

Panasonic

ideas for life

NEW

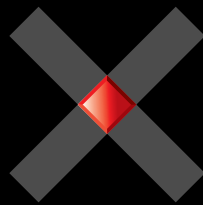
For metals
FAY^b Laser Marker

LP-S SERIES

FDA
Conforming to
FDA regulations

CE
Conforming to
Low voltage
and EMC Directive

High Output



Environmental
Resistance



LP-S SERIES

Advancing Laser Marker Technology

Panasonic released the first fiber laser marker (FAYb laser*) in 1999, pioneering a new laser marking technology. Since then, we have strived to expand our technology base to contribute to the development of the laser marker field. The new **LP-S** series utilizes a high powered, 42 W FAYb laser which produces durable printing results that will not deteriorate over time. With a sealed head design, marking can be done quickly and effectively, even in harsh environments. The **LP-S** series is the next evolutionary step in the advancement of fiber laser marking technology.

* FAYb: Fiber Amplified Ytterbium



FAYb Laser Marker for metals

LP-S series

High Output

High power for deep engraving and high-speed printing



Environment Resistance

Robust body for durability even in harsh environments



Cam shafts



Engine valves



Bearings



Connecting rods



High Output

High power enabling deep engraving and high-speed printing

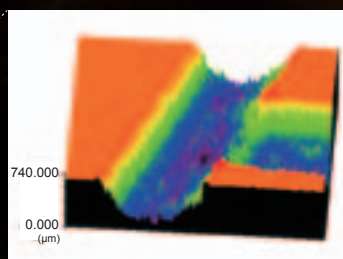
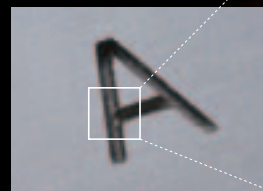
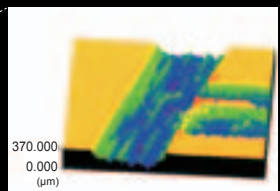
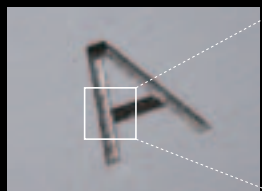
The **LP-S500** 42 W laser marker* is the highest power laser marker produced by Panasonic. It is most suitable for power-intensive printing such as deep engraving or black printing on metals. Additionally, it offers expanded capability, such as cutting, for various machining applications.

* **LP-S500** with laser output adjusted within $\pm 5\%$

High output for superior deep engraving performance

The 42 W high-power output enables high-speed deep engraving and black printing on metal workpieces. This allows for quick and accurate marks to be performed on precision metal parts, such as bearings and tools.

■ Cross-section image of engraved location



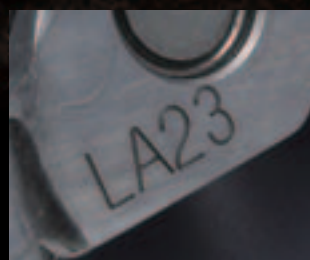
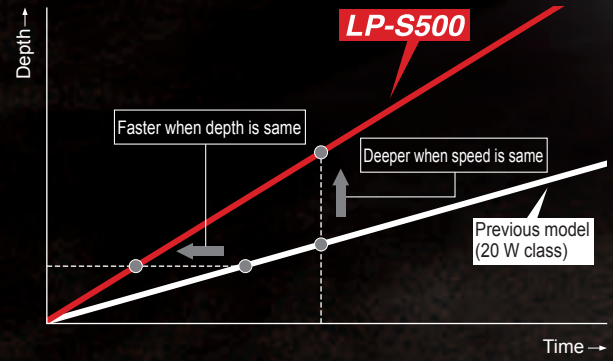
Previous model (20 W class)

LP-S500 [Almost double the depth with the same takt time*]
* Varies depending on workpiece.

High speed for enhanced productivity

Faster and deeper printing 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 printing takt time greatly contributing to the improvement of productivity.

■ Simulated characteristics of high-speed deep engraving



Rocker arms



Crank shafts



End mills



Chains

LP-S series
FAYb LASER MARKER

POWERFUL
&
HIGH SPEED

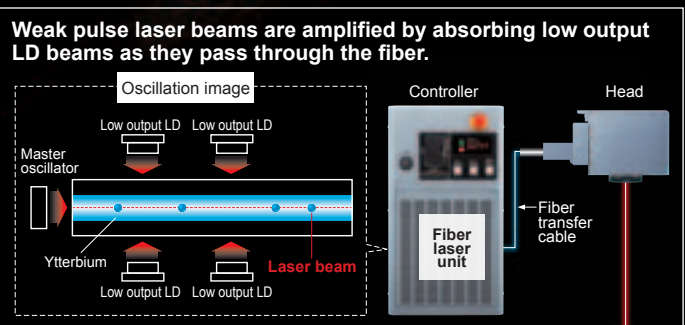
■ Oscillation principle of FAYb laser

The FAYb laser is a revolutionary whereby low intensity laser beams emitted from the master oscillator are amplified as they pass through a Ytterbium (Yb) treated fiber, resulting in a stronger laser beam output.

■ Highly efficient and energy-saving

Conversion loss is minimal as the FAYb laser amplifies the laser beams in the fiber, achieving excellent beam-to-beam conversion efficiency of approximately 50 %.

Power consumption is minimized despite the high output, contributing to reduction in CO₂ emission.



Environment Resistance

**Robust body
even in
harsh environments**

The IP67G protected structure*1, a first in the laser marker industry*2, ensures durability against dust, water droplets, and oil mist at manufacturing sites.

*1: Head section only

*2: Data obtained by Panasonic Electric Works SUNX as of December 2010



Sealed, IP67G rated head enclosure

Use of high quality parts and well engineered design, have resulted in a robust IP67G enclosure.

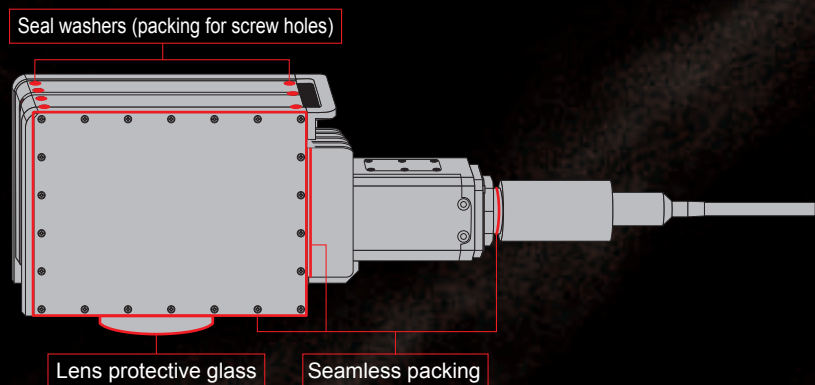
Superior design

The **LP-S** series features minimum frame seams. Minor seams and screw holes are completely sealed, producing high sealing performance. This performance is sustained by applying constant pressure to the sealed areas. Maximum cooling efficiency is also achieved allowing the use of a fanless head for thorough cooling.

High quality protection parts

Seamless sealing materials are used that have low water absorption and excellent oil resistance properties. Connectors are dust, water, and oil-proof. The lens has a protective glass cover.

Composition



Notes:

- 1) The product has a dust- and water-proof structure durable under conditions specified by IEC/JIS standards. Although oil-proof performance is evaluated using typical lubricants and cutting oils, this does not apply to all types of oils.
- 2) The parts must be attached correctly so that the **FAYb Laser Maker** can fully satisfy its environment resistance performance.
- 3) Refer to page 11 for details.

What is IP?

IP indicates the degree of protection from water, human body, or solid foreign objects.

This is based on IEC/JIS standards.

IP6X: Prevents chips from entering inside the product (complete prevention).

IPX7: Prevents water from entering inside the product when it is immersed under water under the specified conditions.

G: Indicates the oil protection structure specified by JIS standards and able to prevent oil drops or oil foam from entering from any direction.

User-Friendly

Industry's first revolutionary fiber unit release mechanism for enhanced flexibility of equipment design

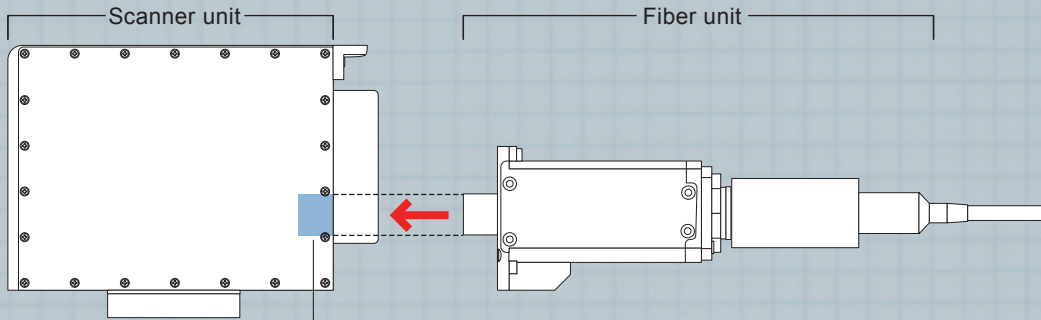


Removable fiber unit

Enhanced flexibility of equipment design

Panasonic's unique laser head design allows the fiber unit to be easily removed from the scanner unit. This revolutionary mechanism is a first in the fiber laser marker industry*1. Because the fiber unit is removable, it can be easily incorporated into equipment for easy installation and enhanced flexibility of equipment design.

■ View showing fiber unit removal



Partition wall

Unique partition wall structure*2 to prevent dust from entering inside the partition wall even when the fiber unit is removed

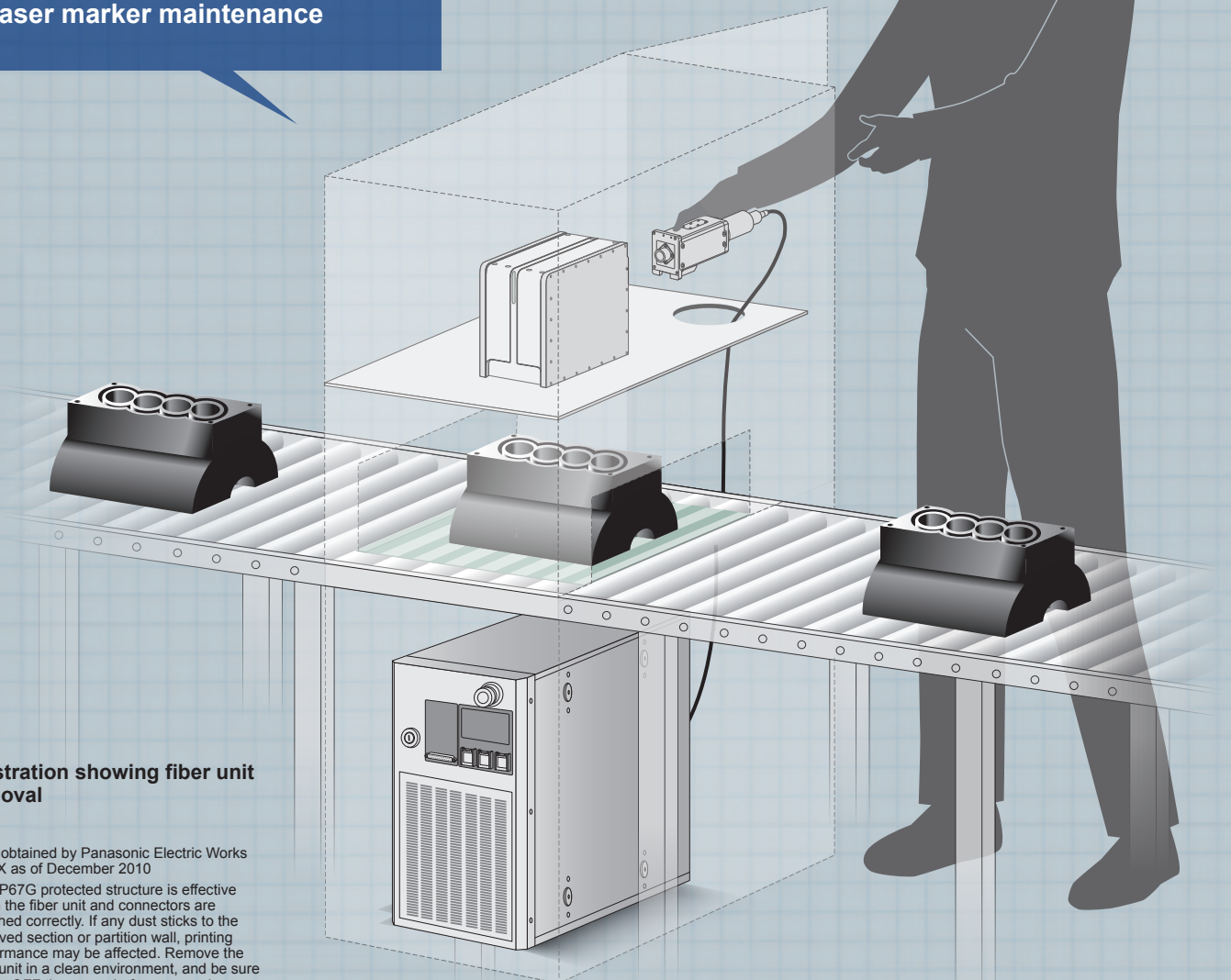
Removable fiber unit offers:

Space saving and cost reduction

Simple assembly

Simple disassembly for transportation

Easy laser marker maintenance



■ Illustration showing fiber unit removal

*1: Data obtained by Panasonic Electric Works SUNX as of December 2010

*2: The IP67G protected structure is effective when the fiber unit and connectors are attached correctly. If any dust sticks to the removed section or partition wall, printing performance may be affected. Remove the fiber unit in a clean environment, and be sure to turn OFF the power before removal.

System Safeguards

Diverse functions and attachments

Safety features

Built-in power monitor



Reassurance Printing energy measurement

Measuring the energy during printing in real time contributes to stabilizing the printing quality.

Safety Laser OFF in case of output error

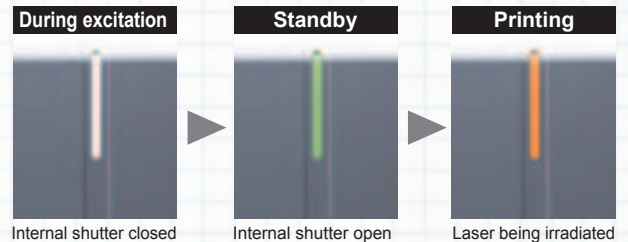
The print trigger signal and laser output are constantly monitored so that laser excitation is automatically turned OFF if the cable is disconnected accidentally. This safety feature contributes to accident prevention.

Reassurance Output measurement

This function allows you to check the current laser output. Numerical control is possible during equipment maintenance.

Safety Laser irradiation status lamp

The head is equipped with a three-color lamp to indicate the laser irradiation status. This is a safety feature that allows the operator to instantly check the status of laser unit and internal shutter operations.



Reassurance Lens protection glass

The outside of the laser beam port is equipped with protective glass to protect it from dust or damage, ensuring stable operation.

Safety Emergency stop switch

The front of the controller is equipped with an emergency stop switch, enabling the laser to be stopped immediately in an emergency.

Operability

Touch panel console optional

Simple operation

A color touch panel is used so that even persons unfamiliar with machine operation can easily handle it. An intuitive and easily understandable software package allows the operator to smoothly access any setting screens, and the ergonomically designed console is easy to operate whether hand-held or directly attached to a machine.

PC Software

Flexible programming and monitoring

The laser marker comes standard with PC software that allows for easy configuration of print data and layout, via a familiar PC based environment. Data can also be created on a PC in offline mode, which means that data configuration is possible without stopping the laser marker. In addition, connecting a PC to the laser marker allows you to check the operation status, I/O status or error log.

Standard peripherals

* Operation check is required in advance.

Quick and simple setup

Laser marker setup and operation is made simple by connecting a commercially available monitor and a mouse. When the monitor is placed in an easy-to-view position, the printed content can be viewed from a distance and any changes made to the printed content can easily be verified.



Touch panel console
* An inlaid composite image is used for the screen.

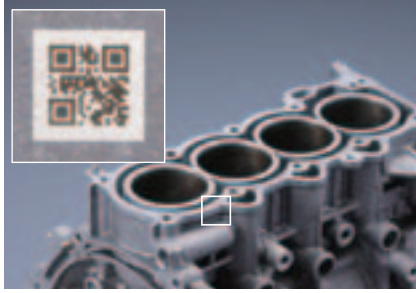
Built-in USB port

Configuration details can be stored on a commercially available USB flash drive, enabling backup of printing conditions or copying to multiple laser markers.

* Operation check is required in advance.



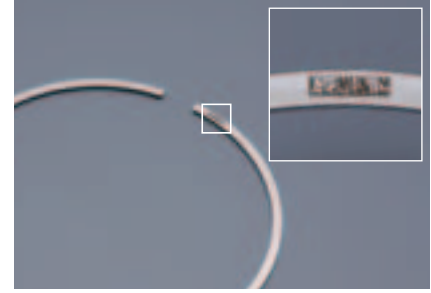
Marking samples



Cylinder blocks



Pressure transducers



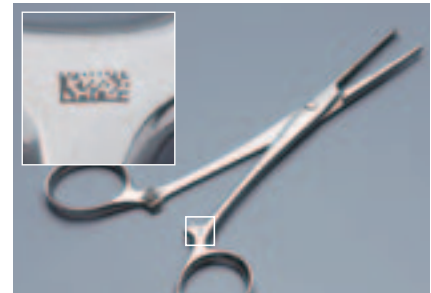
Piston rings



Tools (carbide)



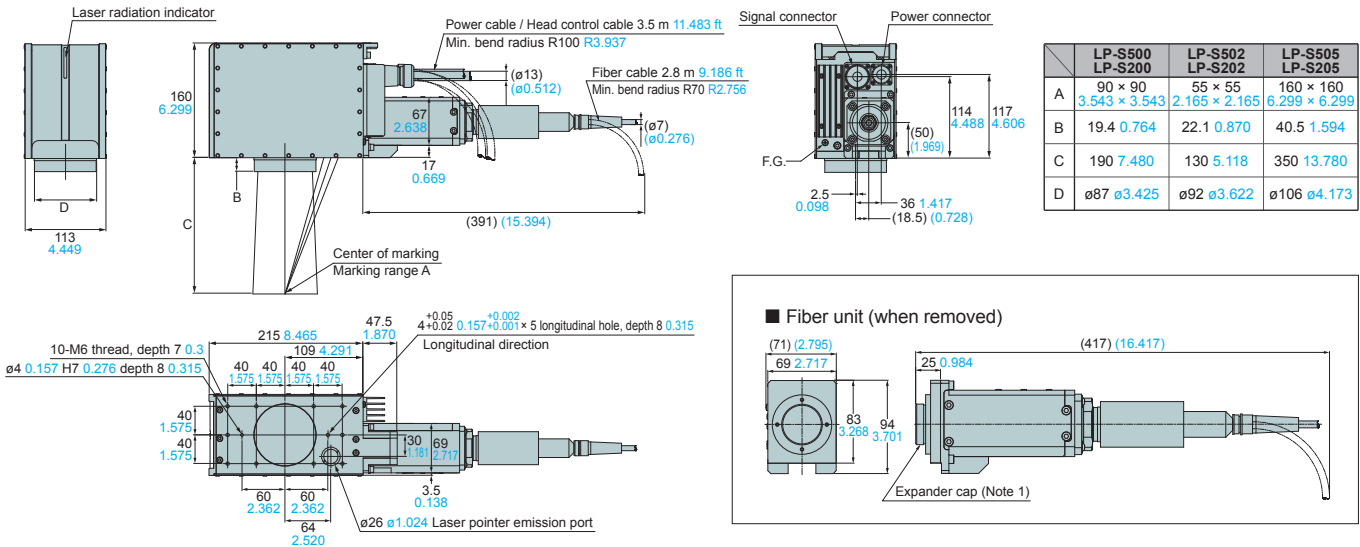
Tweezers



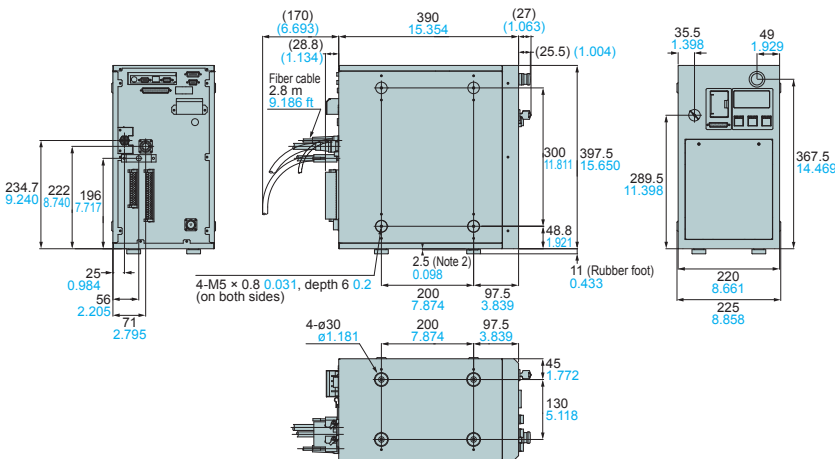
Medical instruments

Dimensions (Unit: mm in)

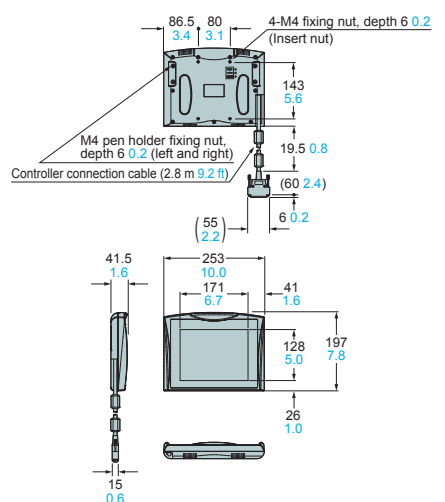
Head



Controller



Console LP-ADP40 (Optional)



- Notes: 1) The expander cap should be removed when the scanner unit is connected.
 2) Indicates the height at the protruding section when the rubber foot are not attached. The rubber foot can be attached to either the right or left side of the controller.

Specifications

Item	Type Model No.	LP-S500			LP-S200		
		Standard LP-S500	Small spot LP-S502	Wide-area LP-S505	Standard LP-S200	Small spot LP-S202	Wide-area LP-S205
Distance from target object (Note 1)		190 mm 7.480 in	130 mm 5.118 in	350 mm 13.780 in	190 mm 7.480 in	130 mm 5.118 in	350 mm 13.780 in
Marking laser		Class 4 Yb fiber laser; wavelength: 1,064 nm 0.042 mil					
	Average output	42 W (±5 %) (pulse oscillation)			17 W (±5 %) (pulse oscillation)		
Guide laser / pointer		Class 2 semiconductor laser; wavelength: 655 nm 0.026 mil					
Marking range		90 mm × 90 mm 3.543 in × 3.543 in	55 mm × 55 mm 2.165 in × 2.165 in	160 mm × 160 mm 6.299 in × 6.299 in	90 mm × 90 mm 3.543 in × 3.543 in	55 mm × 55 mm 2.165 in × 2.165 in	160 mm × 160 mm 6.299 in × 6.299 in
Scanning method		Galvano scanning method					
Character settings (character height, width) (Note 2)		0.1 to 90 mm 0.004 to 3.543 in	0.1 to 55 mm 0.004 to 2.165 in	0.1 to 160 mm 0.004 to 6.299 in	0.1 to 90 mm 0.004 to 3.543 in	0.1 to 55 mm 0.004 to 2.165 in	0.1 to 160 mm 0.004 to 6.299 in
Marking spacing (character spacing, line pitch) (Note 2)		0 to 90 mm 0 to 3.543 in	0 to 55 mm 0 to 2.165 in	0 to 160 mm 0 to 6.299 in	0 to 90 mm 0 to 3.543 in	0 to 55 mm 0 to 2.165 in	0 to 160 mm 0 to 6.299 in
		Arced output: -180° to +180° (variable in 0.01° steps)					
Character arrays		Linear, proportional, monospaced, arced					
Character types		English uppercase letters, English lowercase letters, numerals, katakana, hiragana, kanji (JIS No. 1 and No. 2 standards), symbols, user-registered characters (up to 50)					
Barcodes		Code 39, Code 128, ITF, NW-7, JAN/UPC, RSS-14 (GS1 DataBar), RSS (GS1 DataBar) Limited, RSS (GS1 DataBar) Expanded					
2D codes		QR Code, Micro QR Code, Data Matrix, GS1 Data Matrix					
Composite codes		RSS-14 (GS1 DataBar) CC-A, RSS-14 (GS1 DataBar) Stacked CC-A, RSS (GS1 DataBar) Limited CC-A, UCC / EAN COMPOSITE etc.					
I/O		Input terminal, Output terminal, I/O connector					
Interface		RS-232C, Ethernet					
Cooling method		Head: Naturally air cooling, Controller: Forced air cooling					
Power voltage		90 to 132 V AC, or 180 to 264 V AC (automatic switching), 50 / 60 Hz					
Power consumption		530 VA or less (100 V AC), 650 VA or less (200 V AC)					
Protection degree		Head: IP67G					
Ambient temperature		0 to +40 °C +32 to +104 °F (No dew condensation or icing allowed)					
Ambient temperature for storage		-10 to +60 °C +14 to +140 °F (No dew condensation or icing allowed)					
Ambient humidity		35 % to 85 % RH (No dew condensation or icing allowed)					
Applicable standards		FDA regulations, CE marking					
Net weight	Head	7.5 kg	7.5 kg	8 kg	7.5 kg	7.5 kg	8 kg
	Controller	25 kg			24 kg		
Laser Marker Driver & Utility OS (Note 2)		Microsoft Windows® 7 Professional (32 bit) / Vista Business (32 bit) / XP Home Edition / XP Professional (Confirmed on English OS and Japanese OS)					

Notes: 1) Distance from target object varies by approx. ±0.5 mm **±0.020 in** from model to model. (**LP-S505** and **LP-S205**: approx. ±2 mm **±0.079 in**)
 2) Variable in 0.001 mm **0.0004 in** steps.
 3) Windows® 7 Professional, Vista Business, XP Home Edition, and XP Professional are trademarks or registered trademarks of Microsoft Corporation in the United States and other countries.
 *China models are available, too. Please contact our sales office.

[Dust-, water- and oil-proof performance]

- The head of the FAYb Laser Marker (excluding controller) offers dust- and water-proof performance conforming to IEC/JIS protection grade IP67. Oil-proof performance conforms to IPXXG, and offers protection against some lubricant and cutting oils. Tests are conducted according to the specified environments, times, and methods. However, dust-, water- and oil-proof performance is not guaranteed in all environments. Refer to IEC 60529 (JIS C 0920) for details of testing methods. Oil-proof performance is evaluated using typical lubricants and cutting oils (see table below), but this performance may not be fully achieved depending on the type of oil.
- The protection structure fully achieves performance only when the fiber unit, connectors, focus adjustment unit cover and lens protection glass are attached correctly.
- Although the product features a protection structure, it cannot be used submerged in water or oil.

Test oils	Oil type	Product name	Oil type	Product name
		Water-insoluble cutting oil	Yushiron Cut Abas BM405	Lubricant
	Water-soluble cutting oil	Daphne Alpha Cool EW, Yushiroken EC50T5	Machine oil	Daphne Mechanic Oil 46

Precautions for Proper Use

Laser safety

- This product is classified as a Class 4 Laser Product in IEC/JIS/FDA regulations 21 CFR 1040.10 and 1040.11. Never look at or touch the direct laser beam and its reflection.
- The following labels are attached to this product. Handle the product according to the instruction given on the warning labels. (Warning labels are not shown in the product photographs in this catalog.)
- The laser used by this product generates infrared light that is invisible to the human eye. Use particular caution when the laser is operating.

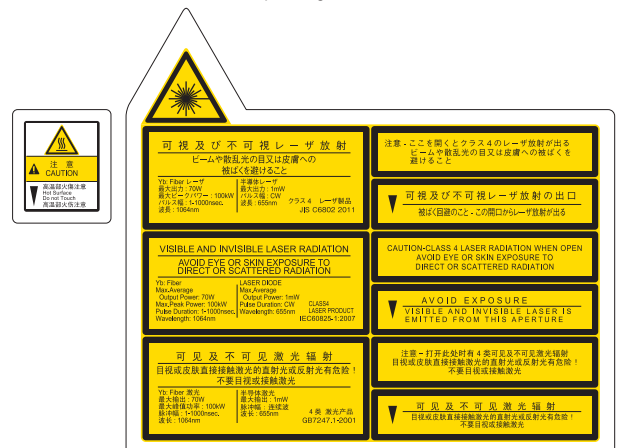
Maintenance

- Air filter:** Regularly clean the air filter attached to the FAYb Laser Marker to maintain cooling effects.
- Laser pointer emission port:** Dust or chips adhering to the laser pointer emission port may affect the printing quality or seriously damage the laser marker. Clean the laser pointer emission port regularly.

Recommended use of a dust collector

- Depending on the object being marked, harmful gasses or smoke that have a detrimental effect on the human body or the laser marker may be generating during marking. If your application falls under this description, use a dust collector.

*For more information, contact your sales representative.



FAYb Laser Marker Lineup

The product lineup includes 4 series: **LP-S** series, **LP-Z** series, **LP-V** series and **LP-W** series. Various applications are supported and compatibility among series is ensured, including the previous **LP-F** series.

LP-V series

Short pulse laser marker for clear chromogenic marking on resin surfaces

Enables beautiful chromogenic marking on resin surfaces by fully utilizing the characteristics of short pulse laser beams with minimal thermal influence.



IC



Resin molded products



LP-Z series

3D-control laser marker for wide area marking

Built-in 3D mechanism allows marking on uneven, curved, sloped or spherical surfaces. Batch marking is possible over a wide area (330 mm × 330 mm **12.992 in × 12.992 in**) on a large workpiece or multiple workpieces, enabling enhanced productivity.



Bearings
(black printing on curved surfaces)



Resin molded products
(chromogenic marking on uneven surfaces)



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electronics

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