



F30

OEM MARKING KIT - CO₂ LASER

The F30 is completely sealed, requires no gas connections and produces a beam that processes material at an average power of 30W. This is due to the combination of a low M_2 (<1.3) high quality laser beam that allows smaller focus spot sizes and unique fast-rising square wave pulsing characteristics. F30 CO₂ laser can be pulsed at repetition rates up to 25 kHz.

This unit offers 30W of power and output wavelengths of 10.6 microns. It provides the greatest flexibility to both end-users and OEM systems integrators. It's your choice: Select the full featured, integrated version (Performance OEM Package) or an intermediate version, with a few value-added options (Basic OEM Package).

Standard Features

- Easily re-configured for direct installation into a production line; can connect to external control device
- Designed for maintenance-free Direct Part Marking [DPM] applications
- I/O extension board (optically isolated 7 input and 5 output ports)
- Built to operate under high shock, vibration, and dust conditions
- Compact and lightweight laser head with easy alignment
- F-Theta lenses objective with 160 mm focal length
- FiberScan C3™ software package
- F30 system is air-cooled
- Mounting hardware and cables
- 3 meters of optical CO₂ cable
- Stand alone operation
- "Plug & Play" system

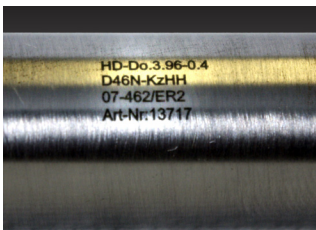
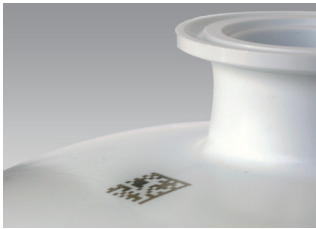
No PC Required

With a built in DSP module system it will operate without a PC. In this case, the marking pattern is saved on the multimedia memory card or uploaded into the system from any stand alone PC or laptop. On board computers with 32 Mb media flash memory cards store marking and lasing files. After files are uploaded, the computer may be disconnected from the laser system.

Optional configuration includes:

- 3D Package for focal distance alignment without mechanical z-axis; Supplied as manually adjusted optical component or fully integrated software controlled 3D package
- Built-in DSP module system on a master laser to work without a PC connected. In this case, the marking pattern is saved on the multimedia memory card or uploaded into the system from any stand alone PC or laptop
- Flat panel monitor (or touch screen monitor), mouse and keyboard
- 19" rack enclosure for laser, scan head and PC controllers
- Electromechanical shutter for enhanced safety features
- F-Theta lenses with customer selected focal length
(*F-Theta lens available in: 75, 100, 150 & 201mm*)
- Red diode pointer for easy setup and alignment
- Remote control interface for all components
- Beam shaping optics for smaller beam size
- External interlock
- Optical isolator



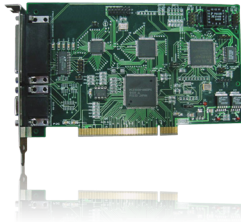


Applications

- Common Applications: Alphanumeric, Logos, Serial Numbers, Part Numbers, Lot / Date Codes, Schematics, Complex Graphics, Pictures & Logos Etching (Material Vaporization)
- OCR Code Marking (Human and Machine Readable)
- Direct Parts Marking, Bar-coding, 2D Data Matrix
- 2D Symbolologies Linear Barcodes
- Production In line Integration
- IC Chip Package Marking
- UID - Unique Identifier
- Marking "On the Fly"
- Surface Annealing
- Surface Texturing
- Surface Marking
- Surface Etching
- Ablation
- Glass Marking

Materials

- Anodized Aluminum
- Stainless Steel
- Composites
- Ceramics
- Graphite
- Titanium
- Leather
- Rubber
- Plastics
- Acrylic
- Wood
- Glass



Control Board

The PC Interface 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 by using Windows software. Instructions are loaded alternately in two list buffers which are processed by the DSP and outputted as 16-bit control signals every 10 μ 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.

DSP Controller

| | |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------|
| DSP Unit | State of the art PC based DSP motion control |
| DSP Control Method | Semi closed loop method |
| Programming | Intuitive native programming |
| Control Functions | X, Y and Z-Axis simultaneously controlled with laser power, velocity and scan head |
| Input Methods | Ethernet, CD, USB Flash memory and 3.5" disk |
| Positions Synchronized Output | Integrated High-Speed position synchronized output (PSO) for laser firing or position latching applications |
| Vision Systems | Supports additional vision systems for positioning and beam registration |
| Program Storage Capacity | Unlimited within PC memory capabilities |
| Operating Modes | Edit / Automatic / Manual |
| Display | 15" or 17" TFT LCD |
| Interface | PCI Bus interface |
| Resolution | 16-Bit positioning resolution |
| Output Period | 10 μ m |



Scanning Head

The scanning head is designed to quickly and precisely deflect and position laser beams with powers up to the kilowatt range. With apertures of 10mm, small spot sizes are achieved along with up to 4" x 4" image fields.

Very stable operating conditions as well as long-term stability are provided by air cooling of the entrance aperture, electronics and galvanometer scanners supplemented by air cooling of the deflection mirrors. The compact housing is dustproof and water resistant.

Dynamic Performance Facility Requirements

| | |
|------------------------|---------------------------------------------------------------------------------------------|
| Repeatability | < 22 μ rad operating temperature 25°C \pm 10°C |
| Offset Drift | < 25 μ rad/k typical air requirements clean, filtered air 20 l/min. at Δp <2bar |
| Gain Drift | < 80 ppm/k |
| Long Term Drift | < 0.3 mrad (over 8 hours) |
| Tracking Error | 0.14 ms |

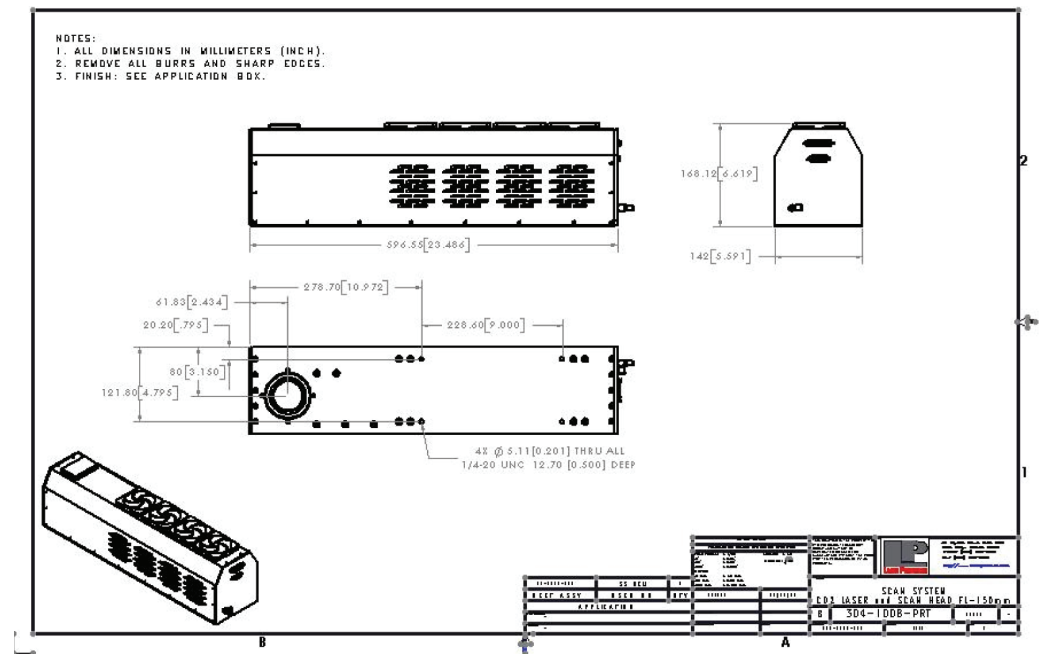
Optical Performance

| | |
|----------------------|---------------------------------------------------------------------|
| Focal Length: | 75, 100, 150 & 201mm 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 |

Systems Specifications

| Model Type | Standard Resolution | High Resolution | Best Resolution | Standard XP |
|------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------|-------------------------------|
| Name | F-30 | F-30S | F-30US | F-30SX |
| Laser type | CO ₂ | CO ₂ | CO ₂ | CO ₂ |
| Wavelength | 10.6 um | 10.6 um | 10.6 um | 10.6 um |
| Power | 30 w | 30 w | 30 w | 30 w |
| Output stability | ±5 % | ±5 % | ±5 % | ±5 % |
| Laser lifetime | 5 years | 5 years | 5 years | 5 years |
| Cooling | Air Cooled | Air Cooled | Air Cooled | Air Cooled |
| Marking area | 100 x 100 mm 3.94" x 3.94" | 70 x 70 mm 2.76" x 2.76" | 50 x 50 mm 1.97" x 1.97" | 140 x 140 mm 5.51" x 5.51" |
| Work clearance | 149 mm 5.87" | 99 mm 3.90" | 72 mm 2.83" | 201 mm 7.91" |
| Focal length | 150 mm | 100 mm | 75 mm | 201 mm |
| Typical marking speed | 2.5 m/s 98 in/s | 2.5 m/s 98 in/s | 2.5 m/s 98 in/s | 2.5 m/s 98 in/s |
| Writing speed | | | | |
| High writing quality | 600 char/sec. max. | 600 char/sec. max. | 600 char/sec. max. | 600 char/sec. max. |
| Good writing quality | 1000 char/sec. max. | 1000 char/sec. max. | 1000 char/sec. max. | 1000 char/sec. max. |
| Font generation | True type font, Laser font | | | |
| Barcodes and Matrices | 2D Data Matrix™, PDF417, BC 39, Interleaved 2 of 5, UPCA/UPCE BC 128, Maxi code, Code 93 and others | | | |
| Graphic formats | Vector and Raster, .BMP, .GIF, .JPG, .WMF, .EMF, .PLT, .DXF | | | |
| Serialization | Incremental, Data source | | | |
| Linear marking | Scalable with letter spacing control | | | |
| Drawing tools | Line, Rectangle, Circle, Ellipse with filling and outline | | | |
| Max power consumption | Less than 400 W standard wall plug 115 VAC | | | |
| System weight | 9kg -20 pounds | | | |
| Operating Temperature Range | 18C°-35C° Non-condensing 65° to 95° F | | | |
| Humidity | 10%-85% Non-condensing | | | |

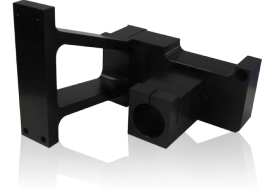
F30 Dimensional Drawings



F30 CO₂ Marking System Options

The standard configuration of the F30 CO₂ marking system, allows the user to have different options to meet virtually all production needs. Additional features include ease of installation allowing for quick start-up and graphical based programming for a minimal learning curve. Requirements beyond those listed below will be quoted upon request.

Mounting Hardware



Barcode, 2D Data Matrix Code Scanners for Marking Quality Verification



Optional Cables, Connectors, and Miscellaneous Electronics



Optional F-Theta Lenses

- 75 mm
- 100 mm
- 150 mm
- 201 mm



Auto Focus Laser Height Sensor with Controller and Software

- Small-spot, Definite-reflective type
- 50 µm spot diameter
- Maximum detection range of 150 mm
- High-speed response and digital display
- High-Power mode with 16-bit high accuracy
- Reading on transparent and solid surfaces

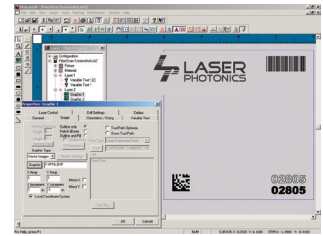
IR Laser Beam

- Operation wave length at 10.6 µm
 - Optional red diode pointer for easy setup
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F30 CO₂ Marking System Options (cont.)

Mounting Brackets for Auto Focus Sensor

Host Communications / Database Interface



Optional scanning heads

7mm, 10mm, 14mm, 25mm, 30mm mirrors

Custom solution and configuration

Customized beam shaping solutions

Custom I/O

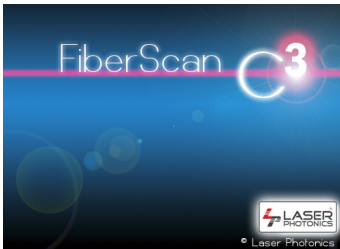
Custom safety interface

In-line and “on the fly” installations



Software Features Include:

- Multilingual internationalized interface
- COM (Component Object Model) interface
- True type font and laser engraving fonts
- Background templates
- Controls any laser type
- Open multiple jobs

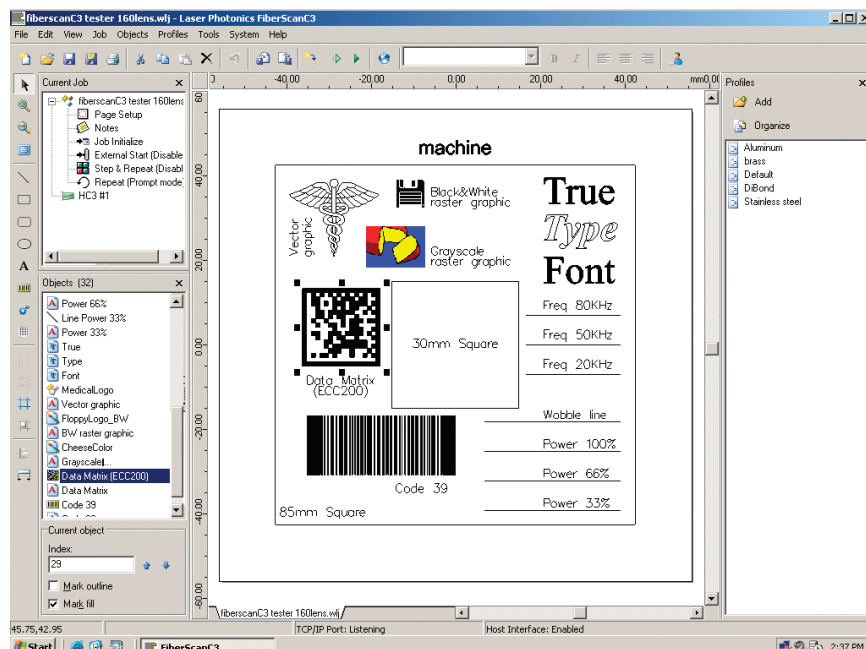


FiberScan C3™ Software

FiberScan C3™ software is a high performance, multi-threaded laser marking solution designed to specifically run on Windows XP Professional. 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 CO₂ 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 lasing job can use any fixture defined in the fixture database. The links allow 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.



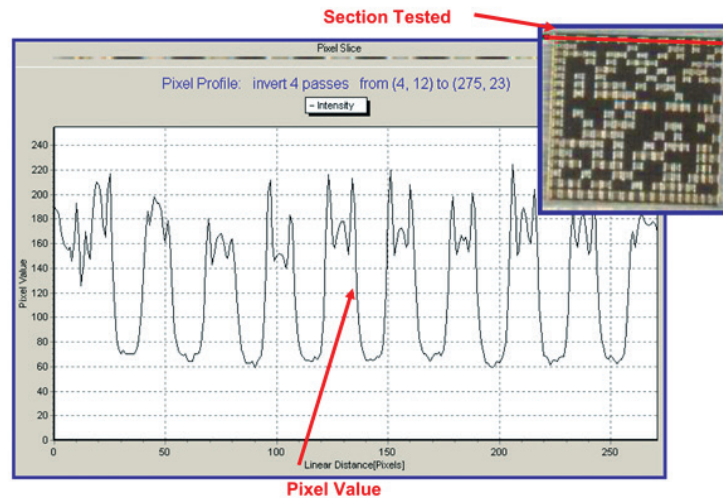
Application Research Center

Laser Photonics maintains an applications lab for processing customer samples and assisting with process development. Our applications lab has the latest testing equipment to analyze all of your application needs.

For marking applications, we provide the highest quality analysis of each and every mark using our Mark Quality Assessment™ (MQA™) software. With our MQA™ software, we have the ability to guarantee and verify the accuracy and quality of our marks.

The screen shot below demonstrates how the MQA™ software reads the level of pixels in the material marked. The section in red has been analyzed with the MQA™ software. The high and low pixel values demonstrate the overall contrast of the mark.

This procedure can be applied to various different marking processes and types generated by our Fiber Laser marking systems. We will prepare and research all applications within a matter of two to three weeks and provide a detailed report free of charge.



Advanced Support

- Remote laser diagnostics through TCP/IP protocol
- Remote diagnostics and upgrades
- Remote systems restore
- Multilingual software
- World wide support
- Built in help index
- Remote training

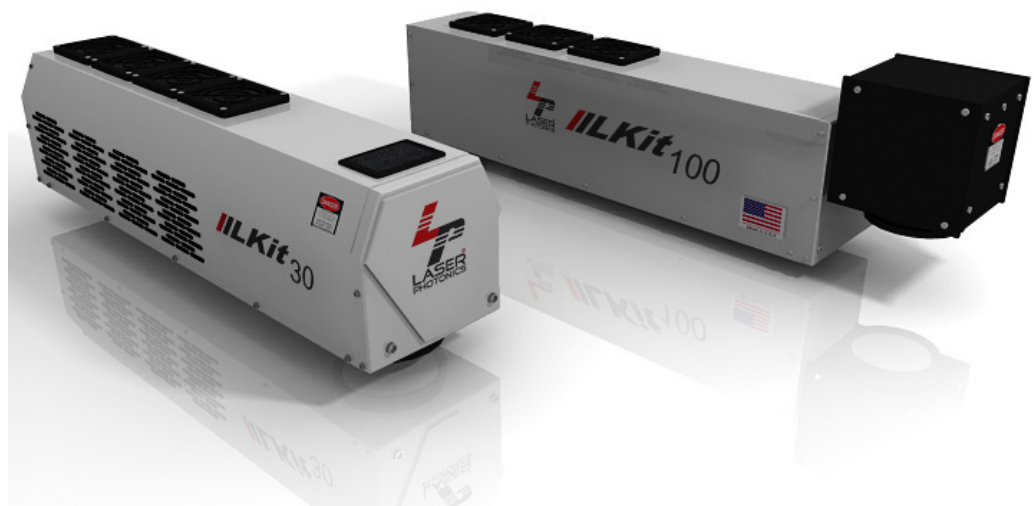
**2 year warranty
on laser components
with 5 year optional program**

International Support

*Multilingual software with
worldwide support*

- Australia
- Brazil
- Canada
- China/Hong Kong
- India
- Malaysia
- Mexico
- Philippines
- Qatar
- Russia
- Singapore
- Taiwan
- Thailand
- Turkey
- and more





Safety Considerations During Operation

10.6 μm 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.

21 CFR 1040.10 Compliance

This product is designed for OEM integration into other equipment.

The product is a Class 4 laser as designated by the CDRH and it does NOT 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. It is the responsibility of the equipment manufacturer to meet all of the regulatory requirements for the final system.



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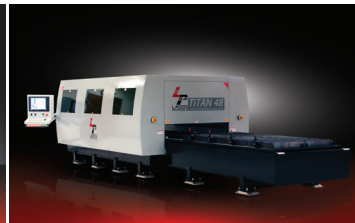
Notes

Laser Photonics - Product Range

F30



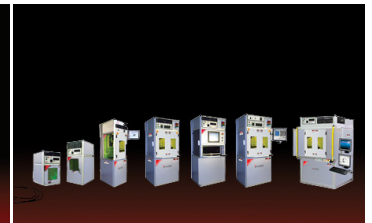
CleanTech Series



Titan Series



MarkStar Handheld



LaserTower™ Series

Laser Photonics, LLC is the industry leader in developing high-tech fiber and CO₂ laser systems. Laser Photonics exclusively specializes in advanced, innovative, latest generation laser systems, processes and technologies. We focus on CO₂ and cutting edge fiber laser technology for material processing. We have delivered hundreds of fiber laser cutting and engraving machines to countries worldwide. Contact us to learn more about our laser marking, cleaning, 3D metal printing, cutting and engraving systems.



1101 N Keller Road Suite G • Orlando, FL 32810 USA
Tel: 407.829.2613 • Toll Free: 1.888.418.2613 • Fax: 407.804.1002
www.laserphotonics.com • marketing@laserphotonics.com