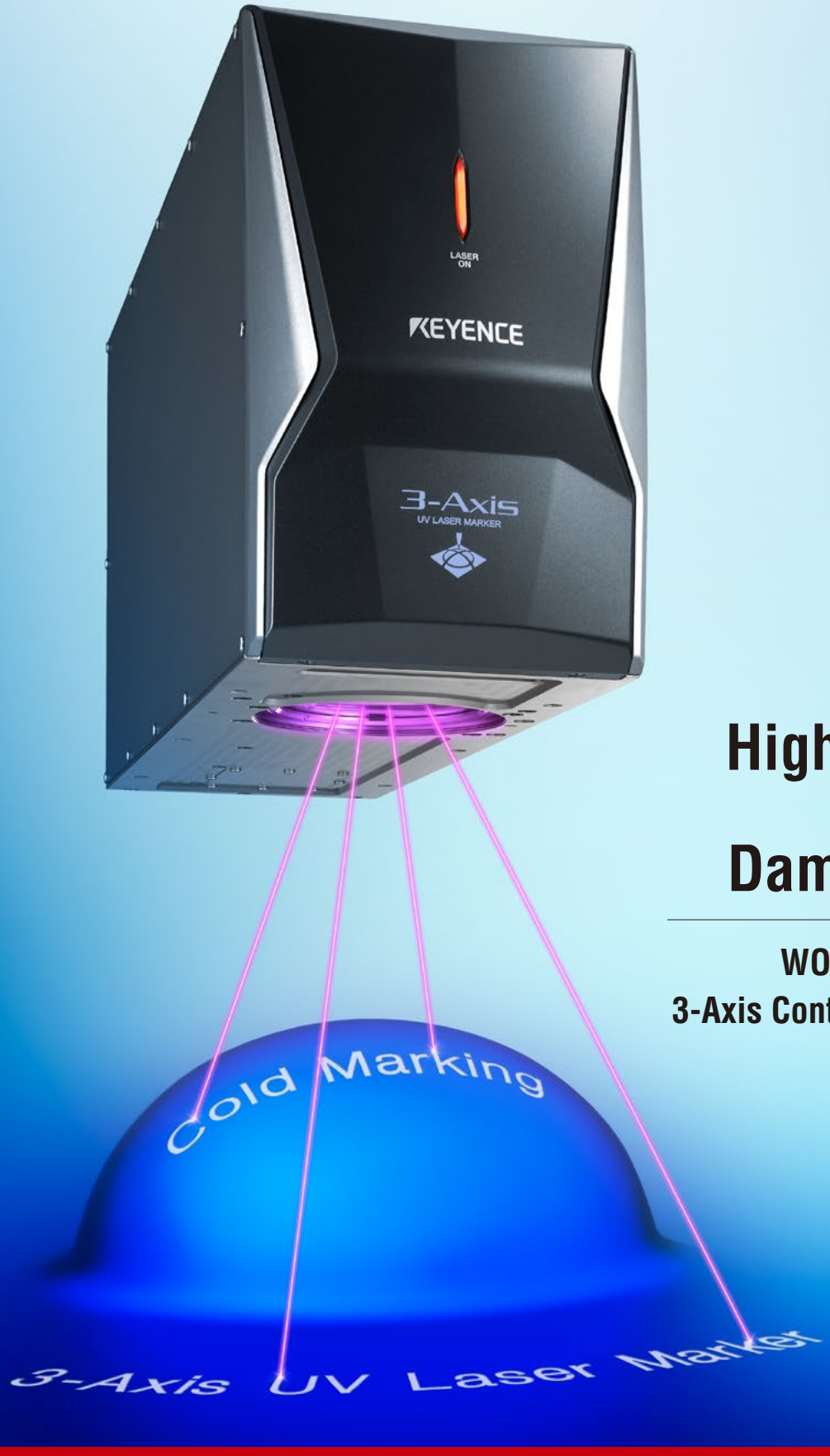
KEYENCE

NEW **3-Axis UV Laser Marker**
MD-U Series



High-Contrast × Damage-Free

WORLD'S FIRST
3-Axis Control UV Laser Marker

MD-U Series

UV Marking, Distinguished from the Rest

Introducing the world's first 3-Axis Control UV laser marker

Clearer, more detailed

High Contrast Marking

The MD-U Series is capable of generating greater contrast for more appealing aesthetics and improved readability on 2D codes.

Standard Wavelength

MD-U

AC adapter
[Material: Red polycarbonate]

Earbuds
[Material: Blue PVC]

USB cable
[Material: White ABS]

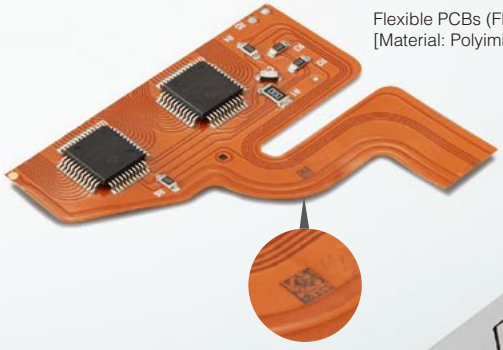
Reduced heat

Damage-Free Marking

Through suppressed heat effects, burrs and yellow tinting are eliminated, allowing for a nearly perfect finish.

Conventional

MD-U



Flexible PCBs (FPC)
[Material: Polyimide]

Medical scissors
[Material: Stainless steel]

NEW

3-Axis UV Laser Marker

MD-U Series

Distortion-free
3D Marking

Uniform marking quality is possible not only on three-dimensional shapes but also at the centers and edges of flat surfaces.
This makes it possible to reduce time spent on changeovers.

Conventional

MD-U

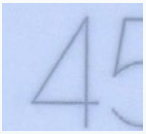
Complex-shaped metals
[Material: Black alumite]

Increased production capacity
High-Speed Marking

KEYENCE's proprietary digital scanners and optimized control enable more accurate, faster marking.

Conventional

MD-U



* Scan speed: 5000 mm/s 196.85"/s

PE bottles

Add Value Through KEYENCE UV Laser Markers

Improved Traceability Options

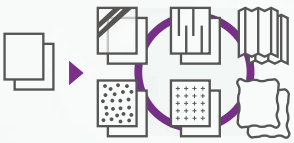
Demand for marking on a wide variety of components rather than simply the final product has continued to become more prevalent. With the MD-U Series, your options are almost endless.

Limited Space, No Problem

With rising demand to reduce component size while increasing functionality, the MD-U Series provides greater flexibility through damage-free marking in limited space.

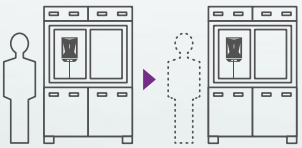
Conquer Difficult Materials

High-strength, high-heat resins are historically challenging for standard wavelength lasers. The MD-U Series offers the best-in-class versatility across a wide array of material types.



Less Changeover for More Up-Time

Multiple materials can be marked with similar parameters, reducing the need for operator intervention thus improving line up-time and efficiency.



Now is the Best Time to Select UV

With the right product, laser marking can be simple. Today, demand focuses more on high quality and stable results than ever. As the need for more sophisticated products and diverse materials increases, it becomes ever more important to select the most versatile marking solution to stay ahead of the competition. With a UV laser, early adopters can not only tackle today's struggles, but can also prepare for whatever challenges tomorrow brings.

What Is Cold Marking with a UV Laser Marker?

Cold marking refers to marking and processing that is performed with minimal heat stress. UV lasers can be used to achieve this result thanks to their incredibly high absorption rate on a variety of materials. A UV laser is simply the Third Harmonic Generation (THG) of a standard wavelength (1064 nm) laser. By passing a standard wavelength laser through a non-linear crystal, and then again through another crystal, the wavelength is effectively reduced to 355 nm, creating the ideal UV laser.

Improved Quality on Traditionally Difficult-to-Mark Materials

Marking on polypropylene cases

High-contrast code marking for improved readability

Standard Wavelength

MD-U

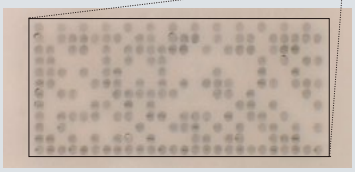
Marking on ceramic PCBs

High-contrast code marking regardless of size

Standard Wavelength

Cell size: 0.09 mm 0.0035"
1.08 mm 0.04" × 2.34 mm 0.09"

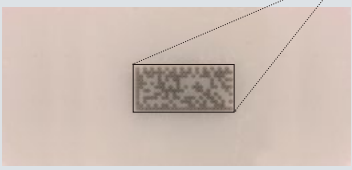
Actual size



MD-U

Cell size: 0.03 mm 0.0012"
0.36 mm 0.01" × 0.78 mm 0.03"

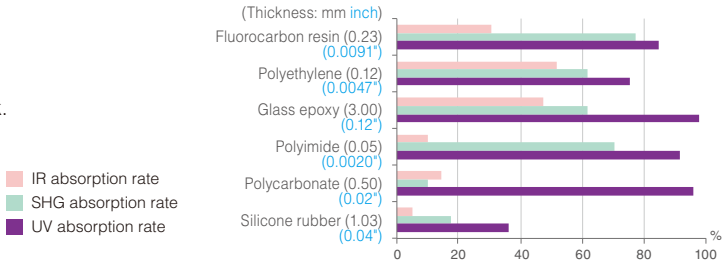
Actual size



Darker Marks Generated Through Higher Absorption Rates

Compared with standard wavelength lasers (IR) or green lasers (SHG), UV lasers generally have a significantly higher material absorption rate, so the irradiated light is more efficiently absorbed by the marking surface. This means the power does not need to be increased in order to obtain a highly visible mark.

Absorption rates for various resin materials

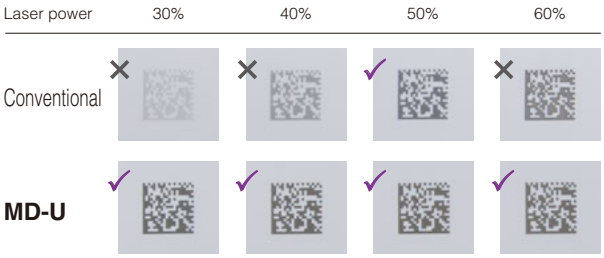


* The values are for reference only and do not account for surface reflectivity.

Maintain Quality Despite Inconsistencies

Due to the higher absorption rate of the MD-U Series, material inconsistencies do not affect marking quality. This allows the laser to use similar parameters on multiple materials or a wider range of parameters to produce acceptable results.

Material: White ABS



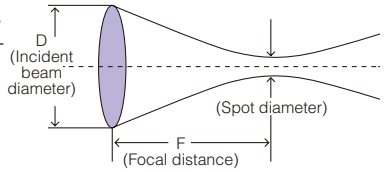
Clear Marking When Space is Limited

The spot diameter of a laser is greatly affected by its wavelength. With UV wavelengths being 1/3 the size of standard wavelengths (355 nm rather than 1064 nm), the spot size can be narrowed accordingly, opening the possibility for marking when space is limited.

Laser marker spot diameter

$$\text{Spot diameter} = \frac{4 \times \lambda \times M^2 \times F}{\pi \times D}$$

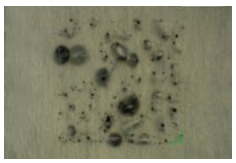
λ: Wavelength
M^2: Beam quality
F: Focal distance
D: Incident beam diameter



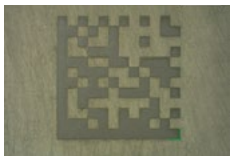
Marking comparison

In-vehicle plastic part [Material: Natural Polyamide]

Conventional



MD-U



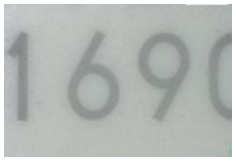
Plastic Tube [Material: Silicon]

Conventional

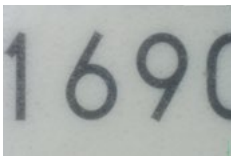
MD-U

Power switch cover [Material: Urea formaldehyde white]

Conventional

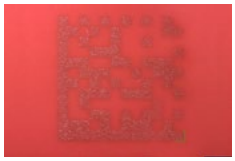


MD-U



Gas meter casing [Material: Red plastic]

Conventional

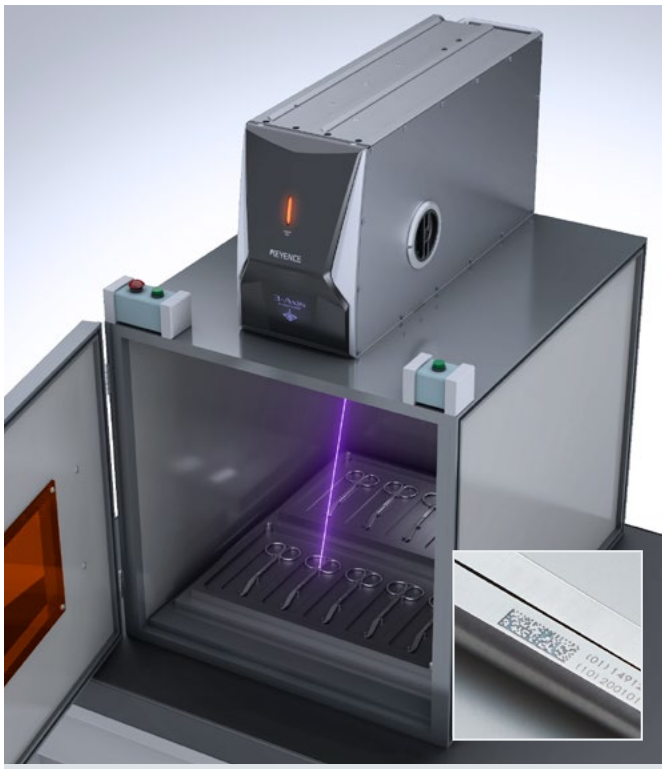


MD-U

Eliminate Heat Affected Zone Through Cold Marking Process

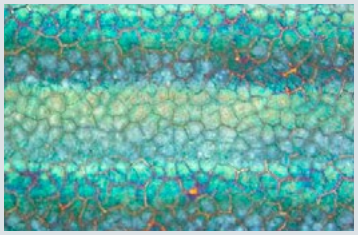
Marking on steel medical instruments

Material: Stainless steel

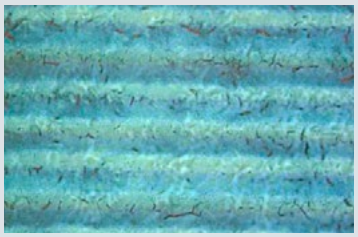


Reduced surface damage allows for corrosion-resistant marking

Standard Wavelength



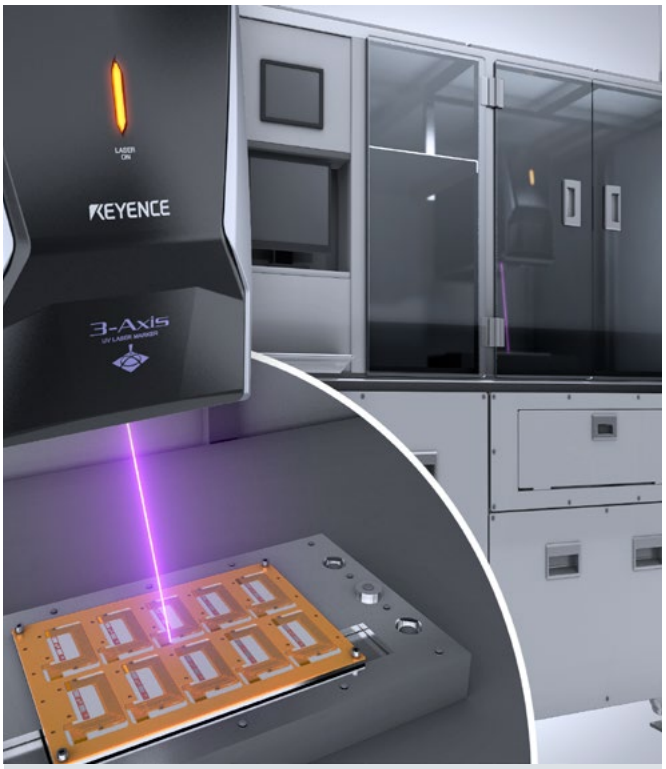
MD-U



Detailed analysis of black-annealed marking

Marking/cutting of flexible PCBs

Material: Polyimide



Perform both marking and processing without thermal damage

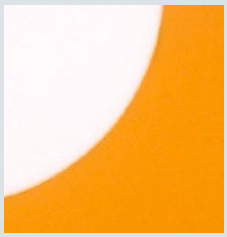
Standard Wavelength

Marking

Cutting

MD-U

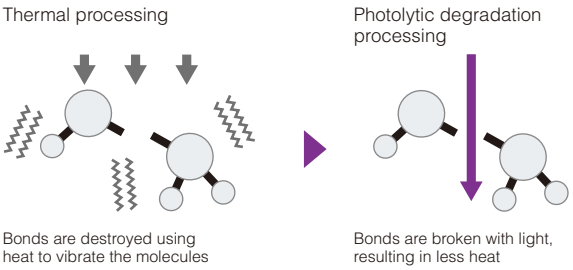
Marking



Cutting

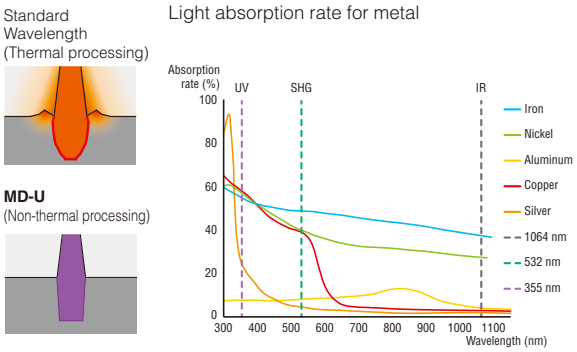
Photolytic Degradation Processing with 355 nm Wavelength

The high-energy photons in UV lasers allow for photolytic degradation processing that breaks the bonds between molecules directly. This allows for marking and processing without heat being applied to surfaces, thus minimizing damage.



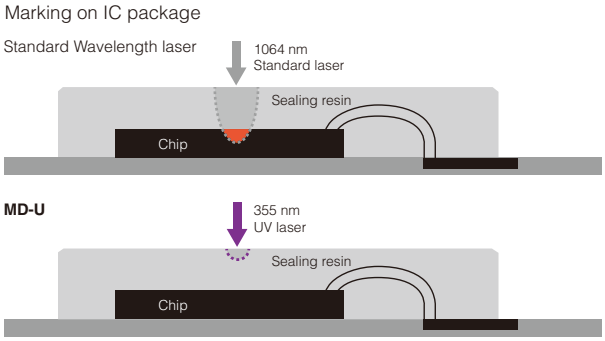
Reduced Surface Damage

The MD-U Series utilizes a high absorption rate even with gold, silver, copper, and other materials with high reflectance. This minimizes soot and burrs while not damaging the surface, so corrosion resistant marking and processing is possible.



Lower Risk of Internal Damage

With the steadily decreasing size of electronic components and their sealing resins, standard wavelength lasers incur a greater risk of damaging the internal components through the transmitted energy. The high material absorption rate offered by UV lasers reduces the chance of that energy being transmitted to internal components.



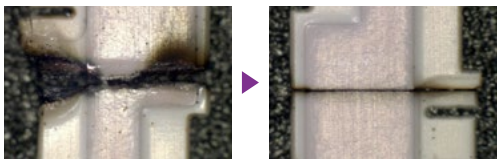
Thermal damage comparisons from different wavelengths

Marking silver-plated surface

Standard Wavelength | **MD-U**

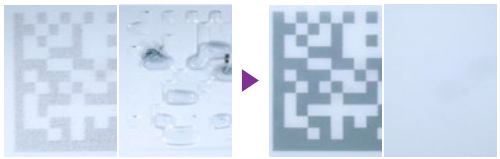
Cutting PCB

Standard Wavelength | **MD-U**



Marking transfusion bag film

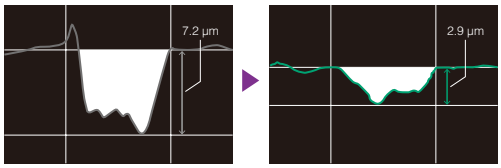
Standard Wavelength | **MD-U**



Surface Back Surface Back

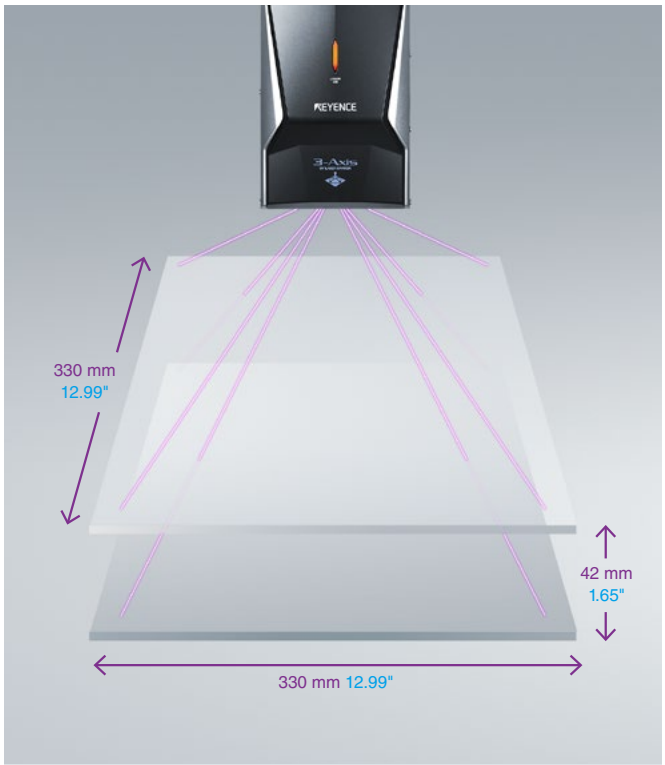
Marking IC package

Standard Wavelength | **MD-U**



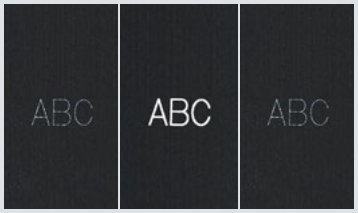
3-Axis Control Provides Superior Marking Quality with Optimal Flexibility

Uniform marking throughout entire area



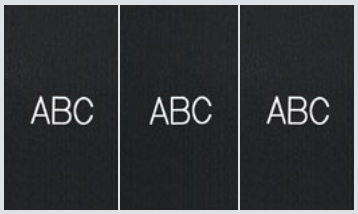
Marking quality remains the same even if the target is at the edge of the marking area

Conventional



Edge Center Edge

MD-U

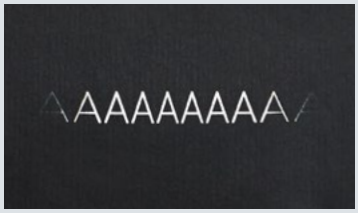


Edge Center Edge

Marking on 3D shapes

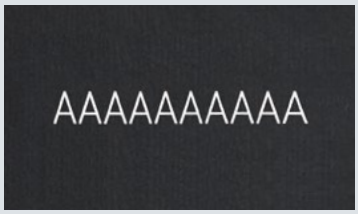
Eliminate distortion by programming any desired shape

Conventional (Cylindrical target)



Edge Center Edge

MD-U

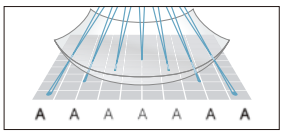


Edge Center Edge

Uniform Marking Edge to Edge

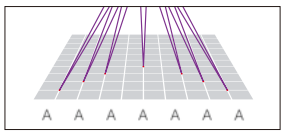
High-precision marking can be performed over a wide area of 330 mm × 330 mm 12.99" × 12.99". This not only reduces costs by simplifying the handling process but also helps improve productivity by reducing indexing time. The distortion, changes in shape, and beam spot size variations that occur when using conventional lasers with an Fθ lens can be eliminated. The 3-Axis Controls adjust the focal point to maintain high-accuracy marking and processing throughout the entire marking area.

Conventional

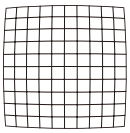


Characters become thicker and their positions are offset the closer they are to the edge of the area.

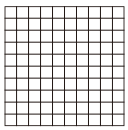
MD-U



Uniform line width and high quality are maintained in the entire area.



Area is distorted by the lens characteristics

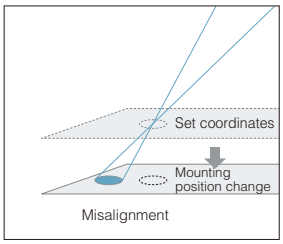


Area is free of deformation/ distortion

Variable Beam Spot and De-Focusing

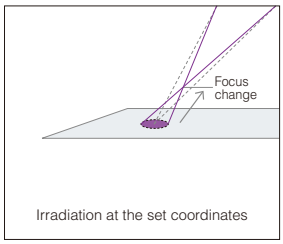
When creating fine marks that do not damage the surface of the target, de-focusing the laser intentionally is one technique that works very well on plastics, resins and metals. With conventional laser systems, the target is placed physically out of focus with no internal adjustments to the laser. This causes incorrect character placement and also marking distortion. Our 3-Axis systems can internally make these adjustments with a simple software setting therefore eliminating the need to make physical adjustments and internally processing the correct X/Y/Z offset to eliminate mis-marking and distortion.

Conventional defocus



Because the mounting position is physically shifted, the irradiation position and character size are also misaligned in relation to their settings.

Variable beam spot sizes



Only the spot size is changed by changing the focal point. Laser irradiation at the desired coordinates and with the desired spot size is possible.

Marking on 3D Shapes

The MD-U Series is equipped with 3-Axis Control, a function for controlling the beam spot to match the target shape, including stepped, inclined, cylindrical, and cone targets. Character distortion and flaws are kept to a minimum, resulting in beautiful marking that perfectly fits the 3D shape.

Step

Conventional (worn) | **MD-U**

Cylinder

Conventional (distorted, stretched) | **MD-U**

Inclined surface

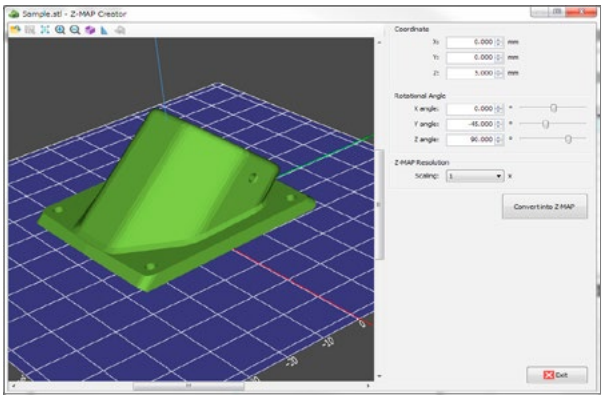
Conventional (worn, stretched) | **MD-U**

Circular cone

Conventional (deformed) | **MD-U**

Z-MAP Creator

Using 3D CAD data (STL format), the actual profile of the target can be imported into Marking Builder 3 and used as the base of the layout. This enables users to configure settings and perform marking on targets that have complicated profiles and cannot be expressed with basic shapes, such as cylinders and step height changes.



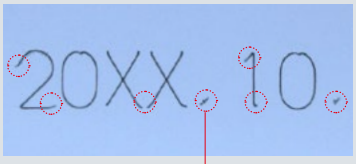
Increased Marking Speed and Improved Production Capacity

Marking on high-speed lines

Higher quality marking than conventional models in the same length of time

Quality comparison on high-speed line marking at 35 ms

Conventional

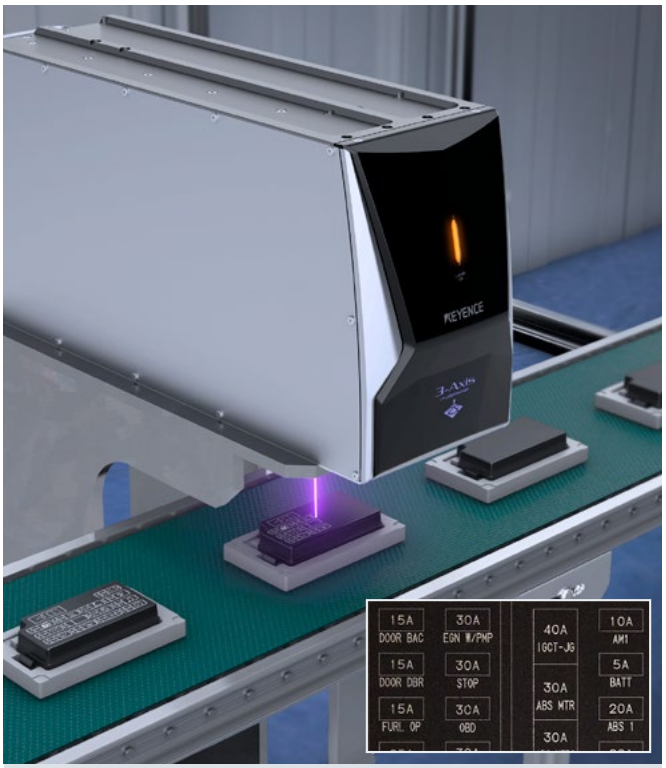


Areas with poor quality

MD-U

High-speed marking on HDPE bottles

Complex logo marking (Fuse boxes)



Faster marking than conventional models at the same quality

Time required for marking at the same quality

Conventional

10.8 s

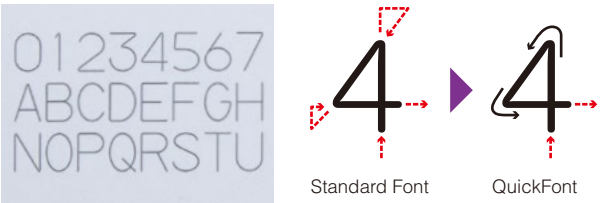
MD-U

6.9 s

Built-in Proprietary Digital Scanner

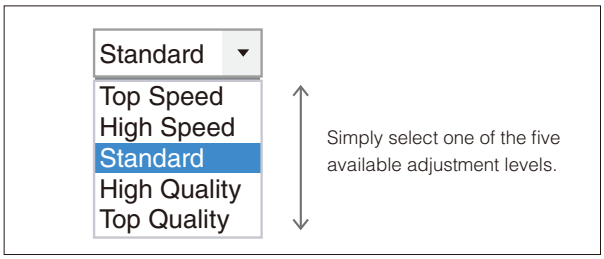
Instead of using an analog scanner as is common with laser markers, the MD-U Series uses a digital scanner developed by KEYENCE enabling a new approach to control. To take advantage of this added performance, the MD-U Series also utilizes QuickFont, a new font to provide even faster marking times without sacrificing quality.

QuickFont



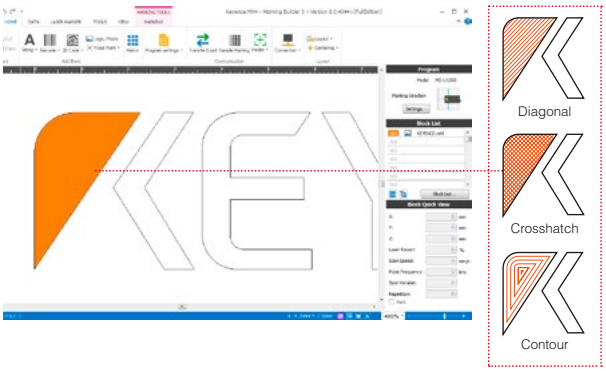
Quality Adjustment Level

The software automatically calculates the adjustments needed to either emphasize higher speed or higher quality by simply selecting the quality level desired.



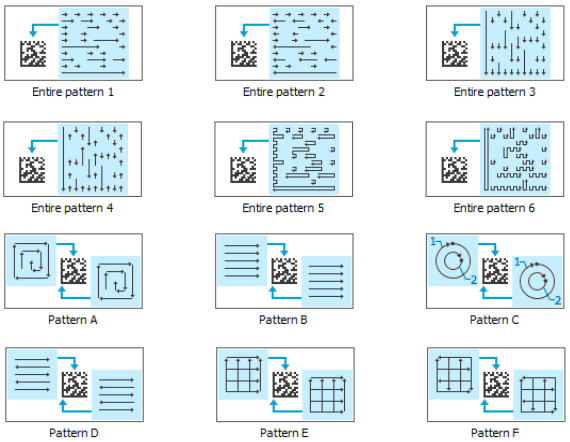
Logo Fill Pattern Selection

With the MD-U, logo fill patterns can be selected. Using dedicated software also makes it possible to perform custom edits such as adjusting fill line intervals for external data, adding/deleting lines, and other settings to ensure the desired quality and marking time.



2D Code Pattern Selection

Marking patterns can effect the way a barcode looks and how well it is identified by the code reader. The Marking Builder 3 software allows for ultimate flexibility in pattern selection with more than 10 patterns to choose from and many more combinations possible.



Stability and Reliability

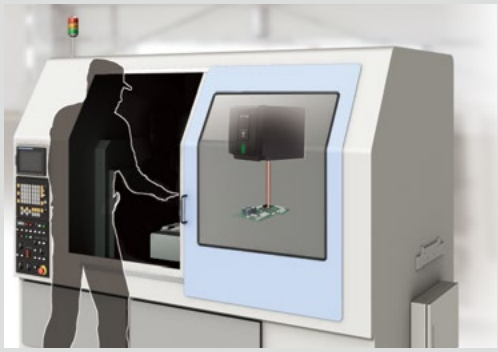
Eliminating the Need for Peripheral Equipment—Built-In Multi-Function Camera Enables Positioning, Inspection, and More

Positioning | Height (Focus) Adjustment

Conventional Method

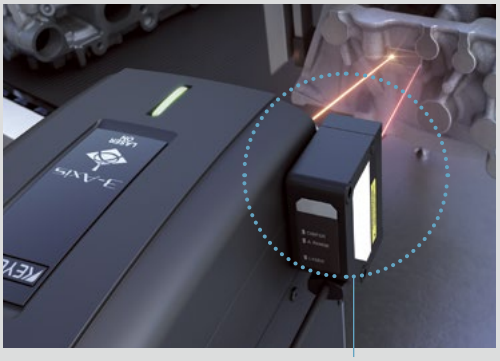
Use of Complicated Equipment

Adjusting the marking position in conventional methods required physically seeing the target. The process was troublesome and time-consuming, requiring workers to override the safety functions before performing work. This being a manual process often resulted in generating several scrap parts.



Measurement by Separate Displacement Sensor

Failing to apply the correct focal distance resulted in flaws or blurring in the marking. To prevent such marking defects, a separate displacement sensor was required, and the measured values were then sent to the marker to achieve the correct focal distance.



Distance measurement sensor

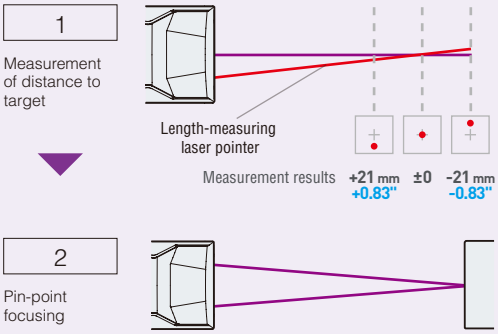
MD-U

Viewfinder Function

Alignment is possible using the built-in camera to capture a live image of the part. Now, an operator can spend less time and produce less scrap while maintaining a safe work environment.

Auto-Focus Function

The Auto-Focus function makes it possible to focus without the use of external equipment. The position of the measurement laser pointer is monitored using the built-in camera, allowing for automatic adjustment of the focal point to within ±21 mm ±0.83".



Multi-function built-in camera

- Viewfinder
- Auto-Focus
- 2D code reading
- Marking Confirmation

Post-Mark Code Reading

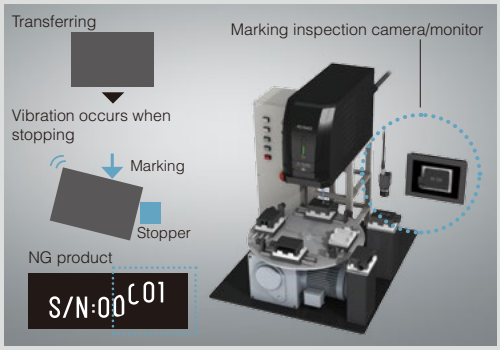
Post-Marking Confirmation

Separate Marking and Reading Processes

With conventional models, the marking and reading processes are separate, resulting in the need to operate different devices when making adjustments. This takes time and effort. Not to mention, if the manufacturers of each device are different, investigating the cause of trouble can be time-consuming.

Separate Post-Processing Inspection Camera

To prevent marking defects from being accepted, conventional lasers required installation of a separate marking inspection camera.



2D Code Reading

With the MD-U Series, 2D codes can be read using the built-in code reader. This ability to perform marking and reading in the same process reduces equipment space and costs. Grade judgment is also available.

Read result

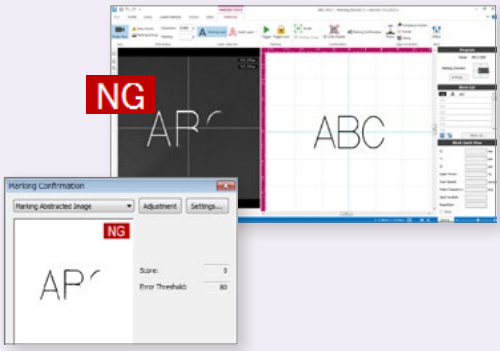
AZ-T00025:A

Total grade judgment

Supported standards:
ISO/IEC TR 29158 (AIM DPM-1-2006)

Marking Confirmation Function

Using images captured both before and after marking, the MD-U Series detects flaws by comparing the shape of characters programmed in the software with the shape of the marked characters.



Environmental Resistance to Improve Service Life

Dust Countermeasures Enable Stable Operation Even in Poor Environments

Protection against the harshest environments

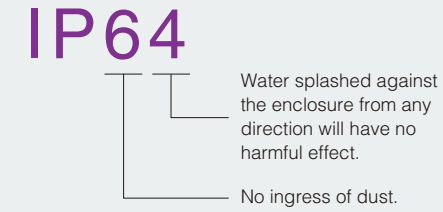
The MD-U Series is designed to be environmentally resistant with an IP64 enclosure rating. This environmental resistance makes it possible to use the device even in harsh environments.

Environmentally Resistant Specifications [Marking Head Enclosure Rating: IP64]

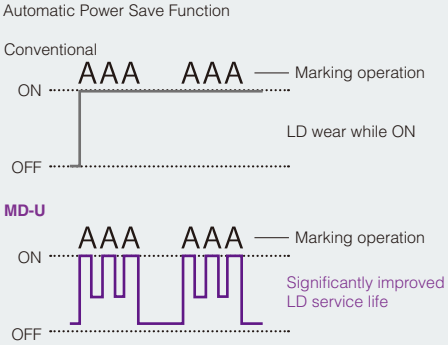
The MD-U Series uses a proprietary sealing method to securely protect optical components. This ensures that these components are not affected by factors such as dirt, dust, and water droplets, and provides environmentally resistant performance and allows for stable operation in even the harshest environments. The MD-U Series has an enclosure rating equivalent to that of the fanless marking head of our MD-F Series fiber laser markers.
(*Attachment of protective lens OP-88240 possible.)

Long Service Life

Taking advantage of KEYENCE's long history of in-house laser development, the design of the MD-U Series offers a long service life. Protection of optical components and countermeasures against dust have eliminated the cause of decreased UV laser output. In addition, a single-emitter laser diode is used, and the Automatic Power Save function allows for more efficient use of the laser diode itself.

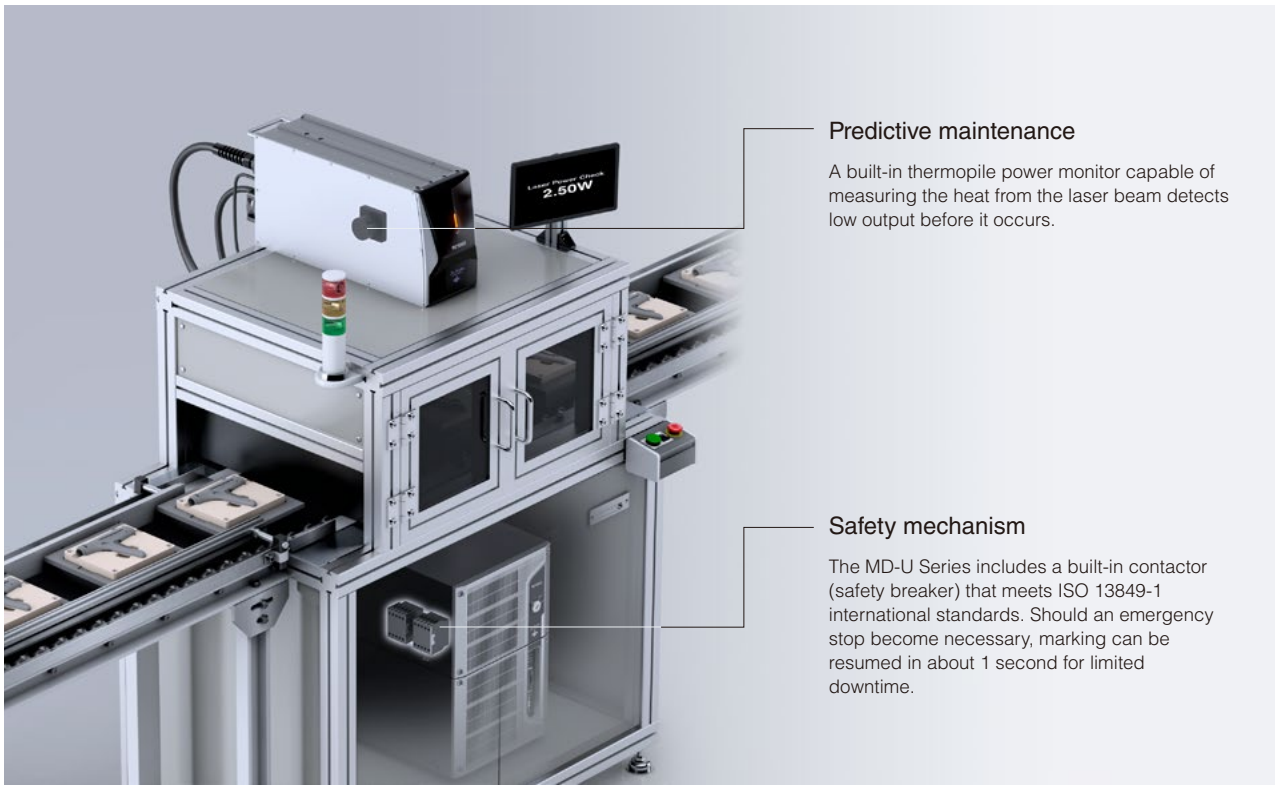


All IP tests are performed for the prescribed time and using the prescribed method. This only guarantees that operation is possible during the time limits required by the test and do not guarantee that the product can be used under the test conditions for extended periods of time.



Built-in Power Monitor for Validation

Ensuring Compliance with the Highest Standards



Predictive maintenance

A built-in thermopile power monitor capable of measuring the heat from the laser beam detects low output before it occurs.

Safety mechanism

The MD-U Series includes a built-in contactor (safety breaker) that meets ISO 13849-1 international standards. Should an emergency stop become necessary, marking can be resumed in about 1 second for limited downtime.

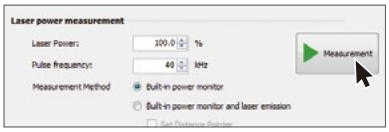
Thermopile Power Monitor and Calibration

A thermopile power monitor is standard-equipped inside the marking head. Power output management, the most important aspect of laser marker equipment maintenance, can be performed easily, accurately, and with minimal time.

ISO 13849-1 Compliance

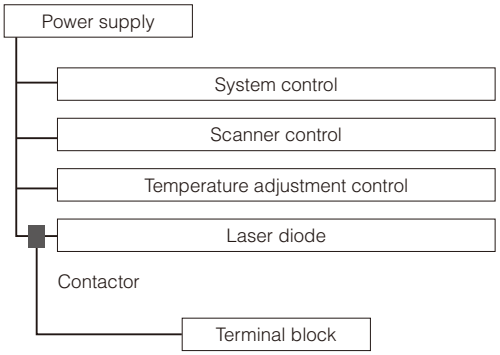
Two contactors inside the controller cut power to the laser source. These contactors can be used as the means to stop the marking laser in compliance with ISO 13849-1. In addition, restoration requires only about 1 second, ensuring a limited downtime.

Enter the measurement conditions, and then click a single button.



The laser beam that is actually emitted is forked and measured within the marking head.

Controller interior



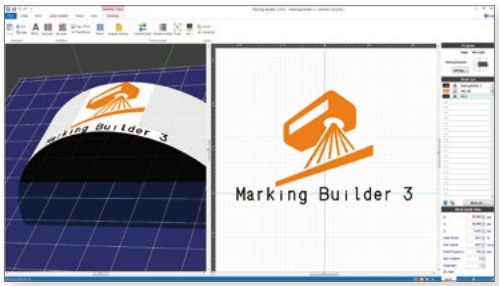
Laser Marker Setting Software

Marking Builder 3

The Marking Builder 3 software suite was developed to promote the high performance of the MD-U Series in an easy-to-use graphical interface. Even users without programming experience can easily set up the device.

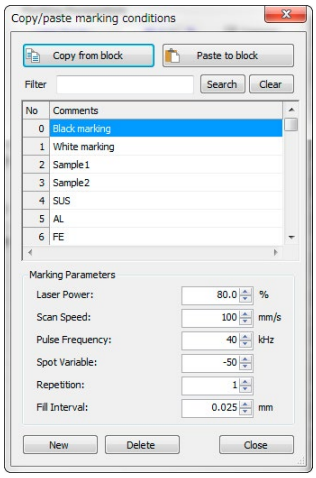
Basic Settings

Settings for three-dimensional shapes can be configured in three steps by following the on-screen guidance. The 3D preview can be used to check alignment and view finished programs in 3D.



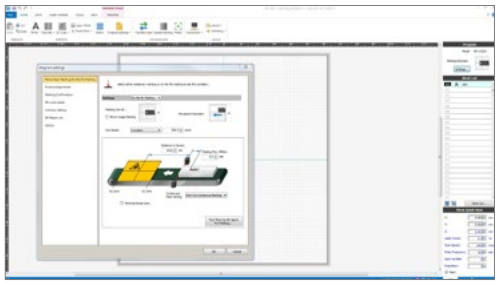
Marking Conditions Clipboard

Frequently used conditions are registered as favorites in the clipboard making new part marking easy.



Moving Marking

High quality marking is possible on flat and curved moving targets. Even first-time users are able to configure the settings with ease.



Customized Software to Meet a Variety of Needs

ActiveX

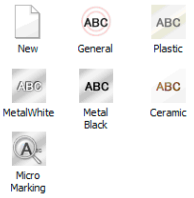
ActiveX technology allows for direct control of the MD-U into other software (such as VB, Excel, or C#). With KEYENCE, users can create custom software using ActiveX technology to automate time-consuming tasks.

Conventional: Required input of information into software

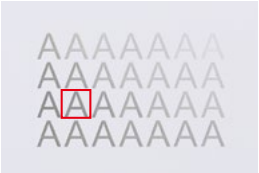
MD-U: One-click automation

Sample Marking Function

The software automatically extracts the optimum marking settings when the user selects the material type. The optimum conditions can be found quickly from the list of marking results. A wealth of experience was conventionally required to set the marking conditions, but this can now be done easily and in a short period of time.



Select the material



Quickly find the optimum conditions

Printer Driver Function

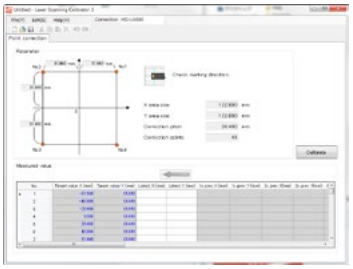
A variety of data—such as Excel, Word, PDF, and bitmap files—can be imported directly into the laser marker software. There is no need to convert or edit the desired data, which makes it possible to easily perform laser marking the same way as printing a document from an office printer.

Import a variety of data directly

HD Marking Area Correction

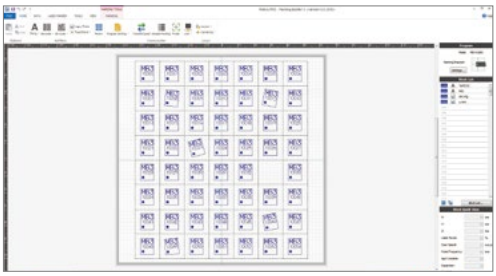
With the MD-U Series, correction within the marking area is possible at up to 2000 different marking points. This means anyone can easily correct marking area distortion—due to the installation environment of the laser head—throughout the entire marking area.

* Measurements of marking results must be performed by the customer.



Matrix Marking Settings

Thousands of items can be arranged in a batch marking layout for optimum marking of products in a palette. This software also links easily with a vision system in order to turn on and off individual target positions and adjust the X/Y/Theta position of individual targets.



Custom Software Example

Traceability System

When marking is complete, a record that includes the date, marking content, OK/NG judgment, grade, and an image of the marking is automatically stored.

No	Date	Marking Content	Judgment	Image
1	20XX0401	ABC0001	OK	20XXX0401001.bmp
2	20XX0401	ABC0002	OK	20XXX0401002.bmp
3	20XX0401	ABC0003	NG	20XXX0401003.bmp
⋮				

1. Marking preview
2. Marking start/stop buttons
3. Marking image display

Marking Examples by Industry

Automotive Industry

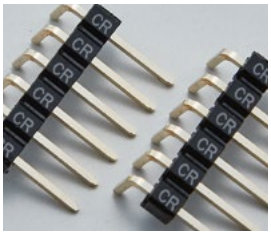
Cation-painted parts
Cation painting

Multicolor automotive relays
PBT

ECU PCBs
Glass epoxy

In-vehicle plastic parts
Polyamide (PA)

Switch covers
Polypropylene (PP)



Terminals
Liquid-crystal polymer (LCP)

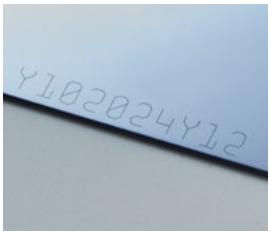
Fuse holders
PBT

Windows
Glass

Electronics Industry

Earbuds
PVC

Terminal block
Polycarbonate (PC)

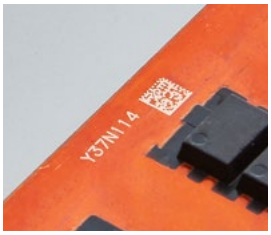


Wafers
Silicon

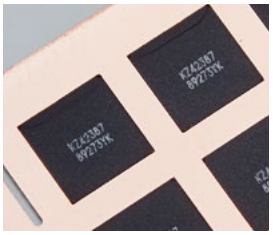
Crystal oscillators
Nickel plating

Transparent case
Polycarbonate (PC)

LED lights
ABS



Lead frames
Copper



IC packages
Epoxy

Medical/Pharmaceutical Industry

Magnifying glasses
ABS

Masks
Nonwoven fabric (PP/PE)

Electric toothbrushes
ABS

Tablets
—

Medical tubing
Silicone

Medicine bottles
HDPE

Steel instruments
Stainless steel

Protective eyewear
Polycarbonate (PC)

Foods, Cosmetics, Etc.

Cosmetic bottles
PET

Detergent caps
Polypropylene (PP)

Toothpaste tubes
Polyethylene (PE)

Desiccant
Nonwoven fabric (PET)

Mint cases
ABS

Cartons
Paper

Food packaging film
Polyethylene (PE)

Bottle caps
Polypropylene (PP)

Full Traceability Solution Provider

Single-source company for marking, reading, and inspection

With a wide range of products—from laser markers to code readers, inspection devices, and sensors — KEYENCE is able to provide various equipment required for traceability solutions. Our systems have been adopted in locations throughout the world.

Marking → **Appearance Inspection** → **Dimensional Measurement** → **Product Difference Checking** → **Reading**

Laser marker
MD-U Series

Image processing system
XG Series

Laser displacement sensor
LJ-V Series

Photoelectric sensor
LR-W Series

1D/2D code reader
SR Series

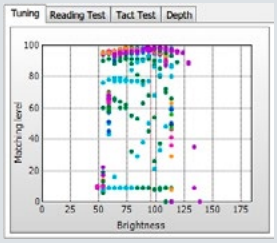
Code Reader

Dealing with Difficult-to-Read Targets

When working with targets that are difficult to read, readability can be improved through use of the SR Series.

Automatic Tuning Function

A variety of setting combinations—including image processing filters and brightness—are analyzed to automatically derive the optimum setting configuration.



Code Verification Function

The Code Verification function enables not only code readability but also grade judgment according to a variety of standards.

Reading rate
100%
Grade
A

Reading rate
100%
Grade
B

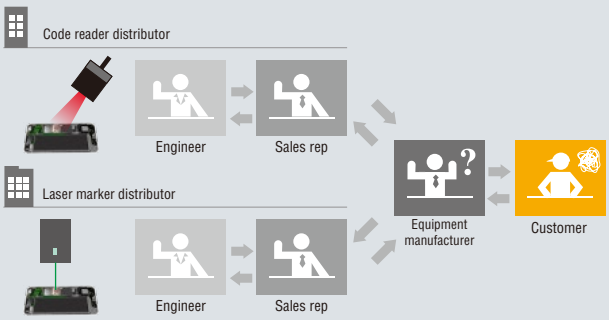
Supported standards:
- ISO/IEC 15416
- ISO/IEC TR 29158
- SAE AS9132
- ISO/IEC 15415
- ISO/IEC 16022
- SEMI T10-0701

One Supplier

Single-Manufacturer Support

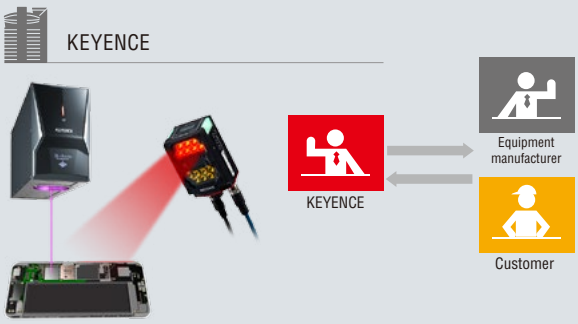
Using laser markers and readers made by the same manufacturer results in smoother adjustments before and after installation.

Support systems of other companies

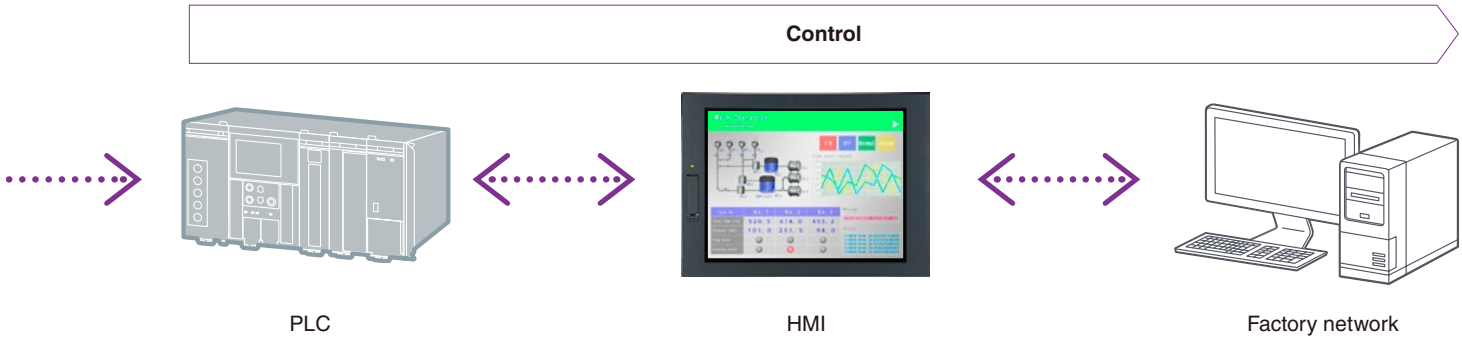


Communication and resolutions between manufacturers take time.

KEYENCE's support system



KEYENCE handles support for both laser markers and barcode readers.



Communication

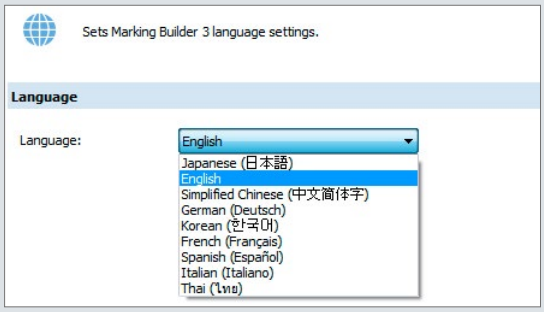
Equipped with Industrial Protocols

The MD-U Series supports both EtherNet/IP™ and PROFINET communication protocols. These networks provide a variety of advantages including the need for only one LAN cable for connection and real-time equipment management.

Global Support

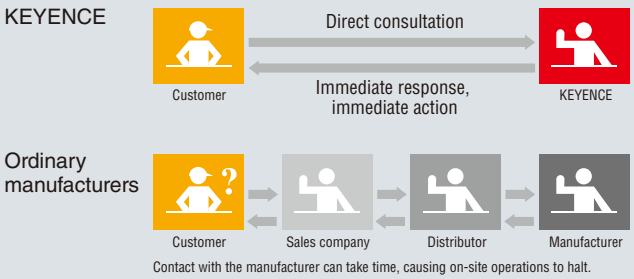
One-Click Language Switching

With the Marking Builder 3 laser marker configuration software, switching languages is as easy as selecting the language from a pull-down menu. With nine languages available, configuration is easy regardless of who is using the software.



Support on a Local and National Level

Since KEYENCE is a direct sales manufacturer, customers are able to receive responses to inquiries in a very short time.



Specifications

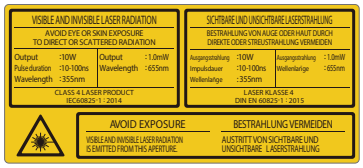
		Standard area	Wide area
Model	Marking unit (controller + head)	**MD-U1000C**	**MD-U1020C**
	Console (sold separately)	**MC-P1**	
	2D code reader add-in (sold separately)	**MD-XAD1/MD-XAD1A**	
Marking method		XYZ 3-Axis simultaneous scanning method	
Marking laser		YVO_4 laser, Class 4 Laser Product (IEC/EN60825-1, JIS C6802, FDA (CDRH) Part 1040.10)*1	
	Wavelength	355 nm	
	Output	3 W/40 kHz (output at focal point: 2.5 W)	
Q-switch frequency		CW (continuous wave), 40 to 400 kHz	
Guide laser/working distance pointer		Semiconductor laser, wavelength: 655 nm, output: 1.0 mW, Class 2 Laser Product (IEC/EN60825-1, JIS C6802, FDA (CDRH) Part1040.10)*1	
Marking area		125 × 125 × 42 mm 4.92" × 4.92" × 1.65"	330 × 330 × 42 mm 12.99" × 12.99" × 1.65"
Standard working distance (±variable width)		189 mm (±21 mm) 7.44" (±0.83")	300 mm (±21 mm) 11.81" (±0.83")
Marking resolution		2 µm	5 µm
Scan speed		Max. 12000 mm/s 472.44"/s	Max. 8000 mm/s 314.96"/s
Character type	Font	KEYENCE original font (numbers, letters, katakana, hiragana, kanji), user font, TrueType font, OpenType font*2	
	Barcode	CODE39, ITF, 2of5, NW7(Codabar), JAN, CODE128, EAN, UPC-A, UPC-E, CODE93	
	2D code	QR code, micro QR code, DataMatrix (ECC200/GS1 DataMatrix)	
	GS1 DataBar	GS1 DataBar, GS1 DataBar CC-A, GS1 DataBar Stacked, GS1 DataBar Stacked CC-A, GS1 DataBar Limited, GS1 DataBar Limited CC-A, GS1 DataBar Truncated, GS1 DataBar Truncated CC-A	
	Logo image	Custom character font and logo (DXF) data, BMP/JPEG/PNG/TIFF	
Marking conditions	Workpiece style	Stationary marking, Moving marking (constant, encoder)	
	Character size (height/width)	0.01 to 125 mm 0.004" to 4.92"	0.01 to 330 mm 0.004" to 12.99"
	No. of registered programs	2000 max.	
	No. of program blocks	256	
Input/output		Terminal block I/O, MIL connector I/O, contactor control I/O	
Interface		RS-232C, USB2.0, Ethernet (100BASE-TX/10BASE-T)*3	
Marking head installation direction		All directions	
Marking head cable length		4.3 ±0.1 m 14.1' ±4"	
Cooling method		Forced air cooling	
Rated voltage and power consumption		Single-phase 100 to 240 VAC ±10%, 50/60 Hz, 800 VA max.	
Overvoltage category		II	
Pollution degree		2	
Enclosure rating (marking head)		IP64	
Environmental resistance	Ambient temperature for storage	–10 to +60°C 14°F to 140°F (no freezing)	
	Ambient temperature for usage	0 to +40°C 32°F to 104°F	
	Ambient humidity for storage/ Ambient humidity for usage	30% to 85% (no condensation)	
Weight	Controller	23.5 kg	
	Marking head	18.0 kg	
	Console	2.0 kg	
Applicable regulations		EU directive (EMC directive, low-voltage directive, RoHS directive), EN standard (EN 55011, EN 61010-1, EN 60825-1, EN 61000-6-2, EN 50581), CSA and UL standards (CAN/CSA C22.2 No. 61010-1, UL 61010-1), North America regulations (FCC Part 15B, ICES-001 Class A)	

*1 The laser classification for FDA (CDRH) is implemented based on IEC60825-1 in accordance with the requirements of Laser Notice No.50. *2 The only TrueType and OpenType fonts supported are those fonts whose "Font embeddability" property is set to "Installable" or "Editable." This property can be viewed from the Properties dialog boxes of the fonts shown on the [Fonts] screen in [Control Panel]. *3 There are two USB ports: a Type A connector for connecting USB memory devices or a USB mouse and a Type B connector that is the dedicated port for Marking Builder 3 (ActiveX). The Ethernet port supports communication with Marking Builder 3 (ActiveX), TCP/IP communication, EtherNet/IP™ and PROFINET.
• PROFINET is either a registered trademark or a trademark of PROFIBUS Nutzerorganisation e.V. • EtherNet/IP™ is either a registered trademark or a trademark of ODVA.

PC software specifications (optional)

Model	Description
MB3-H2D4-DVD	Marking Builder 3 Version 4*1 2D setting and editing software (focal distance, inclination correction, variable spot, distance pointer adjustment)
MB3-H3D1	3D add-in software for Marking Builder 3 (marking on plane, cylinder, cone, or sphere; Z-MAP marking)

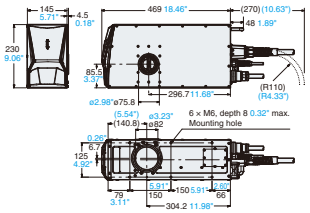
*1 Marking Builder 3 Version 2 and Version 3, and Marking Builder 2 Version 7 are also available.
• Supported operating systems: Windows 10, 8.1, 8, 7 (SP1 or later). Supported languages: English, Japanese, Simplified Chinese, German, Korean, French, Spanish, Thai, Italian.
• Windows is either registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.



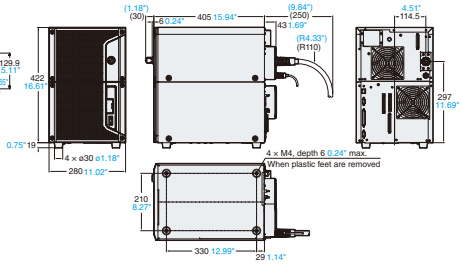
Dimensions

Unit: mm inch

Marking head



Controller



SAFETY PRECAUTIONS
• Be sure to read the manual and fully understand its contents before using the product.
• Do not allow your eyes or skin to be exposed to a directly irradiated laser beam or a diffused reflection laser beam.

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SAFETY INFORMATION
Please read the instruction manual carefully in order to safely operate any KEYENCE product.

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