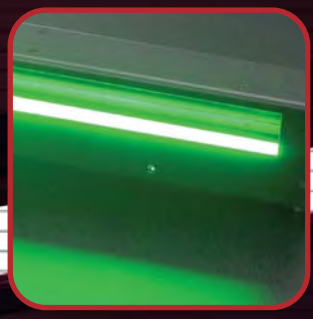
Light Sources / Fiber / LED Illuminations

MV

Machine Vision General Catalog



illumination

YSC Technologies

Tel: 510.226.0889
info@ysctech.com

2008

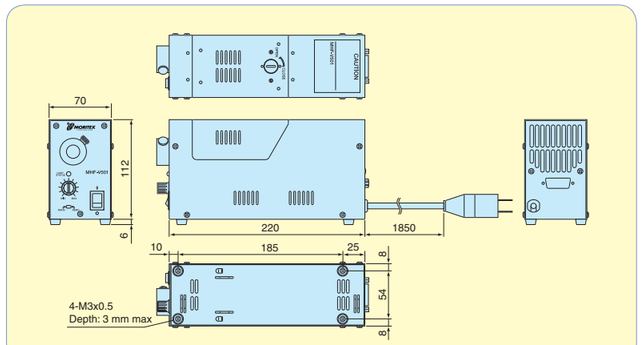
50W *Series*

RoHS Directive

MHF-V501

Compact and multifunctional 50W Halogen Lamp Light Sources at an excellent cost and great performance. This units costs the least and lasts the longest of all our Halogen Lamp Light Sources.

- Achievement of compact size, light weight, and low cost
- Equipped with a variety of security functions
- Environmentally friendly and in compliance with the RoHS Directive



Model	MHF-V501
Input Voltage	AC85V - 125V (50Hz/60Hz)
Power Consumption	125VA (max.)
Compatible Lamp(*1)	LM-50 (12.0V, 50W)
Voltage of Lamp	DC11.7V±0.2V (max.)
Average Lamp Life(*2)	2,000 hours nominal
Average Illuminance (*3)	About 19,000 Lx
Color temperature	About 3,000K
Installation Method	Horizontal installation with the bottom rubber feet of the main unit down
Weight	About 1.8kg
Operating Emperatureand Humidity	0˚C - 45˚C / 20% - 80%RH
Security	Lamp Overcurrent Detecting Function : Output the monitor signal, Cut off the lamp power, Turn On the LED on front panel (RED) Burnt-out Lamp Detecting Function : Output the monitor signal, Cut off the lamp power, Turn On the LED on front panel (RED) Internal High Temperature Detecting Function : Output the monitor signal, Cut off the lamp power
Commodity code	A-0412

OPTION

Optional Parts

Cable with external remote connector	MC-EXC-02
External remote connector	D-SUB15S
Replacement lamp	LM-50

*1 Only compatible lamps can be used.
*2 Many lamps are lit and the time measurements until their filaments blow are normally distributed. The average time from the peak time until the survival ratio of 50% is called the average life.
*3 The average illuminance is at 50 mm from the fi ber end at the maximum volume when Moritex standard light guide (MSG4-2200S) is attached.

■Special Power Supply Unit specifications

Model	MHF-V501-SO	MHF-V501-SC	MHF-V501-D	★MHF-V501-DSO	★MHF-V501-DSC
Remarks	Built-in shutter (Normally open)	Built-in shutter (Normally closed)	With external 8-bit digital dimmer	With external digital dimmer and built-in shutter (Normally open)	With external digital dimmer and built-in shutter (Normally closed)
Commodity code	A-0414	A-0413	A-0501	A-0503	A-0502

★Items made to order

*For detailed specifications, see P.I-80.

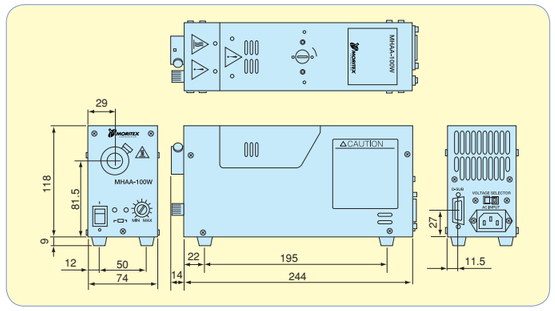
100W *Series*

RoHS Directive CE marking Worldwide power supply

MHAA-100W

The 100W Halogen light source is the most common source in its series because it exhibits excellent performance in all aspects.

- Worldwide power supply unit specifications (100/200V switch type)
- Compliance with CE Marking safety standards
- Environmentally friendly and in compliance with the RoHS Directive



Model	MHAA-100W	
Order Code	MHAA-100W-100V	MHAA-100W-200V
AC Type	100V	200V
Setting at Shipping	Input voltage selector: At 115With 2.0-meter AC cable MC-AC100A	Input voltage selector: At 230With 2.0-meter AC cable MC-AC200A
Input Voltage	AC100-120V/200-240V (50/60Hz)	
Input Voltage Switching (*1)	AC100 : Setting at 115 AC 200h	
Input Current (typ.)	2.4A (at AC 100V input) 1.2A (at AC 200V input)	
Compatible Lamp (*2)	LM-100 (12.0V, 100W)	
Lamp Voltage	DC11.7V±0.2V(max.)	
Average Lamp Life (*3)	1,000 hours nominal	
Average Illuminance (*4)	About 30,000 Lx	
Color Temperature	3,100K	
Installation Method	Horizontal installation with the bottom rubber feet of the main unit down	
Weight	About 2.0kg	
Security	Lamp Overcurrent Detecting Function : Output the monitor signal, Cut off the lamp power, Turn On the LED on front panel (RED) Burnt-out Lamp Detecting Function : Output the monitor signal, Cut off the lamp power, Turn On the LED on front panel (RED) Internal High Temperature Detecting Function : Output the monitor signal, Cut off the lamp power	
Operating Temperature and Humidity	0˚C to45˚C : Linear decrease down to 80%RH at 31˚C and50%RH at 40˚C	
Safety Standard (*5)	EN61010 : 2001 EN61000-6-2 : 2001/EN55011 : 1998, A1 : 1999, A2 : 2002	
Commodity code	A-0510	A-0516

OPTION

Optional Parts

Cable with external remote connector	MC-EXC-02
External remote connector	D-SUB15S
Replacement lamp	LM-100

*1 When the switch is set at 115V, do not apply AC 200V. Doing so may damage the power supply.
When the input voltage selector is set at 230V, the device does not run on AC 100V.
*2 Only compatible lamps can be used.
*3 Many lamps are lit and the time measurements until their filaments blow are normally distributed. The average time from the peak time until the survival ratio of 50% is called the average life.
*4 The average illuminance is at 50 mm from the fi ber end at the maximum volume when Moritex standard light guide (MSG4-2200S) is attached.
*5 This is only when the voltage is -200V.
Note: Plastics fibers may not be available.
(See the table on page I-71.)

■Special Power Supply Unit specifications (AC100V type)

Model	MHAA-100W-SO-100V	MHAA-100W-SC-100V	MHAA-100W-D-100V	★MHAA-100W-D-SO-100V	★MHAA-100W-D-SC-100V
Remarks	Built-in shutter (Normally open)	Built-in shutter (Normally closed)	With external 8-bit digital dimmer	With external digital dimmer and built-in shutter (Normally open)	With external digital dimmer and built-in shutter (Normally closed)
Commodity code	A-0512	A-0511	A-0513	A-0515	A-0514

★Items made to order

*For detailed specifications, see P.I-80.

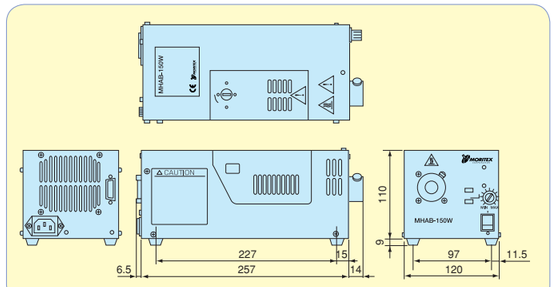
150W *Series*

MHAB-150W

RoHS Directive | CE marking | Worldwide power supply | Lamp dual wattage | Linear dimmer (Optional)

150W Halogen light source of dual wattage, designed for 150W but also available for 100W if a 100W lamp is attached. The irradiation is the most powerful among the Halogen light source series. This high-performance model can be provided with an external linear dimmer function (option).

- High illuminance model max 80,000 Lux
  (2.6 times a 100W light source)
- 100W/150W lamp dual wattage
- External linear modulation option
- Environmentally friendly and in compliance with the RoHS Directive
- Worldwide power supply unit specifications



Model	MHAB-150W	
Order Code	MHAB-150W-100V	MHAB-150W-200V
AC Type	100V	200V
Setting at Shipping	With 2.0-meter AC cable MC-AC100A	With 2.0-meter AC cable MC-AC200A
Input Voltage	AC100V-240V(50Hz/60Hz)	
Compatible Lamp (*1)	LM-150 LM-150C LM-100	
Lamp Voltage	DC 14.7V±0.2V (max.)(LM-150 LM-150C) DC 11.7V±0.2V(max.)(LM-100)	
Average Lamp Life (*2)	50 hours (LM-150), 500 hours (LM-150C), and 1,000 hours (LM-100) nominal	
Average Illuminance (*3)	About 80,000 lx (LM-150), 45,000 lx (LM-150C), and 30,000 lx (LM-100)	
Color Temperature	3,400K(LM-150) 3,200K(LM-150C) 3,100K(LM-100)	
Installation Method	Horizontal installation with the bottom rubber feet of the main unit down	
Weight	About 3.2kg	
Operating Temperature and Humidity	0°C to 45°C : Linear decrease down to 80% RH at 31°C and 50% RH at 40°C	
Security	Lamp Overcurrent Detecting Function : Output the monitor signal, Cut off the lamp power, Turn On the LED on front panel (RED) Burnt-out Lamp Detecting Function : Output the monitor signal, Cut off the lamp power, Turn On the LED on front panel (RED) Internal High Temperature Detecting Function : Output the monitor signal, Cut off the lamp power	
Safety Standard (*4)	EN61010:2001 EN61000-6-2:2001/EN55011:1998:A1:1999:A2:2002	
Commodity code	A-0520	A-0526

OPTION

Optional Parts

Cable with external remote connector	MC-EXC-02
External remote connector	D-SUB15S
Replacement lamp	LM-100, LM-150, LM-150C

*1Only compatible lamps can be used.
*2Many lamps are lit and the time measurements until their filaments blow are normally distributed. The average time from the peak time until the survival ratio of 50% is called the average life.
*3The average illuminance is at 50 mm from the fiber end at the maximum volume when Moritex standard light guide (MSG4-2200S) is attached.
*4This is only when the voltage is -200V.
Note: Plastic fibers may not be available.

■Special Power Supply Unit specifications (AC 100V type)

Model	MHAB-150W-C-100V	★MHAB-150W-SO-100V	★MHAB-150W-SC-100V	MHAB-150W-D-100V	★MHAB-150W-D-SO-100V	★MHAB-150W-D-SC-100V	★MHAB-150W-LI-100V
Remarks	Long life type	Internal shutter attached (normal open)	Internal shutter attached (normal close)	With external digital dimmer	External digital modulation & internal shutter attached (normal open)	External digital modulation & internal shutter attached (normal close)	Linear dimmer type
Commodity code	A-0521	A-0529	A-0528	A-0522	A-0531	A-0530	A-0523

★Items made to order

*For detailed specifications, see I-80.

Infrared 100W Halogen Lamp Light Sources

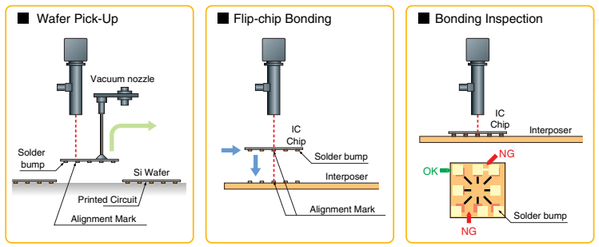
MHAB-100W-IR

- Irradiation of Silicon transmission wavelength (1127 nm or more)
  (Patent pending)
- Radiation mechanism by unique technology

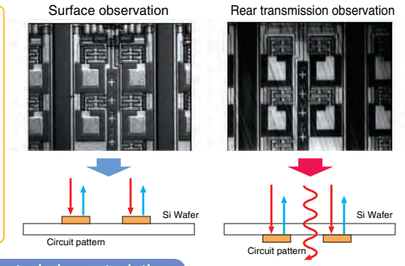
This light source contains know-how accumulated over many years and is the global standard in light sources for monitoring of invisible images.
Furthermore, besides Si, use is also possible for compound semiconductor GaAs and SAW filter LiNb03LiTa03.

RoHS Directive | CE marking | Worldwide power supply

Example application

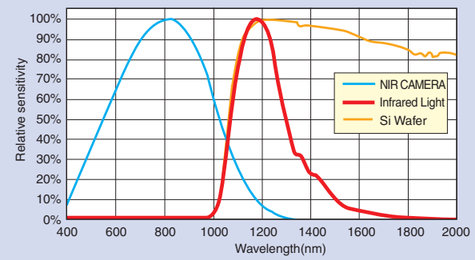


Infrared coaxial transmission observation



Model	MHAB-100W-IR	
Order Code	MHAB-100W-IR-100V	MHAB-100W-IR-200V
AC voltage	100V	200V
Setting at Shipping	AC cable: MC-AC100A-2 with OM	AC cable: MC-AC200A-2 with OM
Input voltage	AC100V-240V(50Hz/60Hz)	
Compatible Lamp (*1)	LM-100-IR(12.0V/100W)	
Voltage of Lamp	DC 10.7±0.2V(max.)	
Average Lamp Life (*2)	1,000 hours nominal	
Installation	Horizontal insulation on the rubber supports at the bottom of the unit	
Weight	——	
Standard Function	Manual dimmer/External control dimmer/External analog dimmer	
External Size	W120 x H110 x D257mm*3	
Commodity code	A-0524	A-0527

Spectral characteristics



*1Only compatible lamps can be used.
*2Many lamps are lit and the time measurements until their filaments blow are normally distributed. The average time from the peak time until the survival ratio of 50% is called the average life.
*3Projections are not included.

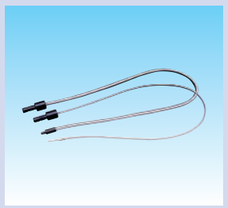
Accessories for IR Systems

●Spare Lamp

Model	LM-100-IR
Specification	IR refiection coating For 100W
Commodity code	A-8216

●Lens Series for IR System

Model	MML4-80D-IR	MML6-80D-IR	MML8-80D-IR
Specification	Lens for IR Magnification 4x 6x 8x		
Commodity code	A-0235	A-0236	A-0237



●Heat resistant light guide

Model	MSG4-1100S-HR
Specification	Heat resistant specification Light guide
Commodity code	A-0637

Note: Only heat-resistant light guides can be used.

●Camera for infrared light

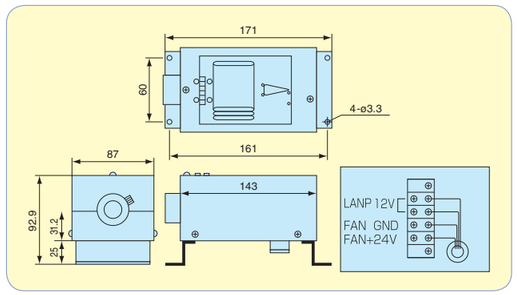
Model	MC-781P-0030
Specification	2/3" 780Hx488pix NIR sensitivity
Commodity code	A-0346

Lamp House

50W/100W Type

RoHS Directive

This lamp house is small and lightweight since it does not have a power supply unit. This unit is ideal when there is not enough room to install a lamp housing and power supply together. The compact lamp house can be installed with the voltage driving the lamp and cooling fan remotely supplied.



Model	MHF-LH50	MHF-LH100
Compatible Lamp (*1)	LM-50	LM-100
Lamp Rated Voltage/ Wattage	DC12V/50W	DC12V/100W
Fan Rated Voltage/ Current	DC24V/90mA(max.)	
Average Lamp Life (*2)	About 2,000 hours nominal	About 1,000 hours nominal
Average Illuminance (*3)	About 20,000Lx	About 32,000Lx
Color Temperature	3,000K	3,100K
Installation Method	Horizontal installation with the bottom brackets of the main unit down	
Weight	0.8kg	
Operating Temperature and Humidity	0˚C-45˚C / 20%-80%RH	
Commodity code	A-0466	A-0468

OPTION

Optional Parts

Replacement lamp	LM-50	LM-100
Commodity code	A-8203	A-8213

*1-ard light guide (MSG4-2200S) is attached

RS-485

RS-485 Communication Unit
MCGA-204D

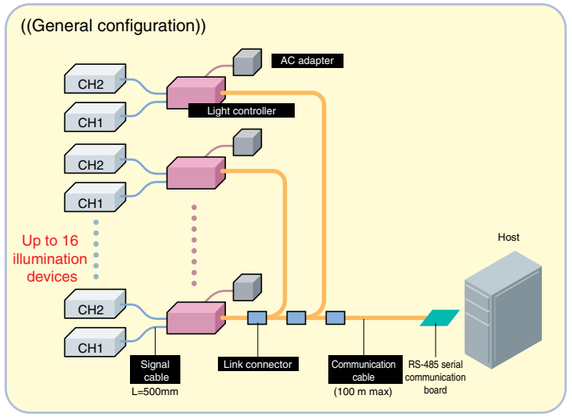
RoHS Directive
CE marking

Light controller for the batch control of Moritex standard light sources and power supplies by RS-485 communication

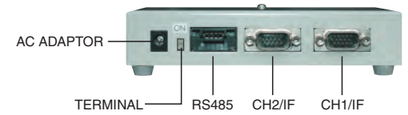
- Single unit for controlling one or two channels
- Batch control of up to 16 channels by unit connection
- Standard light sources and power supplies connectable

(Some old models not supported)

((General configuration))



Communication Specifications	
Communication Interface	RS-485
Communication System	Asynchronous, simplex
Transmission Speed	115.2 (19.2–115.2) Kbps



◆ Capable of connecting Moritex standard light sources and power supplies

Halogen Light Source
MHF-V501 Series
MHAA-100W Series
MHAB-150W Series
MHAB-100W-IR

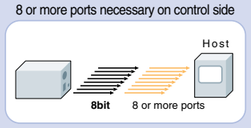
LED Power Supply
MLEK-A/B Series (1 and 2 channels)
MLEP-A (Conversion plug essential for 3 channels)
MLED-G02512LRD
MLED-E00811L (Supporting illumination ON/OFF only)

Model	Item	Commodity code
MCGA-204D	RS-485 light controller	A-1600
MCBB-24W-100V	AC adapter(100V)	A-1601
MC-EXC-08	Signal cable L=500mm	A-8230
MU-EXC-01	Communication cable L=10m	A-9004
MU-CON-01	Link connector (2 pcs.)	A-1602

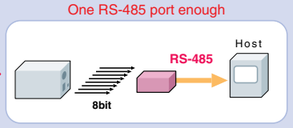
◆ Advantages of RS-485

External control by 8 digital bits

8 or more ports necessary on control side

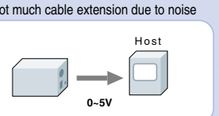


One RS-485 port enough

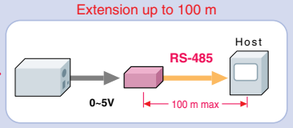


External control by analog (DC 0V- 5V)

Not much cable extension due to noise

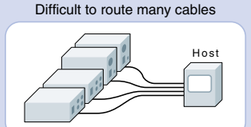


Extension up to 100 m

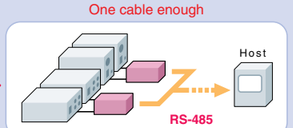


Control of multiple light sources and power supplies

Difficult to route many cables

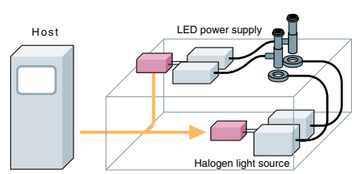


One cable enough

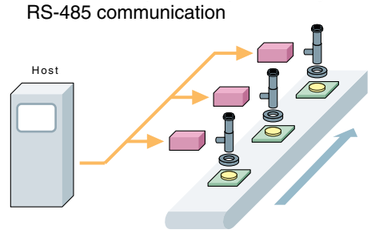


◆ Example of application

■ Halogen light source and LED power supply control by RS-485 communication

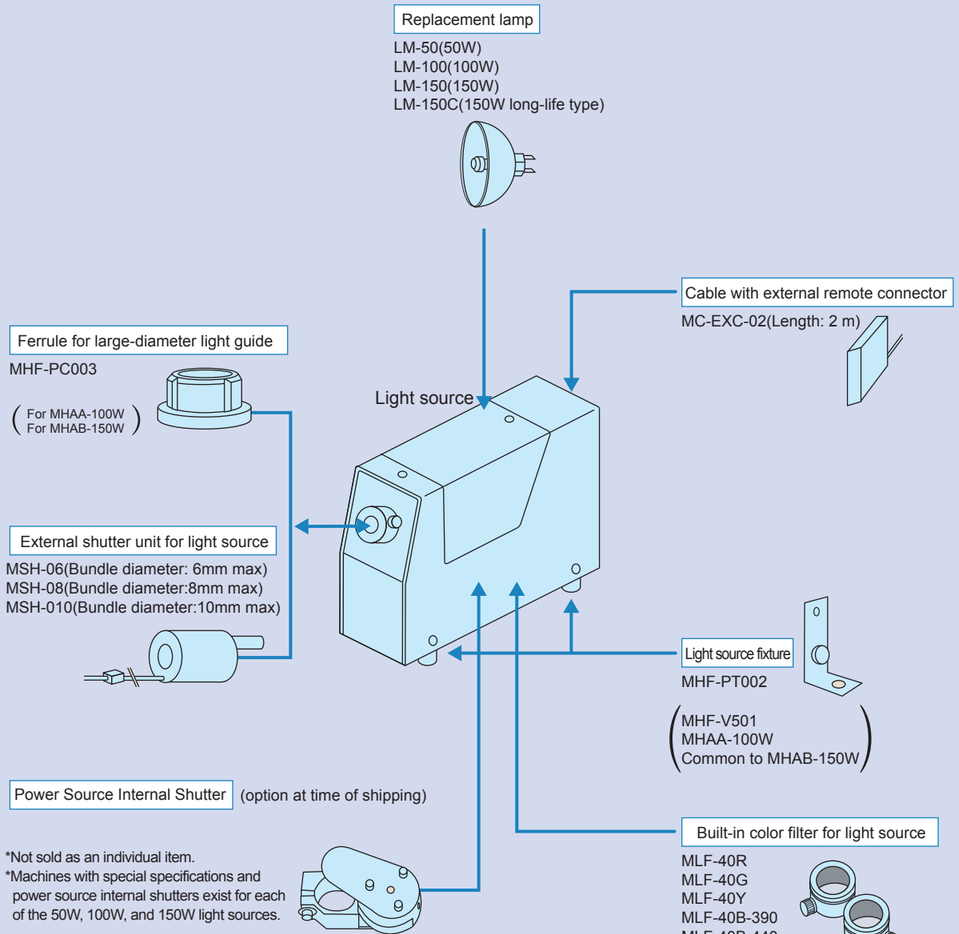


■ Batch control of production processes by RS-485 communication



Option

Option Attachment Drawing for Halogen Lamp Light Sources



*Not sold as an individual item.
*Machines with special specifications and power source internal shutters exist for each of the 50W, 100W, and 150W light sources.

◎ For the light source compatibilities, specifications, prices, and commodity codes of the options, see the corresponding pages.

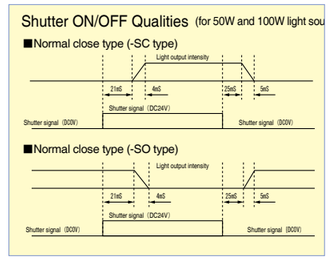
Light Source Equipment Option

Light Source Internal Shutter

Made to order Product (optional at time of shipping)

■ Internal type means that installation space is not necessary.
■ Achievement of a long lifespan that averages the shutter being opened and closed 50 million times.
■ Independent opening and closing is possible regardless of modulation function.
■ Either opening or closing for the shutter can be chosen when voltage is superimposed.

* Not sold as an individual item.
* Machines with special specifications and Power Supply Unit internal shutters exist for each of the 50W, 100W, and 150W light sources.



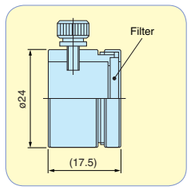
■ Specifications
●Operation input voltage: DC 24V 0.32A
●Shutter response speed

		50W, 100W	150W
Normal open	Closed	25mS	33mS
	Open	30mS	
Normal Closed	Open	25mS	
	Closed	30mS	

* Response speed for a fiber with a diameter of 4 mm when no protective diode exists.
●Average lifespan for opening and closing of the shutter is approximately 50 million times (average for tests performed by Moritex).
* The opening and closing speed of the shutter may vary slightly depending on the capabilities of the power supply unit being used.

(Attachment of the model number for ordering)
(Example) When a normal open shutter is attached to MHAA-100W-100V: MHAA-100W-SO-100V

Light source internal color filter Made to order



Model	MLF-40R	MLF-40G	MLF-40Y	MLF-40B-390	MLF-40B-440	MLF-40B-460
color	Red	Green	Yellow	Bluish purple	Blue	Light blue
Peak wavelength (nm)	600	533	480	390	440	460
Commodity code	A-8247	A-8248	A-8249	A-8250	A-8251	A-8252

*Attach the filter to the light guide retainer inside the light source as if covering it.
*This filter cannot be used together with a built-in shutter.

MHF-PT002

Light Source Fixture
(4 pcs./set)

Model	MHF-PT002
Commodity code	A-8200

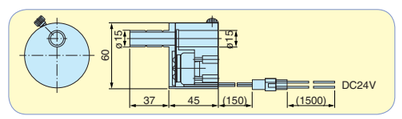
*Contact Moritex about the mounting dimensions.

External Shutter Unit for Light Source Normally open

(Production by order) ※150W光源には使用できません。

Model	MSH-06	MSH-08	MSH-010
Applicable Model	Bundle diameter: 6mm max	Bundle diameter: 8mm max	Bundle diameter: 10mm max
Commodity code	A-8236	A-8237	A-8238

* The standard shutter is closed when 24V is applied.
* Contact Moritex about the specifications for the normally closed type shutter.

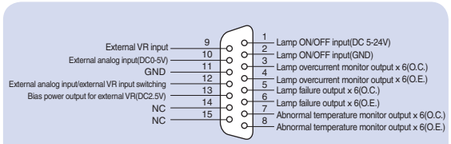


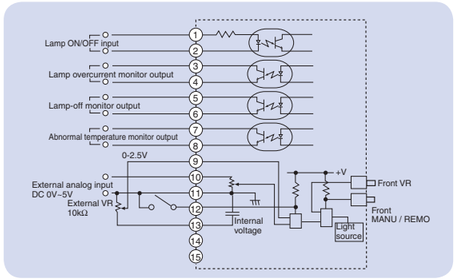
Halogen Lamp Series : Dedicated high, reliability Halogen lamps

	LM-50	LM-100	LM-150	LM-150C
Power consumption	50W	100W	150W	150W
Lamp voltage	DC11.7V	DC11.7V	DC14.7V	DC14.7V
Lamp current	4.2A	8.4A	10A	10A
Average lamp life *1	2,000 hrs nominal	1,000 hrs nominal	50 hrs nominal	500 hrs nominal
Average luminosity *2	About 19,000Lx	About30,000Lx	About80,000Lx	About45,000Lx
Color temperature	3,000°K	3,100°K	3,400°K	3,200°K
Commodity code	A-8203	A-8213	A-8220	A-8221

*1 Many lamps are lit and the time measurements until their filaments blow are normally distributed. The average time from the peak time until the survival ratio of 50% is called the average life.
*2 The average illuminance is at 50 mm from the fiber end at the maximum volume when Moritex standard light guide (MSG4-2200S) is attached.

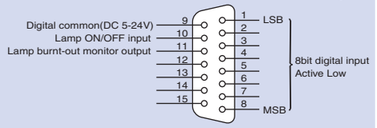
External Analog Control Connection Specifications



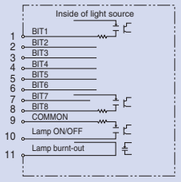


External 8-bit Digital Control Connection Specifications

●External cable side connector connection diagram



●Connection specifications and how to switch modes



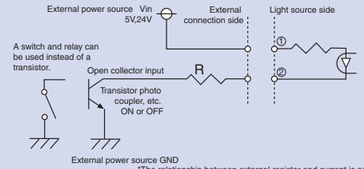
●Control truth table

LAMP ON/OFF	LAMP monitor	BIT8	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	Lamp output
0	0	◊	◊	◊	◊	◊	◊	◊	◊	OFF (off)
1	1	◊	◊	◊	◊	◊	◊	◊	◊	Lamp burnt-out
1	0	0	0	0	0	0	0	0	0	ON (min.)
1	0	0	0	0	0	0	0	0	1	ON
1	0	0	0	0	0	0	0	1	0	ON
1	0	0	0	0	0	0	0	1	1	ON
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
1	0	1	1	1	1	1	1	0	1	ON
1	0	1	1	1	1	1	1	1	0	ON
1	0	1	1	1	1	1	1	1	1	ON (max.)

Note X: ON/OFF can be selected 0: Low 1: High

Example of Signal I/O Circuit Connection

●Signal input circuit connection example (lamp ON/OFF signal)



*The relationship between external resistor and current is as follows.
Use a resistor of 1/4W or greater capacity.

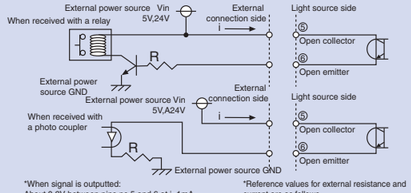
Operation

ON	Unlit
OFF	Lit

Both for transistor and switch

Vin	R(Ω)	Current
DC5V	0	About 12mA
DC24V	3.3~4.7k	About 7mA at 3.3k and 5mA at 4.7k

●Signal output detection circuit connection example (lamp burnt-out signal)



*When signal is outputted:
About 0.2V between pins no.5 and 6 at Ii=1mA
About 1V between pins no.5 and 6 at Ii=5mA.

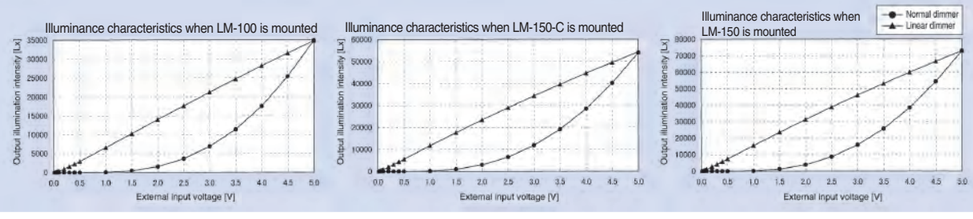
Signal	Between pins (5) and (6)	Current
Lamp normal	Not conducted	Off
Lamp burnt-out	Conducted	On

*Reference values for external resistance and current are as follows.
Use resistance of 1/4W or more.

Vin	R(Ω)	Current I (mA)
DC5V	1~3.3k	About 1 to 4
DC24V	4.7~22k	About 1 to 5

◎The resistance and current values differ depending on the parts. Check the values well before use.

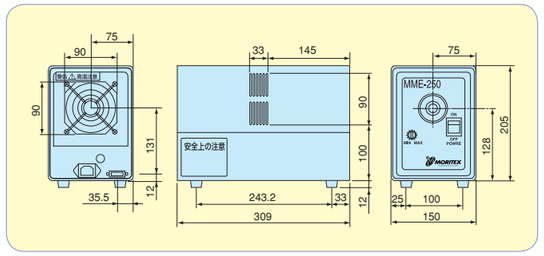
Linear Intensity Control Characteristics(MHAB-150W-LI only)



Option

Metal Halide Light Source
250W *Type*
MME-250

By using this high powered light source with Moritex's glass fiber light guides, high intensity illumination with high color temperature can be obtained. A DC power supply lighting system was employed to reduce the ripples in light intensity. Because it supplies flicker-free powerful light, this light source is ideal for high speed image processing requiring high illuminance.



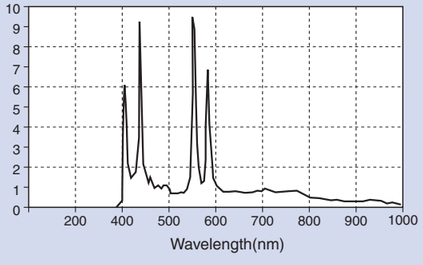
Model	MME-250
Lamp Power Consumption	250W
Input voltage	AC90V-110V (50/60Hz)
Power consumption	About 330W
Average lamp life	2,000 hours nominal (40% or less of the initial luminous energy)
Illuminance (*1)	270,000Lxor more
Color temperature	7,500K
Dimmer System	Manual or external 8-bit digital dimmer
Protection Function	Output off in case of abnormal temperature
Installation Method	Horizontal installation with the bottom rubber feet of the main unit down
Weight	About 6.0 kg
Service temperature and humidity	5˚C- 35˚C / 70%RH max
Commodity code	A-0489
(Optional Parts)	
Replacement Lamp	MH-250-7500
Commodity code	A-8265

*1 The value was converted under the same conditions as the Halogen light source series.

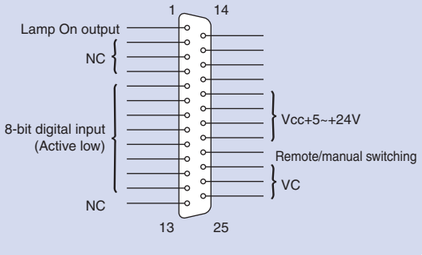
Features

- High-fidelity reproduction of white, blue, and green is possible because the light spectrum is close to that of the sun.
- Cone plate for light flux not hollow
- Optimum for high-speed image processing with flicker-free DC power Metal Halide lamp
- Preset lamp easy to replace
- No-step adjustment of the luminous energy from 0 to 100%
- External 8-bit digital dimmer
- Twin-mirror system to condense all light fluxes to a fiber efficiently
- Reducing illuminance irregularity on the fiber incident surface by using a hexagonal rod lens

Spectral Characteristic Data



External Remote Connection Diagram



◎ The 250W Metal Halide power supply does not accept a plastic fiber. Specify a glass fiber that withstands heat of 300°C at the end face. (The light guide code ends with -HR.)

Metal Halide Light Source

Light Guide

Light Guide

Moritex develops and manufactures composite glass fiber and quartz fiber from wires.
Light guides contain bundles of many fiber strands, each a mere 50um or greater, which are assembled into a variety of emission forms. When combined with light source equipment, high brightness illumination is possible with no noise and no heat.

Light Guide Selection Point

A more compact illumination area is desired.

Fiber wires and bundle diameter are modified in accordance with the desired external form, and manufacturing is performed according to the unique specifications of the customer.

Intensity of light is desired.

It is desired to perform irradiation with stable light with few changes as time passes.

It is desired to irradiate all wavelength ranges of visible light.

Our customers can select the lighting that they require most from our rich line up of lighting equipment, which includes halogen light sources and metal halide light sources. Furthermore, spot illumination by high intensity light from a far distance is made possible by the attachment of a condenser lens.

It is desired to avoid the effect of heat.

The light source device (heat source) of the light guide can be placed at any location specified by the customer. The fiber has a low transmission rate for heat range wavelengths, resulting in a material that reduces the transmission of heat.

Directional light (direct light) is desired.

Straight line light is irradiated by NA from light guides. The Na differs depending on the material of the wire.

*Composite glass and plastic do not transmit wavelengths in the ultraviolet range.
*When wavelengths in the infrared range are necessary: composite glass fiber + heat resistant specifications are used.
*Normal specifications are not heat resistant because the infrared range is heat rays. Please contact your sales representative for details.

Irradiation of ultraviolet rays and infrared rays is desired.

(Special usage light guide)
When wavelengths in the ultraviolet range are necessary: use quart fiber wires. P. I-106

*Consult your Moritex sales representative when using light guides in cable bearers or other similar equipment.
*Refer to P. I-71 for details regarding combination with light sources.

Light Guide

Moritex develops and manufactures multi-component glass and quartz light guides from its own drawn raw fibers. Many fibers as thin as only 50um each are bundled and assembled in light guides of diffferent shapes. When combined with light source devices, the light guides enable high intensity illumination free of noise and heat.

Points of light guide selection

- Making the illumination area small

The fiber size (element wire) and bundle diameter can be changed for manufacturing according to the customer's unique specifications

- Obtaining greater luminous energy
- Making illumination stable with few changes
- Covering the entire wavelength range of visible light

Customers can select the necessary light source from our lineup that includes Halogen and Metal Halide light sources. Additional condensing lenses can be attached for focused or spot illumination providing power light from a remote source.

*When using a light guide for a cable pair, consult the sales department of Moritex.
*See page I-7 for combinations with light sources.

- Avoiding the influence of heat

A light guide allows the light source unit to be positioned at the customer's desired location. A fiber does not conduct heat well because its wavelength transmissivity is low in the heat range.

- Obtaining directive light

A light guide transmits light of different NA through the fiber material. This is optimal for illuminating a sample with directed light.

- Irradiating Ultraviolet and Infrared light using specific light guides for special purposes

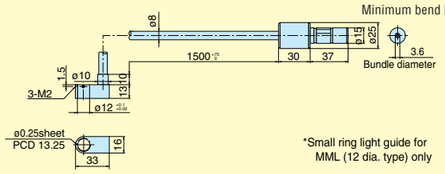
For ultraviolet light: Use a quartz fiber (page I-106)

*Multi-component glass or plastic fibers do not conduct an ultraviolet ray.
*For infrared ray: Use a heat-resistant Multi-component glass fiber.
*An ordinary glass fiber does not have heat resistance to an infrared ray that generates heat. For details, consult the sales department.

Ring Light Guides

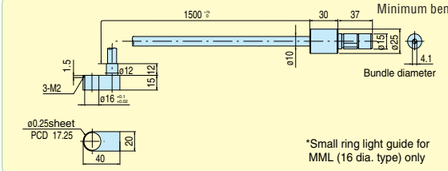
Illumination from 360˚ produces uniform light. These light guides are optimum for CCD camera and microscope inspections.

MRP12-1500V



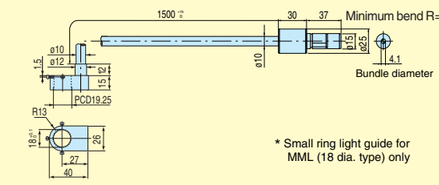
*Small ring light guide for MML (12 dia. type) only

MR P16-1500V



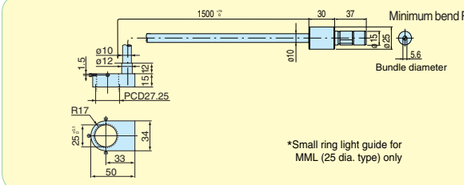
*Small ring light guide for MML (16 dia. type) only

MRP18-1500V



* Small ring light guide for MML (18 dia. type) only

MRP25-1500V

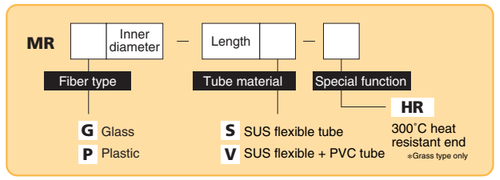


*Small ring light guide for MML (25 dia. type) only

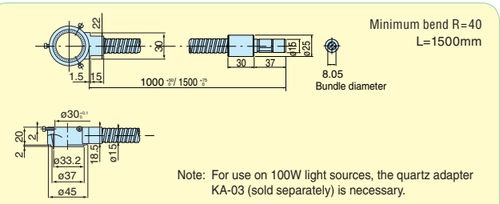
Model	Commodity Code
MRP12-1500V	A-0600
MRP16-1500V	A-0601
MRP18-1500V	A-0617
MRP25-1500V	A-0618
MRP30-1500V	A-0619
MRG25-1500S	A-0602
MRG31-1000S	A-0603
MRG31-1500S	A-0604
MRP31-1000S	A-0605
MRP35-1500S	A-0606

Model	Commodity Code
MRG40-1500S	A-0607
MRG48-1000S	A-0608
MRG48-1500S	A-0609
MRG53-1000S	A-0610
MRG53-1500S	A-0611
MRG61-1000S	A-0612
MRG61-1500S	A-0613
MRG75-1000S	A-0614
MRG75-1500S	A-0615

Model explanation

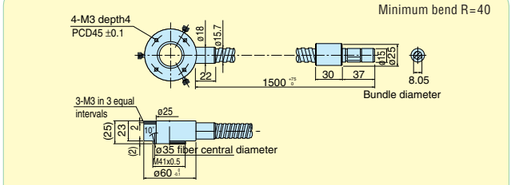


MRP30-1500V

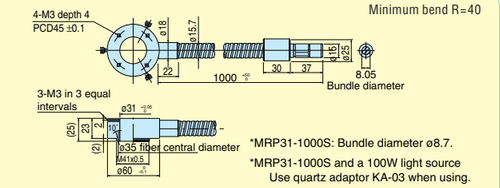


Note: For use on 100W light sources, the quartz adapter KA-03 (sold separately) is necessary.

MRG25-1500S

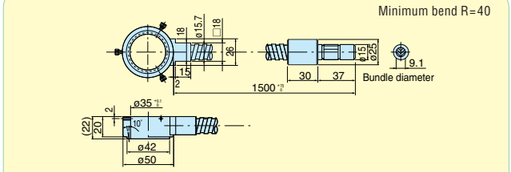


MRG31-1000S MRG31-1500S MRP31-1000S



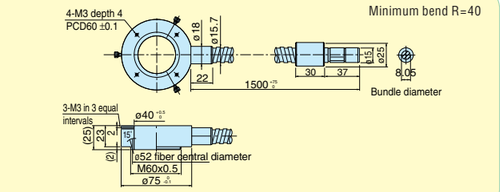
*MRP31-1000S: Bundle diameter ø8.7.
*MRP31-1000S and a 100W light source Use quartz adaptor KA-03 when using.

MRP35-1500S

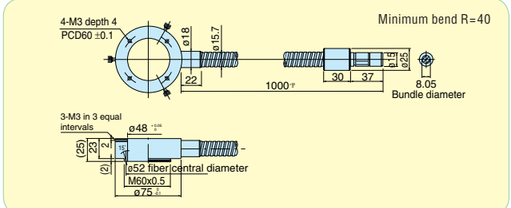


*Use quartz adaptor KA-03 when using a 100W light source.

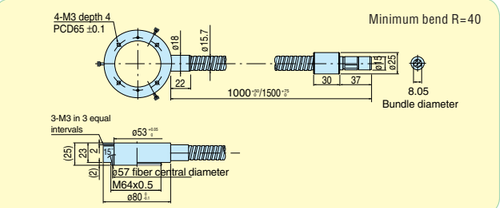
MRG40-1500S



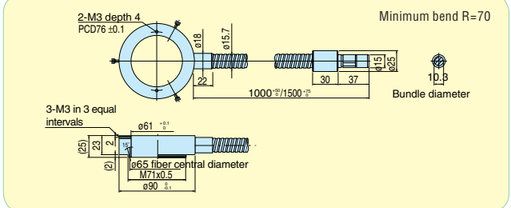
MRG48-1000S MRG48-1500S



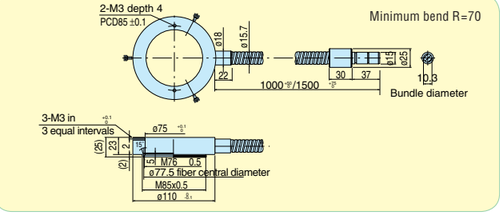
MRG53-1000S MRG53-1500S



MRG61-1000S MRG61-1500S

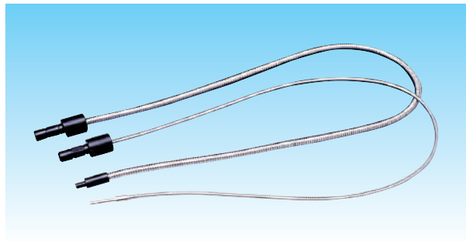


MRG75-1000S MRG75-1500S



Straight Light Guide

In addition to our standard straight type light guides, many different options are available such as random sequence, heat resistant, and small diameter types. These light guides are ideal for spot and coaxial illumination. Select a product to fit your application.

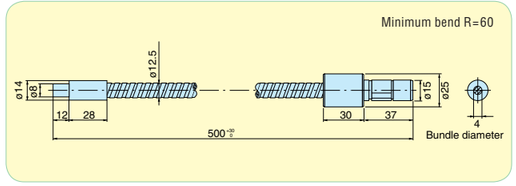


Model explanation

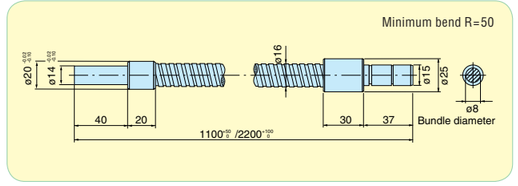
MS [Fiber type] [Bundle diameter] — Length L [Tube material] — [Special function]

Fiber type	Bundle diameter	Tube material	Special function
G Glass	3 ø3	R Interlocking tube	HR 300°C heat resistant end ※Grass type only
P Plastic	4 ø4	S SUS flexible tube	SD Small diameter type
	6 ø6	V SUS flexible + PVC tube	RM Random sequence
	8 ø8		
	10 ø10		

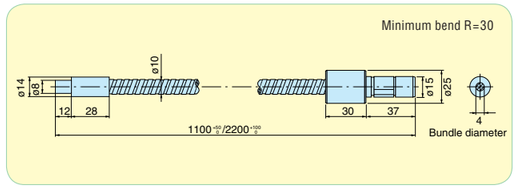
MSG4-500R(Interlocking type)



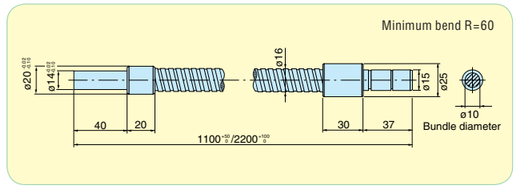
MSG8-1100S MSG8-2200S



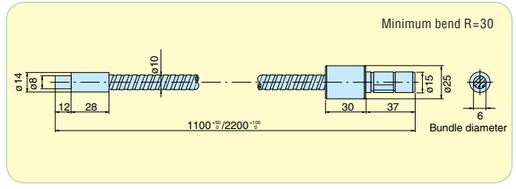
MSG4-1100S MSG4-2200S MSP4-1100S MSG4-1100S-RM MSG4-2200S-RM



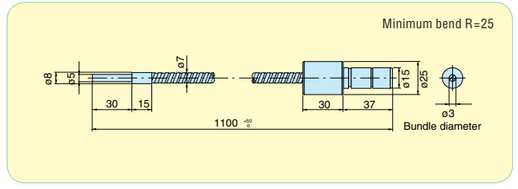
MSG10-1100S MSG10-2200S



MSG6-1100S MSG6-2200S MSG6-1100S-RM MSG6-2200S-RM



MSG3-1100S-SD



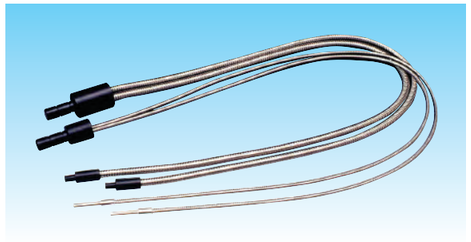
Model	Commodity Code
MSG3-1100S-SD	A-0622
MSG4-500R	A-0623
MSG4-1100S	A-0624
MSP4-1100S	A-0625
MSG4-2200S	A-0626

Model	Commodity Code
MSG4-1100S-RM	A-0627
MSG4-2200S-RM	A-0628
MSG6-1100S	A-0629
MSG6-2200S	A-0630
MSG6-1100S-RM	A-0631

Model	Commodity Code
MSG6-2200S-RM	A-0632
MSG8-1100S	A-0633
MSG8-2200S	A-0634
MSG10-1100S	A-0635
MSG10-2200S	A-0636

2-Branch Light Guide

Use these light guides for applications where lighting from two directions is needed, like when using a microscope or CCD camera or for pattern recognition. Coatings and tube materials can be selected to fit your purpose. Interlock type tube material allows you to bend the type as needed and fix it in place. SUS flexible ("goose neck") type tube material allows you to move the light guide around freely in a small space. Small diameter type light guides with a smaller minimum bend radius are also available. The standard bundle diameter is 4mm, but other diameters can be provided.

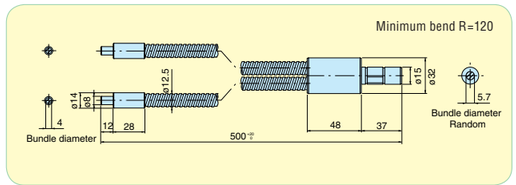


Model explanation

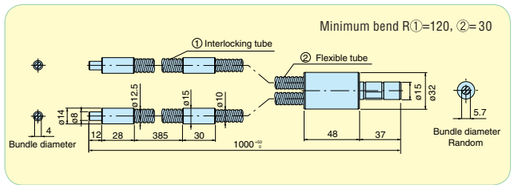
MW [Fiber type] — Length [Tube material] — [Special function]

Fiber type	Tube material	Special function
G Glass	R Interlocking tube	HR 300°C heat resistant end ※Grass type only
P Plastic	S SUS flexible tube	SD Small diameter type
	V SUS flexible + PVC tube	L L-shape type
	SR SUS flexible + interlock	

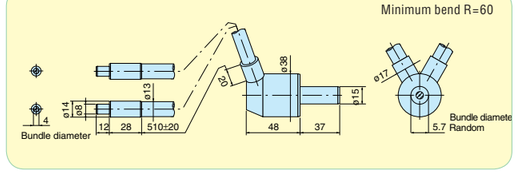
MWG-500R(Interlocking type)



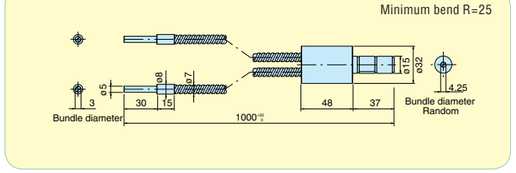
MWG-1000SR



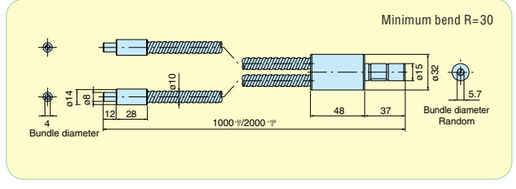
MWG-L-650R(Interlocking type)



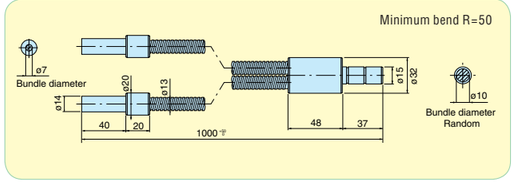
MWG-1000S-SD



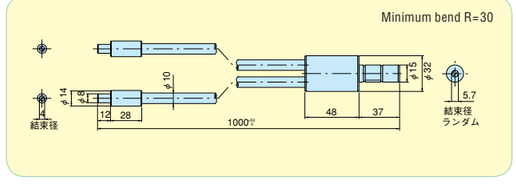
MWG-1000S MWG-2000S



MWG7-1000S



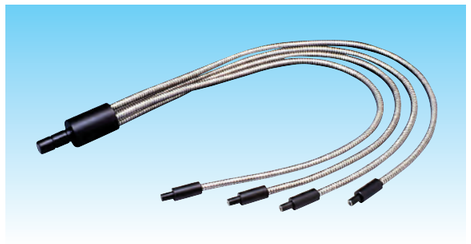
MWG-1000V MWP-1000V



Model	Commodity Code
MWG-500R	A-0647
MWG-L-650R	A-0648
MWG-1000S	A-0649
MWG-2000S	A-0650
MWG-1000V	A-0651
MWP-1000V	A-0652
MWG-1000SR	A-0653
MWG7-1000S	A-0654
MWG-1000S-SD	A-0655

Multiple Branch Light Guide

A multifurcated light guide has three or four fiber bundle terminations. These light guides are ideal when illuminating an object from many different angles, such as in the case of IC pin inspection.

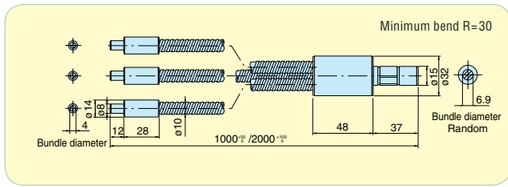


Model explanation

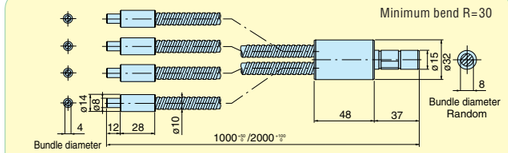
M [ ] G [ ] – Length S – [ ]

- No. of branches: 3 Three, 4 Four
- Bundle diameter: 3 ø3, 4 ø4
- Special function: SD Small diameter type

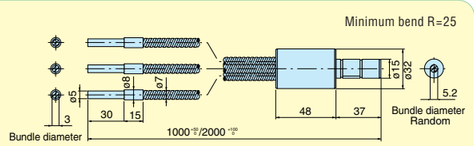
M3G4-1000S
M3G4-2000S



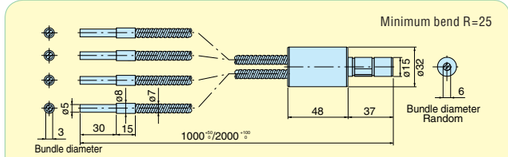
M4G4-1000S
M4G4-2000S



M3G3-1000S-SD
M3G3-2000S-SD



M4G3-1000S-SD
M4G3-2000S-SD



Model	Commodity Code
M3G4-1000S	A-0663
M3G4-2000S	A-0664
M4G4-1000S	A-0665
M4G4-2000S	A-0666
M3G3-1000S-SD	A-0667
M3G3-2000S-SD	A-0668
M4G3-1000S-SD	A-0669
M4G3-2000S-SD	A-0670

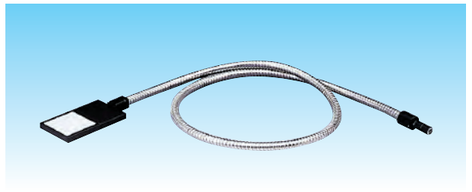
Screen Illumination Light Guide

These plate light guides do not require much space because of their thin, compact design. Moritex's unique reflection light inducer allows for even, bright illumination. They can be used for multi-observation inspections that require transmitted and uniform illumination such as backlighting electronic components or semi-transparent surfaces.

Model explanation

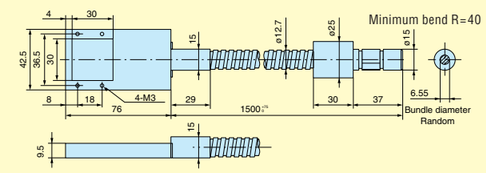
MPP [ ] – 1500S-2

Illuminating area
- **30** 30 X 30mm
- **60** 60 X 60mm
- **90** 90 X 90mm

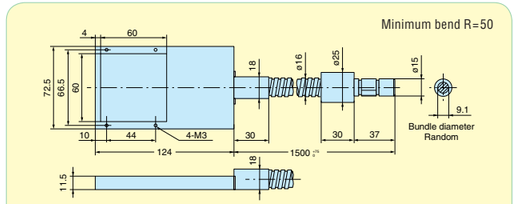


Model	Commodity Code
MPP30-1500S-2	A-0679
MPP60-1500S-2	A-0680
MPP90-1500S-2	A-0681

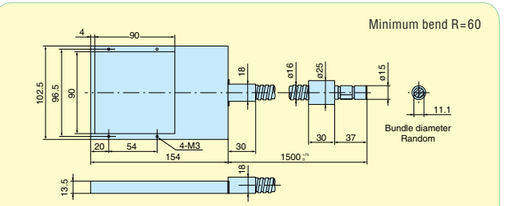
MPP30-1500S-2



MPP60-1500S-2



MPP90-1500S-2



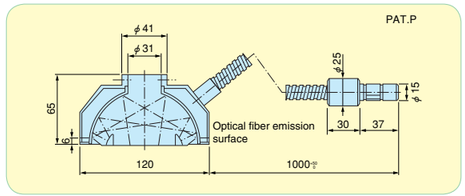
*Light guides cannot be used with 150W light sources; MPP30-1500S, MPP60-1500S, and MPP90-1500S.Use quartz adaptor KA-03 when using a 100W light source. For details, see page I-84.

Dome-type Light Guide

The fiber emission light from the 360 degree internal facing of the lower area inside the dome is reflected on the dome surface. This results in indirect illumination that provides uniform illumination of the work surface. Useful in cases such as when difficulties arise because of halation caused by illumination.

*A compact type (two types, external diameter of 54 or 80) can also be manufactured.

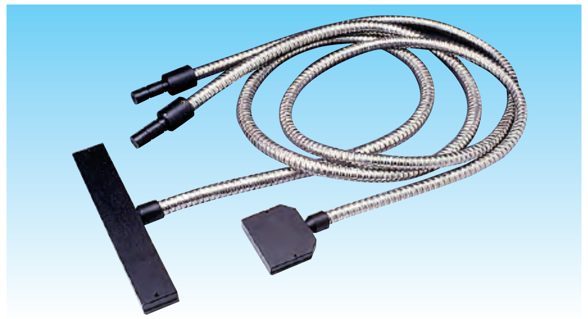
MDP120-1000S



Model	Fiber Material	Commodity Code
MDP120-1000S	Plastic	A-0719

Line Light Guide

These light guides can be used when line illumination or one-dimensional linear CCD lighting is necessary. Applications include glass substrate inspection and angled IC pin inspection.

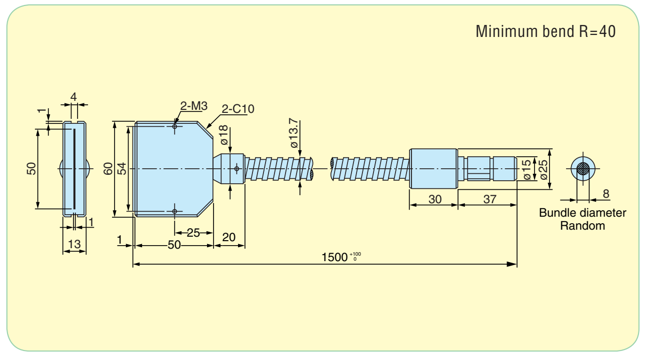


Model explanation

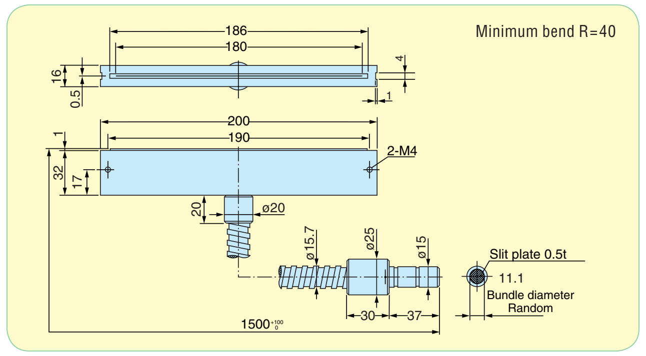
MK [ ] [ ] [ ] — Length S

Fiber type		Line length		
G	Glass	50	50mm	×0.5W Two-split
P	Plastic	180	180mm	

MKG50-1500S

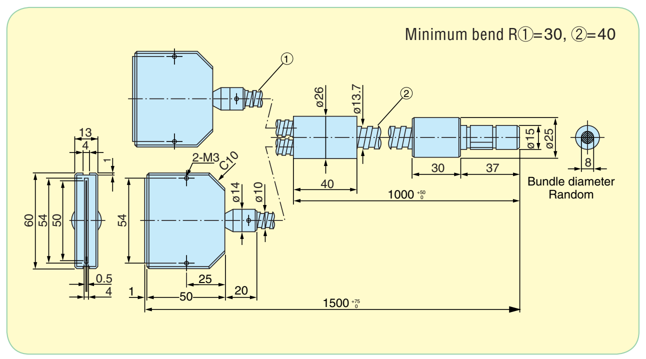


MKP180-1500S

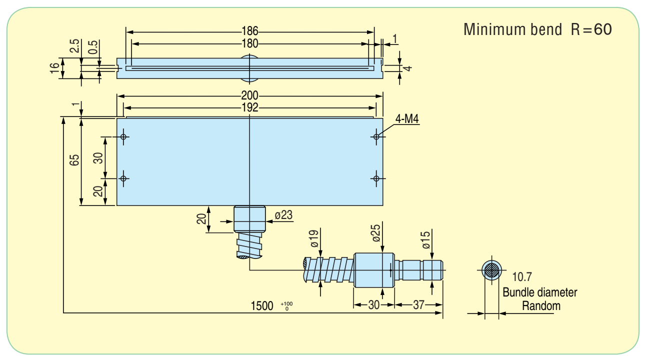


*150W light sources cannot be used with MKP180-1500S. Use quartz adaptor (KA-03) when using a 100W light source. For details, see page I-71.

MKG50×0.5W-1500S Made to order



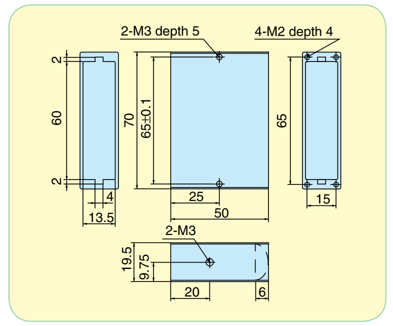
MKG180-1500S



Model	Commodity Code
MKG50-1500S	A-0684
MKG50×0.5W-1500S	A-0685
MKG180-1500S	A-0686
MKP180-1500S	A-0687

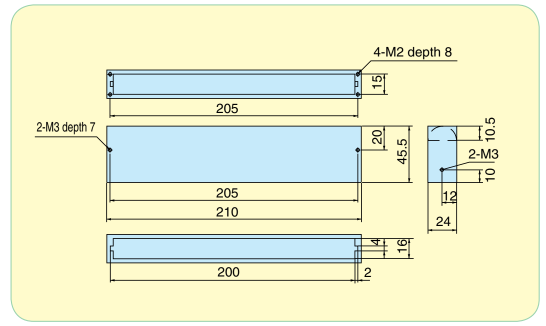
Condenser lens for slit light guide

MLK-50



● Cylindrical focusing lens to be used with the MKG50 light guide to produce a uniform line beam of high illuminance.

MLP-180



● Cylindrical focusing lens to be used with the MKP180/MKG180 light guide to produce a uniform line beam of high illuminance.

Model	Commodity Code
MLK-50	A-8307
MLP-180	A-8308

■ Light source: 100W halogen light source (Volume: max)
■ Fiber: MKG50-1500S for MLK-50,
MKP180-1500S for MLP-180

Cnnection-type Line Light Guide

Made to order

Line light guides having a uniform line width of 180mm can be connected to produce seamless, uniform line illumination of high intensity over long widths. These light guides are available in multiples of 180mm from 360 to 1440mm long. Use these long width light guides for illumination when inspecting LCD, PDP, and other glass boards & substrates or sheet products with line CCD cameras. Please note that a variable number of light sources are needed for each individual unit depending on length.

Line light guide (glass fiber)
MFKG SERIES

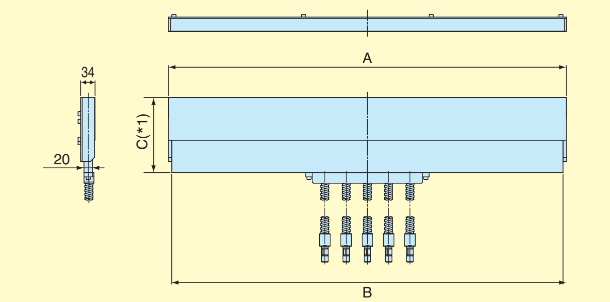
Line light guide (plastic fiber)
MFKP SERIES

Model explanation

MFK ☐ ☐ — **2000S-SRM-L**

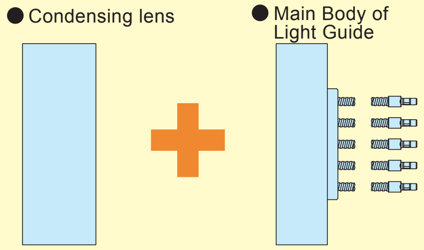
Fiber type / Line length

- **G** Glass
- **P** Plastic



*1 Operable in the range from 159.5 to 194.5 mm

Structure of Connector Type Line Light Guide



◎ The Connector Type Line Light Guide is composed of a combination of the condenser lens and the line light guide.

Model	Fiber Material	Line Length(mm)	Required quantity of Light Source	Commodity Code
MFKG360-2000S-SRM-L	Glass	360	2	A-0735
MFKG540-2000S-SRM-L	Glass	540	3	A-0736
MFKG720-2000S-SRM-L	Glass	72	4	A-0737
MFKG900-2000S-SRM-L	Glass	900	5	A-0738
MFKG1080-2000S-SRM-L	Glass	1080	6	A-0739
MFKG1260-2000S-SRM-L	Glass	1260	7	A-0740
MFKG1440-2000S-SRM-L	Glass	1440	8	A-0741
MFKP360-2000S-SRM-L	Plastic	360	2	A-0742
MFKP540-2000S-SRM-L	Plastic	540	3	A-0743
MFKP720-2000S-SRM-L	Plastic	720	4	A-0744
MFKP900-2000S-SRM-L	Plastic	900	5	A-0745
MFKP1080-2000S-SRM-L	Plastic	1080	6	A-0746
MFKP1260-2000S-SRM-L	Plastic	1260	7	A-0747
MFKP1440-2000S-SRM-L	Plastic	1440	8	A-0748

Cnnection-type Line Light Guide

Ultra-Uniform Line Fiber Illumination

Made-to-Order

MFKG-F1 Model

An ultra-uniform model for length line light guides
This model has made ultra-uniformity possible through improvement of the falling of light intensity at the connection area, as well as through unique technology in which the light guide incidence sides give uniformity to irregularities in the light source equipment.

Usage

Inspection of liquid crystal panels
Inspection of color filters
Inspection of sheet condition

Model Explanation

MFKG ☐ — ☐ ☐ ☐ — ☐ ☐ ☐ ☐

Line Length / Fiber Length / Tube / F1 / Number of Light Sources / Ferrule / Special Element / Special Specification

Tube:
- **S** SUS Flexible
- **V** SUS Flexible + PVC Tube (Black)
- **G** SUS Flexible + PVC Tube (Antistatic Grey)

Ferrule:
- (blank) Standard
- **L** Large Diameter Ferrule

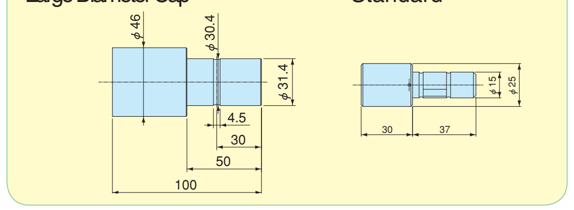
Special Element:
- (blank) None
- **D** Special Element

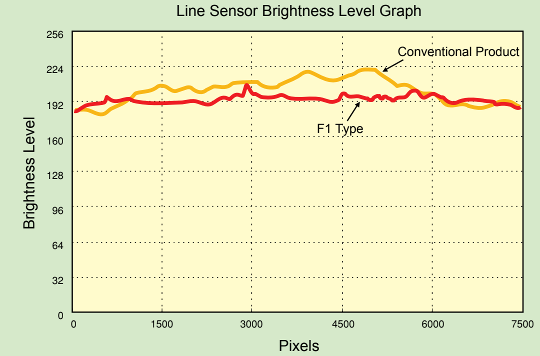
Special Specification:
- **HR** Edge Heat Resistance 300 degrees Celsius
- **REF** Reference

Features

- Improved uniformity through unique optical fiber manufacturing technology.
- Support for a line length of up to 3,600 mm is possible.
- Ultra-uniform lighting is achieved through the use of a condenser lens unit which contains an optical system made possible by unique design.
- Special optical elements that reduce light source irregularity can be installed in the light input bundle area. (Optional)
- The number of input dispersions and light source cap are specified by the customer.

(Approximate Measures)
Standard....Maximum Band Diameter 11 Line Length possible up to 180 mm x 0.5
Large Diameter Cap.... Maximum Band Diameter 20 Line Length possible up to 500 mm x 0.5



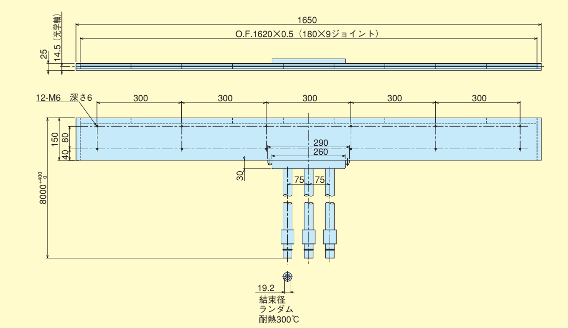


*Caution: The graph and values are intended for use as reference values. They are not a guarantee of the capabilities of the product.

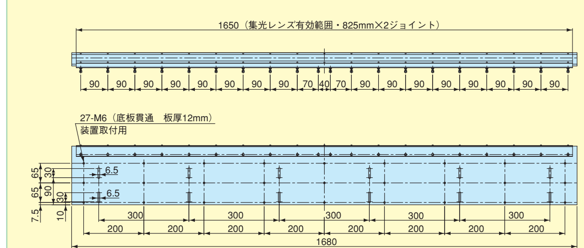
Example of Production Record

MFKG1620-8000G-F1-3LD-HR
Line Length: 1,620mm
Fiber Length: 8,000mm
Model: F1
Light Source: 3 light type Large diameter cap / Special element attached / Heat resistant specification

Light Guide



Condenser Lens

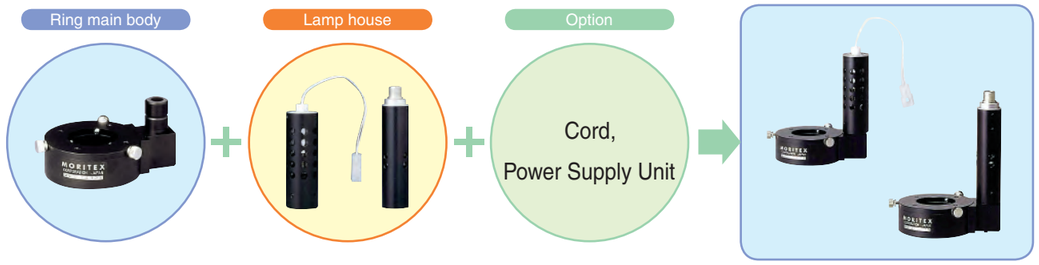


Cnnection-type Line Light Guide

Light Guide with Built-in Lamps

A ring light is integrated with a light source (Tungsten or Halogen lamp). Since no fiber routing is required, this unit is ideal for illuminating robots, X-Y drive units, and other movable items.

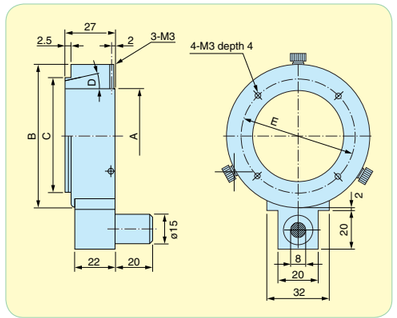
Ring main body + Lamp house + Option (Cord, Power Supply Unit)



Ring main body

Made to order

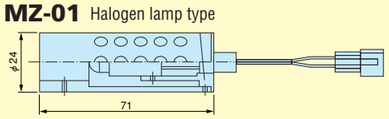
MRG-L31
MRG-L48
MRG-L61



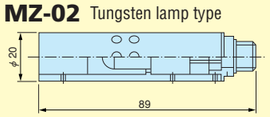
Model	Fiber Material	Ring Inside Diameter A(mm)	Ring Outside Diameter B(mm)	Adapter Mounting Pitch C(mm)	Fiber Irradiation Angle D(°)	Mounting 4-M3 E(mm)	Commodity Code
MRG-L31	Multi-component glass	ø31	ø60	M41 P0.5	10°	ø45	A-0725
MRG-L48		ø48	ø75	M60 P0.5	15°	ø60	A-0726
MRG-L61		ø61	ø90	M70 P0.5	15°	ø76	A-0727

Lamp house

MZ-01 Halogen lamp type



MZ-02 Tungsten lamp type



Model	Lamp	Commodity Code
MZ-01	Halogen	A-0728
MZ-02	Tungsten	A-0729

Options

Connect tube

Light guide connection barrel	Commodity Code
MT-01	A-8415

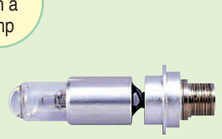
*This guide is available for all the series.
*The tolerance is +0.1.
*This guide also matches halogen light sources of the conventional MHF Series.

Cords

Made to order

Model	Length(mm)	Remarks	Commodity Code
MC-01	2000	Tungsten lamp with double-ended connector	A-8416
MC-02	5000		A-8417
MC-03	2000	Tungsten lamp with single-ended connector	A-8418
MC-04	5000		A-8419
MC-05	2000	Halogen lamp with single-ended connector	A-8420
MC-06	5000		A-8421

Holder with a lamp



Model	Lamp	Standard	Color temperature	Average life	Commodity Code
MH-01	Halogen	10V-1.8A	2950°K	3,000Hr	A-8427
MH-02	Tungsten	5V-1A	2600°K	5000Hr	A-8428

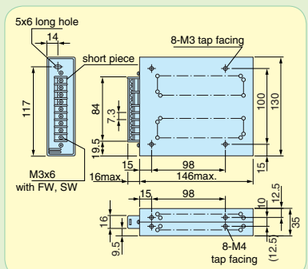
(Optional parts for holder with lamp)

Spare Lamp	Lamp	Commodity Code
MR-01	Halogen	A-8434
MR-02	Tungsten	A-8435

Power source

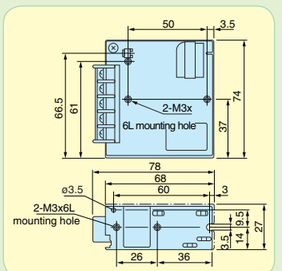
■ Halogen lamp power supply unit

K-10-1



■ Tungsten lamp power supply unit

K-5



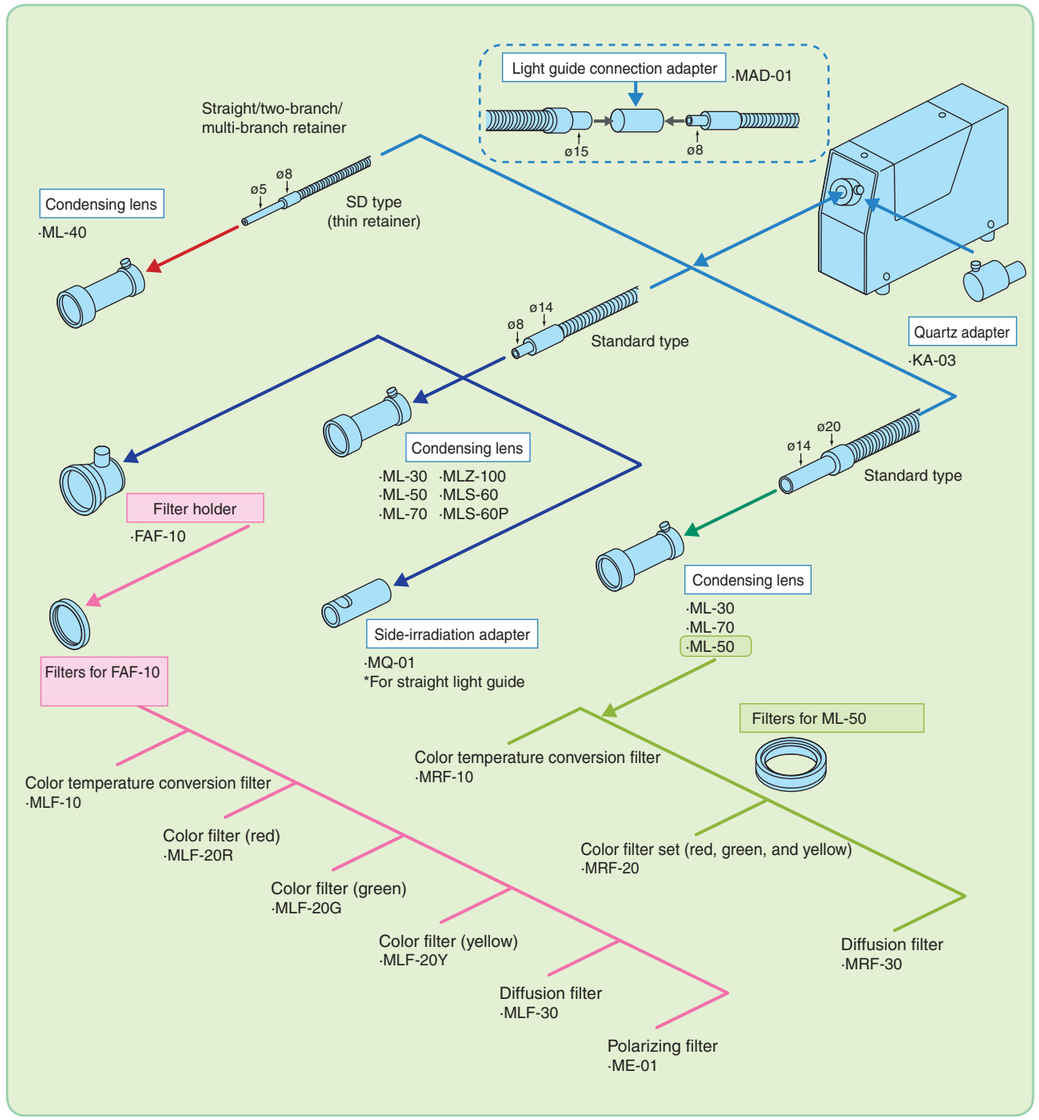
*Please note that the lamp may be disconnected when it is used with a machine that greatly vibrates.

Model	Input Voltage(V)	Rated Output Voltage(V)	Rated Output Current(A)	Input Fluctuation(mV)	Load Fluctuation(mV)	Ripple(mcp-p)	Output Voltage Variation Range	Commodity Code
K-10-1	AC85~132V	9.7	3.4	72max	100max	50max	—	A-8441
K-5	AC85~132V	5	2	20max	40max	80max	±10%	A-8442

*Purchase the ring, lamp house, and options separately. (The customer is requested to assemble them.)

Light Guide Option

Option Attachment Drawing for Straight/Two-branch/Multi-branch Light Guides



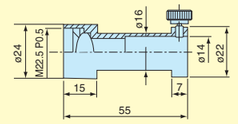
◎ For the light guide compatibilities, specifications, and commodity codes of the options, see the corresponding pages.

Condenser Lenses

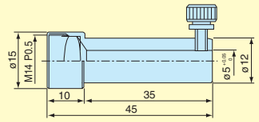
For Straight/Two-branch/Multi-branch Light Guides

These high performance condensing lenses were uniquely developed by Moritex for optical fiber light guides. Through careful design and production, Moritex ensures high quality performance at reasonable cost.

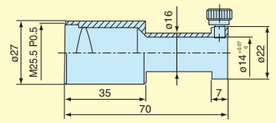
ML-30



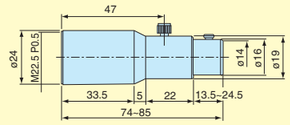
ML-40



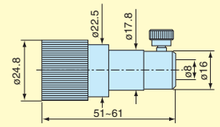
ML-50



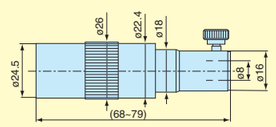
ML-70



MLZ-100

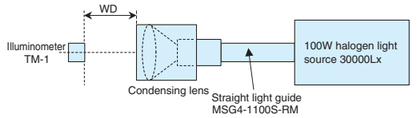


MLS-60P/MLS-60



■ Illuminance characteristic and illumination range of condensing lens

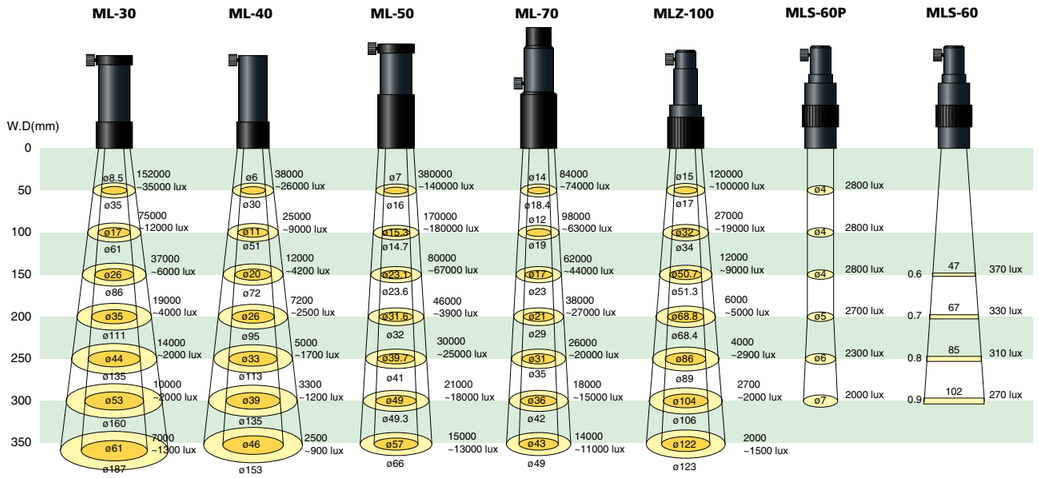
Central illuminance



Model	Feature	Commodity Code
ML-30	For straight or two-branch light guide	A-8300
ML-40	For small diameter type (-SD)	A-8301
ML-50	Provides almost double the illuminance of the ML-30	A-8302
ML-70	Two lenses of two groups for condensation into a uniform and comparatively small spot beam	A-8303
MLZ-100	Uniform spot beam of each WD, focused by helicoid	A-8304
MLS-60P	Fine spot beam, focused by helicoid	A-8306
MLS-60	Uniform and sharp slit beam, focused by helicoid	A-8305

Measuring method:

Position the illuminometer visually at the center of the illumination range (narrow or wide) and measure the illuminance. Set the illuminance of the light source to 30,000 lx for standard measurement (measurement using the standard light guide and measuring instrument). If the illuminance of the light source set to 30,000 lx exceeds 99,900 lx (upper limit of the measuring instrument) in standard measurement, reduce the luminous energy to the measurable range and convert the value into the range of 30,000 lx later.



■ Light source: 100W halogen light source (Volume: max)
■ Fiber: MSG4-1100S-RM for ML-30, ML-50, ML-70, MLZ-100, and MLS-60/60P
MSG3-1100S-SD for ML-40

Filters and Adapters

A filter or adapter can be attached to the illumination port of Moritex straight, two-branch, or multi-branch light guide to change the color temperature of the fiber illumination or the color to red, green, or yellow. Various filters are also made for the condensing lens ML-50 to obtain high illuminance.

Made to order

Filter holder

FAF-10

This filter holder fits a straight, two-branch, or multi-branch with irradiation port of 8.0 in outside diameter. By using this holder, a color temperature conversion filter (MLF-10), color filter (MLF-20 Series of R, G, and Y colors), or diffusion filter (MLF-30)

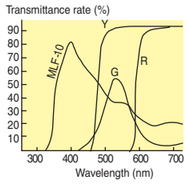
Model	Commodity Code
FAF-10	A-8321

Made to order

Filters

MLF-10
MLF-20
MLF-30

*Screw pitch M22.5x0.5



By using a filter holder (FAF-10), the following filters can be attached:

Model	Product name	Commodity Cody
MLF-10	Color temperature changing filter	A-8322
MLF-20	R.G.Y. color filter	A-8323
MLF-30	Diffusing filter	A-8324
MMLF filter frame	MLF filter frame	A-8325

※カラーフィルタ（MLF-20）各色単品は¥3,000です。

Made to order

Condenser lens

Filters for ML-50

MRF-10
MRF-20
MRF-30

*Screw pitch M25.5x0.5

These filters are made for the condensing lens ML-50.

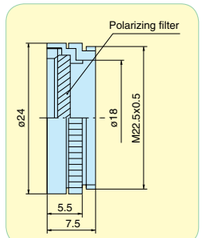
Model	Product name	Commodity Code
MRF-10	Color temperature changing filter	A-8331
MRF-20	R.G.Y. color filter	A-8332
MRF-30	Diffusing filter	A-8333
MRF filter frame	MRF filter frame	A-8334

Made to order

Polarizing filter for straight light guides

ME-01

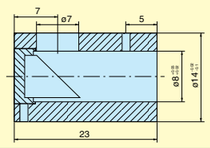
Can be attached to either the filter holder (FAF-10) or various lenses.



Model	Commodity Code
ME-10	A-8340

Side light adapter

MQ-01

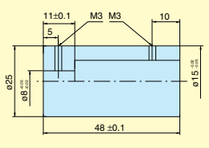


*Used to bend illumination 90° from the light guide output axis

Model	Commodity Code
MQ-01	A-8346

Light guide connector adapter

MAD-01

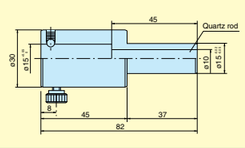


*This adapter is to join the ferrules on the output side of one light guide to the input side of another.

Model	Commodity Code
MAD-01	A-8347

Quartz adapter

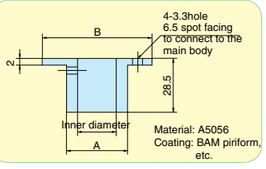
KA-03



*Use this adapter when combining a 100W light source and a plastic light guide.

Model	Commodity Code
KA-03	A-8348

Inner diameter adapter Made to orde

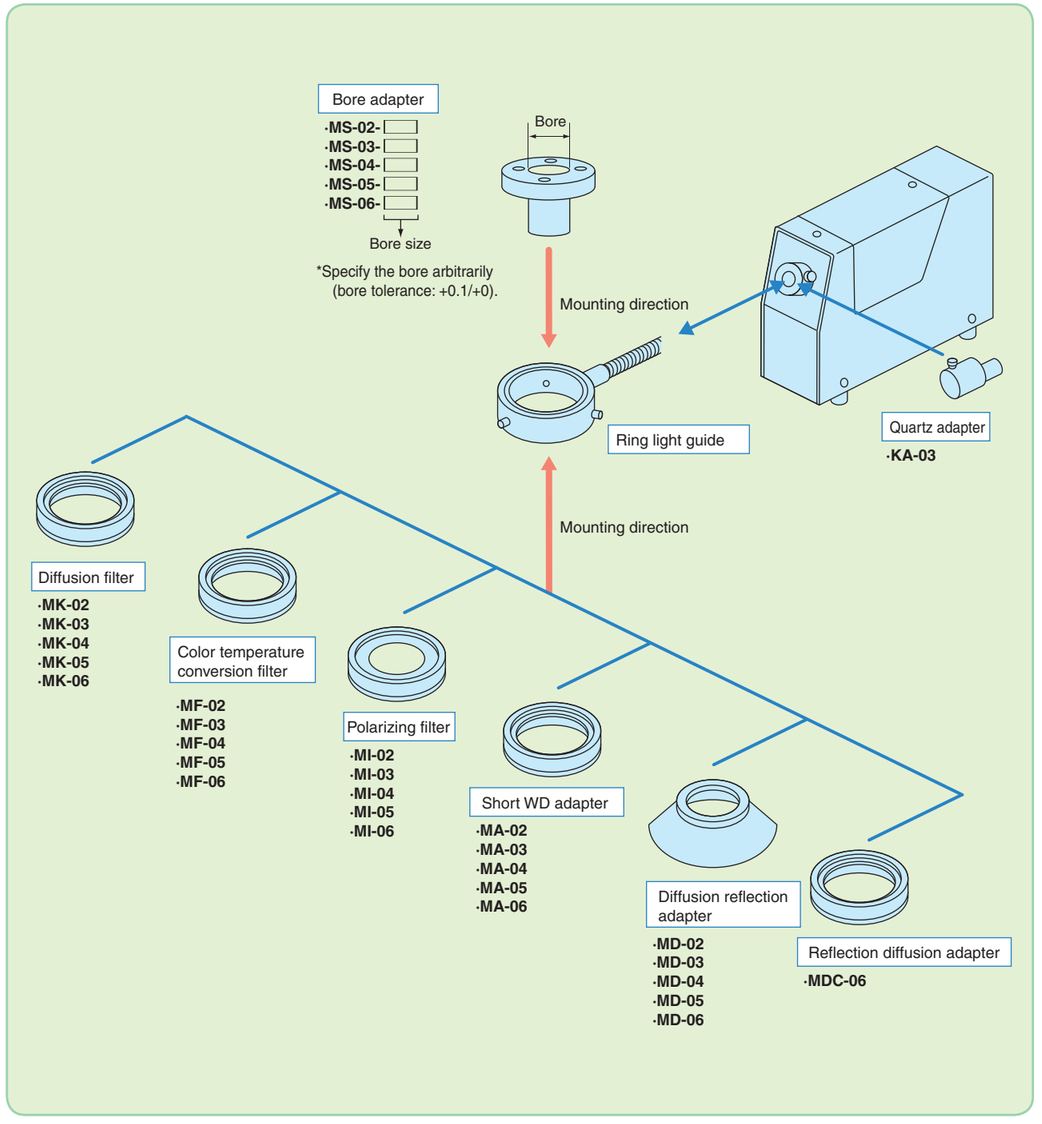


Model	Compatible model	Dimension A(mm)	Dimension B(mm)
MS-02-□	MRG-31	ø31	ø60
MS-03-□	MRG-48	ø48	ø75
MS-04-□	MRG-53	ø53	ø80
MS-05-□	MRG-61	ø61	ø90

● □（内径）はご自由に指定してください。内径公差は□ $^{+0.1}_{+0}$ です。

● 内径は処理なしです。

System Chart of Ring Light Guide



◎For the light guide compatibilities, specifications, and commodity codes of the options, see the corresponding pages.

Ring Light Guide Option

■ Diffusing filter

Model	Compatible model	Outside diameter	Thickness (mm)	Commdity Code
MK-02	MRG-31	ø46	5.5	A-8364
MK-03	MRG-48	ø65		A-8365
MK-04	MRG-53	ø69		A-8366
MK-05	MRG-61	ø76		A-8367
MK-06	MRG-75	ø90		A-8368

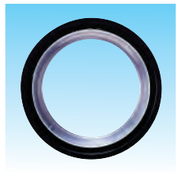
Setting this filter at the light irradiation end of a ring light guide suppresses illuminance irregularity and makes a soft illumination effect available.

■ Color temperature changing filter

Model	Compatible model	Outside diameter	Thickness (mm)	Commdity Code
MF-02	MRG-31	ø46	5.5	A-8374
MF-03	MRG-48	ø65		A-8375
MF-04	MRG-53	ø69		A-8376
MF-05	MRG-61	ø76		A-8377
MF-06	MRG-75	ø90		A-8378

Use this filter for color imaging.

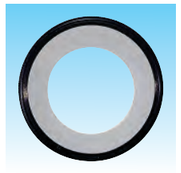
■ Short WD adapter



Model	Compatible model	Outside diameter	Thickness (mm)	Commdity Code
MA-02	MRG-31	ø44	7	A-8384
MA-03	MRG-48	ø66		A-8385
MA-04	MRG-53	ø70		A-8386
MA-05	MRG-61	ø77		A-8387
MA-06	MRG-75	ø90		A-8388

This adapter is optimum if the working distance is short and gentle-angle illumination is necessary.

■ Polarizing filter



Model	Compatible model	Outside diameter	Thickness (mm)	Commdity Code
MI-02	MRG-31	ø44	8.5	A-8394
MI-03	MRG-48	ø63		A-8395
MI-04	MRG-53	ø67		A-8396
MI-05	MRG-61	ø74		A-8397
MI-06	MRG-75	ø88		A-8398

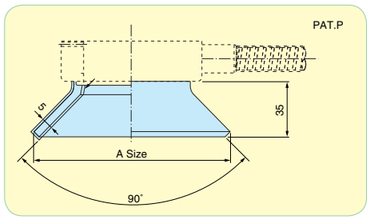
Use this filter to prevent halation by illumination or irregular reflection.

Diffused illumination adapter MD Series

MD02~06

If a diffused illumination adapter (MD Series) is attached to the standard ring light guide, the cone shaped adapter accepts the light, which illuminates the entire inside of the cone and produces uniform diffused illumination with decreasing irregularity.

*Ring light guide MRG series is sold separately.

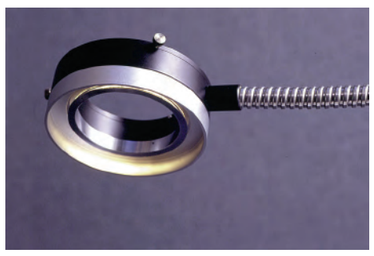


Model	Compatiblering light	Dimension A(mm)	Commdity Code
MD-02	MRG31-	101	A-8404
MD-03	MRG48-	121	A-8405
MD-04	MRG53-	115	A-8406
MD-05	MRG61-	126	A-8407
MD-06	MRG75-	140	A-8408

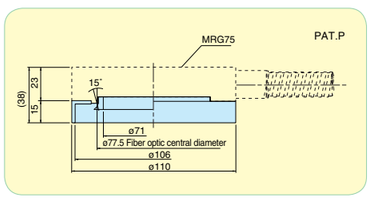
Reflection type diffuse lighting adapter

MDC-06

When this reflection type diffused lighting adapter is used, light from the ring light guide is directed outward through reflection which results in diffused and uniform illumination, ideal for laser mark recognition applications.



*The ring light guide MRG-75-1000S/1500S is sold separately.



Model	Commodity Code
MDC-06	A-8409

Light Guide Data

Mechanical characteristics and environment resistance

Mechanical characteristics

• Minimum bend radius

Fiber optic light guides' minimum bend radius is determined mainly by the tube's bend radius. It is also influenced by the diameter and length of the fiber optic bundle. If you bend a light guide over its limit, it cannot perform properly because transmitted light quantity decreases due to bending or disconnection of optical fiber. Note that bend radius is larger for optical fiber with a random sequence.

• Durability for repeated bending

Although optical fiber's durability for repeated bending varies depending on types, it is not very good overall. Optical fiber breaks or deteriorates because of twisting, friction with other optical fiber, and friction within tubing (coating for a fiber optic bundle). When this happens, transmitted light quantity reduces and a light guide cannot perform sufficiently. Durability for repeated bending is even lower for optical fiber with a random sequence.
If more durability is required, use a flexible light guide (special order) with a different internal structure and special coating agent.

Environment resistance

• Heat resistance

The normal heat resistance ranges for raw plastic fiber, multi-component glass fiber, and quartz fiber are 70, 430˚C (except oiling), and 1,000˚C (except coating) respectively. Upper limit temperature for light guides' ends differs according to the heat resistance of adhesives and coating materials used to protect optical fiber. Upper limit temperature for raw plastic fiber, multi-component glass fiber, and quartz fiber are 70˚C, 200˚C, and 200˚C respectively.
If higher heat resistance is required, please use heat-resistant line guides (special order, 300˚C for multi-component glass fiber and quartz fiber).
If even higher heat resistance is required, quartz fiber light guides that are resistant to 500˚C can be manufactured.
Life of raw optical fiber varies according to temperature that it is used at and the amount and time of change in temperature. Please contact us before using light guides in special conditions.

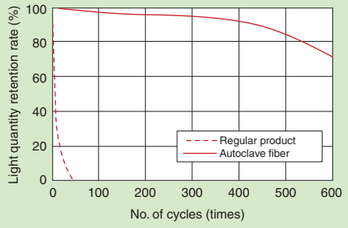
Heat resistance

Optical fiber	Raw fiber's heat resistance(˚C)	Standard products' end heat resistancez(˚C)	Heat-resistant products' end heat resistance(˚C)
Plastic	70	70	——
Multi-component glass	430(except oiling)	200	300
Quartz	1,000 or more (except coating)	200	300, 500

• Moisture resistance and water resistance

Moisture resistance and water resistance of optical fiber are not very high. If moisture/water-resistance is required, please use light guides with special specifications (special order). (Only multi-component glass fiber is available.)Graph 1 is the result of autoclave test.
(One cycle = 20 min. at 130˚C, 100% humidity, 2kg/cm2 pressure --> regular temperature, humidity, air pressure)

Optical fiber's moisture resistance (reference value)



Transmittance rate and luminosity distribution characteristics

Optical fiber data

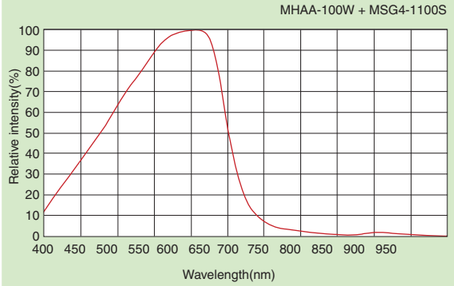
Item / Material	Multi-component glass fiber		Plastic fiber		Quartz fiber	
Fiber diameter	50μm		250μm 500μm 750μm 1000μm 2000μm		208μm (many others)	
Core diameter	45μm		3-5μmless than fiber diameter		200μm	
Entrance angle	About 70˚		About 60˚		About 25˚	
End heat resistance *1	Standard type	200˚C	Standard type	70˚C	Standard type	200˚C
	Special order	300˚C			Special order	500˚C
Durability	△		○		×	
Heat resistance	○		×		○	
Transmittance *2 (visible light for short distance)	△		△		○	

○ Excellent △ Problem in certain conditions × Not recommended

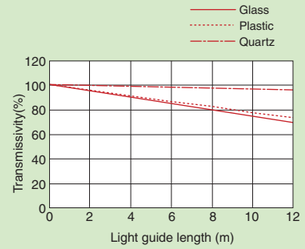
This is for reference only. Consult Moritex for details.

*1 Data of a bundle (not element wire data)
*2 Transmissivity at 10 m or less

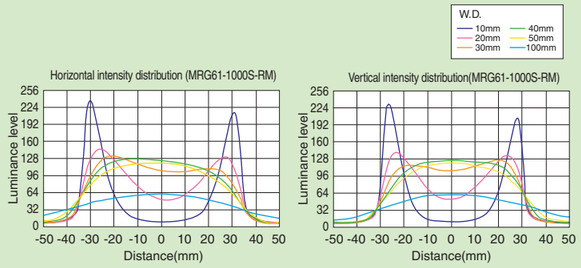
Distribution Characteristics of Light Guide and Halogen Light Source



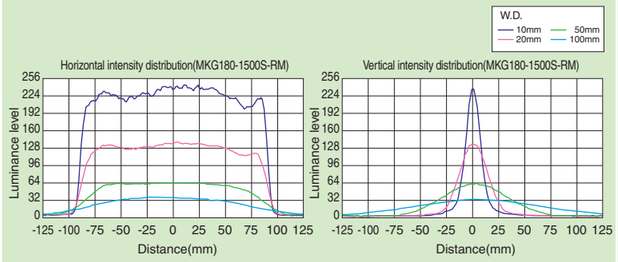
Length and transmissivity of light guide



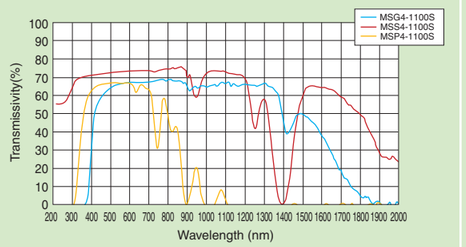
Luminance distribution of ring light guide



Luminance distribution of line light guide



Spectral transmissivity of different straight light guides



UV visible range quartz fiber characteristics

Raw fiber specifications

NAand structure	NA		0.22±0.02
	Diameter	Core(μm)	200±3
		Clad(μm)	208±3
		Primary coating(μm)	240±10
	Allowable bend radius [mm]		20
Material	Core		Pure SiO_2
	Clad		with F SiO_2

Note: Fiber diameter (core/clad) may be changed without any notice.

Features

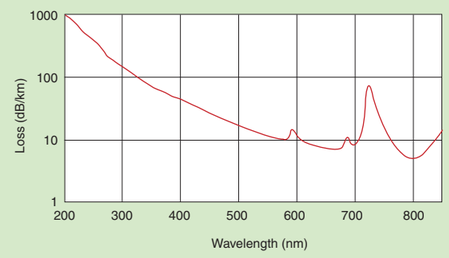
- Suitable for UV-ray transmission because of high OH contents.
- Prices are low because of rational production system.
- Transmittance rate is stable for a long time when used for UV light guides.
- Can be used for i, g, and h rays.
- The thorough quality control of transmission performance and dimensional precision realizes easy processing with less dispersion and produces good-quality products.
- The long-time accumulated technology, experience, and know-how of Moritex enables various fiber processing.

*Light guides for KrF and excimer laser can be custom-made

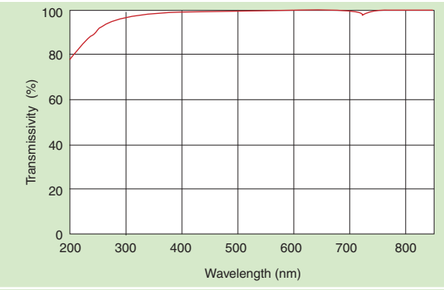
Applications

- Light guides for UV spot light sources
- Advanced light guides for semiconductors and liquid crystal exposure devices
- Light guides for analyzers
- Fiber probes for sensors
- Light guides for fluorometric analysis
- Light guides for medical use

Wavelength loss characteristics



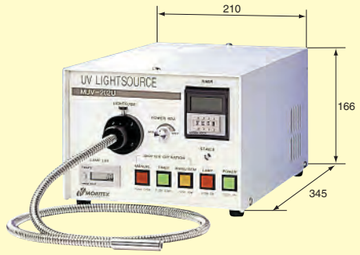
Wavelength transmittance rate characteristics (per meter excluding Fresnel reflection)

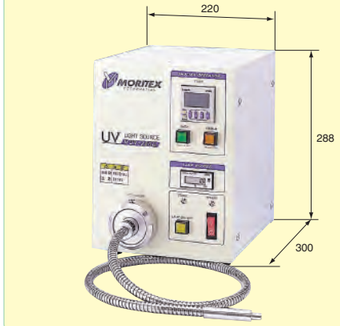


UV illuminator of spot area irradiation type

MUV-202U
MUV-250U-L

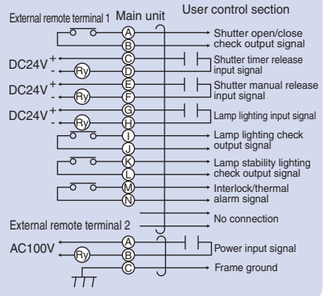
By combining lamps, fibers, and light sources of different types and outputs, you can effectively & efficiently illuminate materials that were not easily illuminated with conventional light sources. These 365nm peak wavelength ultraviolet light sources can be used for curing as well as illumination & excitation. With these sources, maintenance is minimized with the long life of the lamps.



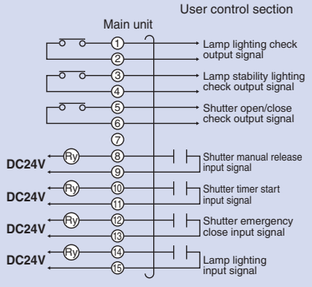


Remote Function

MUV-202U/MUV-202K



MUV-250U-L



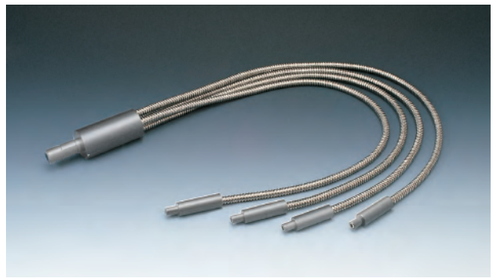
Ry Relay | Relay contact | Relay external contact

Series	Mercury Xenon 200W	Ultrahigh Pressure Mercury 250W	
Model	**MUV-202U**	**MUV-250U-L**	
Outside Dimensions (Inc. Projection)W×H×D(mm)	210 x 166 x 345	220 x 288 x 300	
Features	Low cost and long life	High power	
Lamp Model	**LUM-202**	**LUM-250**	
Average Lamp Life (hr)	4000	3000	
Ultraviolet Intensity (365 nm)	3000mW/cm^2	4000mW/cm^2	
Optical Axis Adjustment	None		
Dimmer System	Mechanical dimmer		
Shutter Drive System (Front Operation)	Manual/digital timer		
Power Consumption	320W	500W	
Weight	7kg	9kg	
Fiber			
(External Input Functions)			
Shutter Timer Start	○	○	
Shutter Manual ON/OFF	○	○	
Power ON/OFF	○	○	
Lamp ON/OFF	○	○	
(Output Functions)			
Lamp Lighting	○	○	
Lamp Stability	○	○	
Shutter Open/Close	○	○	
Interlock/Thermal Error	○	○	
Commodity Code	A-1201	A-1203	
(Options)			
Replacement Lamp	**LUM-202**	**LUM-250**	
Commodity Code	A-8531	A-8532	
Heat-ray Cutoff Filter	MUV-PF001	MUV-PF001*1	MUV-FU-250*2
Commodity Code	A-8556	A-8556	A-8557
UV Intensity Monitor (Main Unit)	**MUVM-MP**		
Commodity Code	A-8563		
Amplifi er for UV Intensity Monitor	**MUVM-254**		**MUVM-365**
Commodity Code	A-8569		A-8570
Fiber Sensor for UV Intensity Monitor	**MUVM-FS**		
Commodity Code	A-8576		
Condensing Direct Irradiation Unit	**MTC-1**		
Commodity Code	A-8582		
High-condensing Direct Irradiation Unit	**MTC-2**	–	
Commodity Code	A-8583	–	
Uniform Direct Irradiation Unit	**MTU-1**	–	
Commodity Code	A-8584	–	

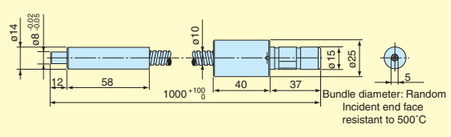
*1 Attached to the tip of a fiber *2 Attached to the root of a fiber

UV Quartz Light Guides

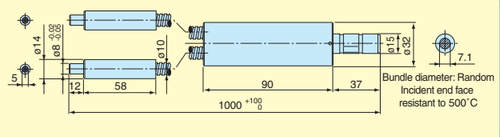
Moritex fabricates UV fiber light guides through the manufacture, bundling, and processing of raw quartz fibers. Straight type, multi-branch, and other various kinds of configurations can be manufactured including light guides custom light to customer specifications.



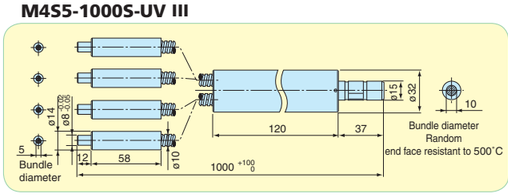
MSS5-1000S-UV III



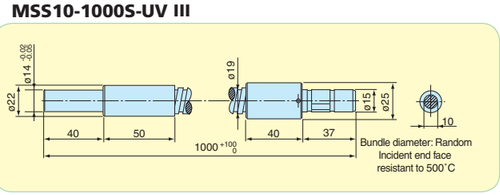
MWS5-1000S-UV III



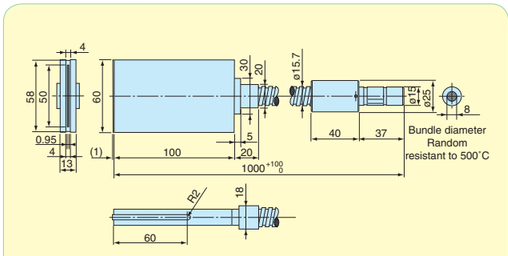
M4S5-1000S-UV III



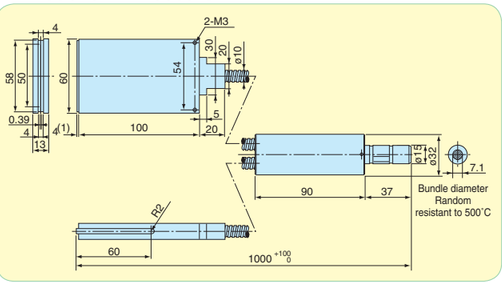
MSS10-1000S-UV III



MKS50-1000S-UV III

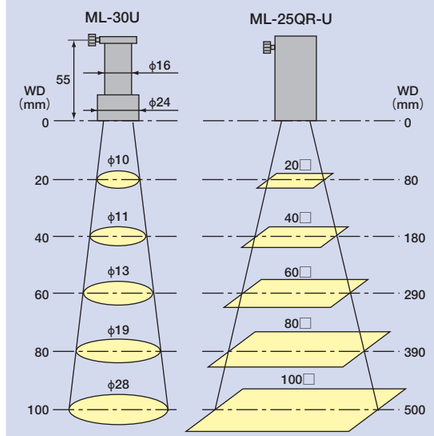


MKS50×0.4W-1000S-UV III



	Model	Remarks	Commodity Code
Standard Model	**MSS5- 1000S-UVⅢ**	ø5 x 1000L	A-1260
	MWS5- 1000S-UVⅢ	ø5 x 2branches x 1000L	A-1261
	M4S5- 1000S-UVⅢ	ø5 x 4branches x 1000L	A-1262
Model by Order	**MSS3.5- 1000S-UVⅢ**	ø3.5 x 1000L	A-1263
	MWS3.5- 1000S-UVⅢ	ø3.5 x 2branches x 1000L	A-1264
	M3S3.5- 1000S-UVⅢ	ø3.5 x 3branches x 1000L	A-1265
	M4S3.5- 1000S-UVⅢ	ø3.5 x 4branches x 1000L	A-1266
	MSS10- 1000S-UVⅢ	ø10 x 1000L	A-1267
	MKS50- 1000S-UVⅢ	Line width: 50 mm	A-1268
	MKS50×0.4W- 1000S-UVⅢ	Line width: 50 mm x 0.4 mm (Two-branch type)	A-1269

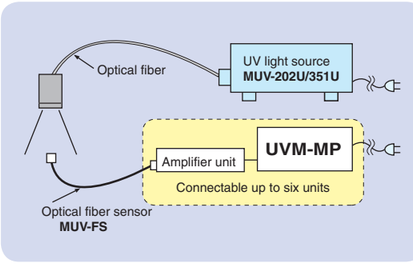
Condensing lens unit



Model	Remarks	Commodity Code
ML-30U	Standard UV condenser lens	A-8590
ML-25QR-L	Quartz uniform square irradiation lens	A-8591

UV intensity monitor

A light guide unit with dedicated sensor is combined to continuously monitor UV intensity and display it on the panel. If the UV intensity becomes lower than the setting, the UV intensity lower limit alarm function is activated.



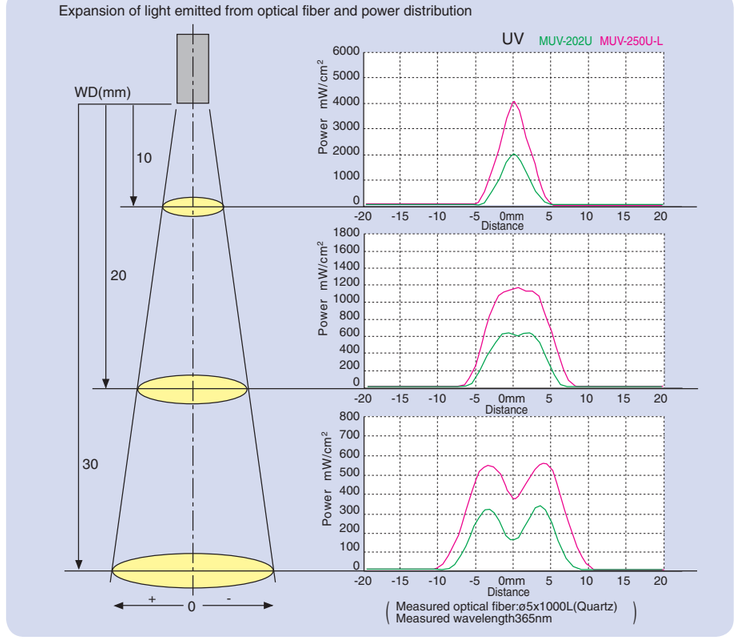
Model	Remarks	Commodity Code
MUVM-MP	UV intensity monitor (Main unit)	A-8563
MUVM-365	Sensor box for UV intensity monitor(365nm)	A-8570
MUVM-254	Sensor box for UV intensity monitor(254nm)	A-8569
MUVM-FS	Sensor fiber head for UV intensity monitor	A-8576

Other

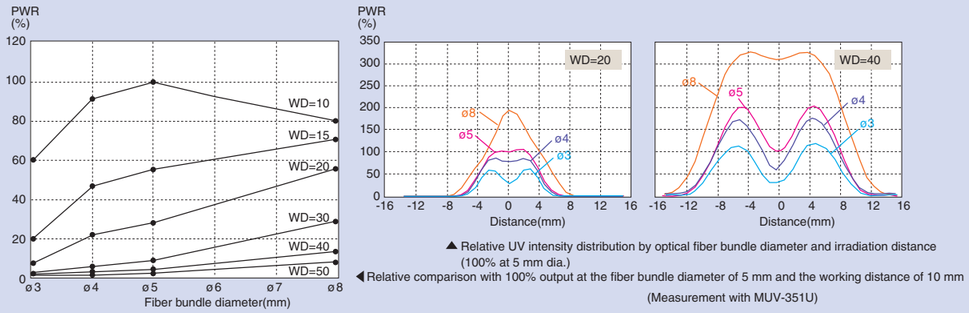
Model	Remarks	Commodity Code
MTC-1	Condensing direct-irradiation unit for MUV-202U/351U	A-8582
MTC-2	Condensing direct-irradiation unit for MUV-202U/351U	A-8583
MTU-1	Uniform direct-irradiation unit for MUV-202U/351U	A-8584

UV Light Source Data

Irradiation distance - intensity distribution



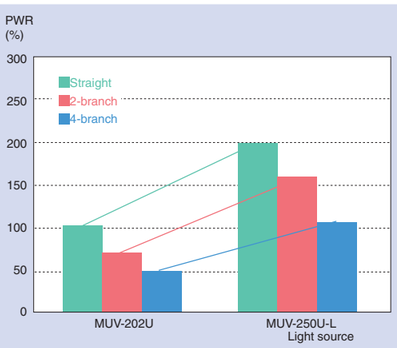
Quartz fiber bundle diameter - UV intensity ◎ Extending the optical fiber bundle diameter increases the UV intensity.



▲ Relative UV intensity distribution by optical fiber bundle diameter and irradiation distance (100% at 5 mm dia.)

◀ Relative comparison with 100% output at the fiber bundle diameter of 5 mm and the working distance of 10 mm (Measurement with MUV-351U)

Quartz fiber bundle diameter - UV intensity ◎ Extending the optical fiber bundle diameter increases the UV intensity.

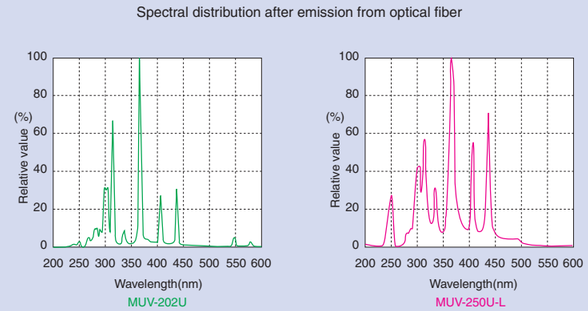


Quartz

	Straight	2-branch	4-branch
MUV-202U	100%	70%	50%
MUV-250U-L	100%	80%	53%

UV intensity data by the number of branches
(Emission diameter: 5 mm)

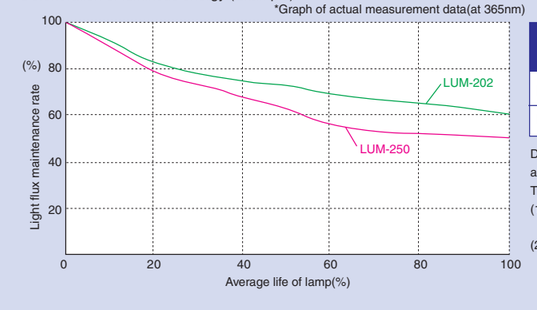
Spot Area Irradiation Type



Lamp service characteristic

Deterioration of luminous energy (Example)

*Graph of actual measurement data(at 365nm)



Compatible Light Source	Compatible Lamp	Average Life (Hours)	Average Life (Light Flux Maintenance Rate)
MUV-202U	LUM-202	3000hr	" 50%
MUV-250U-L	LUM-250	3000hr	" 50%

Definition of average life: Average duration of continuous lighting at the rated power in hours
The life ends in either case of (1) or (2):
(1) The total light flux becomes the specified percentage of less of the initial value.
(2) The lamp fails to light

UV illuminator of spot area irradiation type

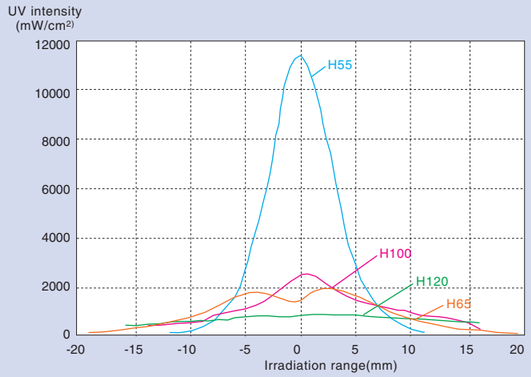
Direct UV illuminator of area irradiation type

ANUP-5256

- Direct irradiation type for quick hardening by UV intensity two to three times greater than the fiber irradiation type
- Keeping great UV intensity and covering wide area irradiation from 10 to 30 dia.
- Also supporting irradiation in a ring state
- Slim light source for easy line installation

		ANUP-5256
Main Unit	Model	
	Power Supply	ingle-phase AC 90 to 120V, 50/60Hz common, 5A
	Lamp	Preset ultrahigh-pressure mercury lamp: 250W (Item No. LUM-250)
	Shutter	Opening and closing manually or by timer
	External Output Signal	Lamp lighting detection, lamp stability detection, and shutter open/close detection
	External Control	Lamp ON/OFF and shutter open/close (manual or timer)
	Weight	Light source section: 9 kg Power supply section: 5 kg
Commodity Code		A-1211

■ UV intensity distribution



■Effective irradiation diameter and UV intensity (Reference)

Effective Irradiation Diameter(mm)	ø5	ø10	ø20	ø30
Focal Position	Ordinary state		Focus (*1)	Ordinary state
Irradiation Height(mm)	55	100	65	120
Initial UV Intensity - Effective Value(mw/cm²)	7600	1350	770	500
Initial UV Intensity - Peak Value(mw/cm²)	10600	2500	2000	900

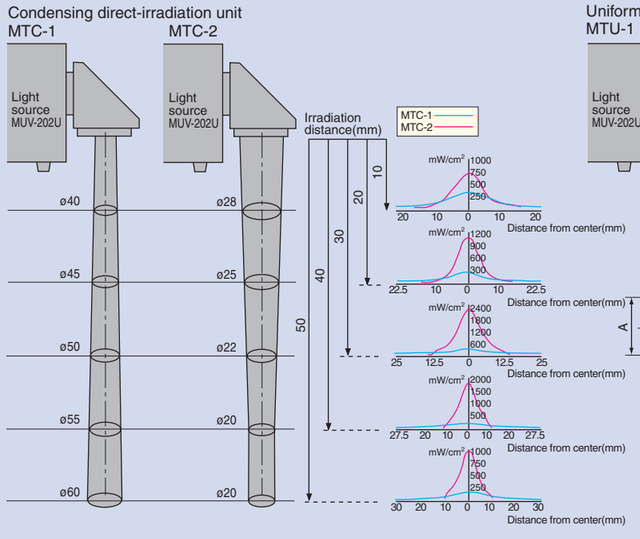
*1 Lamp position 2 mm up from the mirror

*The data is based on measurement and not guaranteed.
*UIT-150 is used for measurement.
*For improvement, the specifications and appearance are subject to change without notice.
*Part of this product classifi ed as strategic material (or service) requires export (or service transaction) permission based on the Foreign Exchange and Foreign Trade Law for its export. For details, consult Moritex.

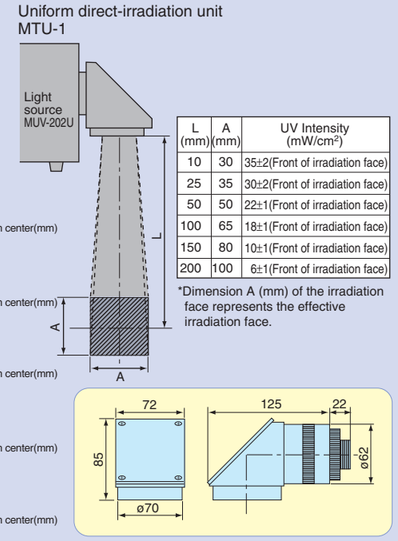
■ Direct irradiation unit - intensity distribution ◎Three types of condensing direct-irradiation units are made for MUV-202U.

Attaching a direct-irradiation unit makes the following characteristics available:

Condensing direct-irradiation unit
MTC-1 MTC-2



Uniform direct-irradiation unit
MTU-1



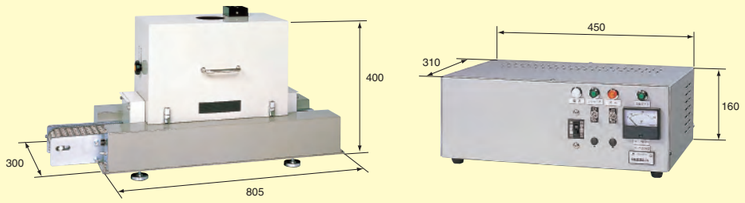
L (mm)	A (mm)	UV Intensity (mW/cm²)
10	30	35±2(Front of irradiation face)
25	35	30±2(Front of irradiation face)
50	50	22±1(Front of irradiation face)
100	65	18±1(Front of irradiation face)
150	80	10±1(Front of irradiation face)
200	100	6±1(Front of irradiation face)

*Dimension A (mm) of the irradiation face represents the effective irradiation face.

Desktop UV illuminator of are irradiation type

ANUP-3000 *Series*

This series allows easy system integration on a rack with peripherals because no power supply is built in.

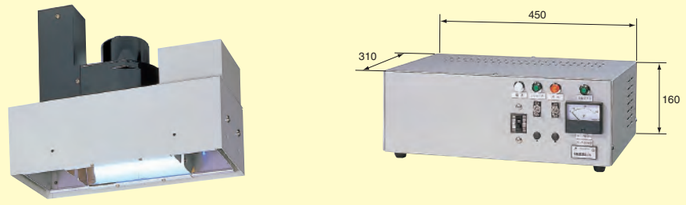


	Series	Desktop high-pressure mercury (1 kW)		Desktop metal halide (1 kW)		Desktop high-pressure mercury (1.5 kW)		Desktop metal halide (1.5 kW)	
Main Unit	Model	**ANUP-3101**	**ANUP-3102**	**ANUP-3103**	**ANUP-3104**	**ANUP-3151**	**ANUP-3152**	**ANUP-3153**	**ANUP-3154**
	Illumination length	125mm							
	UV lamp (Output kW x Number of lamps)	1kW x 1 lamp				1.5kW x 1 lamp			
	UV Lamp Output(W/cm^2)	80W/cm^2				120W/cm^2			
	Lamp Reflector	High-purity aluminum refl ector	Di-Cool optical mirror	High-purity aluminum refl ector	Di-Cool optical mirror	High-purity aluminum refl ector	Di-Cool optical mirror	High-purity aluminum refl ector	Di-Cool optical mirror
	Power Supply	Single-phase 200V 50 / 60Hz common, 15A							
	Conveyor Speed	0.3~5m/min							
	Conveyor Belt	Stainless mesh belt							
	Transportable Work Size	100 (W) x 50(H) mm							
	Effective Irradiation Width	50mm							
	Conveyor Size LxWxH(mm)	805 x 300 x 400							
	Power Supply Size LxWxH (mm)	450 x 310 x 160							
	Power Supply Weight	About 25kg							
	Commodity Code	A-1217	A-1218	A-1219	A-1220	A-1221	A-1222	A-1223	A-1224
(Options)									
	Replacement Lamp	**ANUL-10081**		**ANUM-10081**		**ANUL-15021**		**ANUM-15021**	
	Commodity Code	A-8539		A-8540		A-8541		A-8542	

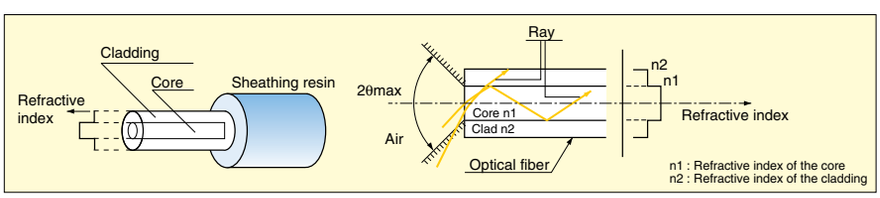
Inline UV illuminator of area irradiation type

ANUP-8000 *Series*

The light sources of this series, compact and easy to carry, can be incorporated easily into production lines.



	Series	Inline high-pressure mercury (1 kW)		Inline metal halide (1 kW)		Inline high-pressure mercury (1.5kW)		Inline metal halide (1.5 kW)		Inline high-pressure mercury (2 kW)		Inline metal halide (2 kW)	
Main Unit	Model	**ANUP-8101**	**ANUP-8102**	**ANUP-8103**	**ANUP-8104**	**ANUP-8151**	**ANUP-8152**	**ANUP-8153**	**ANUP-8154**	**ANUP-8201**	**ANUP-8202**	**ANUP-8203**	**ANUP-8204**
	Standard Lamp Height	125mm											
	UV lamp (Output kW x Number of lamps)	1kW x 1 lamp				1.5kW x 1 lamp				2kW x 1 lamp			
	UV Lamp Output (W/cm^2)	80W/cm^2				120W/cm^2				80W/cm^2			
	Lamp Refl ector	High-purity aluminum refl ector	Di-Cool optical mirro	High-purity aluminum refl ector	Di-Cool optical mirro	High-purity aluminum refl ector	Di-Cool optical mirro	High-purity aluminum refl ector	Di-Cool optical mirro	High-purity aluminum refl ector	Di-Cool optical mirro	High-purity aluminum refl ector	Di-Cool optical mirro
	Standard Lamp Height (mm)	110	130	110	130	110	130	110	130	110	130	110	130
	Power Supply	Single-phase 200V,50 / 60Hz common, 15A											
	Effective Irradiation Width (Vertical)	50mm											
	Effective Irradiation Width(Horizontal)	100mm						200mm					
	Power Supply Size LxWxH (mm)	450 x 310 x 160											
	Power Supply Weight	About 25kg											
	Commodity Code	A-1230	A-1231	A-1232	A-1233	A-1234	A-1235	A-1236	A-1237	A-1238	A-1239	A-1240	A-1241
(Options)													
	Replacement Lamp	**ANUL-10081**		**ANUM-10081**		**ANUL-15021**		**ANUM-15021**		**ANUL-20081**		**ANUM-20081**	
	Commodity Code	A-8539		A-8540		A-8541		A-8542		A-8543		A-8544	

Measured Light Quantity	Light flux (lm)	The quantity of light emitted from a light source. The unit is lumen (lm).
	Luminous intensity (cd = lm/sr)	Light source quantity representing the quantity of light emitted from a light source per unit solid angle. The unit is candela (cd) = lm/sr (solid angle).
	Illuminance (lx = lm/m^2)	Brightness on an object surface irradiated by light emitted from a light source. The unit is lux (lx)= lm/m^2, where m^2 is the area of the object surface.
	Intensity (nt = cd/m^2)	Light source quantity representing the luminous intensity of light emitted from a light source per unit area. The unit is nit (nt) = cd/m^2 or stilb = cd/cm^2.
Filter	Color temperature (K)	Color temperature representing the spectral energy distribution of light emitted from a light source. The unit is Kelvin (K). A light source of a low value is reddish and one of a high value is bluish. To change the color temperature of a light source, use a color temperature conversion filter.
	Polarizing filter	A filter to block too strong and detrimental light reflected from glass, metal, or liquid surface.
	ND filter	A filter, also known as gray filter, to reduce only the light quantity without affecting color reproduction.
	Color temperature conversion filter	A filter to change the color temperature. An arbitrary wavelength can be selected.
	Diffusion filter	A filter to diffuse light from a light source and suppress illumination irregularity.
	Infrared cutoff filter	A filter that allows visible light to pass but blocks infrared ray. This filter can be classified into two types: heat-ray absorbing or catathermic filter that absorbs infrared ray and cold filter that reflects infrared rays by a multilayer film.
	Light control film	A film composed of a micro-louver film laminated with PET or other to make diffusing light close to parallel.
Lamp	Halogen lamp	An incandescent lamp with a trace of halogen gas added to the sealed gas. The halogen cycle prevents the blackening of the bulb wall. The optical output and color temperature are stable with less attenuation, compared with those of an ordinary incandescent
	Metal halide lamp	A lamp of great color rendering and high intensity using illumination by various metal halogen compounds and mercury.
	LED	Light Emitting Diode (LED), a semiconductor element, utilizing a property that applying a fixed-direction current to a crystalline substance having semiconductor PN junction generates energy in the substance and emits the energy as light. This basic theory was found early in the 20th century and silicon carbide was confirmed experimentally to emit light if a current was applied.Later studies established the current technology in the 1960s. Red and green were developed first, yellow in the 1970s, blue in 1993 after all, and then white in 1996.
	Constant-current power supply	A power supply that can supply a fixed current even at infinite impedance and varying load.
	Constant-voltage power supply	A power supply that can supply a fixed voltage even at no impedance and varying load.
	Resistance	Resistance R representing the difficulty of a current to pass (R = E/1). The unit is ohm (Ω). If the potential of a current drops one volt (V) per ampere (A), the resistance is 1Ω. This is Ohms Law, $R = V/I$
Fiber	Optical fiber	
	Numerical aperture (NA)	Characteristic of receiving rays transmitted through the end face of an optical fiber. This is determined by the refractive indexes of the core and cladding of the optical fiber. $NA=\sqrt{n_1^2 - n_2^2}$
	Light-receiving angle (θ)	An angle where the optical fiber can receive light. $\theta=2\sin^{-1}(NA)$