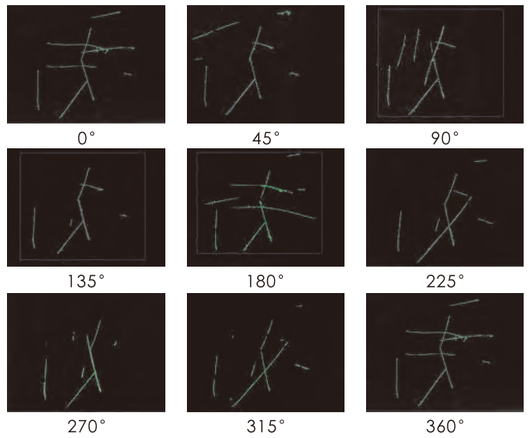


Vertical illumination

Such scratch detection can be implemented with eight bar lights, which are individually controlled. And 9 different images can be taken with the same camera without moving the workpiece.



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

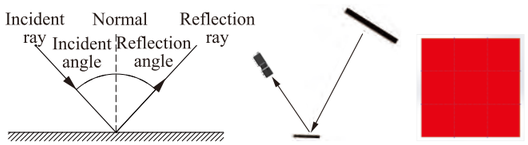


Nine-Grid High Angle Method

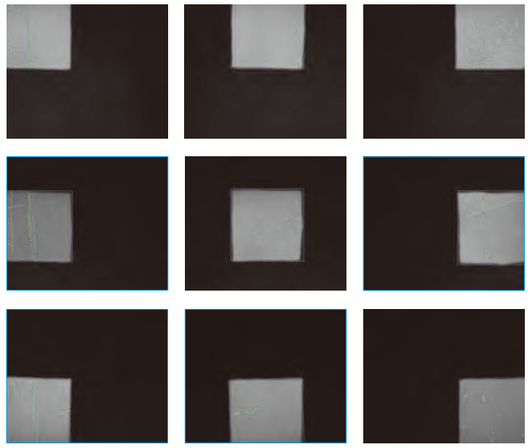
Inspectors (image to the right) examine the surface by using general lighting to detect reflections on the surface. Therefore, they are moving the product in the light looking for speckles or shadows caused by scratches or dirt. However, small and slight scratches are difficult to detect by human eyes.



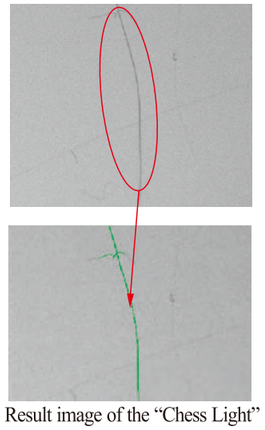
We can use the law of reflection (see image below) to implement a quick solution for the inspection of parts with reflective surfaces. Common lights can illuminate a certain field of view with high uniformity. While this is desired for many applications, it would eliminate the effects of scratches in 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.



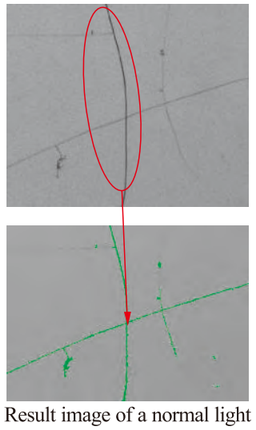
Result Images of the Chess Light



Below are the result images of the Chess Light and a normal light. All the images that took under the same Based on the image, Chess light NOT able to bring out higher contrast as what mentioned in the description. without mechanically adapting the workpiece or the lighting.



Result image of the “Chess Light”



Result image of a normal light

Optical 5-Side-View Solution

Application Solution

Applications: Surface inspection of metal parts in the electronics and automotive industries.
Usually for objects with more than two sides (solution 1), a camera is used to take the pictures from different sides. For this solution, workpiece needs to be rotated, and this requires costly mechanical equipment and it is time consuming. While for the other option (solution 2), five sets of cameras are used to capture the object from five different sides. The solution usually will not be used as it is complicated and the cost is high.

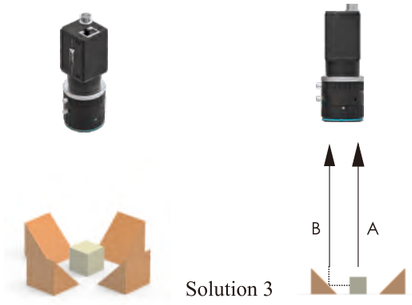


Solution 1



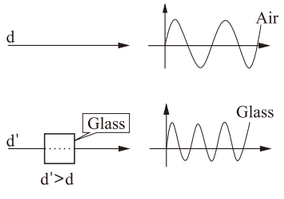
Solution 2

However, there is a third solution, which is sketched in the picture below: A single camera is able to take pictures from five sides of the object at a single shot with prisms. This reduces the cost and time but the images of the sides cannot be captured with the same resolution as the top side (see the right image below). Further optics are required to address this issue.



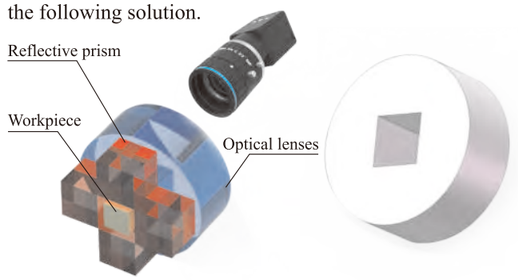
Solution 3

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.

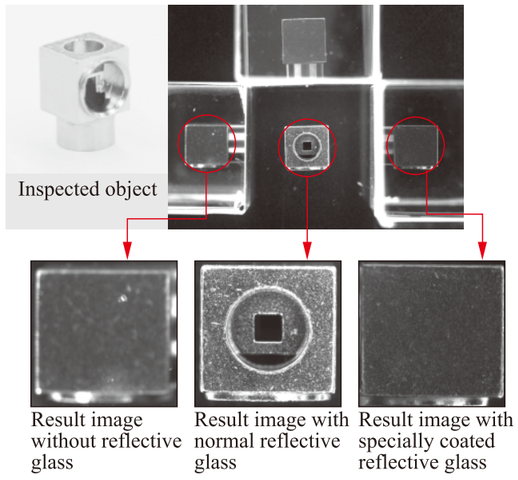




The experienced engineering team of OPT finally designed the following solution.



The figure below shown the camera takes pictures from the top and sides via special reflective glasses, forming the top surface and the side surface simultaneously to improve the efficiency of the inspection. Please take note of the result difference between normal reflective glasses and our specially coated reflective glasses.



Result image without reflective glass

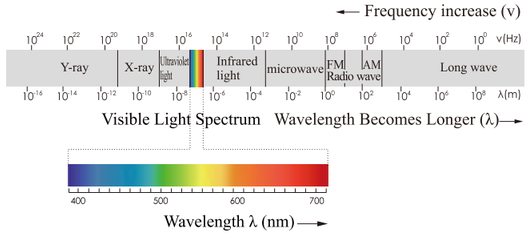
Result image with normal reflective glass

Result image with specially coated reflective glass

Light Wavelength and Applications

Light Wavelength

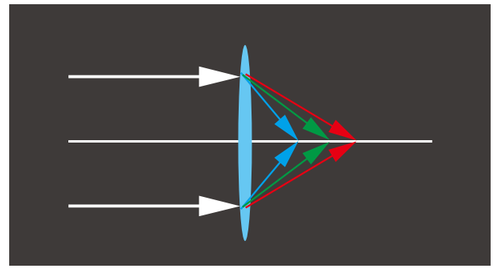
Light is an electromagnetic wave. Visible light is only a small part of the spectrum. The light with vacuum wavelength from 380nm to 780nm is visible. IR light and UV light are located at the end of the two visible light spectrum respectively. From IR light to UV light, the wavelength becomes short, the frequency and the refractive index gradually increases when the light passes through the same transparent medium.



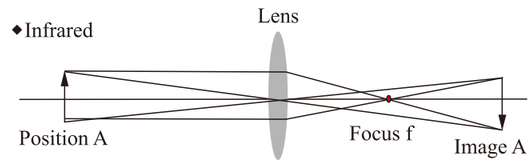
Electromagnetic Spectrum

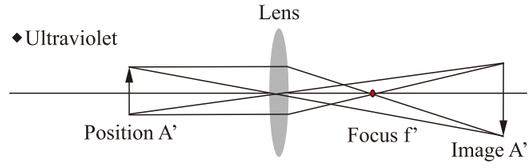
Chromatic Aberration

White light is formed by homogeneous light of different wavelength. Light with different wavelength refract to a medium in different rate. Chromatic aberration is the difference of light imaging position and the size among different color lights formed after white light is refracted by the same medium at the first time and dispersed in optical system. Lenses with different specs (models) can remove chromatic aberration in different levels.

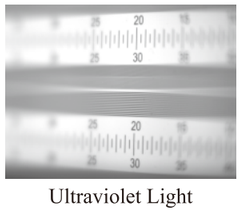


According to the above feature, when illuminating a workpiece, the different colors are refracted at different intervals, and vice versa. Take IR light and UV light as an example, use them to illuminate two targets in different places respectively with the same camera lens (no focusing ring adjustment), and they can focus clearly.

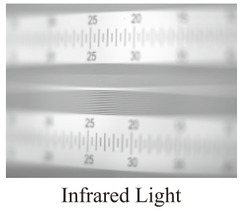




Below shows the two images of 365nm UV light and 940nm IR light tests with 2MP CCD camera (OPT-C3516-2M lens, F1.6) in the same condition. The former test result focuses at 20-scale depth of field, and the latter at 23-scale. To conclude, the longer the wavelength, the farther the position of the clearly focused lens.



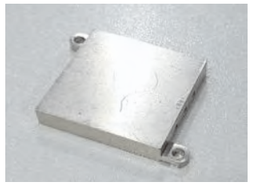
Ultraviolet Light



Infrared Light

Application

The image shows a hardware component, the plane of its body is higher than the two extended parts. Users request to position the whole component contour and assemble it to a product by a manipulator. Telecentric lens should be selected as high assembly accuracy and small field of view are required. The two targets cannot be focused clearly at the same time if a general lighting method is used.

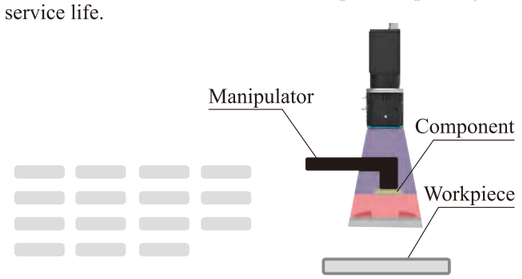


Solution

Based on the above principle and project requirements, OPT has designed an integrated ring light which combines infrared and ultraviolet LEDs. The camera takes two shots, first triggering the infrared light to focus on the plane of the two extended parts; then triggering the ultraviolet light to focus on the two right angle sides of the body after the infrared light is out. Focusing position can be changed by switching between different color lights instead of moving camera lens to solve the problem of insufficient depth of field.

Extended Application

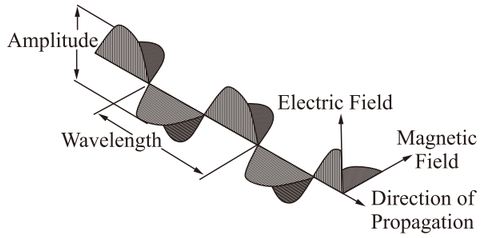
In the image shown below, users get a clear images of the part and the workpiece respectively by moving the lens in Z axis direction, then assemble after positioning them precisely. However, if a light with LEDs of different wavelength can be designed, the two objects can be taken at once by lights switching based on the principle, the longer the wavelength, the farther the position of the clearly focused lens. The light not only able to improve efficiency, but also reduce the cost of some visual part and prolong its service life.



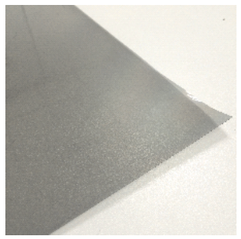
Polarizers: Introduction and Applications

Polarized Lighting

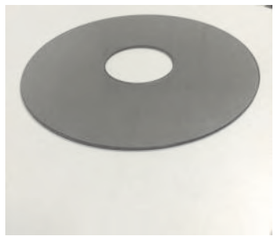
Light is an electromagnetic wave, which is an energy propagation that is interactively induced by a changing electric and magnetic field. The vibration direction is characterized by electric vector. During the propagation of light, the spatial distribution of electric vibration of light wave shows asymmetry with respect to the direction of propagation. The phenomenon is called the polarization of light (see the following image). The plane formed by the vibration direction and the direction in which the light wave travels is called a vibration surface. The light with the plane of the vibrating surface limited to a certain fixed direction is called plane polarized light or linearly polarized light.



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



Polarizer film



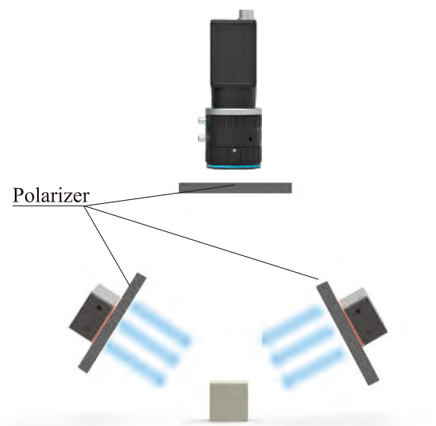
Polarizer glass

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

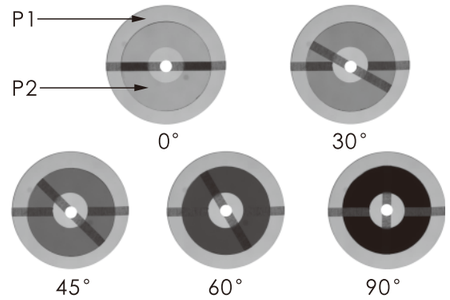
In machine vision applications, we apply linear polarizers to the lighting and another polarizer to the camera lens.



Polarizer Mounting

Common Polarizer Mounting

The images below shown two polarizers (P1, P2). If we keep the position of the P1 and turn the P2, we can observe periodic changes of the intensity.
By turning any of the polarizers, we can optimize the result image.



Polarizers in Real Life Applications

Photographers apply polarizers to their lens in special conditions, e.g. to reduce reflections and make colors more vivid. The reflections on the floor surface are reduced by the polarizer.



Image taken without polarizer



Image taken with polarizer

Polarizers in Machine Vision Applications

Surface inspection in medical, semiconductor, electronics, automotive, and more industries.
Below are some images taken with or without polarizer for reference.

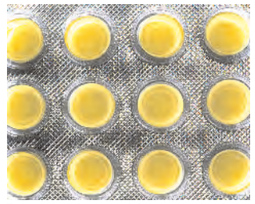


Image taken without polarizer

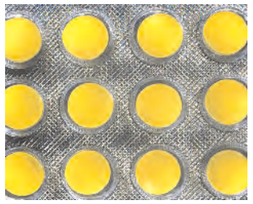


Image taken with polarizer

Pill Inspection

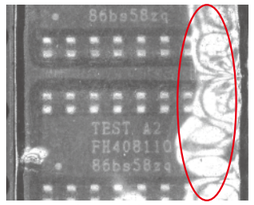


Image taken without polarizer

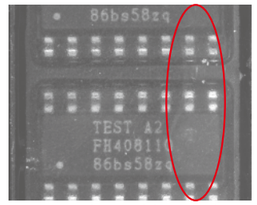


Image taken with polarizer

SMD Package Inspection



Image taken without polarizer

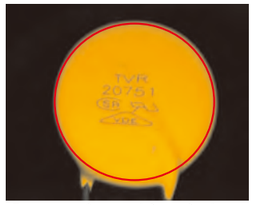


Image taken with polarizer

Capacitor Inspection

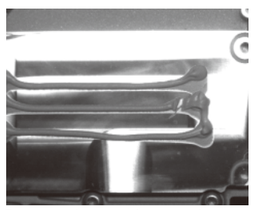


Image taken without polarizer

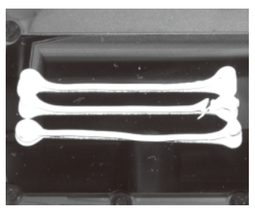
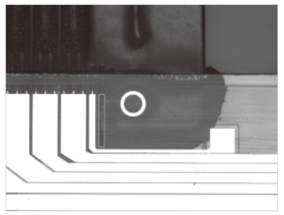


Image taken with polarizer

Gluing Contour Inspection

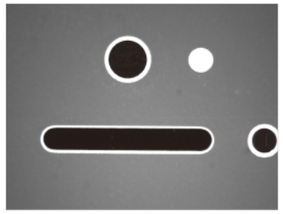
Consumer Electronics Industry



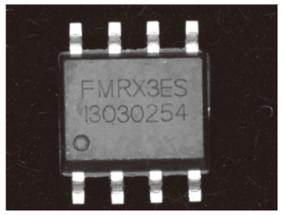
1. Positioning of fiducial marks on touch panel



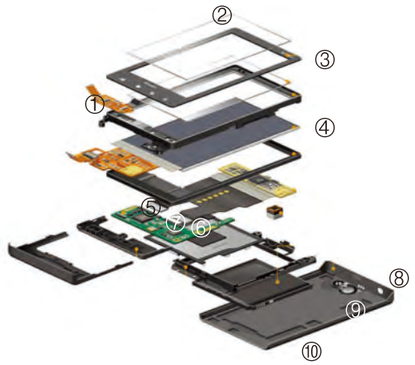
2. Scratches on mobile phone' s screen detection

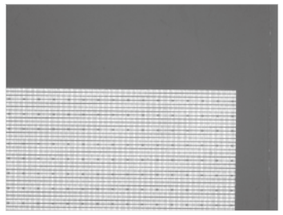


3. Positioning of the microphone hole in the phone covers



5. Pin inspection of integrated circuit (IC)

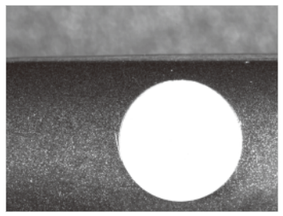




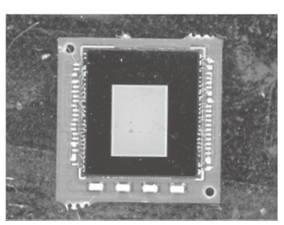
4. Positioning of AA area for LCDs



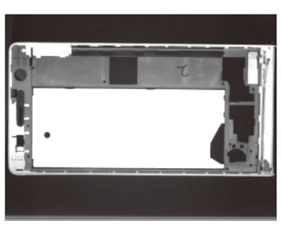
6. PCB inspection



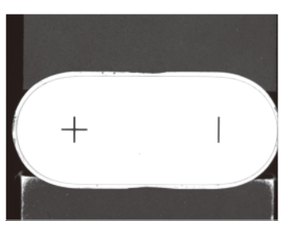
8. Positioning of the earphone plugs hole



7. Surface inspection of mobile phone chips



10. Gauging of mobile phone cases



9. Positioning of signs and characters on keys

Positioning of fiducial marks on touch screens



Workpiece Result

Positioning marks on PCB; as compact structure assembly is needed with small FOV, coaxial spot light with telecentric lens is used.

Detection of scratches on mobile phone screen



Workpiece Result

By using 8k linear camera, line light with high uniformity creates direct reflection on the phone surface. A sharp contrast will be formed between the scratches and background.

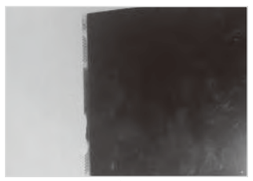
Positioning of the microphone hole in the phone covers



Workpiece Result

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

Positioning of AA area for LCDs



Workpiece Result

IR backlights shine through the AA area of the screen for its accurate positioning.

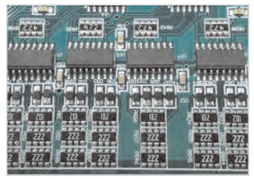
Pin inspection of integrated circuit (IC)



Workpiece Result

Highly uniform illumination from dome light helps to detect several types of defects simultaneously, e.g. flatness, interval between IC pins, and laser-engraved characters.

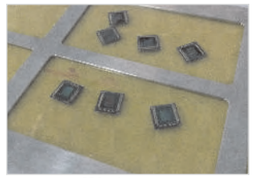
PCB inspection



Workpiece Result

Specific AOI lights provide illumination in different angles to enhance 3D information in detecting the missing or faulty soldering points.

Surface inspection of mobile phone chips



Workpiece Result

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

Positioning of the earphone plugs hole



Workpiece Result

A bar light illuminates from a low angle and shines through the hole to obtain the sharp contrast for cutting.

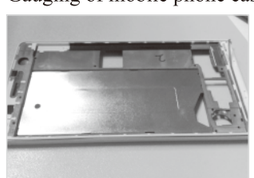
Positioning of signs and characters on keys



Workpiece Result

Highly uniform illumination eliminates the reflections of the glossy part surface for precise position inspection of characters and signs on keys.

Gauging of mobile phone cases



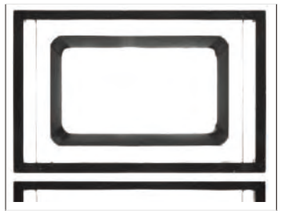
Workpiece Result

Coaxial lights enable the precise measurement of mobile phone cases and LCDs.

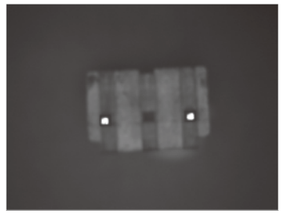
Semiconductor Industry



1. Detection of glue overflow and dirt on IC chips



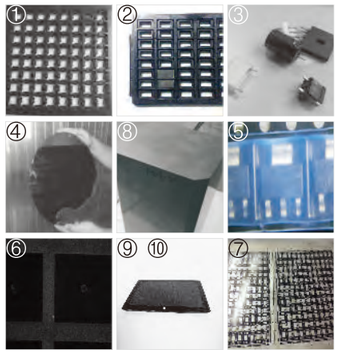
2. Positioning of IC chips for pick and place

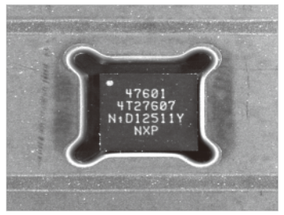


3. Positioning of IC chips pins

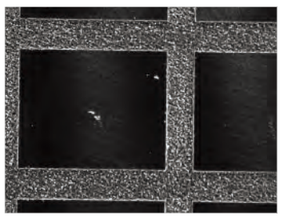


4. Wafer inspection

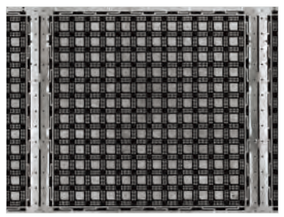




5. SMD package inspection



6. Defect detection on silicon surfaces



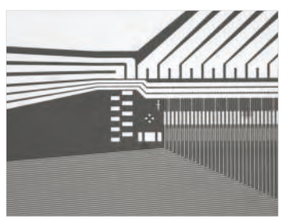
7. Defect detection on chip surfaces



8. LED defect detection

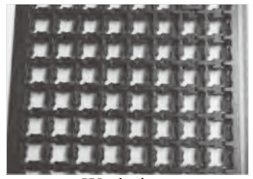


9. Silicon bars cross section geometric measurement



10. Touch screen inspection

Detection of glue overflow and dirt on IC chips



Workpiece



Result

A uniform dome light is used to highlight the glue overflow and dirt on chip surface.

Positioning of IC chips for pick and place



Workpiece



Result

The high-angle front light can ensure the correct positioning of chips and the burning tray.

Positioning of IC chip pins



Workpiece



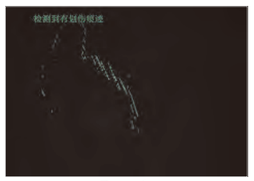
Result

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

Wafer inspection



Workpiece



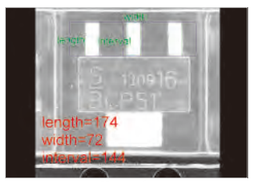
Result

Detection of scratches and dirt. For these large objects on wafer surface, best results can be achieved with 4 bar lights arranged in low angle.

SMD package inspection



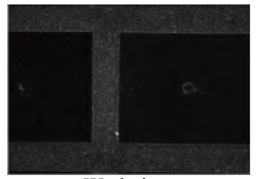
Workpiece



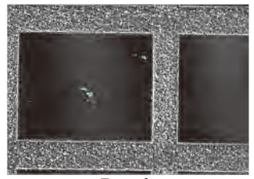
Result

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

Defect detection on silicon surfaces



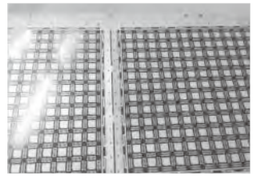
Workpiece



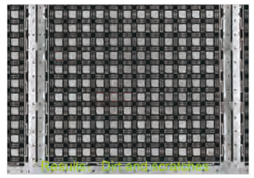
Result

Detection of edge/corner damages, cracks and fragments on silicon surfaces with a 60-degree ring light at shorter working distance.

Defect detection on chip surfaces



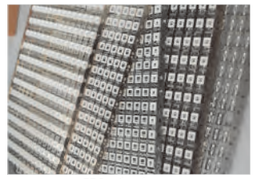
Workpiece



Result

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

LED defect detection



Workpiece



Result

Damages, dirt, scratches, etc detection on LEDs with a coaxial line scan light.

Geometric measurement of the cross section of silicon bars



Workpiece



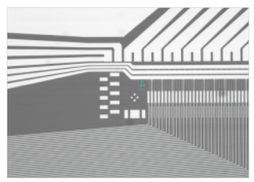
Result

A front panel light is used to inspect the dimensions of the cross section of silicon bars. (Making a view window on center of OPT-FLC series light to get front backlight).

Touch screen inspection



Workpiece



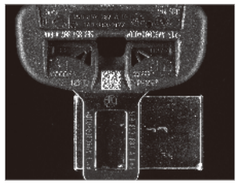
Result

A spot light coupled with a telecentric lens illuminates the touch panel to position the circuits for automatic inspection.

Automotive Industry



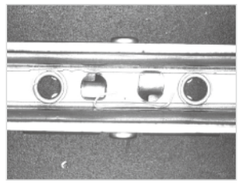
1. Inspection of printing signs



2. OCR on buckle surface



3. Barcode reading



4. Windshield wipers inspection

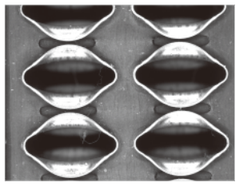


5. OCR on label surface

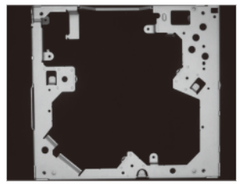


6. OCR on lampshade surface

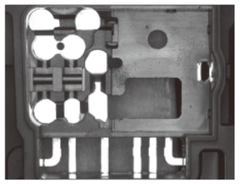




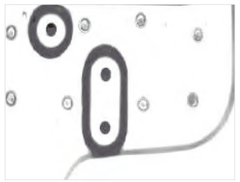
7. Hole inspection



8. Special parts inspection



9. Pitch inspection of metal parts



10. Solder joints of sheet metal inspection



11. Bearing inspection



12. Markers in user panel inspection

Inspection of printing signs



Workpiece



Result

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

OCR on buckle surface



Workpiece



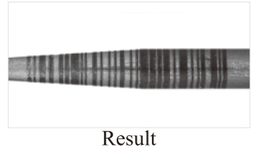
Result

Detect and identify the characters on the buckle plastic and metal. The vault light source is used to uniformly illuminate the buckle surface to eliminate the interference caused by the surface uneveness, and the bar light source of a certain angle is supplemented to highlight the characters.

Barcode reading



Workpiece



Result

A blue ring light is applied from the side to achieve uniform illumination and clear barcode.

Inspection of windshield wipers



Workpiece



Result

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

OCR on label surface



Workpiece



Result

The combined bar light can be used to highlight the characters while avoiding the reflection of the surface film of the workpiece.

OCR on lampshade surface



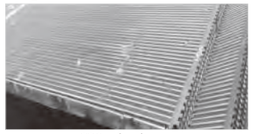
Workpiece



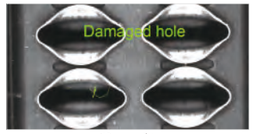
Result

Since the surface of the lampshade is curved and irregular, it is difficult to uniformly illuminate it. Choose a side backlight to illuminate from the side to highlight the characters.

Inspection of holes



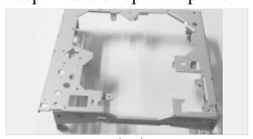
Workpiece



Result

A low-angle ring light can be used to clearly inspect if the holes in car plate is damaged or cracks.

Inspection of special parts



Workpiece



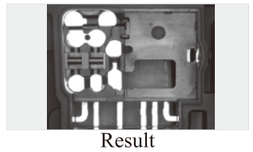
Result

A large backlight is selected to inspect the scratches, pits, side position, etc. of metal parts with different sizes and shapes.

Pitch inspection of metal parts



Workpiece



Result

As the car sheet metal is large and has lots of solder joints, a set of bar lights can be used to illuminate to meet large area and multiple angle uniform illumination effects.

Inspection of solder joints of sheet metal



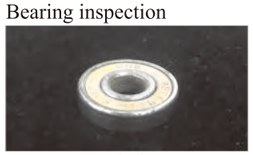
Workpiece



Result

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

Bearing inspection



Workpiece



Result

During 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 clearly in the camera image.

Markers in user panel inspection



Workpiece



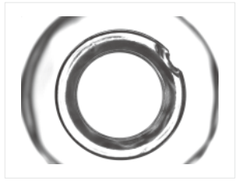
Result

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.

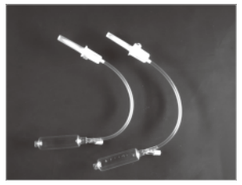
Medical Industry



1. Medical bottles inspection



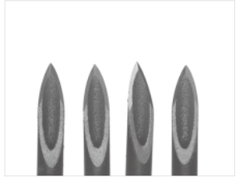
2. The rim of the bottle inspection



3. Covers for iv tubes inspection



4. Injector inspection



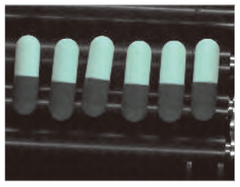
5. Needle tips inspection





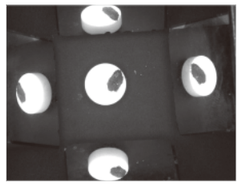


6. Barcode reading



7. Capsules inspection





8. Pills inspection



9. Capsule contour inspection



10. Bottle caps inspection



11. Foreign objects in liquid detection



12. Vial inspection

Inspection of medical bottles



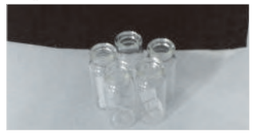
Workpiece



Result

Use OPT-FP series backlight to inspect the dirt and scratches on the bottle surface.

Inspection of the rim of the bottle



Workpiece



Result

A collimated backlight creates sharp contrast and edges in the camera image to detect the damage, bubbles, burr, etc. at the rim of the bottle.

Inspection of covers for IV tubes



Workpiece



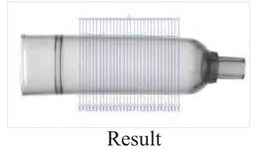
Result

A large bar light can detect the absence of tube covers and connection among the tubes.

Inspection of injector



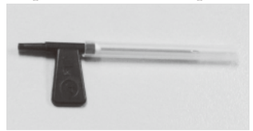
Workpiece



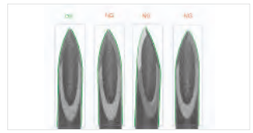
Result

A collimated backlight is suitable for injector measurement and the absence check of the inner rubber ring as it is possible to make the different thickness of the needle tube reflect differently and show different grey values.

Inspection of needle tips



Workpiece



Result

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

Barcode reading



Workpiece



Result

One-dimensional codes need to be checked at a high speed. For short exposure time and good contrast, on-fly -capture mode and a 60° high-intensity ring light are recommended.

Inspection of capsules



Workpiece



Result

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 of vault light is a big advantage, and coaxial lights added can bring out defects on the capsule surface.

Inspection of pills



Workpiece



Result

Check if the pills have defects such as damage or dirt. Since the pills are packaged in a plastic bag for inspection, which has a disorderly reflection, a bar light source and a polarizer are used for uniform illumination.

Capsule contour inspection



Workpiece



Result

To highlight the contour information, choose a white collimated backlight to avoid the surface reflections.

Inspection of bottle caps



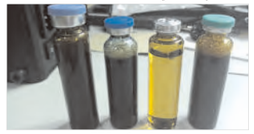
Workpiece



Result

A high-angle ring light is suitable for the inspection of printed characters, scratches and deformation of bottle caps.

Detection of foreign objects in liquid



Workpiece



Result

As the vial is brown, a high-intensity red backlight can be chosen to detect objects like hair, metal scrap, dust, etc. in the liquid.

Vial inspection



Workpiece



Result

A red backlight can inspect the cracks of the vial with dark liquid.

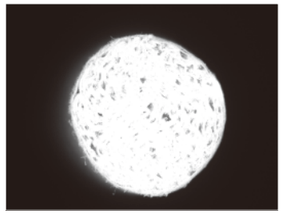
Tobacco Industry



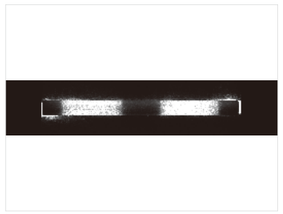
1. OCR on cigarette paper



2. Inspection of package deformation



3. Filter inspection

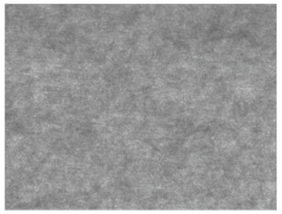


4. Filter size measurement

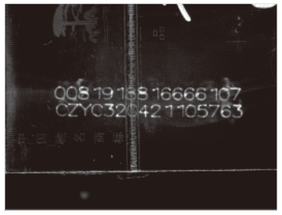




5. Barcode reading



6. Cigarette paper inspection



7. Laser-marked letters inspection



8. Packaging box counting

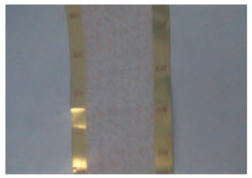
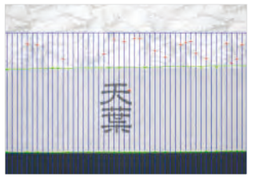


9. Paper package surface inspection



10. Printing inspection on paper package

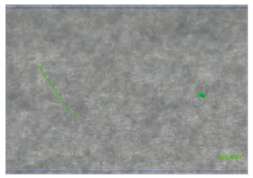
OCR on cigarette paper

Workpiece Result

OPT-FC series flat dome light helps to inspect the size of golden paper strips and recognize incomplete and blur characters on the paper.

Inspection of cigarette paper

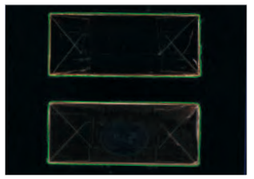



Workpiece Result

Inspect if there is any damages or black speckles on the cigarette paper with a diffuse light source.

Package deformation inspection



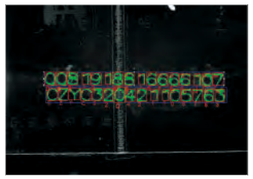


Workpiece Result

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

Laser marked letters inspection

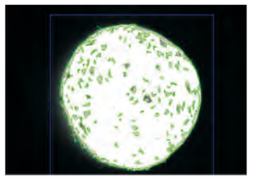




Workpiece Result

Recognition of the laser-marked characters with a low-angle light integrated with a polarizer.

Filter inspection

Workpiece Result

A uniform high-intensity backlight can inspect the fiber pores size and distribution of cigarette filter.

Packaging box counting




Workpiece Result

Application requirements: large FOV, long working distance, high motion speed, and short exposure time; select multiple bar lights for the uniform illumination.

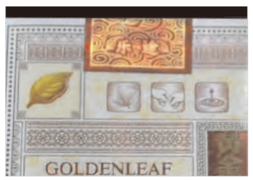
Filter size measurement




Workpiece Result

A backlight shines through the filters to measure their geometric size. With a high intensity blue backlight in adequate size, best results can be achieved.

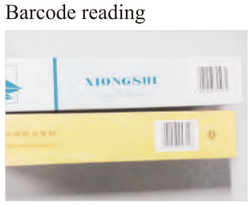
Surface inspection of paper package

Workpiece Result

Inspect if the package surface is flat and the plastic film is damaged, by slanting a side backlight together with a camera to a certain angle for the illumination.

Barcode reading





Workpiece Result

A low-angle illumination integrated with a polarizer helps to read the barcode on the package and remove the interference of surface reflections.

Printing inspection on paper package




Workpiece Result

Check the printing problems and contamination of the package with a high-intensity vault light and a line scan camera to achieve a better result.

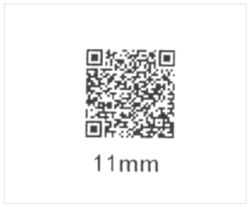
Printing Industry



1. Label inspection for electronic products



2. Printed logo inspection



3. Reading of QR codes



4. Label inspection for daily necessities





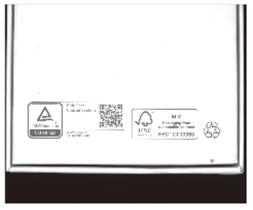
5. Cap surfaces inspection



6. Printing inspection



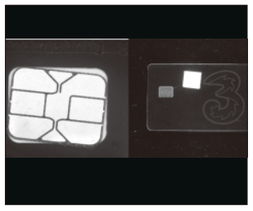
7. OCR for keyboards



8. Print inspection for mobile phone package box



9. Label inspection for pens



10. Inspection of printed characters on SIM cards

Label inspection for electronic products



Workpiece



Result

A bar light illuminates the label from a certain angle to check the QR code and characters on labels.

Printing inspection



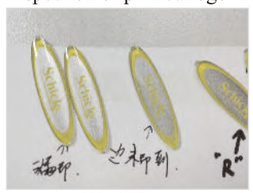
Workpiece



Result

The goal is to inspect the color, ghosting and stains of catalog printing.

Inspection of printed logo



Workpiece



Result

The system inspects missing ink, incomplete printing, blackened edges, scratches etc. with a dome light and a coaxial light to eliminate reflections on the label.

OCR for keyboards



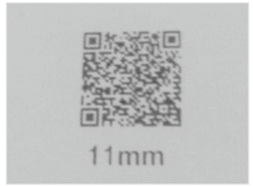
Workpiece



Result

Use a front backlight to achieve large FOV uniform illumination for the OCR on keyboards.

Reading of QR codes



Workpiece



Result

The system reads QR codes with a 75-degree ring light.

Print inspection for mobile phone package box



Workpiece



Result

To detect the defects of the package box surface print, using OPT-FLC series white color light to get uniform illumination for the whole FOV.

Label inspection for daily necessities



Workpiece



Result

Choose a bar light to read the QR codes and recognize the characters on the labels.

Label inspection for pens



Workpiece



Result

Recognize the characters on the labels with a diffuse light source.

Inspection of cap surfaces



Workpiece



Result

A combined bar light allows the inspection of different items in one position, which is applicable to the detection of scratches, dents, letters, etc. on bottle caps.

Inspection of printed characters on SIM cards



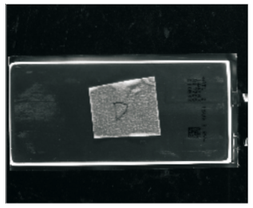
Workpiece



Result

The system inspects the printing defects and chip displacement on the SIM card.

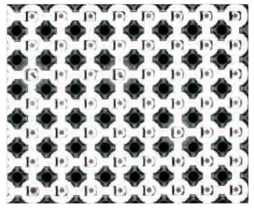
Lithium Battery Industry



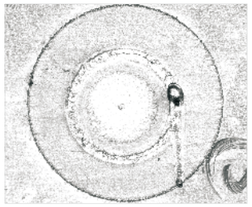
1. Cell phone battery positioning



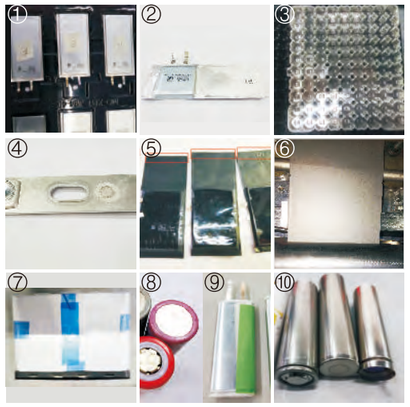
2. QR code reading

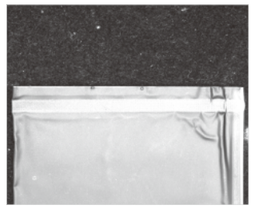


3. Cell module solder joint inspection

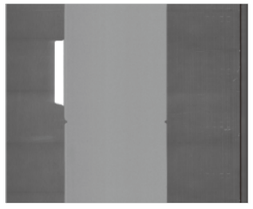


4. Battery slice solder joint inspection





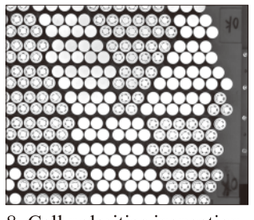
5. Package inspection after sealing



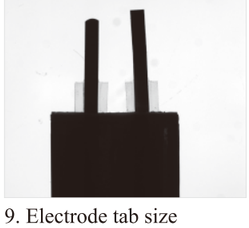
6. Electrode inspection on die-cutting machine



7. Square battery related size measurement



8. Cell polarities inspection

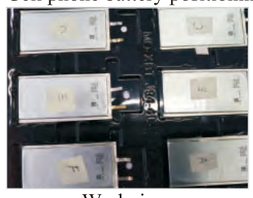


9. Electrode tab size measurement

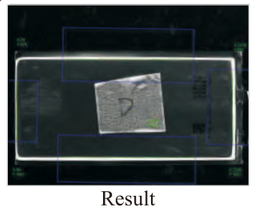


10. Cylindrical battery bottom gasket size measurement

Cell phone battery positioning



Workpiece



Result

Position the battery with a low angle ring light that can highlight its contour.

QR code reading



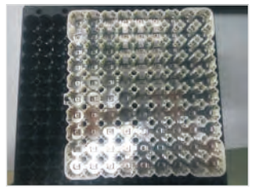
Workpiece



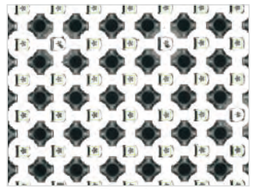
Result

OPT-RID series dome light helps to read the QR codes on batteries by uniform illumination.

Cell module solder joint inspection



Workpiece



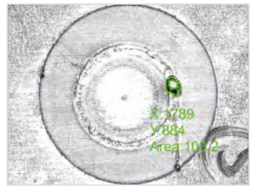
Result

A front backlight that illuminates from top can inspect solder joints of the module. (making a view window on the center of OPT-FLC series to get front backlight).

Battery slice solder joint inspection



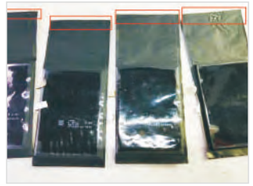
Workpiece



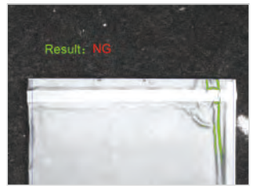
Result

Use OPT high angle ring light to illuminate the workpiece at a suitable working distance.

Package inspection after sealing



Workpiece



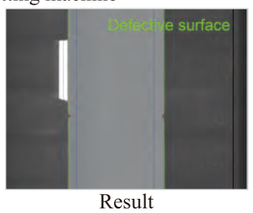
Result

Inspection of package wrinkles, breakage and bubbles after sealing with a front backlight to get large FOV and uniform illumination.

Electrode inspection on die-cutting machine



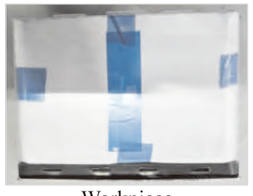
Workpiece



Result

Use high resolution line scan camera to work with OPT-LSS series line scan light for the high speed inspection.

Square battery related size measurement



Workpiece



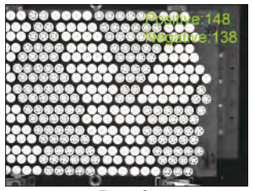
Result

Use OPT-LIU series vault light to eliminate the reflection, the uniform image for the uneven surface can be obtained to measure the distance between the soldering path and the battery side.

Cell module solder joint inspection



Workpiece



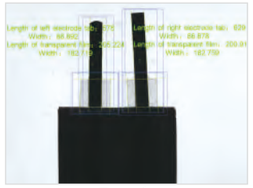
Result

A front backlight that illuminates from top together with a reflector can inspect the battery cathode and anode.

Electrode tab size measurement



Workpiece



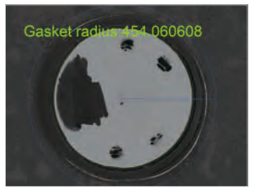
Result

Measure the size of electrode tabs with OPT-FL series backlight of suitable size. The tab contour will faint when the emitting surface is too large.

Cylindrical battery bottom gasket size measurement



Workpiece



Result

The gasket is a piece of high reflective blue metal. Use color camera and OPT high angle ring light to obtain the high contrast image.

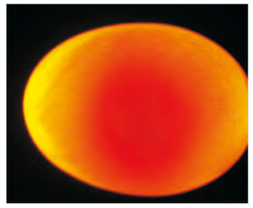
Food and Beverage Industry



1. OCR on packaging box



2. Tea inspection



3. Egg inspection



4. Defects detection on the bottom of milk powder can





5. Scratches detection for beverage can



6. Soy sauce bottle level detection



7. Gum package inspection



8. Plastic package sealing inspection



9. OCR on the bottom of can



10. Areca nuts inspection

OCR on packaging box



Workpiece



Result

Inspect the laser-marked characters on packaging box with a bar light.

Soy sauce bottle level detection



Workpiece



Result

Measure the level of soy sauce. Capture the separate line between soy sauce and air and use a backlight to highlight the liquid outline.

Tea inspection



Workpiece



Result

Choose a backlight to inspect if tea turns yellow or is with branch.

Gum package inspection



Workpiece



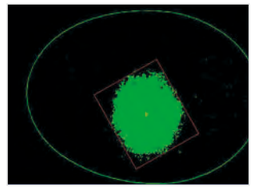
Result

Inspect if the plastic box is damaged or has any printing defects with a diffuse light source for the uniform illumination.

Egg inspection



Workpiece



Result

Inspect the scratch and dirt on the surface and the position of yolk with an IR light.

Plastic package sealing inspection



Workpiece



Result

Inspect the package sealing with a coaxial line scan light.

Defects detection on the bottom of milk powder can



Workpiece



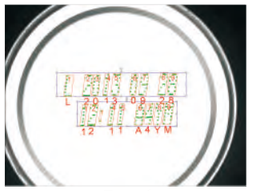
Result

Inspect the bottom contour, glue and surface defects with a diffuse light source for the uniform illumination.

OCR on the bottom of can



Workpiece



Result

Inspect the characters on the bottom of can. Use a dome light to obtain high contrast images with uniform brightness.

Scratches detection for beverage can



Workpiece



Result

Inspect the scratch on the top of the can with a dome light.

Inspection of areca nuts



Workpiece



Result

Inspect the front and back of areca nuts, then position their contours for processing with a low angle bar light.

OPT Controller

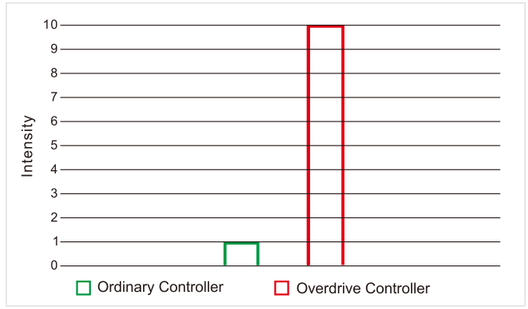
- Controller Selection & Introduction >>P279
- DPA Digital Current Controller >>P281
- Digital Current Controller >>P284
- Digital Current Controller for Spot Lights >>P287
- High Power Digital Current Controller >>P290
- High Power Digital Current Controller NEW >>P292
- High Power Digital Current Controller NEW >>P295
- High Power Digital Current Controller NEW >>P298
- Ultra-high Power Digital Current Controller >>P301
- DPH Strobe Overdrive Digital Controller >>P304
- AP Analog Voltage Controller >>P306
- APA High Power Analog Current Controller >>P309
- Analog Current Controller for Spot Lights >>P311
- DPM Mini Digital Current Controller NEW >>P313
- APM Mini Analog Voltage Controller >>P316
- SPM Mini Strobe Controller >>P318

Applications of Controller

Controller can adjust light source intensity via communication interfaces (e.g. Ethernet port and serial port). Programmable commands can also be sent via Ethernet or Serial ports. External triggers can be used for high speed applications.

Features of OPT Controllers

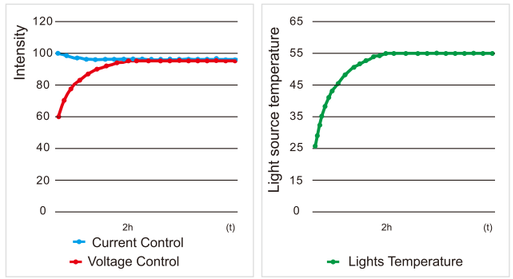
- High accuracy constant current control
- Autosense™ technology
- Overdrive® that increases light intensity
- Programmable trigger
- Efficient and flexible communication protocol
- Short response time, and high trigger frequency



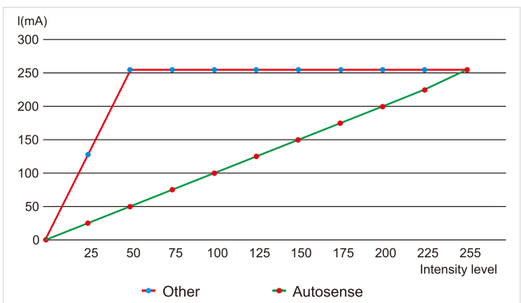
Maximum output comparison between ordinary and overdrive controllers

Autosense™ Technology

Light intensity via current control.



Automatically adjust output current based on light source current rating. Autosense will greatly reduce temperature issues thus prolongs light source life expectancy.



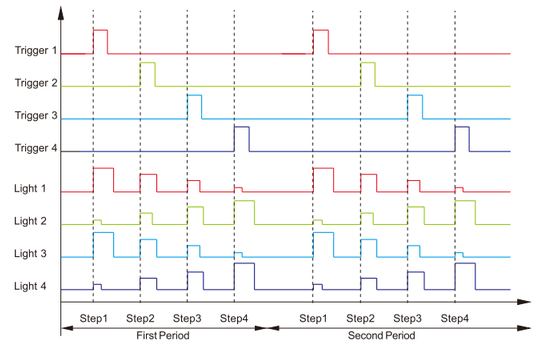
Comparison of Autosense and other controls

Overdrive® Technology

- Max. 20A instant output to increase light intensity
- Trigger pulse width setting
- Short trigger response time

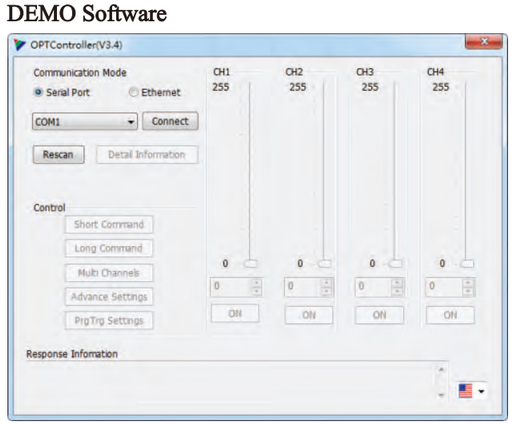
Programmable Trigger Technology

The triggers can be programmed via flowchart. Each step can be defined for expected channel intensity, pulse width and etc. Once the flowchart is set, the controller will sequentially execute each predefined steps.



Notes
1. "Trigger" indicates trigger signal, and "Light" the output signal.
2. The diagram above shows the sequence of 4 programmable triggers. Trigger 1/2/3/4 are trigger sources.

DEMO Software



Controller SDK

- Programming language: VC, VB , C#
- OS: Windows
- Development environment: VS

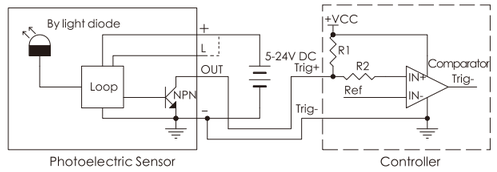
Controller Selection Guide

OPT-DPA2024E-X

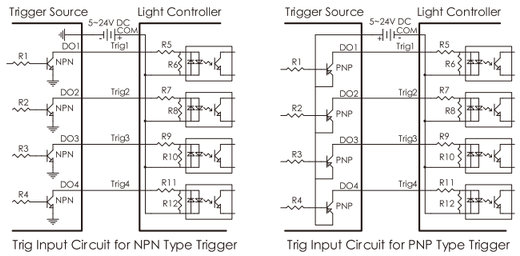
- Channels: 2 → 2 channels; 4 → 4 channels; 8 → 8 channels; 16 → 16 channels
- Additional information: E → Ethernet communication; F → Panel type; B → The 2nd generation
- Output voltage: 05 → 5V; 24 → 24V; 48 → 48V
- Output current: 07 → 0.7A; 20 → 2A; 60 → 6A
- Types: DPA-digital current; DPH-digital overdrive; AP-analog voltage; APA-analog current
- Brand name

Controller Trigger Wiring Diagrams

Switch Trigger



Level Trigger



Selection Table

Type	Control Type	Model	Channels	Triggering	Output Voltage	Single Channel Power	Total Power	Compatible Light	Communication
Digital Controller	Current	OPT-DPM0524E-4	4 (can be extended to 8/12/16)	Level	24V	12W	4CH:48W 8/12/16CH:100W	24V	Ethernet/ RS232
		OPT-DPA2024E-X	4 (can be extended to 8 or 16)	Level	24V	48W	4/8CH:48W 16CH:150W	24V	Ethernet/ RS232
		OPT-DPA2005E-X	4 (can be extended to 8)	Level	5V	10W	4CH:30W 8CH:50W	5V spot light	Ethernet/ RS232
		OPT-DPA2012E-4	4	Level	12V	24W	48W	12V	Ethernet/ RS232
		OPT-DPA6024-2	2	Switch	24V	144W	288W	OPT 6P light	RS232
		OPT-DPA6024E-2	2	Level	5-48V	144W	288W	5-24V OPT 6P light	Ethernet/ RS232
		OPT-DPA6024EB-2	2	Level	24V	144W	288W	OPT 6P light	Ethernet/ RS232
		OPT-DPA6024EC-2	2	Level	5-48V	144W	288W	5-24V OPT 6P light	Ethernet/ RS232
		OPT-DPA10024EB-1	1	Level	24V	240W	240W	OPT 6P light	Ethernet/ RS232
		OPT-DPA20024E-2	2	Level	24V	480W	960W	22V~23.5V 6P light	Ethernet/ RS232
	Overdrive	OPT-DPH20048E-4	4	Level	48V	peak power: 960W	peak power: 1920W	24V	Ethernet/ RS232
Analog Controller	Current	OPT-APA3024-2	2	Switch	24V	72W	144W	OPT 6P light	-
		OPT-APA6024-2	2	Switch	24V	144W	288W	OPT 6P light	-
		OPT-APA0705F-X	1/2/3/4	Switch	5V	3.5W	1/2/3/4CH: 3.5/7/10.5/14W	5V spot light	-
	Voltage	OPT-AP1024F-X	1/2/3/4	Switch	14~24V	24W	1/2CH:30W 3/4CH:40W	24V	-
		OPT-APM0524B-2	2	Switch	14~24V	12W	24W	24V	-
	Strobe	OPT-SPM2024-1	1	Level	12~48V	96W	96W	12~48V	-

DPA Digital Current Controller Patented



- RS232 interface
- 100Mb Ethernet interface
- Temperature-controlled fan
- Convenient mounting with screws or on DIN rails

Selection Guide

OPT-DPA2024E-X

- Channels
- Additional info.: Ethernet
- Max. output voltage: 24V
- Max. output current: 2A
- Digital current controller
- Brand name

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

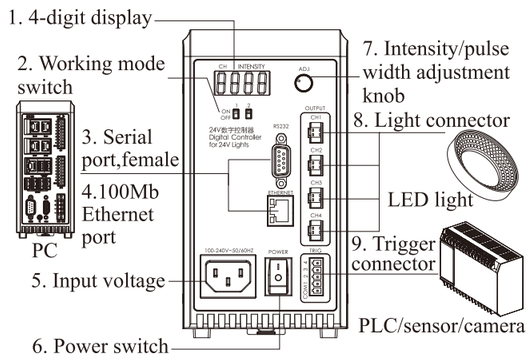
Product Features

- Maximum of 64 programmable steps: intensity, pulse width and trigger source can be defined in each step.
- Autosense™ technology
- ≤ 20μs trigger response time
- Up to 20kHz trigger response frequency
- Simultaneous communication of multiple channels
- Manual setting for max. output current
- 256-level light intensity control
- External trigger: External trigger input (e.g. camera trigger signal) for related light strobes and other sequences. (Strobe mode can greatly improve light source life expectancy.)

Specifications

Model	Specifications	Description
Input voltage	100 - 240V AC 50/60Hz	
Input current	1.8A/115VAC 1A/230VAC	
Lighting mode	Continuous/strobe	Set via the working mode switch or DEMO software
Auto sensing of light rated current	For 10mA-2A 24V LED light	Set via DEMO software
Manual setting for max. output current	10mA - 2A	Set via DEMO software
Intensity control	256 levels	Set via the adjustment key or DEMO software
Short-circuit protection	Yes	The related channel is shut down and “Er2” displays.
Overcurrent protection	Yes	Enabled when the output current is higher than 110% of the set value: the related channel is shut down and “Er1” displays.
Triggering	Level	
Normal trigger	256 intensity levels settable	
Normal trigger time unit	1μs/10μs/1ms/100ms	Set via DEMO software
Normal trigger pulse width	1μs - 30s	Set via the adjustment knob or DEMO software
High intensity trigger	2A output per channel	
High intensity trigger pulse width	0.01 - 5.00ms	Set via the adjustment knob or DEMO software
Programmable trigger	Support up to 64 processes	The intensity, pulse width, and trigger source of each step can be set.
Response time	≤ 20μs	See “Reference Table of Trigger Response Time” for details
Response frequency	≤ 20kHz	See “Reference Table of Trigger Response Time” for details
Fan control	Via temperature	
Output power	48W/CH	4CH/8CH total output: ≤ 48W; 16CH total output: ≤ 150W
Communication	RS232/Ethernet	
Standby power consumption	4CH 6.6W	Tested at 220V AC
	8CH 8.7W	
	16CH 12.5W	
Hi-Pot test	1500VAC 1Min	Leakage current < 10mA
Insulation	500VDC	Insulation resistance > 20MΩ
Operating temperature	-5°C - 50°C	
Dimensions (mm^3) (L × W × H)	4CH 91×132×170	Refer to the drawings for details
	8CH 108×132.4×172.1	
	16CH 140×132.5×172.1	
Weight (kg)	4CH 0.84	
	8CH 1.2	
	16CH 1.6	

Device Overview



Working Mode Setting

Mode	Working mode switch 1	Working mode switch 2
Continuous	ON	ON
Auto sensing of light rated current once	ON	OFF
Normal trigger	OFF	ON
High intensity trigger	OFF	OFF

Error Code Description

Code	Description	Display	Solution
Er0	No LED light connected	“Er0”	Connect an LED light
Er1	Overcurrent protection	“Er1”	Remove ERR and reboot
Er2	Short-circuit protection	“Er2”	Remove ERR and reboot
Er3	Overvoltage protection	“Er3”	Remove ERR and reboot
Er4	Driver hardware communication ERR	“Er4”	Return to OPT for repair
Er5	Display hardware communication ERR	“Er5”	Return to OPT for repair

Remark: “----” displays when the controller is turned on, and the corresponding value displays later.

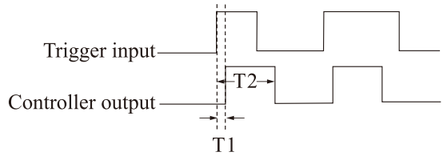
Trigger

Trigger Mode	Trigger Polarity
Normal trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode
High intensity trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode
Programmable trigger	Rising edge trigger
	Falling edge trigger

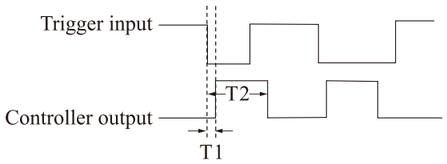
Remark: Rising edge trigger is the default trigger polarity.

Trigger Sequence

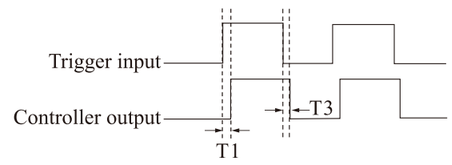
Rising edge trigger
The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



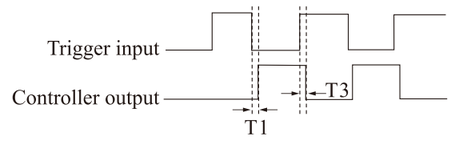
Falling edge trigger
The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



Positive follow trigger mode
When the trigger signal is at high level, the illumination time is the same as the high-level pulse width.



Negative follow trigger mode
When the trigger signal is at low level, the illumination time is the same as the low-level pulse width.



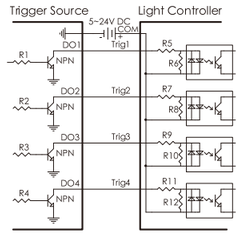
Remarks
1. T1: Enabling response time; T2: Trigger pulse width;
   T3: Disabling response time
2. T2 setting range: 1μs - 30s;
   Please refer to the table of trigger response time for T1 and T3

Reference Table of Trigger Response Time

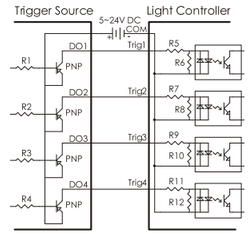
Trigger Voltage (V) \ Output Current (mA)	200		1000		2000	
	T1 (μs)	T3 (μs)	T3 (μs)	T3 (μs)	T1 (μs)	T3 (μs)
5	15	4	18	4	18	4
12	15	4.6	18	4.7	19	4.7
24	10	15	15	15	12	15

Level Trigger Wiring Diagrams

4 trigger channels, and bidirectional optocoupler inside.
Low level: 0 - 2V input voltage; high level: 5 - 24V input voltage. The rising edge trigger is the default trigger polarity.
The diagrams are on the right.



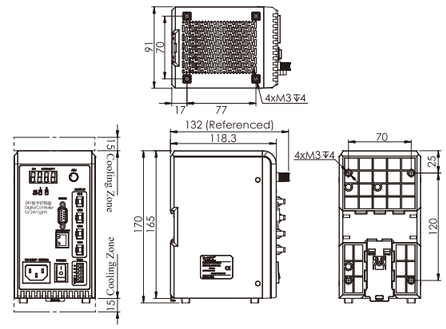
Trig Input Circuit for NPN Type Trigger



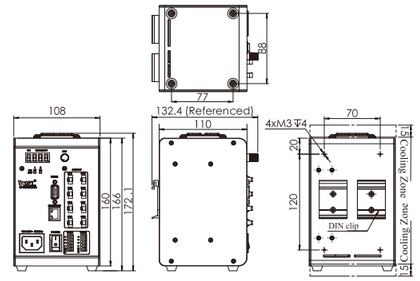
Trig Input Circuit for PNP Type Trigger

Dimensions (mm)

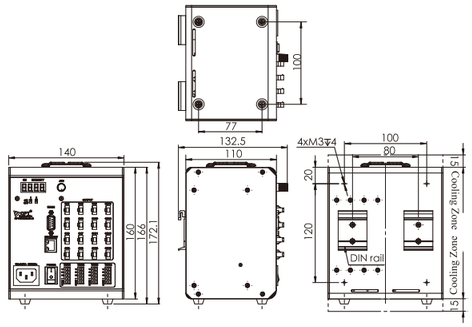
1.OPT-DPA2024E-4



2.OPT-DPA2024E-8



3.OPT-DPA2024E-16



Digital Current Controller

Patented



Selection Guide

OPT-DPA2012E-4

- Channels
- Additional info.: Ethernet
- Max. output voltage: 12V
- Max. output current: 2A
- Digital current controller
- Brand name

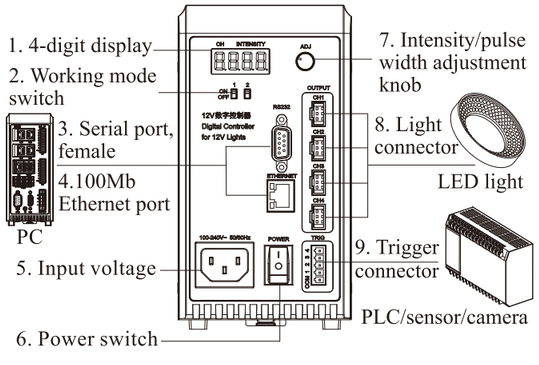
Product Features

- Maximum of 64 programmable steps with intensity, pulse width and trigger source can be defined in each step.
- Autosense™ technology
- ≤ 30μs trigger response time
- Up to 20kHz trigger response frequency
- Simultaneous communication of multiple channels
- Manual setting for max. output current
- 256-level light intensity control
- External trigger: External trigger input (e.g. camera trigger signal) for related light strobes and other sequences. (Strobe mode can greatly improve light source life expectancy.)
- Trigger pulse width setting
- RS232 interface
- 100Mb Ethernet interface
- Temperature-controlled fan
- Convenient mounting with screws or on DIN rails

Specifications

Item	Parameter	Description
Input voltage	100 - 240V AC 50/60Hz	
Input current	1.8A/115VAC 1A/230VAC	
Lighting mode	Continuous/strobe	Set via the working mode switch or DEMO software
Auto sensing of light rated current	For 10mA-2A 12V LED light	Set via DEMO software
Manual setting for max. output current	10mA-2A	Set via DEMO software
Intensity control	256 levels	Set via the adjustment knob or DEMO software
Short-circuit protection	Yes	The related channel is shut down and “Er2” displays.
Overcurrent protection	Yes	Enabled when the output current is higher than 110% of the set value: the related channel is shut down and “Er1” displays.
Triggering	Level	
Normal trigger	256 intensity levels settable	
Normal trigger time unit	1μs/10μs/1ms /100ms	Set via DEMO software
Normal trigger pulse width	1μs-30s	Set via the adjustment knob or DEMO software
High intensity trigger	2A output per channel	
High intensity trigger pulse width	0.01-5.00ms	Set via the adjustment knob or DEMO software
Programmable trigger	Support up to 64 processes	Intensity, pulse width and trigger source of each step can be set.
Response time	≤ 30μs	See “Reference Table of Trigger Response Time” for details
Response frequency	≤ 20kHz	See “Reference Table of Trigger Response Time” for details
Fan control	Via temperature	
Output power	24W/CH	Total output ≤ 48W
Communication	RS232/Ethernet	
Standby power consumption	5W	Tested at 220V AC
Hi-Pot test	1500VAC 1Min	Leakage current < 10mA
Insulation	500VDC	Insulation resistance > 20MΩ
Operating temperature	-5°C - 50°C	
Dimensions (mm^3) (L×W×H)	91×132×170	Refer to the drawing for details
Weight (kg)	0.84	

Device Overview



No.	Item	Description
1	4-digit display	The first digit from the left indicates the operating channel, and the other 3 indicate the operating intensity or pulse width.
2	Working mode switch	Functional conversion; please refer to the working mode setting for details.
3	Serial port, female	Communication with PC via the RS232 interface
4	100Mb Ethernet port	Communication with PC via the Ethernet interface
5	Input voltage	100V - 240V AC, 50/60Hz
6	Power switch	Turns on/off the controller
7	Intensity/pulse width adjustment knob	Press the knob, the digit that flashes is chosen; press it again, the next digit is chosen; turn the knob in clockwise to increase the value and in anti-clockwise to reduce the value
8	Light connector	Each light is individually controlled
9	Trigger connector	Strobe mode can be also achieved by external trigger; trigger pulse width settable

Working Mode Setting

Mode	Working mode switch 1	Working mode switch 2
Continuous	ON	ON
Auto sensing of light rated current once	ON	OFF
Normal trigger	OFF	ON
High intensity trigger	OFF	OFF

Error Code Description

Code	Description	Display	Solution
Er0	No LED light connected	“Er0”	Connect an LED light
Er1	Overcurrent protection	“Er1”	Remove ERR and reboot
Er2	Short-circuit protection	“Er2”	Remove ERR and reboot
Er3	Overvoltage protection	“Er3”	Remove ERR and reboot
Er4	Driver hardware communication ERR	“Er4”	Return to OPT for repair
Er5	Display hardware communication ERR	“Er5”	Return to OPT for repair

Remark: “----” displays when the controller is turned on, and the corresponding value displays later.

Trigger

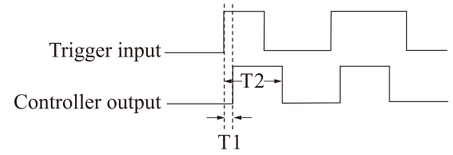
Trigger Mode	Trigger Polarity
Normal trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode
High intensity trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode
Programmable trigger	Rising edge trigger
	Falling edge trigger

Remark: Rising edge trigger is the default trigger polarity.

Trigger Sequence

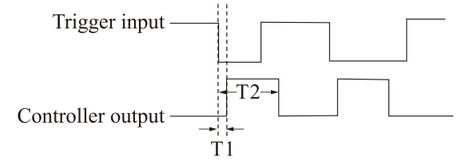
Rising edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



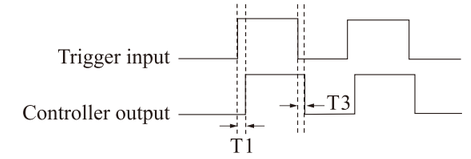
Falling edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



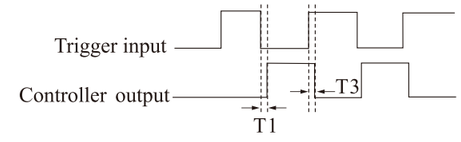
Positive follow trigger mode

When the trigger signal is at high level, the illumination time is the same as the high-level pulse width.



Negative follow trigger mode

When the trigger signal is at low level, the illumination time is the same as the low-level pulse width.



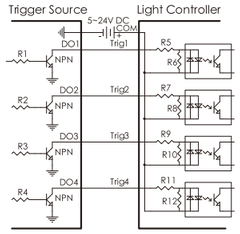
Remarks
1. T1: Enabling response time; T2: Trigger pulse width;
   T3: Disabling response time
2. T2 setting range: 1μs - 30s;
   Please refer to the table of trigger response time for T1 and T3

Reference Table of Trigger Response Time

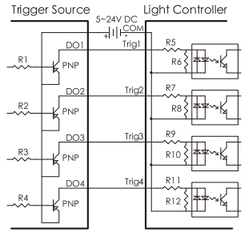
Trigger Voltage (V) \ Output Current (mA)	200		1000		2000	
	T1 (μs)	T3 (μs)	T3 (μs)	T3 (μs)	T1 (μs)	T3 (μs)
5	26	11	27	11	29	11
12	20	13	21	13	23	13
24	21	13	22	12	23	12

Level Trigger Wiring Diagrams

4 trigger channels, and bidirectional optocoupler inside.
Low level: 0 - 2V input voltage; high level: 5 - 24V input voltage. The rising edge trigger is the default trigger polarity.
The diagrams are as below.

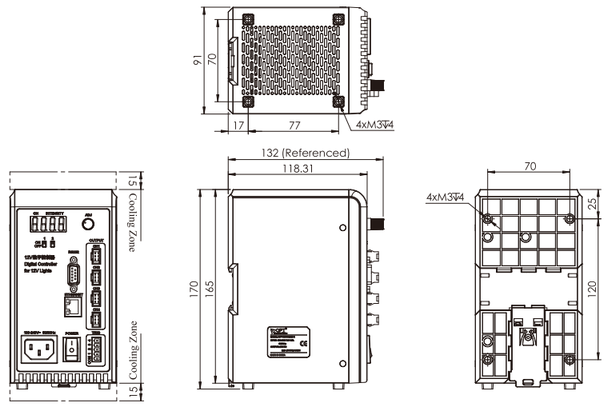


Trig Input Circuit for NPN Type Trigger



Trig Input Circuit for PNP Type Trigger

Dimensions (mm)



Digital Current Controller for Spot Lights Patented



- Trigger pulse width setting
- RS232 interface
- 100Mb Ethernet interface
- Temperature-controlled fan
- Convenient mounting with screws or on DIN rails

Selection Guide

OPT-DPA2005E-X

- Channels
- Additional info.: Ethernet
- Max. output voltage: 5V
- Max. output current: 2A
- Digital current controller
- Brand name

Model	Channels	Compatible Light
OPT-DPA2005E-4	4	10mA - 2A (5V)
OPT-DPA2005E-8	8	10mA - 2A (5V)

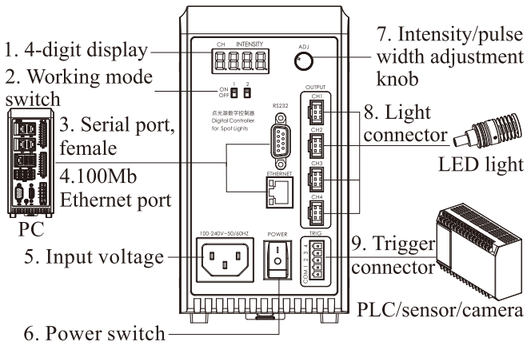
Product Features

- Maximum of 64 programmable steps with intensity, pulse width and trigger source can be defined in each step.
- Autosense™ technology
- ≤ 30μs trigger response time
- Up to 20kHz trigger response frequency
- Simultaneous communication of multiple channels
- Manual setting for max. output current
- 256-level light intensity control
- External trigger: External trigger input (e.g. camera trigger signal) for related light strobes and other sequences. (Strobe mode can greatly improve light source expectancy.)

Specifications

Item	Parameter	Description
Input voltage	100 - 240V AC 50/60Hz	
Input current	1.8A/115VAC 1A/230VAC	
Lighting mode	Continuous/strobe	Set via the working mode switch or DEMO software
Auto sensing of light rated current	For 10mA-2A 5V LED light	Set via DEMO software
Manual setting for max. output current	10mA - 2A	Set via DEMO software
Intensity control	256 levels	Set via the adjustment knob or DEMO software
Short-circuit protection	Yes	The related channel is shut down and “Er2” displays.
Overcurrent protection	Yes	Enabled when the output current is higher than 110% of the set value: the related channel is shut down and “Er1” displays.
Triggering	Level	
Normal trigger	256 intensity levels settable	
Normal trigger time unit	1μs/10μs/1ms /100ms	Set via DEMO software
Normal trigger pulse width	1μs-30s	Set via the adjustment knob or DEMO software
High intensity trigger	2A output per channel	
High intensity trigger pulse width	0.01 - 5.00ms	Set via the adjustment knob or DEMO software
Programmable trigger	Support up to 64 processes	Intensity, pulse width and trigger source of each step can be set.
Response time	≤ 30μs	See “Reference Table of Trigger Response Time” for details
Response frequency	≤ 20kHz	See “Reference Table of Trigger Response Time” for details
Fan control	Via temperature	
Output power	10W/CH	4CH total output ≤ 30W; 8CH total output ≤ 50W
Communication	RS232/Ethernet	
Standby power consumption	4CH: 4.7W	Tested at 220V AC
	8CH: 5.8W	
Hi-Pot test	1500VAC 1Min	Leakage current <10mA
Insulation	500VDC	Insulation resistance >20MΩ
Operating temperature	-5°C - 50°C	
Dimensions (mm^3) (L×W×H)	4CH: 91×132×170	Refer to the drawings for details
	8CH: 108×132.5×172.1	
Weight (kg)	4CH: 0.84	
	8CH: 1.2	

Device Overview



No.	Item	Description
1	4-digit display	The first digit from the left indicates the operating channel, and the other 3 indicate the operating intensity or pulse width.
2	Working mode switch	Functional conversion; please refer to the working mode setting for details.
3	Serial port, female	Communication with PC via the RS232 interface
4	100Mb Ethernet port	Communication with PC via the Ethernet interface
5	Input voltage	100V - 240V AC, 50/60Hz
6	Power switch	Turns on/off the controller
7	Intensity/pulse width adjustment knob	Press the knob, the digit that flashes is chosen; press it again, the next digit is chosen; turn the knob in clockwise to increase the value and in anti-clockwise to reduce the value
8	Light connector	Each light is individually controlled
9	Trigger connector	Strobe mode can be also achieved by external trigger; trigger pulse width settable

Working Mode Setting

Mode	Working mode switch 1	Working mode switch 2
Continuous	ON	ON
Auto sensing of light rated current once	ON	OFF
Normal trigger	OFF	ON
High intensity trigger	OFF	OFF

Error Code Description

Code	Description	Display	Solution
Er0	No LED light connected	“Er0”	Connect an LED light
Er1	Overcurrent protection	“Er1”	Remove ERR and reboot
Er2	Short-circuit protection	“Er2”	Remove ERR and reboot
Er3	Overvoltage protection	“Er3”	Remove ERR and reboot
Er4	Driver hardware communication ERR	“Er4”	Return to OPT for repair
Er5	Display hardware communication ERR	“Er5”	Return to OPT for repair

Remark: “----” displays when the controller is turned on, and the corresponding value displays later.

Trigger

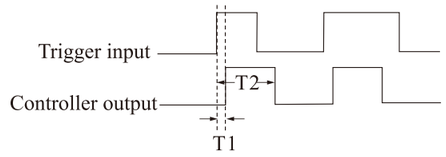
Trigger Mode	Trigger Polarity
Normal trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode
High intensity trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode
Programmable trigger	Rising edge trigger
	Falling edge trigger

Remark: Rising edge trigger is the default trigger polarity.

Trigger Sequence

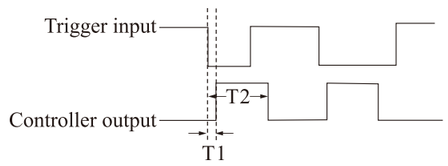
Rising edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



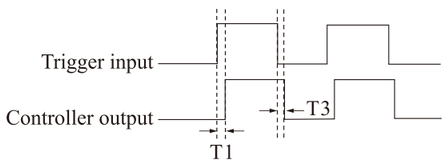
Falling edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



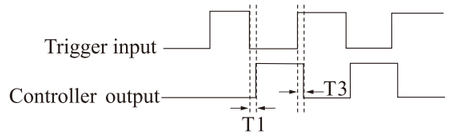
Positive follow trigger mode

When the trigger signal is at high level, the illumination time is the same as the high-level pulse width.



Negative follow trigger mode

When the trigger signal is at low level, the illumination time is the same as the low-level pulse width.



Remarks

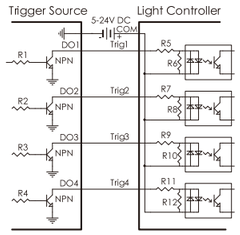
1. T1: Enabling response time; T2: Trigger pulse width; T3: Disabling response time
2. T2 setting range:1μs - 30s; Please refer to the table of trigger response time for T1 and T3

Reference Table of Trigger Response Time

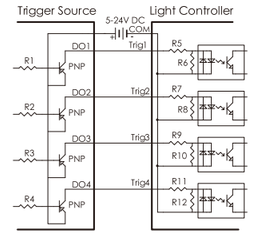
Trigger Voltage (V) \ Output Current (mA)	200		1000		2000	
	T1 (μs)	T3 (μs)	T3 (μs)	T3 (μs)	T1 (μs)	T3 (μs)
5	27	11	28	11	30	11
12	21	14	22	13	24	13
24	22	13	23	12	24	12

Level Trigger Wiring Diagrams

4 trigger channels, and bidirectional optocoupler inside
Low level: 0 - 2V input voltage; high level: 5 - 24V input voltage. The rising edge trigger is the default trigger polarity. The diagrams are as below.



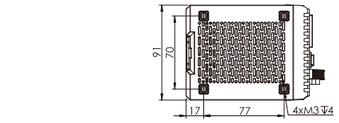
Trig Input Circuit for NPN Type Trigger

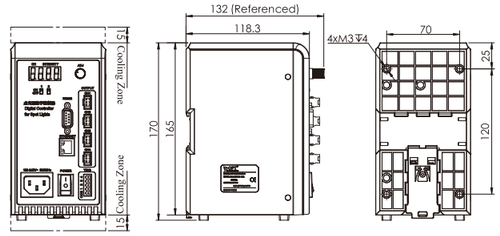


Trig Input Circuit for PNP Type Trigger

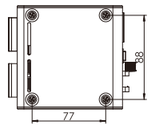
Dimensions (mm)

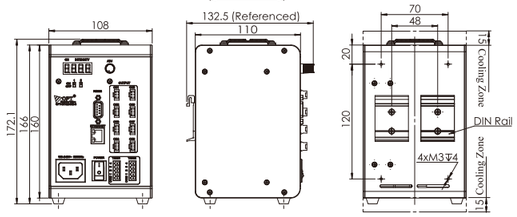
1.OPT-DPA2005E-4





2.OPT-DPA2005E-8





High Power Digital Current Controller Patented

(The controller will be discontinued in March 2022 and replaced with controller OPT-DPA6024EB)



Selection Guide

OPT-DPA6024-2
- Channels
- Max. output voltage: 24V
- Max. output current: 6A
- Digital current controller
- Brand name

Specifications

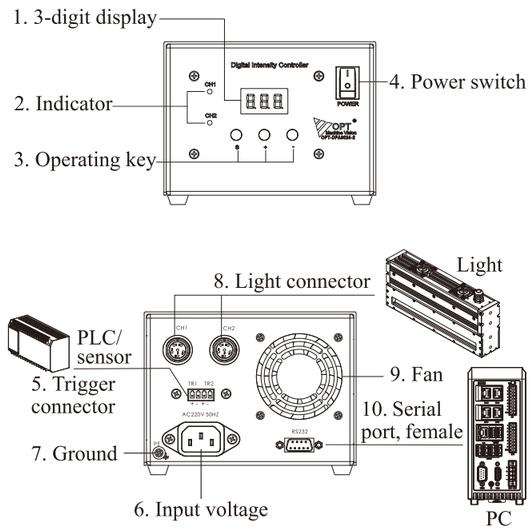
Item	Parameter	Description
Input voltage	100 - 120V AC 7A 200 - 240V AC 3.5A 50/60Hz	Converted via the internal switch; 200 - 240V AC is the default input. Choose the controller model accordingly
Lighting mode	Continuous/strobe	
Auto sensing of light rated current	For 100mA - 6A OPT light[1]	
Intensity control	256 levels	Via the keys or DEMO software
Short-circuit protection	Yes	Enabled when short circuited
Triggering	Switch	
Trigger response time	≥ 150μs	See “Reference Table of Trigger Response Time” for details
Trigger response frequency	≤ 1kHz	See “Reference Table of Trigger Response Time” for details
Channels	2CH	
Output power	144W/CH	2CH total output ≤ 288W
Communication	RS232	
Standby power consumption	≤ 4.9W	Tested at 220V AC
Hi-Pot test	1500VAC 1Min	Leakage current < 10mA
Insulation	500VDC	Insulation resistance > 20MΩ
Operating temperature	-5°C - 50°C	
Dimensions (mm^3) (L × W × H)	136×326×104.5	Refer to the drawing for details
Weight (kg)	2.3	

[1]The light should be with 6 pin connector.

Product Features

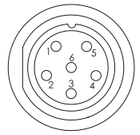
- Autosense™ technology
- RS232 interface
- External trigger: External trigger input (e.g. camera trigger signal) for related light strobes and other sequences. (Strobe mode can greatly improve light source expectancy.)
- 256-level light intensity control
- Manual intensity adjustment
- Power-off memory: No need to reset parameters when restart the controller.

Device Overview



No.	Item	Description
1	3-digit display	The first digit from the left indicates the operating channel, and the other 2 digits show the corresponding intensity.
2	Indicator	Turned on to show active channel, and off to show inactive channel
3	Operating key	Press “S” key to set and confirm operation; “+” to increase and “-” to reduce value
4	Power switch	Turns on/off the controller
5	Trigger connector	Connects external trigger for strobe
6	Input voltage	100 - 120V/200 - 240V AC , 50/60Hz
7	Ground	Grounding protection
8	Light connector	Connects with OPT light with 6P connector
9	Fan	Enhances cooling
10	Serial port, female	Communication with PC via the RS232 interface

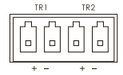
Light Connector



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

Trigger Connector

+ and - electrode input ports form a trigger channel.
2 trigger channels are available (see the figure below).
Please refer to the “Switch Trigger Wiring Diagram” for more details.



Working Mode Setting

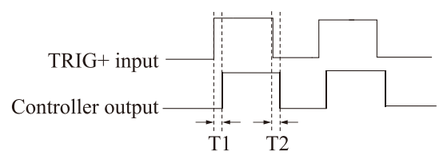
The controller has two working modes (on/off), which can only be set via the internal switch. Please refer to the table below for details.

Working Mode	Description
ON	Light is on when “Trig+” and “Trig-” are disconnected; light is off at the short circuit.
OFF	Light is off when “Trig+” and “Trig-” are disconnected; light is on at the short circuit.

Trigger Sequence

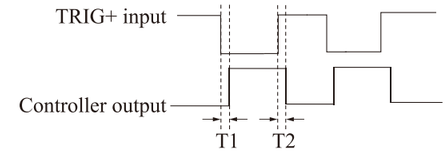
ON Mode

After an external signal is connected, light is on when “Trig+” and “Trig-” are disconnected; light is off at the short circuit.



OFF Mode

After an external signal is connected, light is off when “Trig+” and “Trig−” are disconnected; light is on at the short circuit.

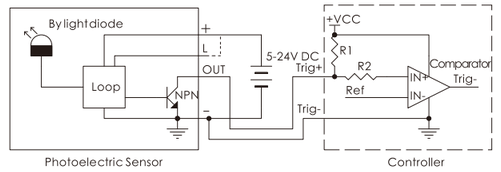


Remarks
1. T1: Enabling response time;
   T2: Disabling response time;
   Please refer to the table of trigger response time for T1 and T2

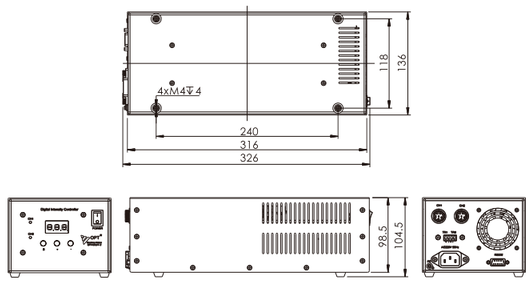
Reference Table of Trigger Response Time

Working Mode \ Output Current (A)	0.5		3		6	
	T1 (μs)	T2 (μs)	T1 (μs)	T2 (μs)	T1 (μs)	T2 (μs)
ON Mode	320	0.7	158	0.9	150	1.5
OFF Mode	320	0.8	154	1.1	150	1.7

Switch Trigger Wiring Diagram



Dimensions (mm)



High Power Digital Current Controller NEW



Selection Guide

OPT - DPA 60 24 E - 2

- Channels
- Additional info.: Ethernet
- No-load output voltage: 24V
- Max. continuous output current: 6A
- Digital current controller
- Brand name

Product Features

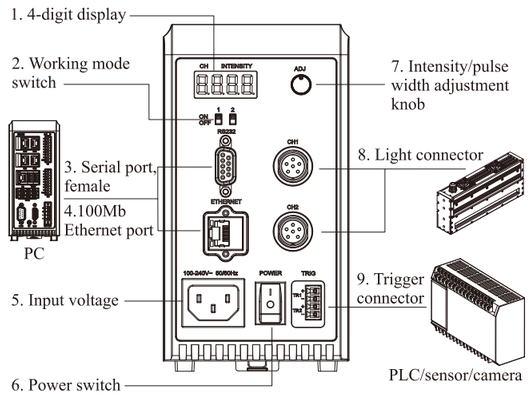
- Compact size
- Provide adaptive light source voltage function. Insert a light source with a rated voltage of 5-24V, the controller output voltage will automatically match with the light source voltage.
- Overdrive® technology. Brightness increment current can be set, maximum output up to 20A, and the brightness increment voltage controller can identify automatically.
- Autosense™ technology
- Programmable trigger: Maximum of 64 programmable steps and intensity, pulse width and trigger source can be defined in each step.
- Provide trigger output duty cycle setting function. This function can effectively protect the light source during brightness increment and strobe.
- ≤ 10μs trigger response time
- Up to 40KHz trigger response frequency
- Trigger pulse width range: 1μs - 30s
- RS232 interface
- 100Mb Ethernet interface
- Provide software trigger function.
- Can cater for online device function upgrade.
- Temperature-controlled fan function
- Convenient mounting with screws or on DIN rails

Specifications

Item	Parameter		Description
	DPA6024E	DPA6024EB	
Input voltage	100~240V AC 50/60Hz		
Input current	4.2A/115VAC 2.1A/230VAC		
Lighting mode	Continuous/strobe		Set via the working mode switch or DEMO software
Auto sensing of light rated current	For 200mA-6A 5-24V LED light	For 200mA-6A 24V LED light	Set via DEMO software
Manual setting for max. output current	25mA~6A		Set via DEMO software
Intensity control	256 levels		Set via the adjustment key or DEMO software
Short-circuit protection	Yes		The related channel is shut down and "Er2" displays.
Overcurrent protection	Yes		Enabled when the output current is higher than 110% of the set value: the related channel is shut down and "Er1" displays.
Overload protection	Yes		Enabled when the Output power is higher than 160W of the value: the related channel is shut down and "Er6" displays.
Normal trigger	256 intensity levels settable		
Normal trigger time unit	1μs/10μs/1ms/100ms		Set via DEMO software
Normal trigger pulse width	1μs~30s		Set via the adjustment knob or DEMO software
High intensity trigger	Brightness increment current can be set, Max. output up to 20A	6A output per channel	6024E controller output voltage does not exceed 48V, 6024EB controller output voltage does not exceed 28V
High intensity trigger pulse width time unit	1μs/10μs/1ms		Set via DEMO software
High intensity trigger pulse width	1μs~999ms		Set via the adjustment knob or DEMO software

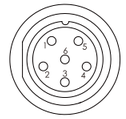
Item	Parameter		Description
	DPA6024E	DPA6024EB	
Programmable trigger	Support up to 64 processes		The intensity, pulse width, and trigger source of each step can be set.
Response time	≤10μs		See "Reference Table of Trigger Response Time" for details
Response frequency	≤ 40kHz		See "Reference Table of Trigger Response Time" for details
Output power	144W/CH		Total power less than 288W
Communication	RS232/Ethernet		
Standby power consumption	18.8W	13.3W	Tested at 220V AC
Hi-Pot test	1500VAC 1Min		Leakage current < 10mA
Insulation	500VDC		Insulation resistanc > 20MΩ
Operating temperature	-5°C - 50°C		
Dimensions (mm^3) (L × W × H)	91×132.5×170		Refer to the drawings for details
Weight (kg)	1.27	1.28	

Device Overview



No.	Item	Description
1	4-digit display	The first digit from the left indicates the operating channel, and the other 3 indicate the operating intensity or pulse width.
2	Working mode switch	Functional conversion; please refer to the working mode setting for details.
3	Serial port, female	Communicate with PC via RS232 interface
4	100Mb Ethernet port	Communicate with PC via Ethernet interface
5	Input voltage	100 - 240V AC, 50/60Hz
6	Power switch	Turns on and off the controller
7	Intensity/pulse width adjustment knob	Press the knob, the digit that flashes is chosen; press it again, the next digit is chosen; turn the knob in clockwise to increase the value and in anti-clockwise to reduce the value
8	Light connector	2 channels of light source output, and each channel can be controlled individually.
9	Trigger connector	Strobe mode can be also achieved by external trigger; trigger pulse width settable

Light Connector



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

Working Mode Setting

Mode	Working mode switch 1	Working mode switch 2
Continuous	ON	ON
Auto sensing of light rated current once	ON	OFF
Normal trigger	OFF	ON
High intensity trigger	OFF	OFF

Error Code Description

Code	Description	Display	Solution
Er0	No LED light connected	"Er0"	Connect an LED light
Er1	Overcurrent protection	"Er1"	Remove ERR and reboot
Er2	Short-circuit protection	"Er2"	Remove ERR and reboot
Er3	Overvoltage protection	"Er3"	Remove ERR and reboot
Er4	Driver hardware communication ERR	"Er4"	Return to OPT for repair
Er5	Display hardware communication ERR	"Er5"	Return to OPT for repair
Er6	Overload protection	"Er6"	Remove light and reboot

Remark: "----" displays when the controller is turned on, and the corresponding value displays later.

Trigger

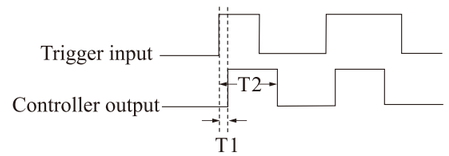
Trigger Mode	Trigger Polarity
Normal trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode
High intensity trigger	Rising edge trigger
	Falling edge trigger
Programmable trigger	Rising edge trigger
	Falling edge trigger

Remark: Rising edge trigger is the default trigger polarity.

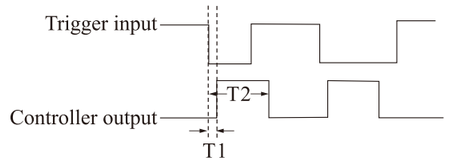
Trigger Sequence

Rising edge trigger

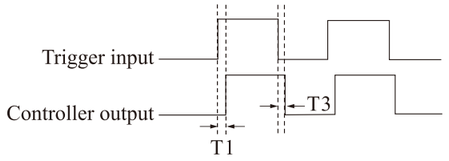
The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



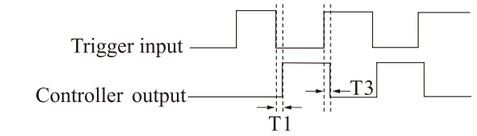
Falling edge trigger
The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



Positive follow trigger mode
When the trigger signal is at high level, the illumination time is same with the high-level pulse width.



Negative follow trigger mode
When the trigger signal is at low level, the illumination time is same with the low-level pulse width.



Remarks
1. T1: Enabling response time; T2: Trigger pulse width;
   T3: Disabling response time
2. T2 setting range: 1μs - 30s;
   Please refer to the table of trigger response time for T1 and T3

Reference Table of Trigger Response Time

OPT-DPA6024E

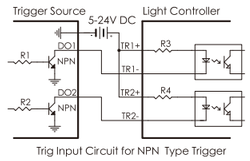
Trigger Voltage (V) \ Output Current (A)	0.4		0.6		3		6	
	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)
5	10	1.5	5.2	1.0	7.5	1.6	8.4	1.5
12	10	1.5	5.2	1.0	7.5	1.6	8.4	1.5
24	10	1.5	5.2	1.0	7.5	1.6	8.4	1.5

OPT-DPA6024EB

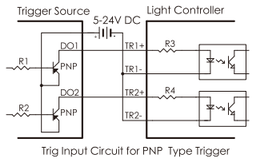
Trigger Voltage (V) \ Output Current (A)	0.4		0.6		3		6	
	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)
5	6.5	2	2.5	2	5.5	2	8	2
12	6.5	2	2.5	2	5.5	2	8	2
24	6.5	2	2.5	2	5.5	2	8	2

Level Trigger Wiring Diagrams

There are 2 trigger ports in this series of controllers (shown in the figure below), including unidirectional optocoupler isolation inside. It is low level when the input voltage is 0~2V, and high level when the input voltage is 5~24V. Two trigger wiring diagrams are given as below:

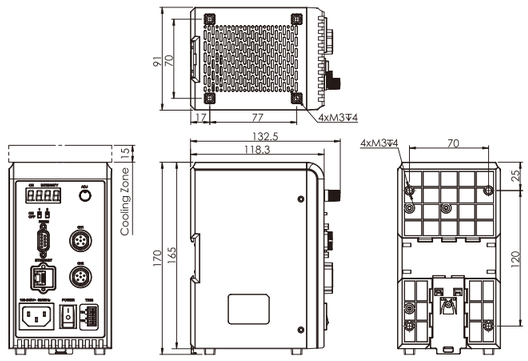


Trig Input Circuit for NPN Type Trigger



Trig Input Circuit for PNP Type Trigger

Dimensions (mm)



High Power Digital Current Controller NEW



Selection Guide

OPT - DPA 60 24 EC - 2
- Channels
- Additional info.: E-Ethernet C-version
- No-load output voltage: 24V
- Max. continuous output current: 6A
- Digital current controller
- Brand name

Product Features

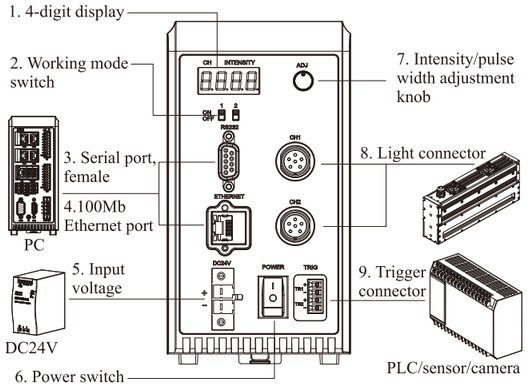
- Compact size
- 22 - 26V DC input voltage; convenient to use DC power on other devices
- Provide adaptive light source voltage function. Insert a light source with a rated voltage of 5-24V, the controller output voltage will automatically match with the light source voltage.
- Overdrive® technology. Brightness increment current can be set, maximum output up to 20A, and the brightness increment voltage controller can identify automatically.
- Autosense™ technology
- Programmable trigger: Maximum of 64 programmable steps and intensity, pulse width and trigger source can be defined in each step.
- Provide trigger output duty cycle setting function. This function can effectively protect the light source during brightness increment and strobe.
- ≤ 10μs trigger response time
- Up to 40kHz trigger response frequency
- Trigger pulse width range: 1μs - 30s
- RS232 interface
- 100Mb Ethernet interface
- Provide software trigger function
- Achieve online upgrade function of the whole device
- Temperature-controlled fan function
- Convenient mounting with screws or on DIN rails

Specifications

Item	Parameter	Description
Input voltage	22~26V DC 16.5A	
Lighting mode	Continuous/strobe	Set via the working mode switch or DEMO software
Auto sensing of light rated current	For200mA-6A 5-24V LED light	Set via DEMO software
Manual setting for max. output current	25mA~6A	Set via DEMO software
Intensity control	256 levels	Set via the adjustment knob or DEMO software
Short-circuit protection	Yes	The related channel is shut down and “Er2” displays.
Overcurrent protection	Yes	Enabled when the output current is higher than 110% of the set value: the related channel is shut down and “Er1” displays.
Overload protection	Yes	Enabled when the Output power is higher than 160W of the value: the related channel is shut down and “Er6” displays.
Normal trigger	256 intensity levels settable	
Normal trigger time unit	1μs/10μs/1ms/100ms	Set via DEMO software
Normal trigger pulse width	1μs~30s	Set via the adjustment knob or DEMO software
High intensity trigger	Brightening current can be set, maximum output 20A	Max. output voltage does not exceed 48V
High intensity trigger pulse width time unit	1μs/10μs/1ms	Set via DEMO software
High intensity trigger pulse width	1μs~999ms	Set via the adjustment knob or DEMO software
Programmable trigger	Supports up to 64 processes	The intensity, pulse width, and trigger source of each step can be set.
Response time	≤10μs	See “Reference Table of Trigger Response Time” for details
Response frequency	≤40kHz	See “Reference Table of Trigger Response Time” for details
Output power	144W/CH	Total power less than 288W
Communication	RS232/Ethernet	

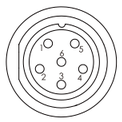
Item	Parameter	Description
Standby power consumption	1W	Tested at 24V DC
Operating temperature	-5°C - 50°C	
Dimensions (mm^3) (L × W × H)	91×132.5×170	Refer to the drawings for details
Weight (kg)	0.86	

Device Overview



No.	Item	Description
1	4-digit display	The first digit from the left indicates the operating channel, and the other 3 indicate the operating intensity or pulse width.
2	Working mode switch	Functional conversion; please refer to the working mode setting for details.
3	Serial port, female	Communicate with PC via RS232 interface
4	100Mb Ethernet port	Communicate with PC via Ethernet interface
5	Input voltage	22 - 26V DC 16.5A
6	Power switch	Turns on/off the controller
7	Intensity/pulse width adjustment knob	Press the knob, the digit that flashes is chosen; press it again, the next digit is chosen; turn the knob in clockwise to increase the value and in anti-clockwise to reduce the value
8	Light connector	2 channels of light source output, and each channel can be controlled individually.
9	Trigger connector	Strobe mode can be also achieved by external trigger; trigger pulse width settable

Light Connector



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

Working Mode Setting

Mode	Working mode switch 1	Working mode switch 2
Continuous	ON	ON
Auto sensing of light rated current once	ON	OFF
Normal trigger	OFF	ON
High intensity trigger	OFF	OFF

Error Code Description

Code	Description	Display	Solution
Er0	No LED light connected	“Er0”	Connect an LED light
Er1	Overcurrent protection	“Er1”	Remove ERR and reboot
Er2	Short-circuit protection	“Er2”	Remove ERR and reboot
Er3	Overvoltage protection	“Er3”	Remove ERR and reboot
Er4	Driver hardware communication ERR	“Er4”	Return to OPT for repair
Er5	Display hardware communication ERR	“Er5”	Return to OPT for repair
Er6	Overload protection	“Er6”	Remove light and reboot

Remark: “----” displays when the controller is turned on, and the corresponding value displays later.

Trigger

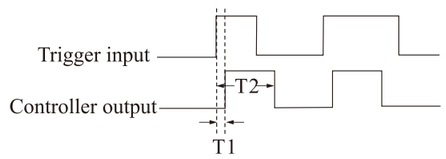
Trigger Mode	Trigger Polarity
Normal trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode
High intensity trigger	Rising edge trigger
	Falling edge trigger
Programmable trigger	Rising edge trigger
	Falling edge trigger

Remark: Rising edge trigger is the default trigger polarity.

Trigger Sequence

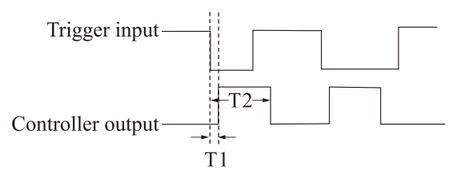
Rising edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



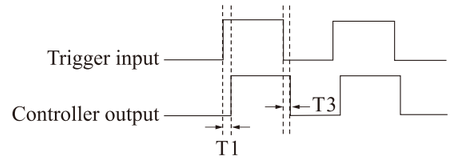
Falling edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



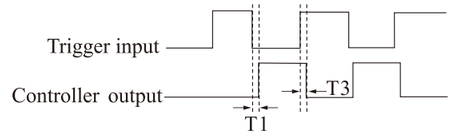
Positive follow trigger mode

When the trigger signal is at high level, the illumination time is same with the high-level pulse width.



Negative follow trigger mode

When the trigger signal is at low level, the illumination time is same with the low-level pulse width.



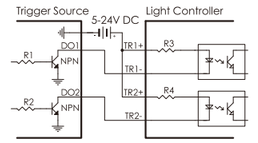
Remarks
1. T1: Enabling response time; T2: Trigger pulse width;
   T3: Disabling response time
2. T2 setting range: 1μs - 30s;
   Please refer to the table of trigger response time for T1 and T3

Reference Table of Trigger Response Time

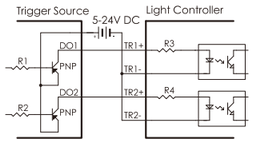
Trigger Voltage (V) \ Output Current (A)	0.4		0.6		3		6	
	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)
5	10	1.5	5.2	1.0	7.5	1.6	8.4	1.5
12	10	1.5	5.2	1.0	7.5	1.6	8.4	1.5
24	10	1.5	5.2	1.0	7.5	1.6	8.4	1.5

Level Trigger Wiring Diagrams

There are 2 trigger ports in this series of controllers (shown in the figure below), including unidirectional optocoupler isolation inside. It is low level when the input voltage is 0~2V, and high level when the input voltage is 5~24V. Two trigger wiring diagrams are given as below:

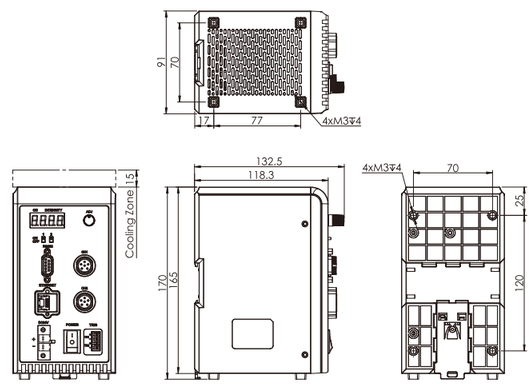


Trig Input Circuit for NPN Type Trigger



Trig Input Circuit for PNP Type Trigger

Dimensions (mm)



High Power Digital Current Controller NEW



Selection Guide

OPT - DPA 100 24 EB - 1

- 1 → Channels
- EB → Additional info.: E-Ethernet B-version
- 24 → No-load output voltage: 24V
- 100 → Max. output current: 10A
- DPA → Digital current controller
- OPT → Brand name

Product Features

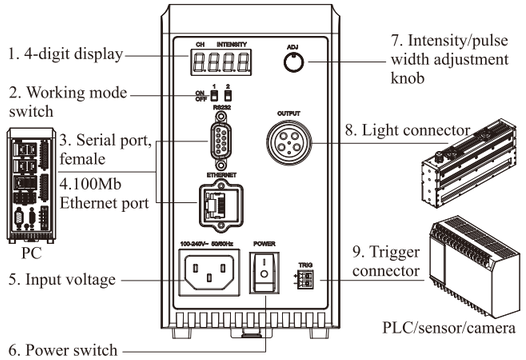
- Compact size
- Autosense™ technology
- Maximum of 64 programmable steps with intensity, pulse width and trigger source can be defined in each step.
- ≤ 10μs trigger response time
- Up to 40kHz trigger response frequency
- Trigger pulse width range: 1μs - 30s
- RS232 interface
- 100Mb Ethernet interface
- Provide software trigger function
- Achieve online upgrade function of the whole device
- Temperature-controlled fan function
- Convenient mounting with screws or on DIN rails

Specifications

Item	Parameter	Description
Input voltage	100~240V AC 50/60Hz	
Input current	4.2A/115VAC 2.1A/230VAC	
Lighting mode	Continuous/strobe	Set via the working mode switch or DEMO software
Auto sensing of light rated current	For 200mA-10A 24V LED light	Set via DEMO software
Manual setting for max. output current	50mA~10A	Set via DEMO software
Intensity control	256 levels	Set via the adjustment key or DEMO software
Short-circuit protection	Yes	The related channel is shut down and “Er2” displays.
Overcurrent protection	Yes	Enabled when the output current is higher than 110% of the set value: the related channel is shut down and “Er1” displays.
Overload protection	Yes	Enabled when the Output power is higher than 265W of the value: the related channel is shut down and “Er6” displays.
Normal trigger	256 intensity levels settable	
Normal trigger time unit	1μs/10μs/1ms/100ms	Set via DEMO software
Normal trigger pulse width	1μs~30s	Set via the adjustment knob or DEMO software
High intensity trigger	Output 12A	Max. output voltage does not exceed 28V
High intensity trigger pulse width time unit	1μs/10μs/1ms	Set via DEMO software
High intensity trigger pulse width	1μs~999ms	Set via the adjustment knob or DEMO software
Programmable trigger	Supports up to 64 processes	The intensity, pulse width, and trigger source of each step can be set.
Response time	≤10μs	See “Reference Table of Trigger Response Time” for details
Response frequency	≤40kHz	See “Reference Table of Trigger Response Time” for details
Output power	240W	

Item	Parameter	Description
Communication	RS232/Ethernet	
Standby power consumption	10W	Tested at 220V AC
Hi-Pot test	1500VAC 1Min	Leakage current < 10mA
Insulation	500VDC	Insulation resistanc > 20MΩ
Operating temperature	-5°C - 50°C	
Dimensions (mm^3) (L × W × H)	91×132.5×170	Refer to the drawings for details
Weight (kg)	1.3	

Device Overview



No.	Item	Description
1	4-digit display	The first digit from the left indicates the operating channel, and the other 3 indicate the operating intensity or pulse width.
2	Working mode switch	Functional conversion; please refer to the working mode setting for details.
3	Serial port, female	Communicate with PC via RS232 interface
4	100Mb Ethernet port	Communicate with PC via Ethernet interface
5	Input voltage	100 - 240V AC 50/60Hz
6	Power switch	Turns on/off the controller
7	Intensity/pulse width adjustment knob	Press the knob, the digit that flashes is chosen; press it again, the next digit is chosen; turn the knob in clockwise to increase the value and in anti-clockwise to reduce the value
8	Light connector	Connect with OPT six-core high-power light source
9	Trigger connector	Strobe mode can be also achieved by external trigger; trigger pulse width settable

Light Connector



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

Working Mode Setting

Mode	Working mode switch 1	Working mode switch 2
Continuous	ON	ON
Auto sensing of light rated current once	ON	OFF
Normal trigger	OFF	ON
High intensity trigger	OFF	OFF

Error Code Description

Code	Description	Display	Solution
Er0	No LED light connected	“Er0”	Connect an LED light
Er1	Overcurrent protection	“Er1”	Remove ERR and reboot
Er2	Short-circuit protection	“Er2”	Remove ERR and reboot
Er3	Overvoltage protection	“Er3”	Remove ERR and reboot
Er4	Driver hardware communication ERR	“Er4”	Return to OPT for repair
Er5	Display hardware communication ERR	“Er5”	Return to OPT for repair
Er6	Overload protection	“Er6”	Remove light and reboot

Remark: “----” displays when the controller is turned on, and the corresponding value displays later.

Trigger

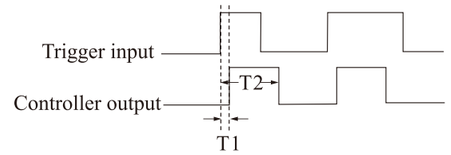
Trigger Mode	Trigger Polarity
Normal trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode
High intensity trigger	Rising edge trigger
	Falling edge trigger
Programmable trigger	Rising edge trigger
	Falling edge trigger

Remark: Rising edge trigger is the default trigger polarity.

Trigger Sequence

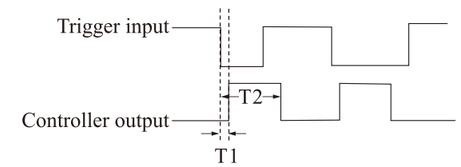
Rising edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



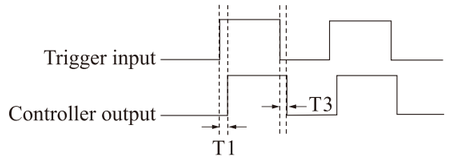
Falling edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



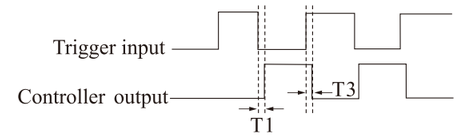
Positive follow trigger mode

When the trigger signal is at high level, the illumination time is same with the high-level pulse width.



Negative follow trigger mode

When the trigger signal is at low level, the illumination time is same with the low-level pulse width.



Remarks

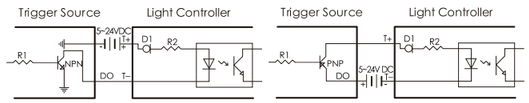
1. T1: Enabling response time; T2: Trigger pulse width;
   T3: Disabling response time
2. T2 setting range: 1μs - 30s;
   Please refer to the table of trigger response time for T1 and T3

Reference Table of Trigger Response Time

Trigger Voltage (V) \ Output Current (A)	0.8		1		5		10	
	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)
5	6	2	2.2	1.6	5.5	1.6	7.6	1.6
12	6	2	2.2	1.7	5.5	1.7	7.6	1.7
24	6	2	2.2	1.8	5.5	1.8	7.6	1.8

Level Trigger Wiring Diagrams

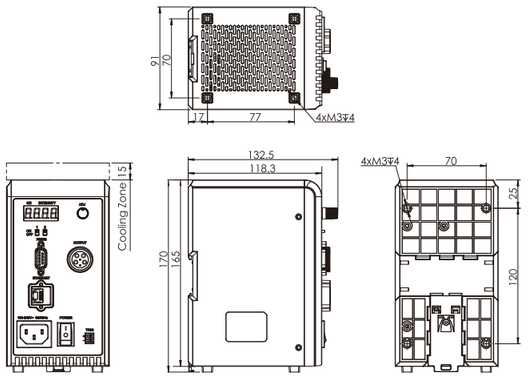
There are 1 trigger port in this series of controllers (shown in the figure below), including unidirectional optocoupler isolation inside. It is low level when the input voltage is 0~2V, and high level when the input voltage is 5~24V. Two trigger wiring diagrams are given as below:



Trig Input Circuit for NPN Type Trigger

Trig Input Circuit for PNP Type Trigger

Dimensions (mm)



Ultra-high Power Digital Current Controller Patented



Selection Guide

OPT - DPA20024E-2

- Channels
- Additional info.: Ethernet
- Max. output voltage: 24V
- Max. output current: 20A
- Digital current controller
- Brand name

Product Features

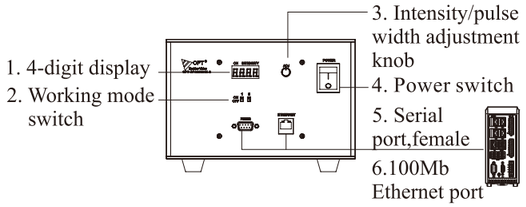
- Autosense™ technology
- Simultaneous communication of the two channels
- Manual setting for max. output current
- 256-level light intensity control
- External trigger: External trigger input (e.g. camera trigger signal) for related light strobes and other sequences. (Strobe mode can greatly improve light source life expectancy.)
- Trigger pulse width setting
- RS232 interface
- 100Mb Ethernet interface

Specifications

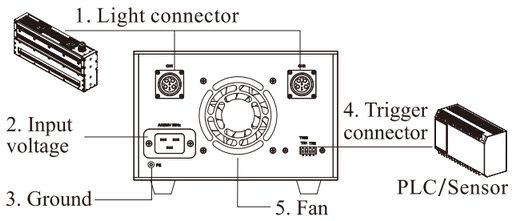
Item	Parameter	Description
Input voltage	100 - 120V/200 - 240V AC 50/60Hz	Converted via the internal switch; 200 - 240V AC is the default input. Choose the controller model accordingly
Input current	24A/115VAC 15A/230VAC	
Lighting mode	Continuous/strobe	Set via the working mode switch or DEMO software
Auto sensing of light rated current	For OPT 1A - 20A light[1]	Set via DEMO software
Manual setting for max. output current	100mA - 20A	Set via DEMO software
Intensity control	256 levels	Set via the adjustment knob or DEMO software
Short-circuit protection	Yes	The related channel is shut down and “Er2” displays.
Overcurrent protection	Yes	Enabled when the output current is higher than 110% of the set value: the related channel is shut down and “Er1” displays.
Triggering	Level	Rising edge trigger is the default trigger polarity.
Normal trigger	256 intensity levels settable	
Normal trigger pulse width	1 - 999ms	Set via the adjustment knob or DEMO software
High intensity trigger	20A output per channel	
High intensity trigger pulse width	0.01 - 5.00ms	Set via the adjustment knob or DEMO software
Response time	≥ 180μs	See “Reference Table of Trigger Response Time” for details
Output power	480W/CH	Only OPT 6P high power light (22 - 23.5V) can be connected.
Communication	RS232/Ethernet	
Standby power consumption	9W	Tested at 220V AC
Hi-Pot test	1500VAC 1Min	Leakage current < 10mA
Insulation	500VDC	Insulation resistance > 20MΩ
Operating temperature	-5°C - 50°C	
Dimensions (mm^3) (L×W×H)	210×387.5×147	Refer to the drawings for details
Weight (kg)	8.62	

[1]The light should be connected with 6 pin connector.

Device Overview



No.	Item	Description
1	4-digit display	The first digit from the left indicates the operating channel, and the other 3 indicate the operating intensity or pulse width.
2	Working mode switch	Functional conversion; please refer to the working mode setting for details.
3	Power switch	Turns on/off the controller
4	Intensity/pulse width adjustment knob	Press the knob, the digit that flashes is chosen; press it again, the next digit is chosen; turn the knob in clockwise to increase the value and in anti-clockwise to reduce the value
5	Serial port, female	Communication with PC via the RS232 interface
6	100Mb Ethernet port	Communication with PC via the Ethernet interface



No.	Item	Description
1	Light connector	Each light (2 in total) individually controlled
2	Input voltage	100 - 120V/200 - 240V AC
3	Ground	Grounding protection
4	Trigger connector	Connects external trigger for strobe; trigger pulse width settable
5	Fan	Enhances cooling

Light Connector



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

Working Mode Setting

Mode	Working Mode Switch 1	Working Mode Switch 2
Continuous	ON	ON
Auto sensing of light rated current once	ON	OFF
Normal trigger	OFF	ON
High intensity trigger	OFF	OFF

Error Code Description

Code	Description	Display	Solution
Er0	No LED light connected	“Er0”	Connect an LED light
Er1	Overcurrent protection	“Er1”	Remove ERR and reboot
Er2	Short-circuit protection	“Er2”	Remove ERR and reboot
Er3	Overvoltage protection	“Er3”	Remove ERR and reboot
Er4	Driver hardware communication ERR	“Er4”	Return to OPT for repair
Er5	Display hardware communication ERR	“Er5”	Return to OPT for repair

Remark: “----” displays when the controller is turned on, and the corresponding value displays later.

Trigger

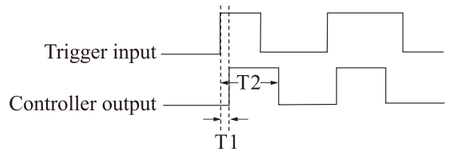
Trigger Mode	Trigger Polarity
Normal trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode
High intensity trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode

Remark： Rising edge trigger is the default trigger polarity.

Trigger Sequence

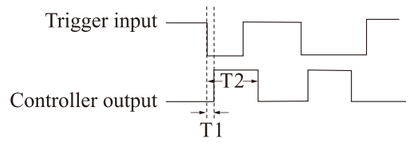
Rising edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



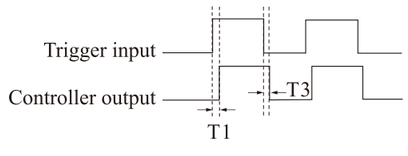
Falling edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



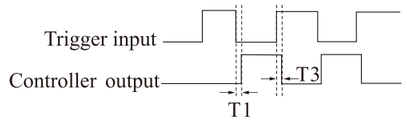
Positive follow trigger mode

When the trigger signal is at high level, the illumination time is the same as the high-level pulse width.



Negative follow trigger mode

When the trigger signal is at low level, the illumination time is the same as the low-level pulse width.



Remarks
1. T1: Enabling response time; T2: Trigger pulse width;
   T3: Disabling response time
2. T2 setting range: 10μs - 999ms;
   Please refer to the table of trigger response time for T1 and T3

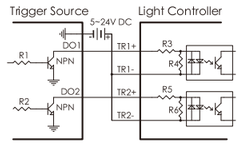
Reference Table of Trigger Response Time

Trigger Voltage (V) \ Output Current (A)	2		10		20	
	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)
5	240	660	232	660	228	668
12	186	680	188	680	188	672
24	176	680	180	672	180	680

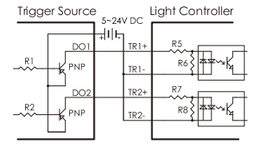
Level Trigger Wiring Diagrams

The controller has 2 trigger channels. Each channel has “+” and “-”input ports.

Low level: 0 - 2V input voltage; high level: 5 - 24V input voltage. The trigger wiring diagrams are as below.

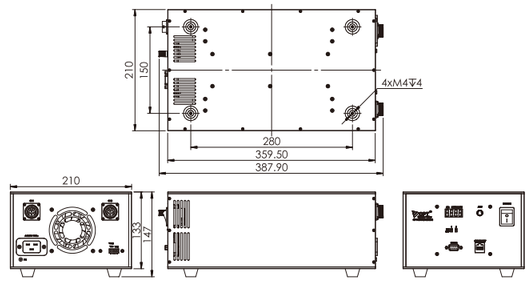


Trig Input Circuit for NPN Type Trigger



Trig Input Circuit for PNP Type Trigger

Dimensions (mm)



DPH Strobe Overdrive Digital Controller



Selection Guide

OPT-DPH20048E-4

- Channels: 4
- Additional info.: Ethernet
- Output voltage: 48V
- Max. transient output current: 20A
- Strobe overdrive digital controller
- Brand name

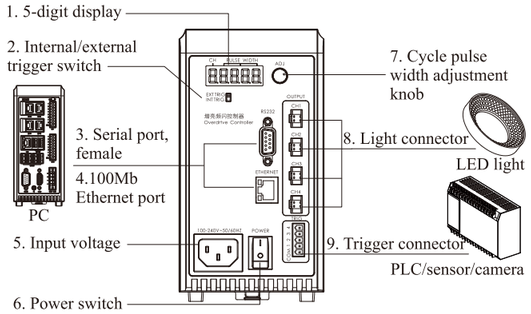
Product Features

- Maximum of 64 programmable steps with intensity, pulse width and trigger source can be defined in each step.
- Overdrive® technology
- The upper limit of external trigger frequency settable
- ≤ 10μs trigger response time
- Simultaneous communication of multiple channels
- External trigger: External trigger input (e.g. camera trigger signal) for related lights strobes and other sequences. (Strobe mode can greatly improve light source expectancy.)
- Internal trigger cycle from setting: 15 - 1000ms
- RS232 interface
- 100Mb Ethernet interface
- Temperature-controlled fan
- Convenient mounting with screws or on DIN rails

Specifications

Item	Parameter	Description
Input voltage	100 - 240V AC 50/60Hz	
Input current	3.6A/115VAC 2A/230VAC	
Output voltage	48V	
Lighting mode	Strobe	
Internal trigger	Yes	Enabled via the trigger mode switch, and the external trigger is disabled.
Internal trigger cycle	15 - 1000ms	Adjusted via the adjustment knob or DEMO software; the cycle of each channel can be different.
External trigger mode	Level trigger	
Trigger pulse width	1 - 1023μs	Adjusted via the adjustment knob or DEMO software; the pulse width of each channel can be different.
Programmable trigger	Support up to 64 processes	Both the pulse width and trigger source settable
Response time	≤ 10μs	See "Reference Table of Trigger Response Time" for details
Short-circuit protection	Yes	The related channel is shut down and "Err2" displays.
Max. transient output current	20A/CH	
Upper limit of external trigger frequency	1 - 900Hz	40Hz by default
Fan control	Via temperature	
Communication	RS232/Ethernet	
Standby power consumption	≤ 9.5W	Tested at 220V AC
Hi-Pot test	1500VAC 1Min	Leakage current < 10mA
Insulation	500VDC	Insulation resistance > 20MΩ
Operating temperature	-5°C - 50°C	
Dimensions (mm^3) (L × W × H)	91×133×171	Refer to the drawing for details
Weight (kg)	1.1	

Device Overview



No.	Item	Description
1	5-digit display	The first digit from the left indicates the operating channel, and the other 4 show the corresponding pulse width or internal trigger cycle.
2	Internal/external trigger switch	INT TRIG: Internal trigger EXT TRIG: External trigger
3	Serial port, female	Communication with PC via the RS232 interface
4	100M Ethernet port	Communication with PC via the Ethernet interface
5	Input voltage	100 - 240V AC 50/60Hz
6	Power switch	Turns on/off the controller
7	Cycle pulse width adjustment knob	Press the knob, the digit that flashes is chosen; press it again, the next digit is chosen; turn the knob in clockwise to increase the value and in anti-clockwise to reduce the value
8	Light connector	Each light (4 in total) individually controlled
9	Trigger connector	Strobe mode can be also achieved by external trigger; trigger pulse width settable

Trigger Mode Setting

Switch	Mode
EXT TRIG	External trigger
INT TRIG	Internal trigger

Error Code Description

Code	Description	Display	Solution
Err2	Short-circuit protection	"Err2"	Remove ERR and reboot
Err4	Driver hardware communication ERR	"Err4"	Return to OPT for repair
Err5	Display hardware communication ERR	"Err5"	Return to OPT for repair

Remark: "-----" displays when the controller is turned on, and the corresponding value displays later.

Trigger

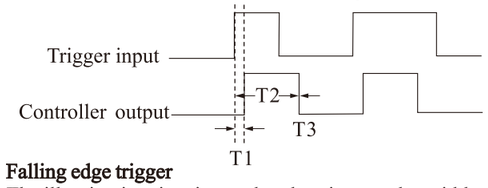
Trigger Mode	Trigger Polarity	Description
Internal trigger	Auto trigger	The controller will output the corresponding pulse width per the set trigger cycle.
External trigger	Rising edge trigger	48V single channel output; trigger pulse width setting: 1 - 1023μs
	Falling edge trigger	
Programmable trigger	Rising edge trigger	Switch to the mode via DEMO software in the external trigger mode; set a step list before entering into the mode
	Falling edge trigger	

Remark: Rising edge trigger is the default trigger polarity.

Trigger Sequence

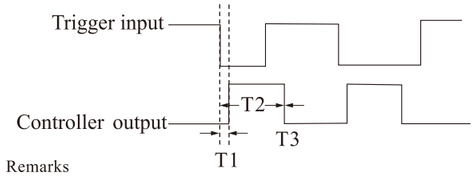
Rising edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



Falling edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software or the adjustment knob.



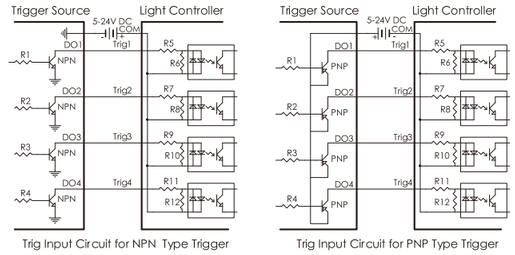
Remarks
1. T1: Enabling response time; T2: Trigger pulse width;
   T3: Disabling response time
2. T2 setting range: 1μs - 1023μs;
   Please refer to the table of trigger response time for T1 and T3

Reference Table of Trigger Response Time

Trigger Voltage (V) \ Output Current (A)	2		5		10		20	
	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)
5	9.4	0.18	9.4	0.18	9.4	0.18	9.4	0.18
12	8.6	0.18	8.6	0.18	8.6	0.18	8.6	0.18
24	8	0.18	8	0.18	8	0.18	8	0.18

Trigger Wiring Diagrams

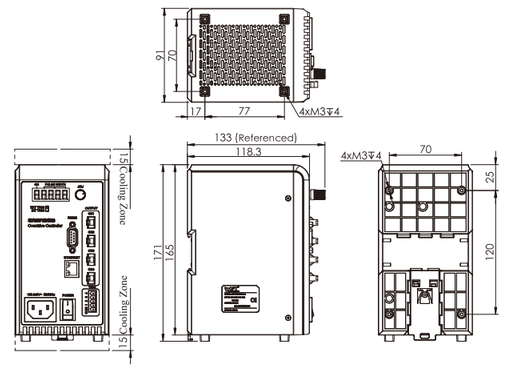
4 trigger channels, and bidirectional optocoupler inside
Low level: 0 - 2V input voltage; high level: 5 - 24V input voltage. The rising edge trigger is the default trigger polarity. The diagrams are as below.



Trig Input Circuit for NPN Type Trigger

Trig Input Circuit for PNP Type Trigger

Dimensions (mm)



AP Analog Voltage Controller Patented



Selection Guide

OPT-AP1024F-X

- Channels
- Additional info.: panel type
- Max. output voltage: 24V
- Max. output current: 1A
- Analog voltage controller
- Brand name

Model	Channels	Compatible Light
OPT-AP1024F-1	1	10mA - 1A (24V)
OPT-AP1024F-2	2	10mA - 1A (24V)
OPT-AP1024F-3	3	10mA - 1A (24V)
OPT-AP1024F-4	4	10mA - 1A (24V)

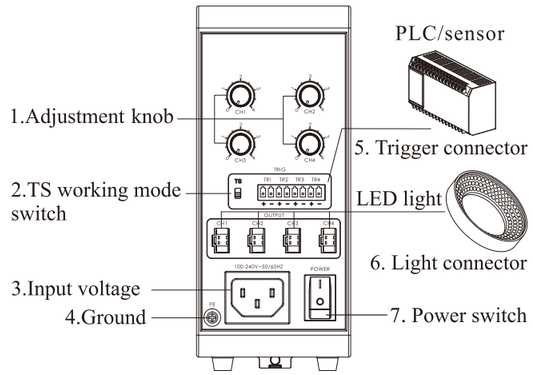
Product Features

- Manual stepless intensity control
- External trigger: External trigger input (e.g. camera trigger signal) for related light strobes and other sequences. (Strobe mode can greatly improve light source life expectancy.)
- Convenient mounting with screws or on DIN rails

Specifications

Item	Parameter		Description
Input voltage	100 - 240V AC 50/60Hz		
Input current	1.8A/115VAC 1A/230VAC		
Output voltage	14.0-24.0V (±0.2V)		Continuously adjustable
Lighting mode	Continuous/strobe		
Intensity control	Stepless		Via the adjustment knob
Triggering	Switch		
Response time	≥ 80μs		See “Reference Table of Trigger Response Time” for details
Response frequency	≤ 1kHz		See “Reference Table of Trigger Response Time” for details
ON/OFF mode conversion	Support		Via the working mode switch (TS)
Output power	24W/CH		1CH/2CH total output ≤ 30W 3CH/4CH total output ≤ 40W
Standby power consumption	1CH	< 1.1W	Tested at 220V AC
	2CH	< 1.1W	
	3CH	< 1.2W	
	4CH	< 1.2W	
Hi-Pot test	1500VAC 1min		Leakage current < 10mA
Insulation	500VDC		Insulation resistance > 20MΩ
Operating temperature	-5°C - 50°C		
Dimensions (mm^3) (L × W × H)	73.5×129.2×166		Refer to the drawing for details
Weight (kg)	1CH/2CH	0.56	
	3CH/4CH	0.66	

Device Overview



Remark: The image above is for AP1024F-4. The last number in Model AP1024F-1/2/3 indicates the number of adjustment knob, external trigger connector and light connector.

No.	Item	Description
1	Adjustment knob	Turned in clockwise to increase and in anti-clockwise to reduce light intensity.
2	TS working mode switch	Moved up for ON mode, and down for OFF mode
3	Input voltage	100 - 240V AC, 50/60Hz
4	Ground	Grounding protection
5	Trigger connector	Connects external trigger for strobe
6	Light connector	Each light is individually controlled
7	Power switch	Turns on/off the controller

Trigger Connector

AP1024F-1/2/3/4 offer 1, 2, 3, or 4 trigger channels respectively. Each channel has “+” and “-”input ports. The image below shows the trigger connector of AP1024F-4. Please refer to the “Switch Trigger Wiring Diagram” for more details.

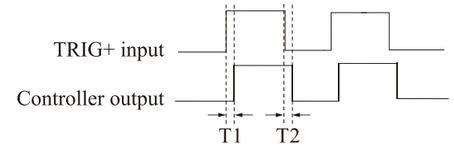


Working Mode Setting

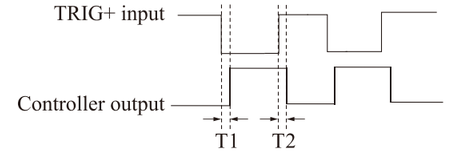
TS Switch	Working Mode	Description
Up	ON	Light is on when “Trig+” and “Trig-” are disconnected; light is off at the short circuit.
Down	OFF	Light is off when “Trig+” and “Trig-” are disconnected; light is on at the short circuit.

Trigger Sequence

ON Mode:
After an external signal is connected, light is on when “Trig+” and “Trig-” are disconnected; light is off at the short circuit.



OFF Mode:
After an external signal is connected, light is off when “Trig+” and “Trig-” are disconnected; light is on at the short circuit.

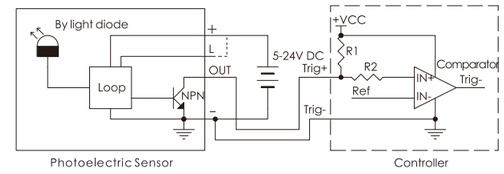


Remarks
T1: Enabling response time; T2: Disabling response time;
Please refer to the table of trigger response time for T1 and T2

Reference Table of Trigger Response Time

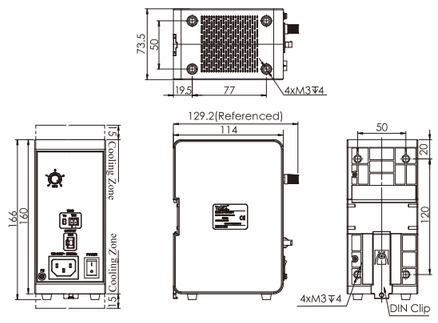
Working Mode \ Output Current (mA)	100		500		1000	
	T1 (μs)	T2 (μs)	T1 (μs)	T2 (μs)	T1 (μs)	T2 (μs)
ON Mode	300	3000	300	500	300	300
OFF Mode	80	3000	80	500	80	400

Switch Trigger Wiring Diagram



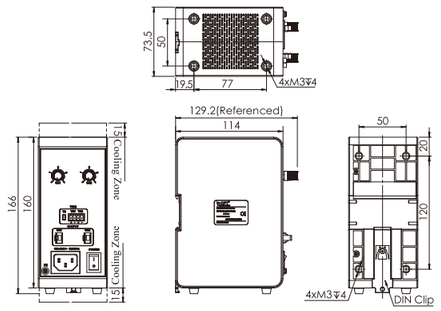
Dimensions (mm)

1.OPT-AP1024F-1

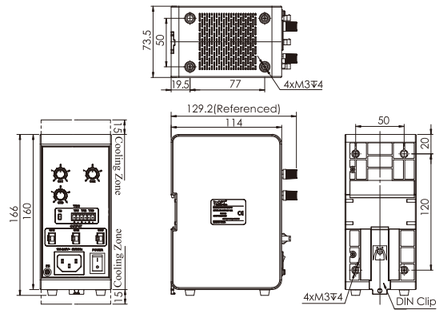


Dimensions (mm)

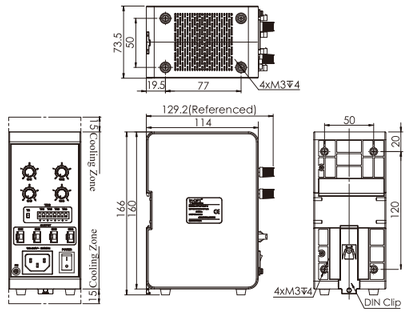
2.OPT-AP1024F-2



3.OPT-AP1024F-3



4.OPT-AP1024F-4



APA High Power Analog Current Controller Patented



Selection Guide

OPT-APA6024-2

- Channels
- Max. output voltage: 24V
- Max. output current: 60 → 6A; 30 → 3A
- Analog current controller
- 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

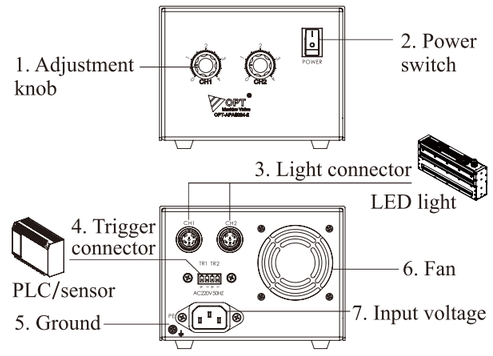
- Autosense™ technology
- Stepless adjustment for output current
- External trigger: External trigger input (e.g. camera trigger signal) for related light strobes and other sequences. (Strobe mode can greatly improve light source life expectancy.)

Parameters

Item	Parameter		Description
Input voltage	100-120V AC 200-240V AC 50/60Hz		Converted via the internal switch; 200 - 240V AC is the default input. Choose the controller model accordingly
Input current	APA3024-2	3A/115VAC 1.7A/230VAC	
	APA6024-2	6.8A/115VAC 3.4A/230VAC	
Lighting mode	Continuous/strobe		
Auto sensing of light rated current	APA3024 for 800mA - 3A light APA6024 for 800mA - 6A light		

Item	Parameter		Description
Intensity control	Stepless		Via the adjustment knob
Triggering	Switch		
Response time	≥ 200μs		See “Reference Table of Trigger Response Time” for details
Response frequency	≤ 1kHz		See “Reference Table of Trigger Response Time” for details
Channels	2		
Output power	APA3024-2	72W/CH	2CH output ≤ 144W
	APA6024-2	144W/CH	2CH output ≤ 288W
Hi-Pot test	1500VAC 1Min		Leakage current < 10mA
Insulation	500VDC		Insulation resistance > 20MΩ
Operating temperature	-5°C - 50°C		
Standby power consumption	≤ 4.7W		Tested at 220V AC
Dimensions (mm^3) (L × W × H)	APA3024-2	136×270.5×104.5	Refer to the drawings for details
	APA6024-2	136×305.8×104.5	
Weight (kg)	APA3024-2	1.6	
	APA6024-2	1.9	

Device Overview



No.	Item	Description
1	Adjustment knob	The 2 connected lights are controlled respectively with the 2 adjustment knobs. Turned in clockwise to increase and in anti-clockwise to reduce light intensity.
2	Power switch	Turns on/off the controller
3	Light connector	Connects OPT light with 6P connector
4	Trigger connector	Connects external trigger for strobe
5	Ground	Grounding protection
6	Fan	Enhances cooling
7	Input voltage	100 - 120V/200 - 240V AC 50/60Hz Various controllers available for different input voltage

Light Connector



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

Trigger Connector

+ and - electrode input ports form a trigger channel. 2 trigger channels are available (see the figure below). Please refer to the "Switch Trigger Wiring Diagram" for more details.



Working Mode Setting

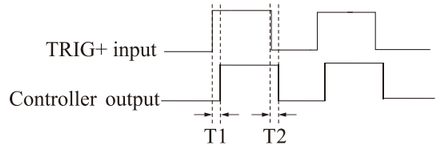
OPT-APA6024-2 has two working modes (on/off), which can only be set via the internal switch. Please refer to the table below for details.

Working Mode	Description
ON	Light is on when "Trig+" and "Trig-" are disconnected; light is off at the short circuit.
OFF	Light is off when "Trig+" and "Trig-" are disconnected; light is on at the short circuit.

Sequence

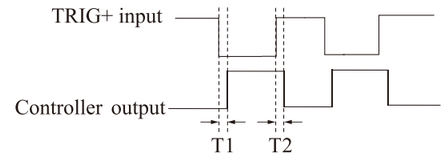
ON Mode

After an external signal is connected, light is on when "Trig+" and "Trig-" are disconnected; light is off at the short circuit.



OFF Mode

After an external signal is connected, light is off when "Trig+" and "Trig-" are disconnected; light is on at the short circuit.

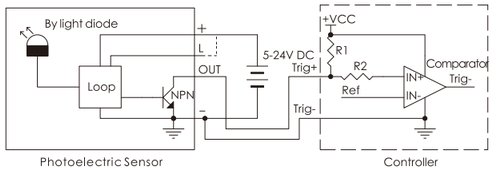


Remarks
T1: Enabling response time; T2: Disabling response time;
Please refer to the table of trigger response time for T1 and T2

Reference Table of Trigger Response Time

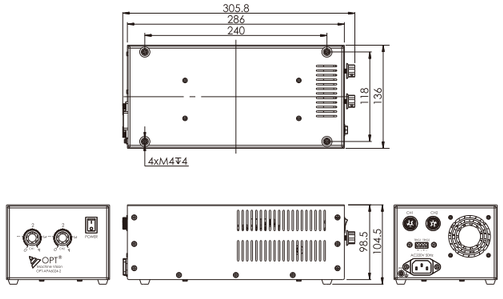
Working Mode \ Output Current (A)	0.5		3		6	
	T1 (μs)	T2 (μs)	T1 (μs)	T2 (μs)	T1 (μs)	T2 (μs)
ON Mode	500	6	600	6	700	6
OFF Mode	200	200	300	200	500	200

Switch Trigger Wiring Diagram

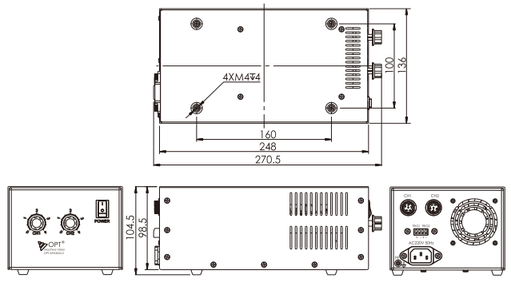


Dimensions (mm)

1.OPT-APA6024-2



2.OPT-APA3024-2



Analog Current Controller for Spot Lights



Selection Guide

OPT-APA0705F-X
- Channels
- Additional info.: panel type
- Max. output voltage: 5V
- Max. output current: 0.7A
- Analog current controller
- Brand name

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

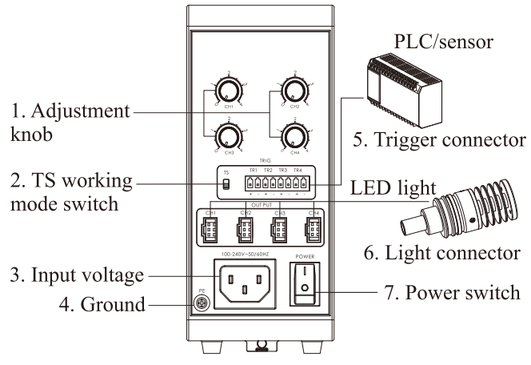
Product Features

- Manual stepless intensity control
- External trigger: External trigger input (e.g. camera trigger signal) for related light strobes and other sequences. (Strobe mode can greatly improve light source expectancy.)
- Convenient mounting with screws or on DIN rails

Specifications

Item	Parameter	Description
Input voltage	100 - 240V AC 50/60Hz	
Input current	1.8A/115VAC 1A/230VAC	
Output current	0 - 0.7A	Continuously adjustable
Lighting mode	Continuous/strobe	
Intensity control	Stepless	Via the intensity adjustment knob
External trigger input	Strobe in synchronization with input	
Triggering	Switch	
Response time	≤ 200μs	See "Reference Table of Trigger Response Time" for details
Response frequency	≤ 1kHz	See "Reference Table of Trigger Response Time" for details
ON/OFF mode conversion	Support	Via the TS switch
Output power	3.5W/CH	
Standby power consumption	< 1W	Tested at 220V AC
Hi-Pot test	1500VAC 1Min	Leakage current < 10mA
Insulation	500VDC	Insulation resistance > 20MΩ
Operating temperature	-5°C - 50°C	
Dimensions (mm^3) (L × W × H)	73.5×129.2×166	Refer to the drawing for details
Weight (kg)	0.7	

Device Overview

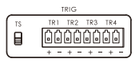


Remark: The image above is for APA0705F-4. The last number in Model APA0705F-1/2/3 indicates the number of adjustment knob, external trigger connector and light connector.

No.	Item	Description
1	Adjustment knob	Turned in clockwise to increase and in anti-clockwise to reduce light intensity.
2	TS working mode switch	Moved up for ON mode, and down for OFF mode
3	Input voltage	100 - 240V AC, 50/60Hz
4	Ground	Grounding protection
5	Trigger connector	Connects external trigger for strobe
6	Light connector	Each light is individually controlled
7	Power switch	Turns on/off the controller

Trigger Connector

APA0705F-1/2/3/4 has 1, 2, 3, or 4 channels respectively. Each channel has "+" and "-" electrode input ports. The image below shows the trigger connector of APA0705F-4. Please refer to the "Switch Trigger Wiring Diagram" for more details.

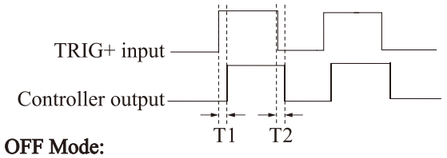


Working Mode Setting

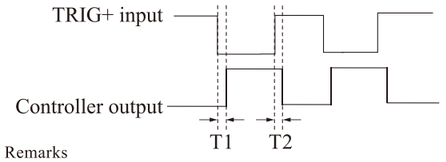
TS Switch	Working Mode	Description
Up	ON	Light is on when "Trig+" and "Trig-" are disconnected; light is off at the short circuit.
Down	OFF	Light is off when "Trig+" and "Trig-" are disconnected; light is on at the short circuit.

Trigger Sequence

ON Mode:
After an external signal is connected, light is on when "Trig+" and "Trig-" are disconnected; light is off at the short circuit.



OFF Mode:
After an external signal is connected, light is off when "Trig+" and "Trig-" are disconnected; light is on at the short circuit.

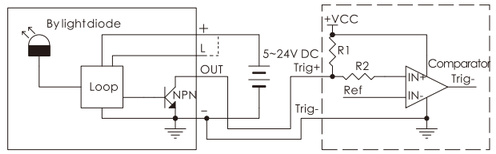


Remarks
T1: Enabling response time; T2: Disabling response time;
Please refer to the table of trigger response time for T1 and T2

Reference Table of Trigger Response Time

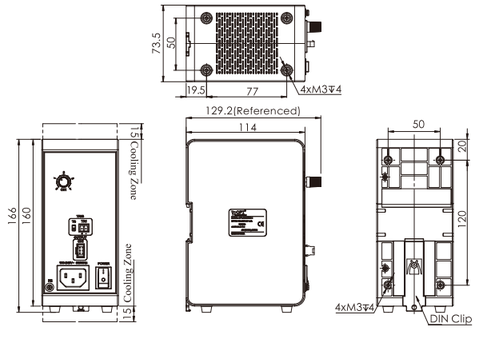
Working Mode \ Output Current (mA)	100		400		700	
	T1 (μs)	T2 (μs)	T1 (μs)	T2 (μs)	T1 (μs)	T2 (μs)
ON Mode	200	5	200	5	200	5
OFF Mode	70	200	70	200	70	200

Switch Trigger Wiring Diagram

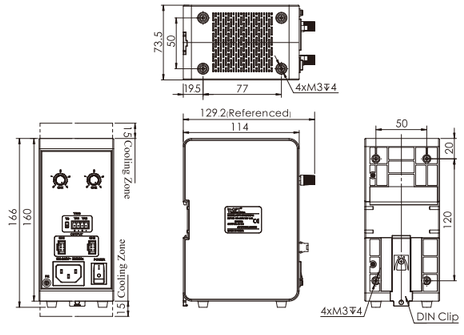


Dimensions (mm)

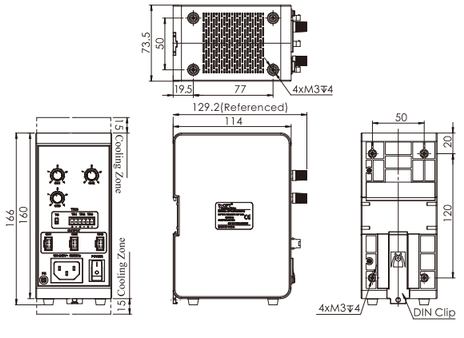
1.OPT-APA0705F-1



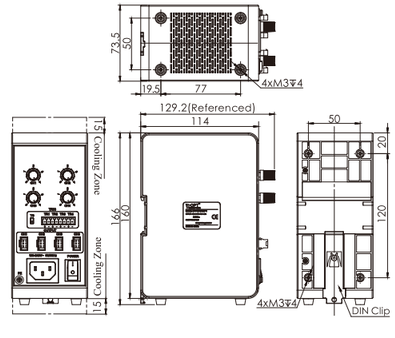
2.OPT-APA0705F-2



3.OPT-APA0705F-3



4.OPT-APA0705F-4



DPM Mini Digital Current Controller NEW

Patented



Selection Guide

OPT-DPM0524E-4

- Channels
- Additional info.: Ethernet
- Max. output voltage: 24V
- Max. output current: 0.5A
- Mini digital current controller (EMM0524E is the extension module.)
- Brand name

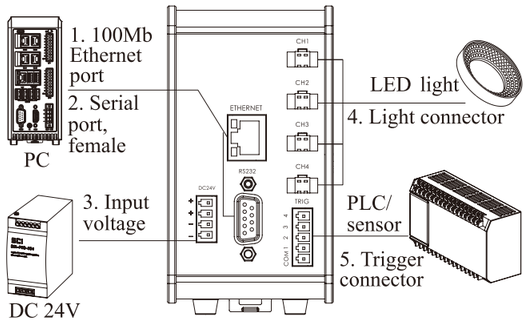
Product Features

- Compact size
- Maximum of 64 programmable steps with intensity, pulse width and trigger source can be defined in each step.
- Can extend up to 16 channels via adding EMM0524 modules
- 20 - 24V DC input voltage; convenient to use DC power on other devices
- Autosense™ technology
- Manual setting for max. output current
- RS232 interface
- 100Mb Ethernet interface
- Simultaneous communication of multiple channels
- Trigger pulse width setting
- External trigger: External trigger input (e.g. camera trigger signal) for related light strobes and other sequences. (Strobe mode can greatly improve light source expectancy.)
- 256-level light intensity control
- Convenient mounting with screws or on DIN rails

Specifications

Item	Parameter	Description
Input voltage	20 - 24V DC	
Input current	3.5A/4CH 7.4A/16CH	
Lighting mode	Continuous/strobe	Set via DEMO software
Auto sensing of light rated current	For 10mA - 0.5A 24V LED light	Set via DEMO software
Manual setting for max. output current	10mA - 0.5A	Set via DEMO software
Intensity control	256 intensity levels	Set via DEMO software
Short-circuit protection	Yes	The related channel is shut down when enabled. Remove the error and reboot to restore the channel.
Overcurrent protection	Yes	Enabled when the output current is higher than 110% of the set value, and the related channel is shut down. Remove the error and reboot to restore the channel.
Triggering	Level	
Normal trigger	256 intensity levels	
Normal trigger time unit	1μs/10μs/1ms/100ms	Set via DEMO software
Normal trigger pulse width	1μs - 30s	Set via DEMO software
High intensity trigger	1A output per channel	
High intensity trigger pulse width	0.01 - 5.00ms	Set via DEMO software
Programmable trigger	Support up to 64 processes	The intensity, pulse width, and trigger source of each step can be set.
Trigger response time	≥ 80μs	See "Reference Table of Trigger Response Time" for details
Trigger response frequency	≤ 10kHz	See "Reference Table of Trigger Response Time" for details
Output power	12W/CH 48W/4CH Total: 100W	Only connected with 24V 10mA - 0.5A LED light
Communication	RS232/Ethernet	
Standby power consumption	< 3W	Tested at 24V DC
Operating temperature	-5°C - 50°C	
Dimensions (mm^3) (L×W×H)	59×69×110	Refer to the drawing for details
Weight (kg)	0.28	

Device Overview



No.	Item	Description
1	100Mb Ethernet port	Communication with PC via the Ethernet interface
2	Serial port, female	Communication with PC via the RS232 interface
3	Input voltage	20 - 24V DC
4	Light connector	Each light is individually controlled
5	Trigger connector	Strobe mode can be also achieved by external trigger; trigger pulse width settable

Trigger

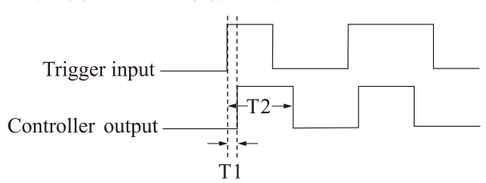
Trigger Mode	Trigger Polarity
Normal trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode
High intensity trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger mode
	Negative follow trigger mode
Programmable trigger	Rising edge trigger
	Falling edge trigger

Remark: Rising edge trigger is the default trigger polarity.

Trigger Sequence

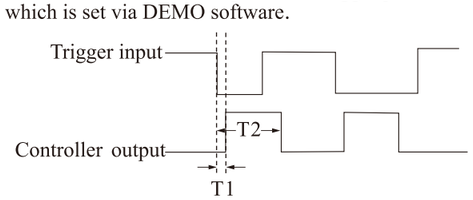
Rising edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software.



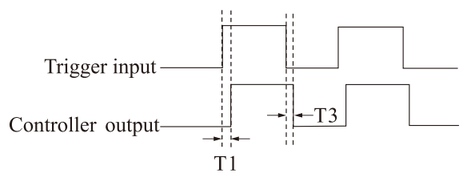
Falling edge trigger

The illumination time is equal to the trigger pulse width, which is set via DEMO software.



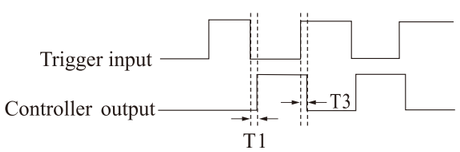
Positive follow trigger mode

When the trigger signal is at high level, the illumination time is the same as the high-level pulse width.



Negative follow trigger mode

When the trigger signal is at low level, the illumination time is the same as the low-level pulse width.



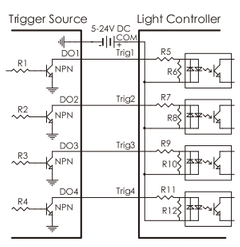
Remarks
1. T1: Enabling response time; T2: Trigger pulse width;
   T3: Disabling response time
2. T2 setting range: 1μs - 30s;
   Please refer to the table of trigger response time for T1 and T3

Reference Table of Trigger Response Time

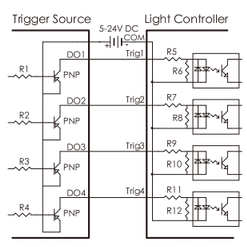
Trigger Voltage (V) \ Output Current (mA)	50		250		500	
	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)
5	550	11.5	132	12	78	13.5
12	550	13.5	130	14	73	15
24	550	19.5	125	20	74	21

Level Trigger Wiring Diagrams

4 trigger channels, and bidirectional optocoupler inside
Low level: 0 - 2V input voltage; high level: 5 - 24V input voltage. The rising edge trigger is the default trigger polarity. The diagrams are as below.



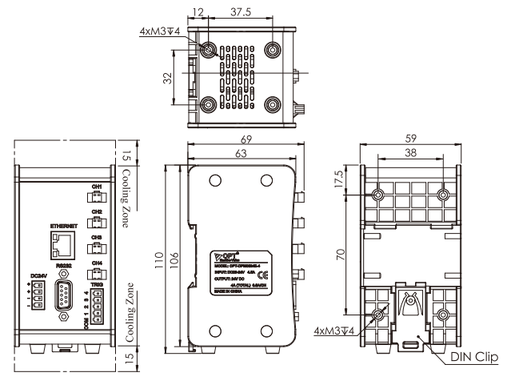
Trig Input Circuit for NPN Type Trigger



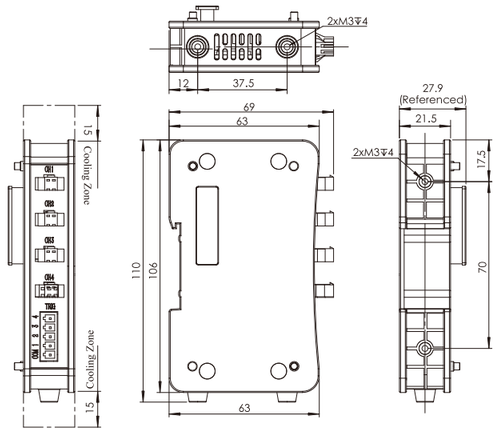
Trig Input Circuit for PNP Type Trigger

Dimensions (mm)

1.OPT-DPM0524E-4



2.OPT-EMM0524E-4



APM Mini Analog Voltage Controller



Selection Guide

OPT-APM0524B-2

- Channels
- Additional info.: The 2nd generation
- Max. output voltage: 24V
- Max. output current: 0.5A
- Analog voltage controller
- Brand name

Item	Parameter	Description
ON/OFF Mode Conversion	Support	Via the working mode switch
Output power	12W/CH	2CH total output ≤ 24W
Standby power consumption	≤ 3W	Tested at 24V DC
Operating temperature	-5°C - 50°C	
Dimensions (mm³) (L×W×H)	24×62×108.3	Refer to the drawing for details
Weight (kg)	0.1	

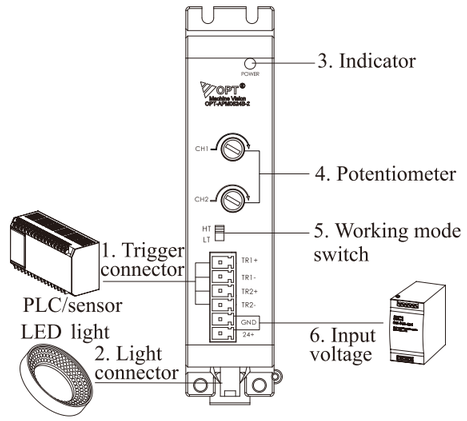
Product Features

- Compact size
- 20 - 24V DC input; convenient to use DC power on other devices
- Manual stepless light intensity control
- Convenient mounting with screws or on DIN rails
- External trigger: External trigger input (e.g. camera trigger signal) for related light strobes and other sequences. (Strobe mode can greatly improve light source life expectancy.)

Specifications

Item	Parameter	Description
Input voltage	20-24V DC	
Input current	1.8A	
Output voltage	14.0 - 24.0V (±0.2V)	Continuously adjustable
Lighting mode	Continuous/strobe	
Intensity control	Stepless	Adjusted via potentiometer
Protection for reverse polarity connection	Yes	Protects controller from the damage caused by wrong power connection
Triggering	Switch	
Response time	≥ 40μs	See “Reference Table of Trigger Response Time” for details
Response frequency	≤ 1kHz	See “Reference Table of Trigger Response Time” for details

Device Overview

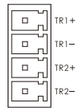


No.	Item	Description
1	Trigger connector	Connects external trigger for strobe
2	Light connector	14 - 24V DC output; each channel individually controlled
3	Power indicator	Indicates the power status: ON or OFF
4	Potentiometer	To adjust light intensity; one knob for each channel

No.	Item	Description
5	Working mode switch	HT: ON mode LT: OFF mode
6	Input voltage	20 - 24V DC

Trigger Connector

APM0524B has two trigger channels. Each channel has “+” and “-” input ports (see the figure below). Please refer to the “Switch Trigger Wiring Diagram” for more details.



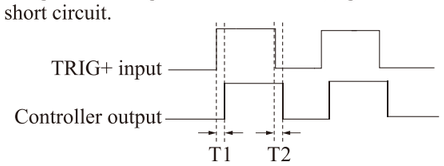
Working Mode Setting

Switch	Working Mode	Description
HT	ON	Light is on when “Trig+” and “Trig-” are disconnected; light is off at the short circuit.
LT	OFF	Light is off when “Trig+” and “Trig-” are disconnected; light is on at the short circuit.

Trigger Sequence

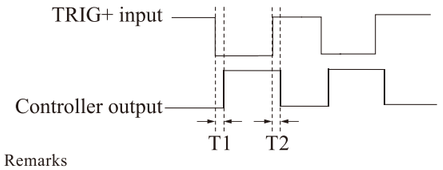
ON Mode

After an external signal is connected, light is on when “Trig+” and “Trig-” are disconnected; light is off at the short circuit.



OFF Mode

After an external signal is connected, light is off when “Trig+” and “Trig-” are disconnected; light is on at the short circuit.

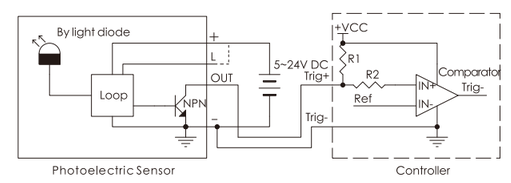


Remarks
T1: Enabling response time; T2: Disabling response time;
Please refer to the table of trigger response time for T1 and T2

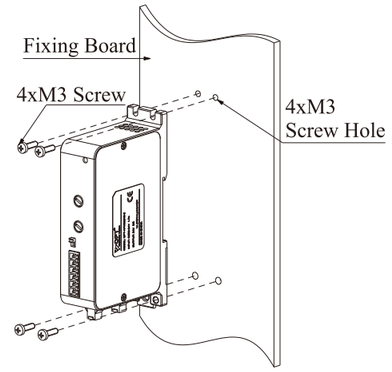
Reference Table of Trigger Response Time

Working Mode \ Output Current (mA)	50		250		500	
	T1 (μs)	T2 (μs)	T1 (μs)	T2 (μs)	T1 (μs)	T2 (μs)
ON Mode	500	1000	500	1000	500	1000
OFF Mode	40	1000	50	1000	50	1000

Trigger Wiring Diagram



Mounting



Mounting with screws

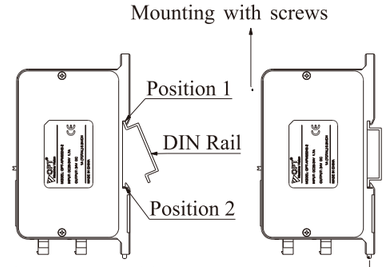
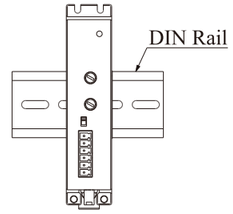


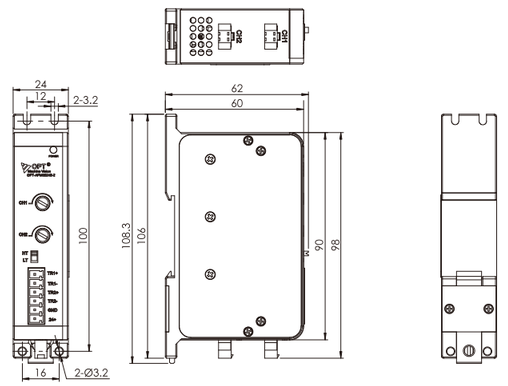
Figure 1 Assembly step

Figure 2 Disassembly step



Mounting on DIN rail

Dimensions (mm)



SPM Mini Strobe Controller Patented



Selection Guide

OPT-SPM2024-1

- Channels: 1
- Output voltage: 12 - 48V
- Max. output current: 2A
- Mini strobe controller
- Brand name

Product Features

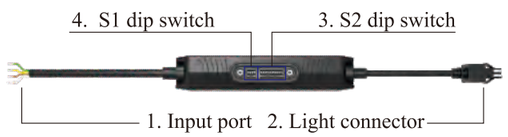
- Compact size
- Up to 50kHz trigger response frequency
- ≤ 10μs trigger response time
- 6 trigger polarities available for various working environments
- Wide input voltage range: 12 - 48V DC; convenient to use the DC power on other devices, and increases strobe intensity
- Trigger pulse width range: 10μs - 1023ms

Parameters

Item	Parameter	Description
Input voltage	12 - 48V DC 4.5A	
Output voltage	$V_o=V_{in}$ - I∗R	V_{in}: Input voltage V_o: Output voltage I: Light operating current R: Resistance≈7.5mΩ
Lighting mode	Strobe	
Protection for reverse polarity connection	Yes	Protects controller from the damage by wrong power connection
External trigger	Yes	

Item	Parameter	Description
Trigger polarities	1. Rising edge trigger 2. Falling edge trigger 3. Positive follow trigger mode 4. Negative follow trigger mode 5. Time limited positive trigger 6. Time limited negative trigger	Set via the S1 switch
Trigger pulse width	10μs - 1023ms	Set via the S2 switch
Trigger level	Low level: 0 - 2V High level: 5 - 24V	
Trigger response frequency	≤ 50kHz	
Trigger response time	≤ 10μs	
Output current	Max. constant output current: 2A	Input I_a - Output I_a > 0.5A (I_a: Average current; have to be followed)
	Max. transient output current: 4A	
Standby power consumption	≤ 1W	Tested at 24V DC
Operating temperature	-5°C - 50°C	
Dimensions (mm^3) (L×W×H)	113.4×24.1×25.3	Refer to the drawing for details
Weight (kg)	0.1	

Device Overview



No.	Interface	Description
1	Input port	For power and trigger signal input
2	Light connector	JST SMP-02V-B 2 Pin
3	S2 switch	Used to set pulse width
4	S1 switch	Used to switch trigger modes

Input connection

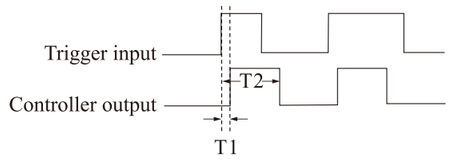
The input port is formed by 4 wires of different colors, which has optocoupler inside. See the chart below for their connection with power anode and cathode.
Low level: 0 - 2V input; high level: 5 - 24V input
Please refer to the “Wiring Diagrams” for more details.

Wire Color	Connection
White	Power+
Brown	Power-
Green	Trigger+
Yellow	Trigger-

Trigger Sequence

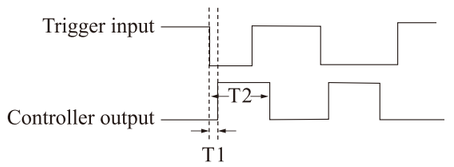
Rising edge trigger

The illumination time is equal to the trigger pulse width, which is set via the relative switch.



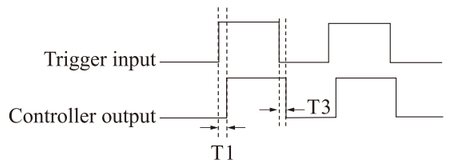
Falling edge trigger

The illumination time is equal to the trigger pulse width, which is set via the relative switch.



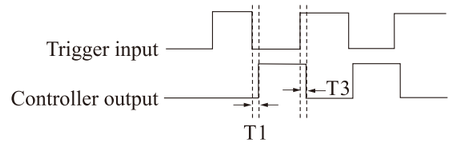
Positive follow trigger mode

When the trigger signal is at high level, the illumination time is the same as the high-level pulse width.



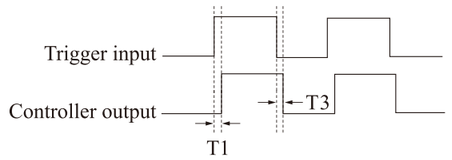
Negative follow trigger mode

When the trigger signal is at low level, the illumination time is the same as the low-level pulse width.

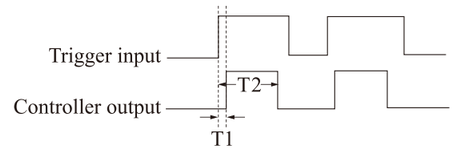


Time limited positive trigger

When the trigger signal is at high level, if the pulse width is less than the preset value, the illumination time is the same as the high-level pulse width.

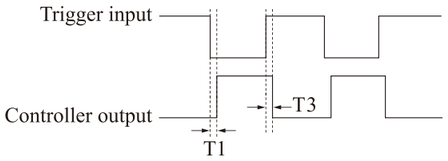


When the trigger signal is at high level, if the pulse width ≥ the preset value, the illumination time is the same as the preset value.

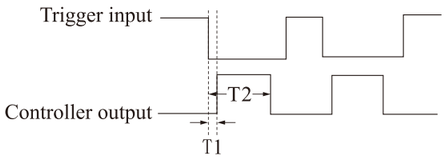


Time limited negative trigger

When the trigger signal is at low level, if the pulse width is less than the preset value, the illumination time is the same as the low-level pulse width.



When the trigger signal is at low level, if the pulse width ≥ the preset value, the illumination time is the same as the preset value.



Remarks
T1: Enabling response time ≤ 10μs;
T2: Trigger pulse width, range: 10μs - 1023ms
T3: Disabling response time ≤ 10μs

Trigger Polarities Setting

Trigger Polarity	S1.3	S1.2	S1.1
Rising edge trigger	OFF	OFF	X
Falling edge trigger	OFF	ON	OFF
Positive follow trigger mode	OFF	ON	ON
Negative follow trigger mode	ON	OFF	OFF
Time limited positive trigger	ON	OFF	ON
Time limited negative trigger	ON	ON	X

Notes
1. Sx.x indicates the exact switch. E.g. S1.1 is the first switch of S1 and S1.2 the second switch of S1, and so on.
2. ON and OFF indicate the connection status; X shows the on/off status of switch.

Trigger Pulse Width Setting

Unit

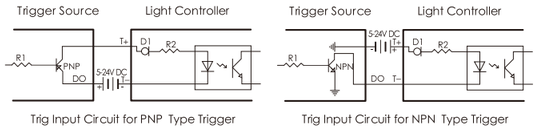
Unit	S1.4
ms	OFF
μs	ON

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

Notes
1. Sx.x indicates the exact switch. E.g. S2.1 is the first switch of S2 and S2.2 the second switch of S2, and so on.
2. Pulse width values can be presented with the 10 binary numbers formed by the switches from S2.10 (the highest bit) to S2.1 (the lowest bit). ON indicates 1, and OFF 0.
3. When μs is the unit of trigger pulse width, the pulse width will be 10μs if the preset value is ≤ 10.

Trigger Wiring Diagrams



Trig Input Circuit for PNP Type Trigger

Trig Input Circuit for NPN Type Trigger

Dimensions (mm)

