



## Short Form Laser Markers

**SUNX – Laser Markers by Panasonic Electric Works**

01/2010



## ■ **FAYb Laser Markers**

FAYb lasers are useful for marking metal, e.g. iron, aluminum, stainless steel, and other materials. Metal medical instruments can be marked by color change. FAYb Laser Markers can also be used to induce color change in resins, e.g. PE (polyethylene), PC (polycarbonate), PP (polypropylene), POM (polyoxymethylene), PBT (polybutylene terephthalate), ABS (acrylonitrile butadiene styrene), EP (epoxy), PA (polyamide/nylon), etc.

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## ■ **CO<sub>2</sub> Laser Markers**

Resins such as polycarbonate, PET and PVC can be marked. Cutting plastic and rubber foil or removing cable isolation is possible. Paper, glass, PCB boards, IC and microchips, wood, paper boxes, plastic bottles are only a few examples of materials that can be marked with CO<sub>2</sub> lasers.

*Page 8*



## ■ **Marking applications**

The image of a blister package at the left illustrates just one of the many applications our Laser Markers have mastered. Besides pharmaceuticals, the automobile, solar industry, medical, food- and beverage industries are just a few examples in which laser marking is becoming increasingly common.

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## ■ **Unique laser solutions**

Panasonic and tesa have teamed up to permanently mark solar cells and flat glass to assure traceability. Also Panasonic has the experience and products to offer a comprehensive solution: code reader sensors, networking, data storage, etc.

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## ■ **Complementary products**

The handheld touch panel allows you to adjust line parameters during production to ensure correct marking. Our fume exhaust systems prevent smoke and particles from contaminating the laser optics and protect operators and machine parts from hazardous gases that may generate during marking.

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## ■ **LP-V series and LP-Z series**

### ■ **HIGHLIGHTS:**

The latest generation of SUNX Laser Markers use an enhanced YAG technology called FAYb (Fiber Amplified Ytterbium).

These fiber lasers provide several advantages over traditional Nd:YAG systems: better marking quality due to a smaller laser beam diameter (e.g. LP-V10U-C 60µm), smaller housing dimensions, a significantly longer lifetime of more than 30,000 hours and lower fixed costs because FAYb systems consume much less power (390VA) and get by with simple air cooling.

Due to their average output of 12W (comparable to 50W of a YAG laser), SUNX LP-V series Laser Markers can mark nearly all metals using the laser processes of deep marking or black marking. Using the laser processes of internal foaming, carbonization (color change) or bleaching, resins can be marked with outstanding quality.

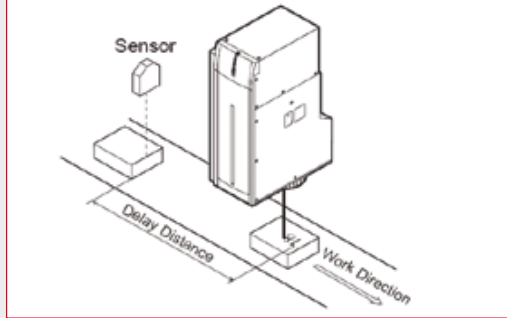
The LP-Z with his 3D function is especially well suited to mark complex forms such as concave or convex surfaces by automatically adjusting its focus point and guaranteeing stable energy density in the beam. This assures stable marking quality even on large marking areas up to 330 x 330mm<sup>2</sup>.

Both the LP-V and LP-Z series come equipped with an encoder interface to mark moving objects, e.g. objects on an assembly line. Other standard features of the LP-V and LP-Z series include a code function (Data Matrix, various bar codes, etc.) and standard functions such as counters, expiration date and lot number generation.



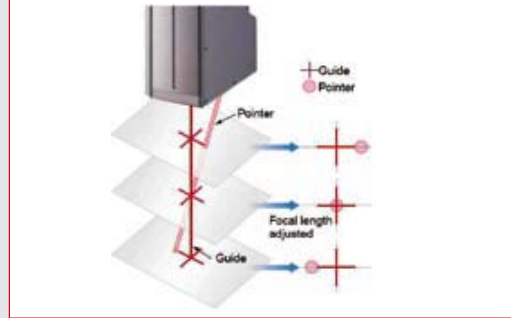
# Highlights LP-V series / LP-Z series

## Marking on-the-fly



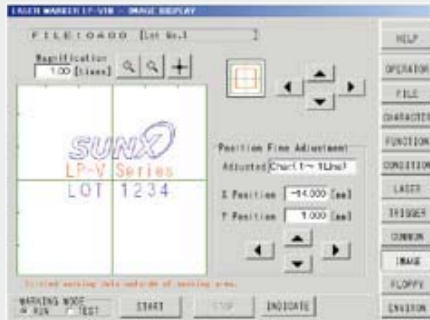
Marking on-the-fly is a standard function that allows moving objects to be marked at fixed or variable speeds. An encoder input automatically adjusts the laser beam position to up to 12.000mm/sec.

## Guide laser / dual pointer



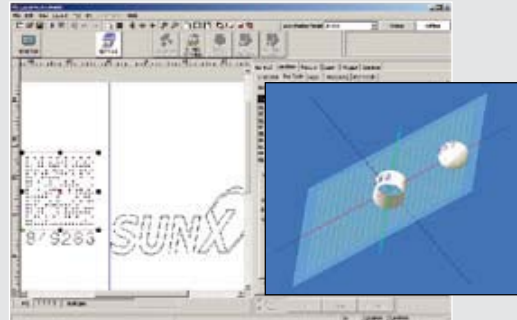
This feature allows you to quickly and conveniently set the optimum working distance. Just focus the point in the crosshairs.

## Internal software with touch screen



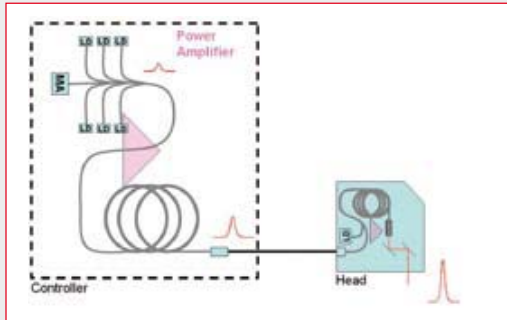
The free of charge internal software allows the operator to adjust, set up and control the Laser Marker via an LCD touch screen without an additional PC. Naturally, a standard screen and mouse can be used instead if preferred.

## External programming software



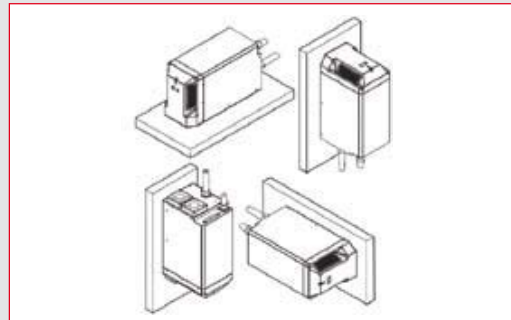
Our free of charge "NAVI" software runs under Windows and allows you to configure laser mark settings on an external computer. Files can be transferred via USB communication.

## High peak power laser source



An additional laser beam amplifier in the laser head of the LP-V enables a higher peak power compared to standard FAYb laser sources, which means a much higher marking quality. Pulse width: 30ns (standard 100ns). Peak power: 20kW (standard 8kW). Frequency: 20-100kHz (standard 20-80kHz).

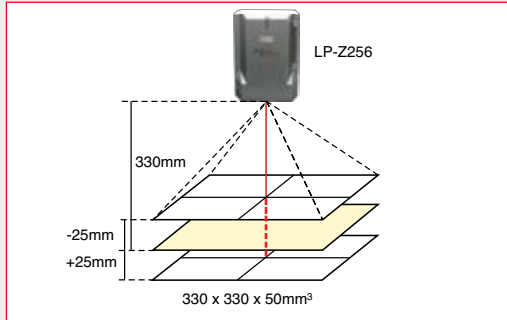
## Installation in any position



Right-side up or up-side down; it doesn't matter. Proper cooling is assured and beam reflection mirrors work properly in any position.



### Marking area



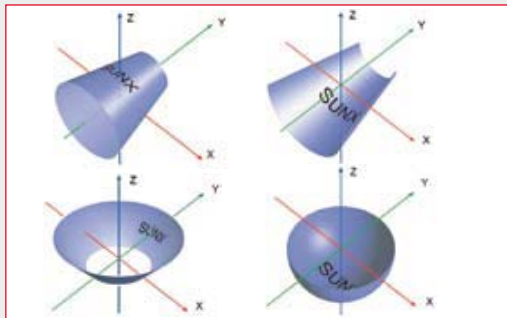
The marking area ranges from 90mm x 90mm to 330mm x 330mm. The LP-Z laser can adjust its focal point automatically, allowing objects to be marked whose height varies by as much as 50mm.

### Special laser head



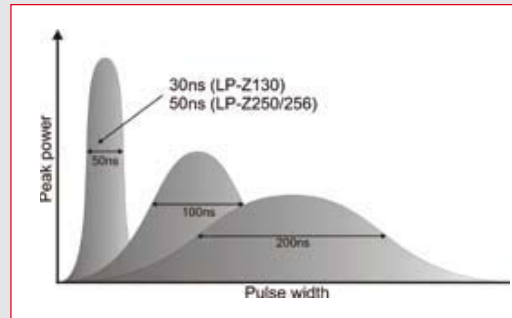
The compact head of the LP-Z can be integrated in an extremely narrow housing because of its small dimensions and cooling ventilation from front to back.

### Predefined forms



The LP-Z laser allows you to select from a variety of predefined forms, easing setup. Combining forms is also possible.

### High power



For the LP-Z laser, the pulse duration can be varied to suit the application requirements. Short pulses yield the best results for coloring resin and engraving. Lengthy pulses work better for black, shallow marking and to remove coating.

### Automatic height adjustment



A signal via RS232C or digital I/Os instructs the LP-Z Laser Marker to adjust its focal point for a different product, automating marking for production line switch-overs.

### Temperature



Quality marking is assured within an ambient temperature range of 0 to 40°C (0 to 35°C for the 25W version).

# LP-V series / LP-Z series

## ■ SPECIFICATIONS

Item	Model	FAYb Laser Marker				
		LP-V10U-C	LP-V15U-C	LP-Z130-C	LP-Z250-C	LP-Z256-C
Work distance		190mm (+ 2mm)	350mm (+ 2mm)	190mm ± 25mm		330mm ± 25mm
Marking range		90mm x 90mm	160mm x 160mm	120mm x 120mm		330mm x 330mm
Scanning speed max.		12,000m/s		12,000m/s		8000m/s
Line speed		Max. 240m/min		170m/min		120m/min
Spot diameter		60µm	95µm	75µm		140µm
Ave. output		12W		13W	25W	
Pulse width		30ns		30, 100, 200ns	50, 100, 200ns	
Pulse cycle		10 to 50µs				10 to 40µs
Ambient temp.		0 to +40°C				0 to +35°C
Storage temp.		-10 to + 60°C (no condensation or frost)				
Ambient humidity		35 to 85% RH (no condensation or frost)				
Marking method		Galvanometer scanning method				
Wave length		1.06µm, laser class 4				
Guide laser		Semiconductor λ=650nm, laser class 2; 1mW				
Character size (height & width)		0.2 to full marking field height and width (adjustable in increments of 0.001mm)				
Marking spacing (spacing & pitch)		0 to full marking field height and width (adjustable in increments of 0.001mm) Fan-like: +/-180° (adjustable in increments of 0.01°)				
Array of character		Straight line, fan-like, proportional/typewriter fonts, tilted and fan-like				
Type of characters		Capital & small characters, figures, 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), 2D codes: QR, Micro QR, Data Matrix (ECC200)				
Logo/shape		BMP / DXF / HPGL / JPEG				
Cooling method		Forced-aired cooling				
Supply voltage		90 to 132VAC or 180 to 264VAC (auto-changing), 50/60Hz				
Power consumption		420W or less (at 200VAC)				
Input		Remote, trigger, encoder (A), encoder (B), shutter control, laser pumping, alarm reset, emergency stop, laser stop, number				
Output		Power supply (+12V), remote (RS232C, I/O), marking ready, marking, marking finished, laser pumping, warning, alarm, confirmation end, counter finish				
Marking condition		Stationary and marking on the fly				
Functions		Marking order optimizing • correction of intersection • counter marking • current date/time marking • expiry date • lot marking • logos/pictures • bold marking • logo data USB transfer • I/O monitor • system offset • common setting • laser pointer • font select • proportional marking • marking image display • operator adjustment • error code display • work image display • guide laser • power speed setting per line/logo file • step & repeat • time delay • serial data processing & marking • multilayered marking • backup • various processing functions • dual pointer • marking time measurement • font creation/editing • power check/correction				
Emergency switch		Provided on the controller				
Weight head		Approx. 9kg	Approx. 10kg	Approx. 9.5kg		
Weight controller		Approx. 22kg			Approx. 24kg	
Life time		Marking time: 30,000 hours (minimum) (note)				



Note: Lifetime indicates operating hours expected under normal operating conditions. It is the period of time between starting to use the device and the beginning of the wear-out phase. For SUNX devices, only the real marking time and not the turn on time has to be considered. This is determined by the life expectancy of components used in assembly of the unit. The weakest component with the shortest life expectancy determines the life of the whole product

MTBF represents the statistical approximation of how long a number of units should operate before a failure can be expected. It does not represent how long the unit will last. Due to this non representative figures of MTBF, SUNX gives only lifetime indications. In certain cases a maximum power drop of 20% can happen after the lifetime period.



## ■ LP-400 series

### ■ HIGHLIGHTS:

SUNX conceived the LP-400 series Laser Markers especially for industries with particularly high demands on speed and functionality. LP-400 series Laser Markers are CO<sub>2</sub> laser marker systems with an output power of 10W, 20W or 30W that, due to an ultra fast galvano-scanning method (max. 12,000mm/s), 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 just 110µm, LP-431U-C and LP-411U-C are especially well suited to mark difficult materials such as glass or PTFE. LP-400 series Laser Markers can also process more than 10 different codes, e.g. bar code, Data Matrix code, etc. Due to their somewhat shorter wavelength of 9.3µm, the LP-420S9U and LP-420S9TU Laser Markers are ideal for marking clear plastics such as PET or PC.

Three useful Windows programs are included with all SUNX Laser Markers: "FONT Maker" allows you to create your own individual characters. "LOGO CONVERTER" converts logos and images in JPEG, BMP, HPGL and DXF formats to the Laser Marker format VEC. The Laser Marker "NAVI" software allows you to conveniently operate all SUNX Laser Markers from your PC.



## Highlights LP-400 series

### Rotating head



The rotating head allows easy integration and stepless adjustment. Its position can be quickly modified on the production line.

### High-speed galvanometer



The high-speed galvanometer enables sharp, clear marking at high speeds and is particularly effective for acceleration and deceleration phases. Marking edges poses no problem.

### Tower type



The tower type was designed with straight beam output for integration in systems where the angle type does not fit.

### High-speed production



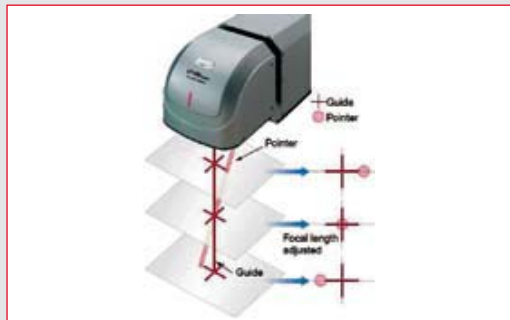
A line speed of up to 240m/min. is possible. Variations in speed, e.g. during the run-up phase of production, can be triggered automatically via an encoder signal input directly at the laser controller.

### Configuration via USB



Our Windows "NAVI" software is free of charge and allows you to configure Laser Markers via USB. For easy, on-site adjustments, an internal controller software can be accessed via a touch screen.

### Guide laser / dual pointer



This feature allows you to quickly and conveniently set the optimum working distance. Just focus the point in the crosshairs. Also marking field and marking characters can be indicated.

# LP-400 series

## ■ SPECIFICATIONS

Model	General-purpose type			Small spot type			Type for large marking range		
	Standard	LP-430U-C	LP-420S9U-C	LP-410U-C	LP-431U-C	LP-421S9U-C	LP-411U-C	LP-425S9U-C	LP-435U-C
Item	Tower	LP-430TU-C	LP-420S9TU-C	LP-410TU-C	LP-431TU-C	LP-421S9TU-C	LP-411TU-C	LP-425S9TU-C	LP-435TU-C
<b>Marking laser</b>		CO <sub>2</sub> laser, laser class 4							
Ave. output		30W	20W	10W	30W	20W	10W	20W	30W
Laser beam diameter		190μm	160μm	190μm	110μm	95μm	110μm	225μm	265μm
Wave length		10.6μm	9.3μm	10.6μm	10.6μm	9.3μm	10.6μm	9.3μm	10.6μm
<b>Guide laser, pointer</b>		Semiconductor λ = 655nm, laser class 2							
Output		1mW							
<b>Marking range</b>		110mm x 110mm			55 mmx 55mm			160mm x 160mm	
<b>Work distance</b>		185mm (+2mm)			111mm (+2mm)			262mm (+2mm)	
<b>Scanning speed</b>		Max. 12,000mm/s			Max. 6000mm/s			Max. 12,000mm/s	
<b>Line speed, up to</b>		240m/min		170m/min	120m/min		85m/min	240m/min	
<b>Character size (height &amp; width)</b>		0.2 to 110mm (adjustable in increments of 0.001mm)			0.2 to 55mm (adjustable in increments of 0.001mm)			0.2 to 160mm (adjustable in increments of 0.001mm)	
<b>Marking spacing (spacing &amp; pitch)</b>		0 to 110mm (adjustable in increments of 0.001mm) Fan-like: ± 180° (adjustable in increments of 0.001°)			0 to 55mm (adjustable in increments of 0.001mm) Fan-like: ± 180° (adjustable in increments of 0.001°)			0 to 160mm (adjustable in increments of 0.001mm) Fan-like: ± 180° (adjustable in increments of 0.001°)	
<b>Array of character</b>		Straight line, fan-like, proportional/typewriter fonts, tilted and fan-like							
<b>Type of characters</b>		Capital & small characters, figures, katakana, hiragana, kanji (JIS level 1 & level 2) symbols, symbols, user-defined characters (up to 50 types)							
<b>Bar codes</b>		CODE39, CODE128, ITF2/5, NW-7, JAN/UPC/EAN, RSS 14, RSS limited, RSS expanded (GS1 Databar)							
<b>2D codes</b>		QR, Micro QR, Data Matrix (ECC200)							
<b>Composite codes</b>		RSS 14CC-A, RSS 14 stacked CC-A, RSS limited CC-A							
<b>Logo/shape</b>		BMP / DXF / HPGL / JPEG							
<b>Cooling method</b>		Forced-aired cooling							
<b>Supply voltage</b>		100 to 120VAC ±10%, 200 to 240VAC ±10%, 50/60Hz							
<b>Power consumption</b>	100VAC	1000VA	670VA		1000VA	670VA		1000VA	
	200VAC	1200VA	700VA		1200VA	700VA		1200VA	
<b>Input</b>		Remote, trigger, encoder (A), encoder (B), shutter control, laser pumping, alarm reset, emergency stop, laser stop, number,...							
<b>Output</b>		Power supply (+12V), remote (RS232C, I/O), marking ready, marking, marking finished, laser pumping, warning, alarm, confirmation end, counter finish							
<b>Marking condition</b>		Stationary, on-the-fly (for moving objects)							
<b>Functions</b>		<ul style="list-style-type: none"> <li>• Correction of intersection • font creation/editing • current date/time marking • expiry date • logos/pictures</li> <li>• counter marking • system offset • time delay • various processing functions • common setting</li> <li>• guide laser • laser pointer • bold marking • proportional marking • marking of moving objects • font select</li> <li>• marking image display • marking time measurement • work image display • multilayered marking</li> <li>• serial data processing &amp; marking • step &amp; repeat • power speed setting per line/logo file • error code display</li> <li>• backup • I/O monitor</li> </ul>							
<b>Emergency stop switch</b>		Provided on the controller							
<b>Ambient temperature</b>		0 to +40°C (no condensation or frost), storage: -10 to 60°C							
<b>Ambient humidity</b>		35 to 85%RH (no condensation or frost)							
<b>Weight</b>	Standard								
	Tower	20kg		16kg		20kg		16kg	20kg
	Controller	12kg		11kg		12kg		11kg	12kg
<b>Lifetime</b>		Marking time: 12,000 hours (minimum) (note)							



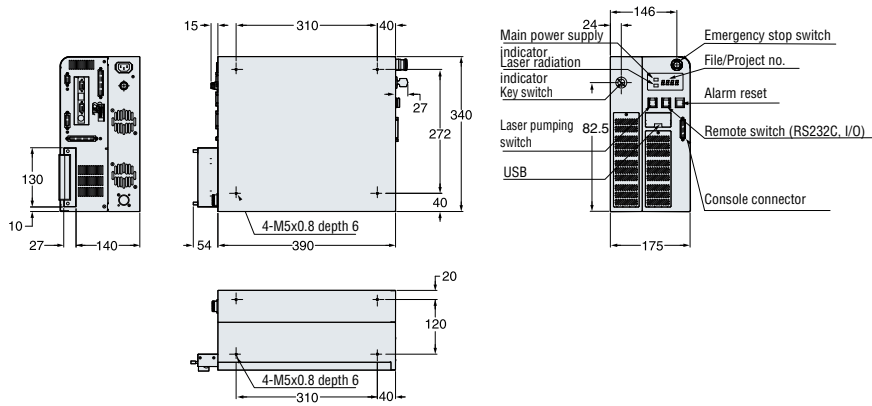
Note: Lifetime indicates operating hours expected under normal operating conditions. It is the period of time between starting to use the device and the beginning of the wear-out phase. For SUNX devices, only the real marking time and not the turn on time has to be considered. This is determined by the life expectancy of components used in assembly of the unit. The weakest component with the shortest life expectancy determines the life of the whole product

MTBF represents the statistical approximation of how long a number of units should operate before a failure can be expected. It does not represent how long the unit will last. Due to this non representative figures of MTBF, SUNX gives only lifetime indications. In certain cases a maximum power drop of 20% can happen after the lifetime period.

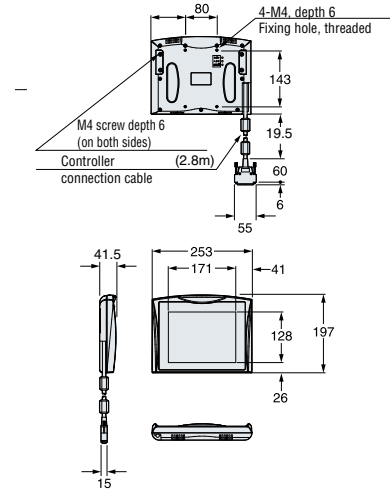


## ■ DIMENSIONS

### ■ CONTROLLER

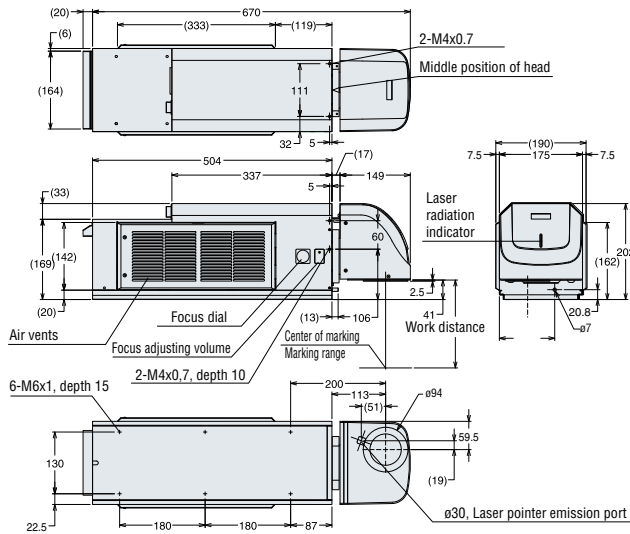


### ■ HANDHELD TOUCH SCREEN (OPTIONAL)

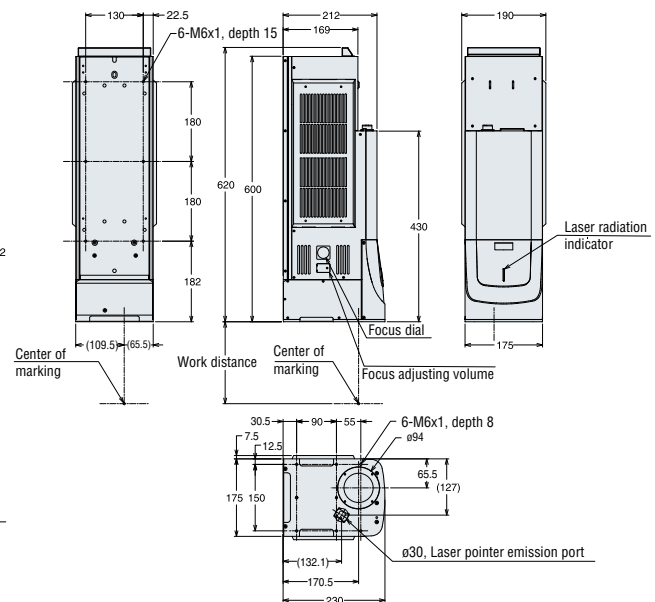


### ■ HEAD

#### LP-400 standard type



#### LP-400 tower type



All measurements in mm

## ■ LP-300 series

### ■ HIGHLIGHTS:

Due to a wavelength in the middle infrared range, SUNX'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 tampo 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. Since it requires little space and due to its robust construction, the CO<sub>2</sub> laser marker system can be easily integrated into assembly lines and individual workstations.

The powerful, user-friendly Windows software allows you to easily enter, edit or save texts and functions such as counters, date code and lot marking. You can easily import company logos and product specifications as graphic (DXF) files. In other words, the LP-310-C is suited to perform nearly any marking task you require.



# Highlights LP-300 series

## No extra controller needed



The complete controller and communication ports, e.g. RS232C, USB and parallel I/Os, are integrated in the laser head. On the front display, you can see the selected file number and error codes.

## Data processing



The software can generate production and validity dates, and increment serial numbers with the counter function automatically. Also CAD data can be imported, e.g. to mark individual logos.

## USB interface



A USB interface enables rapid communication between the Laser Marker and your PC.

## Prevention of overlapping marks



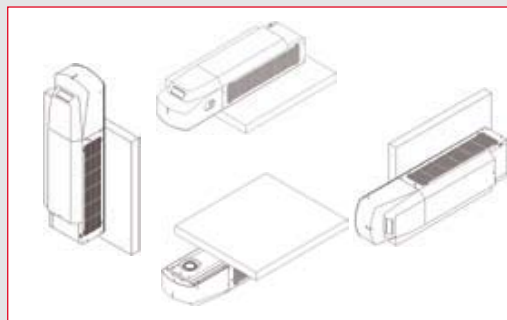
An innovative algorithm prevents double marking at points of intersection, ensuring excellent marking quality.

## Easy operation



Our Windows software is intuitive and free of charge.

## Installation in any position



Right-side up or up-side down; it doesn't matter. Proper cooling is assured and beam reflection mirrors work properly in any position.

# LP-300 series

## ■ SPECIFICATIONS

		CO <sub>2</sub> Laser Marker	
		FDA type	CE type
Item	Type Model	LP-310-A	LP-310-C
Work distance		145mm	
Marking method		Galvanometer scanning method	
Marking laser		CO <sub>2</sub> laser; average output 12W (max 40W), $\lambda = 10.6\mu\text{m}$ , laser class 4	
Marking range (mm)		50 x 50	
Basic dimensions of characters (note)		0.2 to 50mm (adjustable in increments of 0.01mm)	
Scanning speed		Max. 2000mm/s	
Array of character		Straight line, fan-like, oblique line	
Marking condition		Stationary	
Type of characters		Capital and small characters, symbols, katakana, hiragana, kanji (JIS first level) characters, user-defined characters (up to 50 types)	Capital and small characters, numbers, symbols, user-defined characters (up to 50 types)
Marking	Projects/Dates	Max. 120	
	Setting conditions	30 types	
Input		Laser radiation stop, file no., trigger, counter reset, external interlock (power supply box)	
Output		Alarm, laser marker status, counter end	
Interface	RS232C	For external devices only	
	USB Vers. 1.1	For setup software only	
Software		Windows® XP / 2000, Windows Vista, Screen resolution: 800 x 600 or more	
Cable length		5m (between head and power supply box)	
Installation direction		Omnidirectional	
Cooling method		Forced-air cooling (head and power supply box)	
Supply voltage		90 to 132VAC or 180 to 264VAC (auto-changing), 50/60Hz	
Power consumption		700VA or less	
Functions		<ul style="list-style-type: none"> <li>• Lot marking • current date/time • expiry date/time • counter marking • CAD marking • correction of intersection • guide laser • bold marking • marking image display • saved file list • test marking • error history display</li> </ul>	
Ambient temperature		0 to +40°C (no condensation or frost), storage: -10 to +50°C	
Ambient humidity		35 to 85% RH, storage: 35 to 85% RH (no condensation or frost)	
Weight		Head: approx. 13kg, power supply box: approx. 5kg	



Note: The actual character size depends on the material marked.

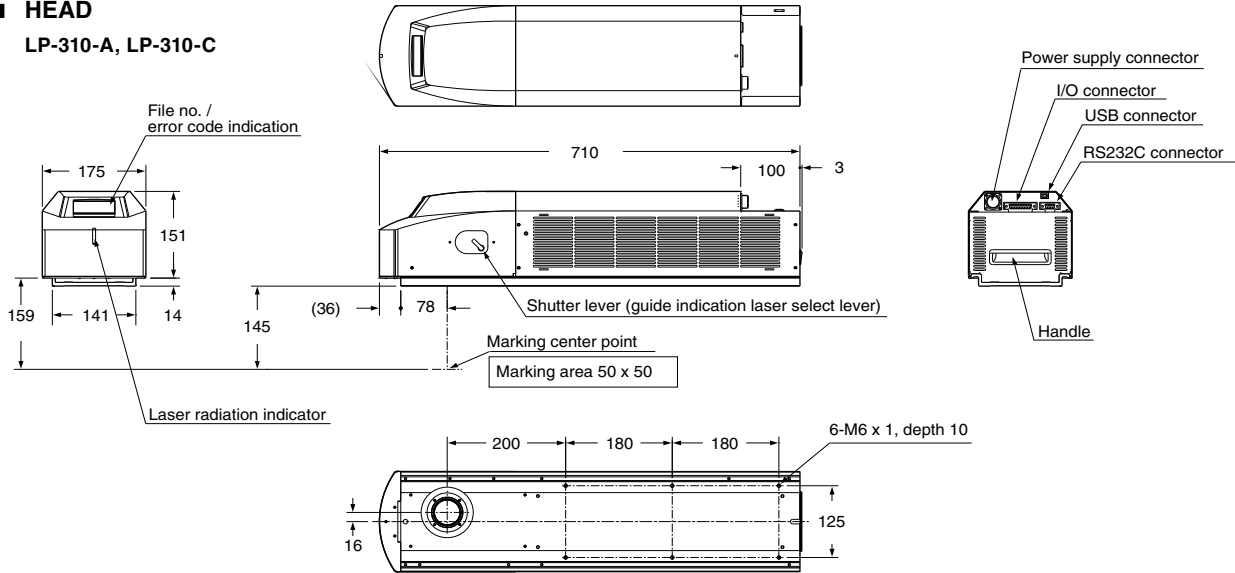
Windows® is a registered trademark of Microsoft Corporation in the United States and other countries.



## ■ DIMENSIONS

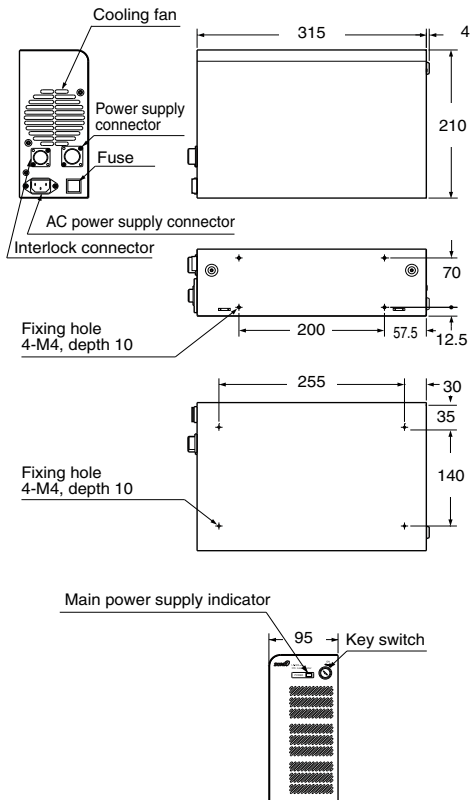
### ■ HEAD

LP-310-A, LP-310-C



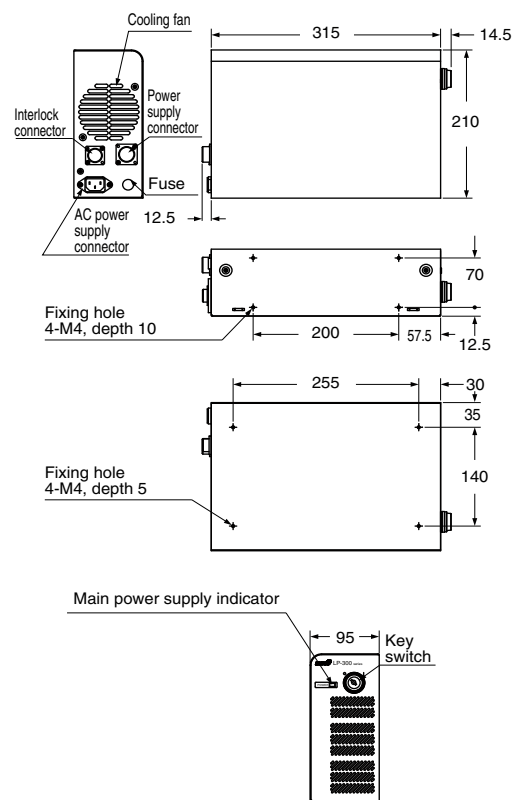
### ■ POWER SUPPLY BOX

LP-310-A



### ■ POWER SUPPLY BOX

LP-310-C



All measurements in mm



# Applications

## MARKING APPLICATIONS



Crackers



Packaging



Oil filter



Connector



PET bottle



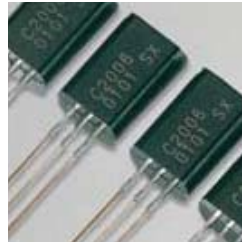
Labels for PET bottles



CDs/DVDs



Cork



Electronic component



Resistor



Intravenous drip bag



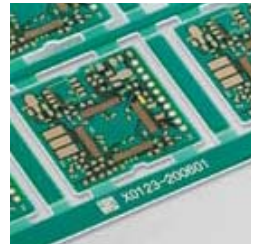
Connector



Bar code on glass



2D code on wood



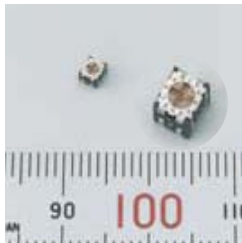
PCB



Button with QR code



Laser diode



Potentiometer



Float / flat glass



Thin film solar cell



Color marking of resin



Automotive product



Plastic housing



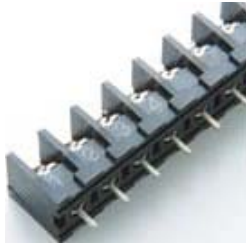
Serial numbers on metal



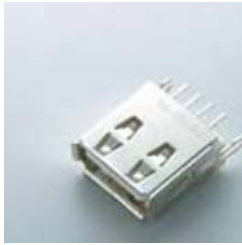
Cell phone key pads



■ MARKING APPLICATIONS



Terminal block



USB connector



Tweezers



Blister package



Metal application



Battery pack



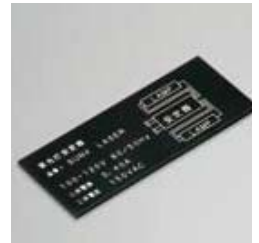
Bearings



IC package



Cylinder head



Nameplate



Button cell



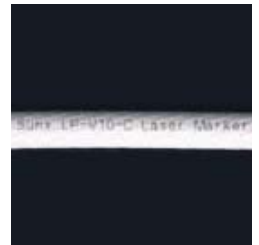
Golf club



Bearings



Electronic components



PTFE cable



Aluminium part



Steel tools

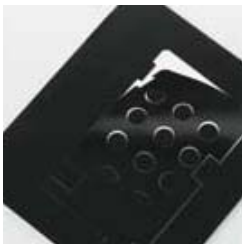


Day/Night design

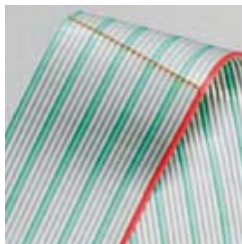
■ PROCESSING APPLICATIONS



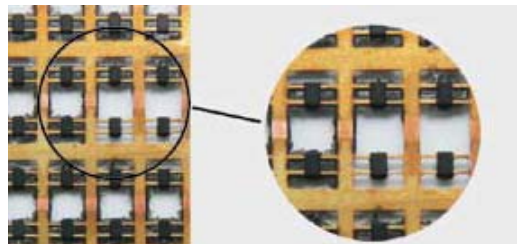
Insulation removal



Perforation

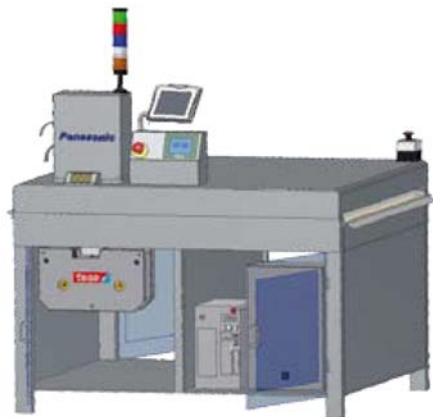


Insulation removal (2)



Deburring ICs

## Unique laser solutions



### ■ LTF-C “Laser-Transfer-Film-Contrast“

tesa and Panasonic Electric Works have mutually developed a revolutionary technology 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 points of LTF-C marking

- High contrast
- As resistant to chemicals, scratches and the environment as the glass itself
- Resistant temperatures of up to 1000°C
- Impervious to UV radiation
- Glass integrity not effected
- Marking possible without damaging TCO coating
- Anti-theft protection
- Marking can be read by humans and machines
- 1D- or 2D-code marking
- Durable (min. 25 years)
- Assures traceability
- Failure cause identification
- Individual marking of glass or solar modules

#### Key points of the marking system

- Flexible integration of the laser marking station (stand alone or integrate into an existing transport system)
- Easy to operate the plant through intelligent visualization technology libraries
- Communications Network options (Profibus DP, CC-Link, Ethernet, TCP/IP, CANopen...)
- Complete track and trace solution with additional equipment like 2D code reader, network communication, data storage, etc...
- Laser, code reader, human machine interface, system housing, mechanic, communication, integration and service from one source

### ■ Table work station

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

#### Key points of the work station

- Wide door opening for easy access
- Electrical or manually driven safety door
- Doors for high operator security (laser class 1)
- Integrated z-axis for manual or electrical height adjustment
- One housing for 12 different laser models
- Fume extraction connection pipe as standard
- Integrated focus-finder, working area finder, marking test and logo simulation with visible red beam are standard for all Laser Markers
- Suited to mark products with a height up to 100mm
- Internal maximum marking field 300 x 300mm<sup>2</sup>
- Optionally, a camera image can be displayed on the laser parameter setting touch screen

### ■ 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 and LP-Z series.



### ■ Laser fume extraction LFE-250

Laser fume extraction with one exhaust port for standard applications

- Height 590mm, width 380mm, depth 380mm
- Weight: 40kg
- Supply voltage: 230V, 50/60Hz
- Power: 90Watt at 200m<sup>3</sup>/h
- Max. sucking capacity: 200m<sup>3</sup>/h
- Filter: prefilter, Hepa, gas
- Noise level: < 60dB (A)
- 24V start / stop
- Filter change signal
- Various filter monitoring functions (e.g. filter defect)
- Clean room class 1000 with an efficiency of 99.997%
- Powder coated housing

Spare parts for LFE-250

- LFE-PF Prefilter for LFE-250
- LFE-CF combined carbon and HEPA filter



### ■ Laser fume extraction LFE-ADPVC

Laser fume extraction with one exhaust port for PVC applications

- Height 1150mm, width 500mm, depth 500mm
- Weight: 100kg
- Supply voltage: 230V, 50/60Hz
- Full load current: 7.2A
- Max. sucking capacity: 325m<sup>3</sup>/h at 1.1kW
- Filter: prefilter, Hepa glass fibre
- Noise level: < 60dB (A)
- 24V start / stop
- Filter change signal
- Various filter monitoring functions (e.g. filter defect)
- Clean room class 1000 with an efficiency of 99.997%
- Brushed stainless steel with epoxy coated internal contact parts

Spare parts for LFE-ADPVC

- LFE-ADPVC-PF prefilter
- LFE-ADPVC-CF combined carbon and HEPA filter
- LFE-ADPVC-FP filter pad

All information in this brochure is subject to technical modification without notice. Errors and omissions excepted.



North America

Europe

Asia Pacific

China

Japan

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