

OVERVIEW

LASER MARKERS



Introduction

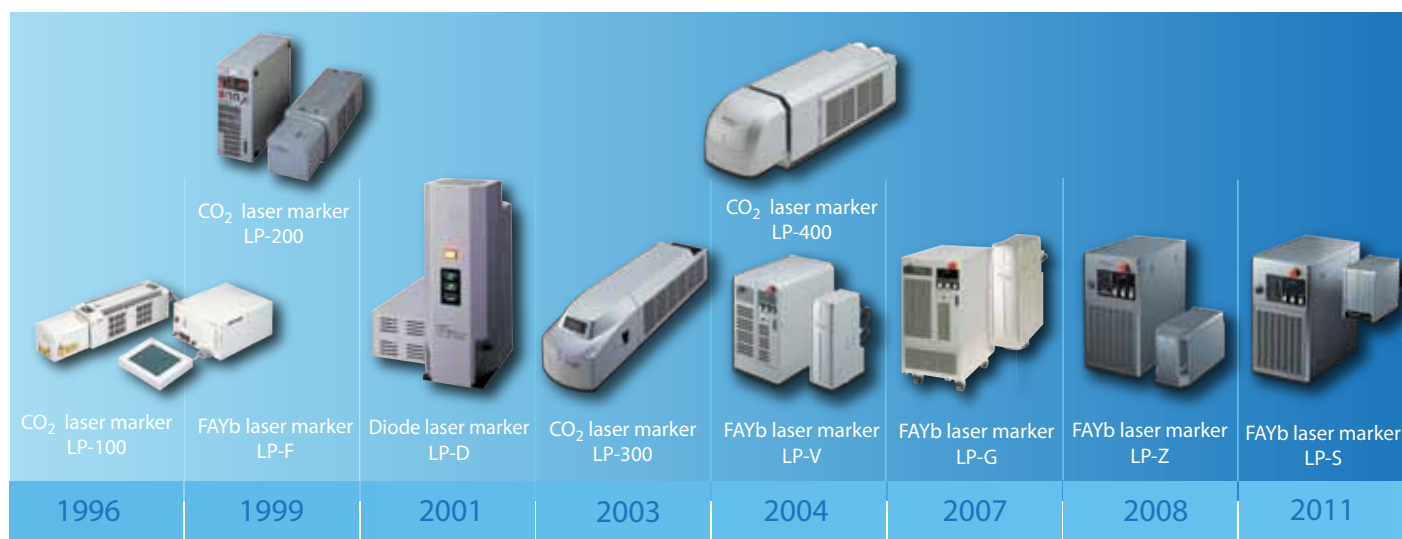


In 1918, Panasonic Electric Works was founded as Matsushita Electric Works by Konosuke Matsushita, who continued to expand the company with great determination. Several companies were integrated into Matsushita Electric Works and thus contributed to the overall growth of the group and the product portfolio. In 1999, SUNX Ltd. became part of the group.



























At that point, the company had already gained a good market position with their sensors and laser markers. SUNX Ltd. started development of laser marker systems as early as 1996. In December 1999, the company launched the first fiber laser marker worldwide and grew to become a global leader in supplying and installing laser markers the world over.

In 2000, SUNX joined the Matsushita group, which in turn changed its company name to Panasonic in 2004. In October 2010, SUNX merged with Panasonic, and a new company Panasonic Electric Works SUNX Co., Ltd. was formed. Since then, all products are marketed under the brand name of Panasonic.











On the following pages, you will find an overview of the many possibilities our technology has to offer.



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Symbols

	„On the fly“ marking with line speeds of up to 240m/min
	High-speed marking with scan speeds of up to 12,000mm/s
	Micro marking with resolutions down to 30µm
	Focus guide laser feature for work distance adjustment
	Marking guide laser feature for checking the marking positions
	Color change on plastic by foaming, carbonizing or bleaching
	Metal marking by annealing or engraving
	High resistance against water, oil, and dust (IP67G) in harsh environments
	Marking on complex 3D shapes or products of different heights
	High-power laser marker for deep metal-engraving and fast black-marking

FAYb laser markers: LP-V series

Panasonic's LP-V series Laser Markers utilizes an enhancement of YAG technology called FAYb (Fiber Amplified Ytterbium). These fiber lasers provide several advantages over traditional Nd:YAG systems, such as a better beam quality, smaller housing dimensions, a significantly longer lifetime and lower fixed costs because FAYb systems consume much less power and get by with simple air cooling. Panasonic's LP-V series Laser Markers can mark nearly all metals using the laser processes of engraving or black marking (annealing). Using the laser processes of internal foaming, carbonization (color change) or bleaching, resins can be marked with outstanding quality.



FDA

Conforming to
FDA regulations
(some models only)

CE

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and EMC Directive
(some models only)



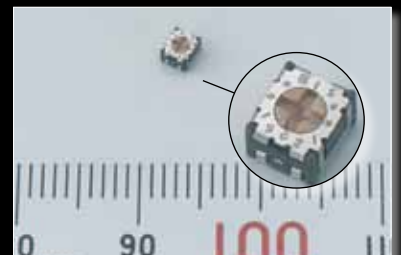
12W short pulse LP-V series FAYb laser marker designed for high quality marking on metal and resin.



Steel tools



Keypad



Potentiometer



Day/Night design



Laser diode



Bearings



Electronic components



Molded resin parts



ICs (DIP)



Improved productivity

High-speed marking

The LP-V series features a high-performance galvano scanner whose acceleration, deceleration, and response speeds exceed those of conventional models by delivering dramatically shorter marking times. Capable of marking up to 700 characters per second and at line speeds of up to 240m/min, the LP-V series improves productivity. The LP-V series automatically determines the most efficient marking order, further reducing marking time. Panasonic's proprietary galvano scanner control technology keeps marking accurate and aligned, even at high speed.

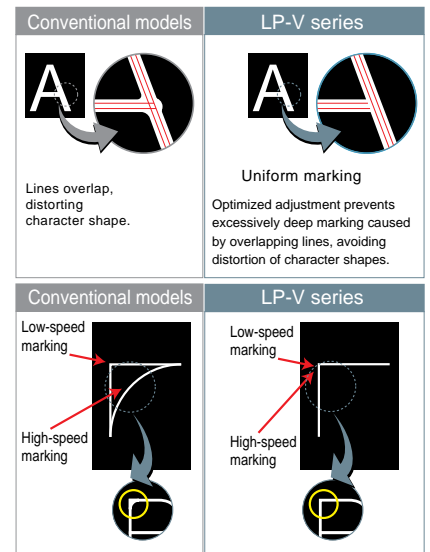
High-quality marking

Technologies behind high-quality marking

The LP-V series takes advantage of a number of new technologies compared to conventional models to deliver high-definition marking. Advanced control functionality automatically adjusts marking strength at locations susceptible to deep marking such as the beginning and ends of lines and areas where straight and curved lines intersect.



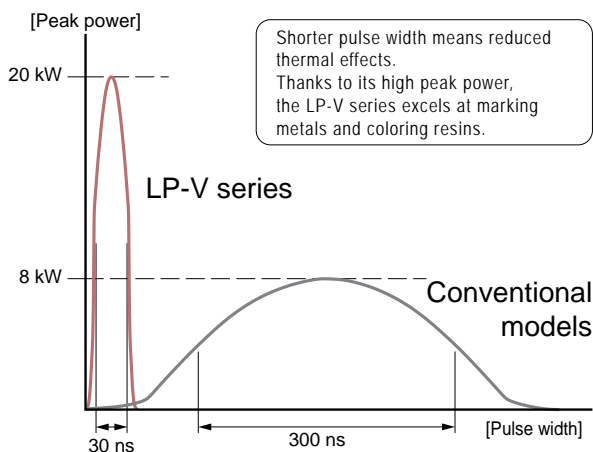
Coloring of the target material is controlled by adjusting the laser power, scanning speed, and marking pulse cycle for each set character line, logo or code, giving products a broad range of expression. The result is a beautiful and high-quality mark with uniform line depth even at high speeds.



Innovative FAYb laser

12W short-pulse laser

The FAYb laser used in the LP-V series features a high peak power of 20kW, enabling it to generate sharp, deep marking and crisp, black output on metals that require high levels of power. Panasonic's LP-V series has it all, delivering high peak power in a short-pulse laser with low thermal effects to enable beautiful, print-like color marking on resins.

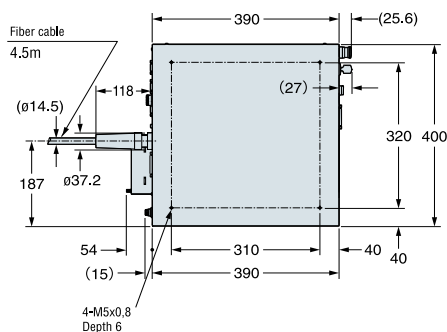
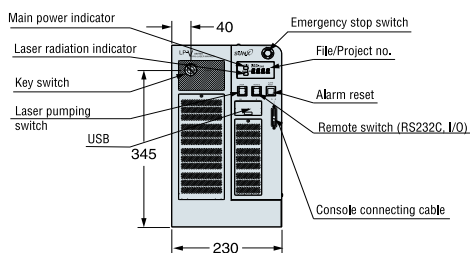


Type	Small spot	Standard	Wide area	
Item	LP-V10U-A55	LP-V10U-C	LP-V15U-C	
Work distance (manually adjustable)	127mm (± 0.7mm)	190mm (± 2mm)	350mm (± 7mm)	
Marking field	55mm x 55mm	90mm x 90mm	160mm x 160mm	
Scanning speed max.	6000mm/s	12,000mm/s		
Line speed max.	120m/min	240m/min		
Average output	12W			
Ambient temperature	0 to +40°C (no condensation or frost), storage: -10 to 60°C			
Ambient humidity	35 to 85% RH (no condensation or frost)			
Marking method	Galvanometer scanning method			
Marking laser	FAYb $\lambda = 1.06\mu\text{m}$, laser class 4			
Guide laser	Semiconductor $\lambda = 655\text{nm}$, laser class 2; 1mW			
Array of character	Straight line, proportional/typewriter, arced, tilted			
Type of characters	Capital & small characters, numerals, katakana, hiragana, kanji (JIS level 1 & level 2), symbols, user-defined characters (up to 50 types)			
Bar codes/2D codes	CODE39, CODE128, ITF2/5, NW-7, JAN/UPC/EAN, RSS 14, RSS limited, RSS expanded (GS1 Databar), GS1 Data Matrix, QR, Micro QR, Data Matrix (ECC200), etc.			
Logos/Graphics	VEC, DXF, BMP, HPGL, JPEG, AI*, EPS*			
Cooling method	Forced-air cooling			
Supply voltage	90 to 132VAC or 180 to 264VAC (auto-changing), 50/60Hz			
Power consumption	420W or less (at 200VAC)			
Inputs	Remote, trigger, encoder (A), encoder (B), shutter control, laser pumping, alarm reset, emergency stop, laser stop, etc.			
Outputs	Power supply (+12V), remote, marking ready, marking, marking finished, laser pumping, warning, alarm, confirmation end, counter finish			
Marking condition	Static and marking on the fly			
Functions	<ul style="list-style-type: none"> marking order optimizing correction of intersection counter marking current date/time marking expiry date marking lot marking logos/pictures marking bold marking logo data USB transfer 	<ul style="list-style-type: none"> I/O monitor system offset common character setting font selection proportional marking marking image display operator adjustment error code log display work image display 	<ul style="list-style-type: none"> guide laser power speed setting per line/logo file step & repeat time delay serial data processing & marking multilayered marking backup 	<ul style="list-style-type: none"> various processing functions dual pointer marking time measurement font/logo creation/editing power check/correction I/O simulation focus adjustment marking on moving objects
Weight of head	9kg		10kg	
Weight of controller	22kg			

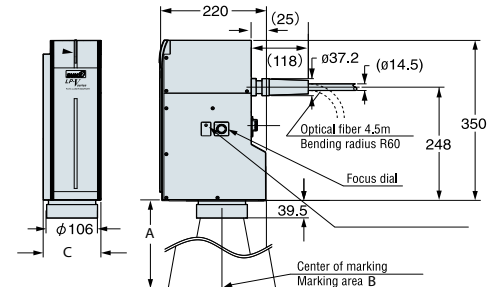
* Adobe Illustrator® is necessary

Dimensions

LP-V controller



LP-V head



Type	Marking distance A (mm)	Marking area B (mm)	Lens diameter C (mm)
LP-V10-A55	127	55 x 55	87
LP-V10	190	90 x 90	87
LP-V15	350	160 x 160	106

FAYb laser markers: LP-S series

To improve deep marking on metal, the output power has been increased from 12W for the current model to 42W. Now deep marking and black marking can be performed on precision metal parts such as bearings and tools at high speed. A robust body, superior mechanical design and high-quality components provide an IP67G degree of protection, which makes the LP-S series attractive and practical for automotive and metal applications. Moreover, the connector is water-, dust-, and oilproof, and the lens is equipped with protective glass. Also, the unique design allows you to remove the fiber-optic cable from the laser head, simplifying integration and service.



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Panasonic

LP-S series
FAYb LASER MARKER



High power and environmentally resistant LP-S series FAYb laser marker designed for metal high-speed marking and deep engraving.



Tools (carbide)



Cylinder blocks



Connecting rods



Crank shafts



Drills



Medical instruments



Engine valves

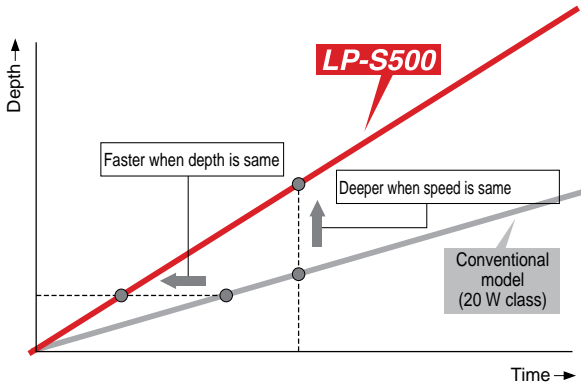


Chains

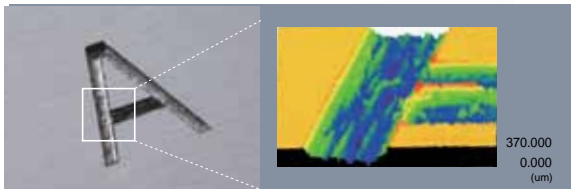


Bearings

Simulated characteristics of high-speed deep engraving



Conventional model (20W class)



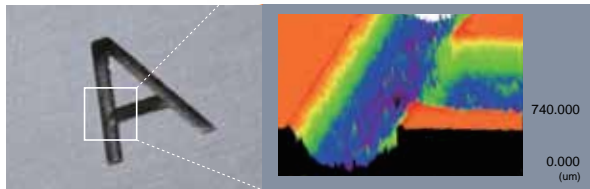
High output power

High output for superior deep engraving performance and high-speed productivity

The 42W high-power output enables high-speed deep engraving and black marking on metal workpieces. This allows quick and accurate marks to be performed on precision metal parts, such as bearings and tools. Faster and deeper marking or processing is possible as more energy is applied to the workpiece. The LP-S500 is equipped with a high-output laser unit. This shortens the marking time, greatly improving productivity.

The LP-S series can internally monitor its own laser power. If the laser power deviates from the value specified, the alarm output is set and marking stopped. This preventative function ensures consistent marking quality no matter when marking takes place.

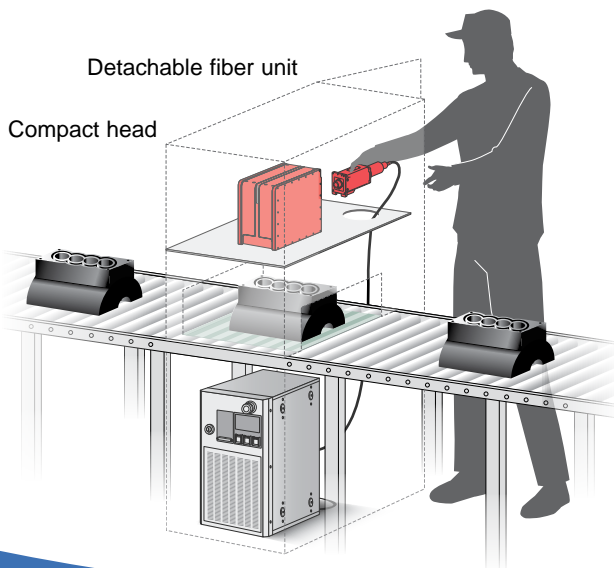
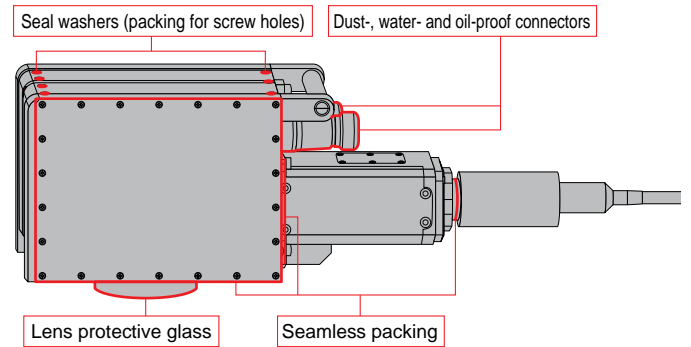
LP-S500: Almost double the depth with the same marking time



Sealed, IP67G rated head

Superior design and high quality protection parts.

The LP-S series features minimum frame seams. Minor seams and screw holes are completely sealed, producing high sealing performance. Maximum cooling efficiency is also achieved, allowing the use of a **fanless head** for thorough cooling. Seamless sealing materials are used that have low water absorption and excellent oil resistance properties. Connectors are dust-, water-, and oil-proof.



Enhanced flexibility of equipment design

Revolutionary fiber unit release mechanism

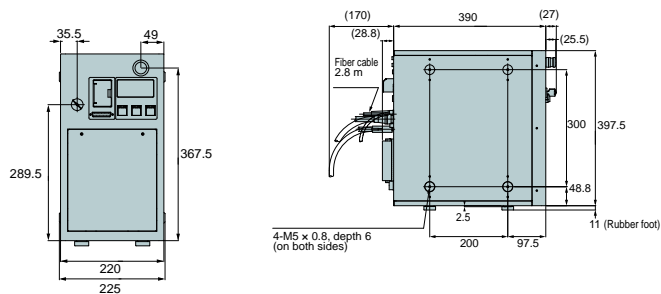
Panasonic's revolutionary laser head design allows the fiber unit to be easily removed from the scanner unit. Because the fiber unit is removable, it can be easily incorporated into equipment for easy installation and enhanced flexibility of equipment design.

Type	Small spot	Standard	Wide area	Small spot	Standard	Wide area
Item	LP-S202	LP-S200	LP-S205	LP-S502	LP-S500	LP-S505
Work distance (manually adjustable)	130mm (± 3mm)	190mm (± 7mm)	350mm (± 24mm)	130mm (± 3mm)	190mm (± 7mm)	350mm (± 24mm)
Marking field	55mm x 55mm	90mm x 90mm	160mm x 160mm	55mm x 55mm	90mm x 90mm	160mm x 160mm
Scanning speed max.	6000mm/s	12,000mm/s		6000mm/s	12,000mm/s	
Line speed max.	120m/min	240m/min		120m/min	240m/min	
Average output	17W			42W		
Ambient temperature	0 to +40°C (no condensation or frost), storage: -10 to 60°C					
Ambient humidity	35 to 85% RH (no condensation or frost)					
Marking method	Galvanometer scanning method					
Marking laser	FAYb $\lambda = 1.06\mu\text{m}$, laser class 4					
Guide laser	Semiconductor $\lambda = 655\text{nm}$, laser class 2; 1mW					
Array of character	Straight line, proportional/typewriter, arced, tilted					
Type of characters	Capital & small characters, numerals, katakana, hiragana, kanji (JIS level 1 & level 2), symbols, user-defined characters (up to 50 types)					
Bar codes/2D codes	CODE39, CODE128, ITF2/5, NW-7, JAN/UPC/EAN, RSS 14, RSS limited, RSS expanded (GS1 Databar), GS1 Data Matrix, QR, Micro QR, Data Matrix (ECC200), etc.					
Logos/Graphics	VEC, DXF, BMP, HPGL, JPEG, AI*, EPS*					
Cooling method	Head: natural air cooling; Controller: forced-air cooling					
Supply voltage	90 to 132VAC or 180 to 264VAC (auto-changing), 50/60Hz					
Power consumption	330W or less (at 100VAC); 450W or less (at 200VAC)			530W or less (at 100W); 650W or less (at 200VAC)		
Inputs	Remote, trigger, encoder (A), encoder (B), shutter control, laser pumping, alarm reset, emergency stop, laser stop, etc.					
Outputs	Power supply (+24V), remote, marking ready, marking, marking finished, laser pumping, warning, alarm, confirmation end, counter finish					
Marking condition	Static and marking on the fly					
Functions	<ul style="list-style-type: none"> marking order optimizing correction of intersection counter marking current date/time marking expiry date marking lot marking logos/pictures marking bold marking logo data USB transfer 	<ul style="list-style-type: none"> I/O monitor system offset common character setting font selection proportional marking marking image display operator adjustment error log display work image display 	<ul style="list-style-type: none"> guide laser power speed setting per line/logo file step & repeat time delay serial data processing & marking multilayered marking backup 	<ul style="list-style-type: none"> various processing functions dual pointer marking time measurement font/logo creation/editing power check/correction I/O simulation focus adjustment marking on moving objects power loop control 		
Weight of head	7.5kg		8kg	7.5kg		8kg
Weight of controller	24kg			25kg		

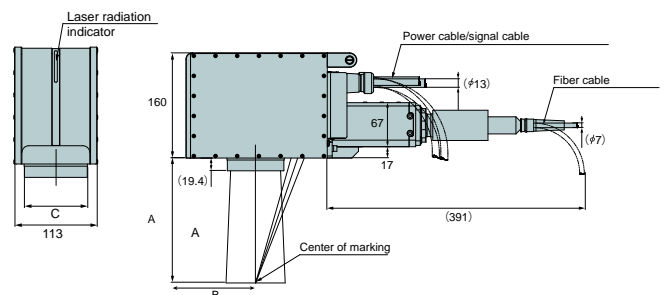
* Adobe Illustrator® is necessary

Dimensions

LP-S controller



LP-S head



Type	Marking distance A (mm)	Marking area B (mm)	Lens diameter C (mm)
LP-SXX2	130	55 x 55	92
LP-SXX0	190	90 x 90	87
LP-SXX5	350	160 x 160	106

FAYb laser markers: LP-Z series

The LP-Z is designed to mark complex **3D** surfaces by adjusting the laser beam's focal point, guaranteeing stable energy density and hence marking quality. This technology likewise contributes to superior marking on large 2D surfaces of up to 330 x 330mm² where the center is much closer to the beam output than the edges and corners.

The LP-Z series comes equipped with an encoder interface to mark moving objects, e.g. objects on an assembly line. Standard functions include code generation (Data Matrix, various bar codes, etc.), counters, expiration date and lot number generation.





3-axis, wide area LP-Z series FAYb laser marker designed for marking complex, 3D metal and resin surfaces.



Cooking pot



ICs



Screw terminal



Bearings



Molded resin parts



Connecting rods



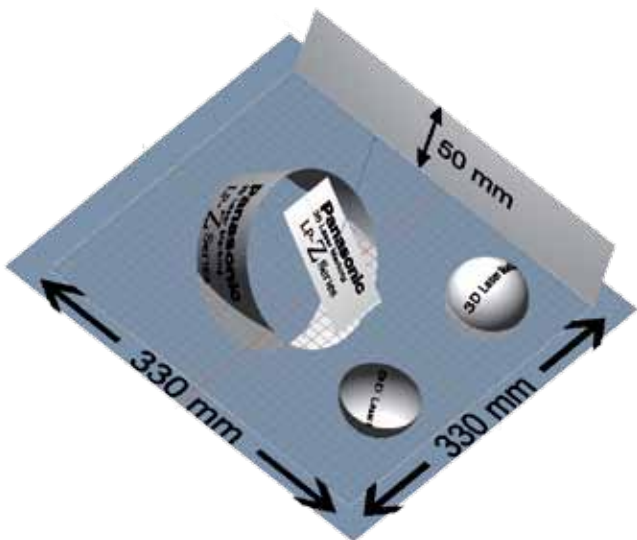
Metal plate (sloped)



Resin cap



Piston rings



3D control

Flexible, precision marking on complex shapes

Z-axis control within a range of 50mm (± 25 mm) allows the head to mark curved, sloped and spherical surfaces as well as surfaces with varying heights. Spot size remains stable, ensuring consistent, high-quality marking. It is even possible to mark 2 facing surfaces in 1 step if the laser head is mounted at an angle, e.g. 45° . Interior surfaces where access is limited can now be marked where mirrors normally need to be used, for example to mark fill levels in pots or measuring cups. This feature can dramatically reduce setup, installation and design costs.

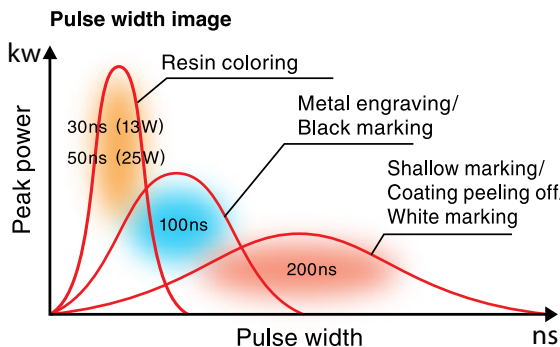
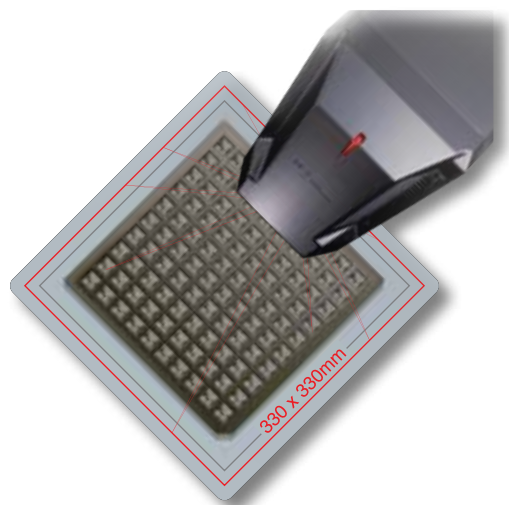


Wide marking field

Highly precise marking and improved productivity

The wide marking field of up to 330mm x 330mm means you can mark an even larger range of products, further enhancing productivity.

Moreover, Z-axis control provides a uniform spot size and stable marking quality with high precision across the field of view, regardless of the marking field's width



30ns

200ns

30ns

200ns

High-performance fiber laser

25W fiber laser with selectable pulse width

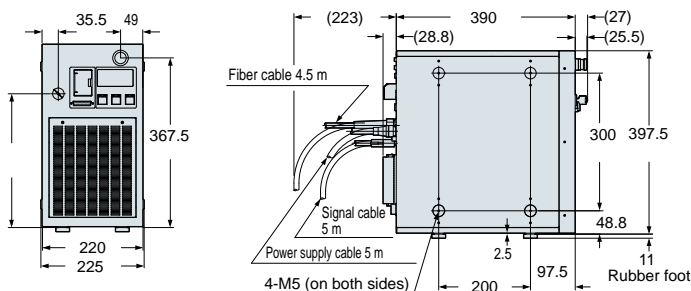
Applications requiring high energy such as deep engraving or black marking (annealing) on metal are easily achieved. The high output power also shortens marking time, thus improving production efficiency. Moreover, using FAYb technology, heat is simply dissipated regardless of the power used, eliminating the need for hooking up and maintaining water-cooling systems. A selection of 3 pulse-width patterns has been added to the existing pulse cycle setting to make finding suitable marking conditions for your application even easier.

Item	Type	Standard	Standard	Wide area	
	Model	LP-Z130-C	LP-Z250-C	LP-Z256-C	
Work distance (automatically adjustable)		190mm (± 25mm)		330mm (± 25mm)	
Marking field		120mm x 120mm		330mm x 330mm	
Scanning speed max.		12,000mm/s		8000mm/s	
Line speed max.		170m/min		120m/min	
Average output		13W	25W		
Ambient temperature		0 to +40°C (no condensation or frost), storage: -10 to 60°C		0 to +35°C (no condensation or frost), storage: -10 to 60°C	
Ambient humidity		35 to 85% RH (no condensation or frost)			
Marking method		Galvanometer scanning method			
Marking laser		FAYb λ = 1.06μm, laser class 4			
Guide laser		Semiconductor λ = 655nm, laser class 2; 1mW			
Array of character		Straight line, proportional/typesetter, arced, tilted			
Type of characters		Capital & small characters, numerals, katakana, hiragana, kanji (JIS level 1 & level 2), symbols, user-defined characters (up to 50 types)			
Bar codes/2D codes		CODE39, CODE128, ITF2/5, NW-7, JAN/UPC/EAN, RSS 14, RSS limited, RSS expanded (GS1 Databar), GS1 Data Matrix, QR, Micro QR, Data Matrix (ECC200), etc.			
Logos/Graphics		VEC, DXF, BMP, HPGL, JPEG, AI*, EPS*			
Cooling method		Forced-air cooling			
Supply voltage		90 to 132VAC or 180 to 264VAC (auto-changing), 50/60Hz			
Power consumption		390W or less (at 100VAC), 420W or less (at 200VAC)			
Inputs		Remote, trigger, encoder (A), encoder (B), shutter control, laser pumping, alarm reset, emergency stop, laser stop, etc.			
Outputs		Power supply (24V), remote, marking ready, marking, marking finished, laser pumping, warning, alarm, confirmation end, counter finish			
Marking condition		Static and marking on the fly			
Functions		<ul style="list-style-type: none"> marking order optimizing correction of intersection counter marking current date/time marking expiry date marking lot marking logos/pictures marking bold marking logo data USB transfer 	<ul style="list-style-type: none"> I/O monitor system offset common character setting font selection proportional marking marking image display operator adjustment error log display work image display 	<ul style="list-style-type: none"> guide laser power speed setting per line/logo file step & repeat time delay serial data processing & marking multilayered marking backup 	<ul style="list-style-type: none"> various processing functions dual pointer marking time measurement font/logo creation/editing power check/correction I/O simulation focus adjustment marking on moving objects 3D marking
Weight of head		9.5kg			
Weight of controller		24kg			

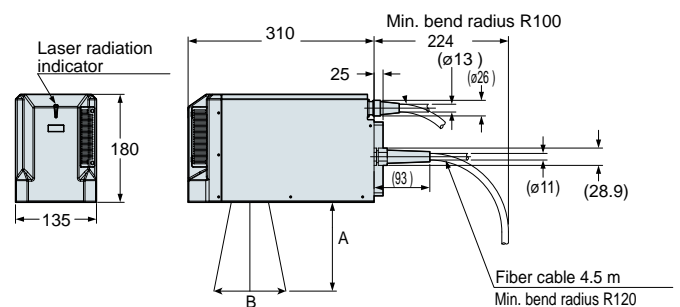
* Adobe Illustrator® is necessary

Dimensions

LP-Z controller



LP-Z head



Type	Marking distance A (mm)	Marking area B (mm)
LP-ZXX0	190 (± 25)	120 x 120
LP-ZXX6	330 (± 25)	330 x 330

CO₂ laser markers: LP-300 series

Due to the midrange infrared wavelength spectrum, Panasonic's LP-310-C Laser Marker is perfectly suited to permanently mark resins, enamel surfaces, glass and organic materials such as paper, wood, rubber or leather.

In comparison to conventional printing processes such as inkjet printing or tampon printing, the laser marker system is a purely optical tool that does not come into direct contact with the material it is marking. Hence it is not subject to wear and tear and requires no additional consumables such as toner, ink or solvents.

In addition to its superior marking quality with clear contours, the LP-310-C is nearly maintenance-free and hence produces few service or follow-up costs.

FDA

Conforming to
FDA regulations
(some models only)

CE

Conforming to Low Voltage
and EMC Directive
(some models only)





The LP-300 series CO₂ laser marker is an “entry-level” device designed for accurate and distinct marking applications on various materials.



Cable



IC



Switch (resin part)



Laser labels (marking & half cutting)



Connector



CD



Terminal block (resin part)



Connector



Retort pouches



Compared to stamping methods

- Environment** Because no ink or solvents are used, marking is environmentally friendly.
- Maintenance** No plates or molds are used, so no maintenance time is required.
- Running cost** Running costs consist of electricity costs only. No plate costs or ink costs.
- Productivity** Marking details can be created easily on a computer and sent to the laser marker. Dates and serial numbers can also be generated automatically.
- Marking quality** Because a non-contact method of marking is used, the characters do not become blurred. Even curved surfaces and narrow spaces can be marked.

Compared to engraving methods

- Environment** Similar: little waste.
- Maintenance** No plates or molds are used, so no maintenance time is required.
- Running cost** Running costs consist of electricity costs only. No need to create new templates.
- Productivity** Marking details can be created easily on a computer and sent to the laser marker. Dates and serial numbers can also be generated automatically.
- Marking quality** Because a non-contact method of marking is used, the characters do not become blurred. Even curved surfaces and sloped surfaces can be marked.



Compared to inkjet printers

- Environment** Environmentally friendly because no ink is used and no industrial waste is generated from solvent, filters, etc.
- Maintenance** Filling and replacing ink and replacing filters is not required at all. No stoppages for maintenance are needed. No specialist training is required, either.
- Running cost** Running costs consist of electricity costs only. No costs are incurred for ink, solvents, filters or pumps.
- Productivity** Marking details can be created easily on a computer and sent to the laser marker. Dates and serial numbers can also be generated automatically.
- Marking quality** Because marking characters along a line is possible, visibility is excellent. A wide range of variations such as fan-shaped and sloped-line characters are possible. Logos and model indicators can also be marked.

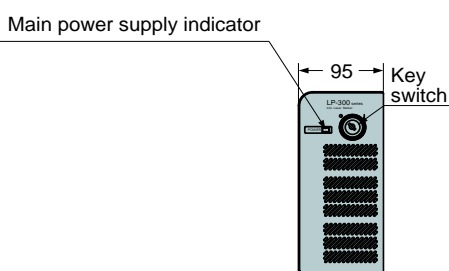
Functionality

<p>Marking the current date</p> <p>Manufacturing date: 15. 01. 31 ↓ Use-by date: 15. 03. 01 ↓ Manufacturing date: 15. 08. 08 ↓ Use-by date: 15. 09. 05</p>	<p>Counter</p> <p>000001 000001 000100 000100 ↓ ↓ ↓ ↓ 000002 000011 000099 000090 ↓ ↓ ↓ ↓ 000003 000021 000098 000080 ↓ ↓ ↓ ↓</p>	<p>Lot marking</p> <p>Manufactured on Oct 5th → 2004A Manufactured on Oct 5th → 2004B Manufactured on Oct 5th → 2004C</p>
<p>Arced and tilted</p> <p>0123456789 0123456789</p>	<p>Various fonts</p> <p>ABCDEF GH <i>ABCDEFGHIH</i></p>	<p>Various settings</p> <p>Standard Characters Note: The LP-300 series are CO₂ laser markers.</p> <p>Bold characters Note: The LP-300 series are CO₂ laser markers.</p>
<p>Logo marking</p> <p>Panasonic</p>		

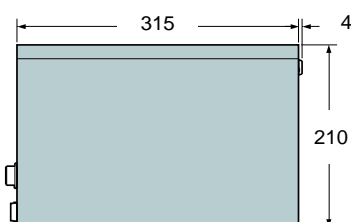
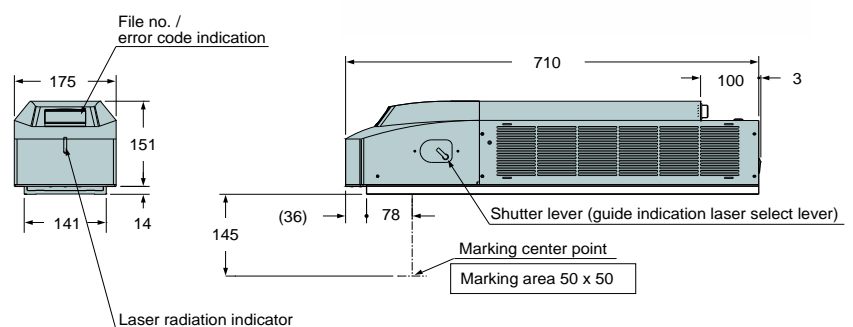
Item	LP-310-C
Work distance	145mm
Marking field	50mm x 50mm
Scanning speed max.	2000mm/s
Average output	12W
Ambient temperature	0 to +40°C (no condensation or frost), storage: -10 to 50°C
Ambient humidity	35 to 85% RH (no condensation or frost)
Marking method	Galvanometer scanning method
Marking laser	CO ₂ laser $\lambda = 10.6\mu\text{m}$, laser class 4
Guide laser	Semiconductor $\lambda = 655\text{nm}$, laser class 2; 1mW
Array of character	Straight line, proportional/typewriter, arced, tilted
Type of characters	Capital & small characters, numerals, katakana, hiragana, kanji (JIS level 1 & level 2), symbols, user-defined characters (up to 50 types)
Logos/Graphics	DXF
Cooling method	Forced-air cooling
Supply voltage	90 to 132VAC or 180 to 264VAC (auto-changing), 50/60Hz
Power consumption	700W or less
Inputs	Laser stop, file no., trigger, counter reset, emergency stop
Outputs	Alarm, marking ready, counter end
Marking condition	Static
Functions	<ul style="list-style-type: none"> • correction of intersection • test marking • current date/time marking • lot marking • guide laser • file transfer/file reading • expiration date/time marking • bold marking • error history display • counter marking • marking image display • CAD marking • Saved file list • Serial data communication
Weight of head	13kg
Weight of controller	5kg (Power supply)

Dimensions

LP-300 controller



LP-300 head



CO₂ laser markers: LP-400 series

Panasonic conceived the LP-400 series laser markers especially for industries with particularly high demands on speed and functionality. LP-400 series laser markers are CO₂ laser marker systems with an output power of 10W, 20W or 30W that, due to an ultra fast galvano-scanner, can mark moving objects on-the-fly at a line speed of up to 240m/min.! The incorporation of an encoder interface permits optimization of marking and flying speed.

Due to their small laser beam diameter of down to 95µm, certain models are especially well suited to mark very small characters on difficult materials. Due to their somewhat shorter wavelength of 9.3µm, some versions of the Laser Markers are ideal for marking clear plastics such as PET or PC.





The high-grade LP-400 series CO₂ laser marker is designed for high-quality marking and processing applications on various materials.



Removing cable insulation



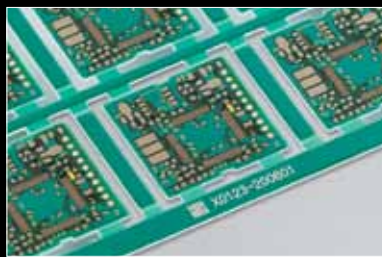
PET bottles



Pouch packaging



Ceramic capacitors



Printed circuit boards



CD/DVD



Ceramic circuit boards



Rubber gaskets (processing)



Silicon tubing



Improved productivity

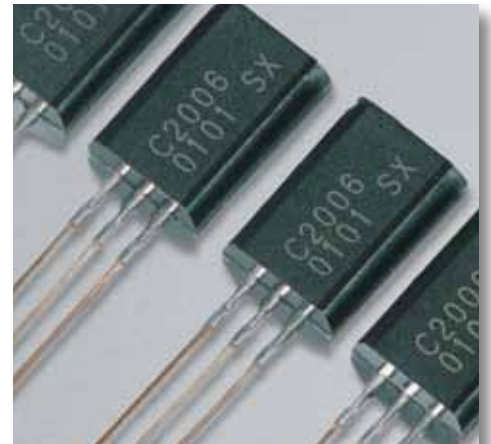
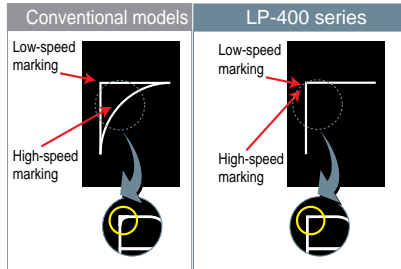
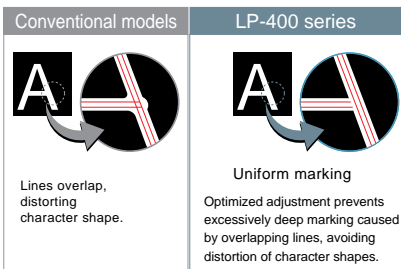
High-speed marking

The LP-400 series features a high-performance galvano scanner whose acceleration, deceleration, and response speeds exceed those of conventional models by delivering dramatically shorter marking times. Capable of marking up to 700 characters per second and at line speeds of up to 240m/min, the LP-400 series can deliver an improved productivity. The LP-400 series automatically determine the most efficient marking order, further reducing marking time. Panasonic's proprietary galvano scanner control technology keeps marking accurate and aligned, even at high speeds.

High-quality marking

Technologies behind high-quality marking

The LP-400 series takes advantage of a number of new technologies compared to conventional models to deliver high-definition marking. Advanced control functionality automatically adjusts marking strength at locations susceptible to deep marking such as the beginning and ends of lines and areas where straight and curved lines intersect. The result is a beautiful, high-quality mark with uniform line depth, even at high speeds.



Rotates through 360°



The proprietary rotating head found on standard models and the additional freedom of installation provided by a selection of tower head models provide the performance to meet a variety of needs.

High-stability laser

Extensive lineup

Laser output stability of within $\pm 3\%$ (typical) ensures consistent marking and high-quality processing over the full output range. The extensive lineup of laser output and wavelength options (three available laser output levels: 10W, 20W, 30W and two available laser wavelengths: 10.6 μ m and 9.3 μ m) accommodate more applications.

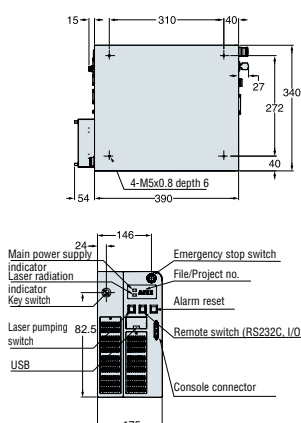


Item	Type	Small spot			Standard			Wide area	
	Standard	LP-431U-C	LP-421S9U-C	LP-411U-C	LP-430U-C	LP-420S9U-C	LP-410U-C	LP-425S9U-C	LP-435U-C
Tower		LP-431TU-C	LP-421S9TU-C	LP-411TU-C	LP-430TU-C	LP-420S9TU-C	LP-410TU-C	LP-425S9TU-C	LP-435TU-C
Work distance (manually adjustable)		111mm (± 2mm)			185mm (± 3mm)			262mm (± 4mm)	
Marking field		55mm x 55mm			110mm x 110mm			160mm x 160mm	
Scanning speed max.		6000mm/s			12,000mm/s			12,000mm/s	
Line speed max.		120m/min		85m/min	240m/min		170m/min	240m/min	
Average output		30W	20W	10W	30W	20W	10W	20W	30W
Ambient temperature		0 to +40°C (no condensation or frost), storage: -10 to 60°C							
Ambient humidity		35 to 85%RH (no condensation or frost)							
Marking method		Galvanometer scanning method							
Marking laser		CO ₂ laser λ = 10.6μm (9.3μm LP 42xS9U), laser class 4							
Guide laser		Semiconductor λ = 655nm, laser class 2, 1mW							
Array of character		Straight line, proportional/typewriter, arced, tilted							
Type of characters		Capital & small characters, numerals, katakana, hiragana, kanji (JIS level 1 & level 2) symbols, user-defined characters (up to 50 types)							
Bar codes/2D codes		CODE39, CODE128, ITF2/5, NW-7, JAN/UPC/EAN, RSS 14, RSS limited, RSS expanded (GS1 Databar), GS1 Data Matrix, QR, Micro QR, Data Matrix (ECC200), etc.							
Logos/Graphics		VEC, DXF, BMP, HPGL, JPEG, AI*, EPS*							
Cooling method		Forced-air cooling							
Supply voltage		90 to 132VAC or 180 to 264VAC (auto-changing), 50/60Hz							
Power consumption		1200W (at 200VAC)	700W (at 200VAC)	1200W (at 200VAC)	700W (at 200VAC)	1200W (at 200VAC)	700W (at 200VAC)	1200W (at 200VAC)	700W (at 200VAC)
Inputs		Remote, trigger, encoder (A), encoder (B), shutter control, laser pumping, alarm reset, emergency stop, laser stop, etc							
Outputs		Power supply (+12V), remote, marking ready, marking, marking finished, laser pumping, warning, alarm, confirmation end, counter finish							
Marking condition		Static and marking on the fly							
Functions		<ul style="list-style-type: none"> marking order optimizing correction of intersection counter marking current date/time marking expiry date marking lot marking logos/pictures marking bold marking logo data USB transfer 	<ul style="list-style-type: none"> I/O monitor system offset common character setting font selection proportional marking marking image display operator adjustment error log display work image display 	<ul style="list-style-type: none"> guide laser power speed setting per line/logo file step & repeat time delay serial data processing & marking multilayered marking backup 	<ul style="list-style-type: none"> various processing functions dual pointer marking time measurement font/logo creation/editing power check/correction I/O simulation focus adjustment marking on moving objects 				
Weight of head		20kg	16kg	20kg	16kg	20kg	16kg	20kg	16kg
Weight of controller		12kg	11kg	12kg	11kg	12kg	11kg	12kg	11kg

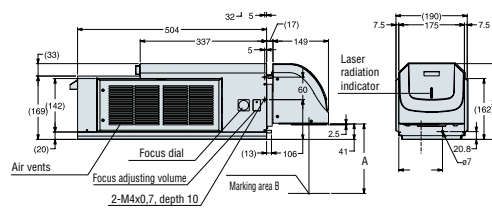
* Adobe Illustrator® is necessary

Dimensions

LP-400 controller

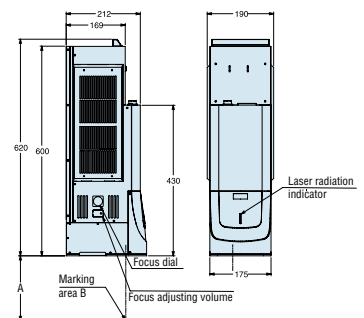


LP-400 head - horizontal model



Type	Marking distance A (mm)	Marking area B (mm)
LP-4X1	111	55 x 55
LP-4X0	185	110 x 110
LP-4X5	262	160 x 160

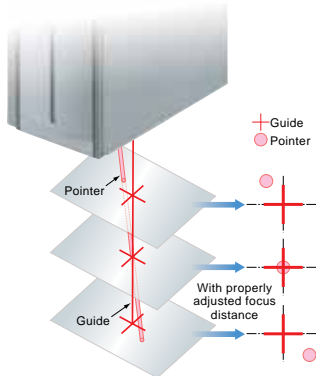
LP-400 head - tower model



Standard features for LP-V/-Z/-S and -400 series

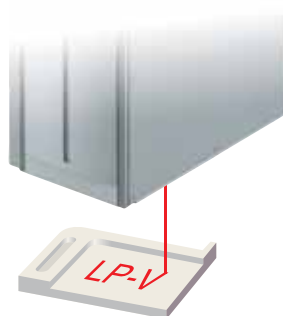
Focus guide laser

Panasonic laser markers incorporate focal pointers created by a red guide light to make it easier to check and adjust the center position and focus distance.



Marking guide laser

Panasonic laser markers use an easily visible red guide laser to trace out the set marking data and marking position, allowing you to visually check the marking position before actual marking begins.



USB connectors

The ability to store system settings on USB memory sticks lets you back up marking settings or copy settings to multiple laser markers.



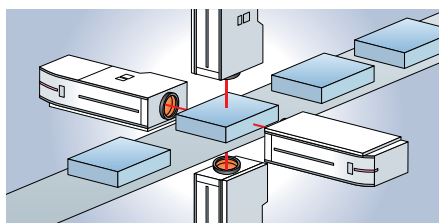
Focus adjustment

In simplifying calibration at the time of installation, a newly developed focus adjustment feature makes it easy to fine adjust the laser marker's focus without moving the head or fixture.



Installation at almost any orientation

Because of their robust design, Panasonic FAYb and CO₂ laser markers can be installed at almost any orientation, enabling easy integration in existing machines, even with limited access or space.



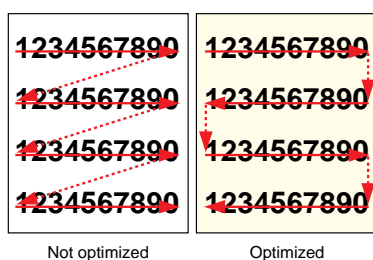
"On the fly" marking

Panasonic laser markers are equipped with an encoder interface, allowing objects to be marked "on the fly" with line speeds of up to 240m/min.



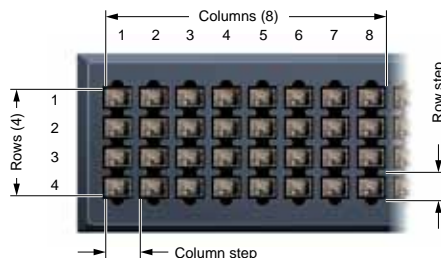
Marking order optimization

Panasonic laser markers automatically determine the most efficient marking order, optimizing high-speed marking.



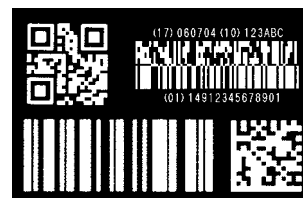
Step and repeat

Step and repeat provides high-speed batch marking for printed circuit boards and plastic packaging such as trays and lead frames, helping increase speeds on semiconductor and electronic component production lines.



1D and 2D code generation

1D and 2D codes enable product information such as serial and lot numbers to be output in a space-efficient manner. These codes are machine readable and are common for track and trace applications.



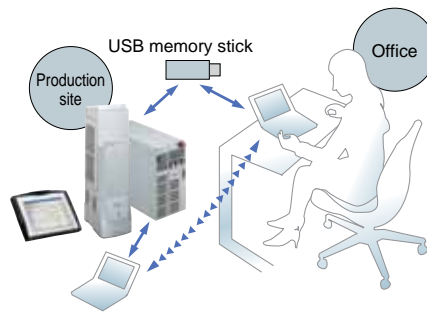
Laser Marker NAVI PC software

Laser Marker NAVI's simple, intuitive mouse-driven interface makes it easy to configure marking conditions and positions in setting files, allowing you to easily create marking layouts according to plan. The application also allows your computer to monitor system operation, and you can check error logs and the I/O monitor at the same time.



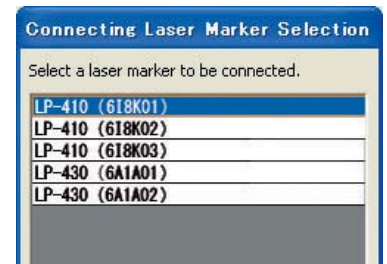
Offline configuration

Now you can create and save data at a remote location such as an office and later transfer it to the laser marker on-site for marking. Alternatively, you can avoid the need for an on-site computer entirely by using a USB memory stick and console to save data to the laser marker for marking.



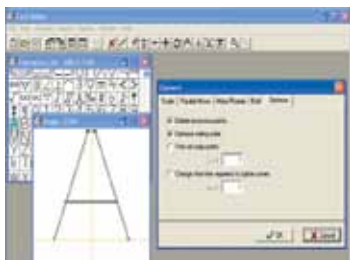
Batch laser marker management

Now you can connect multiple laser markers to a single computer for centralized management of all connected markers and associated configuration data. Easy, straightforward monitoring of settings and operational status rounds off the application's management capabilities.



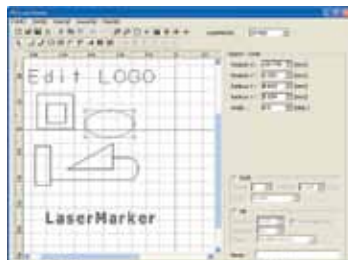
FONT maker software

This useful software allows you to modify or create your own fonts to be marked with the laser marker. It is very useful if registered "®" fonts for company and product names need to be used.



Logo data editing software

Logo data editing software provides a simple and intuitive configuration interface allowing you to create and edit your logo files without using commercial CAD software.



LOGO CONVERTER

Logo data conversion software output logos and other graphical marks from DXF, HPGL, BMP, or JPEG into the VEC format. Data created by Adobe Illustrator® such as AI and EPS can be converted by "Export Vec", which is included.



Power check

This convenient feature allows one-touch confirmation of the current attenuation factor relative to the laser's output when the unit shipped. Total laser radiation time is also displayed on the screen to simplify system maintenance and management.

Password

A password feature dramatically improves safety and security by restricting users' ability to input certain information and protecting system settings, enabling safe and convenient use of the system for design, technical support, facilities, and production workers.

Help

Panasonic laser markers include a help feature so that even first-time users are able to operate the system smoothly. Detailed messages inform users of potential configuration mistakes, reflecting our company's belief that a responsive and intuitive interface is an important aspect of system performance.

LTF-C glass marking technology



tesa and Panasonic Electric Works have mutually developed a revolutionary technology called LTF-C (Laser-Transfer-Film-Contrast) to mark glass permanently. The technology combines laser markers from Panasonic with Laser-Transfer-Film from tesa, yielding a permanent, high contrast mark that is tamper-proof and as indestructible as the glass itself.

Key advantages

- Individual marking
- Can be read by standard vision system
- High contrast
- Glass integrity not compromised
- Temperature resistant up to 1000°C
- Impervious to UV radiation
- Resistant against chemical products (acids, bases...)
- Permanent marking (durability more than 25 years)
- Protects against theft and illegal copying
- Prevents counterfeiting

Solar industry

Each module goes through several manufacturing steps. To guarantee proper quality management, the manufacturing parameters of each solar module must be documented during the manufacturing process. LTF-C glass marking technology allows the glass substrate to be marked individually.



Advantages:

- Permanent & individual marking
- Can be read by 2D code reader and vision systems
- Can withstand all processing steps in the solar industry
- Impervious to UV radiation
- Short marking times of <1s possible

Automobile industry

Automobile windows must be marked permanently and tamper-proof for each specific automobile. In contrast to traditional glass marking, LTF-C requires no caustic substances or subsequent thermal processing. LTF-C is a "cold", flexible laser marking technology.



Advantages:

- Reduction of product scrap via reliable laser technology compared to conventional screen printing
- More efficient stock management due to customer-specific marking applied after glass production
- Recording of individual markings or Vehicle Identification Number (VIN) possible part by part

Pharmaceutical industry

LTF-C glass marking technology allows individual marking of primary packaging for track & trace purposes. The machine-legible Data Matrix code on each syringe means the pharmaceutical product can be tracked seamlessly throughout the process chain.



Advantages:

- 100% tracking of the primary packaging
- Product forgeries can be easily identified
- Excellent legibility
- Integrity of the glass body not compromised
- Permanent
- No particles

Color touch panel

The color touch panel LP-ADP40 designed for maximum ease of use and viewing provides stress-free operation by displaying marking data and settings immediately. The LP-ADP40 can be used with the LP-400, LP-V , LP-Z and LP-S series.



Table work station

For labelling of small- and medium-batch production runs, Panasonic Electric Works proposes table work stations with laser protection. This table housing station is designed to accommodate nearly all Laser Markers offered by Panasonic Electric Works.



Laser fume extraction LFE-250

Laser fume extraction with one exhaust port for standard applications
Special laser fume extraction units are available e.g. for PVC marking applications



Product sample service

Take advantage of our cost-free product sample service and let yourself be convinced of our quality laser marking systems. For immediate processing, please submit the form on our website: www.panasonic-electric-works.com/peweu/en/html/21556.php (or scan the code on the right side with your smartphone) and send us several samples and a drawing showing the inscription you require. We will then apply the required inscription to your components to create individual samples for you.



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Europe

Asia Pacific

China

Japan

Panasonic Electric Works

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