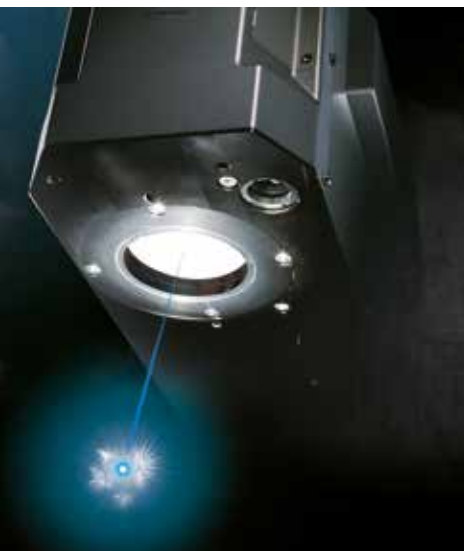


LASER MARKING SYSTEMS





With a focus on: Added value for the customer

Our philosophy extends to all areas and industries. Whether for the home, office, department store, car, plane, or production facility: Panasonic powers the things that move people. We develop and design solutions of an impressive variety, keeping the customer's requirements as a whole always in view. Panasonic's decades of experience in the area of consumer products and industrial automation lay the perfect foundation for the success of our laser marking systems. We monitor very closely the needs of our customers and what type of added value is in demand in which specialty area. Our blend of outstanding technology, outstanding quality and outstanding service yields a complete solution that leaves nothing to be desired.



Outstanding technology

Everything we do is based on the deployment of the latest laser marking technologies. The application laboratories at the Panasonic European head office and the worldwide dialog that our highly qualified engineers engage in enable continuous product improvements. Strong arguments speak for our Laser Marking Systems and their outstanding technology. Their enormous precision and high level of reliability have gained worldwide renown.

Outstanding quality

The satisfaction of our customers and the trust they have in Panasonic are paramount to us. At our company, every single employee is involved and sensitized, resulting in high-quality products and impressive services. In all areas, our team takes the most varied customer requests into account, and learns from them continuously. Technological know-how and a keen sense for what is important form the basis for our innovative, high-quality products.

Outstanding service

Panasonic's service network has a broad reach. We respond quickly and are known for our flexibility. Our outstanding service begins long before a laser marking system is installed. Customer advice, feasibility studies and project management are the pillars on which our success concept is based. The Panasonic service team comes to the aid of all customers with reliable service experts – at any time, regardless of the service life of your system.

Fiber Laser Marking Systems (FAYb):

LP-RF series	04
LP-RV series	08
LP-Z series	12
LP-S series	16
LP-M series	20

CO₂ Laser Marking Systems:

LP-GS series	24
LP-400 series	28

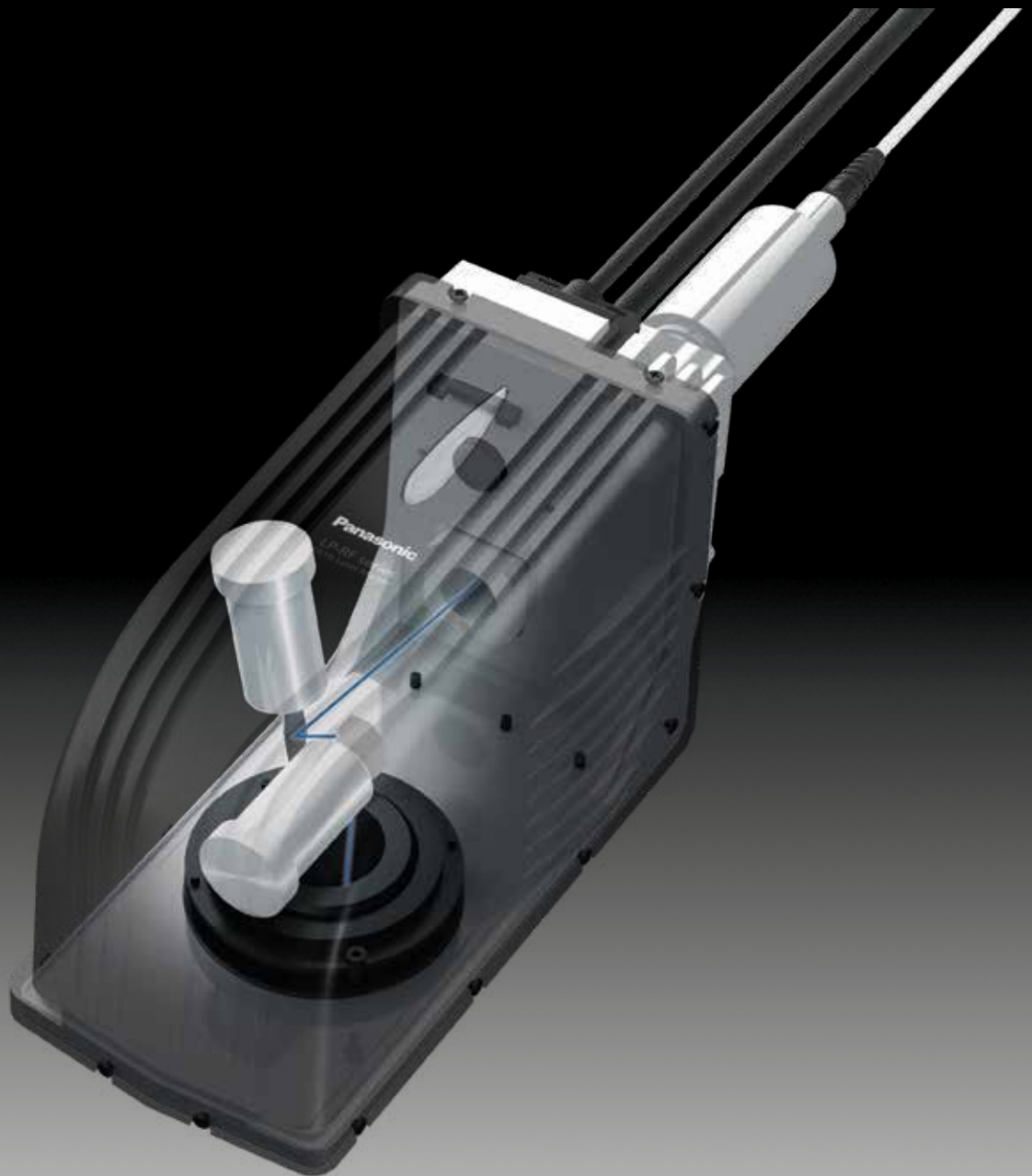
Standard functions	32
Global network	34
Accessory	35

Product history

1996	1999	2001	2003	2004
LP-100 CO ₂ Laser Marker 	LP-200 CO ₂ Laser Marker  LP-F FAYb Laser Marker 	LP-D Diode Laser Marker 	LP-300 CO ₂ Laser Marker 	LP-400 CO ₂ Laser Marker  LP-V FAYb Laser Marker 
2007	2008	2011	2013	2014
LP-G FAYb Laser Marker 	LP-Z FAYb Laser Marker 	LP-S FAYb Laser Marker 	LP-M FAYb Laser Marker 	LP-GS FAYb Laser Marker 
2019	2020			
LP-RF FAYb Laser Marker 	LP-RV FAYb Laser Marker 			

In 1999, Panasonic introduced the world's first laser marker equipped with a fiber laser oscillator. Since then, the company has advanced the product function to respond to customers' needs and released four unique premium fiber laser markers.

Panasonic recently reexamined the essential key functions of a laser marker, and added an easy-to-handle model to the lineup – the new LP-RF series.



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LP-RF

The best choice for uncomplicated 2D plastic and metal applications is the easy-to-use 20W fiber laser system.

Molded resin part



Battery pack



Slider bar



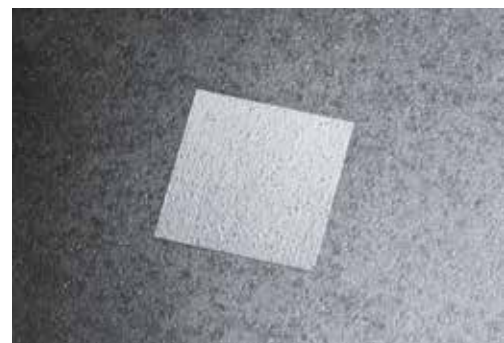
Gear



Gear



Cleaning process



Tool



Camshaft



Fuel nozzle





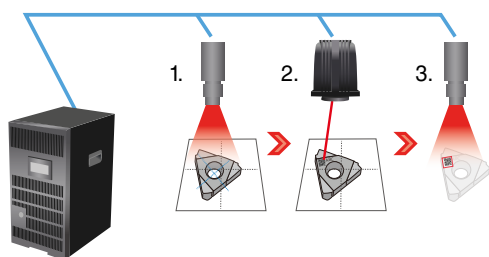
Highlights for operation

New interfaces for remote control

In addition to the connector for I/O control and the RS232C connector, new EtherNet/IP and PROFINET network units are provided to support the PLC connection via these industrial networks. The installation of the additional network units is easy and can be performed at any time.

PROFINET unit and EtherNet/IP unit

- › Support industrial networks
- › Optional accessory
- › Retrofittable
- › Easy installation

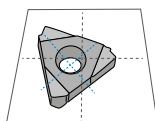


Direct connection to image processing device

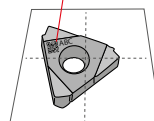
Automatic marking position correction and scan check

The LP-RF series can be connected directly to a machine vision system. This enables the execution of a series of operations, such as detection of the workpiece position, correction of the marking position and cross-checking with scanned information of marked Data Matrix code (DMC), etc., without using a PLC.

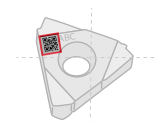
1. Detection of workpiece position
2. Marking position correction
3. Cross-check of scanned code information



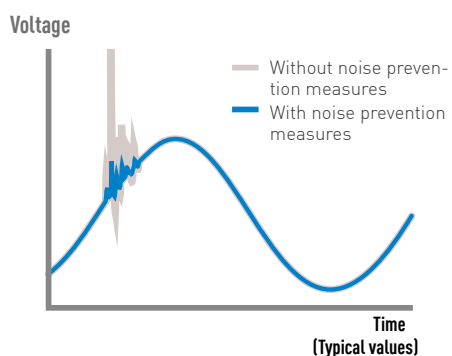
The camera scans and detects the position of the workpiece placed in the equipment.



The angle is corrected based on the scanned position information before the LP-RF emits the laser beam.



The system checks whether the marked Data Matrix code can be scanned properly and cross-checking the scanned information with the marked DMC



FT noise
Surge noise

Reduced by 90%
Reduced by 70%

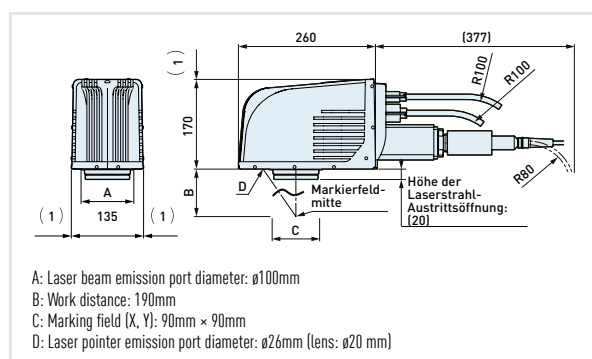
Controller with high noise resistance

Electrical noise produced by equipment using a large amount of electrical current or generated in the surrounding area can affect the operation of the internal parts of the equipment and cause problems. The controller of the LP-RF series is equipped with anti-noise parts such as a power transformer and varistor to ensure safe and reliable use of the Laser Marker during the production process.

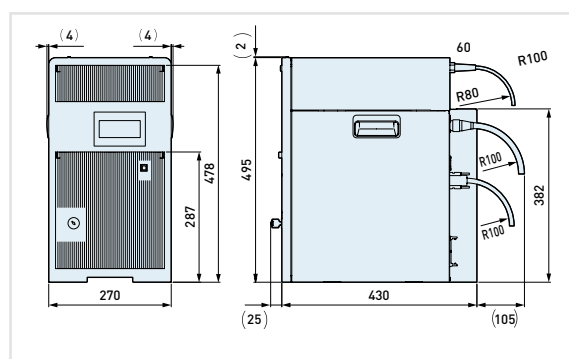
Model	Item	Standard
		LP-RF200P
Marking laser		Fiber laser $\lambda = 1060\text{nm}$, laser class 4
Guide laser		Semiconductor $\lambda = 655\text{nm}$, laser class 2, output class 1mW
Output class		20W
Marking field		90mm x 90mm
Work distance		190mm
System startup time		10s
Laser excitation time		7s
Scan method		Galvano scanner
Scan speed (max.)		12000mm/s
Line speed (max.)		240m/min
Workpiece positioning		Stationary and on-the-fly marking
Fiber cable length		3m
Net weight	Laser head	8kg
	Controller	37kg
Degree of protection (laser head)		IP64
Cooling method		Laser head: natural air cooling, controller: forced air cooling
Ambient temperature		0°C to +40°C, storage: -10°C to +60°C
Ambient humidity		35% to 85%
Operating voltage		180V AC to 264V AC ($\pm 10\%$), 50/60Hz
Power consumption (max.)		370W (2.1A)
Communication interfaces		Digital I/O, Ethernet, EtherNet/IP (optional), PROFINET (optional), RS232C
Software		Laser Marker NAVI smart, Logo Data Editing, ExportVec, Font Maker
Software languages		German, English, Japanese, Korean, simplified Chinese, traditional Chinese
Character types		Upper and lower case letters, numerals, symbols, user-defined characters (up to 50), Japanese characters katakana, hiragana, kanji (JIS level 1 and level 2)
Functional characters		Current date, counter, lot function, expiry date, laser parameter, registered characters
TrueType		TrueType font from PC
Bar codes		CODE39, CODE128, CODE93, ITF, NW-7, EAN/UPC/JAN, GS1 DataBar
2D codes		QR Code, Micro QR Code, iQR Code, Data Matrix, GS1 Data Matrix, PDF417
Logos/graphics		VEC, DXF, BMP, HPGL, JPEG, AI*, EPS* * Adobe Illustrator® required
Number marking files (max.)		10000 files

Dimensions

LP-RF200P laser head



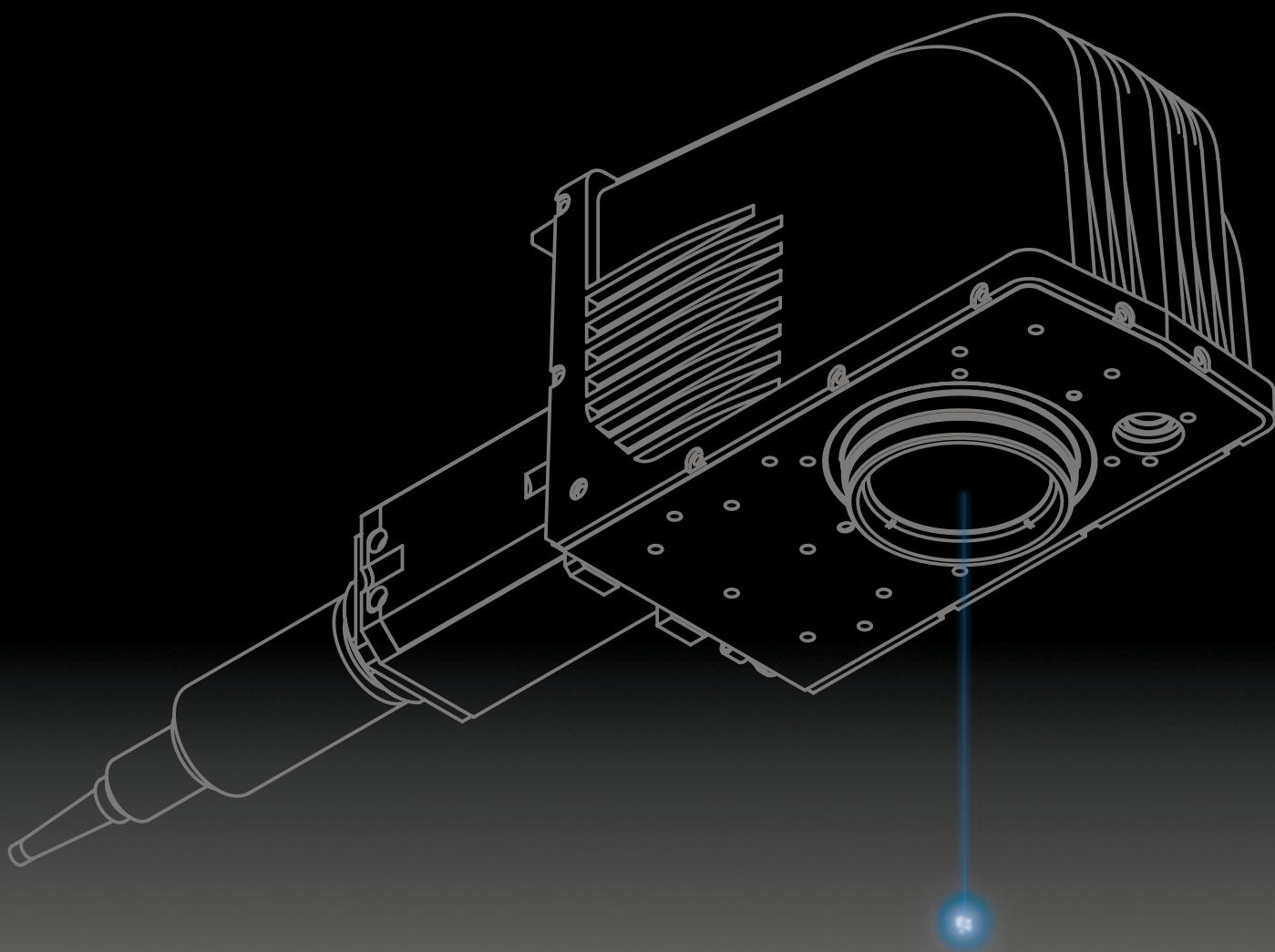
LP-RF200P controller



* All measurements in mm

The fiber laser oscillation system is recognized as an ecological system because its consumption power is low and the laser diode service life is long compared with YAG or YVO4. However, there was a problem that made it difficult to generate a short pulse laser.

Through adopting a new three-unit configuration, the LP-RV series with fiber oscillation system has realized a short pulse with a pulse duration of 1ns. This will contribute to providing overwhelming improvement on expressive power and application needs.





LP-RV

20W short pulse fiber laser system for applications with extra small characters and high contrast.

Small electronic part



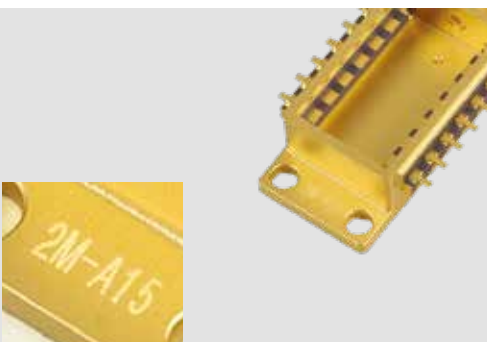
Nameplate



Molded resin part



Gold plating peeling



IC package



Illuminated switch



Metal part

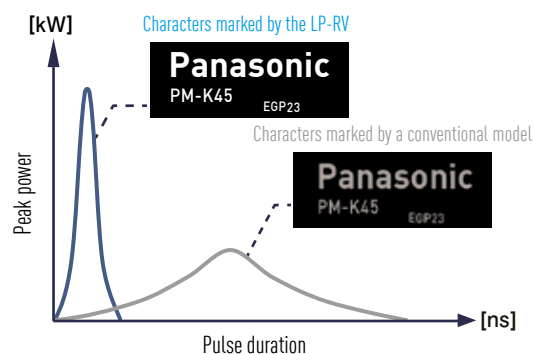


Dowel



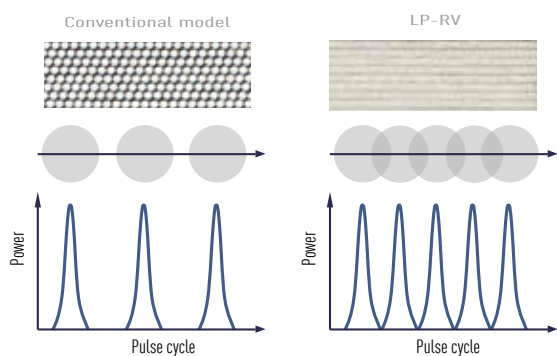
Pressure switch tool plastic





Small thermal effect

The thermal effect caused by the short pulse laser on the workpiece is small. The risk of burning, discoloration, or deformation due to heat is minimized. Therefore, the short pulse laser can be used as an optimal laser marker for workpieces where it is essential to suppress the thermal effect, such as ICs and thin metals or for high-contrast marking on resin surfaces.



High pulse repetition rate

The LP-RV can generate a short pulse laser beam with a high repetition rate even if the scanning is performed at a higher speed. As a result, the laser marking is possible without spaces between dots irradiated by the laser, as shown in the left figure. This also shortens the laser marking or processing cycle time and improves the quality.



Exact marking of extra small characters

A short pulse laser prevents the heat from spreading during the laser radiation on a workpiece. Thus, it allows the marking of characters with much finer line segments. It is possible to mark characters as small as 0.15mm × 0.15mm. The marked characters are clearly visible and easy to read.



Three-unit configuration

The laser marker features a three-unit configuration. This allows to separately install, remove or replace each of the three individual units in the case of mounting or maintenance. It also contributes to shorten potential down-times.

The LP-Z series is equipped with a 3D-functionality and especially suited for marking concave or convex surfaces. The focus is adjusted automatically, guaranteeing stable energy density on the workpiece. This technology improves marking quality on large 2D surfaces up to a maximum of 330mm x 330mm.

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.



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LP-Z

3-axis - LP-Z series fiber laser marking system designed for marking complex 3D metal and resin surfaces.

Plastic housing



IC package



Screw terminal



Ball bearing



Molded resin part



Crankshaft



Metal plate (oblique)

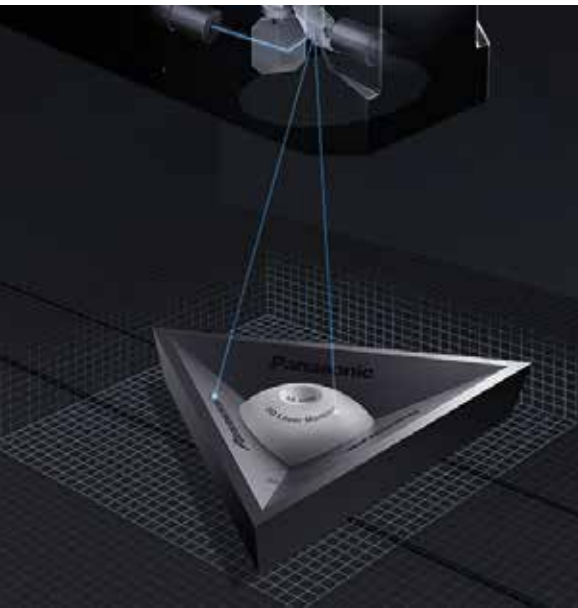


Resin cover



Battery casing

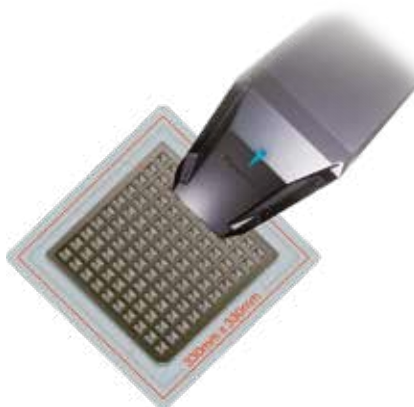




3D control

Marking of oblique, convex and concave surfaces

The Z-axis control allows for the marking of oblique, convex and concave surfaces in an area of 50mm (± 25 mm). Even surfaces with different heights can be marked easily with this new technology. Inside the marking field the spot size remains stable, ensuring consistent, high-quality marking. It is even possible to mark two facing surfaces in one step if the laser head or the product is mounted at a certain angle, e.g. 45° . Before, mirrors were needed to mark surfaces inside an object because access was limited. Now marking of i.e. fill level markings in pots or measuring cups has become much easier. This feature can dramatically reduce setup, installation and design costs.



Large marking field

Precise marking and improved productivity

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

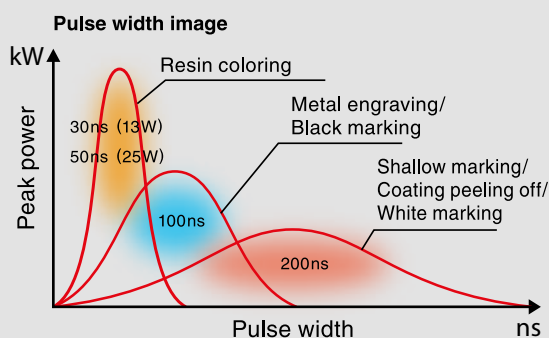
Thanks to the integrated Z-axis control, the system guarantees the ability to mark complex shapes without compromising quality in the least in any position of the marking field. This makes the system ideal for high quality markings even on the edge sections of the marking field.

High-performance fiber laser

25W fiber laser with selectable pulse width

Applications requiring a high power such as deep markings and black marking of metals can be achieved easily. The high output power also shortens marking time, thus improving production efficiency. A selection of three pulse width patterns has been added to the existing pulse cycle setting to make finding suitable marking conditions for your application even easier.

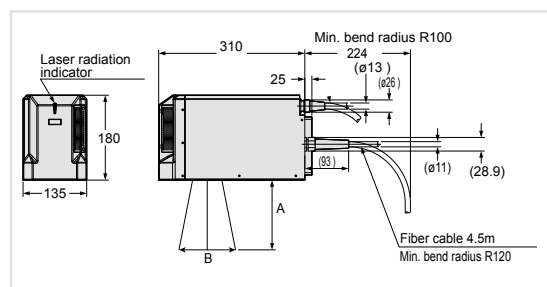
Moreover, using the fiber laser marking technology, heat is simply dissipated regardless of the power used, eliminating the need for hooking up and maintaining water-cooling systems.



Item		Standard		Large marking field
		LP-Z130-LS1-C	LP-Z250-LS1-C	LP-Z256-LS1-C
Marking laser		Fiber laser λ = 1060nm, laser class 4		
Guide laser		Semiconductor λ = 650nm, laser class 2, output class 1mW		
Output class		13W	25W	
Pulse duration		30ns, 100ns, 200ns (user-defined settings)	50ns, 100ns, 200ns (user-defined settings)	
Marking field		120mm x 120mm		330mm x 330mm
Work distance		190mm		330mm
3D marking area [Z axis control]		50mm (±25mm)		
Scan method		Galvano scanner		
Scan speed (max.)		12000mm/s		8000mm/s
Line speed (max.)		170m/min		120m/min
Workpiece positioning		Stationary and on-the-fly marking		
Fiber cable length		4.5m		
Net weight	Laser head	9.5kg		
	Controller	24kg		
Cooling method		Laser head, controller: forced air cooling		
Ambient temperature		0°C to +40°C,storage: -10°C to +60°C	0°C to +35°C, storage: -10°C to +60°C	
Ambient humidity		35% to 85%		
Operating voltage		90V AC to 132V AC or 180V AC to 264V AC, 50/60Hz (auto switching)		
Power consumption (max.)	100V AC	390W		
	200V AC	420W		
Communication interfaces		Digital I/O, Ethernet, RS232C		
Software		Laser Marker NAVI Plus, Logo Data Conversion, Logo Data Editing, ExportVec, Font Maker NAVILINK 3D		
Software languages		German, English, Japanese, Korean, simplified Chinese, traditional Chinese		
Character types		Upper and lower case letters, numerals, symbols, user-defined characters (up to 50), Japanese characters katakana, hiragana, kanji (JIS level 1 and level 2)		
Functional characters		Current date, counter, lot function, expiry date, laser parameter, registered characters		
Bar codes		CODE39, CODE128, ITF, NW-7, EAN/UPC, GS1 DataBar		
2D codes		QR Code, Micro QR Code, Data Matrix, GS1 Data Matrix		
Logos/graphics		VEC, DXF, BMP, HPGL, JPEG, AI*, EPS* * Adobe Illustrator® required		
Number marking files (max.)		2048 files		

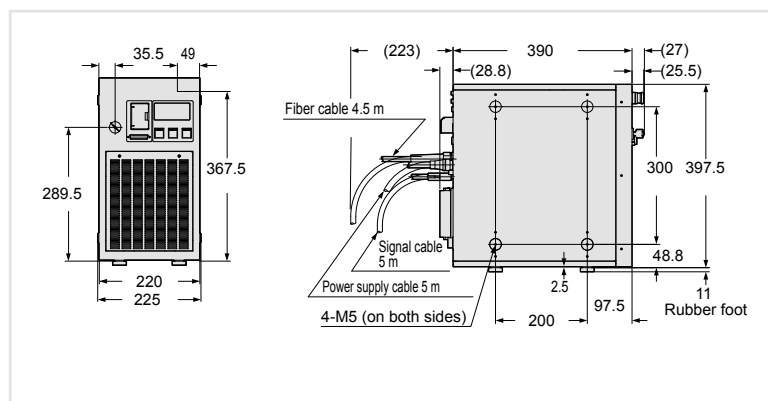
Dimensions

LP-Z laser head



Type	Work distance A (mm)	Marking field B (mm²)
LP-ZXX0-LS1-C	190 (± 25)	120x120
LP-Z256-LS1-C	330 (± 25)	330x330

LP-Z controller



* All measurements in mm

To improve deep marking on metal, the output power has been increased from 12W for the current model to 50W. This way, engraving and black marking on precision metal parts as ball bearings, drills, and molds with high speeds is possible. 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 oil-proof, and the lens is equipped with protective glass. The device's unique design makes it possible to remove the fiber-optic cable from the laser head. Thanks to a small and removable fiber head, integration with other equipment just got simpler.



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LP-S

The high power and environmentally resistant fiber laser marking systems of the LP-S series are designed for metal high-speed marking and deep engraving.

Tools (carbide)



Cylinder blocks



Connecting rod



Crankshafts



Camshafts



Joint



Engine valves



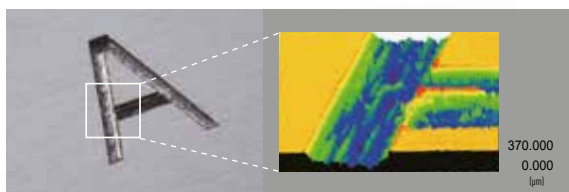
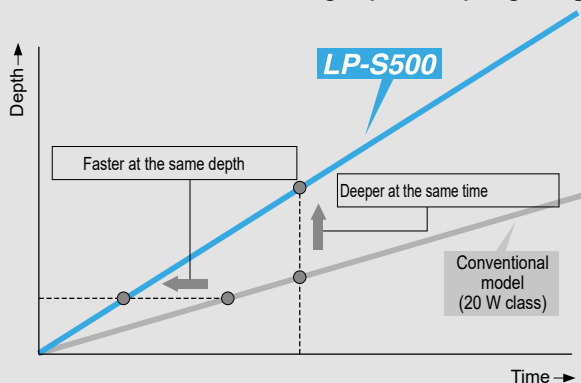
Chains



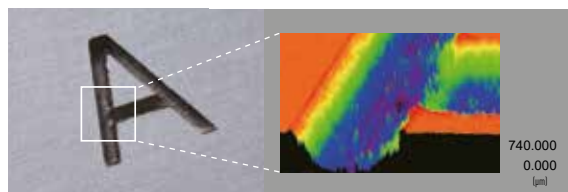
Gear wheel



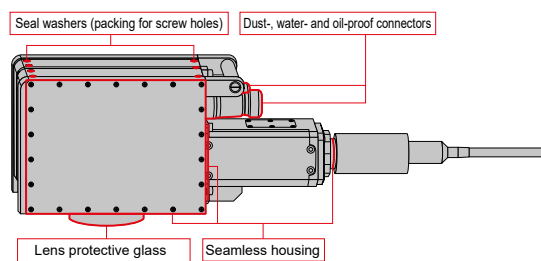
Simulated characteristics of high-speed deep engraving



Conventional model (20W)



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



High output power

High output power for superior deep engraving and high speed productivity

The 50W 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 fiber laser technology. This shortens the marking time, which greatly improves productivity. The LP-S series can monitor its own laser power internally. If the laser power deviates from the value specified, the alarm output is set and marking will be stopped. This preventative function ensures consistent quality of product marking no matter when marking takes place.

High degree of protection IP67G

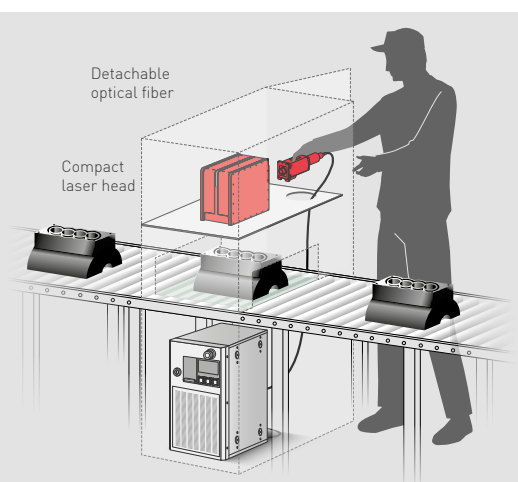
Superior design and highly resistant parts

The LP-S series features minimum frame seams. The narrow joints and screw holes are completely sealed and caulked. 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.

Detachable optical fiber cable

Enhanced flexibility of equipment design and integration

Panasonic's unparalleled laser head design allows the fiber cable unit to be removed from the laser head. Because the fiber unit is removable, designing and mounting the laser marker into existing equipment is more flexible and much easier.

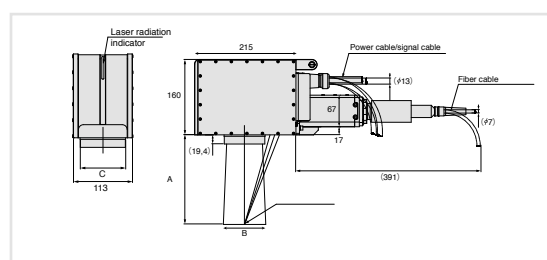


Item		Small marking field	Standard	Large marking field	Small marking field	Standard	Large marking field
		LP-S202-LS1	LP-S200-LS1	LP-S205-LS1	LP-S502-LS1	LP-S500-LS1	LP-S505-LS1
Model							
Marking laser		Fiber laser λ = 1064nm, laser class 4					
Guide laser		Semiconductor λ = 650nm, laser class 2, output class 1mW					
Output class		20W			50W		
Marking field		55mm x 55mm	90mm x 90mm	160mm x 160mm	55mm x 55mm	90mm x 90mm	160mm x 160mm
Work distance		130mm	190mm	350mm	130mm	190mm	350mm
Focus adjustment (manually)		±3mm	±7mm	±24mm	±3mm	±7mm	±24mm
Scan method		Galvano scanner					
Scan speed (max.)		6000mm/s	12000mm/s		6000mm/s	12000mm/s	
Line speed (max.)		120m/min	240m/min		120m/min	240m/min	
Workpiece positioning		Stationary and on-the-fly marking					
Fiber cable length		5m					
Net weight	Laser head	7.5kg		8kg	7.5kg		8kg
	Controller	24kg			25kg		
Degree of protection (laser head)		IP67G					
Cooling method		Laser head: none, controller: forced air cooling					
Ambient temperature		0°C to +40°C, storage: -10°C to +60°C					
Ambient humidity		35% to 85%					
Operating voltage		90V AC to 132V AC or 180V AC to 264V AC, 50/60Hz (auto switching)					
Power consumption (max.)	100V AC	330W			530W		
	200V AC	450W			650W		
Communication interfaces		Digital I/O, Ethernet, RS232C					
Software		Laser Marker NAVI Plus, Logo Data Conversion, Logo Data Editing, ExportVec, Font Maker					
Software languages		German, English, Japanese, Korean, simplified Chinese, traditional Chinese					
Character types		Upper and lower case letters, numerals, symbols, user-defined characters (up to 50), Japanese characters katakana, hiragana, kanji (JIS level 1 and level 2)					
Functional characters		Current date, counter, lot function, expiry date, laser parameter, registered characters					
Bar codes		CODE39, CODE128, ITF, NW-7, EAN/UPC, GS1 DataBar					
2D codes		QR Code, Micro QR Code, Data Matrix, GS1 Data Matrix					
Logos/graphics		VEC, DXF, BMP, HPGL, JPEG, AI*, EPS* * Adobe Illustrator® required					
Number marking files (max.)		2048 files					

* Adobe Illustrator® required

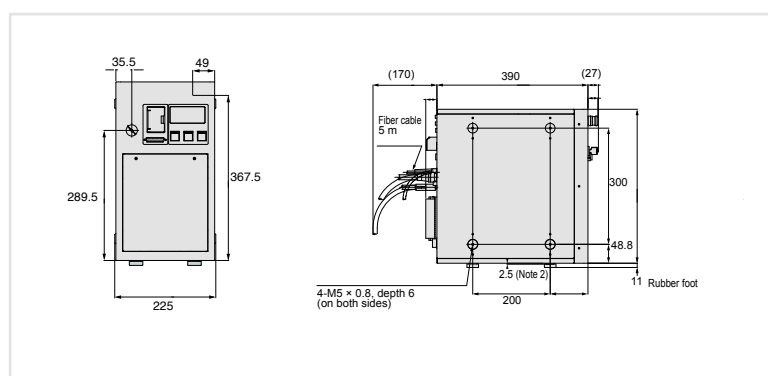
Dimensions

LP-S laser head



Type	Work distance A (mm)	Marking field B (mm²)	Lens diameter C (mm)
LP-SX02-LS1	130	55 x 55	92
LP-SX00-LS1	190	90 x 90	87
LP-SX05-LS1	350	160 x 160	106

LP-S controller



* All measurements in mm

The Panasonic LP-M series stands out for its high speed. With an output of up to 50W, it makes rapid, deep markings on metal. Thanks to its 3D functionality, numerous marking and processing applications can be achieved with highest precision.



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LP-M

The 3D fiber laser system is especially suited for metal processing.

Bar code on cylinder block



Connecting rod



Machine component



Gasket coating removal



Cutting



Cutting out



Engraving

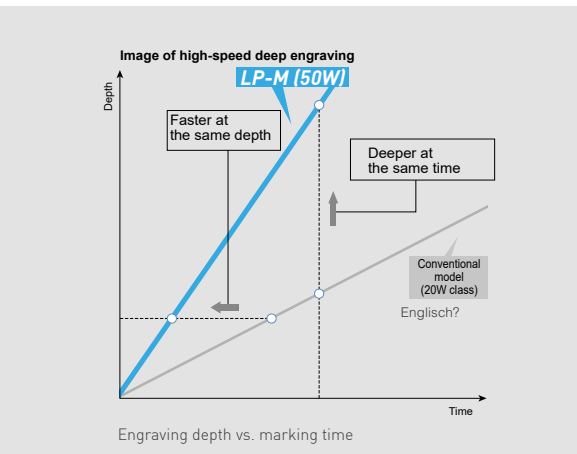


Cleaning



Pipe coupling

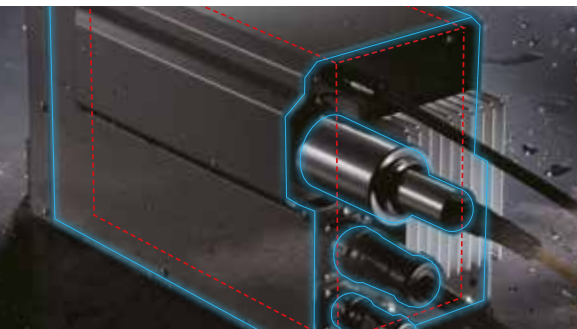




Deep marking or high-speed marking

The depth of the engraving and the applied speed can be coordinated exactly.

The larger the energy amount sent to the workpiece, the faster or deeper the marking. Cycle time reduction greatly enhances productivity and reduces costs.



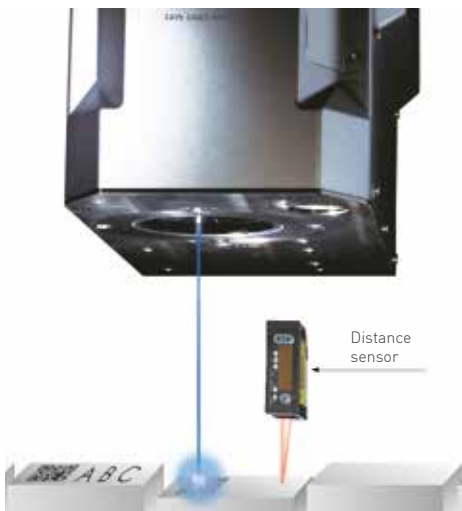
Innovative dual protective enclosure

The LP-M series has been designed to withstand harsh environments containing dust and water. It was our intention to make the laser head fanless and to protect it using an innovative IP64-compliant double protective housing.



Powerful Z-axis control

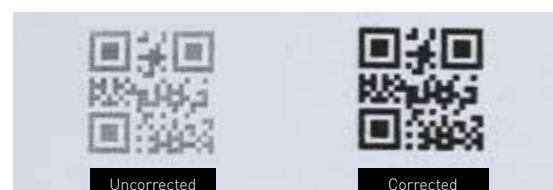
The Z-axis control enables markings on oblique, spherical or cylindrical shapes. Even with height differences of up to 44mm. A stable beam diameter generates markings in excellent quality.



Automatic distance measuring

Customers no longer need to position the workpiece exactly for marking as the displacement sensor detects the product reliably and ensures stable marking quality.

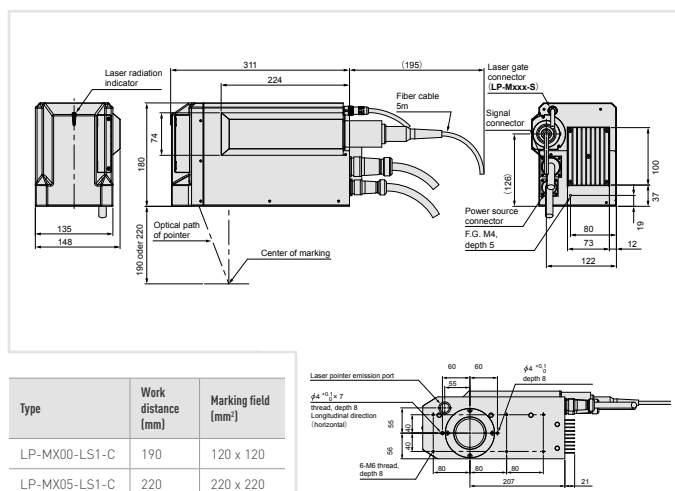
Deviation from the correct marking height: 2mm



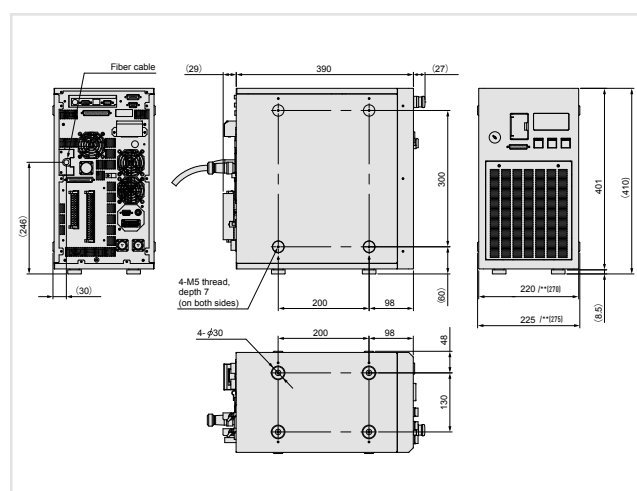
Model		Item	Standard	Large marking field	Standard	Large marking field	Standard
		LP-M200-LS1	LP-M205-LS1	LP-M500-LS1	LP-M505-LS1	LP-MA00-LS1	
Marking laser			Fiber laser λ = 1064nm, laser class 4				
Guide laser			Semiconductor λ = 655nm, laser class 2, output class 1mW				
Output class			20W		50W		100W
Marking field			120mm x 120mm	220mm x 220mm	120mm x 120mm	220mm x 220mm	120mm x 120mm
Work distance			190mm	220mm	190mm	220mm	190mm
3D marking area (Z axis control)			44mm (±22mm)				
Scan method			Galvano scanner				
Scan speed (max.)			12000mm/s				
Line speed (max.)			170m/min				
Workpiece positioning			Stationary and on-the-fly marking				
Fiber cable length			5m				
Net weight	Laser head	12kg					
	Controller	28kg					35kg
Degree of protection (laser head)			IP64				
Cooling method			Laser head: natural air cooling, controller: forced air cooling				
Ambient temperature			0°C to +40°C, storage: -10°C to +60°C				
Ambient humidity			35% to 85%				
Operating voltage			90V AC to 132V AC or 180V AC to 264V AC, 50/60Hz (auto switching)				
Power consumption (max.)	100V AC	390W			580W		740W
	200V AC	510W			720W		830W
Communication interfaces			Digital I/O, Ethernet, RS232C				
Software			Laser Marker NAVI Plus, Logo Data Conversion, Logo Data Editing, ExportVec, Font Maker, NAVILINK 3D				
Software languages			German, English, Japanese, Korean, simplified Chinese, traditional Chinese				
Character types			Upper and lower case letters, numerals, symbols, user-defined characters (up to 50), Japanese characters katakana, hiragana, kanji (JIS level 1 and level 2)				
Functional characters			Current date, counter, lot function, expiry date, laser parameter, registered characters				
Bar codes			CODE39, CODE128, ITF, NW-7, EAN/UPC, GS1 DataBar				
2D codes			QR Code, Micro QR Code, Data Matrix, GS1 Data Matrix				
Logos/graphics			VEC, DXF, BMP, HPGL, JPEG, AI*, EPS* * Adobe Illustrator® required				
Number marking files (max.)			2048 files				

Dimensions

LP-M laser head



LP-M / LP-MA controller



* All measurements in mm
** Dimensions for LP-MA Controller

The new LP-GS is a little miracle: It is one of the smallest CO₂ lasers and yet provides a very high performance. Marking on organic materials, such as leather, paper, wood, but also on plastics, i. e. electronic components, is one of its strengths. Due to its compact size, it can be installed in all positions,

thus combining freedom in design with the low cost and planning security of a standard system. The configuration of the laser marking system can be simplified by using the Bluetooth technology.



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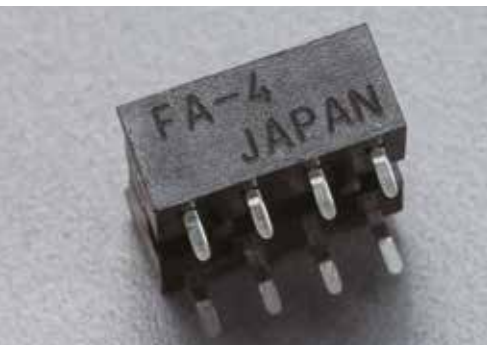




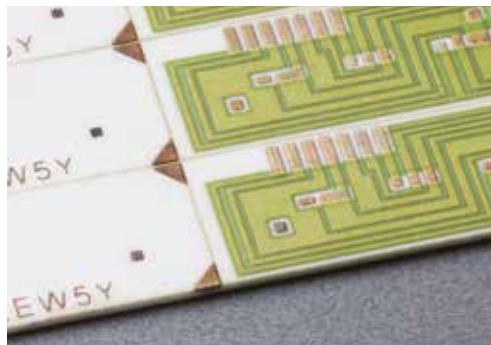
LP-GS

The revolutionary size of the LP-GS series CO₂ laser marking system LP-GS is topped by its high power density.

Connector



Circuit board



Capacitor



Molded resin part



Packaging



Aluminum packaging



Labels

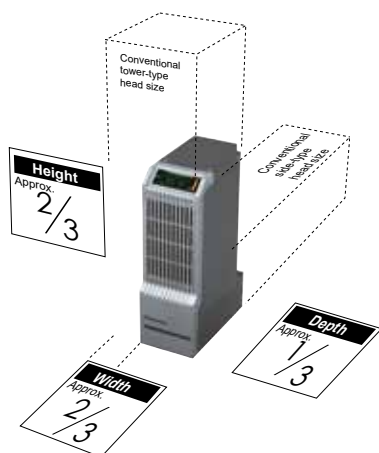


Film processing



Optical fiber





Revolutionary size and large marking field

The LP-GS series laser heads have considerably decreased in size and weight. Also, it was possible to significantly reduce the size of the controller with the effect that the required space and costs also decrease. The laser head can be installed in any direction (top, bottom, left or right).

The cable between the laser head and the controller is flex-resistant. In this way, the laser head can be handled on the production line and placed exactly above the respective marking position, which ensures a high marking quality.

Z-axis control

In the past, the position of the head had to be adjusted to the thickness of the circuit board every time. But nowadays the LP-GS series is fitted with a Z-direction control mechanism that automatically adjusts the work distance based on the thickness of the circuit board. This ensures a consistent marking quality and saves time during the installation.



With Z-axis control

Without Z-axis control



New software: Laser Marker NAVI smart

The new PC configuration software Laser Marker NAVI smart is included in the product package. It is compatible with Windows® 10. Touch panel control can be realized by a tablet PC. A comfortable, wireless access via Bluetooth is a matter of fact. Troublesome laying of cables will not be required. Configuration and installation is simple.

Panasonic has designed the LP-400 series laser marking systems for industries with particularly high demands in terms of speed and functionality. LP-400 series consists of CO₂ laser marking systems with an output power of 10W, 20W or 30W that, due to an ultra fast galvanometer scanner can mark moving objects on-the-fly at a line speed of up to 240m/min. The incorporated encoder interface permits optimization of marking and flying speed.

Thanks to their small laser beam diameter of down to 95µm, certain models are especially well suited to apply very small markings on complex workpieces. Due to their somewhat shorter wavelength of 9.3µm, some LP-400 models are ideal for marking clear plastics such as PET or PC.



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LP-400

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

Insulation removal



PET bottles



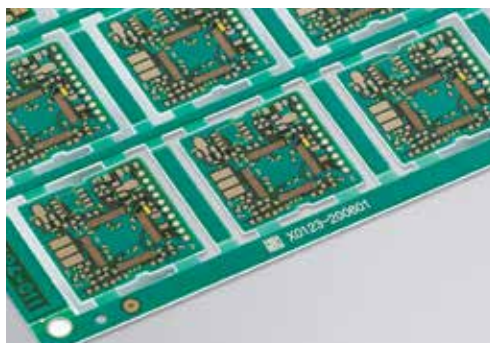
Pouch packaging



Ceramic capacitors



Printed circuit boards



Glass



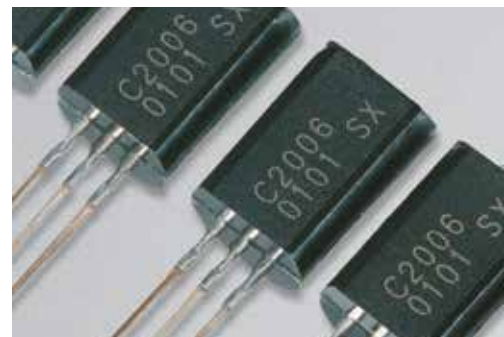
Ceramic circuit board

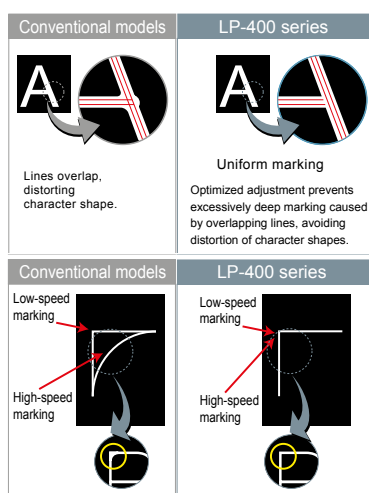


Rubber gaskets



Transistor





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 response times. Thus, the LP-400 series achieves remarkably shorter marking times. Capable of marking up to 700 characters per second at line speeds of up to 240 m/min, the laser system improves productivity. The LP-400 series automatically determines the most efficient marking order, further reducing marking time. Panasonic's proprietary galvanometer scanner keeps marking accurate and aligned, even at high speeds.

Unique marking quality

Technologies behind high-quality marking

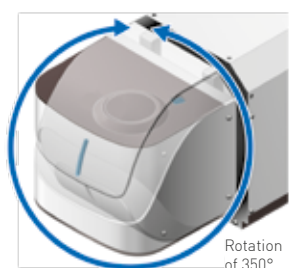
The LP-400 series takes advantage of a number of new technologies compared to conventional models to deliver high-definition marking. An advanced control functionality automatically adjusts the marking strength at locations susceptible to deep marking such as the beginning and ends of lines and areas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

High-stability output

Extensive lineup

The laser output stability of within $\pm 3\%$ ensures consistent marking and high-quality processing over the full output range. The LP-400 series consists of several models with different laser output and wavelength options: 10W, 20W, 30W and two available laser wavelengths: 10.6 μ m and 9.3 μ m. Thus, you can realize many applications.

The proprietary rotating laser head found on standard models of the LP-400 series and the additional freedom of installation provided by a selection of tower head models meet a variety of needs.



Standard model

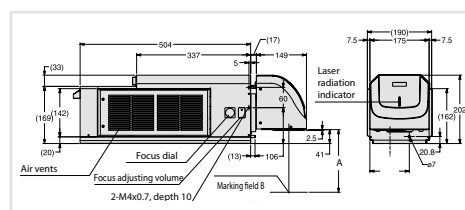


Tower model

Model	Item	Small marking field			Standard			Large marking field	
	Standard	LP-411U-LS1-C	LP-421S9U-LS1-C	LP-431U-LS1-C	LP-410U-LS1-C	LP-420S9U-LS1-C	LP-430U-LS1-C	LP-425S9U-LS1-C	LP-435U-LS1-C
	Tower	LP-411TU-LS1-C	LP-421S9TU-LS1-C	LP-431TU-LS1-C	LP-410TU-LS1-C	LP-420S9TU-LS1-C	LP-430TU-LS1-C	LP-425S9TU-LS1-C	LP-435TU-LS1-C
Marking laser		CO2 laser λ = 10.6μm [9.3μm LP 42xS9U], laser class 4							
Guide laser		Semiconductor λ = 650nm, laser class 2, output class 1mW							
Output class		10W	20W	30W	10W	20W	30W	20W	30W
Marking field		55mm x 55mm			110mm x 110mm			160mm x 160mm	
Work distance		111mm			185mm			262mm	
Focus adjustment (manually)		±2mm			±3mm			±4mm	
Scan method		Galvano scanner							
Scan speed (max.)		6000mm/s			12000mm/s			12000mm/s	
Line speed (max.)		85m/min	120m/min		170m/min	240m/min		240m/min	
Workpiece positioning		Stationary and on-the-fly marking							
Power supply length		5m							
Net weight	Laser head	16kg	20kg		16kg	20kg			
	Controller	11kg	12kg		11kg	12kg			
Cooling method		Laser head, controller: forced air cooling							
Ambient temperature		0°C to +40°C, storage: -10°C to +60°C							
Ambient humidity		35% to 85%							
Operating voltage		90V AC to 132V AC or 180V AC to 264V AC, 50/60Hz (auto switching)							
Power consumption (max.)	200V AC	700W	1200W		700W	1200W			
Communication interfaces		Digital I/O, Ethernet, RS232C							
Software		Laser Marker NAVI, Logo Data Conversion, Logo Data Editing, ExportVec, Font Maker							
Software languages		English, Japanese							
Character types		Upper and lower case letters, numerals, symbols, user-defined characters (up to 50), Japanese characters katakana, hiragana, kanji (JIS level 1 and level 2)							
Functional characters		Current date, counter, lot function, expiry date, laser parameter, registered characters							
Bar codes		CODE39, CODE128, ITF, NW-7, EAN/UPC, GS1 DataBar							
2D codes		QR Code, Micro QR Code, Data Matrix, GS1 Data Matrix							
Logos/graphics		VEC, DXF, BMP, HPGL, JPEG, AI*, EPS* * Adobe Illustrator® required							
Number marking files (max.)		2048 files							

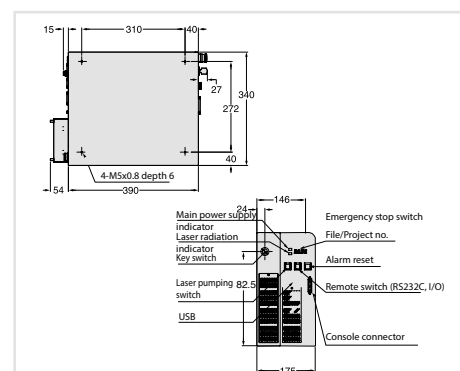
Dimensions

LP-400 laser head

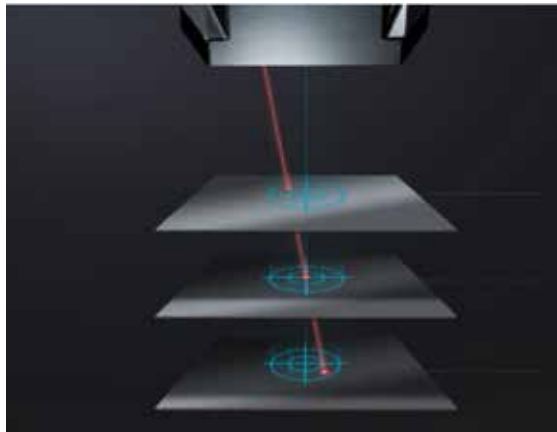


Type	Work distance (mm)	Marking field (mm²)
LP-4X1-LS1-C	111	55 x 55
LP-4X0-LS1-C	185	110 x 110
LP-4X5-LS1-C	262	160 x 160

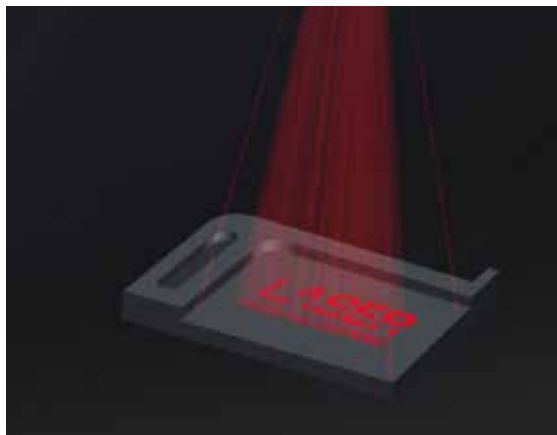
LP-400 controller



* All measurements in mm

**Focus guide laser**

Panasonic laser marking systems incorporate a guide laser to easily check and adjust the marking position and the work distance.

**Simulation before marking**

The well visible, red guide laser indicates the marking position in advance. This marking simulation offers the possibility to check and adjust the marking position prior to executing the real marking process.

**Installation directions**

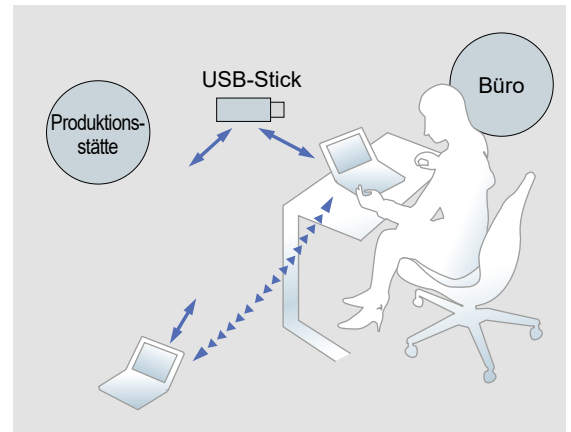
Because of their robust design, Panasonic fiber and CO₂ laser marking systems can be installed at almost any orientation, enabling an easy integration in existing machines, even with limited access or space.

**On-the-fly marking**

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

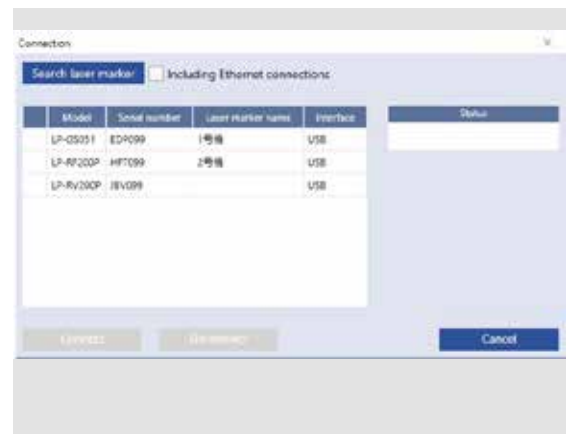
Offline configuration

Now you can create and save data at a remote location such as an office and later transfer it to the laser marking system on-site for marking. You do not need an on-site computer, you can transfer the data directly by using a memory stick and a touch panel to the laser system for marking.



Batch management

You can control multiple laser marking systems by a single computer for centralized management so it is possible to transfer the configuration data to all with your PC connected marking systems. Easy, straightforward monitoring of settings and operational status rounds off the application's management capabilities.



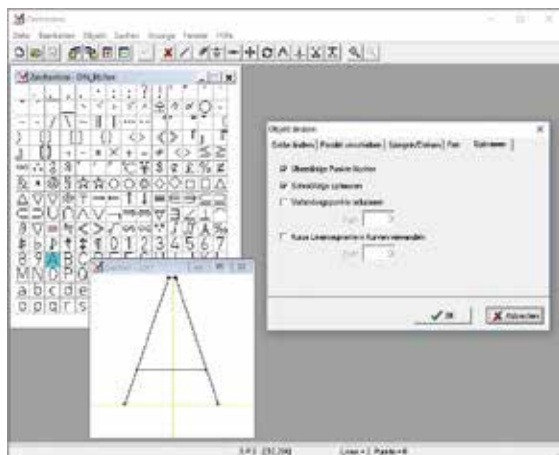
Laser Marker NAVI PC software

The Laser Marker NAVI software is a simple, intuitive mouse-driven interface that makes it easy to configure marking settings and positions in files, allowing you to easily plan and create marking layouts. The software also allows your computer to monitor the system operation, and you can check error logs and the inputs and outputs.



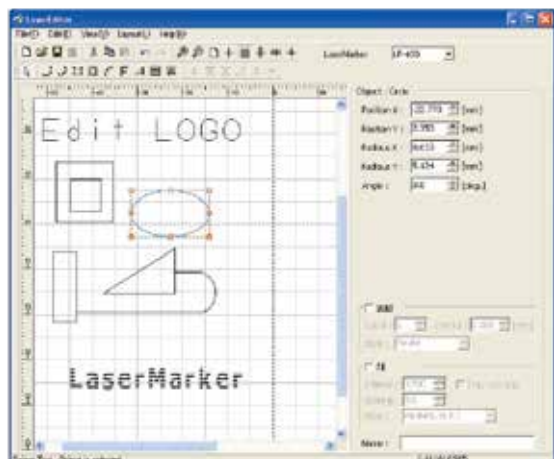
Software and hardware features

- | | | | |
|----------------------------------------|-----------------------------------|---------------------------------------------------|----------------------------------|
| › Marking order optimizing | › Bold marking | › Marking image monitor | › Work distance indication |
| › Automatic correction of intersection | › Logo data transfer to USB media | › Individual output and speed settings per object | › Marking time measurement |
| › Counter function | › I/O monitor | › Step & repeat | › Font/logo creation and editing |
| › Current date/time | › Font selection | › Serial data processing & marking | › Power check/correction |
| › Expiry date | › Marking field indication | › Multilayered marking | › I/O interface |
| › Lot function | › Control of user access | › Backup | › VGA, USB |
| › Logos/graphics | › Error code display | | |



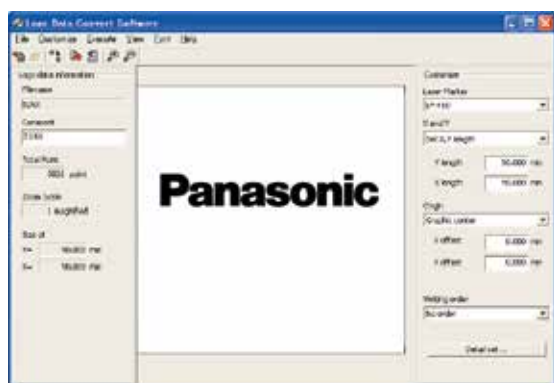
Font creation software

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



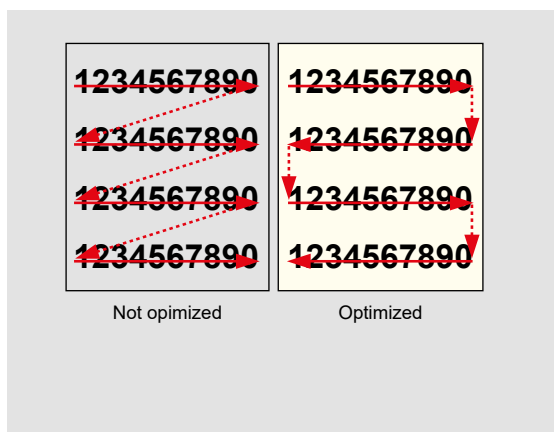
Logo data editing software

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 Data Conversion software

The software to convert logo data outputs logos and other graphical data in DXF, HPGL, BMP, or JPEG format in the VEC format. Data created by Adobe Illustrator® such as AI and EPS can be converted by the included software "ExportVec".

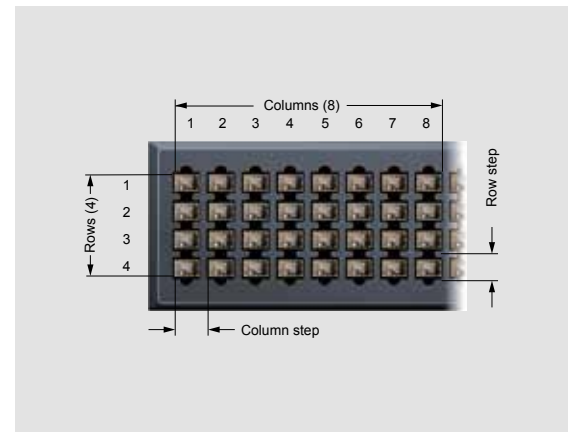


Marking order optimization

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

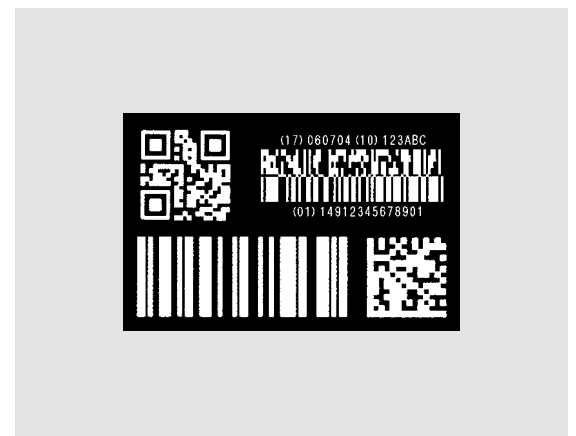
Step & repeat

Step & 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.



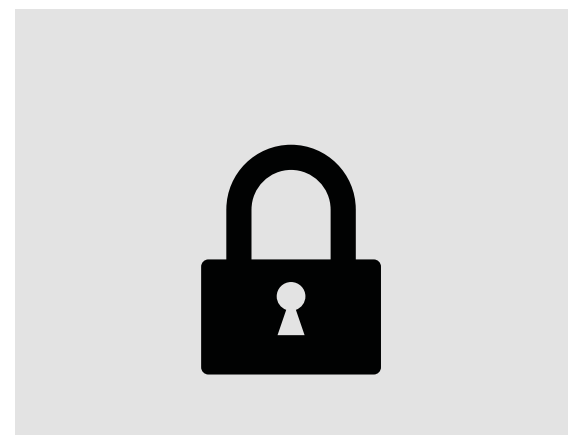
Marking 1D and 2D codes

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.



Password

A password feature improves safety and security by restricting the users' access to certain information and system settings. Thus, you can avoid to accidentally overwrite your predefined settings. The whole process of parameterization and maintenance becomes stable.



Help function

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



Maintenance & Services for Panasonic lasers systems

To ensure reliable operation with consistent high-quality marking results Panasonic Industry focused on the robustness of the Panasonic Laser Marking Systems. Even in environments with a high exposure of dust or oil mist it is only necessary to clean the lens protection glass with a dry and soft cloth. In order to optimize the running costs and reduce downtime of the laser marker the customer can easily change limited-life parts of the controller like fan filters, the fans itself, the internal battery or the contactor kit. Even changing the lens protection glass on the head unit does not require Panasonic personnel. However, our customers can expect to receive comprehensive support provided by trained experts.

Besides a comprehensive maintenance support Panasonic Industry offers a wide-ranging portfolio of customer support to ensure an optimal and cost-effective usability. Our services start with consultation and feasibility studies, assistance in the set-up phase up to maintenance and troubleshooting. We establish a close relationship with our customers from the pre- to aftersales stage and beyond the product life cycle itself.





Our service packages

Outstanding service is a matter of course for us. There we offer different services in three different services packages according to your needs.

- › Guaranteed availability of all series specific spare parts during the entire contract period
- › Individual spare parts bundles
- › 48h spare part and replacement system delivery
- › Emergency hotline
- › Firmware update
- › Training for the operators
- › If required: short-term support by Panasonic service technicians

Included service features	Maintenance Service	Replacement Service	Premium Service
Inspection: Visual inspection and a functional test	✓		✓
Preventive maintenance	✓		✓
Firmware update	✓		✓
Recommended actions for operators	✓		✓
Prioritized repair	✓		✓
Replacement system for the duration of the repair period		✓	✓
Prioritized troubleshooting services	✓	✓	✓
Guaranteed availability of all series specific spare parts during the entire contract period			✓
24/48h spare part and replacement system delivery		✓	✓
Series-specific spare part packages			✓
Emergency hotline: advanced technical support until 22:00 CET			✓
10% discount on spare parts for inhouse repairs			✓



Workstation

Panasonic offers a stand-alone laser protective enclosure as a manual manufacturing workplace for the production of prototypes and small individual series. The workstation LC 3000 is able to tackle numerous tasks and offers a wide range of possible applications. Panasonic currently offers three different models with the required flexibility of movement: with a rotary indexing table of $\varnothing 650\text{mm}$, with 360° rotation axis or with X, Y, Z axis movement.



Touch panel

With the color touch panel LP-ADP40 a simple operation of the laser marking systems is guaranteed. Even persons not used to operating machines are able to control the system easily. The intuitive and user friendly software grants operator access to all setting screens. The ergonomic touch panel can be mounted directly at the machine or used as a handheld device.



Extraction and filtration systems

Panasonic recommends employing an extraction unit when using a laser marking system. This extends the service life of the laser and protects the operator from health hazards.

Depending on the application, different extraction units are available, i. e. to mark PVC.



Laser protective goggles

We offer different protective goggles, especially designed for Panasonic laser marking systems. These goggles are exceptionally light, have a very good and comfortable fit and enable a safe all-round visibility. They comply with European laser safety standards EN 207/EN 208.

More information at www.laser.panasonic.eu



North America

Europe

Asia Pacific

China

Japan

Panasonic Electric Works

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North & South America		
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Asia Pacific/China/Japan		
► China	Panasonic Electric Works Sales (China) Co. Ltd.	Tower C 3rd Floor, Office Park, NO.5 Jinghua South Street, Chaoyang District, Beijing 100020, Tel. +86-10-5925-5988, Fax +86-10-5925-5980
► Hong Kong	Panasonic Industrial Devices Sales (HK) Co., Ltd.	Suite 301, 3/F, Chinachem Golden Plaza, 77 Mody Road, TST East, Kowloon, Hong Kong, Tel. +852-2529-3956, Fax +852-2528-6991
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