

**LaserTowerPRO™**  
3D LASER MARKING SYSTEM



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## Industries

- Defense
- Government
- Aerospace
- Automotive
- Metal Fabrication
- Direct Parts Marking
- Medical
- & Many More!



The LaserTowerPRO is an industrial-grade system designed to operate under high-vibration, shock and dust conditions with a MTBF >50,000 hours. The LaserTowerPRO is maintenance-free requiring no consumables.

The system operates as a stand-alone system or with the doors removed, easily integrates into a I/O production line in a small 2ft by 2ft space saving footprint.

Each LaserTowerPRO is optimized per our customer's unique application designed with either a Fiber Laser or CO2 Laser with wattages ranging from 20W to 100W. The LaserTowerPRO provides a 19" by 19" material working space inside the enclosure.

The LaserTowerPRO incorporates a programmable 8" Z-axis for focal height adjustments with 2 optical X'Y' axes and a portfolio of F-Theta lens options incrementally increasing the range of the marking area from 2" x 2" to 9" x 9".

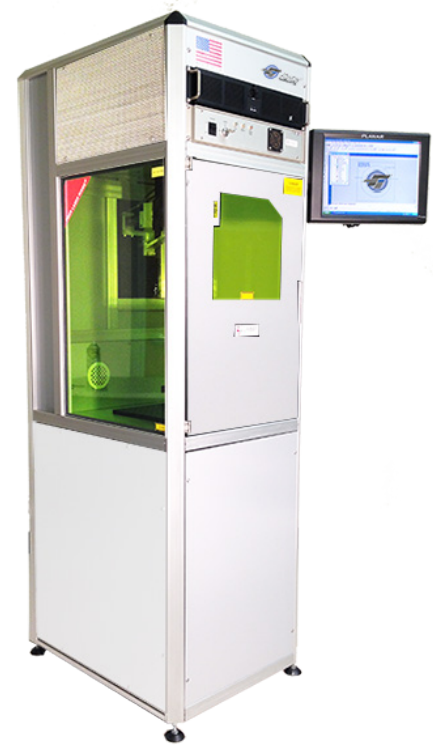
All Direct Parts Marking (DPM), including UDI/UID barcodes, logos and all other service marks are permanent, legible and non-removable across the largest range of materials with special attention to highly-reflective metals. Included in the software is the company's proprietary barcode technology that presents an easily readable barcode with the use of a simple mobile phone barcode scanning application.

**The LaserTowerPRO™ series produce a wide variety of Permanent, Legible and Non-Removable Direct Part Markings on a wide variety of materials.**

Applications and Types of Marks		Materials	
ITO or Paint Removal Backlit Button Marking Medical/Automotive Coding IC Chip Package Marking 2D UDI/UID Barcoding Part Numbering 3D Engraving/Deep-Engraving Surface Texturing	OCR Code Marking "On-The-Fly" Marking Alphanumeric Marking Logos and Schematics Sequential Serial Numbers Lot Codes and Date Codes Ablation (Anodized, Painted or Coated)	Aluminum (Anodized/Polished/Cast) Stainless Steel and Mild Steel Titanium and Nickel Copper and Brass Carbide and Polycarbonate Polypropylene Painted Metal Alloys Chrome and Cast Iron	Wood and Ceramics Rubber and Silicon Marble and Stone Composites and PVC Plastic and Graphite Fabrics and Leather Acrylic and MDF Galvanized Metals And More!

### LaserTowerPRO Design: Main Features:

- Maintenance-Free requiring no consumables
- Continuous operation under high-shock, vibration and dust conditions
- Long-term industrial-grade reliability with 50,000 hours MTBF
- Optimized for either a Fiber Laser or CO<sup>2</sup> Laser
- Standard wall plug operation with high electrical efficiency
- Low voltage power source (110/220 VAC) 8 amps
- Laser "ON" magnetically locked front doors for operator safety
- 2ft x 2ft space saving footprint for tight production line workspaces
- Large Chamber provides 19" x 19" material working area
- 8" Z-Axis Controller to accommodate a wide range of material heights
- Class 1 or Class 4 Laser-Rated Safety Viewing Port
- PC-Based Controller, Flat Panel Monitor, Mouse and Keyboard
- Industrial-grade Extruded Frame with 19" Rack Mount Design
- Exhaust outlet for Fume Extractor
- Side Doors for longer parts (optional)



### Fiber Laser: 20W-30W-50W Options

Fiber Lasers are a great leap forward in processing all metal and coated soft material applications. Our Fiber Lasers are easily integrated into industrial processes in comparison with conventional laser due to:

- State of the art, Air-cooled, Ytterbium Q-switched Fiber Laser up to 2mJ for marking on virtually any material
- CW or Q-switched Fiber laser options with high-repetition rate
- Excellent TEM<sub>00</sub> beam quality ( $M^2 < 1.05$ )
- Exceptional High Reliability with more than 30,000 hours estimated maintenance-free operation
- Very high 50,000 hours MTBF (100,000 hours typical on diodes)
- Flexible cable-beam delivery system
- No water cooling required on select models
- Optimized for Direct Part Marking (DPM) applications including UDI/UID Barcoding and 3D Deep Engraving
- Red diode pointer for easy application setup
- Fiber delivery up to 3 meters
- Warranty – 2 years on laser components



### ***Q-Switched Fiber Laser***

The Q-switched Fiber Laser is maintenance-free. It delivers an excellent diffraction-limited (TEM00 beam quality  $M2 < 1.05$ ) laser beam directly to the worksite via a metal sheathed single-mode fiber cable. These compact service-free Fiber Lasers are designed to operate under high-shock, vibration and dust conditions in relatively high humidity across wide operating temperature ranges. State-of-the-art air-cooled Ytterbium lasers have a very high MTBF of 50,000 hours (100,000 hours typical on diodes).

There is no routine replacement of parts or materials scheduling requiring only a low voltage power source. Fiber-to-Fiber architecture provides a robust, monolithic design with no optics to align, no mechanics to stabilize. The laser is engineered for optimal power and density providing responsive performance for the most demanding applications.

### ***Fantom CO2 Slab Laser: 20W/30W/70W/100W Options***

Laser Photonics' proprietary Fantom CO2 SLAB Lasers are a leap forward in laser technology. These CO2 lasers are easily integrated into industrial processes in comparison with conventional lasers:

- Designed to operate under high shock, vibration & dust conditions
- Sealed off and RF Excited CO2 SLAB laser
- CW or Pulsed CO2 laser options
- Excellent TEM00 beam quality ( $M2 < 1.2$ )
- Exceptional Reliability with > 10,000 hours maintenance-free operation
- Sealed dust-proof design
- No need for gas refill during the warranty period
- Flexible cable-beam delivery system
- No water cooling required on select models
- Optimized for Direct Part Marking (DPM) applications including UID/UDI barcoding and engraving
- Red diode pointer for easy application setup (Optional)
- Warranty – 2 years on laser components



### ***Fantom F20/F30/F70/F100 CO2 SLAB Laser***

Fantom Slab Lasers are completely sealed units requiring no gas connections producing a beam that processes material at an average power of 20W/30W/70W/100W respectively. These CO2 lasers provide a low  $M2$  ( $M < 1.2$ ), high quality beam that allows smaller focus spot sizes and incorporates Laser Photonics' proprietary fast-rising square wave pulsing technology with repetition rates up to 25 kHz with an output wavelength of 10.6 microns engineered for optimal power and density providing responsive performance for the most demanding applications.



## Dynamic Performance Facility Requirements

Repeatability:	< 22 $\mu$ rad Operating Temperature 25°C $\pm$ 10°C
Offset Drift:	< 25 $\mu$ rad/k Typical Air Requirements Clean, Filtered air 20 l/min. at $\Delta p$ <2bar
Gain Drift:	< 80 ppm/k
Long Term Drift:	< 0.3 mrad (Over 8 hours)
Tracking Error:	0.40 ms

## Optical Performance

Focal Length:	100 – 200MM Typical Scan Angle of Scanner 1 $\pm$ 0.26 rad
Zero Offset:	< 5 mrad Typical Scan Angle of Scanner 2 $\pm$ 0.40 rad
Skew:	< 1.5 mrad Typical Field Size – Ellipse 80mm x 130mm
Nonlinearity:	< 2.1 mrad Typical Field Size – Square 75mm x 75mm to 110 x 110mm
Gain Error:	< 5 mrad

### PC-Based Controller

The PC-Based Controller is an industrial-grade PC in an open and upgradeable configuration incorporating the latest generation mother board and data storage devices. The controller also includes an advanced Scan Head Digital Control Board and optically isolated I/O card. The unit operates on Windows™ XP or 7 Operating System with optional field correction software for demanding applications.



### DSP Control Board

The PC Interface DSP Control Board provides synchronous, interference -resistant control of the scan system and laser in real time. A high performance signal processor and the supplied DLL simplify programming under Windows. Software instructions are loaded alternately in two list buffers processed by the DSP and output as 16-bit control signals every 10 $\mu$ s to the scan system. The processor automatically performs vital steps such as micro-vectorization and image field correction. Laser control is synchronized with the scanner movements.



<b>Interface:</b>	PCI bus interface
<b>Resolution:</b>	16-bit positioning resolution
<b>Output Period:</b>	10 $\mu$ s



#### ***Precise, Maintenance Free Z-Axis Controller***

The Z-Axis Controller with an 8" vertical capability accommodates a variety of replaceable lenses.



#### ***Light Barriers (option)***



#### ***Precise, F-Theta Lens Options***

100mm - 160mm - 254mm - 330mm



#### ***Dual Push Buttons for Safe Operation (option)***



#### ***Touch Screen Interface (option)***



#### ***Auto Focus Laser height Sensor with Controller and Software (option)***



#### ***Host Communication/Database Interface (option)***



#### ***IR Laser Beam Red Diode Pointer (option for CO2 laser / Standard for Fiber laser)***



#### ***Vision System Recognition/Alignment System (option)***

<b>Laser Equipment</b>	Fiber Laser: LPQ 20-1.0, LPQ 30-1.0, LPQ 50-1.0, CO <sup>2</sup> Laser – Fantom F30, Fantom F100
<b>Mode of operation</b>	Q-Switched or CW (Fiber laser); Pulsed or CW (CO <sup>2</sup> laser)
<b>Programmable Z-Axis</b>	4" or 8" Travel
<b>Maximum Material Weight</b>	120 lbs
<b>System Dimensions</b>	See envelope drawings below
<b>Weight</b>	325 pounds
<b>Operating Temperature</b>	+18 to +25° C
<b>Relative Humidity</b>	40 – 80% non-condensing
<b>Electrical Requirements</b>	120 volt 8 amps
<b>Clean Dry Air* (If Required and equipped)*</b>	80 PSI

## FiberScan C3™ / FiberScan C3™ LT Software

### Proprietary Software Options:

- FiberScan C3 LT is designed to operate on Windows 7 (32/64 bit) and supports Windows XP Professional (32/64 bit).
- FiberScanC3 supports remote access data base connectivity designed to operate on Windows XP Professional (32 bit) and supports Windows 7 (32 bit).



The user-friendly software entails a fully integrated driver, remote diagnostic capabilities for worldwide support and multiple hardware interfaces for the ability to execute any CO<sub>2</sub> or Fiber Laser marking system. File links to several internal databases make the FiberScan C3™ program flexible and powerful.

These databases include a materials application system and a fixture database. The materials application system allows a user to define a laser process, give the process a unique name and subsequently link the process to graphic programs. A process can include multiple passes using different values for power, frequency and speed on each laser pass.

The database can contain and manage many thousands of different process 'recipes'.

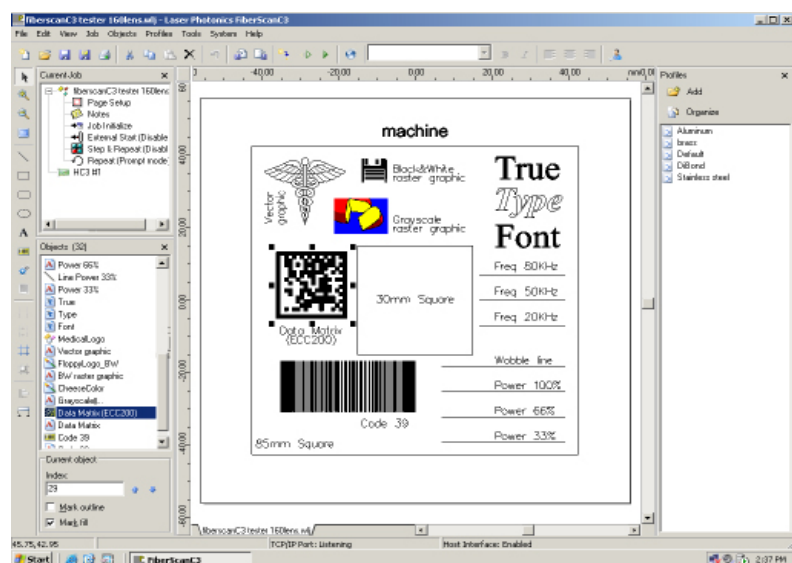
The fixture database allows the user to control fixture offsets and define step and repeat processes. Just like the material database, any WLJ job can use any fixture defined in the fixture database.

The link allows all appropriate graphic and process information to be automatically loaded when the operator selects the lasing file.

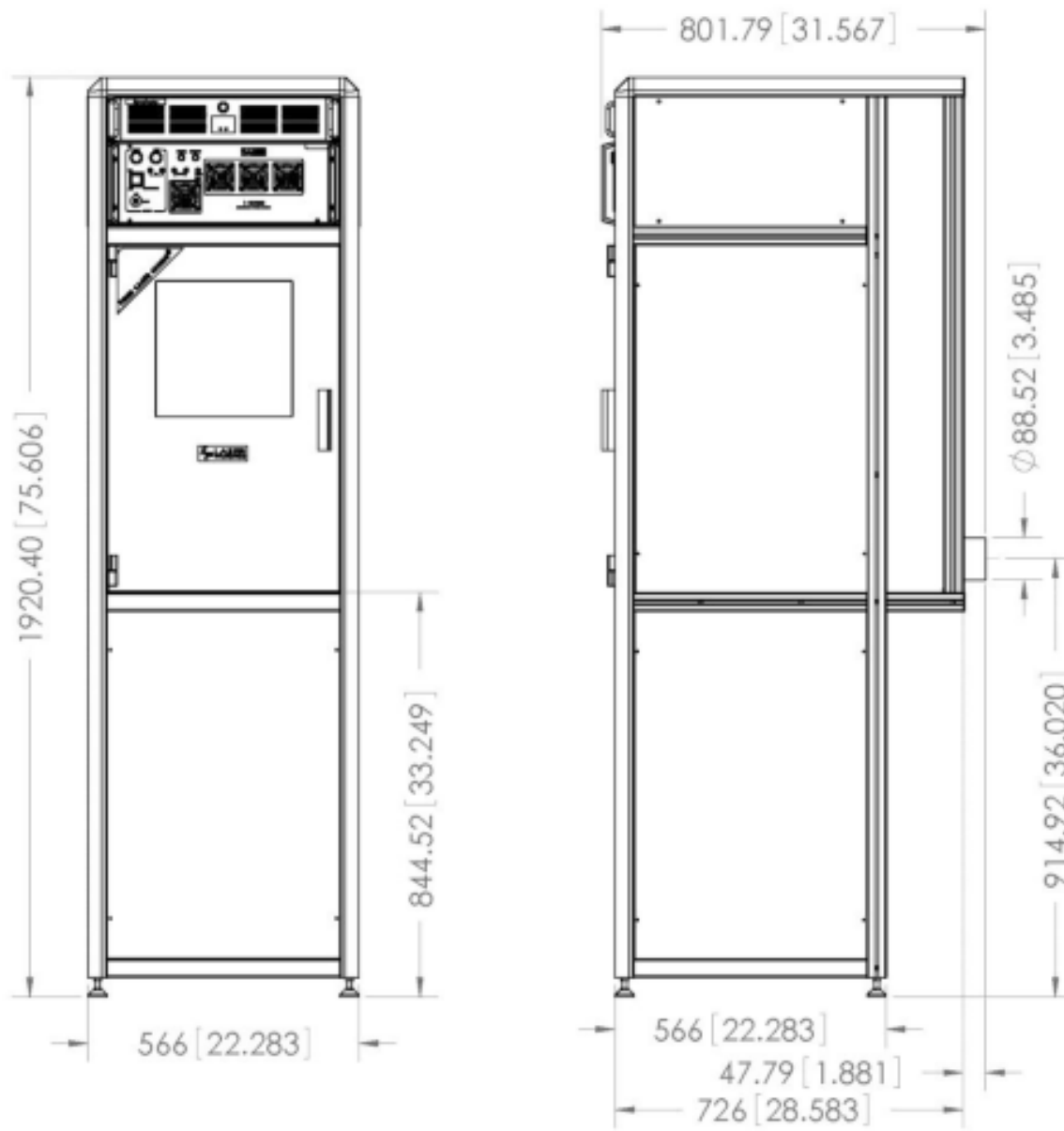
At any time the operator can change the links, for example a lasing job that is normally marked on stainless steel, can be marked on brass by selecting the brass process file prior to executing the job program file.

Operators don't have the need to remember fonts and logos for a particular job because FiberScan C3™ automatically performs all required graphic loading.

FiberScan C3™ does not require users to learn any programming languages or special codes and provides all of the flexible and graphic controls that users are accustomed to such as radial marking, aspect control, character spacing, angular rotations and full justification.



**LaserTowerPRO System Dimensions: 325 lbs**





## LaserTower Series Product Guide



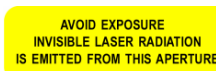
LaserTower™ Series Product Guide						
	LASERTOWER DESKTOP	LASERTOWER COMPACT	LASERTOWER PRO	LASERTOWER PRO CM	LASERTOWER PRO RT	LASERTOWER PRO MEGACENTER
<b>Q-Switched Fiber Laser</b>						
0.5mJ @ 10kHz	✓	✓	✓	✓	✓	✓
0.5mJ @ 20kHz	✓	✓	✓	✓	✓	✓
1.0mJ @ 20kHz	✓	✓	✓	✓	✓	✓
2.0mJ @ 20kHz			✓	✓	✓	✓
<b>CW Fiber Laser (50 Watts)</b>						
50 Watts			✓	✓	✓	✓
<b>F-Theta Scanning Lenses</b>						
100mm		✓	✓	✓	✓	✓
160mm	✓	✓	✓	✓	✓	✓
254mm		✓	✓	✓	✓	✓
330mm		✓	✓	✓	✓	
330mm With Beam Expander				✓	✓	
420mm				✓	✓	
420mm With Beam Expander				✓	✓	

## LaserTower Series Product Guide

	LASERTOWER DESKTOP	LASERTOWER COMPACT	LASERTOWER PRO	LASERTOWER PRO CM	LASERTOWER PRO RT	LASERTOWER PRO MEGACENTER
<b>Z-Axis Controller</b>						
Scissor Jack (Manual "Z" Axis Adjustment)	✓					
Programmable Z-Axis (4" Travel)		✓	✓	✓	✓	✓
Programmable Z-Axis (8" Travel)		✓	✓	✓	✓	✓
Rotary "C" Indexer (Circumference Marking)			✓	✓	✓	
X-Y Table for Extended Marking Areas or High Precision Laser Processing			✓	✓		✓



Requirements beyond those listed above will be quoted upon request. Contact Laser Photonics office or visit our website [www.laserphotonics.com](http://www.laserphotonics.com) if you need any assistance determining which capabilities best suit your needs.



Safety Considerations during Operation: 1064 nM wavelength laser light emitted from this laser system is invisible and may be harmful to the human eye. Proper laser safety eyewear must be worn during operation at all times.



21CFR 1040.10 Compliance: Fiber Lasers are a Class 4 laser as designated by the CDRH and meet the full requirements for a stand-alone laser system as defined by 21 CFR 1040.10 under the Radiation Control for Health and Safety Act of 1968. As an added level of security, a redundantly switched safety interlock system helps prevent accidental exposure to excess laser radiation. Plus the system is equipped with an electrical power manual reset, a key-locked laser power switch and a remote interlock connector. Finally, the system has audible and visible emission indicators with five (5) second emission delay settings. All these features, in combination, constitute the laser radiation safety system which allows the LaserTower™ Series of equipment be used in a safe and secure manner.



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