AENBUSLM DLC-JG-3.0

AENBUSLM 20W Laser Module with Air Assist Instruction Manual

Model: DLC-JG-3.0

1. Safety Information

This AENBUSLM laser module is a Class 4 laser product. Improper use can result in serious injury, including permanent eye damage, skin burns, and fire. Always adhere to the following safety guidelines:

- **Eye Protection:** Always wear certified laser safety goggles that block the specific wavelength of this laser (typically 450nm-455nm blue laser) when the laser is in operation. Never look directly into the laser beam or at its reflection.
- **Skin Protection:** Avoid direct exposure of skin to the laser beam.
- **Fire Hazard:** The laser can ignite flammable materials. Ensure a fire extinguisher is readily available and never leave the laser operating unattended. Work in a well-ventilated area.
- **Children and Pets:** Keep the laser module and its operating area out of reach of children and pets.
- **Ventilation:** Ensure adequate ventilation to remove fumes and smoke generated during engraving or cutting.
- **Emergency Stop:** Familiarize yourself with the emergency stop procedure for your laser engraving machine.

2. Product Overview

The AENBUSLM DLC-JG-3.0 is a high-power 20W (20000mW) optical output laser module designed for precision cutting and engraving. It features a built-in FAC (Fast Axis Collimation) lens and an ultra-fine compressed laser spot for enhanced performance. The integrated air assist system helps achieve cleaner cuts and engravings by clearing debris and smoke.

This image displays the AENBUSLM laser module alongside various items that can be customized, such as ceramic mugs, stainless steel tumblers, hip flasks, and small wooden cutting boards, demonstrating the module's application in engraving.

This diagram highlights the main features of the 20W laser engraving head, including its 20W optical output, integrated eye protection, external air pump compatibility, laser cutting and air assist functions, ultra-fine 0.06*0.08mm laser beam, and suitability for various materials.

Key Features:

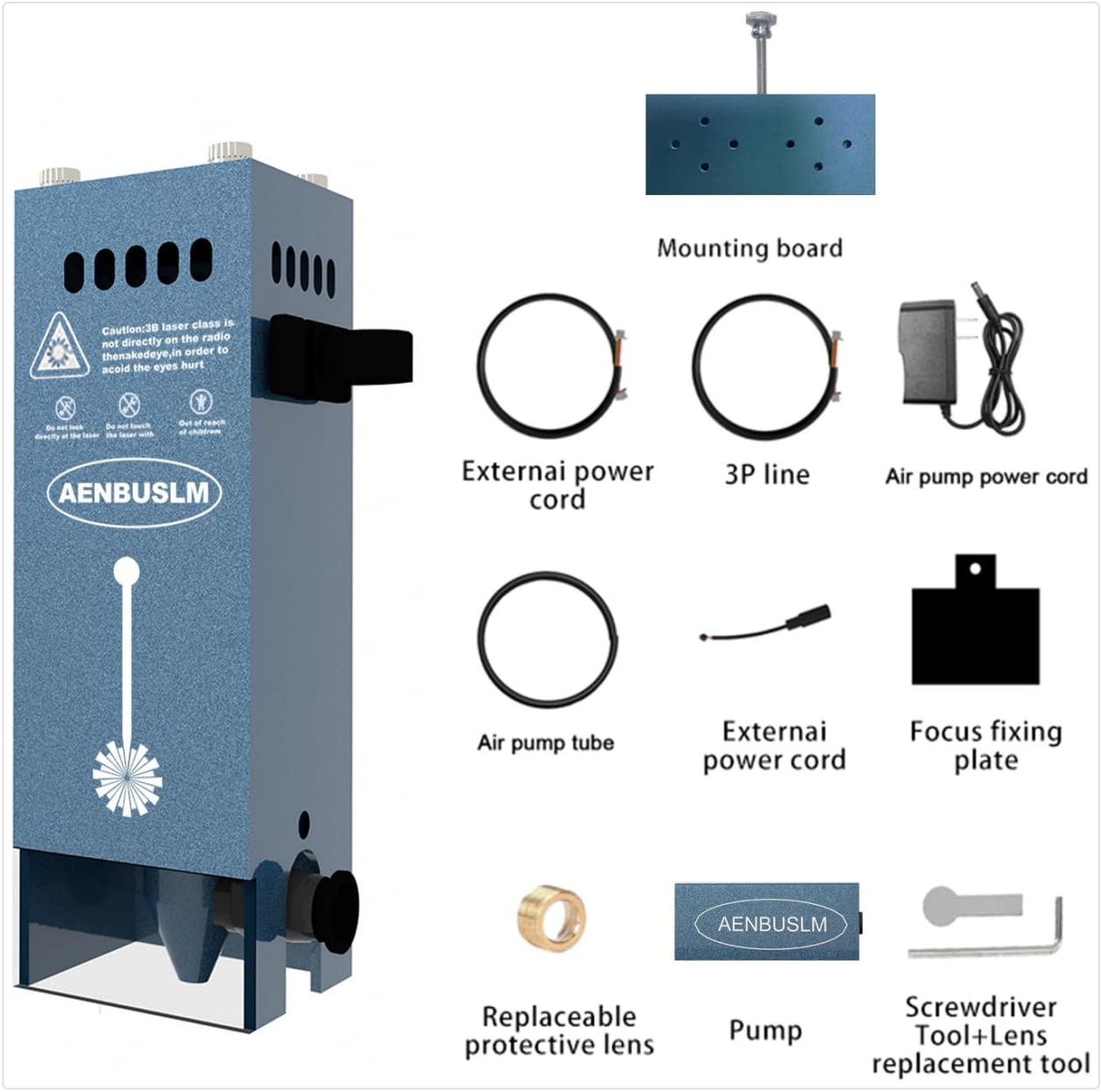
- **High Output Power:** 20W (20000mW) optical output for efficient cutting and engraving.
- **Precision Spot:** Ultra-fine compressed laser spot (0.06*0.08mm) for detailed work.
- **Integrated Air Assist:** Enhances cutting and engraving quality by removing smoke and debris.
- **Wide Compatibility:** Supports 12V and 24V DIY machines, various laser engravers, laser cutters, CNC routers, and 3D printers.
- **Versatile Material Processing:** Capable of cutting materials like 25mm pinewood (one pass), 18mm black acrylic (one pass), and 0.1mm stainless steel.
- **High Engraving Speed:** Achieves speeds up to 24000mm/min.

This visual illustrates the module's powerful cutting capabilities, showcasing precise, single-pass cuts through an 18mm thick black acrylic sheet and a 25mm thick piece of pinewood, measured with calipers.

This image demonstrates the integrated air assist system, which provides a strong airflow to disperse smoke and debris, ensuring cleaner cuts and engravings and a more pleasant working environment.

3. Package Contents

Verify that all items listed below are included in your package:



This image displays all components included in the product package: the laser module, a mounting board, external power cords, a 3P line, an air pump power cord, an air pump tube, a focus fixing plate, a replaceable protective lens, the air pump unit, and a screwdriver tool with a lens replacement tool.

- AENBUSLM Laser Module (DLC-JG-3.0)
- Mounting Board
- External Power Cord
- 3P Line (Control Line)
- Air Pump Power Cord
- Air Pump Tube
- Focus Fixing Plate
- Replaceable Protective Lens
- Air Pump Unit
- Screwdriver Tool + Lens Replacement Tool

4. Setup Instructions

Follow these steps to properly install and connect your laser module:

1. **Mounting:** Attach the laser module to your laser engraving or cutting machine's gantry using the provided mounting board. The module features multi-hole positions on its back for flexible installation. Ensure the module is securely fastened and stable.
2. **Electrical Connections:**
    - Connect the 3P control line from the laser module to the corresponding port on your machine's control board. This is a plug-and-play connection.
    - Connect the external power cord to the laser module. The module is universally compatible with both 12V and 24V power supplies.
3. **Air Assist Connection:**
    - Connect the air pump tube to the air assist inlet on the laser module.
    - Connect the air pump power cord to the air pump unit and then to a suitable power source.
4. **Focus Adjustment:** Use the focus fixing plate to set the correct focal distance between the laser lens and the material surface. This is crucial for optimal cutting and engraving performance.

This diagram provides a clear view of the laser module's rear panel, detailing the power input (VIN), PWM signal, ground (GND), and TTL connections. It also illustrates various wiring configurations for universal 12V and 24V compatibility, along with the power switch location.

5. Operating Instructions

Once the laser module is installed and connected, you can begin your engraving or cutting projects. Always ensure safety precautions are in place before operation.

1. **Software Setup:** Configure your laser control software (e.g., LightBurn, LaserGRBL) with the appropriate settings for the AENBUSLM 20W laser module. Refer to your software's documentation for specific setup instructions.
2. **Material Placement:** Place the material to be processed on the workbed, ensuring it is flat and securely positioned.
3. **Focusing:** Perform a focus test to ensure the laser is perfectly focused on the material surface. An accurate focus is critical for achieving clean cuts and sharp engravings.
4. **Parameter Settings:** Adjust laser power, speed, and passes according to the material type and desired outcome. Start with conservative settings and gradually increase as needed.
5. **Activate Air Assist:** Turn on the air pump before starting any cutting or engraving operation. The air assist will help to blow away smoke and debris, preventing charring and improving cut quality.
6. **Start Operation:** Initiate the laser job from your control software. Monitor the process closely.
7. **Completion:** Once the job is complete, turn off the laser and air assist. Allow the material to cool before handling.

6. Maintenance

Regular maintenance ensures optimal performance and extends the lifespan of your laser module.

- **Lens Cleaning:** Periodically inspect the protective lens for dust, debris, or residue. Use the provided lens replacement tool and a soft, lint-free cloth with lens cleaning solution (if necessary) to gently clean the lens. Replace the protective lens if it becomes scratched or damaged.
- **Air Assist Nozzle:** Ensure the air assist nozzle is clear of any blockages. Clean it regularly to maintain effective airflow.
- **General Cleaning:** Keep the exterior of the laser module clean and free of dust.
- **Storage:** When not in use, store the laser module in a clean, dry environment, away from direct sunlight and extreme temperatures.

7. Troubleshooting

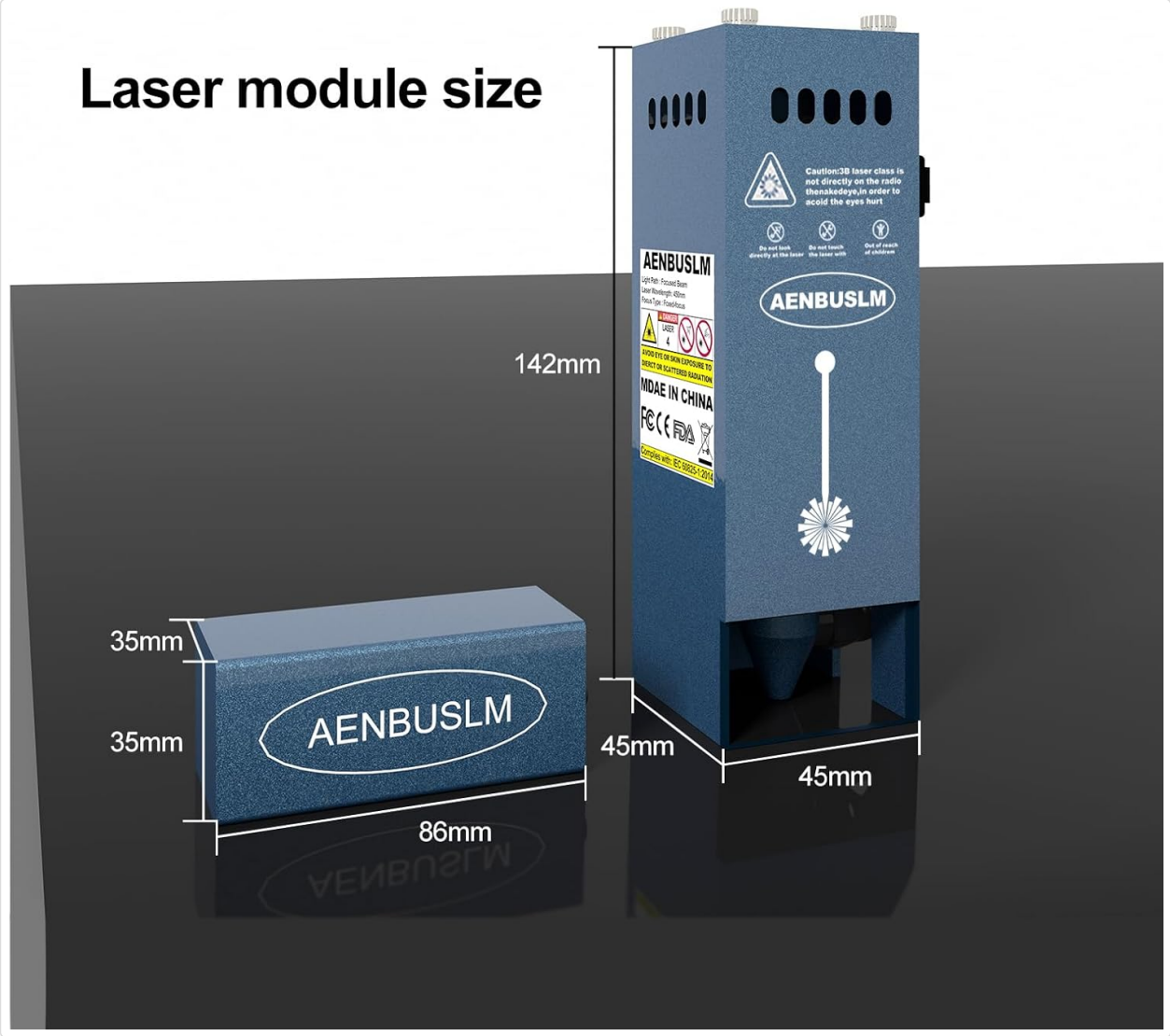
If you encounter issues with your AENBUSLM laser module, consider the following common problems and solutions:

- **Laser Not Firing:**
  - Check all power connections to ensure they are secure.
  - Verify the 3P control line is correctly connected and your machine's software is sending a signal.
  - Ensure the laser module's power switch is in the 'ON' position.
  - Confirm that the laser power settings in your software are not set to 0.
- **Weak Laser Output / Poor Cut Quality:**
  - Re-check the laser focus. An incorrect focal distance is a common cause of weak performance.
  - Clean the protective lens. A dirty lens can significantly reduce laser power.
  - Adjust laser power and speed settings in your software. Different materials require different parameters.
  - Ensure the air assist is functioning correctly and the nozzle is clear.

- **Module Not Recognized by Machine:**
  - Verify all wiring connections are correct and secure.
  - Check your machine's firmware and software for compatibility and proper configuration.

If these steps do not resolve the issue, please contact AENBUSLM customer support for further assistance.

8. Specifications



This image provides the physical dimensions of the AENBUSLM laser module (142mm height, 45mm width, 45mm depth) and the separate air pump unit (86mm length, 35mm width, 35mm height).

Feature	Specification
Model Number	DLC-JG-3.0
Optical Output Power	20W (20000mW)
Machine Power	160W
Laser Spot Size	0.06*0.08mm
Input Voltage	12V and 24V (Universal)
Engraving Speed	Up to 24000mm/min

Feature	Specification
Product Dimensions (Laser Module)	2.1 x 1.8 x 5.7 inches (approx. 53 x 46 x 145 mm)
Item Weight	1.1 pounds (approx. 0.5 kg)
Manufacturer	AENBUSLM

9. Warranty and Support

AENBUSLM is committed to providing high-quality after-sales service. If you encounter any problems when using our products, our professional technicians are available to provide solutions and assistance.

For support, please contact our after-sales service team. Contact information can typically be found on the product packaging or the official AENBUSLM website.