SFX BY-50GS-175-MOPA

SFX 60W JPT MOPA M7 Fiber Laser Marking Machine Instruction Manual

Brand: SFX | Model: BY-50GS-175-MOPA

1. Introduction

This manual provides essential information for the safe and efficient operation of your SFX 60W JPT MOPA M7 Fiber Laser Marking Machine. This advanced laser engraver is designed for high-precision marking and engraving on a wide range of materials, featuring a 175x175mm marking area and an 80mm rotary axis for versatile applications. It is compatible with industry-standard software such as Lightburn and EZCAD2.0. Please read this manual thoroughly before operating the machine to ensure proper setup, safe usage, and optimal performance. Retain this manual for future reference.

2. Safety Information

WARNING: This is a Class 4 Laser Product. Direct exposure to the laser beam can cause severe eye and skin damage. Always wear appropriate laser safety goggles and ensure proper ventilation during operation.

- Always wear certified laser safety glasses that block the specific wavelength of the fiber laser (typically 1064nm).
- Never look directly into the laser beam or at reflections from shiny surfaces.
- Ensure the work area is clear of flammable materials.
- Operate the machine in a well-ventilated area to dissipate fumes and particles.
- Keep children and unauthorized personnel away from the machine during operation.
- Disconnect power before performing any maintenance or cleaning.
- Familiarize yourself with the emergency stop button location and function.

3. Packaging Details

Upon receiving your SFX Fiber Laser Marking Machine, please verify that all components listed below are included and in good condition:

Image: Detailed packing list showing all included accessories.

- 1 x Fiber Laser Engraver (60W JPT MOPA M7)
- 1 x 175x175mm Lens
- 1 x 80mm Rotary Axis (Optional, included in this package)
- 1 x Power Line
- 1 x Goggles (Laser Safety Glasses)
- 1 x Allen Wrench Set
- 1 x USB Drive (containing software and user manual)
- 1 x Foot Switch
- M6 Positioning Screws (some)
- 2 x Lock Bar

- 1 x USB Line

4. Product Overview and Components

The SFX Fiber Laser Marking Machine consists of several key components working in unison to achieve precise marking and engraving.

Image: The complete SFX 60W JPT MOPA M7 Fiber Laser Marking Machine, including the laser unit, control box, and rotary axis attachment.

4.1. Laser Source: JPT MOPA M7

The JPT MOPA M7 series high-power pulsed fiber lasers utilize master oscillator power amplifier (MOPA) configuration, offering excellent laser performance and high levels of temporal pulse shaping controllability. This technology allows for independent control of pulse repetition frequency (PRF) and pulse width, enabling superior marking effects on various materials, including aluminum black marking and color marking on stainless steel.

Image: The JPT MOPA M7 laser source module and a F-Theta lens, crucial for focusing the laser beam.

4.2. Control Board & Galvo Scanner

The machine features a JCZ-LMCV4 control board, providing stable and reliable interfaces. It is compatible with EZCAD2.0 software and Lightburn. The Sino-Galvo & ZBTK galvo scanner ensures good running stability, high positioning accuracy, fast marking speed, and strong anti-interference ability.

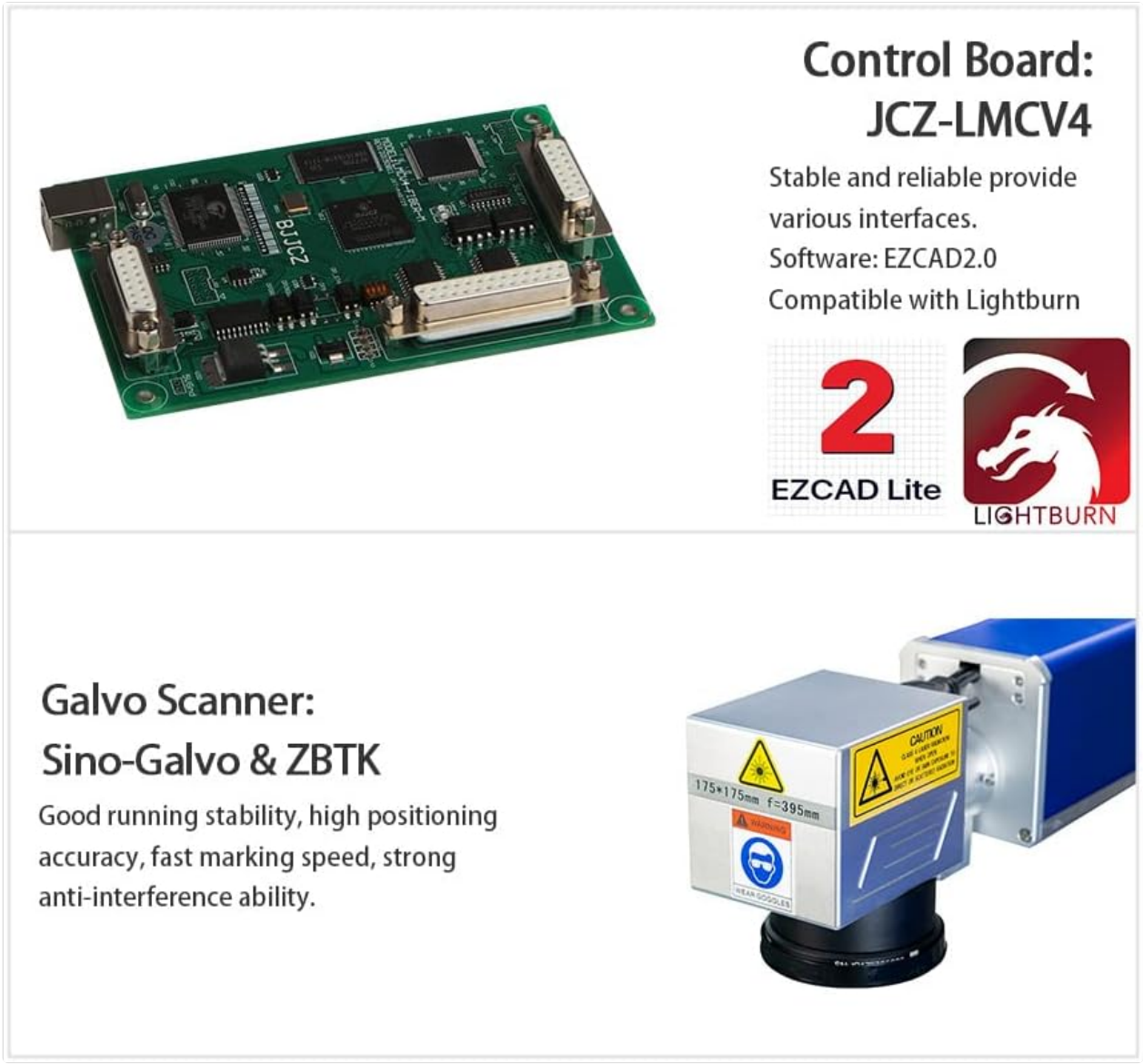

Image: The JCZ-LMCV4 control board and the galvo scanner, which directs the laser beam.

4.3. Focusing System & Work Bed

The machine utilizes a double red dot focusing system, providing a red guideline and red dot for easy and accurate focusing. The work bed is made of aluminum alloy with an open design and location holes for easy and precise positioning of materials.

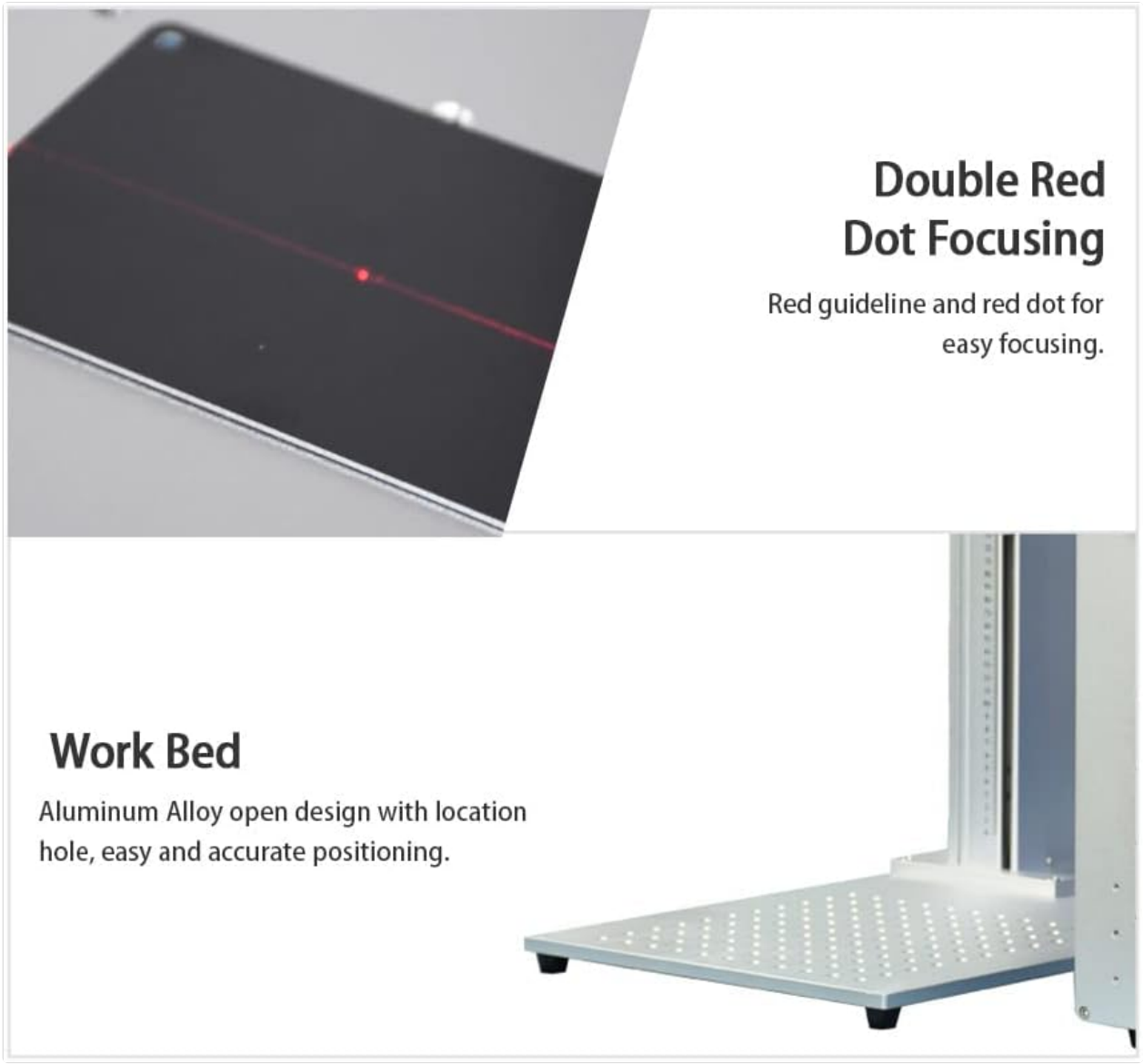

Image: Illustration of the double red dot focusing mechanism and the perforated aluminum work bed.

4.4. Machine Interface & Rotary Axis

The machine features industrial standard aviation plug and socket interfaces, ensuring dust-proof and water-proof connections. The included 80mm rotary axis (D80) allows for engraving on cylindrical or irregular objects, expanding the machine's versatility. It features a 57*76 Stepper Motor and a clamping range of 2-70mm.

Image: Close-up of the machine's USB and rotary device ports, alongside the 80mm rotary axis.

5. Technical Specifications

Below are the detailed technical parameters for the 60W JPT MOPA M7 Fiber Laser Marking Machine:

	SFX-20GS	SFX-30GS	SFX-60GS
Marking Area	110 x 110mm (4.3 x 4.3in) 150 x 150mm (5.9 x 5.9in) 175x 175mm (6.9 x 6.9in)	Optional	
Maximum Material Thickness	300mm(11.8in)@110 x 110mm 250mm(9.8in)@150 x 150mm 206mm(8.1in)@175 x 175mm		
Laser Source	JPT MOPA M7		
Repetition Rate (Frequency)	1-4000kHz	1-4000kHz	1-4000kHz
Pulse Duration	2-350ns	2-350ns	2-500ns
Output Power Adjustment range	10%-100%		
Marking Speed	⩽7m/s(275.6in/s)	⩽7m/s(275.6in/s)	⩽7m/s(275.6in/s)
Engraving Depth	⩽0.2mm(0.008in)	⩽0.4mm(0.016in)	⩽1mm(0.024in)
Minimum Line Width	0.01mm(0.0004in)	Depends on the material	
Minimum Character	0.2mm(0.0008in)	Depends on the material	
Electrical Requirements	110V-240/50Hz-60Hz(According to local electricity supply).		
Power Consumption	500W	800W	1000W
Marking Interface	USB connection.Compatible with Windous XP/Vista/7/8/10.		
Communication Mode For Automation	TCP/IP,IO,RS232.		
Marking Content	barcodes,serial numbers,text,vector,and logos.		
Red Dot Pointer	Since the laser beam is incisible, the Red Dot Pointer allows you to have a visual reference for locating where the laser will fire .		
Contact us or fill out the form to learn more!			

Image: A comparative table of technical specifications for SFX-20GS, SFX-30GS, and SFX-60GS models.

Parameter	Specification (60W Model)
Laser Power	60W (Class 4, 60,000mW Output Power)

Parameter	Specification (60W Model)
Marking Area	175 x 175mm
Max. Material Thickness	206mm
Laser Source	JPT MOPA M7
Maximum Pulse Energy	2.0mJ
Repetition Rate Frequency	1-4000kHZ@JPT
Pulse Duration	2-500ns
Output Power Adjustment Range	10%-100%
Marking Speed	7m/s
Engraving Depth	≤1.0mm
Min. Line Width	≤0.01mm (Depends on the material)
Min. Character	0.2mm (Depends on the material)
Input Voltage	110V-240V/50-60Hz
Complete Power Consumption	1000W
Communication Mode for Automation	TCP/IP, IO, RS232
Electrical-Optical Conversion Rate	Up to 70%
Re-position Precision	0.002mm

6. Application Advantages

The SFX 60W JPT MOPA M7 Fiber Laser Marking Machine offers several advantages for various industrial and creative applications:

- **Metal Surface Processing & Peeling Coating:** Ideal for precise removal of coatings from metal surfaces.
- **Aluminum Black Marking:** Achieves deep, dark, and durable black marks on aluminum.
- **Semi-conductor & Electronics Industry Applications:** Suitable for delicate and precise marking on electronic components.
- **Large Area Engraving:** The 175x175mm marking area allows for efficient processing of larger items.
- **Excellent Marking Effect on Plastic or Other Sensitive Material:** MOPA technology provides finer control over pulse characteristics, reducing heat impact and improving mark quality on sensitive materials.
- **Black and Color Marking on Stainless Steel:** Capable of producing distinct black and various color markings on stainless steel surfaces.

7. Applicable Materials

This fiber laser marking machine is highly versatile and can be used on a wide range of materials, both metallic

and certain non-metallic types:

Image: A table indicating materials suitable for laser cutting and laser marking/engraving.

Material Type	Laser Marking & Engraving	Laser Cutting
Carbon Steel	✔	✔
Aluminum	✔	✔
Stainless Steel	✔	✔
Brass	✔	✔
Copper	✔	✔
Gold	✔	
Silver	✔	
Titanium	✔	✔
Nylon	✔	

Material Type	Laser Marking & Engraving	Laser Cutting
Light Button	✔	
ABS	✔	
PVC	✔	
PES	✔	
Acrylic	✔	
Plastics	✔	
Brick	✔	
Glass	✔	
Marble	✔	
Tile	✔	

8. Setup Guide

1. **Unpacking and Inspection:** Carefully unpack all components. Inspect for any visible damage during transit. Report any discrepancies to the seller immediately.
2. **Assembly:** Follow the assembly instructions provided in the included USB drive. Typically, this involves mounting the laser head to the column, connecting the control box, and attaching the rotary axis if desired.
3. **Software Installation:** Insert the provided USB drive into your computer. Install the EZCAD2.0 software. If using Lightburn, ensure you have the correct drivers and configuration files, which may also be on the USB drive or available from the manufacturer's support resources.
4. **Power Connection:** Connect the machine to a stable power supply (110V-240V/50-60Hz). Ensure the emergency stop button is disengaged (turned counter-clockwise) before powering on.
5. **Computer Connection:** Connect the laser machine to your computer via the provided USB cable.

9. Operating Instructions

This section provides a general overview of the operating procedure. Refer to the detailed software manual (EZCAD2.0 or Lightburn) for specific instructions on design and parameter settings.

1. **Power On:** Turn on the main power switch on the control box. The machine will initialize.
2. **Software Launch:** Open the EZCAD2.0 or Lightburn software on your computer.
3. **Design & Import:** Create or import your desired design (text, graphics, barcodes, serial numbers, logos).
4. **Parameter Settings:** Adjust laser parameters such as power, speed, frequency, and pulse width according to the material being processed and the desired marking effect. Consult the software manual and material testing guidelines.
5. **Material Placement:** Place your material securely on the work bed. For cylindrical objects, use the rotary axis.
6. **Focusing:** Use the double red dot focusing system to achieve optimal focus. The two red dots should

converge into a single, sharp point on the material surface.

7. **Preview (Red Light):** Activate the red light preview function in the software to see the marking area on your material. Adjust the material position as needed.
8. **Start Marking:** Once satisfied with the preview and settings, initiate the marking process from the software. The laser will begin engraving.
9. **Monitoring:** Monitor the marking process. In case of any issues, immediately press the emergency stop button.

Your browser does not support the video tag.

Video: SFX LASER Highlights, demonstrating various marking applications and the machine's capabilities on different materials.

10. Maintenance

Regular maintenance ensures the longevity and optimal performance of your laser marking machine:

- **Lens Cleaning:** Periodically clean the F-Theta lens and protective window with a lint-free cloth and lens cleaning solution. Avoid touching the optical surfaces with bare hands.
- **Dust Removal:** Keep the machine, especially the galvo scanner and control box, free from dust and debris. Use compressed air or a soft brush.
- **Cable Inspection:** Regularly check all cables and connections for wear or damage. Ensure they are securely plugged in.
- **Ventilation:** Ensure the cooling fans on the control box and laser source are not obstructed and are functioning correctly.
- **Software Updates:** Keep your EZCAD2.0 or Lightburn software updated to the latest version for improved features and bug fixes.

11. Troubleshooting

This section addresses common issues you might encounter. For more complex problems, please contact SFX customer support.

Problem	Possible Cause	Solution
Laser not firing	Emergency stop engaged, power off, software error, cable disconnected.	Disengage E-stop, check power, restart software/machine, verify cable connections.
Poor marking quality	Incorrect focus, wrong parameters, dirty lens, material not suitable.	Re-focus, adjust power/speed/frequency, clean lens, test on scrap material.
Machine not recognized by computer	Driver issue, faulty USB cable, software not installed correctly.	Reinstall drivers, try a different USB port/cable, reinstall software.
Rotary axis not moving	Incorrect connection, software settings, motor issue.	Check rotary axis cable, verify settings in software, restart machine.

12. Warranty and Support

Your SFX 60W JPT MOPA M7 Fiber Laser Marking Machine is backed by SFX Industrial Technology. For specific warranty terms, please refer to the documentation included with your purchase or contact the seller directly. SFX Industrial Technology offers customer support to assist with any technical issues or inquiries.

- **Returns:** This product is eligible for 30-day easy returns.
- **Customer Support:** For technical assistance, troubleshooting, or parts inquiries, please contact SFX Industrial Technology.

Related Documents - BY-50GS-175-MOPA

	Monport Fiber Laser Marking Machine User Manual This user manual provides comprehensive instructions for the installation, setup, safe operation, and maintenance of the Monport Fiber Laser Marking Machine. It covers general information, safety precautions, installation steps, operation procedures, maintenance guidelines, and troubleshooting.
	ComMarker M7-mopa Laser Marking Machine Manual Comprehensive user manual for the ComMarker M7-mopa laser marking machine, detailing safety precautions, assembly, software operation, parameter settings, and troubleshooting FAQs.
	ComMarker B6 Laser Marking Machine Manual Comprehensive manual for the ComMarker B6 Laser Marking Machine, covering safety, assembly, specifications, operation, and software setup for precise laser engraving.
	Cloudray MP Series Laser Marking Machine Packing List and Contents Detailed packing list for the Cloudray MP Series Laser Marking Machine, including all standard accessories, components, and their functions. Essential information for setup and operation.

	ComMarker B6 & B6MOPA Laser Engraver User Manual: Assembly, Operation, and Maintenance Guide Comprehensive user manual for the ComMarker B6 and B6MOPA Laser Engravers, covering machine assembly, operation instructions, software setup (EZCAD2, Lightburn), auto-focus settings, and maintenance procedures.
	OMTech LYF-60W MOPA Fiber Laser Marking Machine User Manual Comprehensive user manual for the OMTech LYF-60W MOPA Fiber Laser Marking Machine, detailing installation, operation, safety protocols, maintenance, and troubleshooting for personal and professional applications.