

OMRON

Smart Curing System
ZUV Series



The UV Curing System

Find its value!

*So, will you keep on using
a lamp system?*



realizing

Cost performance that will overwhelm a lamp system

Achieves a low initial cost level believed to be impossible in an LED system up to now. The newly-developed ZUV value model has made sweeping cost reductions possible at an initial cost lower than a lamp system.

The cost revolution was made possible because Omron is No.1 in lamp system replacement and LED system introduction in Japan. There's no mistaking it. It's an LED era from now on.

* Source : 2008 Fuji Chimera Research Institute publication, 2008 General Survey of Image Device Related Markets

ZUV value model

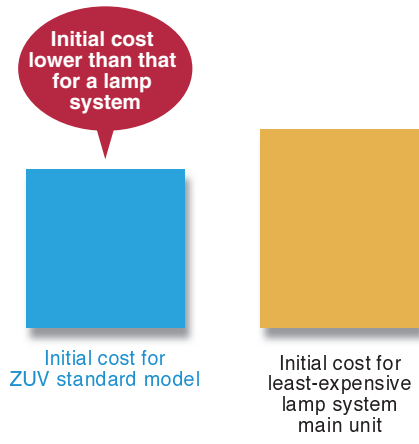
$$\left[\begin{array}{l} \text{Cost-performance Controller} \\ \text{ZUV-C20H} \end{array} \right] \times \left[\begin{array}{l} \text{New UV LED} \\ \text{NEW Cost-performance Head} \\ \text{ZUV-H20MB} \end{array} \right]$$



Benefit
1

Initial cost efficiency

Cost comparison when buying new

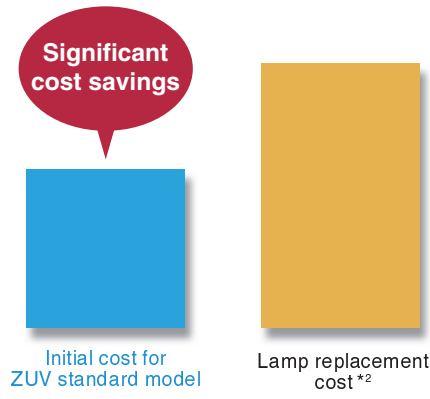


The basic performance of UV bonding is retained while significant cost savings compared to a conventional LED system is achieved with carefully selected features. ZUV standard model can be purchased at a price below that of the lamp system.

Benefit
2

Beats lamp replacement costs

Comparison of lamp system aging costs and standard model initial costs*1



*1 Comparing the case in which you keep using a lamp system with the case where you switch to the ZUV standard model
*2 Lamp replacement costs after two years have gone by at a replacement frequency of about three times a year

If customers who are currently using a lamp system would compare the costs of lamp replacement, which occurs about three times a year, in cases where they would continuously use a lamp system for two years from now on they would find installing the ZUV standard model less expensive.

On top of that, running costs are substantially nil.

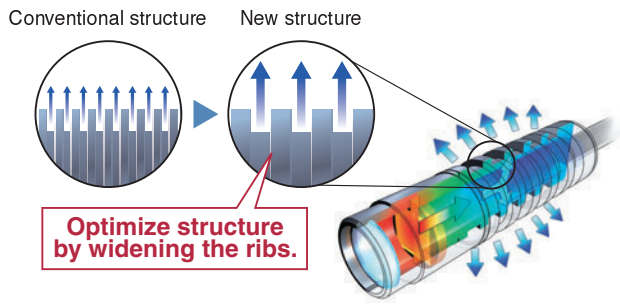
It is characteristic of the LED to have a longer life in comparison with a lamp system. In addition, for a lamp system whose light source is unstable, you have to leave its light source on all the time but an LED system, with its highly stable light source, can be turned off when illumination is not needed. For that reason, extended use over a long period of time is possible and running costs can be said to be substantially nil. Moreover, electricity costs can be reduced by turning the unit off when it is not illuminating.

Omron's unique head technology

It is a UV-LED, whose characteristic is its long life, but there is a chance that its life will be shorter if the heat is not properly dissipated when emitting light. For that reason, it is considered necessary to avoid rises in temperature during illumination. The advance that has fulfilled this requirement in a compact head is Omron's unique heat dissipation structure = the Smart Canyon.

■ Optimized "New Smart Canyon Structure" **Patent pending**

The Smart Canyon structure has been utilized in all heads in the ZUV Series, but for the sake of achieving low initial cost in the standard model heads we have optimized this Smart Canyon structure even further, enabling it to dissipate heat more efficiently.



We deliver the features you need, where you need them

Two models of controller according to your application



For High cost performance

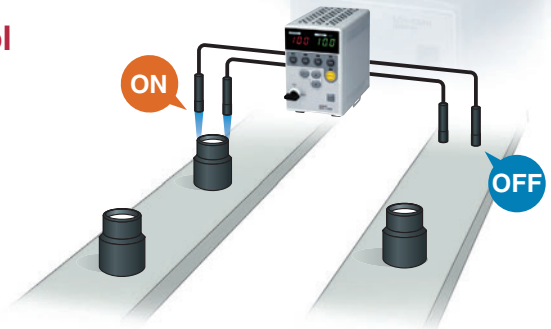
Value model controller

ZUV-C20H



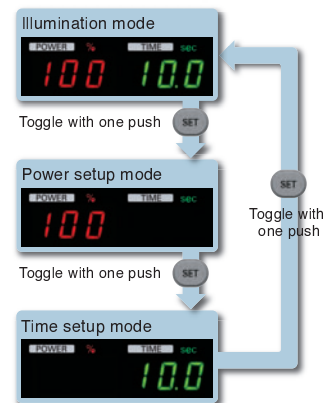
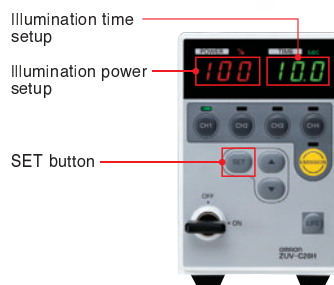
4-head independent On/Off control

Four-head independent On/Off control is available in a single controller. What's more, we've made more efficient illumination possible by achieving "illumination with a different illumination power and timing at each head" which is impossible in a lamp system.



Simple operation in 3 modes

The startup screen at Power On is in illumination mode. Toggle through three modes including Power setup mode, Time setup mode, and Illumination mode with the single push of a button. The setup operation for each mode is simple. With its limited button count, simple operation, and easy-to-read screen, anyone can use it easily.

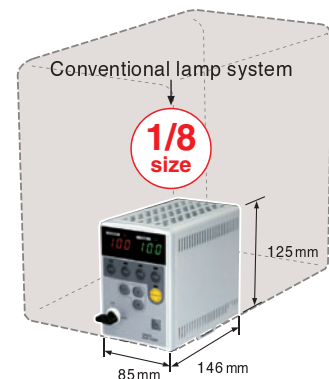


Cumulative illumination time control at every head

Cumulative time for every head is stored in the controller. The life of the head can be determined by setting the threshold for this cumulative time. When the cumulative time of the heads exceeds this threshold, an error is issued and the illumination time at every head can be controlled.

Ultra compact body

Because of its ultra compact body that's about 1/8th the size of a conventional lamp system, it lets you build them into small-size devices or install them into the adjusting jig periphery, not to mention integration into cell production lines. Also, we use robot cable instead of quartz glass fiber for connection to the head and controller. It can be reliably used for mounting onto moving elements such as a robot or cylinder.



Scene
2

For R&D and UV curing trial

Multi-function model controller

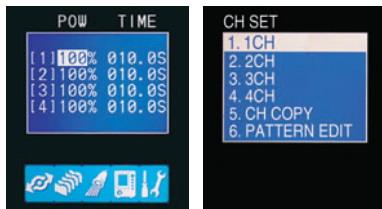
ZUV-C30H



Easy operation with an LED display

Setup is simple with an LED display. It displays illumination status during operation, allowing for simple, worry-free and reliable UV bonding.

Setup screen



Illumination time and power can be set on the top screen.

Easy-to-see menu that can be selectable to English or Japanese.

Screen during operation



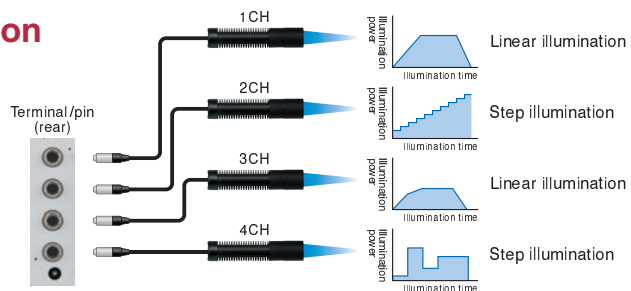
Not only let's you do constant illumination but patterns as well, such as pulse illumination, to reduce resin shrinkage.

Life management with cumulative energy control. Able to adjust illumination power on the fly.

Illumination power is adjustable while in operation.

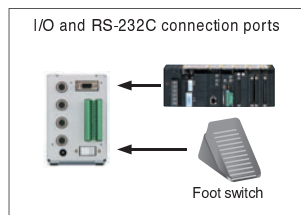
Programmed illumination

You can program illumination patterns such as step illumination and linear illumination, and high-precision adhesion to reduce resin shrinkage is possible.



Multi-access link

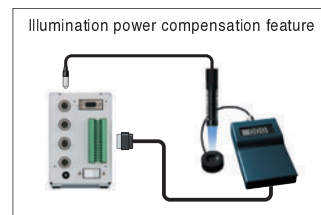
Its usability is top in a class by itself, with multi-connected access link features such as external control using the I/O port or RS-232C connection and data transfers to a PC via USB.



You can turn illumination On or Off, change illumination patterns, or control various types of alarms externally with the I/O port or the RS-232C connection.



You can transfer such cumulative illumination energy and frequency data to a PC via USB. This is useful in QA data storage and failure analysis.



It comes equipped with a power tuning feature that allows you to correct illumination power based on the output of an illumination meter. Power corrections can be made simply and reliably during startup inspection.

Solve various problems of lamp system

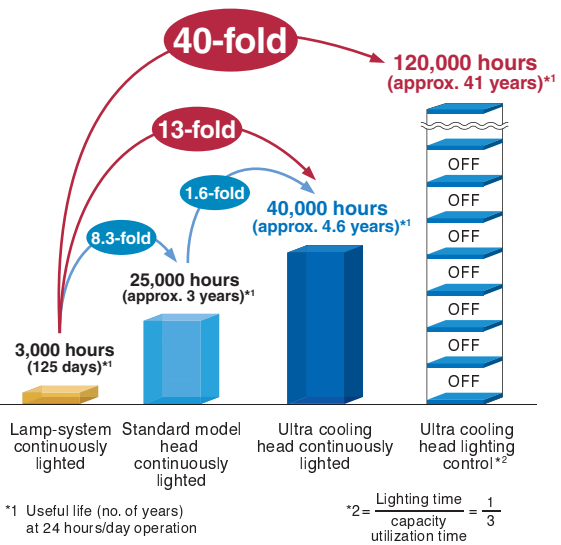
Ultra cooling head (ZUV-H10MB)

Solution 1

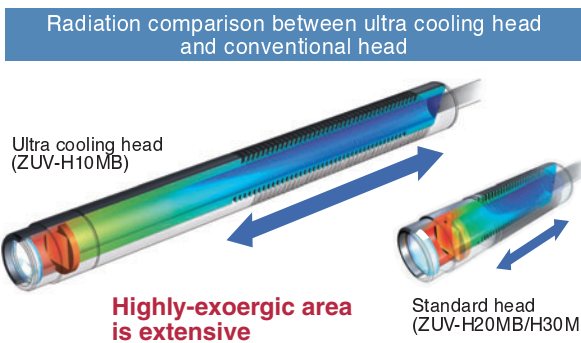
Eliminates the manpower, time, and costs of light source replacement

Industry-best lifetime of 40,000 hours achieved with ultra cooling heads

The biggest issue for the lamp system is frequent replacement of the lamp light source. LED system has longer life compared to the lamp system. Replacement man hours can also be eliminated if you use the ultra cooling head. The continuously-on lifetime of the ultra cooling head is 40,000 hours, or 13 times that of a lamp system. If you assume "lighting-on time divided by capacity utilization time" is one-third, a semipermanent usage of 120,000 hours, or 40 times that of a lamp system, is possible. That means light source replacement becomes essentially unnecessary and both the labor hours and running costs of the replacement work can be reduced substantially.

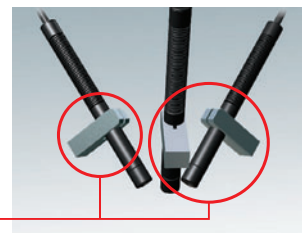


As for the ultra cooling head, we have expanded the number of heat dissipating ribs in the Smart Canyon Structure from the existing 21 to 40 by making the housing into a long body. Through effective dissipation of heat, we have achieved industry-leading long life and illuminance stability.



Dedicated Jig for ultra cooling heads

Its heat dissipation is even better compared to a conventional head, so it can be mounted on the customer's existing toolings or on original toolings of new design. It will allow you to trim man-hours of LED system introduction.



Mountable on existing fittings
No need for heat dissipating fittings

Solution
2

Maximum power to greatly reduce tact time

High-speed bonding with the highest illumination in the industry of 9,400 mW/cm² with the Ultra light focus Lens

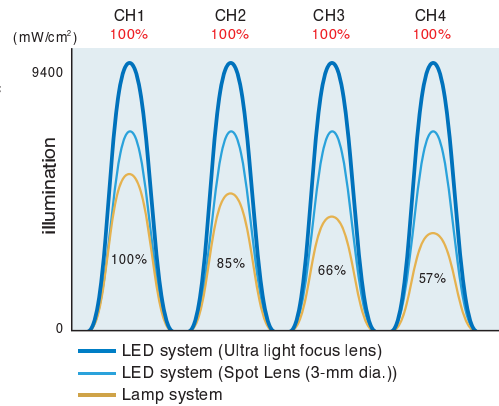


Ultra light focus lens (ZUV-L2H)

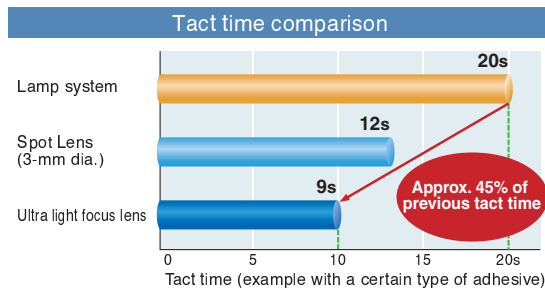
Improvements in tact time due to high-speed bonding can be achieved if you use the ultra light focus lens, with 9,400 mW/cm² illumination, the best in the industry, which far exceeds the average illumination of a mercury lamp. Reduces tact time by up to 55% compared to a lamp system when used with the ultra light focus lens*¹. In addition, when increasing the number of channels in use*², maximum illumination will decrease as the number of channels increases for a lamp system, but the maximum illumination at each head won't decrease even if the number of channels increases on an LED system and productive UV adhesion is possible.

*¹ Compared with mercury lamp system
*² When fiber branching is used

Illumination comparison between LED system head and lamp system fiber when 4 branches are used



Uses UIT-150 UV Light Integrating Actinometer manufactured by Ushio Inc.
When measured at suggested work distance.
Lamp system value is an example with a typical fiber.



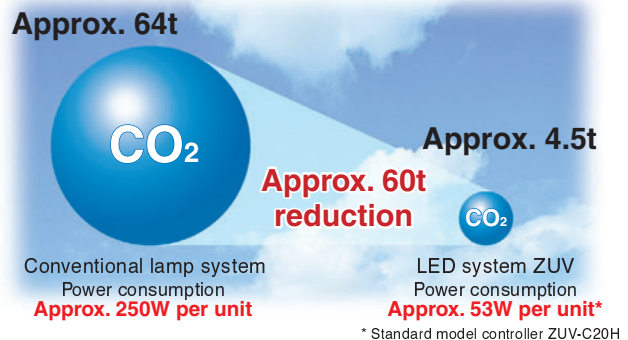
Solution
3

Environmentally safe

Substantially reduces CO₂ emissions in power-saving LED system usage

High power consumption and disposal of the mercury lamps that occurs with each replacement are problems at a lamp system site, but they can be resolved by using an LED system. An LED system has lower power consumption than a mercury lamp system, and can also lead to power saving with efficient use of energy through lighting control. In addition, the LED light source doesn't use mercury so it is superior in terms of reduced environmental impact.

Comparison of annual CO₂ discharge amounts when used in 100 units



Notes · Assumed to be 24 hours and 260 days operation.
· Assumes "on time divided by equipment operation time" to equal one-third.
· For CO₂ emissions, calculation of 4.1t CO₂ reduction with 10,000 kWh reduction in the Nationwide Receiving End Coefficient published by the Federation of Electric Power Companies of Japan
· Power consumption may vary according to device conditions

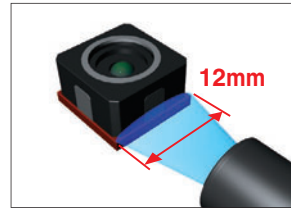
Illumination variation tailored to all UV bonding



Line beam lens
ZUV-L12L

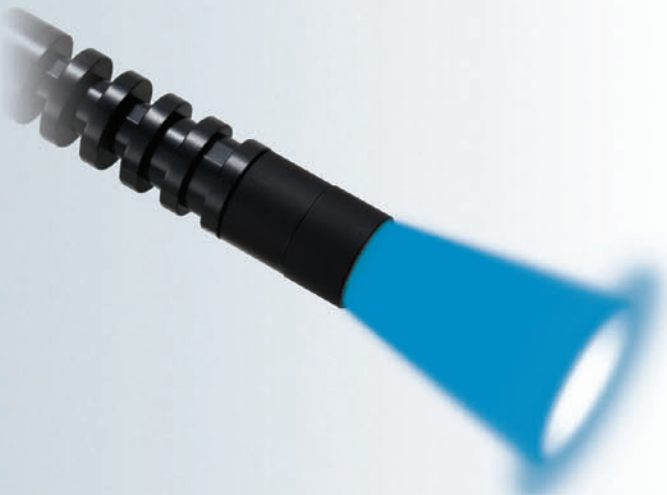
Illumination 1

Bonds at once over a wide range Line beam lens with a 12mm beam width



UV adhesion with line beam lens

With a line beam lens, UV bonding of work which used to be difficult with a single illumination is also possible. A relatively uniform elongated elliptical illumination area is achieved by illuminating with line beam lens with a 12 mm beam width. You can accomplish UV bonding at once without moving the illumination head, so productivity will increase.



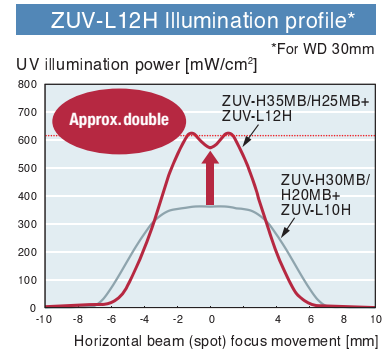
Diffuse illumination head ZUV-H35MB
Diffuse illumination head value models
ZUV-H25MB
Diffusing lens ZUV-L12H

Illumination 2

Bonds securely even if separated

NEW 690 mW/cm² illumination power even at a working distance of 30 mm

Achieve 690 mW/cm² illumination power at a working distance of 30 mm when you use the newly developed diffusion illumination head (ZUV-H35MB/ZUV-H25MB) + diffusing lens (ZUV-L12H). Reliable bonding is realized even at a distance by ensuring illumination power that used to be a problem when illumination couldn't be done close to the work.



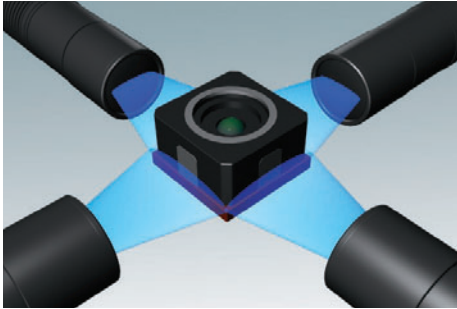
Small diameter lens
ZUV-L6T/L8T

Illumination 3

Bonds firmly for minute objects Narrow radius lenses with ø6/ø8 external lens diameters

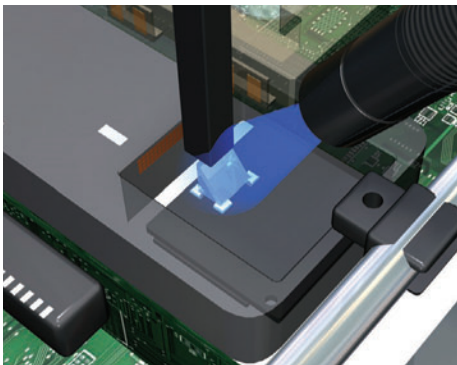
Narrow radius lenses whose head lens is elongated and extended are most suitable when the head size is too large or head placement is difficult. We made it possible to illuminate tiny components with a number of beams by illuminating with narrow radius lenses. A placement close to the work is also possible.

Illumination
4



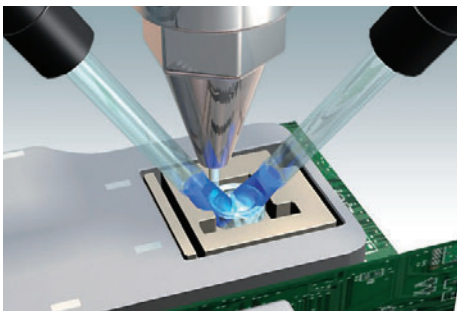
Adhesion of a camera module housing and a board

We shortened tact time by illuminating with a line beam lens. Contributes to improvements in productivity.



UV bonding of a light pickup lens

In addition to being able to bond reliably even at a work distance of 30 mm, it contributes to improvements in productivity with diffuse beam illumination.



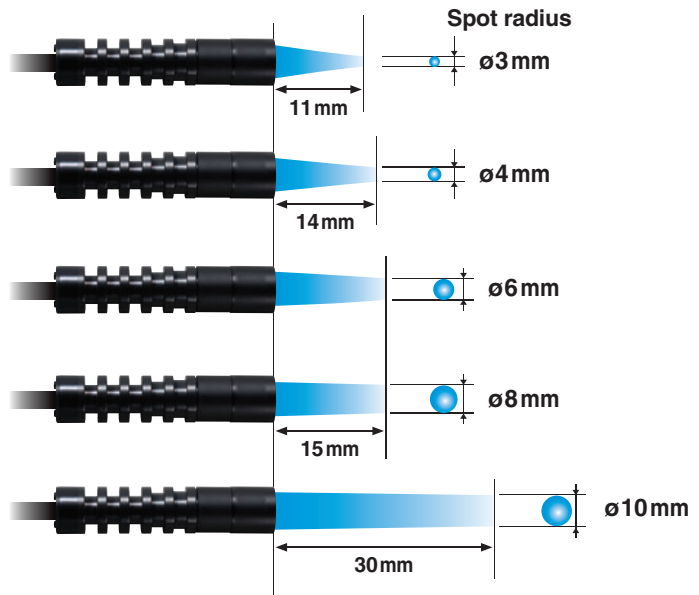
UV bonding of a light pickup lens

We achieved high-speed bonding by UV illuminating a tiny optical pickup lens with multiple small lenses.

Maximum illumination with five spot sizes to choose from

Spot lenses with $\phi 3/\phi 4/\phi 6/\phi 8/\phi 10$ mm beam diameter

Easy to change spot size with interchangeable head lenses. Reliable UV bonding can be performed with the selection of a spot in a size appropriate to the work from five lenses.



Spot lens

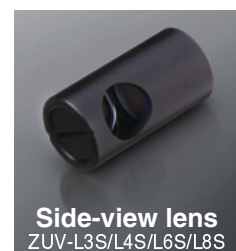
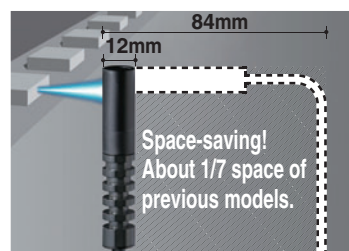
ZUV-L3H/L4H/L6H/L8H/L10H

Illumination
5

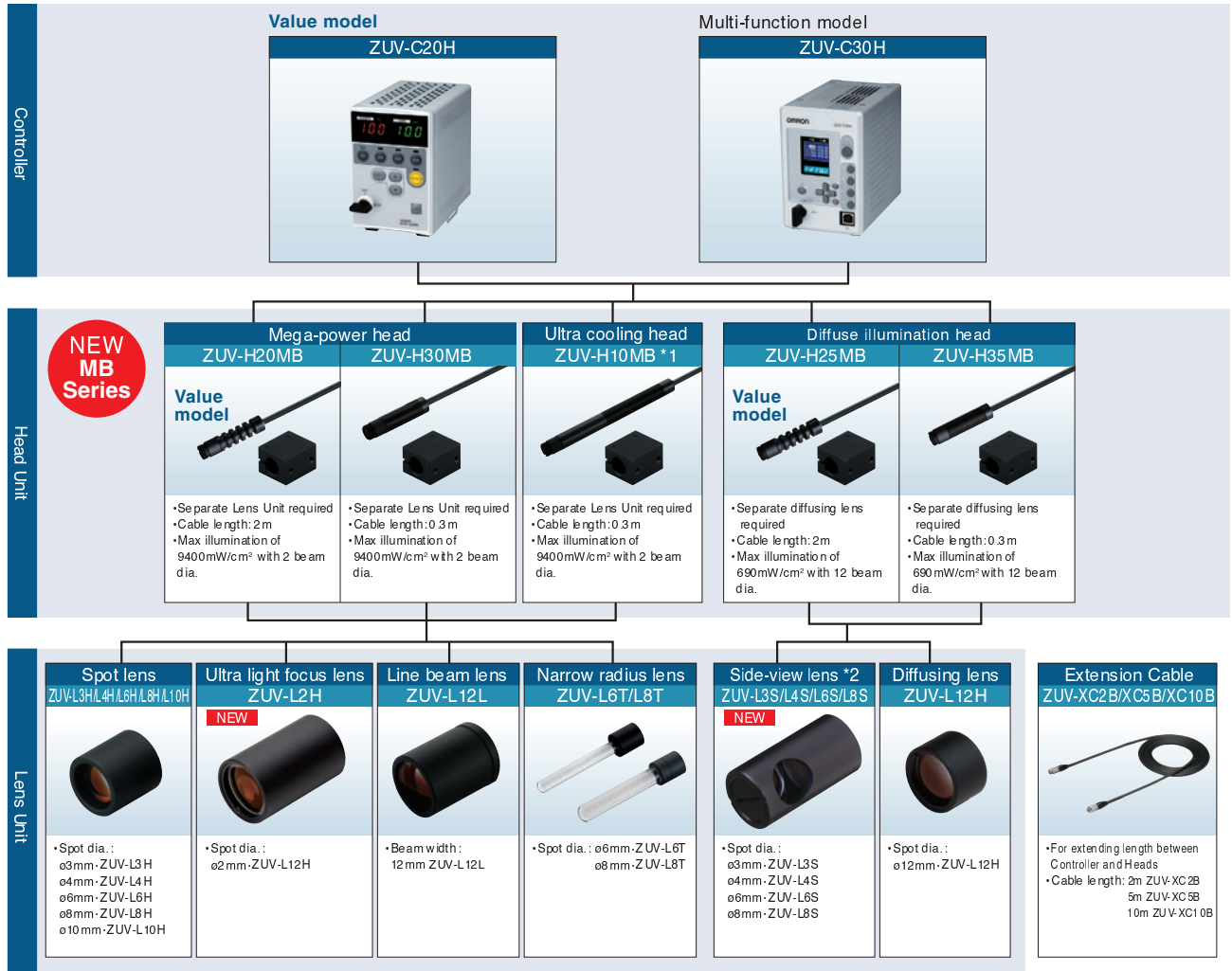
Effectively save equipment space with a light path that is emitted at 90°

Side-view Lens for UV illumination from the side of the lens unit

The light path is illuminated at 90° to occupy only about 1/7 the space of previous models. This achieves more flexibility in mounting the Head and enables more flexible usage of space in production equipment. Installation is also possible in small spaces in existing equipment.



Ordering Information



*1 Models are also available with 2-m cables. (ZUV-H10MB 2M)

*2 When using ZUV-H25MB/H35MB diffuse illumination head with side-view lens, we recommend using ZUV-L3S/L4S.

Ratings and Characteristics

Controller

Model		ZUV-C20H (Value model)	ZUV-C30H (Multi-function model)
Irradiation method	Constant irradiation	irradiation illumination power (0% to 100%), illumination time (max. 99.9sec/unlimited)	illumination power (0% to 100%), irradiation time (999.9 s max.)
	Pattern irradiation	Unavailable	Can be set to step or ramp (linear) 16 points specified per setting
No. of settings		No bank feature	16 banks
Cumulative illumination summation		Time (unit: 100 hour display)	Energy (display unit - J)
Terminal block I/O	Inputs	Emergency shutdown, UV illumination start/stop (All channels/4-channel)	Emergency stop, Start/stop UV illumination (4 channels), Select settings (banks)
	Outputs	Ready output (all-channels/4-channel), error output, operating	Ready (4 channels), UV illuminating, errors
RS-232C and USB I/O		None	Start/stop UV irradiation (4 channels), select settings (banks), get/change settings data, save/read data, power tuning
Cooling method		Air cooled (no fan)	Fan air cooling
Power supply voltage		AC power only 100V-240V AC ± 10%, 50/60 Hz (AC adapter attached)	Select AC or DC power supply • AC power supply: 100 to 240 V AC ± 10%, 50/60 Hz (AC adapter included) • DC power supply: 24 V DC ± 10% (supplied from terminal block on back of Unit)
Current consumption		1.4A (53W)	• With AC adapter: 2.3 A (55W) • With DC power supply: 1.9 A (45W)
Vibration tolerance		10 to 150 Hz acceleration 50 m/s ² , half amplitude 0.35 mm, X/Y/Z direction 8 minutes each 10 times	
Drop impact resistance		150 m/s ² , 6 directions (up/down, right/left, front/back) 3 times each	
Ambient temperature range		Operating: 5 to 35°C; Storage: -10 to +60°C (with no condensation or icing)	
Ambient humidity range		Operating/storage: 30% to 85% (with no condensation or icing)	
Degree of protection		IEC 60529 IP20	
Material		Polycarbonate, SECC	SUS, aluminum
Weight (package)		Approx. 1,800g (Controller only: approx. 1,200g)	Approx. 2,950g (Controller only: approx. 1,900g)
Accessories		Instruction sheet, Key, AC adapter	Instruction sheet, Key, AC adapter, CD-ROM (USB driver, user's manual PDF)

■ Ratings and Characteristics

Head Unit

Model	ZUV-H20MB/H30MB/H10MB/H25MB/H35MB	
Light source	Wavelength	365 nm *
	Class	Class 3B (JIS C 6802 2005) Class 3B (EN60825-1: 1994 +A1: 2002 +A2: 2001)
Vibration tolerance	10 to 150 Hz acceleration 50 m/s ² , half amplitude 0.35 mm, X/Y/Z direction 8 minutes each 10 times	
Drop impact resistance	150 m/s ² , 6 directions (up/down, right/left, front/back) 3 times each	
Ambient temperature range	Operating: 5 to 35°C; Storage: -10 to +60°C (with no condensation or icing)	
Ambient humidity range	Operating/storage: 30% to 85% (with no condensation or icing)	
Degree of Protection	IEC60529 IP40	
Material	ZUV-H20MB/H25MB: Zinc, aluminum, glass ZUV-H30MB/H10MB/H35MB: Zinc, copper, aluminum, glass	
Weight (after packing)	ZUV-H20MB/H25MB: Approx. 185g (Main unit: approx. 100g), ZUV-H30MB/H35MB: Approx. 150g (Main unit: approx. 55g), ZUV-H10MB: Approx. 180g (Main unit: approx. 105g)	
Accessories	Operation manual, clamp (with M3 thread), warning label (English)	

* Models are also available with a 385-nm light source wavelength. (ZUV-H21MB/H11MB/H26MB)

Lens Unit

Model	ZUV-L2H/L3H/L4H/L6H/L8H/L10H/L12L/L6T/L8T/L3S/L4S/L6S/L8S/L12H						
Vibration tolerance	10 to 150 Hz acceleration 50 m/s ² , half amplitude 0.35 mm, X/Y/Z direction 8 minutes each 10 times						
Drop impact resistance	150 m/s ² , 6 directions (up/down, right/left, front/back) 3 times each						
Ambient temperature range	Operating: 5 to 35°C; Storage: -10 to +60°C (with no condensation or icing)						
Ambient humidity range	Operating/storage: 30% to 85% (with no condensation or icing)						
Degree of Protection	IEC60529 IP40						
Material	Aluminum, glass						
Weight (after packing)	ZUV-L2H/L3H/L4H/L6H/L8H/L10H: Approx. 10g (Main unit: approx. 5g), ZUV-L12L: Approx. 30g (Main unit: approx. 5g), ZUV-L6T: Approx. 35g (Main unit: approx. 7g), ZUV-L8T: Approx. 40g (Main unit: approx. 10g), ZUV-L3S/L4S/L6S/L8S: Approx. 35g (Main unit: approx. 5g), ZUV-L12H: Approx. 30g (Main unit: approx. 5g)						
Accessories	Operation manual						

Head Unit model	ZUV-H20MB/H30MB/H10MB						
Lens Unit model	ZUV-L2H	ZUV-L3H	ZUV-L4H	ZUV-L6H	ZUV-L8H	ZUV-L10H	ZUV-L12L
Spot diameter/Beam shape	2mm dia.	3mm dia.	4mm dia.	6mm dia.	8mm dia.	10mm dia.	12 × 2mm
Recommended working distance	10mm	11mm	14mm	15mm	15mm	30mm	15mm
Peak illumination * 1	9400mW/cm ²	6900mW/cm ²	5300mW/cm ²	3700mW/cm ²	1800mW/cm ²	400mW/cm ²	460mW/cm ² * 2

Head Unit model	ZUV-H20MB/H30MB/H10MB					
Lens Unit model	ZUV-L6T	ZUV-L8T	ZUV-L3S	ZUV-L4S	ZUV-L6S	ZUV-L8S
Spot diameter/Beam shape	1.5mm dia.	3mm dia.	3mm dia.	4mm dia.	6mm dia.	8mm dia.
Recommended working distance	6mm	9mm	4mm	5mm	8mm	13mm
Peak illumination * 1	5800mW/cm ²	4600mW/cm ²	6100mW/cm ²	5300mW/cm ²	3700mW/cm ²	2000mW/cm ²

Head Unit model	ZUV-H25MB/H35MB		
Lens Unit model	ZUV-L12H	ZUV-L3S	ZUV-L4S
Spot diameter/Beam shape	12mm dia.	3mm dia.	4mm dia.
Recommended working distance	30mm	8mm	13mm
Peak illumination * 1	690mW/cm ²	3300mW/cm ²	1500mW/cm ²

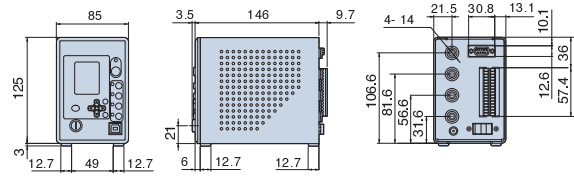
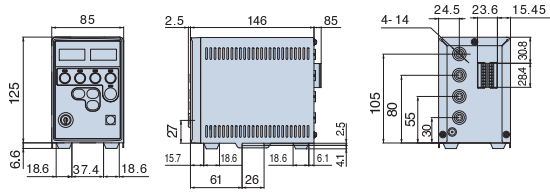
* 1 Under the following conditions: 100% irradiation, 25°C room temperature and with heat sink. Values for reference only.
* 2 Illumination is the value at a 15-mm working distance and in a 12 × 2-mm beam shape range.

External Dimensions (Unit: mm)

Controller

Value model ZUV-C20H

Multi-function model ZUV-C30H

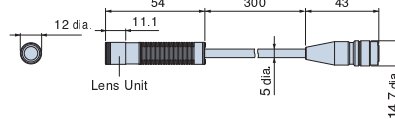
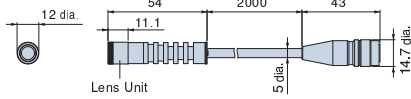


Head unit

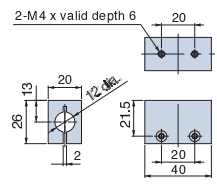
Standard head

NEW Value model ZUV-H20MB

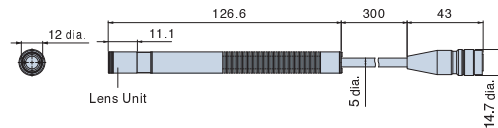
ZUV-H30MB



Clamp



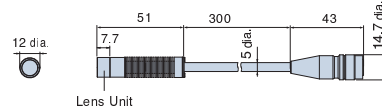
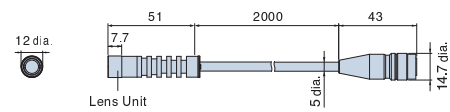
NEW Ultra cooling head ZUV-H10MB



Diffuse illumination head

NEW Value model ZUV-H25MB

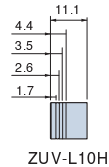
ZUV-H35MB



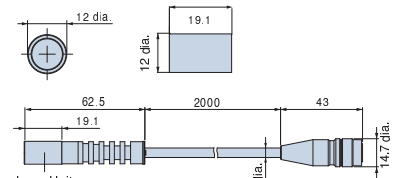
Lens unit

Spot lens ZUV-L3H/L4H/L6H/L8H/L10H

Note: The model number is printed on the side of the Lens Unit.



NEW Ultra light focus lens ZUV-L2H

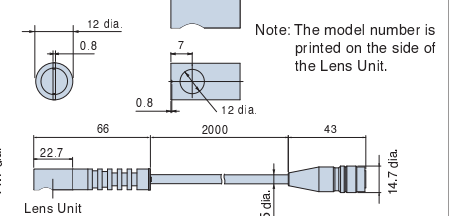
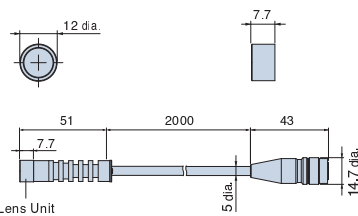
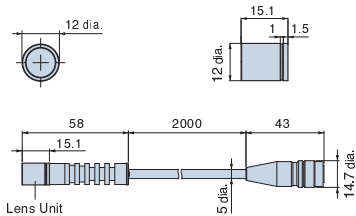


Note: When attached to ZUV-H20MB (Mega-power head standard model)

Line beam lens ZUV-L12L

Diffusing lens ZUV-L12H

NEW Side-view lens ZUV-L□S



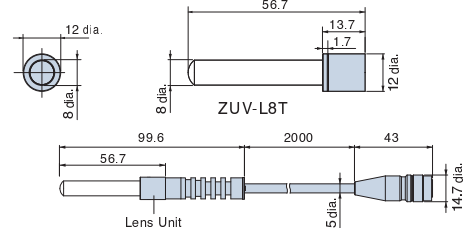
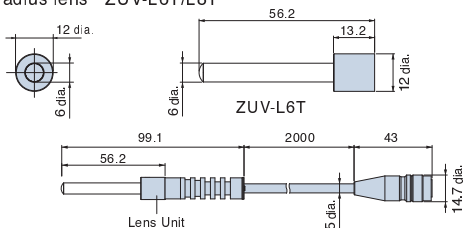
Note: The model number is printed on the side of the Lens Unit.

Note: When attached to ZUV-H20MB (Mega-power head standard model)

Note: When attached to ZUV-H25MB (Diffuse illumination head standard model)

Note: When attached to ZUV-H20MB (Mega-power head standard model)

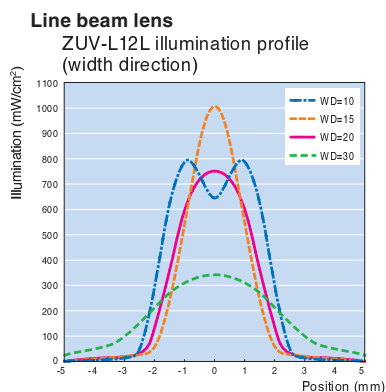
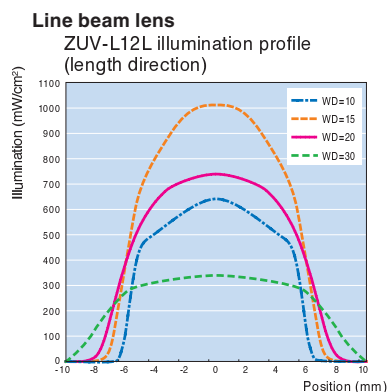
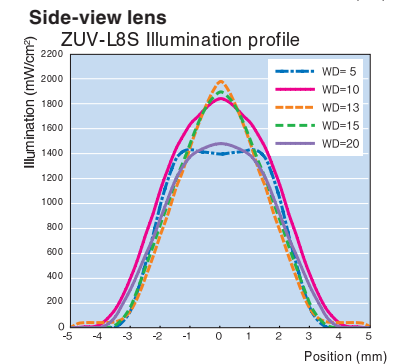
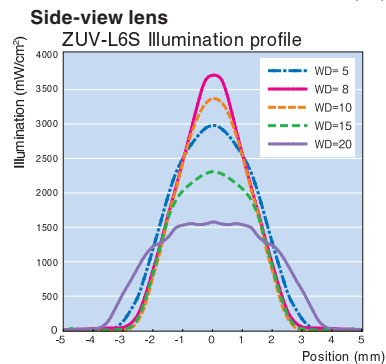
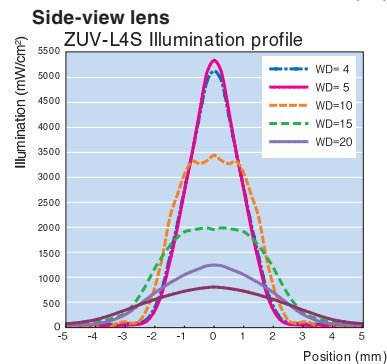
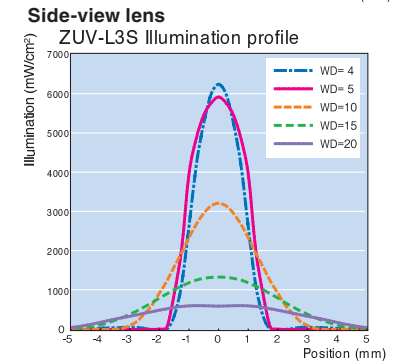
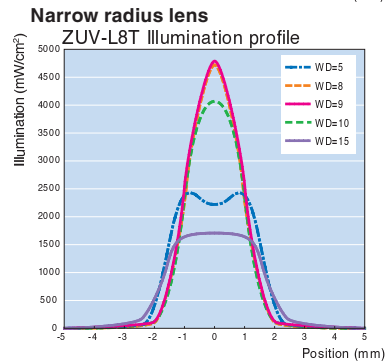
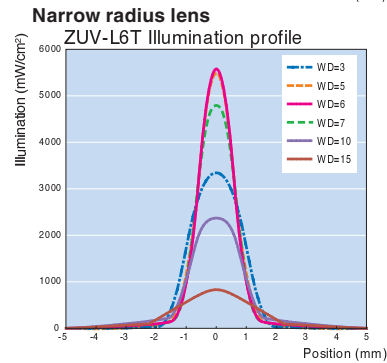
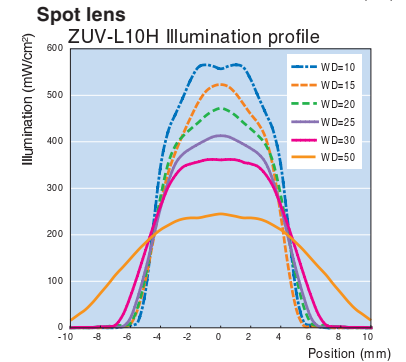
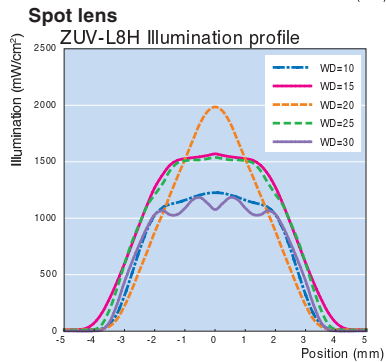
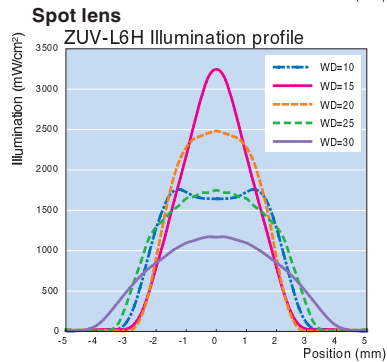
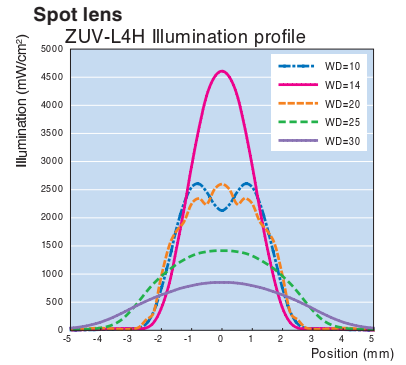
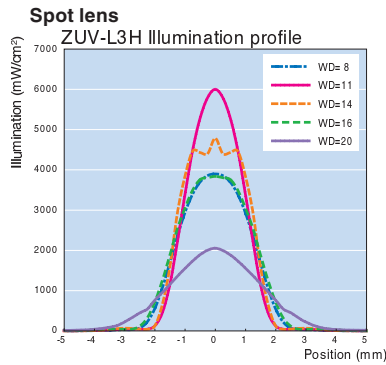
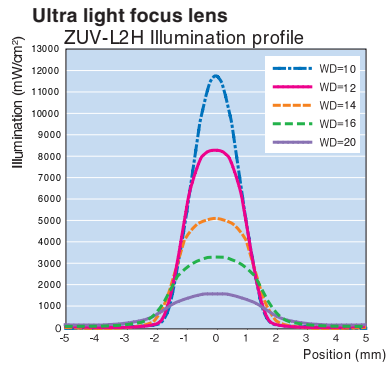
Narrow radius lens ZUV-L6T/L8T



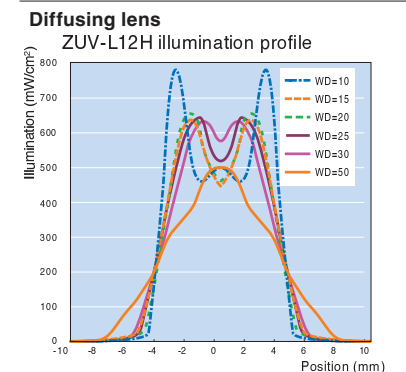
Note: When attached to ZUV-H20MB (Standard head value model)

■ Beam Spot Profile (Typical Examples)

Mega-power head /ultra-cooling head ZUV-H20MB/H30MB/H10MB
(Controller ZUV-C20H/C30H, 100% power when illuminated)



Diffuse illumination head ZUV-H25MB/H35MB
(Controller ZUV-C20H/C30H, 100% power when illuminated)



 **WARNING**

Never look directly at or allow your skin to be exposed to the ultraviolet light.
Ultraviolet light will damage vision and skin if it is viewed directly or the skin is exposed.
Workers shall wear protective goggles and equipment to protect from being exposed to light reflection.



Never disassemble the Unit.
Disassembling the Unit may lead to electric shock or damage from light leakage.



This document provides information mainly for selecting suitable models. Please read the document User's Manual (Z257/Z260) carefully for information that the user must understand and accept before purchase, including information on warranty, limitations of liability, and precautions.

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