

# ***FYBRA<sup>II</sup> - Active Fiber Laser Marking System***

***21-31-52W Versions***

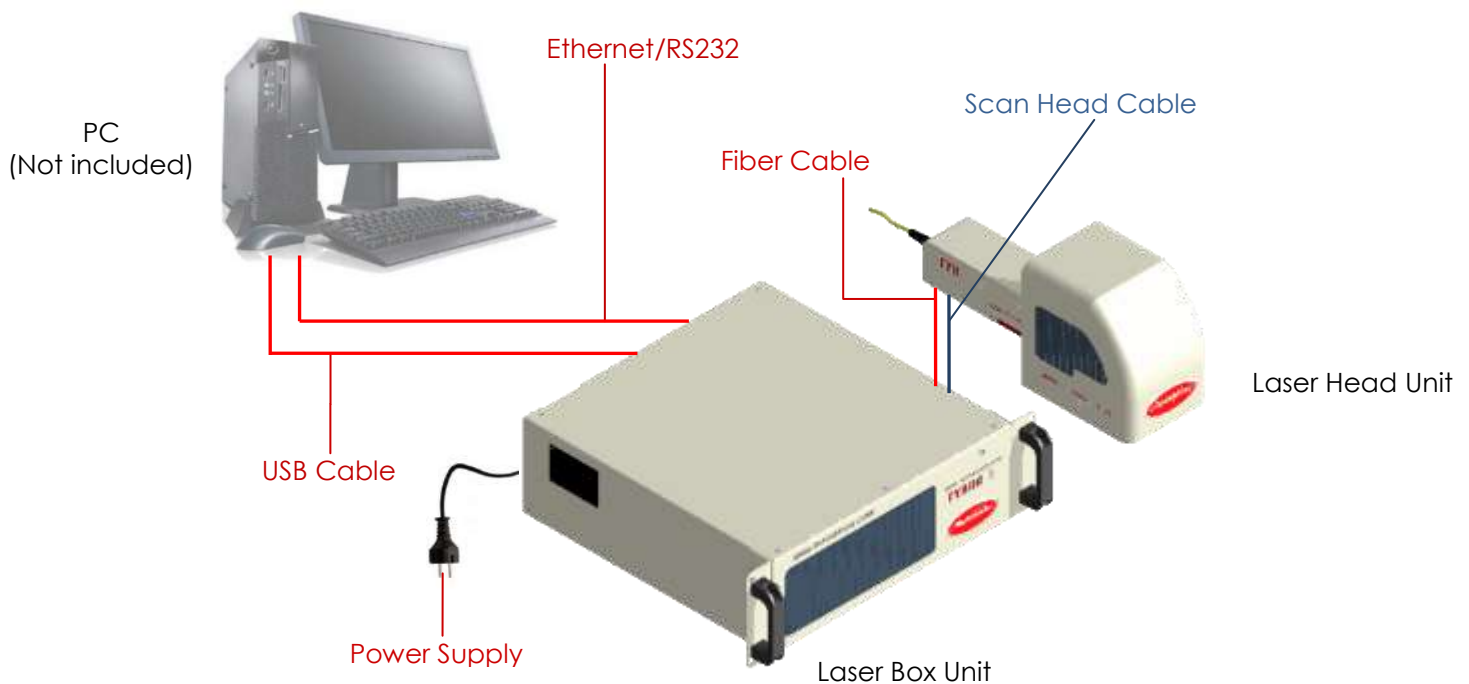
## **System Overview**

All AUTOMATOR fiber lasers are manufactured with the highest quality sources available today and are ideal for difficult to mark materials and heavy duty markings. FYBRA offers an exceptional combination of high peak power and exceptional beam quality produce a tight beam profile perfect for a wide variety of applications, from deep engraving and micro etching.



FYBRA<sup>II</sup> comes with three main components: the BOX contains the source and the electrical components, The HEAD with a galvanometer for fast x/y movement and focal lens and the FIBER optic cable that connects the two. The AUTOMATOR FYBRA<sup>II</sup> couples the stability of a fiber laser with our proprietary EuGENIUS<sup>TM</sup> software to create market leading "power-to-the-part" performance.

- ***Deeper and more precise markings***
- ***Double-block optimized laser device***
- ***Designed for bad environments***
- ***Stand-alone version available***
- ***Powerful and easy to use***



## Automator FYBRA II - Fiber laser

### Options

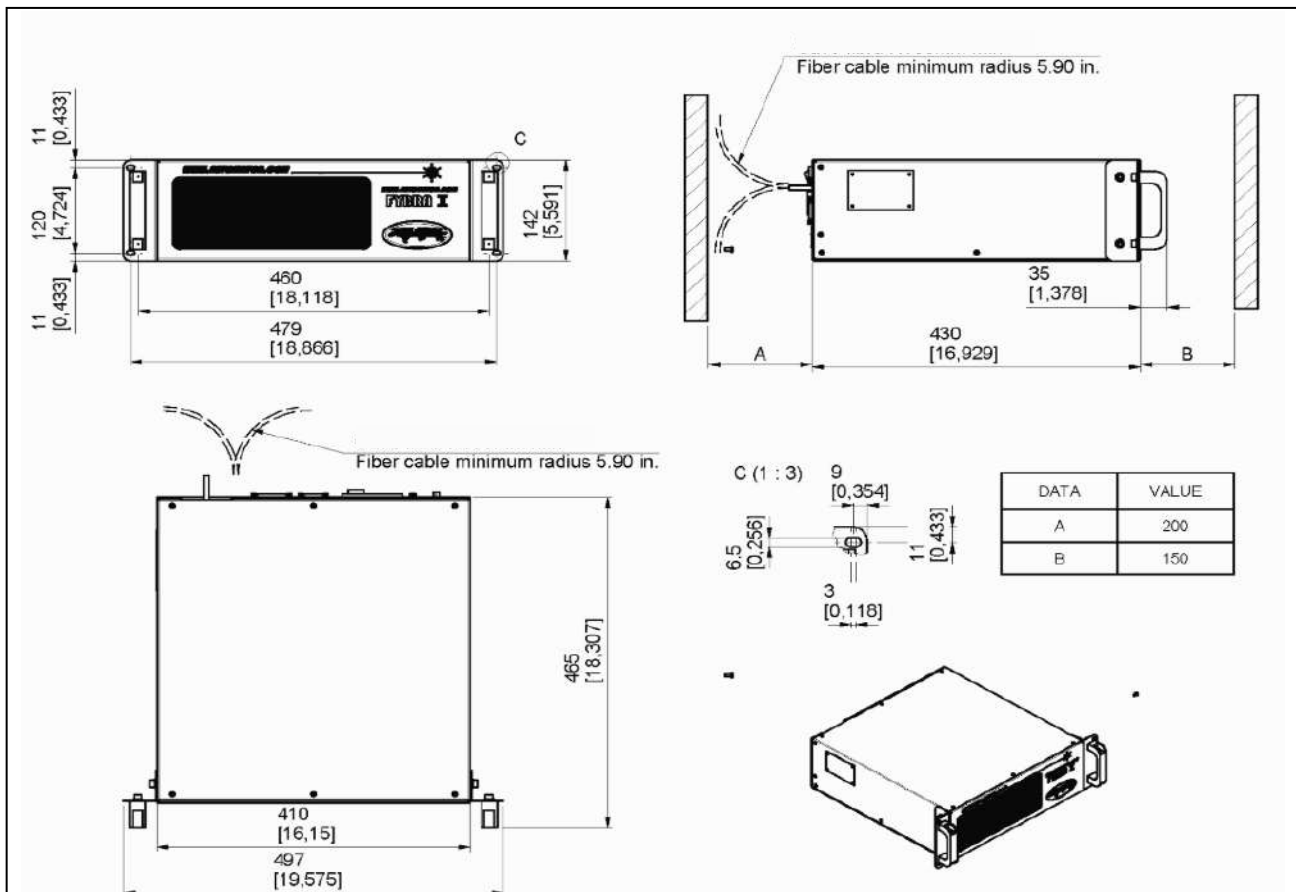
Adjustable X-Y-Z axis, Rotating Theta axis, Safety Class 1 enclosures

### Box unit



The box unit sets the electronic parts and the laser source in two separated cases. With this configuration, the laser source is protected by the dust and all the interferences coming from the external environment trough the fan chilling system.

### Box unit - Technical drawings



**Automator FYBRA<sup>II</sup> - Fiber laser**
**Box unit - Technical data**

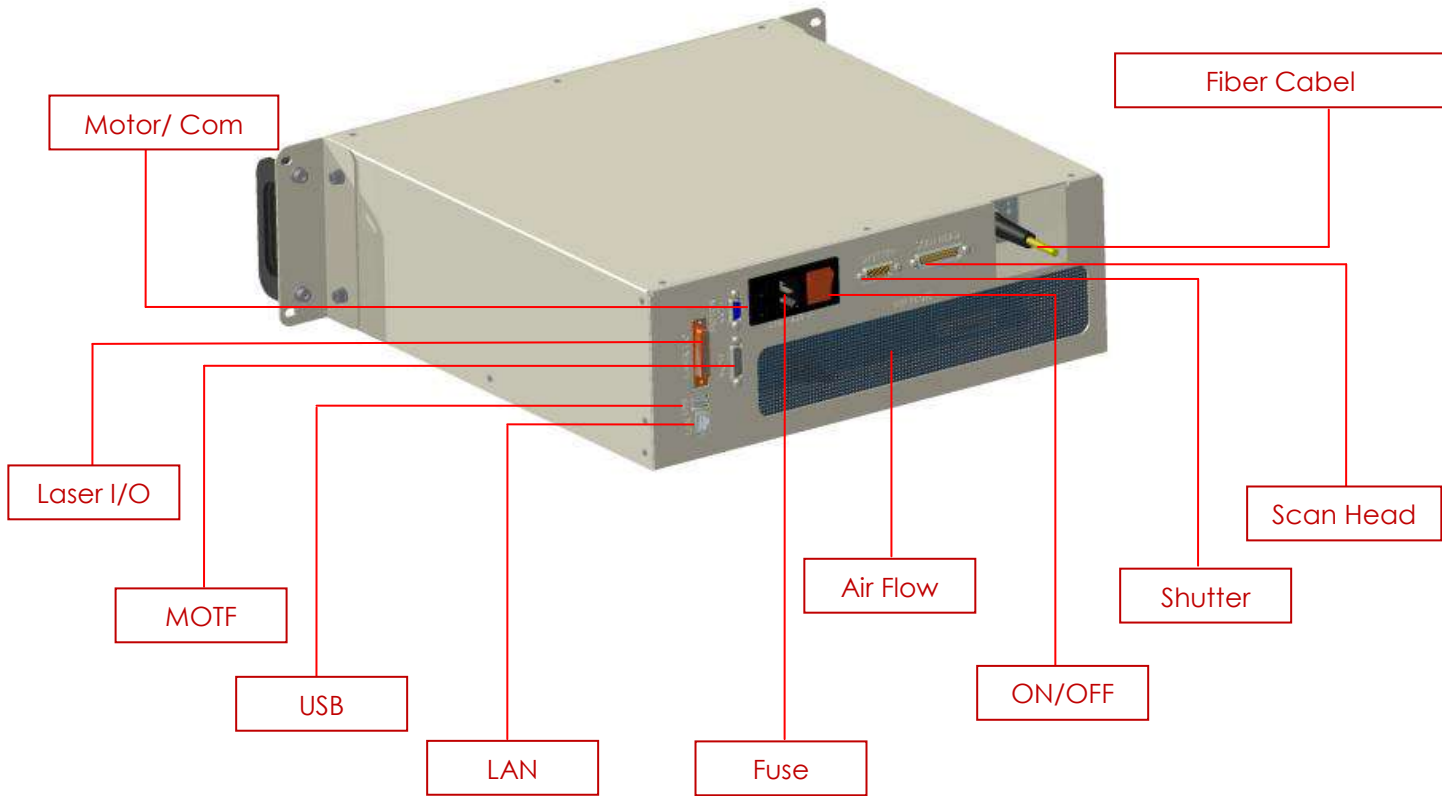
<b>Overall Dimensions: LxWxH (mm • in):</b>	465x497x142 • 18.3x19.5x5.6
<b>Weight (kg - lb):</b>	23,5 • 51,8
<b>Laser type:</b>	Active Fiber Laser
<b>Power range (W):</b>	21-31-52
<b>Wavelength (nm):</b>	1050 – 1090
<b>Polarization:</b>	Random
<b>Standard lens (mm - marking area):</b>	F160 - marking area 110x110
<b>Optical Isolator:</b>	Yes
<b>External power supply:</b>	100/240V 50/60Hz
<b>Power consumption (20°C) (W):</b>	500
<b>Laser working voltage (VDC):</b>	24 ± 1
<b>Laser beam diameter, before lenses (mm):</b>	6/8
<b>Beam quality (M<sup>2</sup>):</b>	1.7
<b>Pulse duration (ns) @20kHz:</b>	<140
<b>Output power tunability (%):</b>	10-100
<b>Standard fiber cable length (mm - in):</b>	2.400 • 94.50
<b>Operating temperature (°C • °F):</b>	0 - +40 • 32 - 100,4
<b>Store temperature (°C • °F):</b>	-10 - +60 • 14 - 140
<b>Humidity (%):</b>	10-80
<b>Cooling system:</b>	Forced air cooled
<b>Connectivity:</b>	Power, ethernet port, fiber cable, I/O port
<b>Directive 2011/65/EC - Restriction of Hazardous Substances (RoHS):</b>	Respectful
<b>Safety Class:</b>	4
<b>SIL:</b>	3
<b>MTBF (Working Hours):</b>	125.000
<b>IP Certification of the Cover: (CEI70-1)</b>	30
<b>Mark on the fly:</b>	Yes
<b>Available axis (depending by the softwares):</b>	Z-X-Y, Rotating Theta, up to 32 external axis

**Box unit - Board**

Board of PC interface with electronic control that handles the head and galvanometers for the two axes. The output-closing door signal management for the access to the marking area and Emergency safety Operator, according to the legislation in force, is responsibility of the integrator.

## Automator FYBRA<sup>II</sup> - Fiber laser

### Box unit - Layout and connectivity



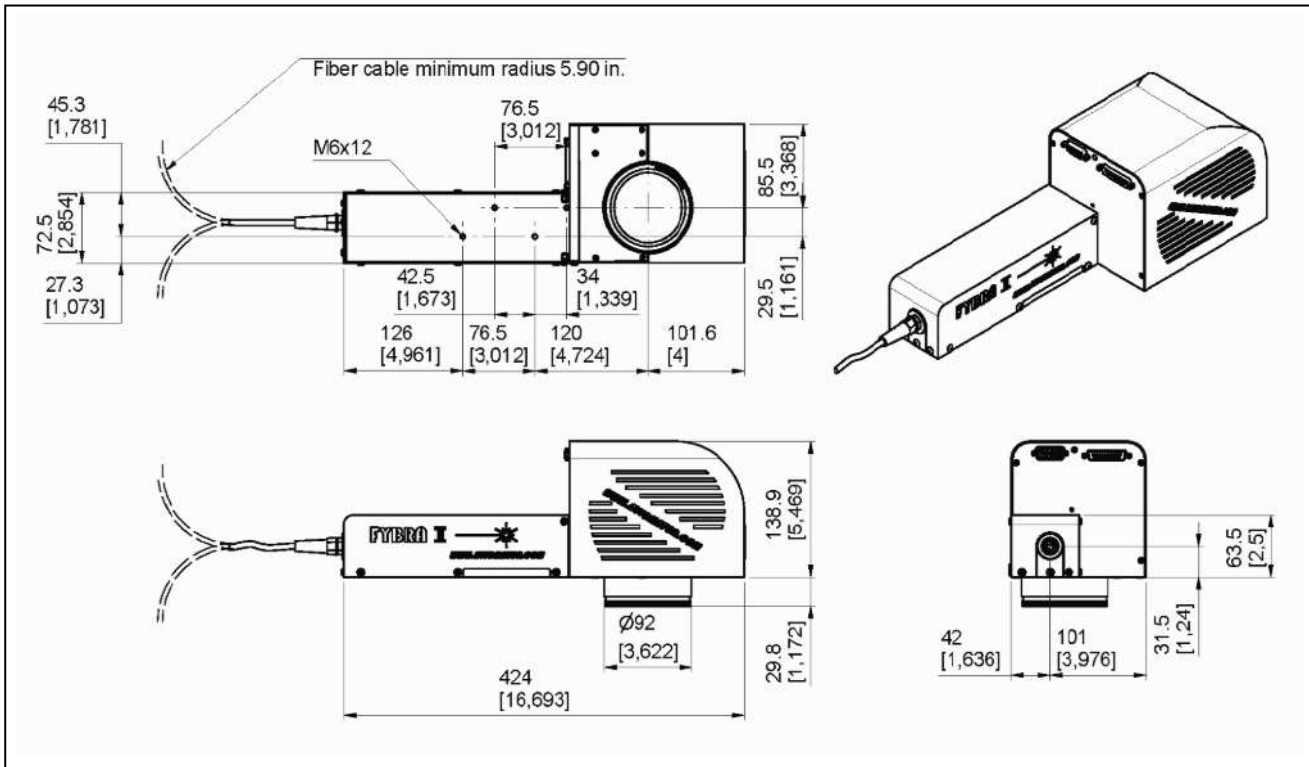
### Head unit



The head unit sets the galvanometric system and the lenses to focus the laser beam generated by the active fiber source in the Box unit.

#### Head unit - Scanning head

Scanning head with flat field standard lens 110x110 mm. For other areas of marking see **Lenses range**.

**Automator FYBRA<sup>II</sup> - Fiber laser**
**Head unit - Technical drawings**

**Head unit - Technical Data**

<b>Overall Dimensions LxWxH (mm • in):</b>	424x101x138 • 16.7x3.9x5.4
<b>Weight (kg - lb):</b>	6 • 13,22
<b>Fiber cable length (mm • in):</b>	2.400 • 94.50
<b>Marking Head installation directions:</b>	All directions
<b>IP Certification of the Cover (CEI70-1)</b>	60 31

**Head unit - Lenses range**

<b>Lens F163</b>	Flat field focus – marking area 110x110 mm	• 4,33"x4,33"
<b>Lens F100</b>	Flat field focus – marking area 60x60 mm	• 2,36"x2,36"
<b>Lens F254</b>	Flat field focus – marking area 155x155 mm	• 6,10"x6,10"
<b>LENS F330</b>	Flat field focus – marking area 200x200 mm	• 7,87"x7,87"
<b>Lens F430</b>	Flat field focus – marking area 300x300 mm	• 11,8"x11,8"

**Head unit - Lenses focus length** (these data are can vary lens by lens with a tolerance of 5%)

<b>Lens F163 (mm • in)</b>	190 • 7,48
<b>Lens F100 (mm • in)</b>	99 • 3,89
<b>Lens F254 (mm • in)</b>	298 • 11,7
<b>Lens F330 (mm • in)</b>	385 • 15,1
<b>Lens F430 (mm • in)</b>	492 • 19,3

## Automator FYBRA<sup>II</sup> - Fiber laser

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### Head unit - Red diode

Red diode pointing to 2 mw save (class 3A projecting the preview on the workpiece, so that the operator can easily check the positioning). The marked area is illuminated by a ring of LEDs, placed around the lens.

### Marking Head - Shutter

The FYBRA<sup>II</sup> marking head integrates a shutter housing: this electro-mechanical actuator provides a millisecond shutter operation. During marking, the shutter stays in an open position and then closes when the operation is completed providing a safe condition of lockout. The shutter movement can be controlled by the laser hardware/software or by the I/O signals. An integrated certified safety sensor detects the shutter blade position in the housing, providing a critical information that confirms the state of the shutter position.

### Head unit - FocusFinder

Automator FYBRA<sup>II</sup> is available, like any other Automator marking laser, even with **FocusFinder** focal distance detection system, which always detects the correct distance between the lens and the piece to be marked.

## EuGENIUS<sup>TM</sup> Software

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**EuGenius Software** has been projected and developed by Automator highly specialized team, consolidating the marked requests in the long term marking knowhow of more than 70 years in marking. Versatile in the applications and friendly to use, even by operators without highly technical specific training, such as CAD knowledge.

- Multilanguage menu
- Management barcode "Datamatrix", 2D code, QR code, PDF Queues
- Easy import of vector drawings, DXF
- Easy import of raster graphics, BMP, JPEG, .JPG, GIF
- Complete set of laser parameters such as speed or power laser
- Texts, Text arcs, text on curved lines,
- Lines, rectangles, polygons, circles and arcs
- TTF Font ® (windows property)
- Graphic preview
- Texts with date, serial numbers, shift codes and year/month/day
- Multi fillings or single profile markings
- Templates (object to be marked as background)
- Proportion scale, move, rotate, group creation of each object on the screen
- Quick Test for an easy identification of the best laser parameters
- Automation & object tiling
- External axis commanded by software
- Shutter control

Communication protocols: proprietary | Remote Interface Protocol

**Automator FYBRA<sup>II</sup> - Fiber laser**
**FYBRA<sup>II</sup> – Pin out – I/O scheme**

Com. IN
nc
Start Marking
JOB loading
USER 1
USER 2
USER 3
USER 4 (SHUTTER)
nc
nc
nc
nc
X1 , X2 (Com. Security)
Com. OUT
System ON
System READY
Laser ON (armed)
nc
Ongoing marking
USER OUT 1
USER OUT 2
nc
Nc
Y1 (Security Channel 1)
Y2 (Security Channel 2)

Pin:	I/O 9 Female Poles (communications/motors)
1	(reserved)
2	RX2
3	TX2
4	(reserved)
5	0 Vdc
6	(reserved)
7	A
8	B
9	+24 Vdc

Pin:	I/O 15 Female Poles (encoder)		
1	+24 Vdc	8	nc
2	0 Vdc	9	+5Vdc
3	A	10	/A
4	B	11	/B
5	Z	12	/Z
6	nc	13	nc
7	nc	14/15	nc