ACMER S2

ACMER S2 Laser Engraver and Cutter: User Manual

Model: S2

1. Introduction

This manual provides comprehensive instructions for the safe and efficient use of your ACMER S2 Laser Engraver and Cutter. Please read this manual thoroughly before operating the device to ensure proper setup, operation, and maintenance. Adhering to these guidelines will help you achieve optimal results and ensure safety.
The ACMER S2 is a high-precision laser engraving and cutting machine designed for various materials such as wood, metal, leather, and acrylic. It features a 12W laser module, a 300x300mm working area, and a maximum engraving speed of 10,000 mm/min.

2. Safety Guidelines

WARNING: Laser radiation can cause eye damage and skin burns. Always wear protective goggles during operation. Never look directly at the laser beam.

- Ensure the work area is well-ventilated to dissipate fumes and smoke.
- Keep a fire extinguisher nearby.
- Do not leave the machine unattended during operation.
- Keep children and pets away from the operating machine.
- Operate the machine on a stable, non-flammable surface.
- Avoid engraving or cutting highly reflective, transparent, or unknown materials without proper precautions.
- The machine includes a protective anti-UV acrylic cover. Ensure it is in place during operation.

3. Setup

3.1 Unpacking and Assembly

The ACMER S2 is designed for easy assembly. Carefully unpack all components and follow the included assembly guide. Ensure all screws are tightened securely before proceeding.

3.2 Connecting the Device

1. Connect the power adapter to the machine and a suitable power outlet.
2. Connect the machine to your computer via the provided USB cable.

3.3 Software Installation

The ACMER S2 is compatible with popular laser control software such as LightBurn and LaserGRBL. It supports Windows, macOS, and Linux operating systems. Download and install the latest version of your preferred software from the official websites.

3.4 Focus Adjustment

Accurate focus is critical for optimal engraving and cutting results. Use the provided focus block or a similar object to set the correct focal distance.

1. Place the material to be processed on the work area.
2. Position the laser module over the material.
3. Place the focus block (typically 3mm thick) between the laser module and the material surface.
4. Loosen the thumbscrew on the side of the laser module.
5. Adjust the laser module's height until its bottom edge rests gently on the focus block.
6. Tighten the thumbscrew to secure the laser module in place.
7. Remove the focus block. The laser is now focused correctly for the material thickness.

Image: Adjusting the laser module's focus using a focus block.

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Video: This video demonstrates the process of setting the laser focus and performing a test cut on MDF material. It shows the laser module being adjusted to the correct height using a small piece of material as a guide, followed by the machine cutting a square and a circle.

4. Operating Instructions

4.1 Material Preparation

Ensure your material is clean, flat, and free of obstructions. Secure the material to the work area to prevent movement during operation.

4.2 Loading Material

Place the material onto the honeycomb workbed. Ensure it is positioned within the working area of 300x300mm.

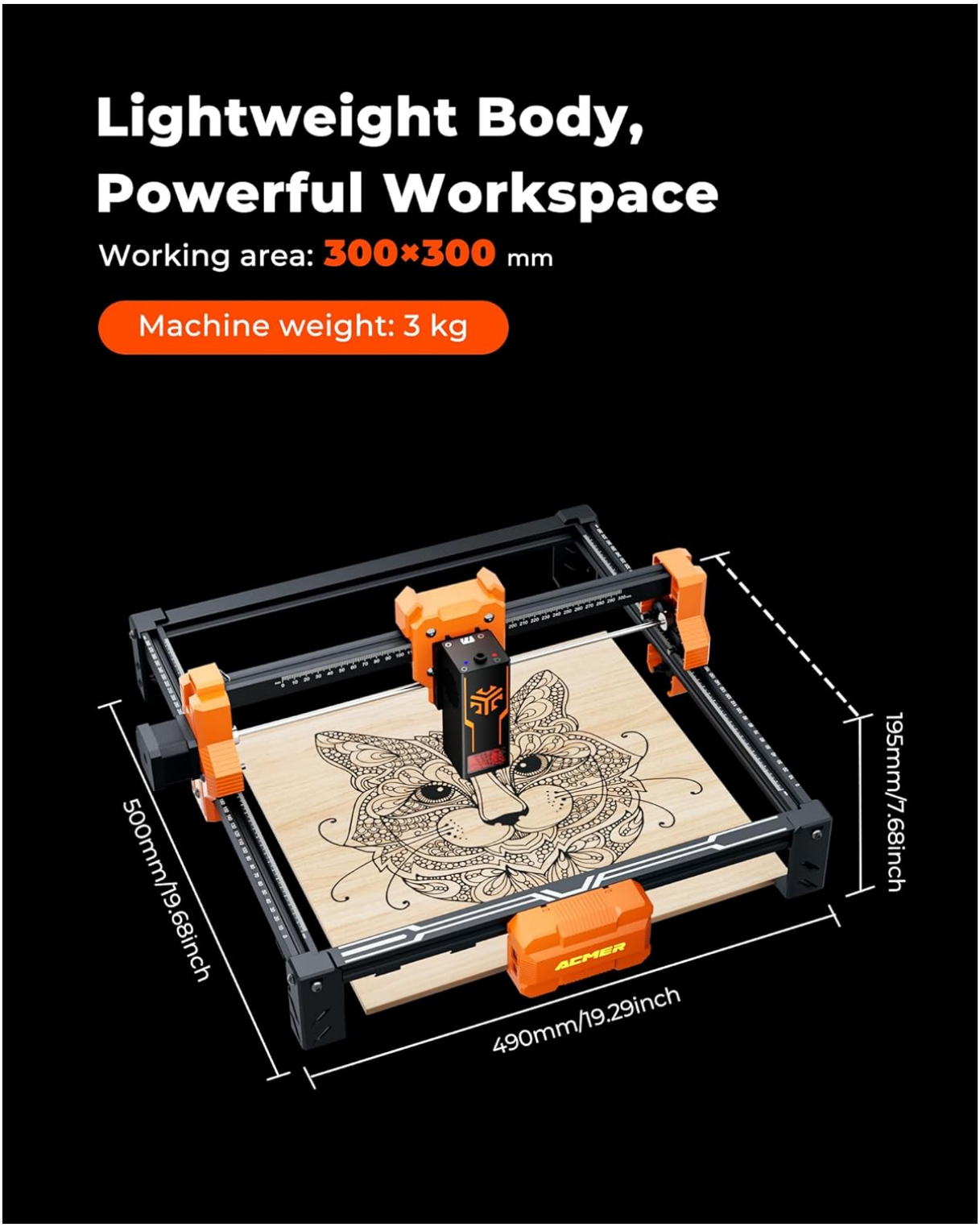

Image: The ACMER S2 machine highlighting its 300x300mm working area.

4.3 Software Operation and Parameter Settings

Open your chosen software (LightBurn or LaserGRBL). Import your design and configure the engraving or cutting parameters. These parameters include:

- **Speed:** Determines how fast the laser head moves. Higher speeds are generally used for engraving or light cutting.
- **Power:** Controls the laser's intensity. Higher power is needed for cutting thicker materials or deeper engraving.

- **Passes:** The number of times the laser will trace the same path. Multiple passes are often required for cutting thicker materials.

Refer to the software's documentation for detailed instructions on setting up your projects. Experiment with small test pieces to find the optimal settings for your specific material and desired outcome.

Image: Software compatibility for the ACMER S2, including LightBurn and LaserGRBL.

4.4 Starting Operation

Once parameters are set and the material is secured, initiate the engraving or cutting process from your software. The machine will begin executing the design.

4.5 Material Compatibility and Cutting Depth

The ACMER S2 can engrave over 100 different materials and cut various thicknesses depending on the

laser wattage and number of passes. For example, the 12W laser can cut up to 15mm paulownia wood and 12mm black acrylic with multiple passes.

Image: Cutting depth capabilities for various laser wattages and materials.

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Video: This video demonstrates the ACMER S2 12W laser cutting through 4mm black acrylic. It shows the laser module in action, making precise cuts to create a square and a circle, highlighting the machine's cutting capability on acrylic.

5. Maintenance

Regular maintenance ensures the longevity and performance of your ACMER S2.

- **Cleaning the Laser Module:** Periodically clean the laser lens and nozzle with a soft, lint-free cloth and appropriate lens cleaning solution.
- **Cleaning the Work Area:** The honeycomb workbed can accumulate debris. Clean it regularly to prevent residue buildup that could affect cutting quality or pose a fire hazard.
- **Lubrication:** Apply a small amount of lubricant to the guide rails and lead screws as recommended by the manufacturer to ensure smooth movement.
- **Air Assist (Optional):** If using an optional air assist pump, ensure its nozzle is clear and the air flow is unobstructed. Air assist helps achieve cleaner cuts and reduces charring.

Image: The benefit of using an air assist pump for cleaner cuts and reduced charring.

6. Troubleshooting

If you encounter issues with your ACMER S2, refer to the following common problems and solutions:

- **Laser not firing:** Check power connections, USB connection, and ensure the laser module is properly seated. Verify laser power settings in your software.
- **Poor engraving/cutting quality:**
  - Verify laser focus.
  - Adjust speed and power settings for the specific material.
  - Clean the laser lens.
  - Ensure the material is flat and secured.
- **Machine not connecting to computer:** Check USB cable, try a different USB port, reinstall software drivers, or restart both the machine and computer.
- **Unexpected movement or stopping:** Ensure the machine is on a stable surface. Check for loose belts or pulleys. The S2 has movement detection safety features that may pause operation if unexpected movement occurs.

For more detailed troubleshooting, consult the software documentation (LightBurn, LaserGRBL) or the ACMER official support resources.

7. Specifications

Feature	Specification
Model Number	S2
Laser Output Power	12,000mW (12W)
Total System Power	72W
Engraving Accuracy	0.01 mm (0.004 in)
Ultra-fine Laser Spot	0.08×0.08 mm
Working Area	300x300 mm
Engraving Speed	Up to 10,000 mm/min
Supported Materials	Wood, Metal, Leather, Acrylic, etc.
Software Compatibility	LightBurn, LaserGRBL
Operating Systems	Windows, macOS, Linux
Package Dimensions	21.61 x 11.54 x 5.59 inches
Item Weight	8.49 pounds
Manufacturer	Acmer

8. Warranty and Support

For warranty information, please refer to the documentation provided with your purchase or visit the official ACMER website. For technical support, contact ACMER customer service through their official channels or the retailer from whom you purchased the product.