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Lighting Equipment

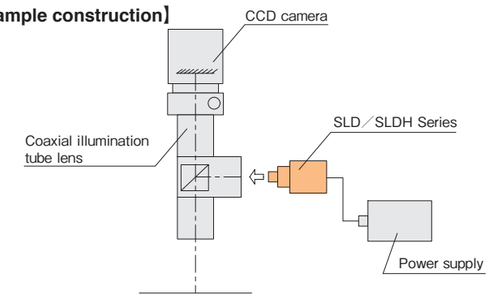
Lighting Equipment

This section presents various LED and Halogen illumination systems to combine with optical lens assemblies for increased resolution. The user can choose from a variety of illuminators sources that are independent of material,size and surface texture.

Spot LED for Coaxial Illumination



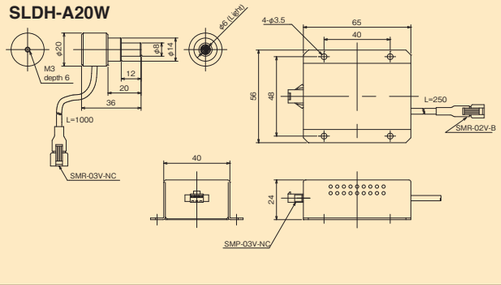
【Sample construction】



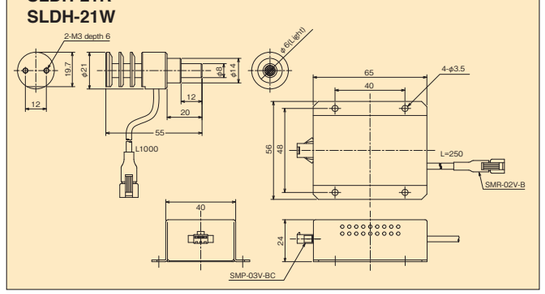
SLDH series

Spot LED is a powerful LED and used for lens magnification higher than 3X. The outer dimension of the illuminator is designed for a maximum of 21mm to facilitate the needs of system integrators. This illuminator is useful not only for coaxial illumination but for spot illumination as well.

SLDH-A20R
SLDH-A20W



SLDH-21R
SLDH-21W



■ Specification

Model	Number of LED	Consumption of power(W)	Color
SLDH-A20R	1	4.5	Red
SLDH-A20W	1	4.5	White

Note: Blue(B), Green(G) LED are also available. Note: Input voltage is 12V.

■ Specification

Model	Number of LED	Consumption of power(W)	Color
SLDH-21R	1	9	Red
SLDH-21W	1	9	White

Note: Blue(B), Green(G) LED are also available. Note: Input voltage is 12V.

Full Color LED

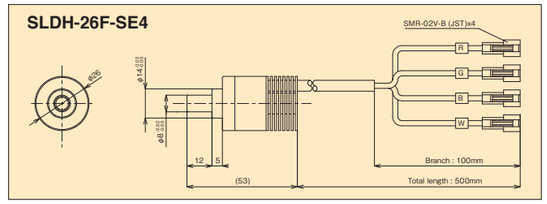
Available to control 4 colors (R/G/B/W) in one illuminator.
You can blend each color to make best color for your specimen / inspection.

■ Specification

Model	Number of LED	Consumption of power(W)	Color
SLDH-26F-SE4	4	4.2～16.8 (One color～Full color)	R/G/B/W

Note: Input voltage is 12V.

SLDH-26F-SE4



SLD series

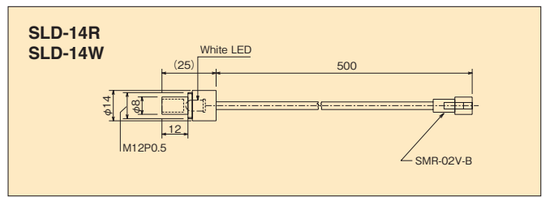
A series of LED illuminators that utilize high-intensity LEDs are used mainly for coaxial illumination systems. Useful for low magnification coaxial lenses which do not require high intensity illumination.

■ Specification

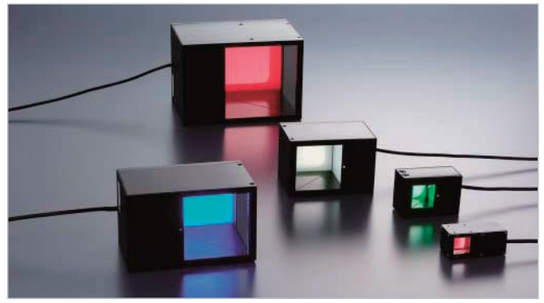
Model	Number of LED	Consumption of power(W)	Color
SLD-14R	1	0.3	Red
SLD-14W	1	0.3	White

Note: Blue(B), Green(G) LED are also available. Note: Input voltage is 12V.

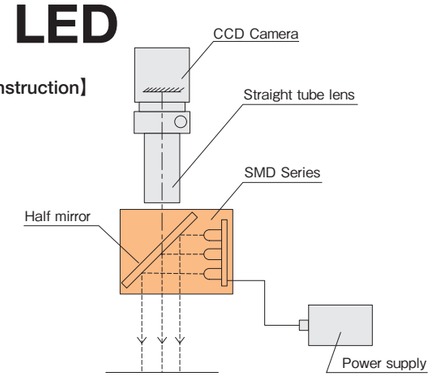
SLD-14R
SLD-14W



Surface Reflection Coaxial LED



【Sample construction】



SMD series

This illuminator can be installed on the front of the lens tube. Useful for lens systems that are not equipped for coaxial illumination or lens systems of low magnification which cover a wide field of view.

■ Specification

Model #	Power consumption (W)	Color
SMD-13RH	0.8	Red
SMD-13W	0.6	White
SMD-20RH	1.2	Red
SMD-20W	1.7	White
SMD-40RH	3.6	Red
SMD-40W	3.1	White
SMD-50RH	6.0	Red
SMD-50W	4.9	White
SMD-70RH	10.2	Red
SMD-70W	10.1	White

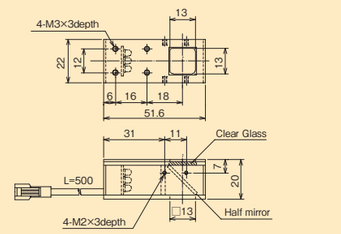
Note: Blue(B), Green(G) LED are also available. Note: Input voltage is 12V.

■ Specification

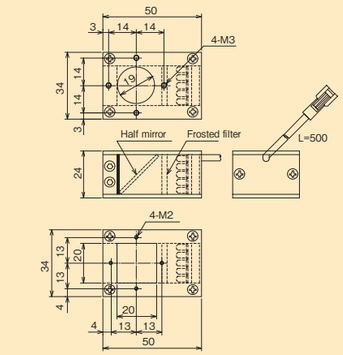
Model #	Power consumption (W)	Color
SMD-50F-SE	5.8-17.4 (One color - Full color)	R/G/B Full color
SMD-70F-SE	6.3-18.9 (One color - Full color)	R/G/B Full color

Note: Input voltage is 12V.

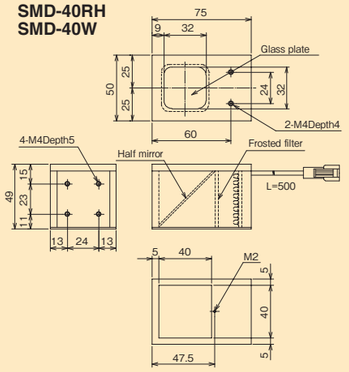
SMD-13RH
SMD-13W



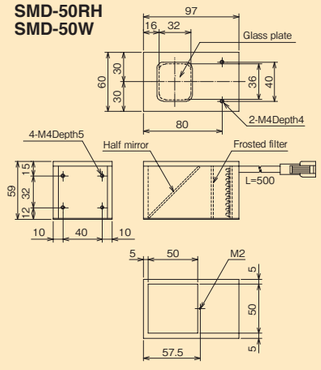
SMD-20RH
SMD-20W



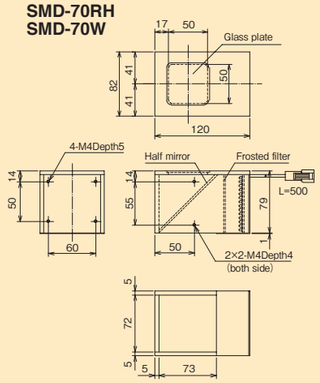
SMD-40RH
SMD-40W



SMD-50RH
SMD-50W



SMD-70RH
SMD-70W

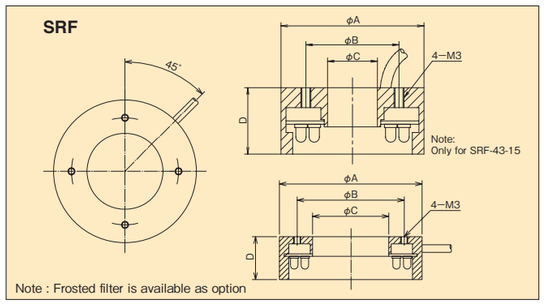


Flat Direct Ring LED

High-intensity LEDs mounted in a ring format to illuminate a wide field of view.

SRF series



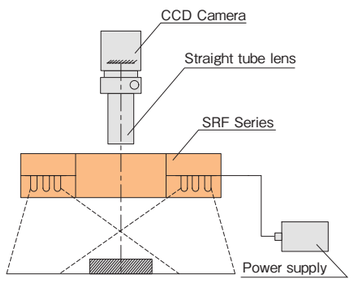


■ Specification

Model #	Dimension(mm)				Power consumption (W)	Color
	A	B	C	D		
SRF-32-10RH	32	14	10	15	0.8	Red
SRF-32-10W	32	14	10	15	1.1	White
SRF-43-15RH	43	28	15	20	1.8	Red
SRF-43-15W	43	28	15	20	2.2	White
SRF-50-15RH	50	35	15	18	3.1	Red
SRF-50-15W	50	35	15	18	3.3	White
SRF-60-32RH	60	45	32	18	3.6	Red
SRF-60-32W	60	45	32	18	3.6	White
SRF-70-37RH	70	50	37	18	4.9	Red
SRF-70-37W	70	50	37	18	5.6	White
SRF-90-50RH	90	70	50	18	7.3	Red
SRF-90-50W	90	70	50	18	6.2	White
SRF-100-50RH	100	70	50	20	8.5	Red
SRF-100-50W	100	70	50	20	6.5	White
SRF-110-60RH	110	85	60	22	12.1	Red
SRF-110-60W	110	85	60	22	9.6	White

Note: Blue(B), Green(G) LED are also available. Note: Input voltage is 12V.

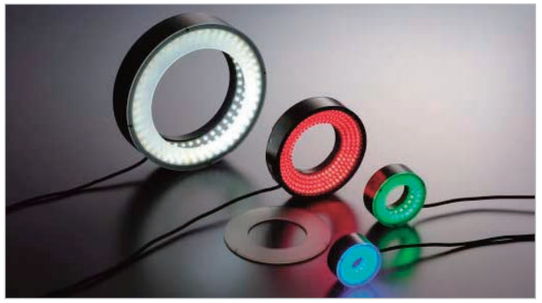
【Sample construction】

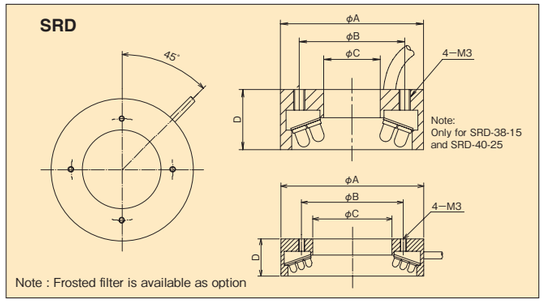


Direct Ring LED

High intensity LEDs mounted in a ring format configuration and tilted to a specific angle to focus the illumination at a certain working distance. Adjusting the height of this ring LED changes the light angle and varies the images contrast.

SRD series



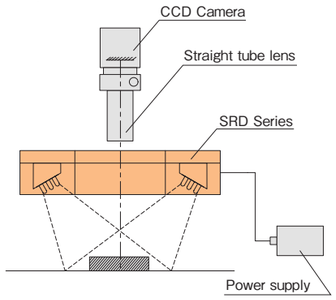


■ Specification

Model #	Dimension(mm)				Power consumption (W)	W.D.	Color
	A	B	C	D			
SRD-38-15RH	38	28	15	16	1.8	10~35	Red
SRD-38-15W	38	28	15	16	2.2	10~35	White
SRD-40-25RH	40	32	25	15	1.2	25~45	Red
SRD-40-25W	40	32	25	15	1.5	25~45	White
SRD-50-28RH	50	40	28	16	3.0	20~50	Red
SRD-50-28W	50	40	28	16	2.7	20~50	White
SRD-66-36RH	66	50	36	20	4.3	40~80	Red
SRD-66-36W	66	50	36	20	5.4	40~80	White
SRD-70-39RH	70	50	39	18	4.7	20~70	Red
SRD-70-39W	70	50	39	18	5.8	20~70	White
SRD-90-50RH	90	70	50	20.5	7.1	40~90	Red
SRD-90-50W	90	70	50	20.5	6.5	40~90	White
SRD-110-60RH	110	85	60	26	9.6	40~100	Red
SRD-110-60W	110	85	60	26	9.6	40~100	White
SRD-140-95RH	140	120	95	28	13.9	50~110	Red
SRD-140-95W	140	120	95	28	10.8	50~110	White

Note: Blue(B), Green(G) LED are also available. Note: Input voltage is 12V.

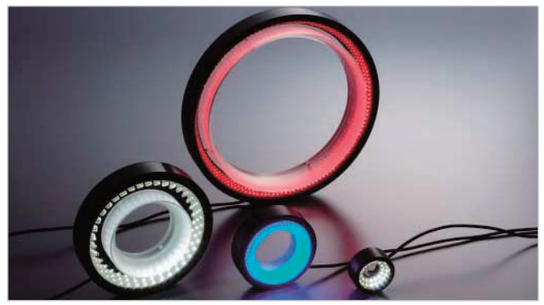
【Sample construction】

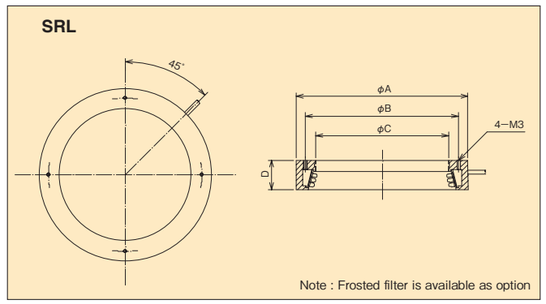


Low Angle Ring LED

This illuminator is a shallow-angle LED ring style. Illumination from a shallow angle allows surface irregularities to be seen quite readily.

SRL series



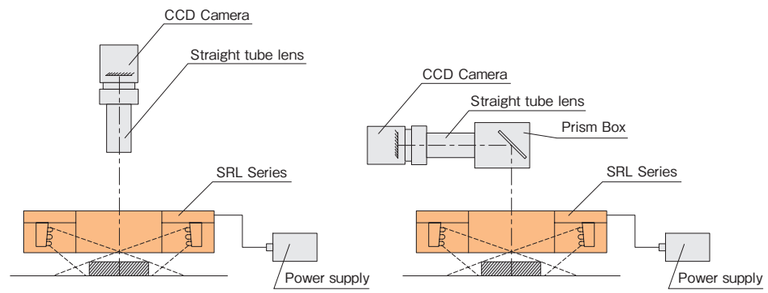


■ Specification

Model #	Dimension(mm)				Power consumption (W)	WD	Color
	A	B	C	D			
SRL-40-15RH	40	28	15	17	2.1	5~10	Red
SRL-40-15W	40	28	15	17	2.2	5~10	White
SRL-50-24RH	50	36	24	18	2.7	10~20	Red
SRL-50-24W	50	36	24	18	2.9	10~20	White
SRL-74-48RH	74	60	48	19	5.4	15~30	Red
SRL-74-48W	74	60	48	19	5.4	15~30	White
SRL-100-68RH	100	84	68	22	7.0	15~40	Red
SRL-100-68W	100	84	68	22	5.4	15~40	White
SRL-120-70RH	120	90	70	21	10.5	15~40	Red
SRL-120-70W	120	90	70	21	6.9	15~40	White
SRL-140-108RH	140	125	108	24	11.9	10~30	Red
SRL-140-108W	140	125	108	24	8.0	10~30	White
SRL-200-170RH	200	186	170	22	18.4	40~70	Red
SRL-200-170W	200	186	170	22	18.9	40~70	White

Note : Blue (B) , Green (G) LED are also available. Note : Input voltage is 12V

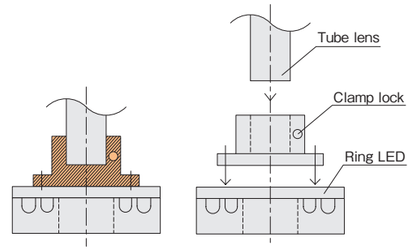
【Sample construction】



【Mounting adapter of Ring LED to lens tube】

This adapter for mounting Ring LED to lens tubes is available as standard component and customized for special applications.





【List of frosted filters for Ring LED series】

Frosted filter for ring LED are available from list below.
(Thickness: 2mm / Transmission: 80%)

■ For Flat Direct Ring Illuminators

Model #	Applicable illumination
SKRF-32-10	SRF-32-10
SKRF-43-15	SRF-43-15
SKRF-50-15	SRF-50-15
SKRF-60-32	SRF-60-32
SKRF-70-37	SRF-70-37
SKRF-90-50	SRF-90-50
SKRF-100-50	SRF-100-50
SKRF-110-60	SRF-110-60

■ For Direct Ring Illuminators

Model #	Applicable illumination
SKRD-38-15	SRD-38-15
SKRD-38-12	SRD-38-15
SKRD-40-25	SRD-40-25
SKRD-40-21	SRD-40-25
SKRD-50-28	SRD-50-28
SKRD-50-24	SRD-50-28
SKRD-66-36	SRD-66-36
SKRD-66-32	SRD-66-36
SKRD-70-39	SRD-70-39
SKRD-70-35	SRD-70-39
SKRD-90-50	SRD-90-50
SKRD-110-60	SRD-110-60
SKRD-140-95	SRD-140-95

■ For Low Angle Ring Illuminators

Model #	Applicable illumination
SKRL-74-48	SRL-74-48
SKRL-100-68	SRL-100-68
SKRL-120-70	SRL-120-70
SKRL-140-108	SRL-140-108
SKRL-200-170	SRL-200-170

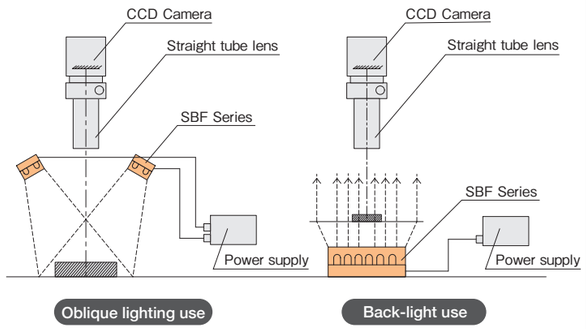
Direct Bar LED

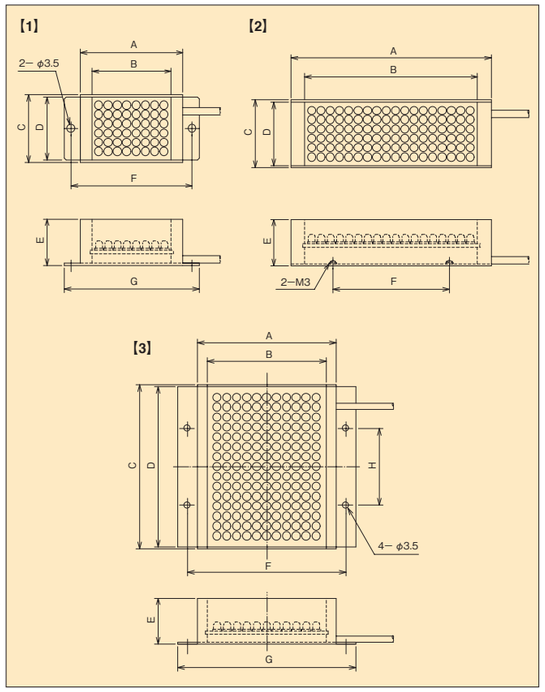
High luminance LEDs, mounted in a flat array, for direct illumination of the subject. Can be used in combination with diffuser to provide equally intense light. A wide array of styles is offered, including those for back light and oblique use.

SBR series



【Sample construction】





■ Specification

Model #	frosted filter	Dimension(mm) A	B	C	D	E	F	G	H	Power consumption (W)	Color	Drawing
SBR-11-14RH	No	24	14	14	11	12	30	36	–	0.3	Red	[1]
SBR-11-14W		24	14	14	11	12	30	36	–	0.4	White	
SBR-15-26RHS	Yes	36	26	18	15	20.5	44	50	–	0.6	Red	
SBR-15-26WS		36	26	18	15	20.5	44	50	–	1.1	White	
SBR-27-34RH	No	44	34	30	27	20.5	52	58	–	2.4	Red	
SBR-27-34W		44	34	30	27	20.5	52	58	–	2.9	White	
SBR-70-75RHS	Yes	85	75	71	68	30.5	95	105	60	10.2	Red	[3]
SBR-70-75WS		85	75	71	68	30.5	95	105	60	10.1	White	
SBR-25-25RHS	Yes	35	25	28	25	30.5	15	–	–	1.8	Red	[2]
SBR-25-25WS		35	25	28	25	30.5	15	–	–	2.2	White	
SBR-50-15RH	No	60	50	18	15	20.5	30	–	–	1.8	Red	
SBR-50-15W		60	50	18	15	20.5	30	–	–	2.2	White	
SBR-100-11RH	No	110	100	14.2	11.2	20.7	80	–	–	2.4	Red	
SBR-100-11W		110	100	14.2	11.2	20.7	80	–	–	2.9	Red	
SBR-140-11RH	No	150	140	14	11	20.5	80	–	–	4.2	White	
SBR-140-11W		150	140	14	11	20.5	80	–	–	4.4	Red	
SBR-132-15RH	No	142	132	18	15	20.5	80	–	–	5.4	White	
SBR-132-15W		142	132	18	15	20.5	80	–	–	5.8	Red	
SBR-72-24RH	No	86	74	30	27	20.5	50	–	–	5.4	White	
SBR-72-24W		86	74	30	27	20.5	50	–	–	4.4	Red	
SBR-50-50RHS	No	62	50	51	48	30.5	Note1	–	–	6.4	White	
SBR-50-50WS		62	50	51	48	30.5	Note1	–	–	5.4	Red	
SBR-15-200RHS	Yes	210	200	24	15	22.5	100	–	–	8.4	White	
SBR-15-200WS		210	200	24	15	22.5	100	–	–	8.9	Red	
SBR-185-30RHS	Yes	198	186	39	30	22.5	Note2	–	–	13.2	White	
SBR-185-30WS		198	186	39	30	22.5	Note2	–	–	13	Red	
SBR-300-24RHS	Yes	300	288	36	27	22.5	160	–	–	20.2	White	
SBR-300-24WS		300	288	36	27	22.5	160	–	–	25.6	Red	

Note : Blue (B) , Green (G) LED are also available. Note : Input voltage is 12V

List of frosted filter for Direct Bar illuminators

The frosted filter listed below is for Direct Bar illuminators that do not have a frosted filter as an option.
(thickness : 2mm / transmission : 80%)

■ Frosted filters for Direct Bar LED

Filter Model #	LED Model #
SKBR-11-14	SBR-11-14
SKBR-50-15	SBR-50-15
SKBR-27-34	SBR-27-34
SKBR-100-11	SBR-100-11
SKBR-140-11	SBR-140-11
SKBR-132-15	SBR-132-15
SKBR-72-24	SBR-72-24

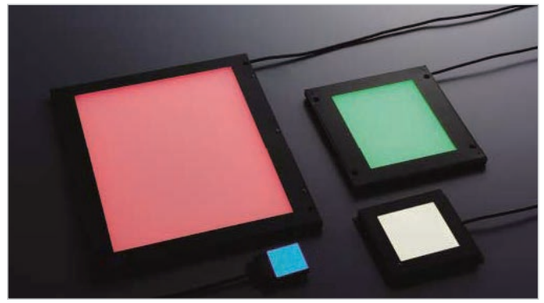
※1
Dimension of E will be changed to 21 when installed frosted filter.

Note 1 : 4-M3 pitch 40X40
Note 2 : 3-M3 pitch 70

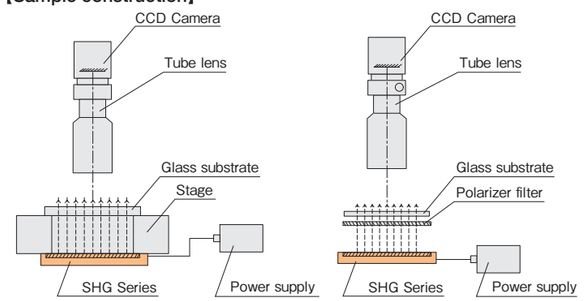
Flat Luminescent LED

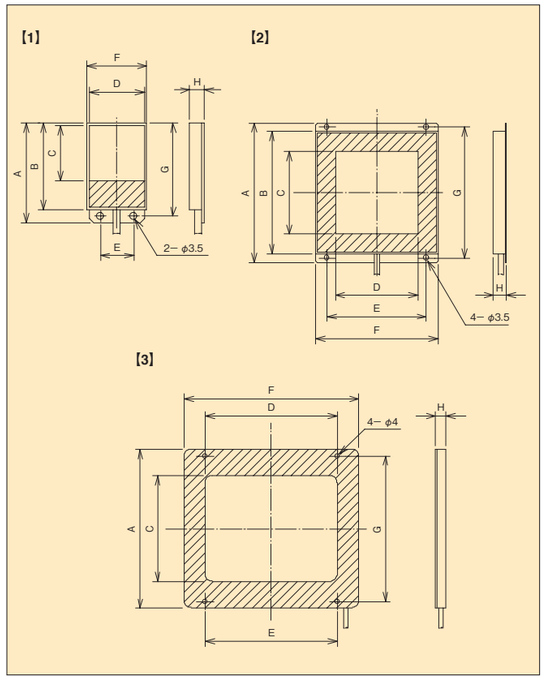
Uniform flat-panel illuminator. Useful as a backlight for transmission illumination due to its inherent thinness.

SHG series



【Sample construction】





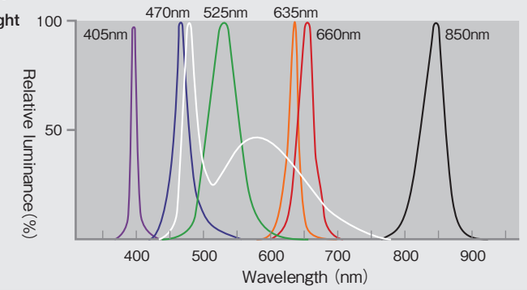
■ Specification

Model #	Dimension(mm) A	B	C	D	E	F	G	H	Power consumption (W)	Color	Drawing
SHG-25-25R	45	38	25	25	15	26	42	7.0	0.3	Red	[1]
SHG-25-25W	45	38	25	25	15	26	42	7.0	0.4	White	
SHG-30-41R	52	42	30	41	30	42	47	7.0	0.5	Red	
SHG-30-41W	52	42	30	41	30	42	47	7.0	1.2	White	
SHG-50-50R	84	74	50	50	60	74	79	8.5	2.0	Red	[2]
SHG-50-50W	84	74	50	50	60	74	79	8.5	2.9	White	
SHG-80-100R	122	–	80	100	100	134	110	8.0	3.4	Red	[3]
SHG-80-100W	122	–	80	100	100	134	110	8.0	5.1	White	
SHG-100-100R	142	–	100	100	100	134	130	8.0	3.9	Red	
SHG-100-100W	142	–	100	100	100	134	130	8.0	5.8	White	
SHG-135-180R	177	–	135	180	180	214	166	8.0	5.8	Red	
SHG-135-180W	177	–	135	180	180	214	166	8.0	8.7	White	
SHG-150-200R	190	–	150	200	200	232	180	8.0	6.8	Red	
SHG-150-200W	190	–	150	200	200	232	180	8.0	10.1	White	

Note : Blue (B) , Green (G) LED are also available. Note : Input voltage is 12V

Additional Note

■ Spectrum of light



Color	Peak
White	—
Ultraviolet	405nm
Blue	470nm
Green	525nm
Red	635nm
Red	660nm
Infrared	850nm

Special LED

We have a variety of options for LED.
Please consult with us about wavelength other than visible light, or special use application.
We also can make customized illumination.

Infrared Illumination

- Ideal for transmission observation using infrared wavelength (Inspection of semiconductor / liquid / printing etc.)

- We have same lineup as visible light LED (Coaxial spot / surface reflection coaxial / ring / flat etc.)

- Select wavelength from 850nm / 940nm or other wavelength



Ultraviolet Illumination

■UV-LED illumination

For observation and inspection purpose, we have same lineup as visible light LED.

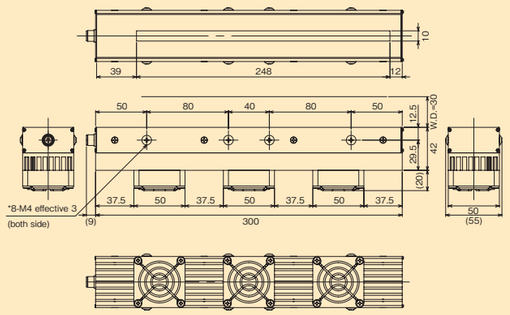
■UV-LED cure / special power supply

High power UV-LED can be replaced by a existing lamp.
We do from board design to heat release arrangement tailored for your needs.
Select wavelength from 365nm / 375nm / 385nm / 395nm / 405nm

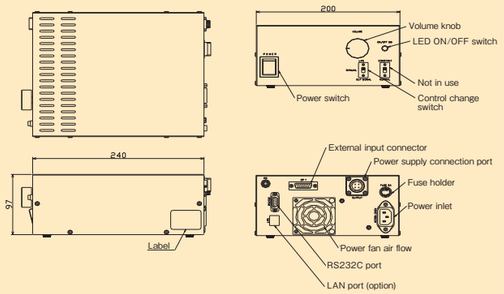
LED-Head	
Exposure area	100～3,800mm×5mm (W.D.=30mm)
UV light intensity	500～1000mW/cm2 (W.D.=30mm)
Peak wavelength	365nm , 385nm , 405nm
Cooling type	Forced fan cooling, water cooling

Special power supply	
Input voltage	AC100～240V
Operation frequency	50/60Hz
Output	100～600W
Manual control	Control by volume knob (Non-stage)
External control	Analog 0-5V or Digital 8 bit, LAN (option)
Feature	Open detection, power supply abnormal detection, With power supply for forced air cooling fan

LED-Head (Ex: Emission part length 240mm)



Special power supply



Pulse Control Power Supply

STPA-1230-C2 / STPA-1245-C4



Please choose power supply capacity based on illumination type. Multiple LED can be controlled separately by one power supply. (1ch-4ch) External ON / OFF control and dimming (0-5V control) is available.

■ Specification

Model #	STPA-1230-C2	STPA-1245-C4
Channel number	2CH	4CH
CH Total output	30W (Max. 15W for 1CH)	45W (Max. 15W for 1CH)
Control type	PWM type Approx. 60kHz	
Manual Control ON/OFFF	By volume knob (0 - 100%) Individual ON/OFF for each CH	
MANUAL/REMOTE feature	Swith by slide switch	
External Control ON/OFF	DC0-5V voltage input (0-100%) Individual ON/OFF for each channel	
Cooling	Naturally air-cooling	
Input voltage	DC12V (AC adapter input)	
Output voltage	12V±5%	
Accessories	AC adapter (AC100-240V), AC cable (only for 125VAC), External remote connector	

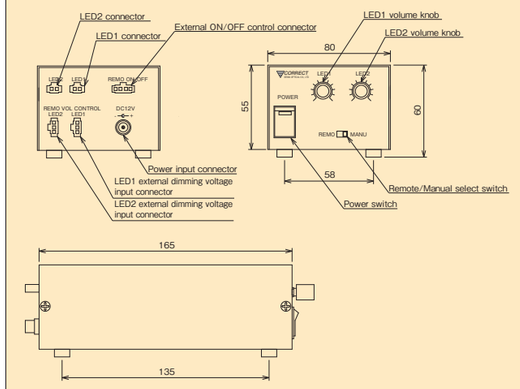
■ Connection Connector Array

	Pin No.	STPA-1230-C2	STPA-1245-C4
		Signal name	
LED	1	Output +(+12V)	
	2	Output -	
EXT ON/OFF CONTROL	1	LED1 ON/OFF	LED1 ON/OFF
	2	LED2 ON/OFF	LED2 ON/OFF
	3	External control changeover	LED3 ON/OFF
	4	GND	LED4 ON/OFF
	5	—	External control changeover
	6	—	GND
EXT CONTROL	1	+5V Output	
	2	Dimming voltage input	
	3	GND	

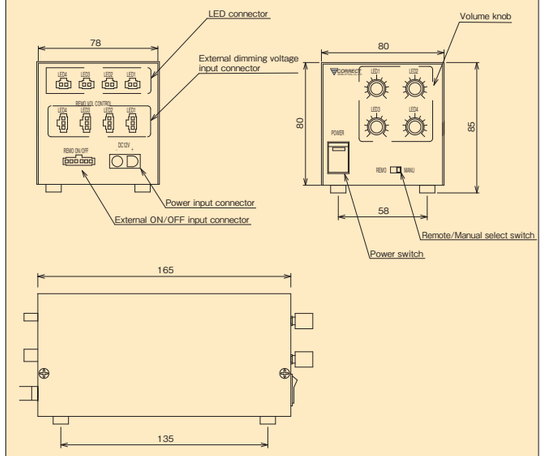
■ External dimming control (0-5V control)

2 ways of control:
1: There is DC 5V (max. 500mA) output as service power supply at pin 1.
By using this, input 0-5V variable voltage at pin 2.
2: Input 0-5V variable voltage to pin 2 and pin 3 from external.
Pin 1 is not in use (N.C).

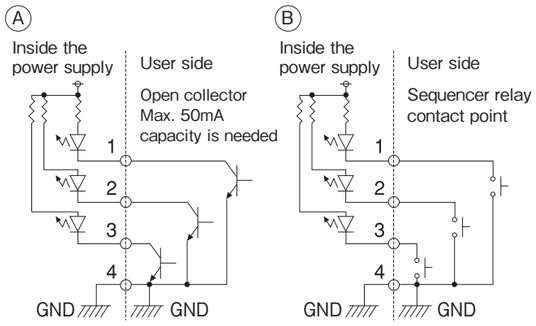
STPA-1230-C2



STPA-1245-C4



■ External ON / OFF connection example (STPA-1230-C2)



External ON / OFF control is available when pin 3 and pin 4 of external ON / OFF control connector are short-circuited. (At this point, LED 1 and LED 2 are OFF)
When pin 1 and pin 4 are short-circuited, LED 1 is ON. When pin 2 and pin 4 are short-circuited, LED 2 is ON.

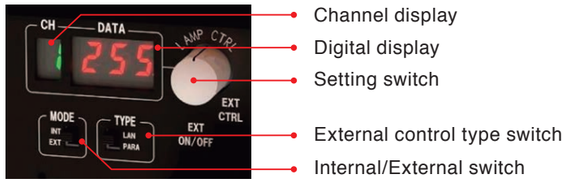
Digital PWM Power Supply

STP-LAN/DIO
STP-232/DIO
STP-485/ANG

This power supply has a lot of functions with selectable interface. 3 types of external control are available: [LAN/8 bit parallel communication switch] [RS-232C/8 bit parallel communication switch] [RS-485/Analog 0-5V switch]

- External ON/OFF signal and lighting output are fully synchronized
- Various external ON/OFF functions
- All sizes are adjustable to DIN rail installation





Channel display
Digital display
Setting switch
External control type switch
Internal/External switch







Specification

Model #	CH	Input voltage	Output voltage	Capacity(W)	Drawing
STP-△△△△△-1230-C2	2	AC100～240V	DC12V	30W	1
STP-△△△△△-1230-C4	4				2
STP-△△△△△-1230-C8	8				
STP-△△△△△-1250-C2	2			50W	3
STP-△△△△△-1250-C4	4				
STP-△△△△△-1250-C8	8				
STP-△△△△△-12100-C2	2			100W	4
STP-△△△△△-12100-C4	4				
STP-△△△△△-12100-C8	8				
STP-△△△△△-2430-C2	2		DC24V	30W	1
STP-△△△△△-2430-C4	4				2
STP-△△△△△-2430-C8	8				
STP-△△△△△-2450-C2	2			50W	3
STP-△△△△△-2450-C4	4				
STP-△△△△△-2450-C8	8				
STP-△△△△△-24100-C2	2			100W	4
STP-△△△△△-24100-C4	4				
STP-△△△△△-24100-C8	8				

Note:△△△△△on the model represents following : LAN/DIO, 232/DIO or 485/ANG

Common Specifications

Output control method	PWM approx. 125kHz
External control	External ON/OFF, External output control
Protection function	Overcurrent protection function, FAN error

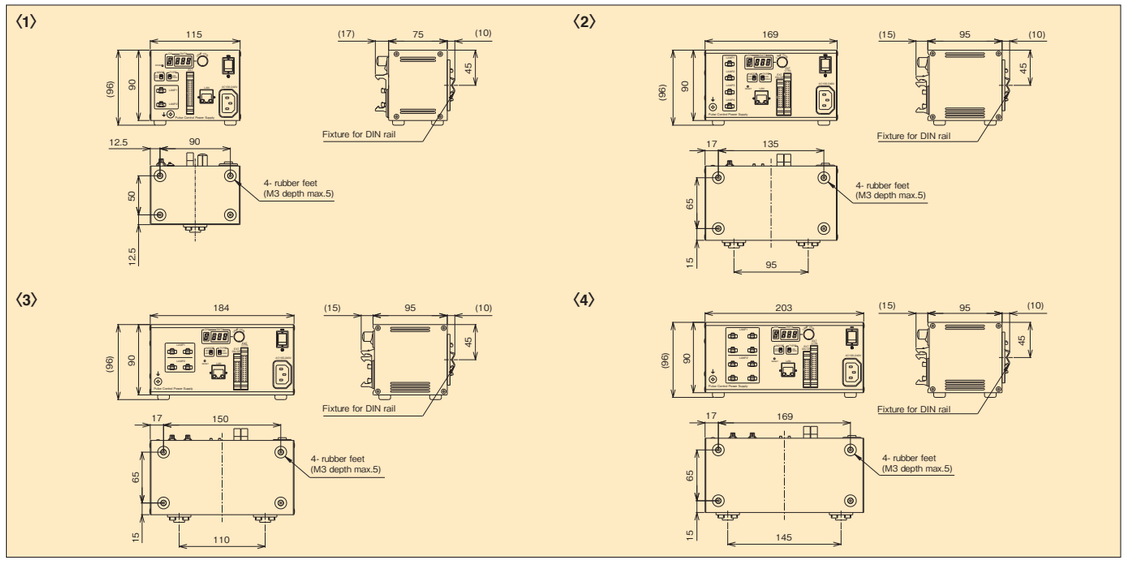
Communication Specification (LAN)

Communication protocol	TCP/IP
Regulatory compliance	IEEE802.3(10BASE-T)、IEEE802.3u(100BASE-TX)
Communication speed	10Mbps(10BASE-T)、100Mbps(100BASE-TX)
Connection port number	4ports
Function	Auto MDI/MDIX、Auto Negotiation

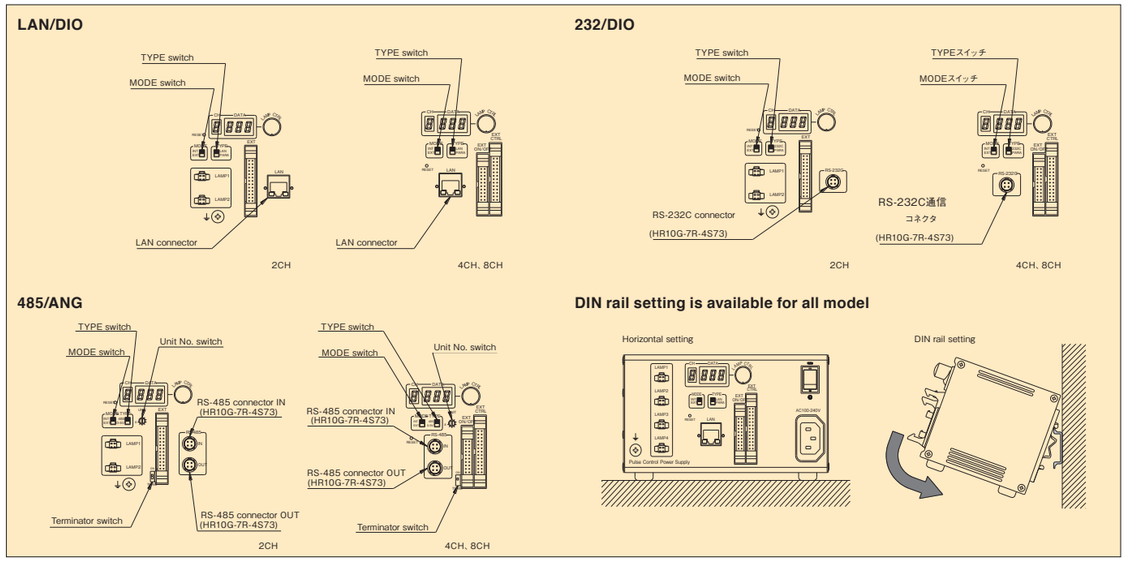
Communication Specification (RS232C/RS-485)

Communication protocol	RS-232C/RS-485
Baud rate	19200bps
Data bit	8bit
Parity bit	Even parity
Stop bit	1bit

Drawings



Front panel detail

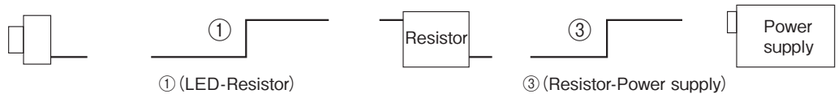


About external control function

- LAN communication
  With Ethernet communication, all devices on the network can be managed by one computer.
  Also available to manage devices individually by setting IP address.
- RS-485 communication
  Switch setting value in high speed by parallel communication.
- 8bit parallel communication
  Switch setting value in high speed by parallel communication.
- RS-232C communication
  Easy external control even in noisy environment.
- Analog 0-5V
  Control by 0-5V analog signal. Voltage varying dimming makes it easy to build external control environment.

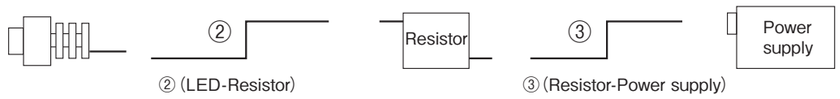
LED light Extension Cable

<Extension cable for SLDH-A20 series and SLDH-20 series>



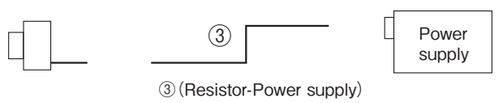
① (LED-Resistor) ③ (Resistor-Power supply)

<Extension cable for SLDH-21 series and SLDH-22 series>



② (LED-Resistor) ③ (Resistor-Power supply)

<Extension cable for the other 12V driving LED>



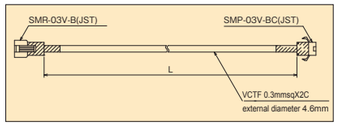
③ (Resistor-Power supply)

■ Specification

① (LED-Resistor)

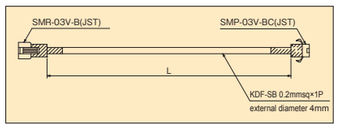
Normal cable

Model #	Length
SEC-01-SH	1m
SEC-02-SH	2m
SEC-03-SH	3m
SEC-04-SH	4m
SEC-05-SH	5m



Flex resistance cable

Model #	Length
SEC-01-SHR	1m
SEC-02-SHR	2m
SEC-03-SHR	3m
SEC-04-SHR	4m
SEC-05-SHR	5m

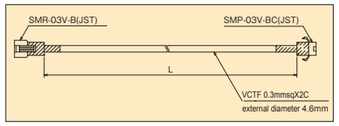


Pin number	Signal name
1	Output +
2	OutPut −
3	NC

② (LED-Resistor)

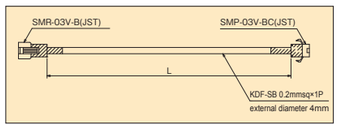
Normal cable

Model #	Length
SEC-01-SH3	1m
SEC-02-SH3	2m
SEC-03-SH3	3m
SEC-04-SH3	4m
SEC-05-SH3	5m



Flex resistance cable

Model #	Length
SEC-01-SHR3	1m
SEC-02-SHR3	2m
SEC-03-SHR3	3m
SEC-04-SHR3	4m
SEC-05-SHR3	5m

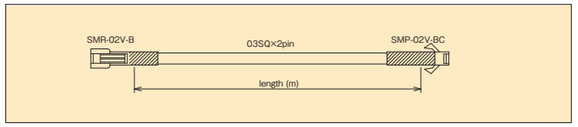


Pin number	Signal name
1	NC
2	Output −
3	Output +

③ (Resistor - Power supply) / for the other 12V driving LED

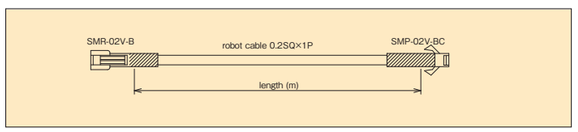
Normal cable

Model #	Length
SEC-01-S	1m
SEC-02-S	2m
SEC-03-S	3m
SEC-04-S	4m
SEC-05-S	5m



Flex resistance cable

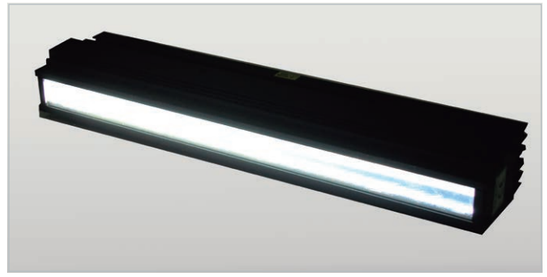
Model #	Length
SEC-01-SR	1m
SEC-02-SR	2m
SEC-03-SR	3m
SEC-04-SR	4m
SEC-05-SR	5m



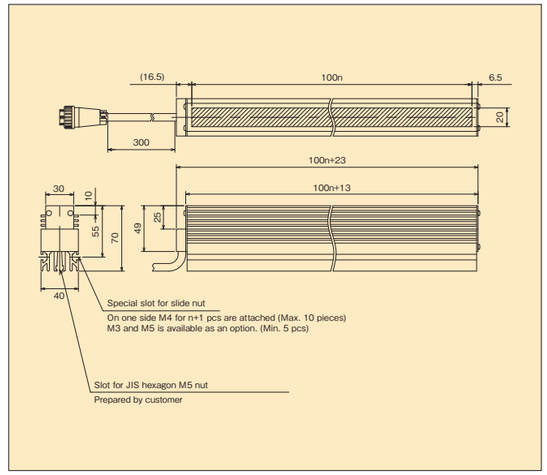
Pin number	Signal name
1	Output +
2	OutPut −

High Intensity Line Illumination

SBBR-LSR series



This super high intensity line light is ideal for system using line sensor camera. Line length available in multiples of 100mm.



■ Specification

Model #	Power consumption (W)			Drawing
	W	R	B	
SBBR-LSR100□	20	13	20	n=1
SBBR-LSR200□	40	26	40	n=2
SBBR-LSR300□	60	39	60	n=3
SBBR-LSR400□	80	52	80	n=4
SBBR-LSR600□	120	78	120	n=6
SBBR-LSR1000□	200	130	200	n=10

Note: □on the model represents following: W=white, R=red, B=blue
Note: Condenser lens and frosted filter are attachable.

Power supply for SBBR-LSR

This power supply is for SBBR-LSR series. Dimming is available in 1000 levels from external digital signal. Ideal for line sensor camera or high speed shutter camera since it is constant current control type.

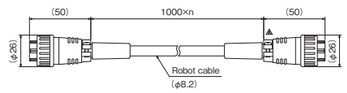


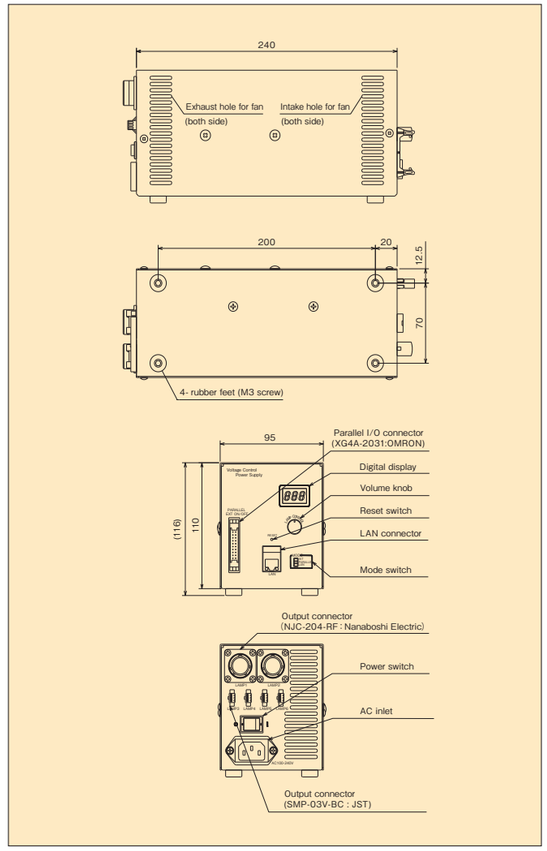
■ Specification

Model #	STDV-24300-C1
Input voltage	AC100~240V
Operating frequency	50/60Hz
Rated power output	DC24V
Capacity	300W
Output CH	Divaricate the output of 1ch 6 connectors (Metal connector 2pcs/SM connector 4pcs)
Light volume control	Variable output voltage
External control	External ON/OFF control External dimming control (Communication type change over 10bit parallel / Ethernet)

Special cable for SBBR-LSR

Model #	Length(m)
SEC-01-MCBR	1
SEC-02-MCBR	2
SEC-03-MCBR	3
SEC-05-MCBR	5
SEC-10-MCBR	10



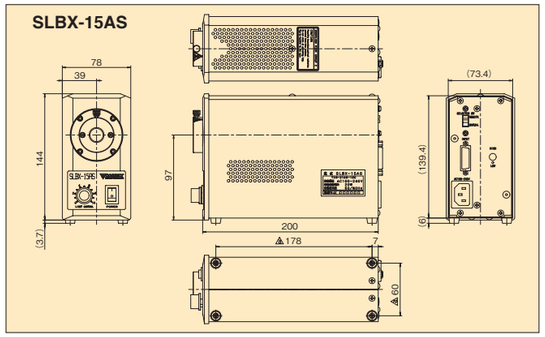


White LED Light Source

SLBX-15AS

This light guide insert type LED light source can be replaced halogen light source. Energy-saving and long-life.





■ Specification

Model #	SLBX-15AS
Input voltage	AC100～240V
Input voltage frequency	50/60Hz
Power consumption	20W
LED color	White
Intensity	※Average illuminance: 600,000lx
LED lifetime	30,000H
Lighting control	Manual: Continuous dimming by front panel light control volume Remote: Analog input voltage DC0V- +5V
Function switch	Manual/Remote switcable: backside
Protection feature	Over current protection circuit fuse
Cooling method	Forced cooling by fan
Operating temperature/humidity	0 degree - +40 degree / 20%-80%RH
External dimension	W78 x H144 x D200mm
Weight	2kg

※ Intensity is experimental value. Not guaranteed value. ※ LED lifetime is depending on operating environment and temp.

Features

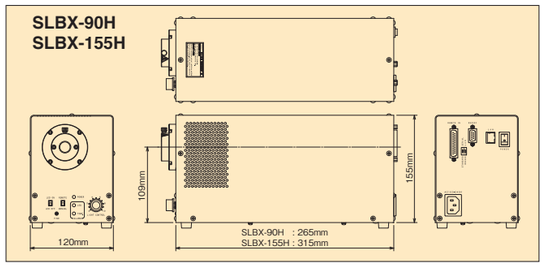
- Brightness is equal to 150W halogen light source
- Intensity 600,000lx
- Ideal for line sensor camera system
- Available to use with a light guide with core diameter up to ϕ11mm
- Low power consumption (20W)
- Color filter can be inserted at insertion port (option)
- Possible to use with plastic fiber and glass fiber

Metal Halide Class LED Light Source

SLBX-90H / SLBX-155H

This LED light source has brightness equal to metal halide light source. Reduced operation cost greatly.





Features

- SLBX-155H has brightness equal to 250W metal halide light source
- Intensity : SLBX-90H: 1,400,000lx
  SLBX-155H: 1,800,000lx
- Available to use with a light guide with core diameter up to ϕ11mm
- External control available
- Application: Spot illumination for high speed camera
  Light source for wide length line light guide
  For inspection which needs high intensity

■ Specification

Model #	SLBX-90H	SLBX-155H
Input voltage	AC100～240V±10%	
Input frequency	50/60Hz	
Power consumption	90W	155W
LED color	White	
Intensity *Note1	1,400,000lx	1,800,000lx
LED lifetime *Note2	Approx. 30,000H	
Lighting control	Manual : Continuous dimming by front panel light control volume External control: 8bit digital (RS-232C and LAN are also available)	Manual : Continuous dimming by front panel light control volume External control: 8bit digital, RS-232C, LAN
Cooling	Forced-fan cooling	
Operation temp / humidity	0 degree - +40 degree / 20% - 80% RH (No condensing)	
Dimensions	W120 x H163 x D265mm (Except projection)	W120 x H163 x D315mm (Except projection)
Weight	4kg	4.6kg

Note1: This is the reference intensity when measured at 50mm away from emission edge using bundle size ϕ11mm, length 500mm light guide. Note2: LED lifetime is depending on operating environment and temp. Not guaranteed value.

Halogen Light Source

FA-100C/FA-150EN

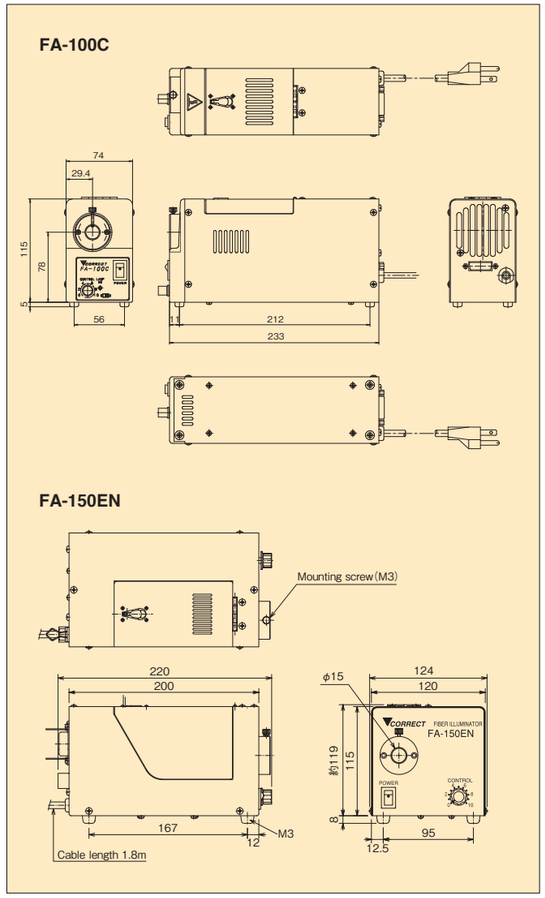


FA-100C / FA-150EN is a light source that can be used for multiple purpose. They are compact, lightweight and are suitable for image processing applications.

■ Specification

Model	FA-100C	FA-150EN
Input voltage	AC100～240V	AC100V (Note: Other voltage available upon request)
Input frequency	50/60Hz	
Power consumption	130W	175W
Lamp	JCR12V100W10H, Color temp. 3100K ※Average life: 1000H ※Average intensity :500,000lx	JCR15V150W5H, Color temp. 3100K ※Average life: 800H ※Average intensity :600,000lx
Output type	DC	
Lamp intensity stability	Input variation ±10%, Intensity variation approx ±0.3% (Not applicable when the lamp deterioration)	
Light volume control	Output voltage variable control 2%-100%	
Output voltage range	DC3.0V～12.0V	DC4.5V～14.0V
Protection performance	Overload circuit: Auto recovery Overheat circuit: Auto shut down and auto recovery	
Cooling	Forced-fan cooling	
Optical filter	Heat-proof filter embedded	Heat-proof filter, cold filter embedded
Ambient temperature /humidity	-10℃ - +45℃/20%-80% RH (Non condensing)	
External dimensions	W74×H115×D233mm(Except projection)	W126×H126×D227mm(Except projection)
Weight	2.2kg	2.3kg

※ Average lamp life is calculated from test results and is not guaranteed

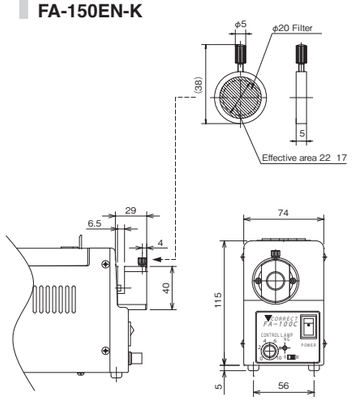


■ Options

Filter Holder

F20 series filters (P.24) can be installed.

FA-100C-K
FA-150EN-K



Inner Shutter

Lamp On/Off controlled by rotary solenoid driven shutter.

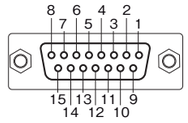
FA-100C-S24V

【Method】
The shutter operates when the voltage is provided between pins No.14 (+), and No. 15(-) of remote control connector.

【Note】
Power for operating the shutter must be provided by the customer as follows:
DC24V type : DC24V / over 0.5A

■ Receptacle for shutter

Receptacle DA-15S-N
Plug DA-15P-N

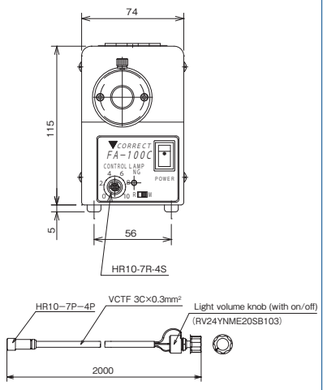


Pin 14 : Shutter ＋ voltage(＋)
Pin 15 : Shutter － voltage(－)

Remote Control

Dimming from any place by extending the cable of light volume knob

FA-100C-M
FA-150EN-M



※Cable length can be up to 10m by customizing.

Infrared Illumination

SIS-150 (-NIR/-AIR/-IR)

SIS-150 series is a light source that has wavelength range on near-infrared. In combination with optimized optical system and IR camera, it is suitable for non-destructive inspection such as internal inspection of Si wafer or inspection of back surface pattern.



■ Common specification

Model	SIS-150 (-NIR/-AIR/-IR)
Input voltage	AC100V～240V
Input frequency	50/60Hz
Output type	DC
Light volume control	Variable output voltage Variable range of voltage : DC2V-15V Variable range of light volume : 0.1%～100%
Protection	Overcurrent circuit (Power shutdown and recovery) Overheat circuit (Auto recovery)
Cooling	Forced-fan cooling
Operation temp/humidity	0℃-40℃／20%-80%RH (No condensing)
Functions	Lamp burnout signal output:Open collector/Emitter Analog signal voltage control:DC0-5V input Remote lamp ON/OFF:Lamp OFF by applying DC5V
Dimensions	W124×H165×D224mm (Except projection)
Weight	Approx. 2.7kg

Selectable from 3 types of lamps

Model	SIS-150-NIR	SIS-150-AIR	SIS-150-IR
Wavelength	400-1100nm	400-1700nm	650-1500nm
Peak wavelength	800nm	1000nm	800nm
Light guide	Standard	Heat-resistant	Heat-resistant

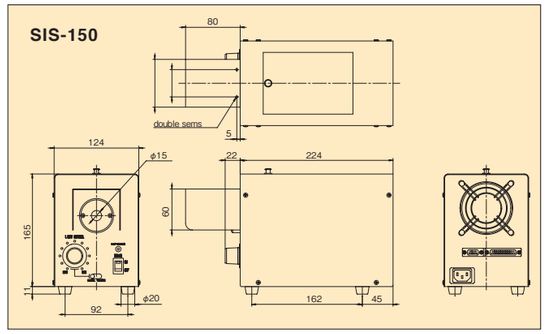
■ Option

- Available for installing bandpass filter
- Available for installing mechanical shutter
- Available for installing 256 level digital light control board
  - Analog/Digital control board (Control voltage (0-5V))
  - Parallel control board (Parallel 8bit digital signal)
  - Serial control board (RS232C serial 8bit digital signal)

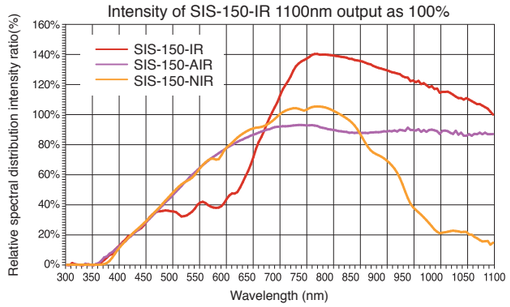
【Heat-resistant Light guide】

Model	SLG-B6-✳✳✳✳-UHR
Bundle diameter	φ6
Outside material	Flexible SUS tube
Minimum curve(R)	R40
L:Length	1000
	2000
	3000

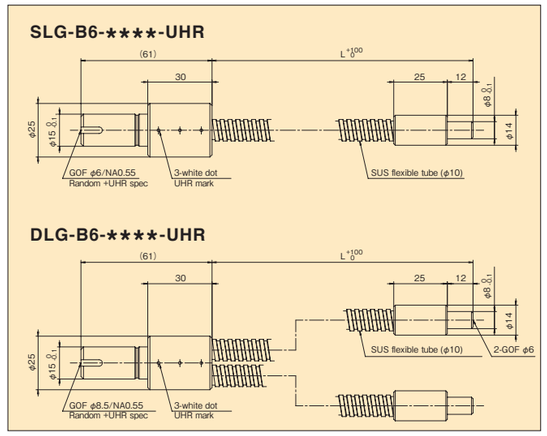
Model	DLG-B6-✳✳✳✳-UHR (Dual branch)
Bundle diameter	φ6
Outside material	Flexible SUS tube
Minimum curve(R)	R40
L:Length	1000
	2000
	3000



SIS-150-NIR/AIR/IR Output Spectral Distribution



Note:Above is the output data measured by our equipment. This is not a guaranteed value.



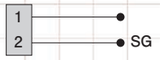
DATA

FA-100C Remote function

<External control connection>

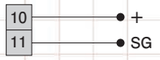
1. ON/ OFF on halogen lamp

Use this control when the lamp needs to be cycled on/off repeatedly while the other functions (light volume remote/ lamp burnout detection) are active. If pin No.1 and pin No.2 (SG) of the remote control connector are DC5V driven applied the lamp will be turn off. The lamp will turn on again once the short-circuit is released.



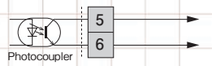
2. Light volume remote control

Switch light volume remote change to REMOTE side and apply control voltage DC0V-+5.0V between pin No.10 and pin No.11 (SG) of remote receptacle.



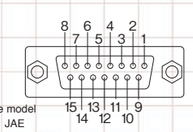
3. Halogen Lamp burnout detection

When a lamp filament is burned out or there is no lamp continuity, the red warning LED is turned ON, and the lamp burnout signal is driven to 5V between pin 5 and pin 6 of the remote control receptacle.



〈Remote receptacle〉

1-2: Halogen lamp on/off
10-11: Lamp ON/OFF remote control voltage (input) (DC 0V-5V max)
5: Lamp burn out signal output (+)
6: Lamp burn out signal output (−)



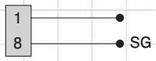
Receptacle model DA-15S-N JAE
Plug model DA-15P-N

FA-150EN / FA-100IR Remote function

〈External control function〉

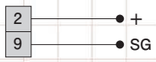
1. ON/ OFF on halogen lamp

Use this control when the lamp needs to be cycled on/off repeatedly while the other functions (light volume remote/ lamp burnout detection) are active. If pin No.1 and pin No.8 (SG) of the remote control connector are short-circuited, the lamp will be turn off. The lamp will turn on again once the short-circuit is released.



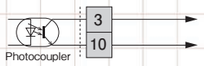
2. Light volume remote control

Switch light volume remote change to REMOTE side and apply control voltage DC0V-+5.0V between pin No.2 and pin No.9 (SG) of remote receptacle.



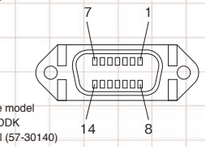
3. Halogen Lamp burnout detection (FA-100IR only)

When a lamp filament is burned out or there is no lamp continuity, the red warning LED is turned ON, and the lamp burnout signal is driven to 5V between pin 3 and pin 10 of the remote control receptacle.



〈Remote receptacle〉

1-8: Halogen lamp on/off
2-9: Lamp ON/OFF remote control voltage (input) (DC 0V-5V max)
3: Lamp burn out signal output (+)
10: Lamp burn out signal output (−)



Receptacle model 57-40140 DDK
Plug model (57-30140)

SLBX-15AS Remote function

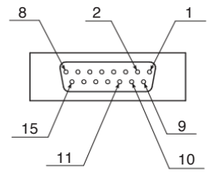
1. Light ON/OFF function

Short-circuit pin No.1 and pin No.2 of INPUT connector to turn OFF the lamp. Lamp will turn ON again once the short-circuit is released.

2. Light volume remote control

Switch light volume remote change to REMOTE side and apply control voltage DC0V-+5.0V between pin No.10(+V) and pin No.11 (GND) of INPUT connector.

INPUT connector pin alignment

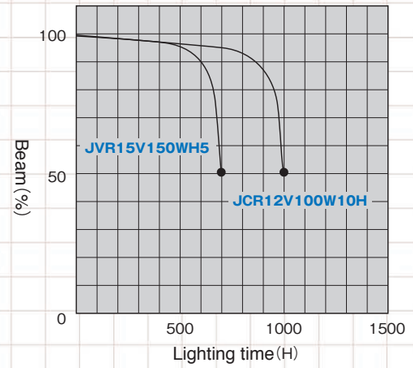


Connector: Dsub connector Female (socket) 15 cores
Note: External control I/O connector Male (pin) side is not attached

Filament life and attenuation rate of halogen lamps

This chart shows halogen lamp filament life and attenuation rate when the lamp is ON continuously under ideal conditions.

※ the life time of the halogen lamp depends upon its operating conditions and use environment (temperature, humidity, impact, dirt, draft, voltage, number of lighting cycles)

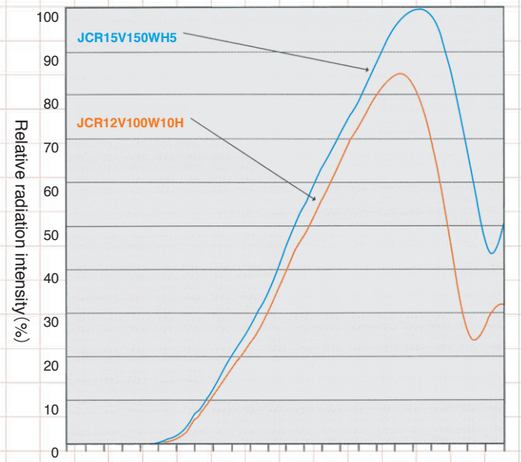


DATA

Color temp, and spectral distribution of the halogen lamp

Dichroic with reflector halogen lamp.

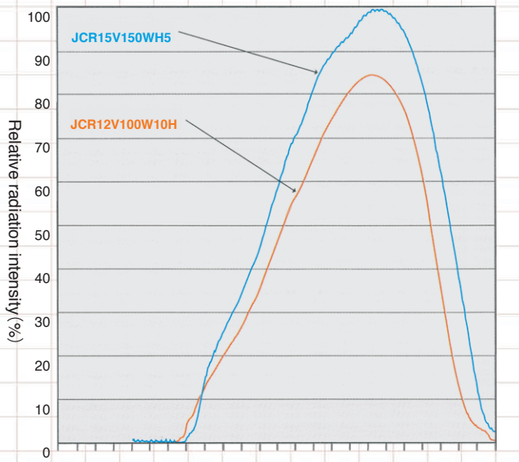
※The peak value of the intensity of JCR15V150WH5 is defined as 100%



Installing light guide (SL-B5-500)

The light source (builtin cold glass and thermally insulated filter) is installed in the light guide, SL-B5-500.

※The peak value of the radiation intensity in JCR15V150WH5 is defined as 100%



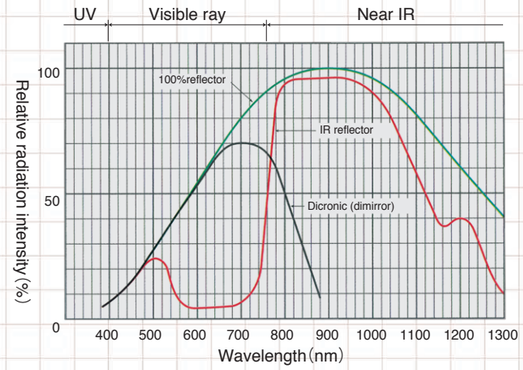
Light Intensity Chart (SL-B5-1000)

	JCR12V100W10H	JCR15V150WH5
Intensity (lx)	70100	91500
50 (mm)	100%	100%
100	27.5	28.5
150	13.5	13.5
200	8.0	8.0
250	5.5	5.5
300	4.0	4.0

Categories of reflectors and spectral distribution

The graph shows the spectral distribution of different reflectors used. The reflectors types are 100% reflectors, near IR reflectors and dichroic mirrors.

※The peak value of the relative radiation intensity of halogen lamps with 100% reflector is defined as 100%



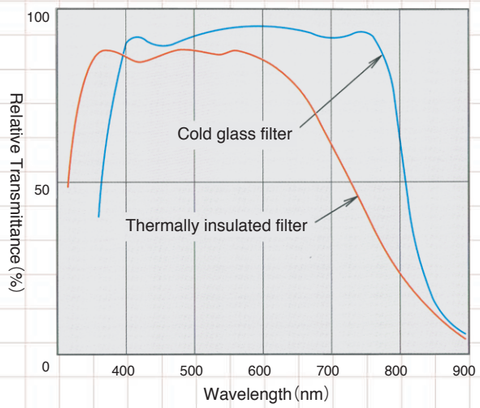
Characteristics of built-in filters

■**Thermally insulated filter**

Absorbs heat rays, transmits visible rays.
(Byname: heat-ray absorbing filter)

■**Cold glass filter**

A thin, multi-layered heat radiation reflective film. This filter transmits visible light very effectively.



Fiber Illuminator

Glass fiber

50μm diameter glass fiber for visible light. Excellent for high temperature and humidity conditions. Also useful as standard visible light source.

Plastic fiber light guide

Fiber light source with good transmission characteristics for visible light (made from poly methyl methacrylate). Excellent as a flexible fiber light source. Not recommended for high temperature applications. Price efficient product, highly cost effective.

■ Specification

[for FVL series]

Model	SLG-B6 (Glass)	SLP-B6 (Plastic)	DLG-B6 (Glass)	DLP-B6 (Plastic)
Bundle diameter	ϕ6			
Outside material	flexible SUS tube			
Minimum curve (R)	R35			
L: Length	1000			
	1500			
	2000			
	3000			

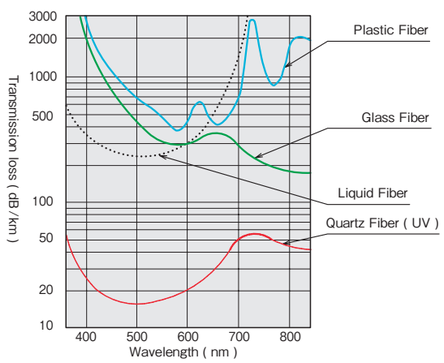
[for zoom series]

Model	SL-B5 Series	SL-B8 Series	SL-B3
Bundle diameter	ϕ5	ϕ8	ϕ3
Outside material	flexible SUS tube		
Minimum curve (R)	R50	R65	R45
L: Length	500	500	–
	750	750	–
	1000	1000	1000
	1500	1500	–
	2000	2000	2000
	3000	3000	3000

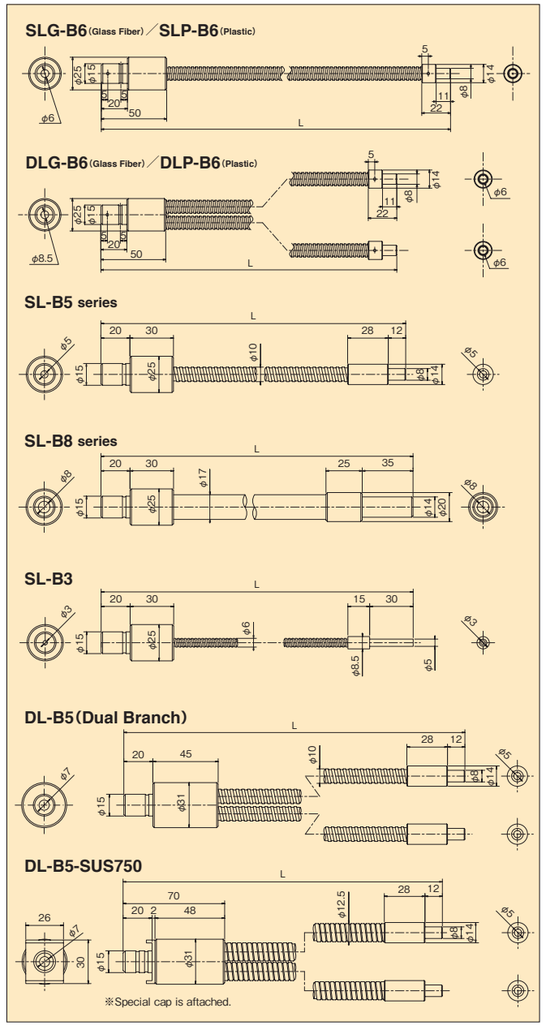
Model	DL-B5 (Dual Branch) ／ DL-B5-SUS	
Bundle diameter	ϕ5	
Outside material	Flexible SUS tube	Semi lock type
Minimum curve (R)	R50	
L: Length	500	500
	750	750
	1000	–
	1500	–
	2000	–
	3000	–

※Semi Lock type has accessories parts for the light source that are user-configurable.
※Triple Branch, Quadruple Branch also available.

■ Fiber light-guide transmission loss characteristics

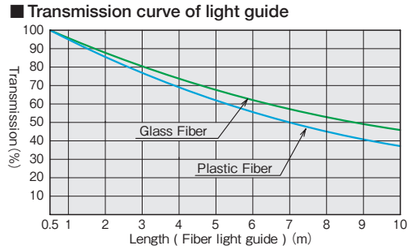






※Special cap is attached.

■ Transmission curve of light guide



Ring Light Guide

This ring illuminator can be used on any fixed magnification and zoom lens tubes. Typical applications include examining any highly contoured and channeled patterns, such as traces on PC boards.



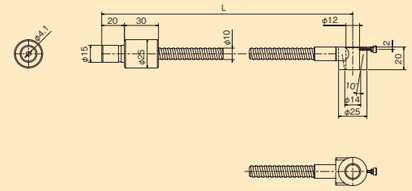
Specification

Model	HL-12 series	HL-17 series
Inner diameter	ϕ12	ϕ17
Projector size	ϕ14	ϕ20
Projector angle	10°	30°
Bundle size	ϕ4.1	ϕ5
Outside Exterior material	Flexible SUS Tube	
Minimum curve (R)	R60	
L: Length	1000	
	1500	
	2000	
	3000	

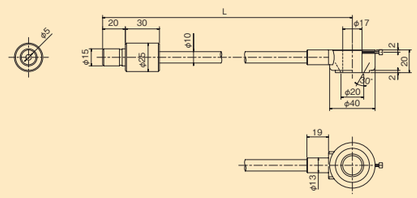
Model	HL-18 series	HL-20 series
Inner diameter	ϕ18	ϕ20
Projector size	ϕ22	
Projector angle	5°	6°
Bundle size	ϕ5	
Outside Exterior material	Flexible SUS Tube	
Minimum curve (R)	R65	
L: Length	1000	
	1500	
	2000	
	3000	

Model	HL-28 series
Inner diameter	ϕ28
Projector size	ϕ32
Projector angle	10°
Bundle size	ϕ6.2
Outside Exterior material	Flexible SUS Tube
Minimum curve (R)	R60
L: Length	1000
	1500
	2000
	3000

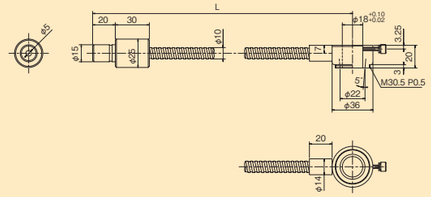
HL-12



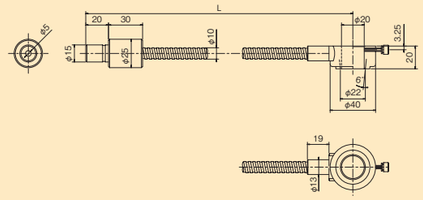
HL-17



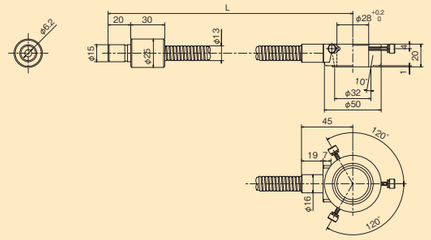
HL-18



HL-20



HL-28



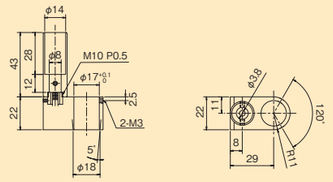
Specification

Model	HL-50 series	HL-55 series
Inner diameter	ϕ50	ϕ55
Projector size	ϕ54	ϕ58
Projector angle	15°	
Bundle size	ϕ8	
Outside Exterior material	Flexible SUS Tube	
Minimum curve (R)	R60	
L: Length	1000	
	1500	
	2000	
	3000	

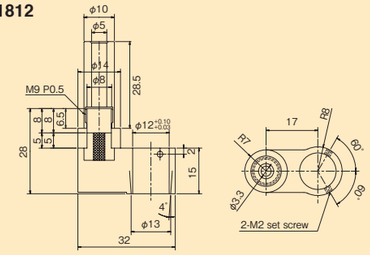
Model	VL-17 series	VL-28 series
Inner diameter	ϕ17	ϕ28
Projector size	ϕ20	ϕ32
Projector angle	10°	5°
Bundle size	ϕ5	ϕ6
Outside Exterior material	Flexible SUS Tube	
Minimum curve (R)	R50	
L: Length	1000	
	1500	
	2000	
	3000	

Model	LL-50 series
Projector length	50
Bundle size	ϕ8
Outside Exterior material	Flexible SUS Tube
Minimum Curve (R)	R60
L: Length	1000

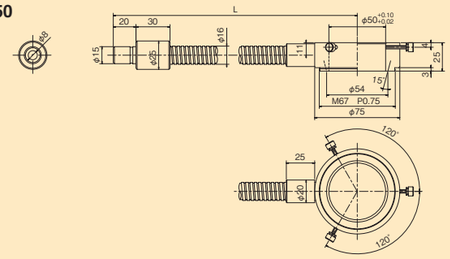
RF-2217



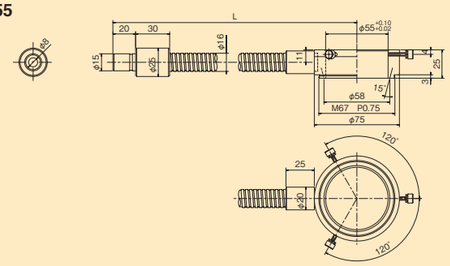
RF-1812



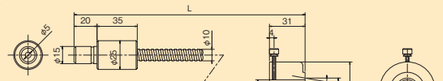
HL-50



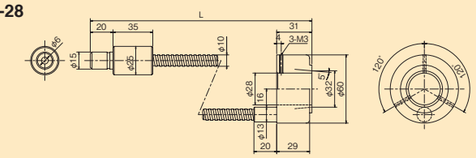
HL-55



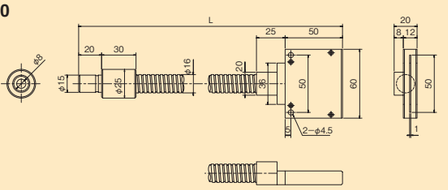
VL-17



VL-28



LL-50



Condenser Lens

The typical beam angle emanating from a fiber light guide is around 70°. These lenses are used with fiber light guides when a high intensity spot size smaller than 70°is needed. A variety of spot sizes can be achieved through the use of different lenses.

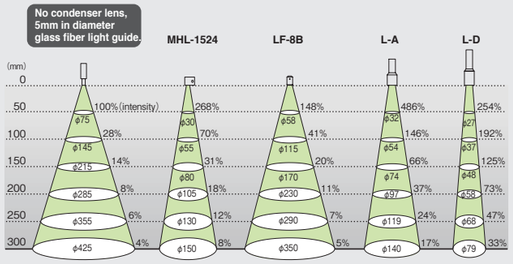


Additional information

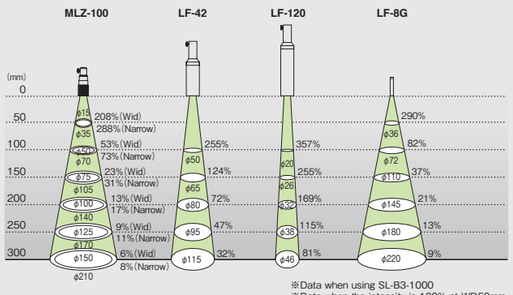
■Performance of condenser lens

※Spot size can differ depending upon the distance of the light source to the condenser lens.

referenced data

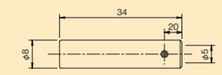


※Data when using bundle diameter of 5mm , L=1000mm light guide.
※Data when the intensity is 100% at WD50mm.

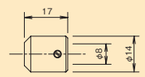


※Data when using SL-B3-1000
※Data when the intensity is 100% at WD50mm.

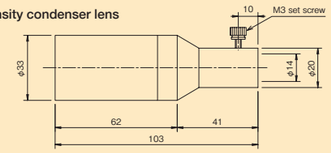
■Small diameter condenser lens
LF-8G
For SL-B3 series



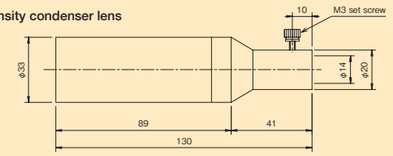
■Small diameter condenser lens
LF-8B
For SL-B5/DL-B5 series



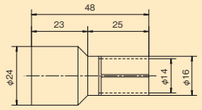
■High intensity condenser lens
LF-42



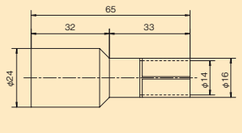
■High intensity condenser lens
LF-120



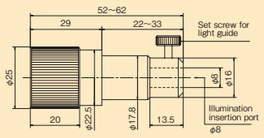
■Standard type condenser lens
L-A



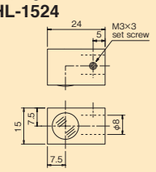
■Standard high condenser lens
L-D



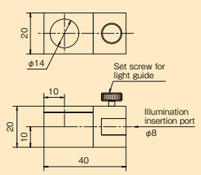
■Standard high condenser lens
MLZ-100



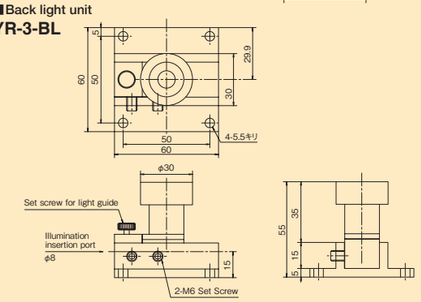
■Right Angle condenser lens for back light
MHL-1524



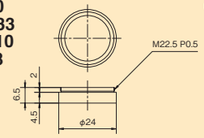
■Right Angle mirror for back light
MHL-2040



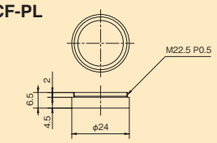
■Back light unit
YR-3-BL



■Color filter for Condenser lens
CF-R60
CF-G533
CF-B410
CF-Y48



■Polarizer filter for condenser lens
CF-PL



Accessories for Illuminators

We have accessorries to mount illuminations on focusing mount (P.64). We can build suitable system for you by combining optical unit, illumination, focusing mount and stand.



Flexible Arm

Hold straight light guide / dual light guide to fix the position of lighting.

■Specification

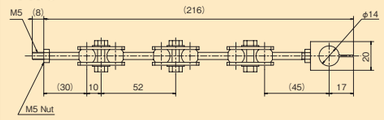
FH-3	3 joints
FH-4	4 joints
FH-5	5 joints

※different lengths are also available.

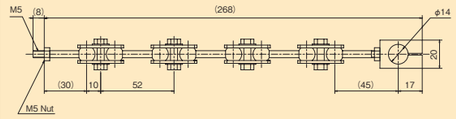
Fixing Bracket

Using with HL-AD50 to fix the position and height of ring fiber light guide or ring LED light.

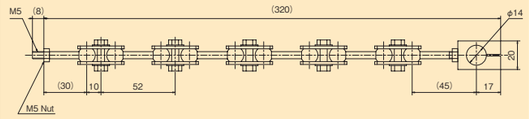
FH-3



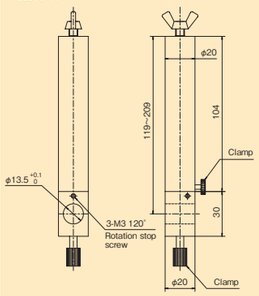
FH-4



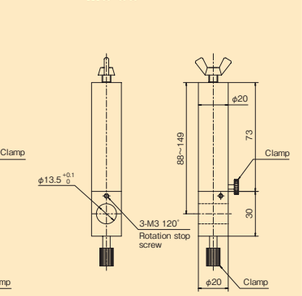
FH-5



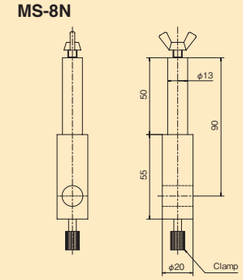
MS-8



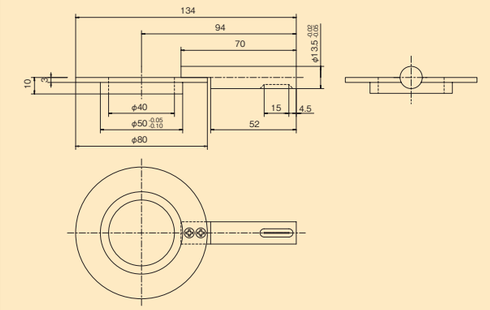
MS-8S



MS-8N



HL-AD50



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