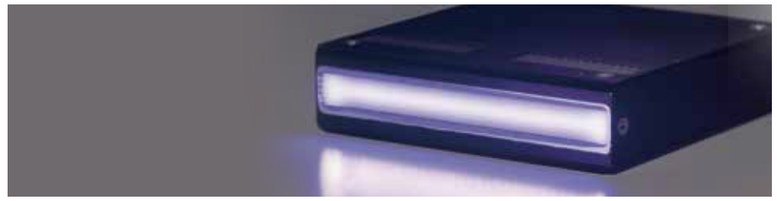
USHIO Applying Light to Life



SURFACE TREATMENT / UV CURE

USHIO

USHIO INC.

Sales Department, Photon Process Global Business Unit, System Solution Division

TOKYO 1-6-5 Marunouchi, Chiyoda-ku, Tokyo 100-8150,Japan
TEL: +81 3-5657-1033 FAX: +81 3-5657-1030
OSAKA Shin Osaka Prime Tower 12F 6-1-1 Nishinakajima,Yodogawa-ku, Osaka 532-0011,Japan
TEL: +81 6-6306-5711 FAX: +81 6-6306-5718
www.ushio.co.jp Mail. stc@ushio.co.jp

USHIO SHANGHAI, INC.
02,03 Unit, 30F, New Bund Center, NO.555 West Haiyang Road/ NO.588 Dongyu Road, Pudong, Shanghai, 200126, P.R.C.
TEL: +86 21-6841-1135 FAX: +86 21-6841-1150

USHIO SHENZHEN, INC.
Unit 08, 52/F, A Block, Kingkey 100 Building, No.5016 Shennan East Road, Luohu District, Shenzhen, P.R.C.
TEL: +86 755-8207-0162 FAX: +86 755-8207-0161

USHIO ASIA PACIFIC PTE. LTD.
28 Genting Lane, #05-05, Platinum 28, Singapore 349585
TEL: +65 6274-5311 FAX: +65 6274-5300

USHIO TAIWAN, INC.
8F, No.4, Sec.1, Zhongxiao W.Rd., Taipei 10041, Taiwan, R.O.C.
TEL: +886-2-2312-3358 FAX: +886-2-2312-3858

USHIO KOREA, INC.
(Yeoksam-dong, Gangnam Center Building), 17F, 388, Gangnam-daero, Gangnam-gu, Seoul 06232 Rep.of Korea
TEL: +82 2-587-1115 FAX: +82 2-587-1118

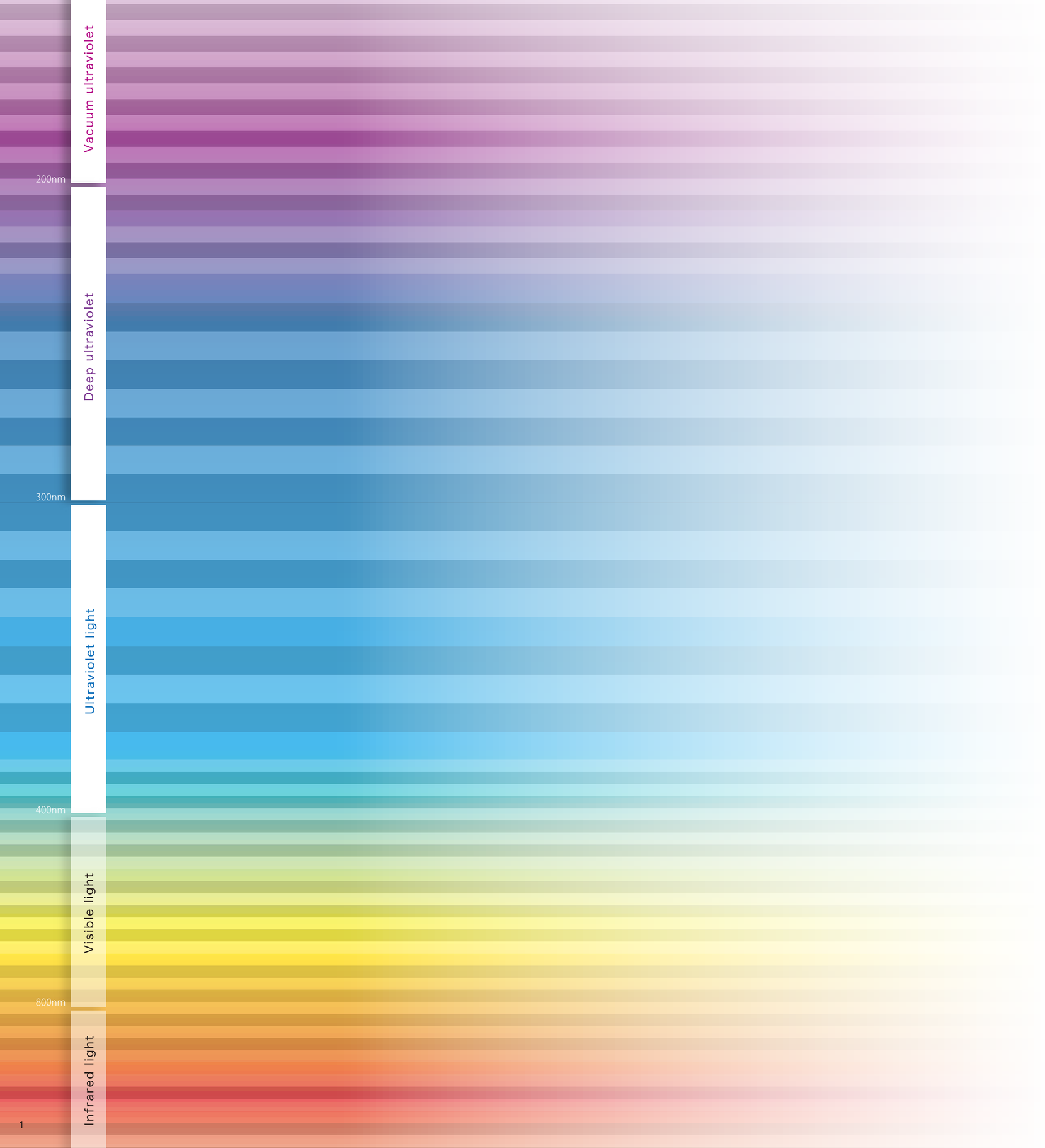
USHIO AMERICA, INC.
5440 Cerritos Avenue, Cypress, CA 90630,U.S.A.
TEL: +1 714-236-8600 FAX: +1 714-229-3180

USHIO EUROPE B.V.
Breguetlaan 38, 1438 BC Oude Meer, The Netherlands
TEL: +31 20-446-9333

USHIO GERMANY GmbH
Münchener Straße 10, 85643 Steinhöring, Germany
TEL: +49 80-94-906-0

USHIO U.K., LTD.
Argyll House, Quarrywood Court, Livingston, West Lothian, EH54 6AX United Kingdom
TEL: +44 129-625-6067

2209K①-1000Ei①



Cleaning, Surface Treatment, Curing, Bonding

Ushio's Cleansing, Surface Treatment, Curing and Bonding 03

Sample Applications 05

Example of manufacturing process 07

Cleaning, Surface Treatment

Excimer Irradiation Units 09

Atmospheric Pressure Plasma Irradiation Device 15

Curing, Bonding

Spot UV Irradiation Units 17

UV-LED 25

Customer Service 33

Ushio's Cleaning, Surface Treatment

Optimize surface conditions with light and plasma

Cleaning and surface treatment technologies offer all sorts of possibilities.
Not only can they improve the overall stability of production processes and increase yields, but they can also add new functionality to materials, allowing combinations of materials that were formerly not possible.
In addition, a wide variety of cleaning and surface treatment processes are available, such as "wet/dry," "physical action/chemical action," and "atmospheric pressure treatment/decompression treatment," and it is necessary to select the most appropriate method for the purpose and application.
Ushio provides solutions to create optimal surface conditions based on light and plasma technologies.

Features of Dry Cleaning/Surface Treatment Technology

Compared with ordinary heatbased curing and drying, UV curing offers the advantages listed below.

Simplified process Space saving

Only UV irradiation is needed, so no rinsing or drying process is required

Low environmental impact

Chemical treatment by photochemistry/free radicals, so no need for chemical management or waste liquid disposal

Easy to incorporate into inline processes

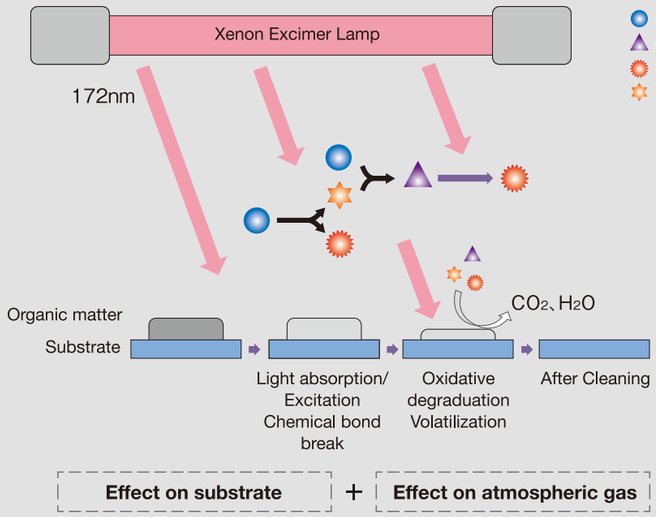
No need for vacuum pulling or release, making it easy to incorporate into inline processes

Can accommodate larger workpieces

Capable of processing even large workpieces of up to three meters

Example of dry cleaning/surface treatment

■ VUV/O_3 Cleaning with Dielectric Barrier Discharge Excimer Lamp



Click here to see a video about "Excimer Light Irradiation System for Surface Treatment."

Ushio's Curing, Bonding

Anything, anywhere —— curing and bonding with UV

"Ultraviolet (UV)-curable resins" are photosensitive agents that instantly harden (cure) or bond upon irradiation by ultraviolet light. Materials coated with such resins can be cured or bonded by irradiation with ultraviolet light in wavelengths short enough to induce a chemical reaction. When used in UV curing and bonding technology, this technique is referred to using terms such as "light hardening" and "UV curing." This UV curing technology was first used practically around 35 years ago in the printing industry for stickers and labels.Since then, applicaions for UV curing have expanded into a range of manufacturing sectors, including the curing of paints and surface coatings, the attachment of precision components such as semiconductors and electronic components, and the bonding of LCD panels, as well as in nanotechnology, biotechnology, fuel cells and photovoltaic cells.

Features of UV Curing Technology

Compared with ordinary heat-based curing and bonding, UV curing offers the advantages listed below.

Quick effect and adhesion

Processes that would take hours with heat curing and bonding can be completed in just a few seconds

Low-temperature processing with little or no heat damage

No high heat is generated, so the temperature of the irradiated object does not increase

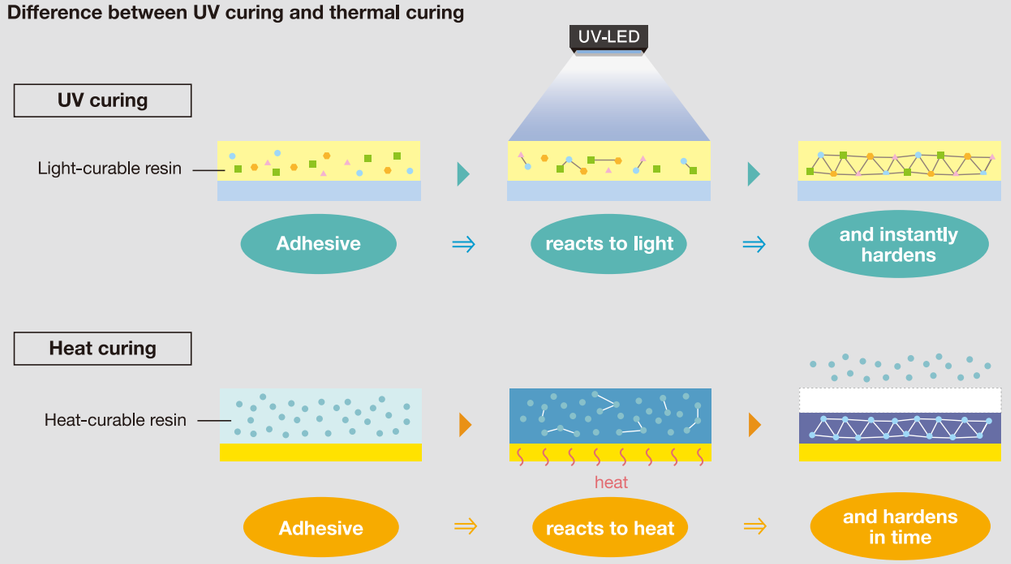
Space saving

Does not require furnaces or other large equipment, so conserves space

Non-polluting

Uses no organic solvents, so this technology is pollution-free and environmentally friendly

■ Difference between UV curing and thermal curing

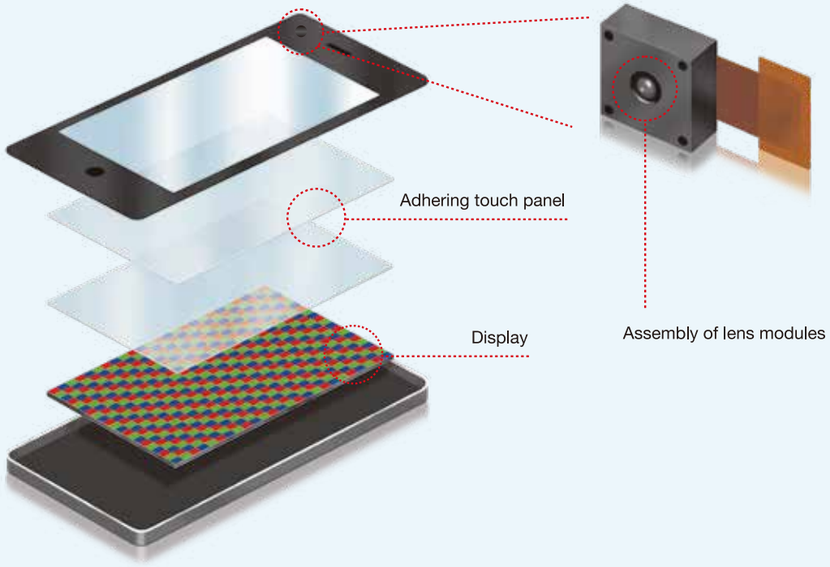


Sample Applications

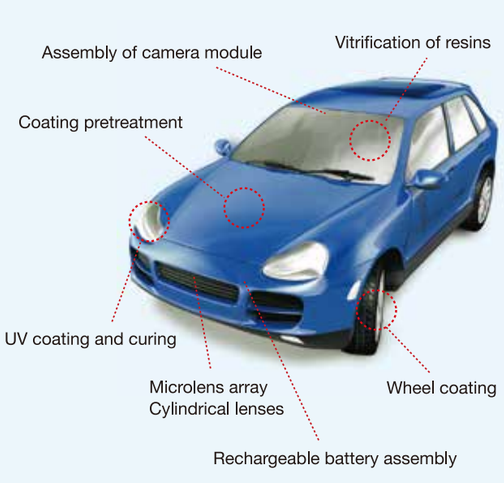
Cleaning, Surface Treatment, Curing, Bonding

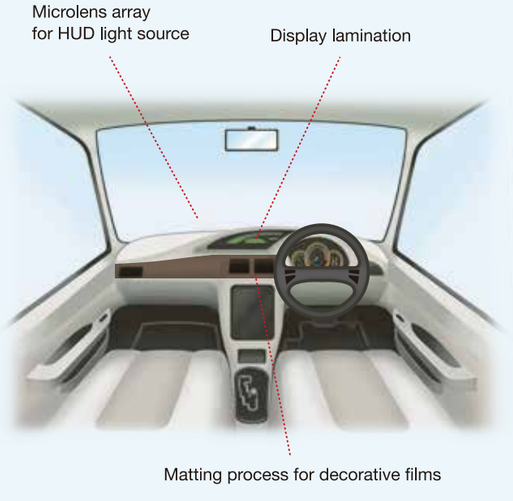
Ushio's light technologies are used in a wide variety of applications to meet all sorts of needs.

For the mobile equipment

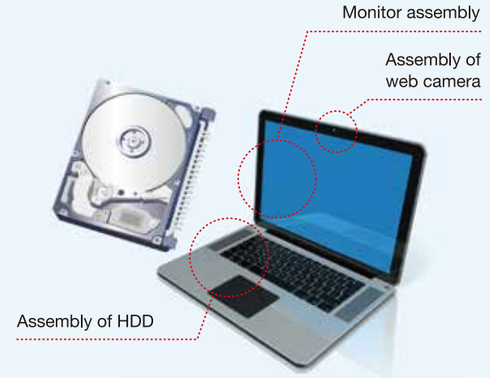


For Automobiles

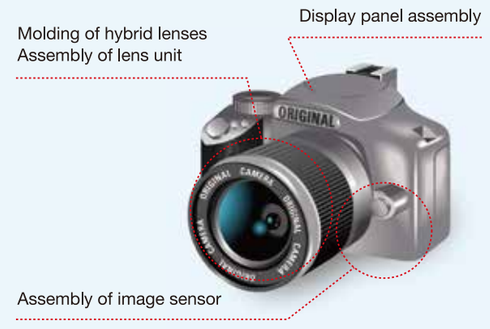




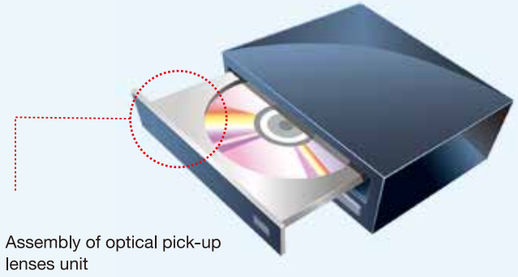
For computers



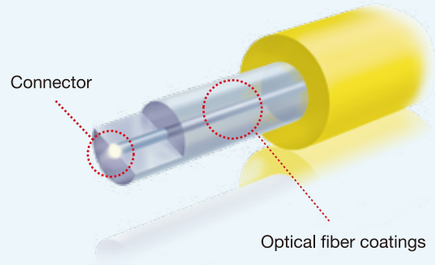
For cameras



For CD, DVD and Blu-ray

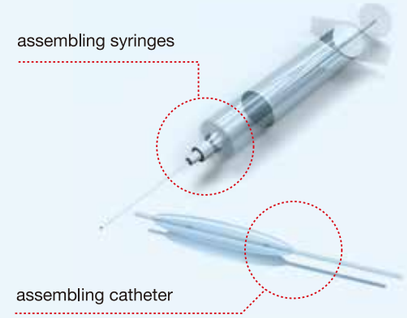


For optical communications



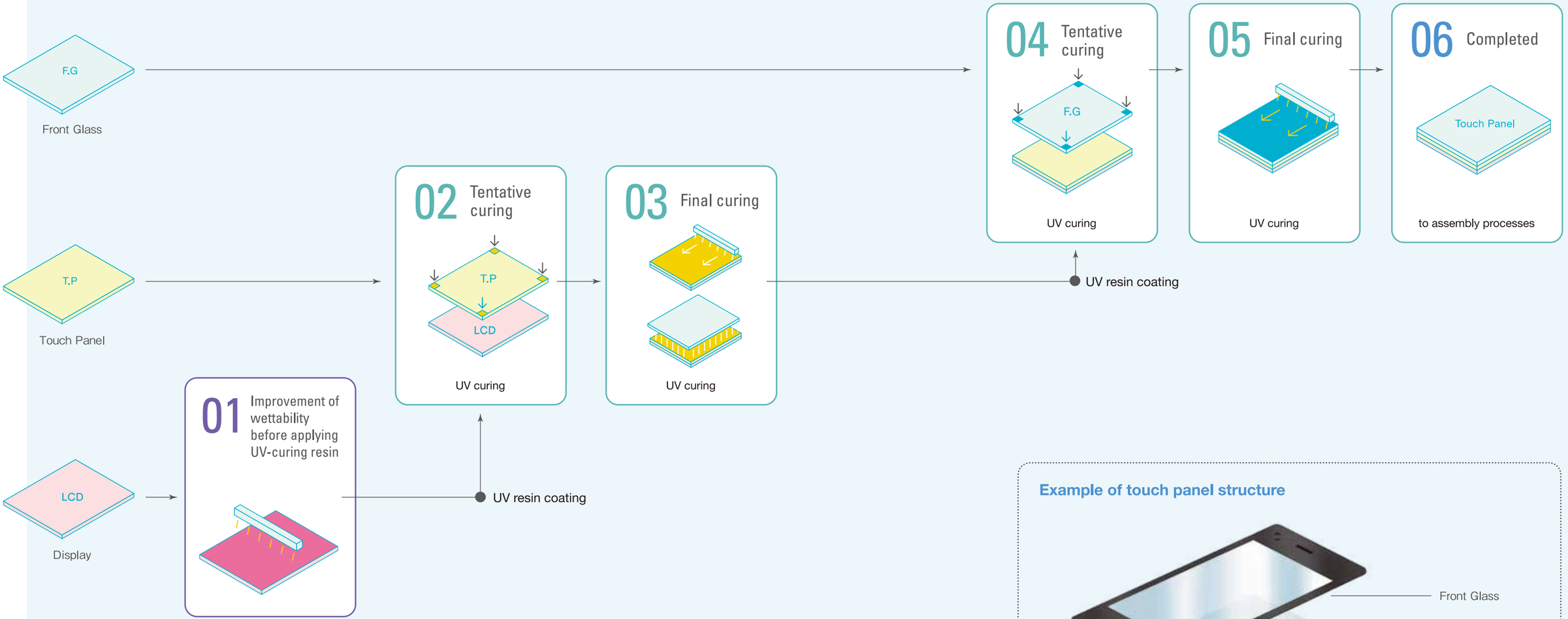
For printing

For medical equipment



Example of manufacturing process

Manufacturing Process of Touch Panels and Ushio's UV Technology



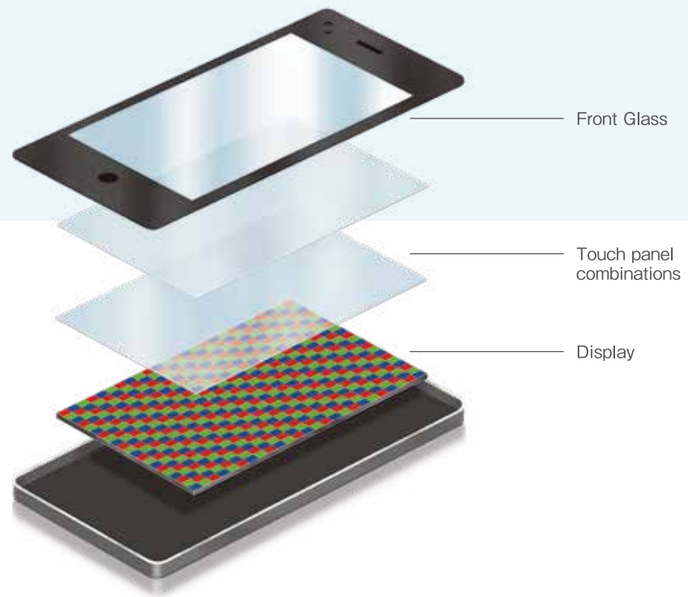
Ushio products used in manufacturing processes

01 Excimer Irradiation Units →P9

02 04 Spot UV Irradiation Units →P17

03 05 UV-LED →P25

Example of touch panel structure



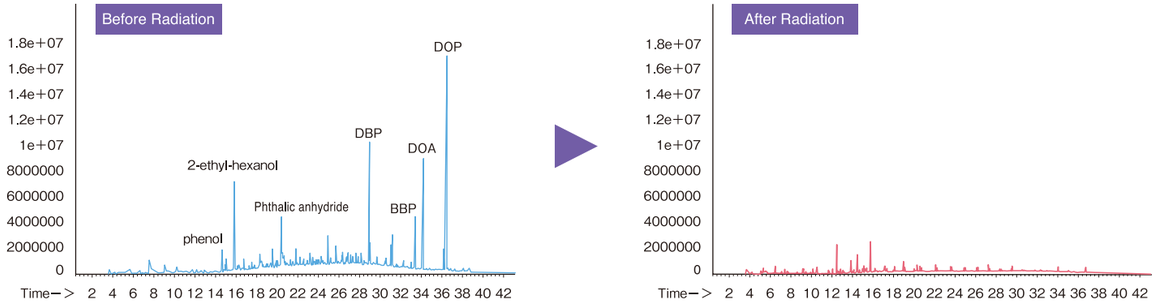
Excimer Irradiation Units

EXCIMER

Cleaning and surface modification by excimer light

This unit emits ultraviolet rays of high photonic energy with the very short wavelength of 172nm.
This equipment can decompose resins and excite gases, and is used for dry cleaning of organic materials, hydrophilization, and adhesive strength improvement.

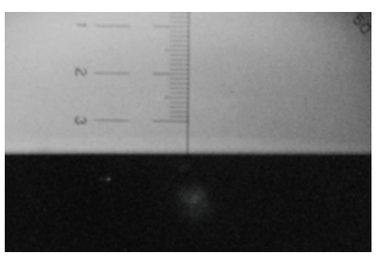
Result of Evaluation by Thermal Desorption GC/MS Analysis



Change of Water Contact Angle

■ **Before Radiation**

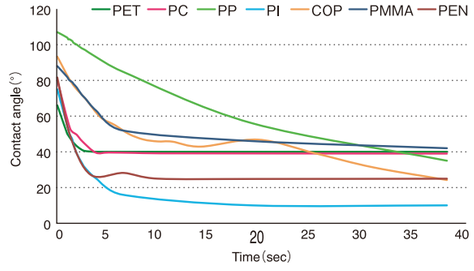
■ **After Radiation**



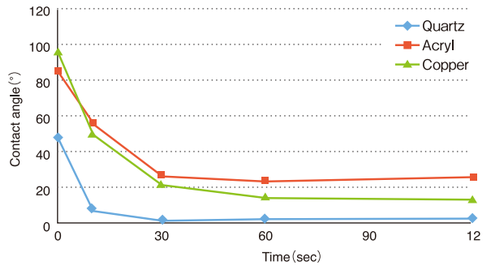
Process Conditions	
Radiation time	10 seconds
Sample	Non-alkali glass
Atmosphere	In atmospheric air
Radiation distance	2mm

Contact angle 50°→ 5° or less（less than measurement limit）

Change in Contact Angle for Various Organic and Inorganic Substrates



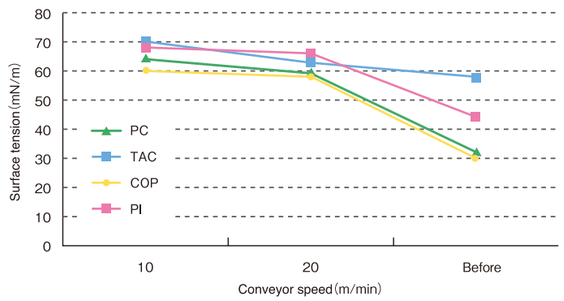
Radiant Emission:50mW/cm²
Work Distance:1mm



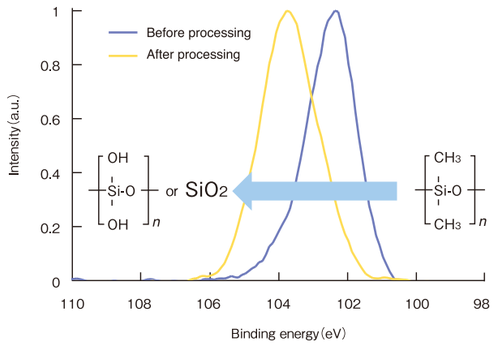
Radiant Emission:40mW/cm²
Work Distance:4mm

Evaluation Example

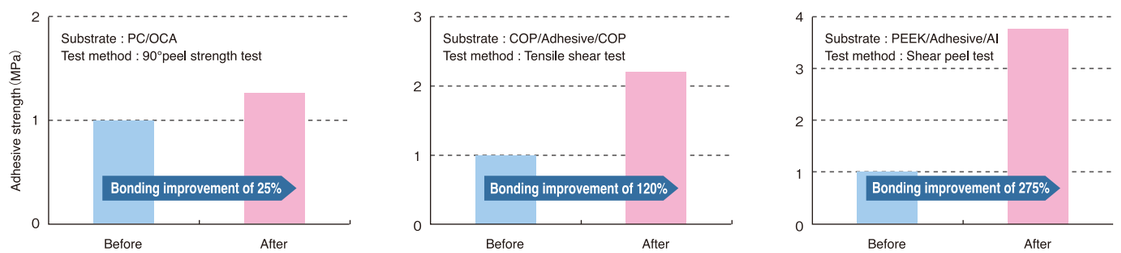
■ **Wettability improvement of film substrate**



■ **SiO_2 conversion of silicone resin surface**



■ **Example of adhesion improvement**



※Degree of adhesion improvement varies greatly according to substrate.

Excimer Irradiation Units

EXCIMER

Features

World's first successful commercialization of this type of product

In 1993, excimer lamps were the first products launched by Ushio.

Cumulative shipment of 6,000 units

Focusing on the FPD industry, as of 2018 we have shipped a total of more than 5,000 units.

High market share

As a leading manufacturer of excimer lamps, we constantly work to advance research & development and to expand out lineup to meet the needs of our customers.

Collaboration / Open Innovation

For customers who are considering the purchase of our products, demonstration units may be loaned out, with a Application Laboratory Facilities available.
Witnessed experiments or experiments using an customer provided sample can be conducted. Upon completing an experiment, we conduct analysis and assessment (XPS,FT-IR,FE/SEM etc), and then send an experiment report to each customer.
Any customer interested in the above should submit an application from our Homepage or contact the Business Division.

For a witnessed experiment:
Inform us of the contents of the desired experiment or send/deliver a workpiece to us in advance. We will be able to start an experiment soon after you visit us.

For an experiment with an customer provided sample:
Inform us of the contents of the desired experiment in advance and send us a workpiece.

※Note that it may be difficult for us to satisfy certain customer requests depending on the contents of an experiment or analysis.
For details, please contact us for further information in advance.

A rich light source lineup

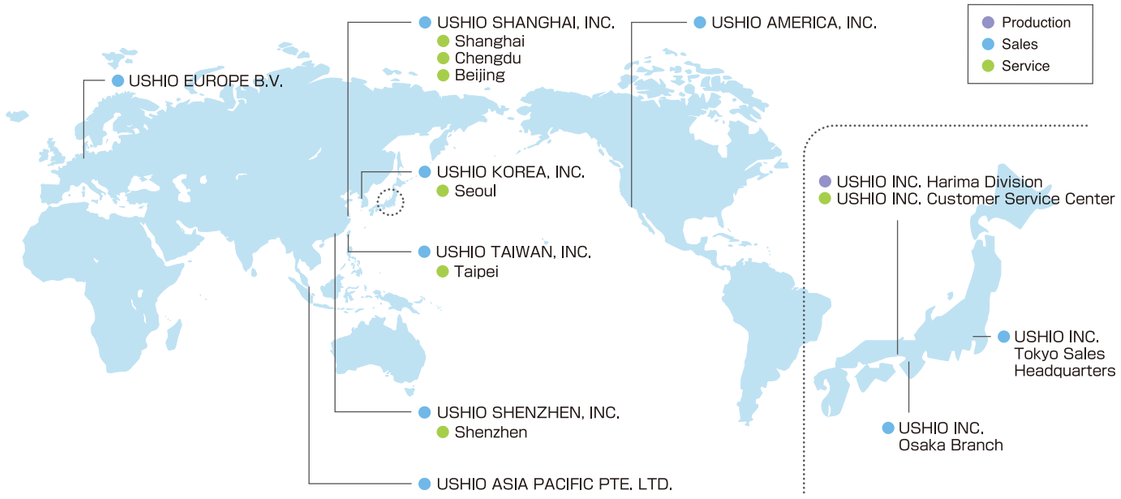
We make a broad lineup of equipment, ranging from laboratory verification equipment to mass production facilities.
We can propose customizations to meet individual customer requirements. With its outstanding productivity, the HP-V series enjoys a particularly high reputation.

- **High cumulative exposure by wide, flat tube structure**
- **High radiation emittance by proprietary reflective film technology**
- **Covers widths of up to 3,400 mm with a single lamp**

Achieves processing with minimal number of lamps. Contributes to CoO reduction.

Support Organization

Ushio Group provide support program such as spare parts sales, tool maintenance, relocation, modification or calibration.
Customer service center in Japan collaborate with worldwide service office to provide quick and convenient support.
We support preventing your tool from any troubles by proposing preventive maintenance program.
Please use our support program for comfortable operation and optimization for market and technical needs change.



Excimer Irradiation Units

EXCIMER

Product Lineup

Surface light source for □100mm window size

■ Specifications

Model	Atmosphere	放射発散度
SSP04A-***	Normal atmosphere	20mW/cm²以上
SSP04V-***	Vacuum	18mW/cm²以上

■ Utilities

Electricity	Nitrogen
AC100 or 200V 0.1kVA	4.5～5.5NL/min (purity of 99.99% or more)

HPV-ST Series

Compact in size while maintaining the performance of the HPV series

STN Series

STA Series

■ Specifications

Model	Process gas	Emission wavelength	Radiation divergence
STN3-***	Required	300mm	170W/cm² or greater
STN5-***	Required	550mm	

※100V/200V specification for 300 mm width, 200V specification for 550mm width

■ Utilities

Model	Process gas	Emission wavelength	Radiation divergence
STA3-***	Not required (air intake)	300mm	170W/cm² or greater
STA5-***	Not required (air intake)	550mm	

※100V/200V specification for 300 mm width, 200V specification for 550mm width

Small experimental unit (for □100mm window)

■ Reference specifications

Irradiation area	□100(mm)
Irradiation emittance	Over 20mW/cm²
Irradiation distance (window to stage top)	4～25mm (When equipped with elevating mechanism)
Rough size (excluding protrusions and lighting power supply)	W250 × D500 ×H325(mm)

■ Utilities

Electrical capacity	AC100V 0.3KVA
Cooling water (municipal supply)	—
Exhaust	0.1～0.2m³/min
Gas for lamp housing	N_2 : 5～6NL/min
Gas for processing chamber	N_2 : 0～50NL/min CDA : 0～1NL/min

SVM Series (Stage conveyor with material handling mechanism for large substrates)

■ Reference specifications

Irradiation area	～730×920(mm)
Irradiation emittance	Over 170mW/cm²
Irradiation distance (window to stage top)	3～40mm
Rough size (excluding protrusions and lighting power supply)	—
Conveyor speed	0.5～5.0m/min

※Approximate size and utilities vary according to unit size. Please contact our sales representative for details.
※Available with or without process gas (intake type)

Film Excimer Series (Horizontal conveyor type)

Provides 50% reduction in N2 flow rate. Allows control over oxygen concentration even during high-speed substrate handling.

■ Reference specifications

Irradiation area	～width 1,500(mm)
Irradiation emittance	Over 170mW/cm²
Irradiation distance (window to stage top)	4mm(Adjustable)
Rough size (excluding protrusions and lighting power supply)	—

※Approximate size and utilities vary according to unit size. Please contact our sales representative for details.

Atmospheric Pressure Plasma Irradiation Device

Features

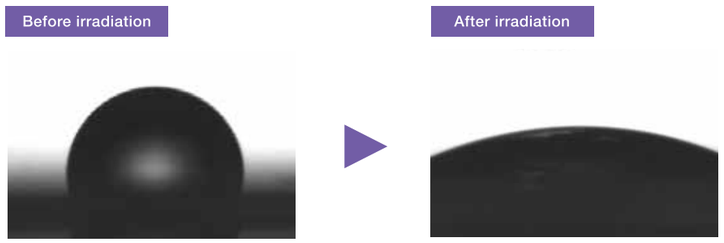
Atmospheric pressure plasma irradiator that combines high frequency power supply technology developed for excimer lamps with Ushio's unique reactor structure.

Unparalleled compact design

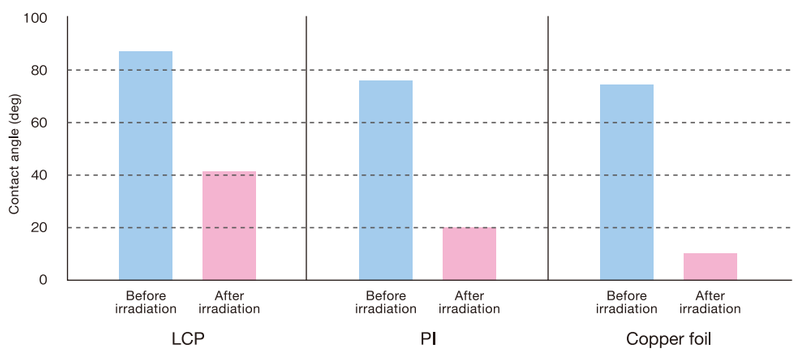
Low temperature treatment Low damage

High reliability

Example of COP (cyclic olefin polymer) hydrogenation

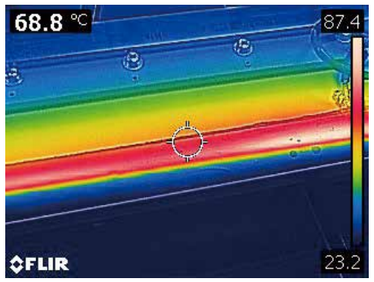


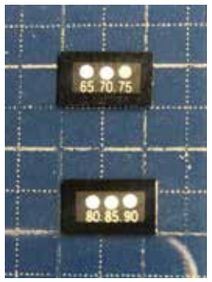
Change in contact angle of organic/inorganic materials



Low-temperature processing / low damage

Enabling low-temperature processing, effective for irradiating resins and film substrates that have low heat resistance
High cooling efficiency enables reactor cooling with process gas only





Substrate temperature : 65°C or lower
Results of thermolabel evaluation of glass substrates when irradiated at WD of 2 mm and transfer speed of 0.15 m/min

Long life and high reliability

- Reactor with a unique structure that is less affected by thermal expansion and more resistant to cracking
- Highly reliable high-frequency power supply with a total of more than 5,000 units shipped

	Direct discharge method	Ordinary DBD method	Ushio's original DBD method
Structure	Electrode / Electrode	Cooling and electrode / Cooling and electrode	Dielectric / Cooling and electrode
Efficiency	◎ Overwhelming advantage over DBD	△	○
Life	× Discharge continues as electrode is consumed	△ Dielectric cracks due to expansion coefficients of metal and dielectric	○ Structure less affected by expansion coefficient

※DBD : Dielectric Barrier Discharge

Spot UV Irradiation Units

Spot-Curing

Features

3 times more irradiance than before. Curing requires only 1/3 of the time!
High-power spot UV irradiation apparatus.

SP-11

Shorter curing time | **Fewer devices** | **Improves adhesion**

Specifications

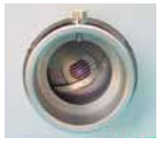
Model	SP11_275A
Light Source	Preset 275W UV lamp
UV irradiation	6500 mW/cm²(previous: 4080mW/cm²) [Conditions] Ushio fiber SF-101AQ, irradiation distance 15mm, Ushio intensity meter: UVD-S365 (photoreceptor ø1mm) [Remarks] SP11 UV wavelength measurement is limited with Ushio irradiometer; use values as a guide. Curing speed is therefore faster with broad-spectrum curing provided with this apparatus depending on the work material.
Lamp life	2000 hours / 50% of initial UV irradiance
Shutter	Motor shutter timer/manual controllable Timer settings: 0.5 – 999s (0.1-s steps), 1000 – 9999s (1-s steps)
Weight	Approx 8.3kg

Lamp replacement One-touch system

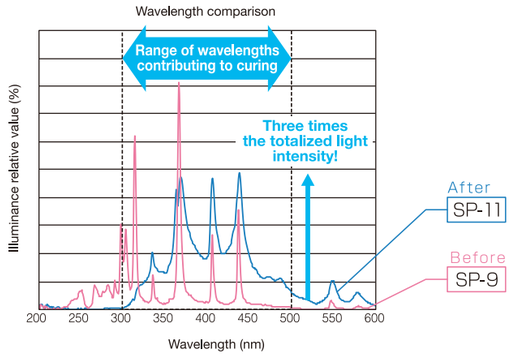
No special tools/No optical axis adjustment

0-to-100% Light Control (Mechanica l Diaphragm)

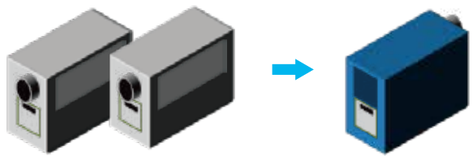
Light can be controlled in increments of 1% from 0% to 100% by a light control system using a simple Mechanical diaphragm. The irradiance corresponds almost linearly to the scale value.



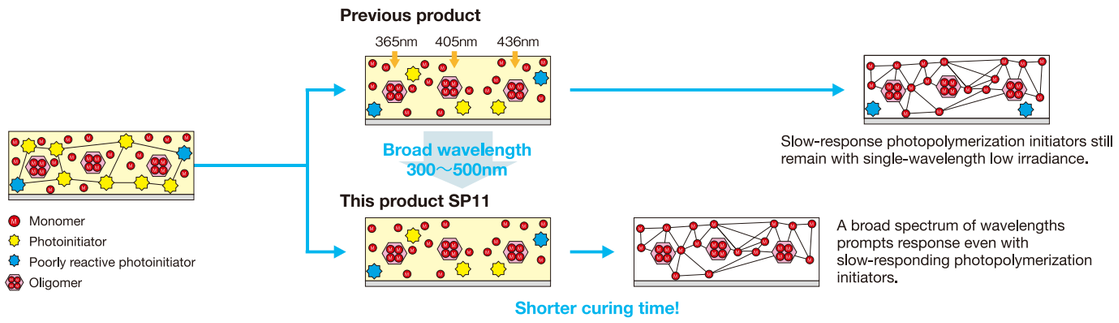
■ Broad spectrum of wavelengths increases irradiance to 3 times more than before
Curing time down to 1/3



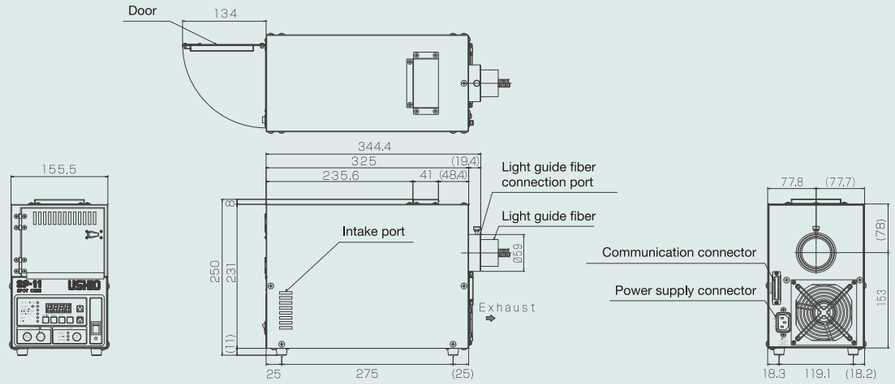
■ High-level irradiance, requiring only half the number of apparatuses



■ Broad-spectrum light achieves deeper and more intense curing

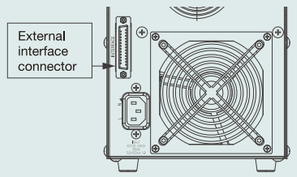


■ Appearance

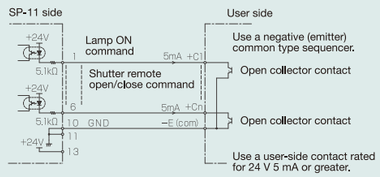


■ External interface

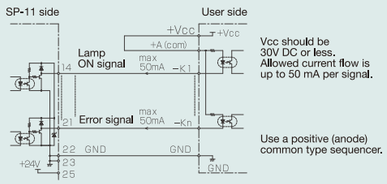
D-sub 25PIN



● Signal input



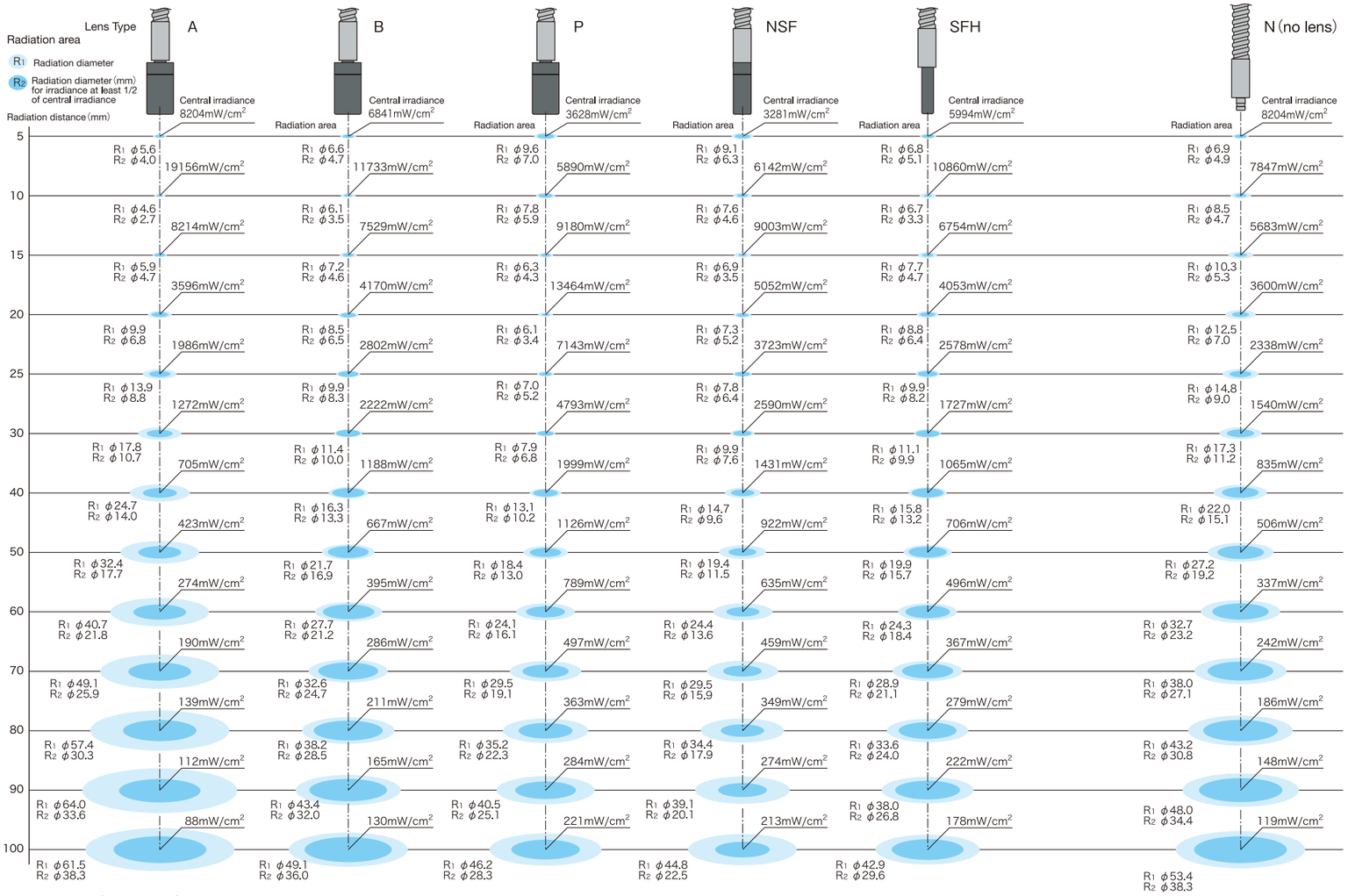
● Signal output



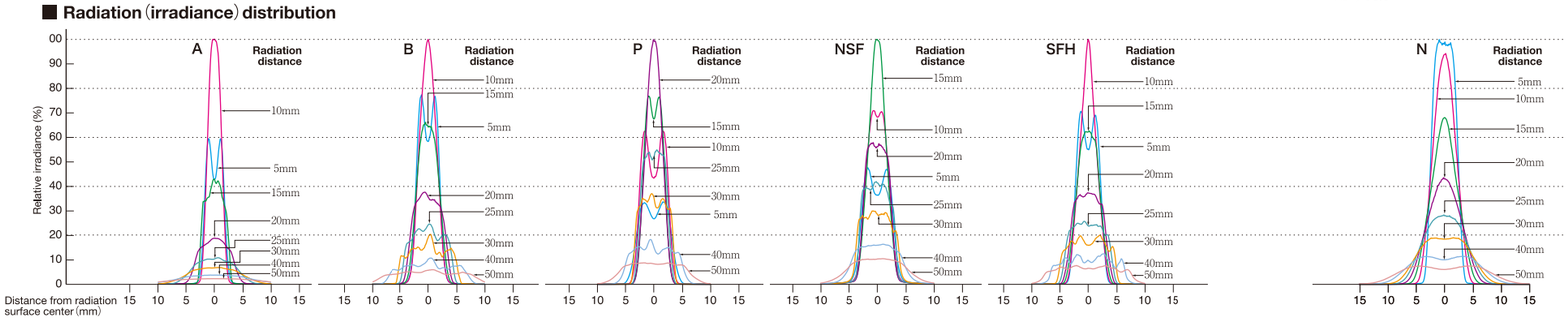
Spot UV Irradiation Units

Spot-Curing

High illumination type



Radiation (irradiance) distribution



Intensity comparison by number of branches (referential value)

Fiber type: SF (φ5mm) No lens	Number of branches			
	1	2	3	4
Relative intensity	100%	85%	65%	50%

※For UIT250/UVD-S365 when the number of branches is 1, the length is 1m, and the power is 250W

Fiber Line-up

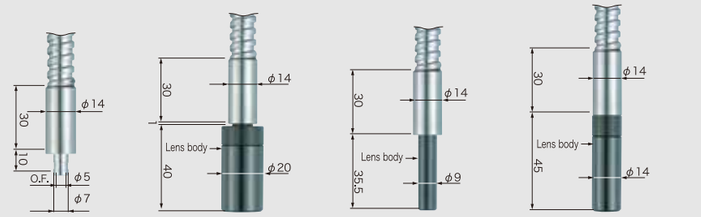
Optical fiber units can be selected based on number of branches, length, and radiation diameter to meet the features of a newly developed light source.

■ Standard Quartz Fiber Specifications

	Type SF
Fiber diameter	φ5mm
Number of branches	1～4
Fiber length	1m

※More than 4 branches are available.
※Other fiber diameters and lengths are also available by ordering.

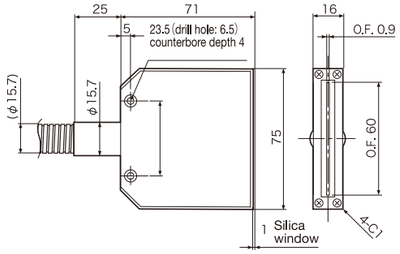
■ Type SF



Options

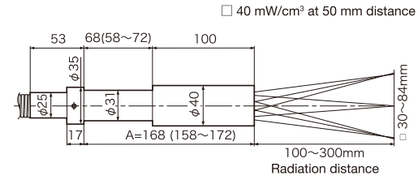
■ Line fiber type UV irradiation unit

By combining with Ushio's unique optical design technologies, we can customize our products to suit your needs andall forms of lines.



■ Special optical fiber with uniform radiation lens

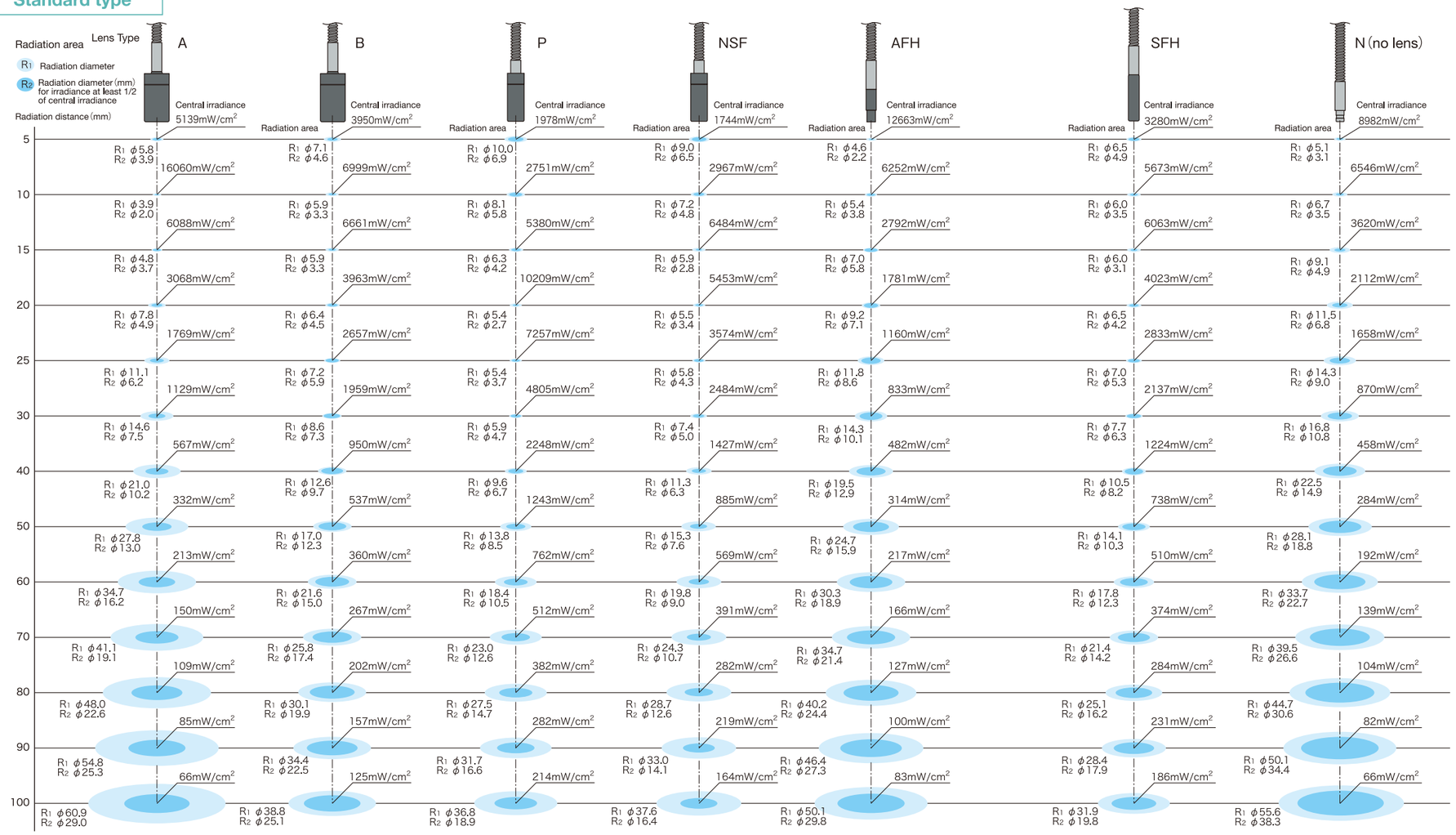
Special lens and special optical fiber enable an irradiation surface of from □ 30mm to □ 84mm.



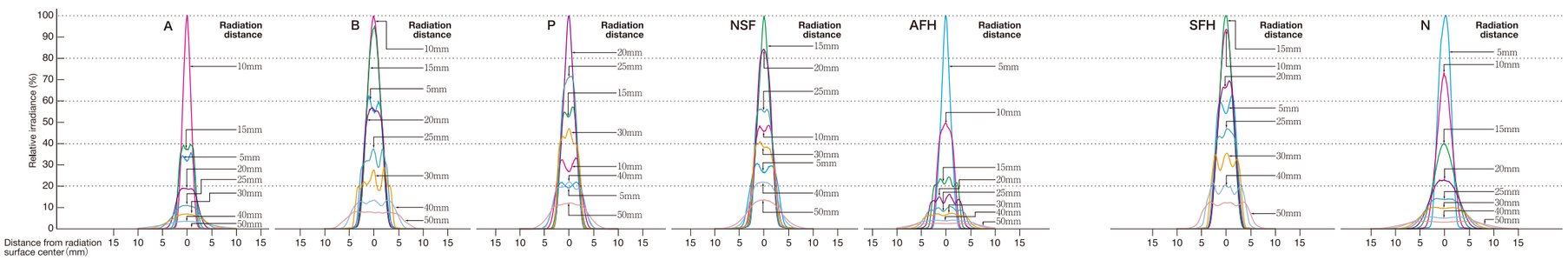
Spot UV Irradiation Units

Spot-Curing

Standard type



■ Radiation (irradiance) distribution



Intensity comparison by number of branches (referential value)

Fiber type: AF No lens	Number of branches			
	1	2	3	4
Relative intensity	100%	90%	80%	60%

※With the UIT-250 when using 1 branch with a length of 1m and a 200/250W switchable main unit

Fiber Line-up

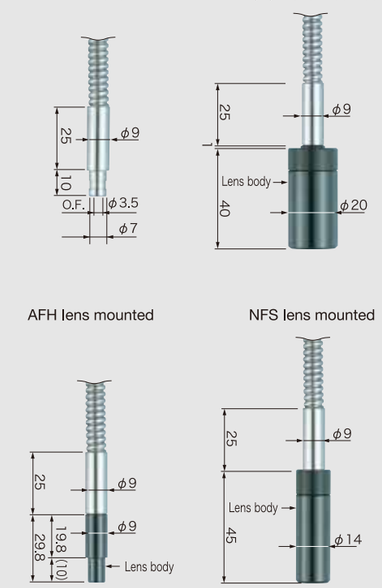
Optical fiber units can be selected based on number of branches, length, and radiation diameter to meet the features of a newly develpoed light source.

■ Standard Quartz Fiber Specifications

	Type AF
Fiber diameter	ϕ3.5mm
Number of branches	1～4
Fiber length	1m

※More than 4 branches are available.
※Other fiber diameters and lengths are also available by ordering.

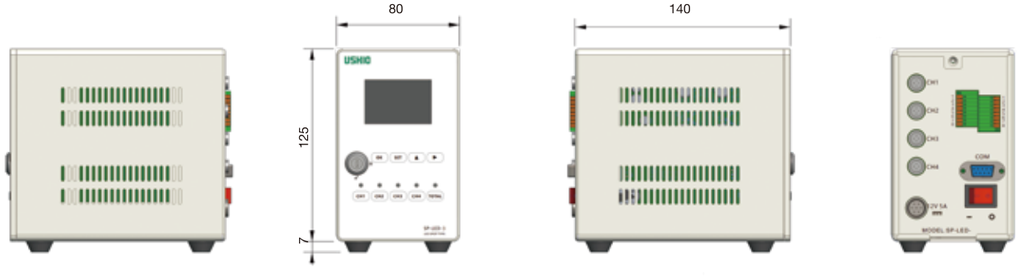
■ Type AF



Standard-type AF fiber with “A”,“B”, or “P”tip lenses, each having a tip lenses, each having a different radiation distance and radiation diameter, or with a fine lens that can easily access a narrow place.

Spot UV Irradiation Units

Appearance



Specifications

General Body

Dimensions	W80mm×D148mm×H132mm
Weight	Approx. 1.2kg
Rated Voltage	100-240VAC±10% single-phase,50/60Hz
Power consumption	100% setting 37VA(0.37A at AC100V)
Air exhausts	0.2m3/min max
Operating environment	Temperature 0 to 40°C, Humidity 80% max
Strage environment	There should be no corrosive gas or dust. Water,oil,etc. shall not be spiashed directly Tempareture 0 to 50°C, humidity 80% max (non condensing)
AC cable length	1.5m

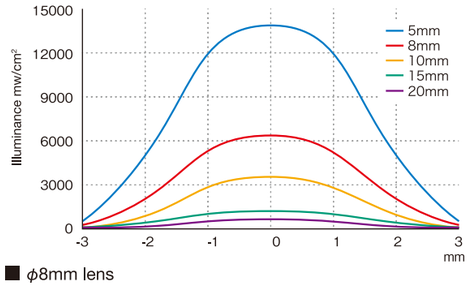
Optical System

LED unit	1 unit (4 elements/4 branches)
LED unit expected life	20,000 hours
Initial peak illuminance	12,000mw/cm² or more
Light head length	2m
Light intensity adjustment	0% to 100%: 1% step
Irradiation time setting	Timer setting 1 to 999 seconds (0.1 second step)
Head types	ϕ3, ϕ6, ϕ8, ϕ10

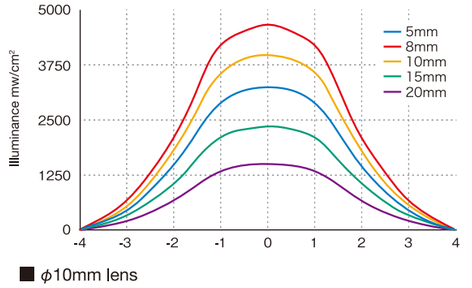
Signal terminal no.	Signal type	Signal content
Left no. 5	24V signal	Channel 1 output signal
Left no. 6	24V signal	Channel 2 output signal
Left no. 7	24V signal	Channel 3 output signal
Left no. 8	24V signal	Channel 4 output signal
Right no. 5	Power supply ground	Left side 5-8 common ground
Right no. 6	Relay common contact	Normally, Right 6 is shorted to Right 7; when error occurs, Right 6 is shorted to Right 8
Right no. 7	Relay normally close contact	
Right no. 8	Relay normally open contact	

Optical simulation

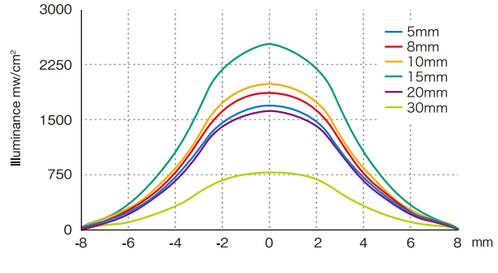
ϕ3mm lens



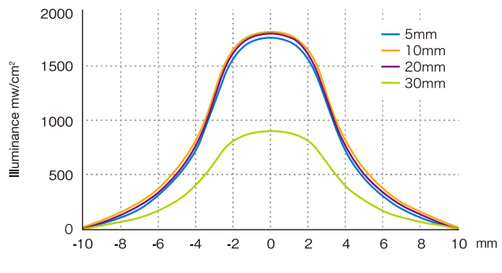
ϕ6mm lens



ϕ8mm lens



ϕ10mm lens



UV-LED

UV-LED

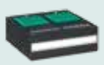
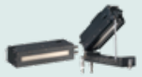
Product Lineup

Compared to lamps with a broad wavelength range, UV-LED lamps can irradiate at specific wavelengths, enabling low-temperature processing.

Can be turned off and on instantaneously, conserving electricity (approx. 75% reduction) and enabling pulsed lighting operation.

Enables long lamp life.

Makes it possible to propose products that include a lighting power supply and control unit.

Model Series		ESd	EHi	 i/iⅡ	iC	iⅣ	iⅢ	iⅢR	 A	Aij
Peak intensity		Air-cooling	Air-cooling	Air-cooling	Air-cooling	Air-cooling	Air-cooling	Air-cooling	Water-cooling	Water-cooling
Cooling method		~4.5W/cm²	~5.5W/cm²	~10.0W/cm²	~10.0W/cm²	~14.0W/cm²	~13.0W/cm²	~2.0W/cm²	~14.0W/cm²	~4.5W/cm²
Performance characteristic	WD-free	●					●			
	Connection optics	●	●	●	●					●
	High efficiency cooling					●			–	–
	Split lighting			●				●	●	
	LED board exchange			●	●	●	●	●	●	●
	Higher dosag		●			●	●		●	
	Wavelength Selectione	●	●	●	●	●	●			●
	Silent Design					●	●		–	–
	Compact and light weight	●	●		●	●			–	–
	LED driver integrated	●	●	●	●	●	●	●		●
	Exclusive power supply	※1	※1	●	●	●	●	●	●	※1

※1 Possible to propose with a single power supply.

WD-Free
Equal illuminance can be obtained at irradiation distances of 0 to 15 mm.

Connecyion Optics
When lamps are connected, there is no decrease in illuminance at the points of connection.

High Efficiency Cooling
High integrated light output is achieved with low power consumption through the use of high-efficiency cooling.

Split Lighting Control
Lighting can be split within a module.

LED Board Exchange
No need to return modules in case of trouble. Customers can replace LED boards on their own.

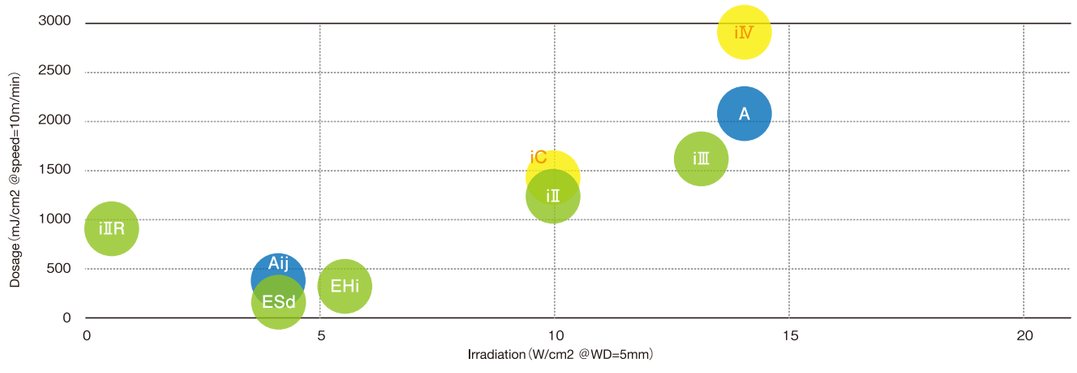
High Dose Capability
Model that provides industry's highest integrated light output in terms of size and power consumption.

Wavelength Selection
Selectable wavelengths from 365 to 405 nm.

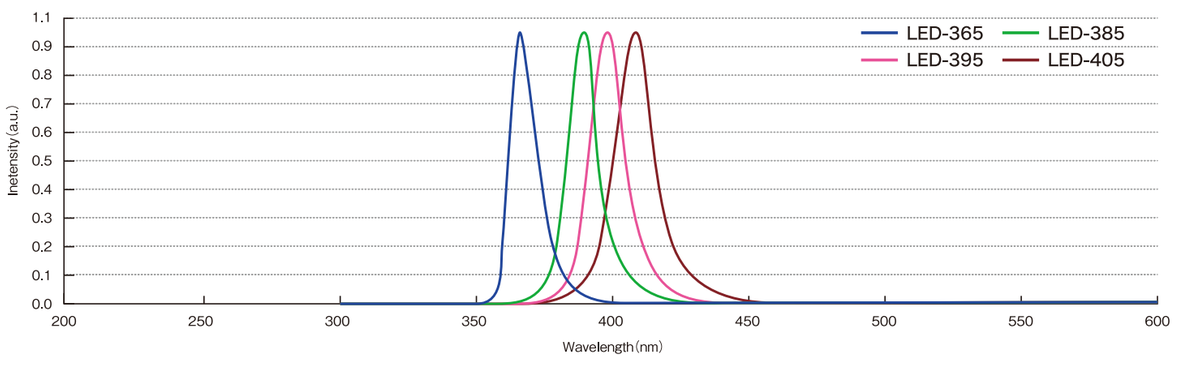
Silent Design
High power, yet quiet due to optimal fan control.

Compact and Light Weight
Easy-to-use size and weight.

■ UniJet lineup Irradiation and Dosage



■ UV-LED spectral distribution (reference values)



UV-LED

UV-LED

E Series

Air-cooling

Features

Significantly improved light distribution uniformity when modules are connected, with powerful specification despite palm-sized configuration.
An entry-level UV-LED model that can be used in any situation.

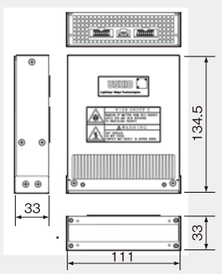
- Both HD and HC types are available
- 10%～100% dimmable
- Scalable by edgeless design
- Built-in LED driver

Specifications

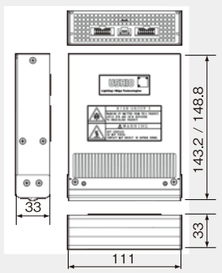
E series (GEN2) Standard type		HD		HC	
		E075Sd HD	E110Sd HD	E075Sd HC	E110Sd HC
Window Size (mm)		75×17	108×17	76×φ10	109×φ10
Width (mm)		78	111	78	111
Length (mm)		33			
Height (mm)		134.5		143.2	
Peak Irradiance (W/cm²)	365nm	6.5 (WD=0mm) ／2.7 (WD=5mm) ※1		4.6 (WD=10mm) ※1	
	385nm	10 (WD=0mm) ／4.2 (WD=5mm) ※1		6.5 (WD=10mm) ※1	
	395nm				

※1 Reference value based on measurement by USHIO.　※ A single power supply is also available as an option.

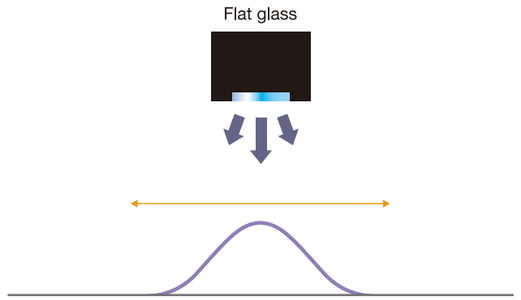
■ E110Sd HD
■ E110Hi HD



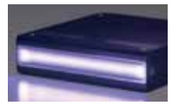
■ E110Sd HC
■ E110Hi HC



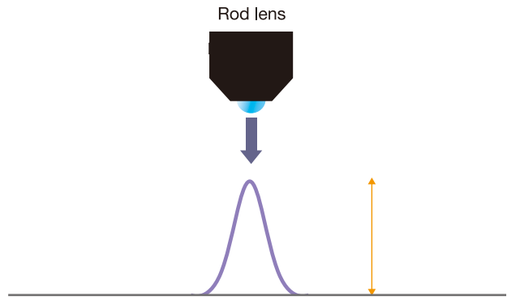
■ **HD Type (High Dose)**



High dose energy is suitable for inkjet printing as well as applications that requires quick UV curing demand.



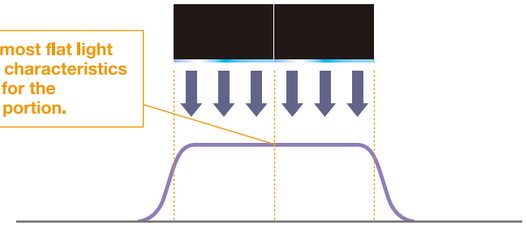
■ **HC Type (High Condensing)**



High condensing UV by optical rod lens is suitable for long distance / narrow curing area.

■ **Modules can be connected**

Achieves almost flat light distribution characteristics with GEN 2 for the connecting portion.



Specifications

E series (GEN2) High power type		HD		HC	
		E075Hi HD	E110Hi HD	E075Hi HC	E110Hi HC
Window Size (mm)		75×17	108×17	76×φ10	109×φ10
Width (mm)		78	111	78	111
Length (mm)		33			
Height (mm)		134.5		143.2	
Peak Irradiance (W/cm²)	365nm	5.4 (WD=0mm) ／3.8 (WD=5mm) ※1		4.2 (WD=5mm) ※1	
	385nm	7.5 (WD=0mm) ／5.4 (WD=5mm) ※1		6.1 (WD=5mm) ※1	
	395mm				

※1 Reference value based on measurement by USHIO.　※A single power supply is also available as an option.

UV-LED

UV-LED

iC Series

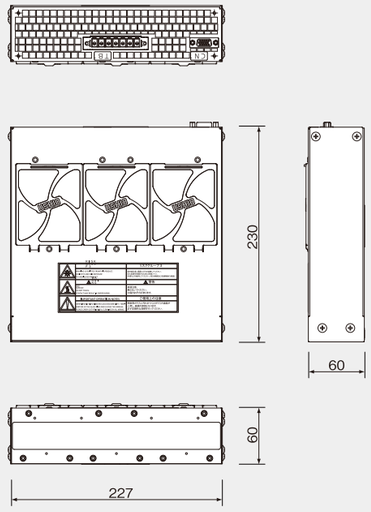
Air-cooling

Features

Sufficient illuminance and integrated light output to meet basic
productivity requirements for various photosensitive resins.
In addition, this basic model is easy to use, particularly in terms of size and air intake/exhaust requirements.

- High irradiance: Up to 13.5W/cm²
- Smallest widely used 10W/cm² model in the world
- 10%～100% dimmable
- Scalable by edgeless design
- Built-in LED driver
- Replaceable UV-LED board

■ i225C



Specifications

iC series		i075C	i150C	i225C	i130C	i375C
Window Size (mm)		73×29	148×29	223×29	289×29	373×29
Width (mm)		78	152	227	302	377
Length (mm)		60				
Height (mm)		230				
Peak Irradiance (W/cm²)	365nm	9.0 (WD=0mm) ／7.0 (WD=5mm) ※1				
	385nm	12.5 (WD=0mm) ／10.0 (WD=5mm) ※1				
	395nm	13.5 (WD=0mm) ／11.0 (WD=5mm) ※1				

※1 Reference value based on measurement by USHIO.

iIV Series

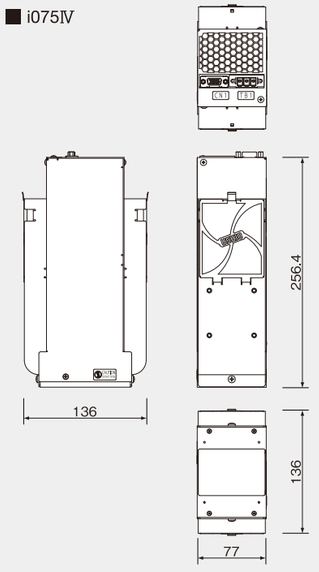
Air-cooling

Features

Air-cooled model with integrated light output that “far exceeds that of water-cooled models.”
This is our flagship model, which we recommend for use in environments
where curing cannot be achieved by conventional UV-LEDs.

- Achieves high irradiation of up to 15W/cm²
- Achieved approx. 240% increase of dosage than iII series
- 25% more compact than iIII
- 25% lighter than iIII
- Quiet design
- 15%～100% dimmable
- Built-in LED driver
- Replaceable UV-LED board

■ i075IV



Specifications

IIV series		i075IV	i150IV	i225IV	i130IV	i375IV	i450IV	i525IV
Window Size (mm)		75×52	150×52	225×52	300×52	375×52	450×52	525×52
Width (mm)		77	152	227	302	377	452	527
Length (mm)		136						
Height (mm)		256.4						
Peak Irradiance (W/cm²)	365nm	10.5 (WD=0mm) ／10.0 (WD=5mm) ※2						
	385nm	13.0 (WD=0mm) ／12.5 (WD=5mm) ※2						
	395nm	15.0 (WD=0mm) ／14.0 (WD=5mm) ※2						

※1 Available for 395nm ※2 Reference value based on Ushio measurement.

UV-LED

UV-LED

i lll Series

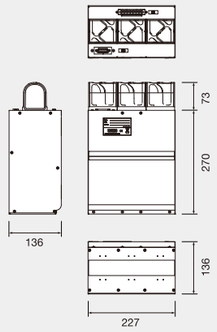
Air-cooling

Features

This model is designed for customer ease of use, providing quiet operation along with high power and working distance flexibility.

Specifications

■ i225Ⅲ



iⅢ series		i075Ⅲ	i150Ⅲ	i225Ⅲ	i300Ⅲ	i375Ⅲ	i450Ⅲ	i525Ⅲ	i600Ⅲ	i675Ⅲ	i750Ⅲ
Window Size (mm)		75×40	150×40	225×40	300×40	375×40	450×40	525×40	600×40	675×40	750×40
Width (mm)		77	152	227	302	377	452	527	602	677	752
Length (mm)		136									
Height (mm)		270									
Peak Irradiance (W/cm²)	365nm	9.0 (WD=0mm) / 7.0 (WD=5mm) ※2									
	385nm	12.5 (WD=0mm) / 10.0 (WD=5mm) ※3									
	395nm	13.5 (WD=0mm) / 11.0 (WD=5mm) ※3									

※1 Available for 385nm and 395nm. ※2 Reference value based on measurement by Ushio. ※3 Reference value based on measurement by Ushio at 395nm.

i ll R Series

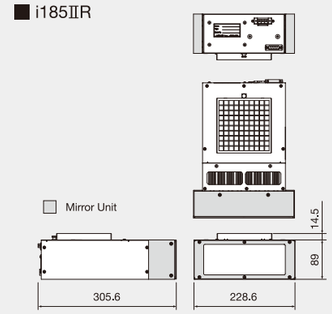
Air-cooling

Features

This model is equipped with a mirror unit that enables uniform UV irradiation over a wide area.

Specifications

■ i185ⅡR



iⅡR series		i185ⅡR	i245ⅡR	i310ⅡR	i185ⅡR-2	i185ⅡR-2	i185ⅡR-2
Window Size (mm)		184.8×69	246.6×69	307.4×69	372.2×69	395.8×69	619.4×69
Width (mm)		228.6	290.4	252.2	420.8	544.4	668
Length (mm)		305.6					
Height (mm)		103.5			113.5		
Peak Irradiance (W/cm²)	385nm	1.5 (WD=10mm) ※1					

※1 Reference value based on measurement by Ushio.

A Series

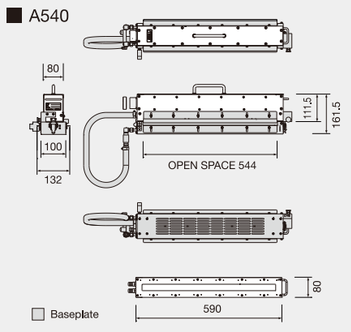
Water-cooling

Features

This water-cooled, high-illumination model is ideal for environments that are not suitable for air-cooled systems.

Specifications

■ A540



A series		A180	A270	A360	A450	A540
Window Size (mm)		180×26	270×26	360×26	450×26	540×26
Width (mm)		230	320	410	500	590
Length (mm)		80				
Height (mm)		111.5				
Peak Irradiance (W/cm²)	385nm	Full : 16.0 (WD=0mm) / 14.0 (WD=5mm) ※1 Half : 8.0 (WD=0mm) / 7.0 (WD=5mm) ※1				

※1 Reference value based on measurement by Ushio.

Power supply for UV-LED air cooling

Features

- Fine irradiation control with 200 dimming levels: Digital display enables reproduction of dimming values
- All-in-one structure with power supply and enables single-unit control. (Separate type is also available.)
- Error signals are output from the irradiation device's built-in IF board
- Compact design requires little space for installation
- For retrofits, three levels of control signals can be input for remote dimming control.

i/ill/illR/iC/illl/ilV Series-specific power supply

Specifications

External dimensions	Width (mm)	400
	Length (mm)	616
	Height (mm)	150
Power supply capacity※1		180–240 V AC single phase + 1G, 50/60Hz, 2.9 kVA
Remote operation		Irradiation on/off, 3-step dimming control (H, M,L) 0–10 V dimming control
Local operation		Operation from touch panel On/Off, dimming Total irradiation time display, Error display
External Interface		On/off command, Dimming control (0–10V, dimming rate 10–100%), RS485 serial communication
Displa		Remote local error Cumulative irradiation time Language selection (Japanese/English)

※1 Power supply specifications vary depending on the length of the irradiation width. Please contact our sales representative for details.
※2 H, M, L dimming control voltages can be set independently from each other through the touch panel in the range of 0 to 10 V.

Continually Striving for Optimum Light

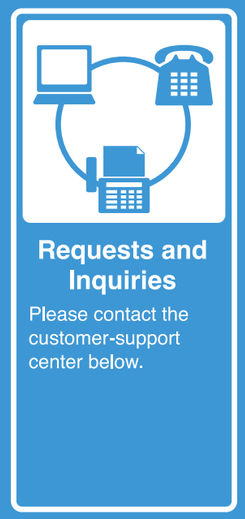
Striving for the satisfaction of each individual customer,
Ushio provides "light support" services according to needs and objectives.

"Ushio Light" has long been used both for illumination and as energy.

As light professionals, we provide support services for light that best suits your needs and objectives as we strive to satisfy each and every one of our customers.

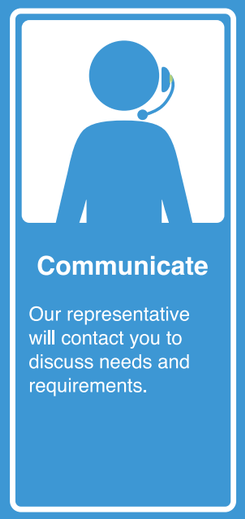
Please take advantage of Ushio's support services to ensure that you continue to use your "Ushio Light" with peace of mind after your purchase, and to ensure that your "Ushio Light" is optimally suited to your sometimes changing circumstances.

Support Flow



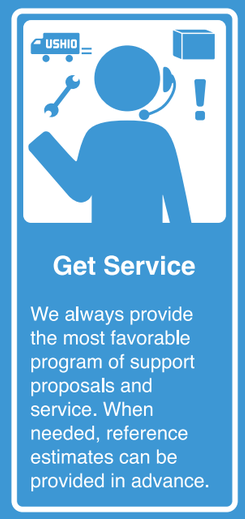
Requests and Inquiries

Please contact the customer-support center below.



Communicate

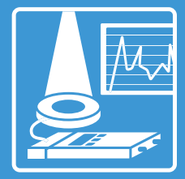
Our representative will contact you to discuss needs and requirements.



Get Service

We always provide the most favorable program of support proposals and service. When needed, reference estimates can be provided in advance.

Support Program



Calibration of Optical Measuring Instruments

USHIO calibrates light measuring instrument sent to designated facilities under an ISO9001-based quality control system.

Repairs

We perform repairs of products sent to our designated repair facilities. We can also provide overhauls and substitutes as needed.

On-site Repair

Our service personnel visit customer sites to make repairs or restore devices.

Shipment of Maintenance Parts

We select and ship needed replacement parts. In some cases, we can visit customer sites to install such parts.

Periodic Inspection and Maintenance

Periodic inspection is recommended to ensure safe operation of equipment. During periodic inspection, we evaluate equipment performance and the condition of consumable items and component wear.

Others

We provide services according to customer needs, such as relocation and modification of equipment. Please feel free to contact us.

Customer Support Center

6409 Moto-Ishikawa-cho, Aoba-ku, Yokohama-shi Kanagawa 225-0004

Reception Hours 9:00-17:00
(excluding weekends and holidays)

Mail techsup@ushio.co.jp

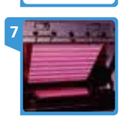
TEL ＋81 45-901-2509

FAX ＋81 45-901-2607

※A charge is assessed for this service. Means of account settlement, and return shipping location and method must be arranged in advance.
※Applies only to products of Ushio INC. or companies who are members of the Ushio group.

Supported Products

Please feel free to contact us regarding products or services not listed. We look forward to serving you.



1. Lithography tools
2. TAB exposure system
3. ODF;UV Irradiation Equipment for One Drop Fill
4. UV curing system
5. Spot UV curing equipment
6. UV photoresist curing systems
9. Excimer irradiation unit
10. Light measurement instruments