KEYENCE

NEW **World's Fastest, High power CO_2 Laser Marker**

ML-G9300 Series

CE

Ultra-high Output

30W

Laser Power

Innovative Laser Markers Using WaveGuide Technology

The Ultimate Laser Marker Using WaveGuide Technology

Using WaveGuide (WG) Technology, high-speed permanent marking is now available.
Various materials can be marked with a single unit.

World's highest speed, high power
CO_2 Laser Marker
ML-G9300 Series

A vertical marking head is available.

2.5 times higher than conventional products

World's highest power: 30W output

The high power 30W output offers wider marking applications.

The ML-G Series incorporates a 30W laser oscillator that uses the newly developed WaveGuide excitation method. Although the overall length of approx. 23.6" (600 mm) is the smallest in its corresponding class, the ML-G Series enables marking on stainless steel workpieces as well as on resin workpieces, offering wider marking applications.*

* To print on stainless steel, please use the model that supports ultra-small character sizes.

Two times faster than conventional products

World's highest speed: 600 characters/second

Enables high-speed marking that cannot be achieved with conventional markers.

The world's fastest marking scanner motor has been developed. With a high scan speed of 472.4"/sec. (12,000 mm/sec.), the ML-G Series can reduce the marking tact time (twice as fast as conventional products). Marking on fast-moving products is now possible.

Twice as high as conventional products

Laser Power Stability within ±5%*

Beautiful, consistent marking can be achieved.

The ML-G Series provides stable laser power to maintain consistent marking quality. It can suppress irregularities in marking density and eliminate problems of missing or blurred characters. Thus, the ML-G Series ensures beautiful marking over a long period of time.

* When the output is 20% or higher

Twice as long as conventional products

World's longest life expectancy: 10 years*

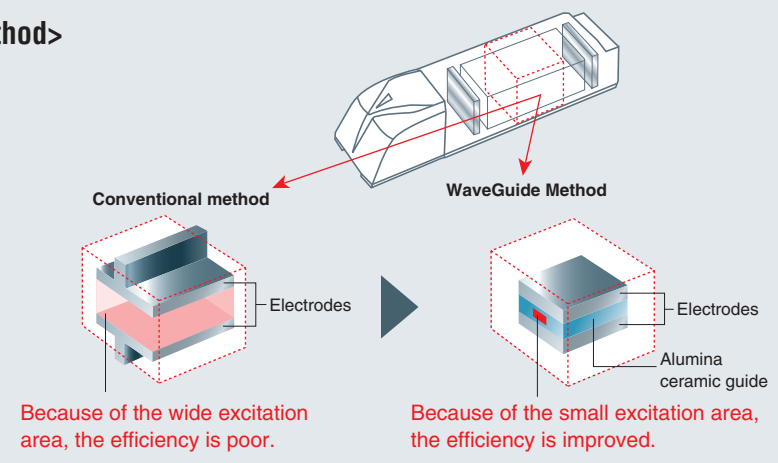
Ultimate maintenance-free structure

The laser oscillator is equipped with a metallic hardware seal to suppress CO_2 gas leakage, offering a life expectancy approximately twice as long as conventional products. Since the laser oscillator does not need to be replaced for a long time, it provides an ultimate, maintenance-free structure.

* Performance not guaranteed.

<WaveGuide (WG) Method>

The path of the laser beam in the oscillator is guided with alumina ceramics. With the reduced electrode pitch, the WaveGuide method ensures high efficiency and stability.



High Power and High Speed Achieve the Impossible

The ML-G Series solves applications that have been abandoned with conventional markers.

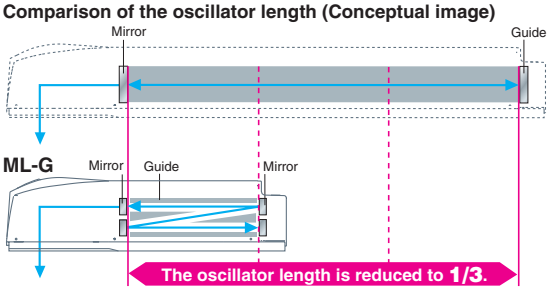
The ML-G Series can track fast-moving products.

World's highest power: 30W output

High output from an ultra-small body – Newly developed WaveGuide Technology

The path of the laser beam, which is generated with ultimate efficiency by WaveGuide technology, is folded in a Z shape in the oscillator. This method can reduce the oscillator length, resulting in downsizing of the unit. Also, it provides higher excitation efficiency than the conventional method.

Comparison of the oscillator length (Conceptual image)



Marking on stainless steel workpieces, film cutting and boring are possible.

The ML-G Series enables marking on various materials such as stainless steel, resin, glass, rubber and paper. With its enhanced laser power, the ML-G Series can also be used for machining purposes such as resin film cutting, boring and wire sheath cutting.

* To print on stainless steel, please use the model that supports ultra-small character sizes.

Marking on a stainless steel workpiece

Cutting a harness sheath

World's fastest scanner motor

The marking tact time is reduced to 1/2.

To obtain the best performance of the WaveGuide technology, the world's fastest marking scanner motor has been developed. When tuned to optimum conditions, the scanner motor provides the fastest marking speed of 600 characters/second, resulting in a significant reduction in marking tact time.

Comparison of high-speed marking **Twice the speed**
(Number of characters that can be marked in 0.07 sec.)

Conventional product　　ML-G

Tracking fast-moving lines

The ML-G Series remarkably improves marking on products traveling on high-speed lines. Conventional products have considerable limitations in such applications. The ML-G Series enables high-speed, clear marking on PET bottles, cartons, electrical wires and more.

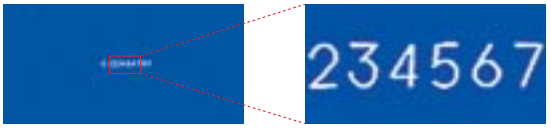
Marking on a PET bottle

Marking on electrical wire

High-definition marking resolution of 0.039 Mil (1 μm)

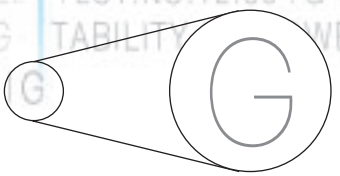
Adoption of a high-definition scanner driver

By developing a high-definition scanner driver, the marking resolution is significantly improved from 0.585 to 0.039 Mil (15 to 1 μm). Thus, the ML-G Series enables higher-definition, beautiful marking of fonts and logo marks. Even ultra-small characters can be expressed clearly.



Long-term Marking Quality

Retain well-defined marks forever



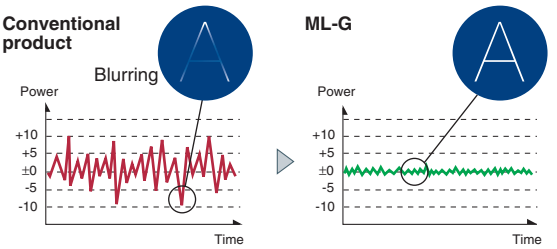
Well-defined characters can be retained for a long period of time.

Highest marking stability*

High-precision laser output with ±5% stability ensures stable marking*.

With conventional oscillators, the laser power fluctuates slightly by approximately ±10% during the marking process. The marking quality can be diminished. However, the ML-G Series incorporates a laser oscillator using WaveGuide technology, providing a laser power stability within ±5%. Therefore, the ML-G Series can suppress irregularity in marking density to maintain constant marking quality. It ensures highly stable marking that cannot be achieved with conventional markers.

* When output is 20% or higher



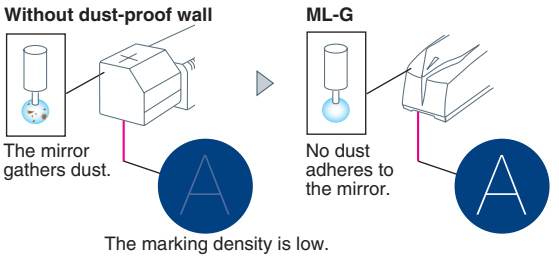
A dust-proof structure and noise immunity ensure stable marking.

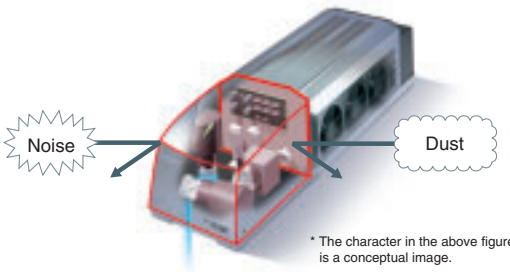
Super dust-proof structure

A dust-proof wall exists between the laser oscillator and the scanner to separate these units completely. With this structure, external air for cooling the oscillator will not effect the scanner. Dust contained in the external air will not adhere to the marking scanner mirror. Thus, the ML-G Series ensures stable marking without missing or blurred characters.

Noise immunity

Since the whole marking head is shielded, the ML-G Series prevents external noise from entering the scanner and control board, ensuring stable marking. A CE Marking-conformable model is also available.





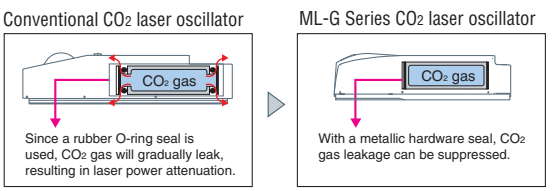
* The character in the above figure is a conceptual image.

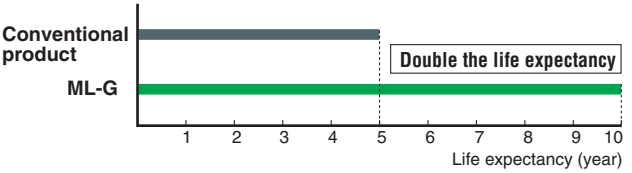
World's longest life expectancy: 10 years*

Maintenance-free structure

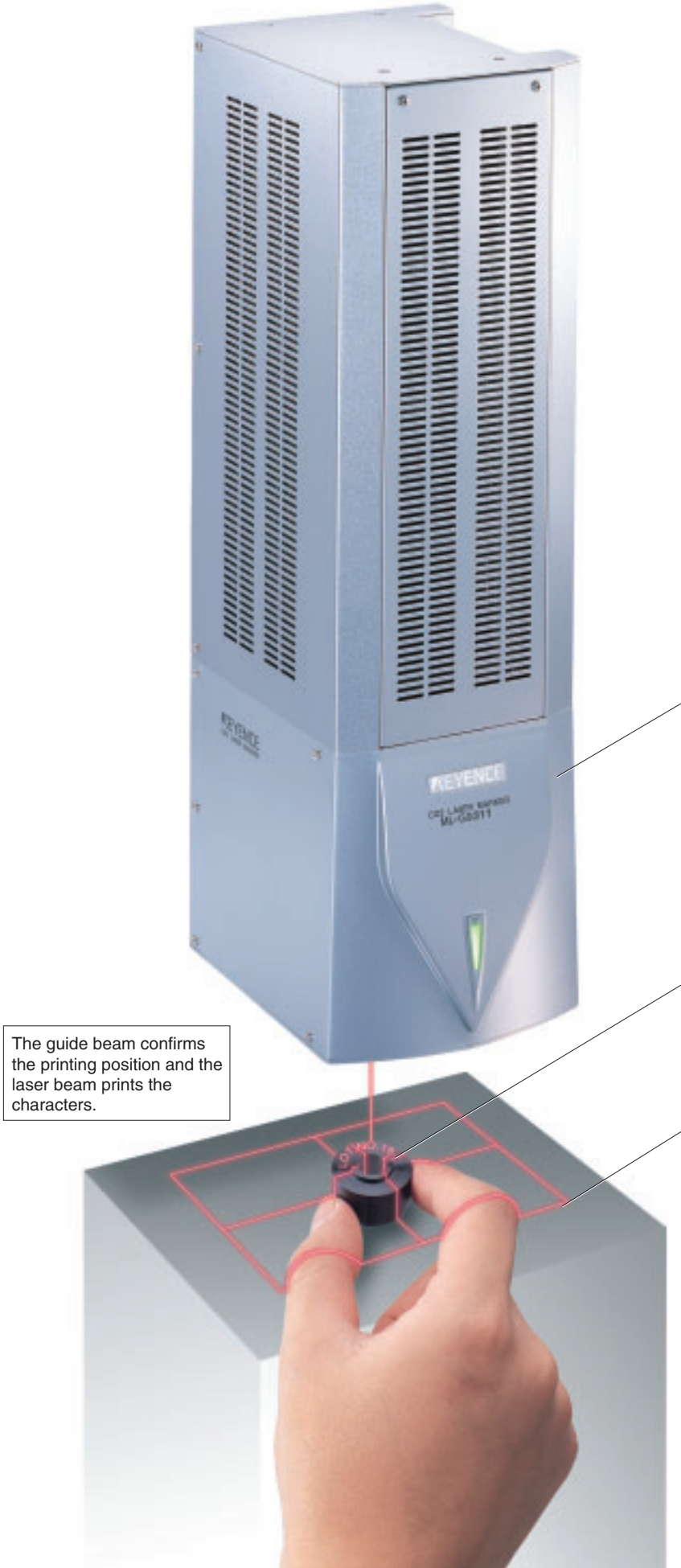
The laser oscillator is equipped with a metallic hardware seal to suppress CO_2 gas leakage, offering a life expectancy approximately twice as long as conventional products. This results in maintenance cost reduction. Furthermore, it can eliminate line stoppage during replacement and save the labor of troublesome replacement work.

* The life expectancy of 10 years is not a guaranteed value.





Quick and Easy Installation



The vertical marking head can be installed in minimal space.

Continuous laser guide
Using a red laser beam, you can clearly see the image of the characters to be marked.

The guide beam confirms the printing position and the laser beam prints the characters.

Work area laser guide
A laser beam indicates the work area. You can determine the workpiece position easily.

Ease of installation

A laser guide can simplify workpiece positioning.

Continuous laser guide

A high-speed scanning red laser confirms the position of marking characters on a workpiece.

Workpiece image laser guide

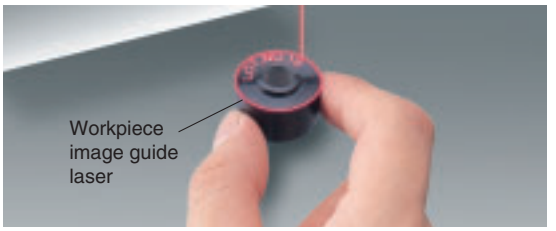
You can confirm the workpiece outline shape with the red laser. Using this guide laser enables accurate setup without positioning errors.

Work area laser guide

A high-speed red laser displays the work area on the target. Using this laser guide simplifies workpiece angle/position adjustment.

Focal point cross-pointer

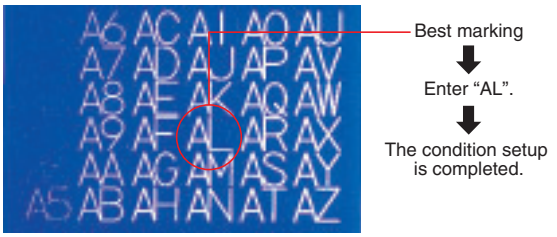
You can quickly determine the optimum workpiece distance by checking the intersection of two laser paths. Using this laser guide enables quick and accurate setup for workpiece changeover.



Optimum marking conditions can be quickly defined.

Sample marking function

With conventional markers, it is very difficult for users to determine the optimum marking conditions for different shapes and materials of target workpieces. The sample marking function automatically marks 70 patterns, which are obtained under different combinations of laser power and marking speeds. You can select the optimum marking conditions quickly by checking the marked characters. With this function, you can determine the highest-precision marking condition easily and accurately.



Safety design

The emergency stop button stops laser oscillation immediately.

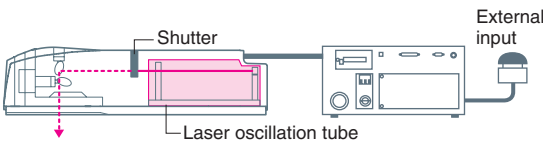
Emergency stop button

The emergency stop button is provided on the controller front panel. The operator can stop laser oscillation immediately in case of an emergency.

Laser oscillation can be stopped with an external input.

Automatic shutter

Using an external input to the controller, the operator can stop laser oscillation. Even if an abnormal condition occurs with the line, the automatic shutter will prevent laser emission.



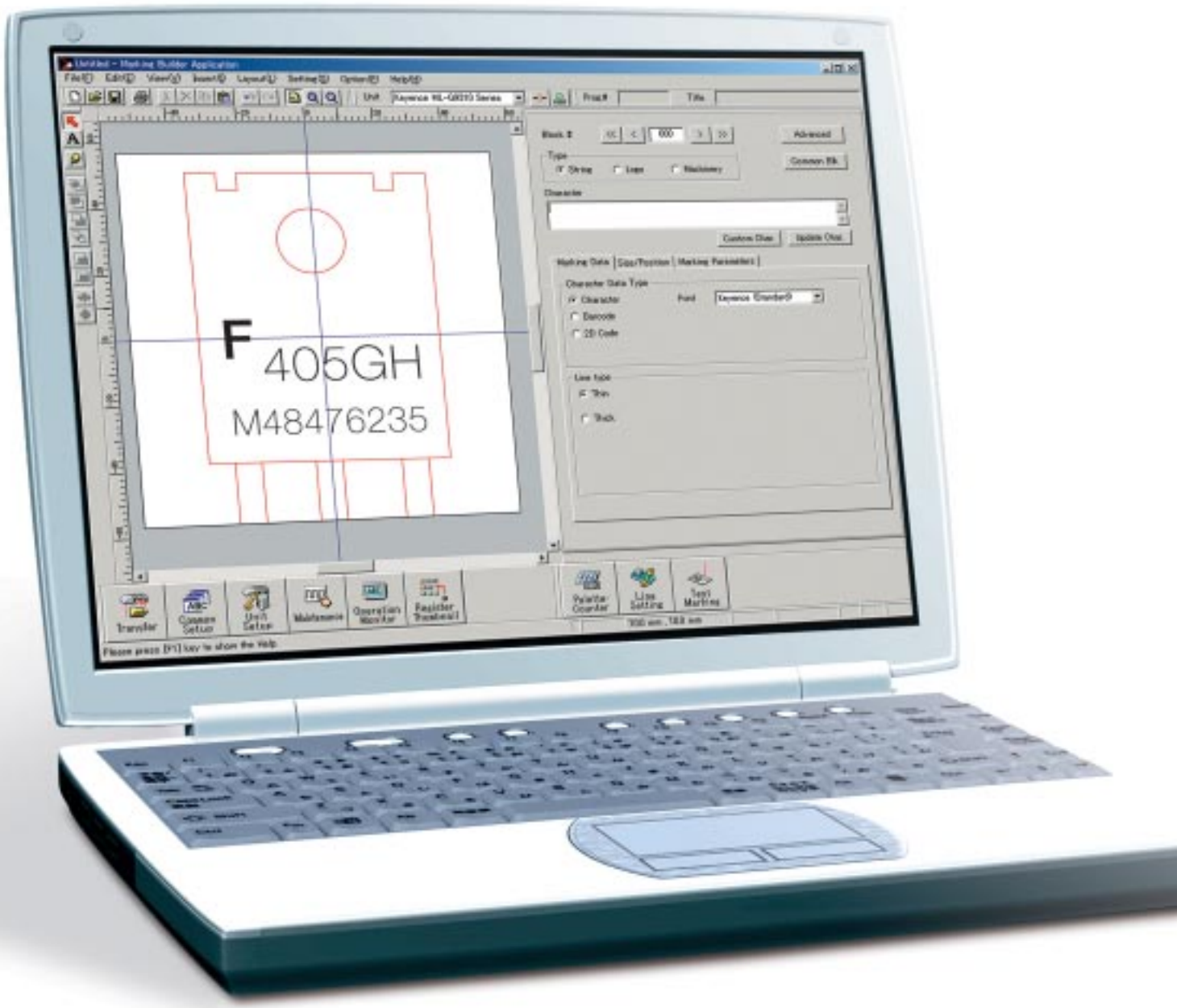
Compliance with high-level safety standards

Conforms to FDA standards and CE Marking

In addition to the FDA standards (U.S. safety standards), the ML-G Series meets the requirements of CE Marking for EU countries, ensuring the world’s highest safety level.

Dedicated Marking Software Simplifies Setup

Even inexperienced users can set up the ML-G.

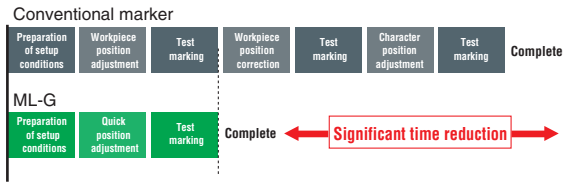


Easy to use

The integrated marking software “Marking Builder” is included.

The setup time can be greatly reduced.

Since preset data can be checked on the screen in real time, the setup time can be reduced. You can see a finished image before marking on actual products, so the marking layout check (Cut & Try process) can be simplified. This function can save both time and workpieces.

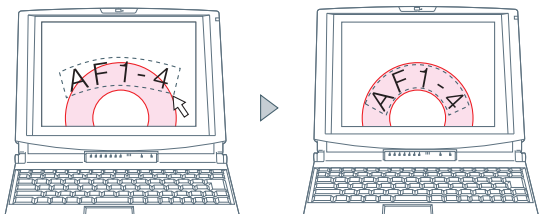


Simplified layout according to the workpiece image

Workpiece image display function

The marking layout can be determined by monitoring the target workpiece image.* You can execute coordinate movement and zoom-in/zoom-out operation simply by dragging characters. Even arc alignment, which is difficult to do with the conventional method, can be performed easily.

* An image of the target can be loaded into the Marking Builder software so as to assist in setup of the position of the mark.



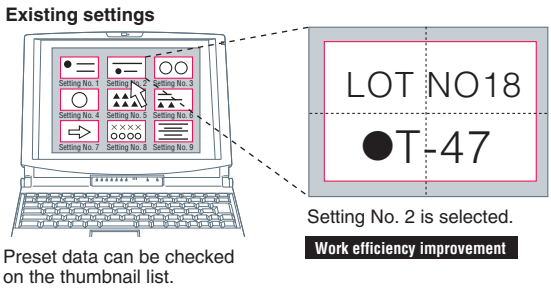
Align the character string with the workpiece image.

Layout is completed.

The thumbnail display shows existing settings and logo marks.

Thumbnail registration/display function

Existing settings and logo marks can be checked with the thumbnail list. You can find the setting or logo mark to be called at a glance and edit the data smoothly. This function is useful to improve work efficiency and to prevent operation errors.



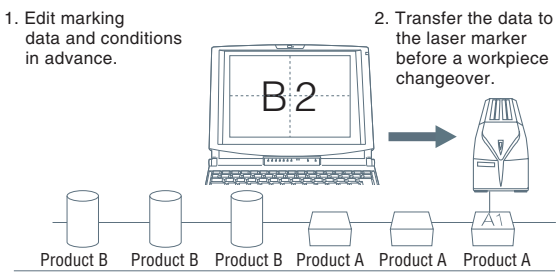
Preset data can be checked on the thumbnail list.

Setting No. 2 is selected.

Work efficiency improvement

Editing marking data and conditions during operation enables smooth setup for workpiece changeover.

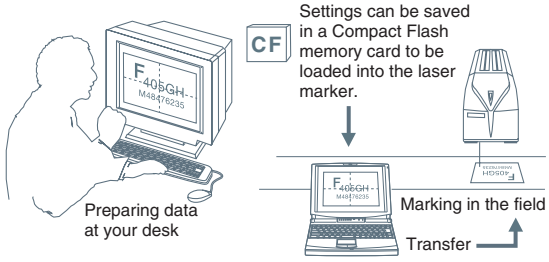
During the marking operation, you can edit the character strings and marking position. You can prepare the next marking data and conditions while the production line is in operation. As a result, you can perform marking setup for workpiece changeover without stopping the production line. This function is useful for improving work efficiency and preventing operation errors.



You can make preparations for Product B while marking on Product A.

Setup in Offline mode

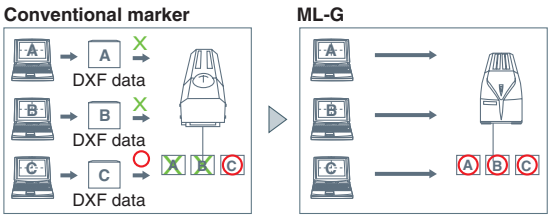
Complicated settings and logo marks can be prepared at your desk. After the setup is completed, the prepared data can be transferred to the laser marker and marked on products. This function enables accurate setup without causing stress for the operators.



Direct marking of CAD/image data

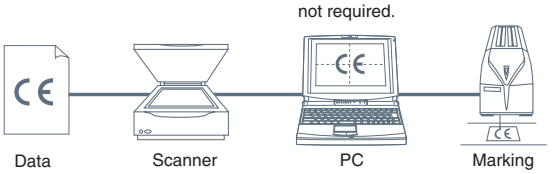
Highly-compatible software

In many cases, conventional markers cannot accept CAD data because of a difference in the DXF file version or format. However, the ML-G Series can accept CAD data directly without conversion into a DXF file.



Marking data from a scanner

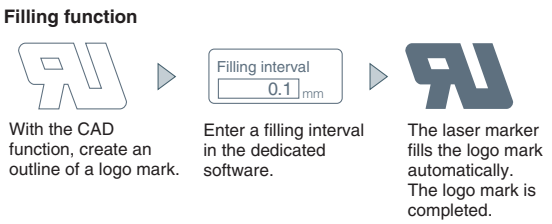
The laser marker can accept data directly from a scanner. If you have an original logo mark or design, it can be marked with the laser marker immediately.



Logo mark, custom character editor

Character editor tool

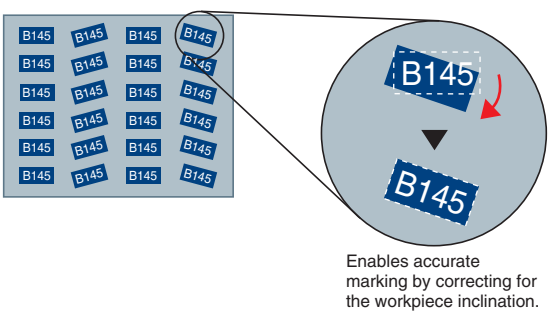
With the simplified CAD function, you can edit figures, logo marks and fonts loaded into the PC. With the editor tool, you can easily draw or edit an image, such as drawing an additional line or filling a logo mark. Using this tool results in a drastic reduction of the number of setup steps.



Batch marking on several products

Palette marking function

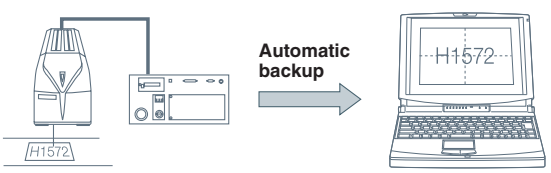
This function enables the same characters and serial numbers to be marked on several workpieces (e.g. electronic components) arranged on a palette. The ML-G Series enables accurate marking on even minute workpieces by correcting for the inclination and distortion of individual workpieces.



Automatic backup of preset conditions

Automatic backup function

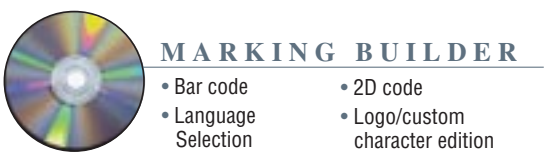
The laser marker executes backup of preset conditions automatically once a day. This function lessens the risk of losing important settings.



All-in-one software integrates various functions required for marking

Numerous functions

The all-in-one software offers various functions required for marking. With this single software, the laser marker can meet all marking needs and also offer expandability in the future. You do not need to purchase additional software later.



Color Touch Panel

Easy operation without using a PC

Easy-to-operate touch panel (Option)

Operation screen

Even inexperienced people can use the operation screen intuitively. With the simple input procedure, operability in the field is improved. The touch panel provides a user-friendly design, enabling marking data and preset conditions (ex. marking start position) to be changed easily on the operation screen.

*The following screen shows a simulated image.

Touch panel console
ML-GP1

Making daily operations easier

Changing registration data

Select a title to be changed and press [Enter]. Since the touch panel displays the marking data, operation errors can be prevented.

Changing characters

Change characters with the user-friendly touch keys. Even inexperienced users can operate them easily.

Marking stop

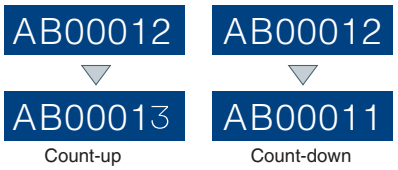
With the touch of a key, you can stop marking. This function makes you feel secure because you can stop marking immediately.

Numerous Functions Satisfy Your Needs

A collection of functions which are useful for various applications

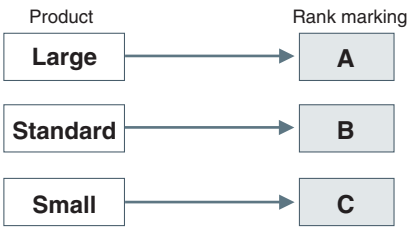
Automatic counters [Count-up / Count-down]

Numeric valves can be incremented or decremented. Ten independent counters are provided as a standard feature.



Rank marking

The ML-G can be used to mark an object with a production quality label.



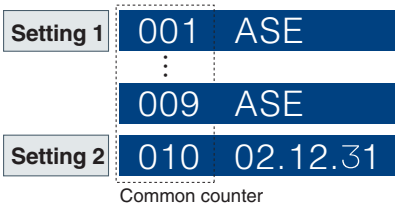
Serial port selection

The ML-G Series provides RS-232C and RS-422A serial ports, which can be selected according to the external equipment that is connected.

Conforming to RS-232C
Conforming to RS-422A

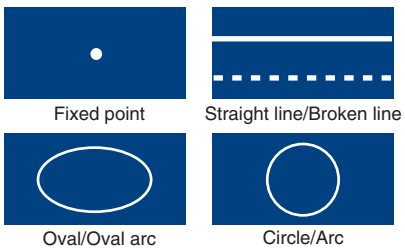
Common counter

The ML-G Series provides ten counters that can be commonly used for individual settings. Various counters are provided, covering various applications. (Binary, base36, etc.)



Laser cutting mode

The ML-G Series provides five types of laser cutting modes, enabling various laser cutting operations.



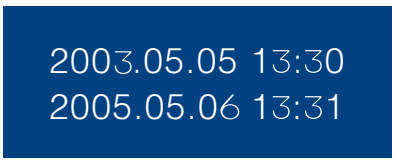
Memory card

Important settings can be saved in a commercially available compact flash card.

* The compact flash card is not included with this product.
* For information on the compatible compact flash card, contact KEYENCE.

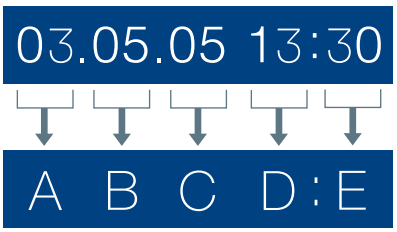
Automatic calendar

The current date (year/month/day) and time, and the "Sell by" date and time can be marked.



Date code to manufacturer's code function

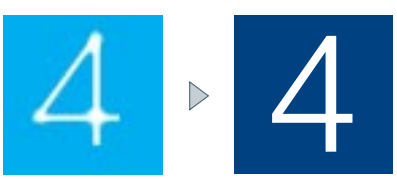
Date characters (year/month/day and time) can be replaced with other characters which are specified by the producer's Manufacturer's code



Flexible marking adjustment

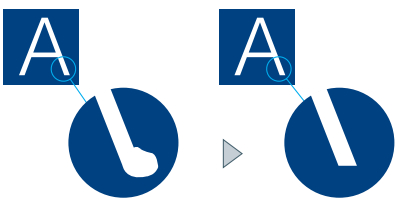
Intersection eliminating function

This function can solve problems that may occur at intersections in characters of deep inscription, filling spaces between lines or scorching. Also, oblique lines and curves can be expressed uniformly.



Laser ON/OFF timing adjustment

The laser ON/OFF timing can be adjusted depending on the specified marking speed and character size. With this adjustment, the ML-G Series enables finer line expressions.

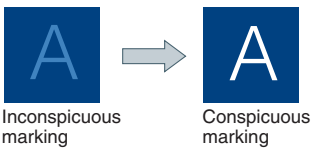


Various expressions of boldface fonts

Since the line width can be freely specified, various boldface fonts can be expressed.

Laser power fine adjustment

This function can set up laser power fine adjustment in 100 steps.



Useful functions for monitoring the unit status

Laser power offset

This function can correct the laser power for all settings registered in the laser marker at one time. This function is useful for correcting laser power when several laser markers are used or when laser power attenuation occurs.

Laser operation time

The laser marker operation time can be monitored.

Error history management

The error history can be checked. If an error occurs in the field, the cause of the error can be determined in a short period of time.

Terminal block monitor

This function is useful to confirm the ON/OFF status and operating condition of each I/O signal to the controller.

Preset data can be output in a CSV file.

The ML-G Series can read and write CSV files, enabling you to check preset data in detail.

Numerous control I/Os

The ML-G Series provides a variety of inputs and outputs to control peripheral equipment in the field.

(Output)

- Laser indicator
- Marking complete
- Marking
- Ready
- Warning
- Error
- 24 VDC

(Input)

- Marking start
- Counter reset
- Encoder pulse
- Count-up
- Emergency stop
- Count-down

Various expressions

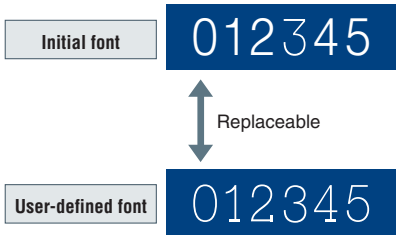
Logo mark/image marking

Marking of logo marks/images is enabled.

- CAD data
- PNG data
- BMP data
- TIF data
- JPG data
- PCD data

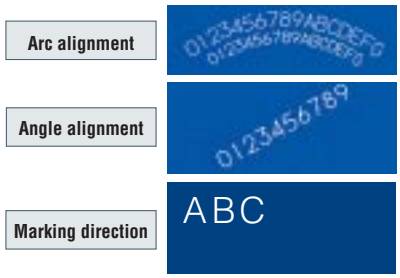
Registration of a user-defined font

The initial font can be replaced with up to two types of user-defined fonts. * Optional function



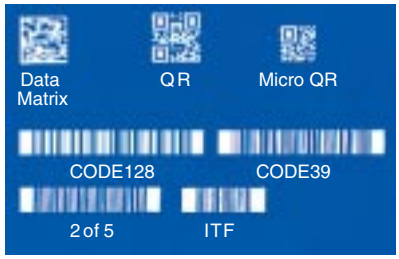
Flexible marking alignment

A desired character alignment can be selected according to the marking space.



Marking of various bar codes

In addition to 2D codes, the ML-G Series enables marking of various bar codes.



2D codes

- Data matrix
- QR code
- Micro QR code

Bar codes

- Code128
- Code39
- ITF
- 2of5
- JAN
- Codabar

Marking with True Type fonts

The ML-G Series enables marking using True Type fonts.

Image data print function

Images (JPG and BMP data) loaded into a PC can be directly printed with the laser marker. The laser marker enables an image captured by a digital camera to be freely designed and printed on various workpieces.

Image data captured by a digital camera can be directly printed.

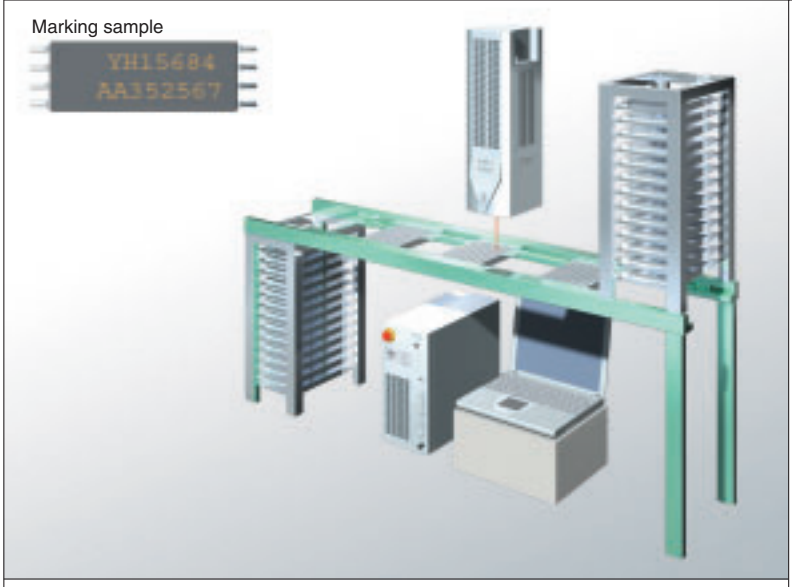
ML-G Series Laser Marker

Various Industrial Applications

Numerous functions useful for all industries

Electronic component industry

Marking sample



The ML-G Series enables batch marking on several electronic components on a pallet. The ML-G Series can perform marking position adjustment for individual products, ensuring accurate marking on even minute products. With the world's fastest scanner motor, the ML-G Series improves production efficiency significantly.

Advantages of the ML-G Series

Batch marking on several products
You can easily set up the batch marking conditions for several products on a pallet. Since the ML-G Series can perform marking position adjustment for individual products, marking position error can be eliminated.

Ultra-small Character Model marking unit
The Ultra-small Character Model enables marking of extremely small characters (minimum character height: 0.008" (0.2 mm)) that cannot be expressed with conventional markers.

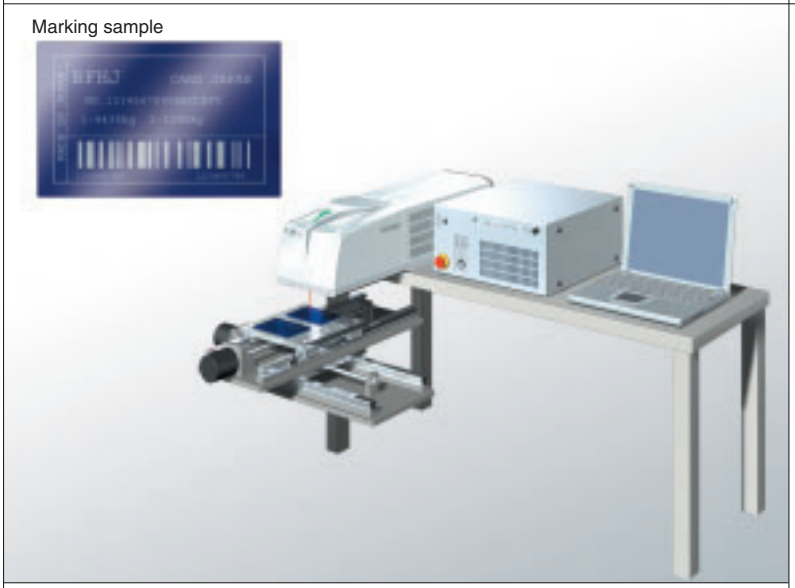
High-speed marking results in a shortened tact time.
With the world's fastest scanner motor, the ML-G Series enables high-speed marking of 600 characters/second.

Well-defined characters can be retained for a long period of time.
The ML-G Series can suppress minute fluctuations in laser power intensity, ensuring output stability within ± 5%. As a result, it enables stable marking without blurred characters and without damage to delicate electronic components.

A vertical marking unit is also available.
The vertical model minimizes the installation space, enabling a highly efficient equipment layout.

Automotive industry

Marking sample



The ML-G Series is used for preparing automobile nameplates. It provides various marking expressions such as the company logo mark, model, standard, product name and manufacturing country. Highly environment-proof, non-erasable marking is enabled.

Advantages of the ML-G Series

A variety of design marking
The ML-G Series can accept CAD data and JPG data directly for marking. With the simplified CAD function, you can draw a figure or correct preset data. This enhances the capacity of marking expressions.

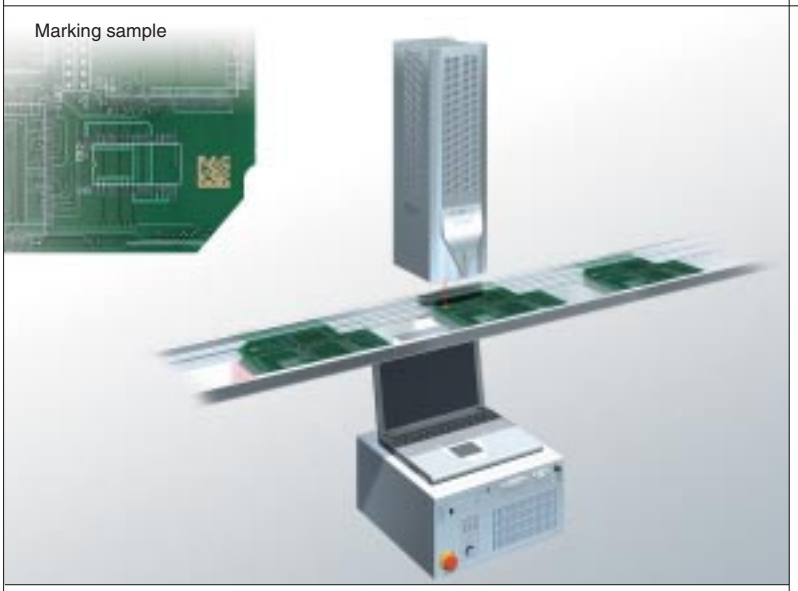
Various fonts
User-defined fonts can be used. This function is suitable for nameplate design.

Large memory capacity
The ML-G Series provides large memory capacity that enables registration of up to 2,000 settings. It can be applied to production lines in the future that may have increased production items.

Existing settings can be reviewed from the thumbnail.
With the thumbnail registration/display function, you can check preset data at a glance. As a result, you can prevent setting errors and improve editing efficiency.

Electrical Industry

Marking sample



The ML-G Series is used to mark a 2D process control code on printed circuit boards. Based on the data read from the 2D code, chip mounting/assembly process control and inspection of finished products are performed.

Advantages of the ML-G Series

Marking of 2D codes (ex. Data Matrix, QR code) and various bar codes (Code128, Code39, 2of5, ITF, JAN and Codabar)
Various bar codes can be selected according to field needs.

Accurate reading of bar codes
The ML-G Series enables more precise bar code marking. It also enables fine adjustment of the bar code line width on the target workpiece, resulting in an increased reading ratio.

Food, Chemical, and Cosmetic Industries

Marking sample

The ML-G Series expresses characters by burning off the print of drug cartons through thermal processing so that the white base of the carton will be exposed. To ensure easy recognition of the image, the characters are expressed in boldface type. As the contrast increases between the characters and background, accurate marking recognition is enabled.

Advantages of the ML-G Series

Accurate automatic character recognition
The ML-G Series can suppress minute fluctuations in laser power intensity, ensuring output stability within ±5%. As a result, it enables stable marking without missing or blurred characters, ensuring more accurate character recognition.

Tracking high-speed lines
To ensure a higher level of image recognition, the marking on drug cartons is generally expressed in boldface type. The world's fastest scanner motor exhibits its power in high-speed marking of boldface types.

Specifications

Type			English/FDA Models (Japanese Models)			CE model
			Standard model	Small-character model	Ultra-small-character model	Standard model
Model	Controller		ML-G9300F (ML-G9300)			ML-G9300C
	Marking unit	Horizontal model	ML-G9310F (ML-G9310)	ML-G9320F (ML-G9320)	ML-G9370F (ML-G9370)	ML-G9310C
		Vertical model	ML-G9311F (ML-G9311)	ML-G9321F (ML-G9321)	ML-G9371F (ML-G9371)	ML-G9311C
	Console [1.] (Color touch panel)		ML-GP1F (ML-GP1)			ML-GP1C
Marking laser	CO_2 laser		Class 4 (wavelength: 0.413 Mil 10.6 µm)			
	Average output		30 W			20 W
	Output stability		±5% [2.]			
Laser guide	Laser diode		Class 2 (wavelength: 650 nm)			
	Output		1.0 mW			
Guide light			LED pointer (green)			
Marking area			4.33" 110 mm	2.17" 55 mm	1.18" 30 mm	4.33" 110 mm
Working distance			8.19" ±0.08" 208 ±2 mm	4.45" ±0.04" 113 ±1 mm	2.56" ±0.04" 65 ±1 mm	8.19" ±0.08" 208 ±2 mm
Marking resolution			0.078 Mil 2 µm	0.039 Mil 1 µm	0.039 Mil 1 µm	0.078 Mil 2 µm
Marking speed			600 characters/sec. max.	300 characters/sec. max.		600 characters/sec. max.
Character type	KEYENCE original font		Numerical value, alphabet, katakana, hiragana, kanji (the first and second standards of JIS)			
	User font		Up to two types of font can be registered. [1.]			
	True Type font		TrueType font installed in the PC			
	Update character		Automatic calendar, automatic time limit calculation, shift code setting, automatic counter, rank marking			
	Barcode		CODE 39, ITF, 2of5, Codabar, JAN, CODE 128			
	2D code		QR code, micro QR code, DataMatrix (ECC200)			
	Logo image Custom font, logo (CAD) data		Custom font, logo (CAD) data			
			BMP, JPG, PNG, TIF, PCD			
	Laser cutting		Fixed point, straight line, dashed line, circle, oval			
Marking conditions	Character layout		Straight line, diagonal line, arc, horizontal writing			
	Marking style		Stationary marking, movement marking			
	Character size	Character height	0.02" to 4.33" 0.5 to 110 mm	0.01" to 2.17" 0.3 to 55 mm	0.008" to 1.18" 0.2 to 30 mm	0.02" to 4.33" 0.5 to 110 mm
		Character width	0.02" to 4.33" 0.5 to 110 mm	0.01" to 2.17" 0.3 to 55 mm	0.008" to 1.18" 0.2 to 30 mm	0.02" to 4.33" 0.5 to 110 mm
		Character size unit	0.001 mm			
	Program	Registered Programs	2000 settings max.			
		Number of blocks	256 blocks			
Functions			Thick line marking, skipping crossed line, common block setting, scan speed optimization, continuous marking, palette marking, sample marking, test marking, thumbnail registration, save in memory card, CSV file saving, automatic backup, laser power offset, font replacement, preset, Logo editing tool, workpiece image display, TWAIN input,communication history display, terminal block monitor simulation			
Laser marker setting software (MARKING BUILDER)			Supported OS: Windows® XP/2000/98SE [6.] Monitor display: 1024 x 768 pixels or more			
Terminal block Input/ Output	Input		Error Reset, Trigger Inhibit, Laser Cutting Mode Disable, Emergency Stop, Mark-Laser control, Fix Rank Value,Laser control, Count-up, Count-down, Counter Reset, No./Value set, Fix Program No., Encoder Pulse, Trigger			
	Output		Laser Indicator, Marking Complete, Marking, READY, Warning, Error, 24 VDC power			
RS-232C/RS-422A			Dedicated for connecting external devices			
USB port			Dedicated for connecting laser marker setting software (MARKING BUILDER)			
Memory card slot			Dedicated for CF memory card [3.]			
Marking unit installation direction			All directions			
Installation instruction	Laser guide		Character (1), character (continuous), area frame and center coordinate crisscross (continuous), workpiece image (continuous)			
	Distance pointer		LED pointer + laser guide beam			
Marking unit cable length			16.4' 5 m			
Standard			Conforms to FDA standard [4.]			Conforms to CE Marking Standard [5.]
Cooling method			Forced air cooling			
Supply voltage			100 to 120, 200 to 240 VAC ± 10% (50/60 Hz) 13 A max.			100 to 120/200 to 240 VAC ±10% (50/60 Hz) 10 A max.
Power consumption			1200 VA max. (100 to 120 VAC), 1500 VA max. (200 to 240 VAC)			1000 VA max. (100 to 120 VAC) 1200 VA max. (200 to 240 VAC)
Environmental resistance	Ambient temperature for storage		-10 to + 60˚C (14 to 140 ˚F), No condensation			
	Ambient temperature for usage		0 to 40˚C (32 to 104 ˚F), No condensation			
	Ambient humidity for usage		30 to 85%, No condensation			
Weight	Controller		9.8 kg			
	Marking unit	Horizontal model	13.3 kg			
		Vertical model	13.8 kg			
	Console		1.4 kg			

1. Optional 2. Output of 20% or more
3. CF memory card (up to 256 M byte) by SanDisk Corporation is recommended (www.sandisk.com). The commercially available card adapter is needed.
4. Conforms to 21CFR Part 1040.10 5. Conforms to EN55011 Class A, EN61000-6-2, EN61010-1, and EN60825-1 Laser Class 4.
6. Only the Japanese version of Windows® 98SE is supported. Windows® 98SE English version is not supported.

Tips for Correct Use

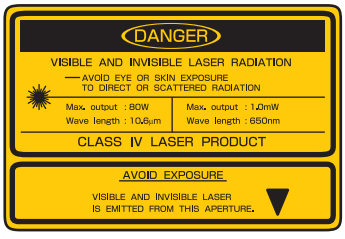
Safety precautions

- Before using the laser marker, be sure to refer to the User's Manual for thorough knowledge of the contents.
- Do not allow your eyes or skin to be exposed to a directly irradiated laser beam or a diffused reflection laser beam.

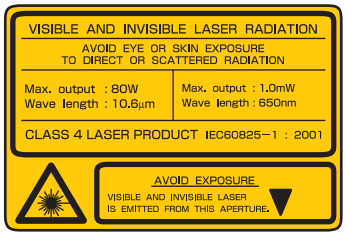
Laser beam

The following label is affixed to the marking unit. When handling a laser marker, observe the instructions indicated on the label.

FDA Class IV



IEC Class 4

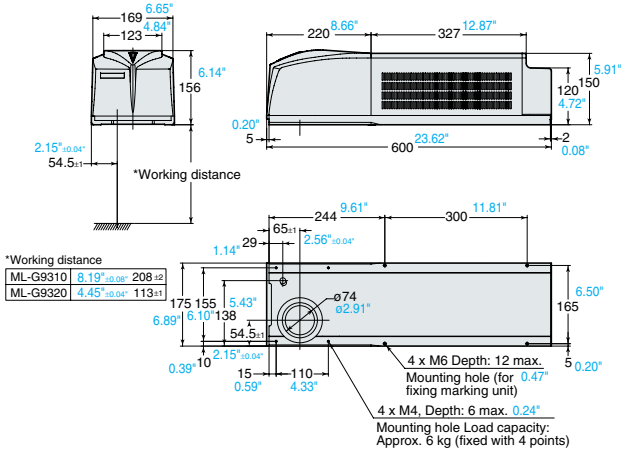


Dimensions

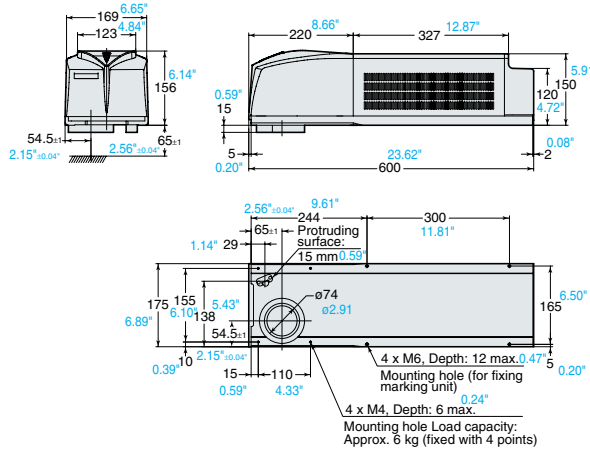
Marking unit

Unit: inch mm

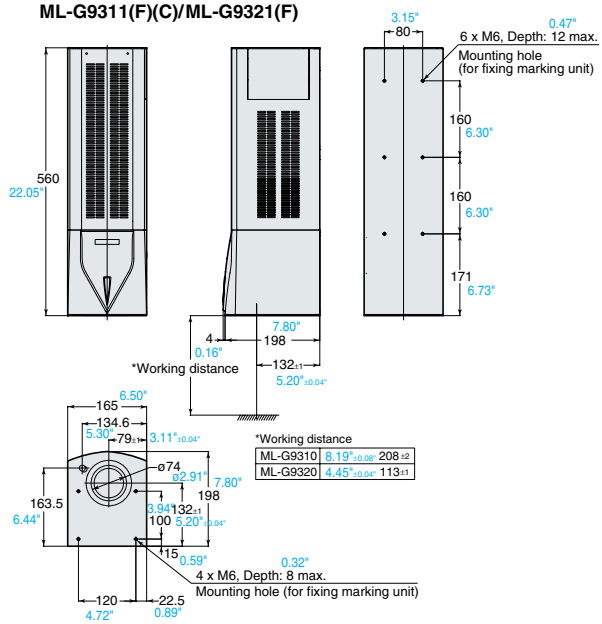
ML-G9310(F)(C)/ML-G9320(F)



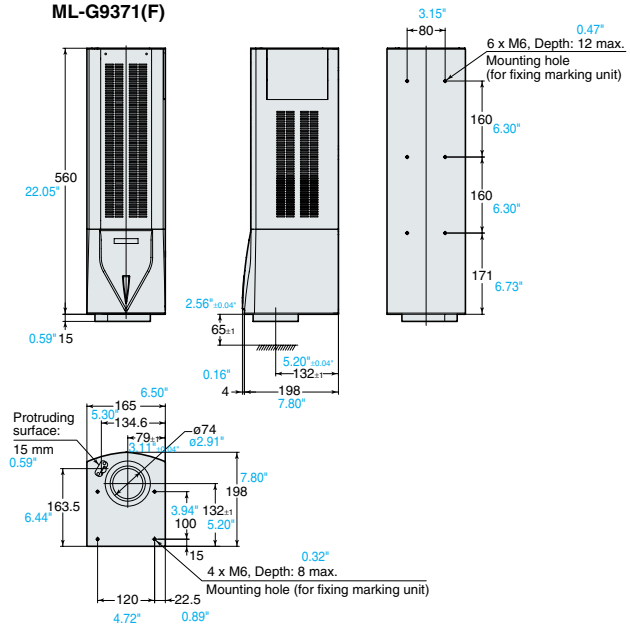
ML-G9370(F)



ML-G9311(F)(C)/ML-G9321(F)

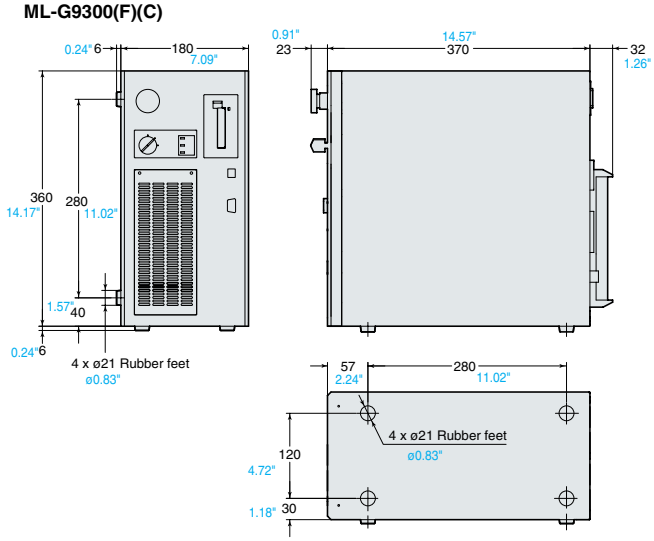


ML-G9371(F)



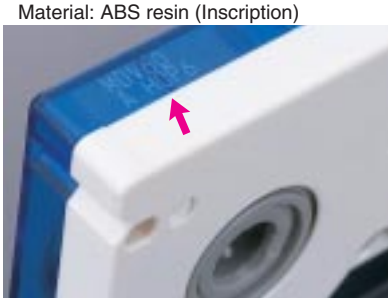
Controller

ML-G9300(F)(C)

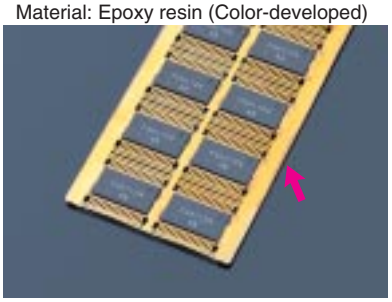


Marking samples

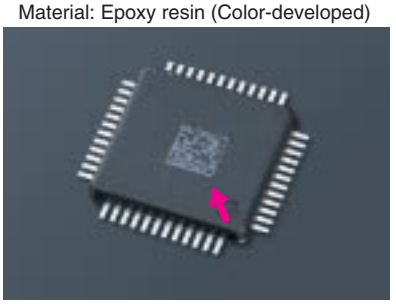
Video tape
Material: ABS resin (Inscription)



IC
Material: Epoxy resin (Color-developed)

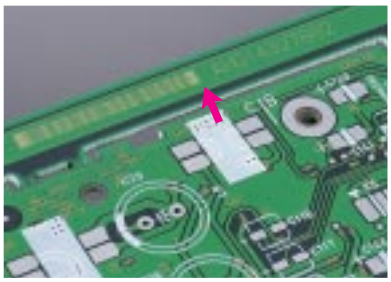


Electronic component
Material: Epoxy resin (Color-developed)



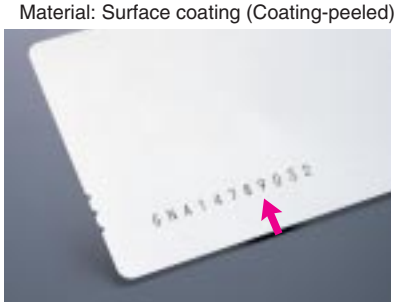
CD-R
Material: Polycarbonate (Inscription)

Printed circuit board
Material: Epoxy glass + resist (Surface-peeled)



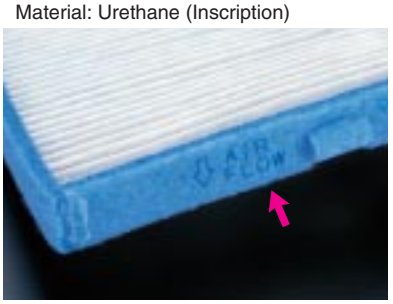
Harness
Material: Vinyl chloride (Color-developed)

Magnetic card
Material: Surface coating (Coating-peeled)

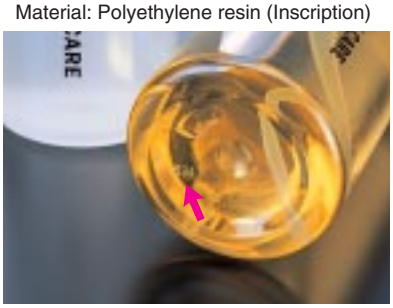


Stainless steel
Material: Stainless steel (Black marking)

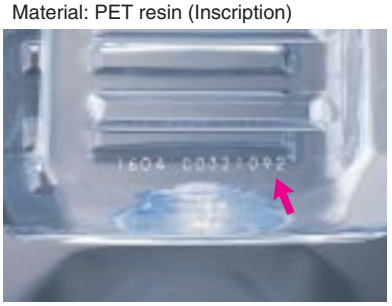
Filter
Material: Urethane (Inscription)



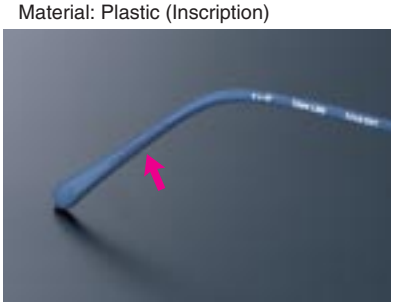
Cosmetics
Material: Polyethylene resin (Inscription)



PET bottle
Material: PET resin (Inscription)

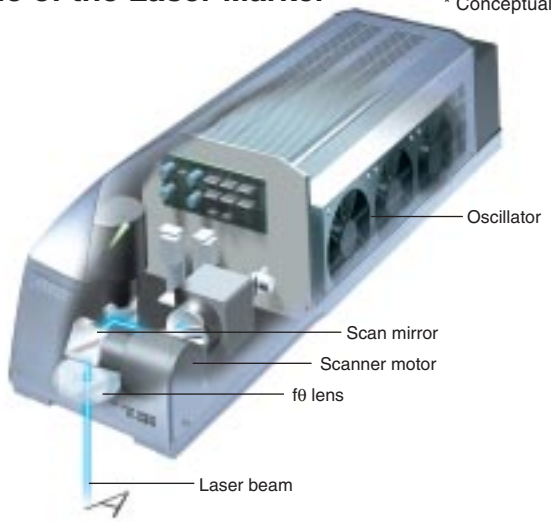


Frame of glasses
Material: Plastic (Inscription)



Principle of the Laser Marker

* Conceptual image



Flow of marking operation

1. Electrical energy is applied to the CO_2 gas filled in the oscillator to excite the laser.
2. While the excited laser beam moves back and forth between the reflection mirrors in the oscillator, it will be amplified and output.
3. The output laser beam is converged onto the target workpiece surface through the fθ lens.
4. The converged, hot laser beam spot is scanned with the marking scanner motor along the X axis and Y axis individually. Through thermal processing, a character is expressed in one stroke.

Marking samples

Character size (Typical examples)

0123456789
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

0123456789
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Arc/angle alignment

0123456789ABCDEFG
0123456789ABCDEFG
0123456789

Logo mark

2D code

Data Matrix　QR　Micro QR

Bar code

CODE128　CODE39
2 of 5　ITF

bmp/jpg data

Marking area of the Standard model
4.33" x 4.33" (110 x 110 mm)

Marking area of the Small character model 2.17" x 2.17" (55 x 55 mm)

Marking area of the Ultra-Small character model 1.18" x 1.18" (30 x 30 mm)

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Fax: 615-986-0114

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Fax: 614-799-3401

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Fax: 847-969-0453

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Phone:303-756-5242
Fax: 303-756-8301

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Phone:562-552-9980
Fax: 562-552-9981

Pennsylvania
Phone:610-382-1310
Fax: 610-382-1320

Atlanta
Phone:770-951-1222
Fax: 770-951-1958

Cincinnati
Phone:513-554-1227
Fax: 513-554-1229

Minneapolis
Phone:952-924-9779
Fax: 952-249-9143

Phoenix
Phone:602-225-2400
Fax: 602-225-2425

Virginia
Phone:804-327-9522
Fax: 804-327-9180

Tampa
Phone:813-998-9886
Fax: 813-998-9887

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