AENBUSLM DLC-JG-3.0

AENBUSLM 80W Laser Module User 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. Adhere strictly to all safety guidelines.

- **Eye Protection:** Always wear appropriate laser safety goggles that filter 450nm wavelength light when operating the laser module. Never look directly at the laser beam or 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.
- **Ventilation:** Operate the laser in a well-ventilated area to dissipate fumes and smoke generated during engraving or cutting.
- **Children and Pets:** Keep the laser module and its operating area out of reach of children and pets.
- **Emergency Stop:** Familiarize yourself with the emergency stop procedure for your laser machine.

Front view of the AENBUSLM laser module, highlighting its compact design and integrated air assist nozzle. Note the safety warnings printed on the module itself.

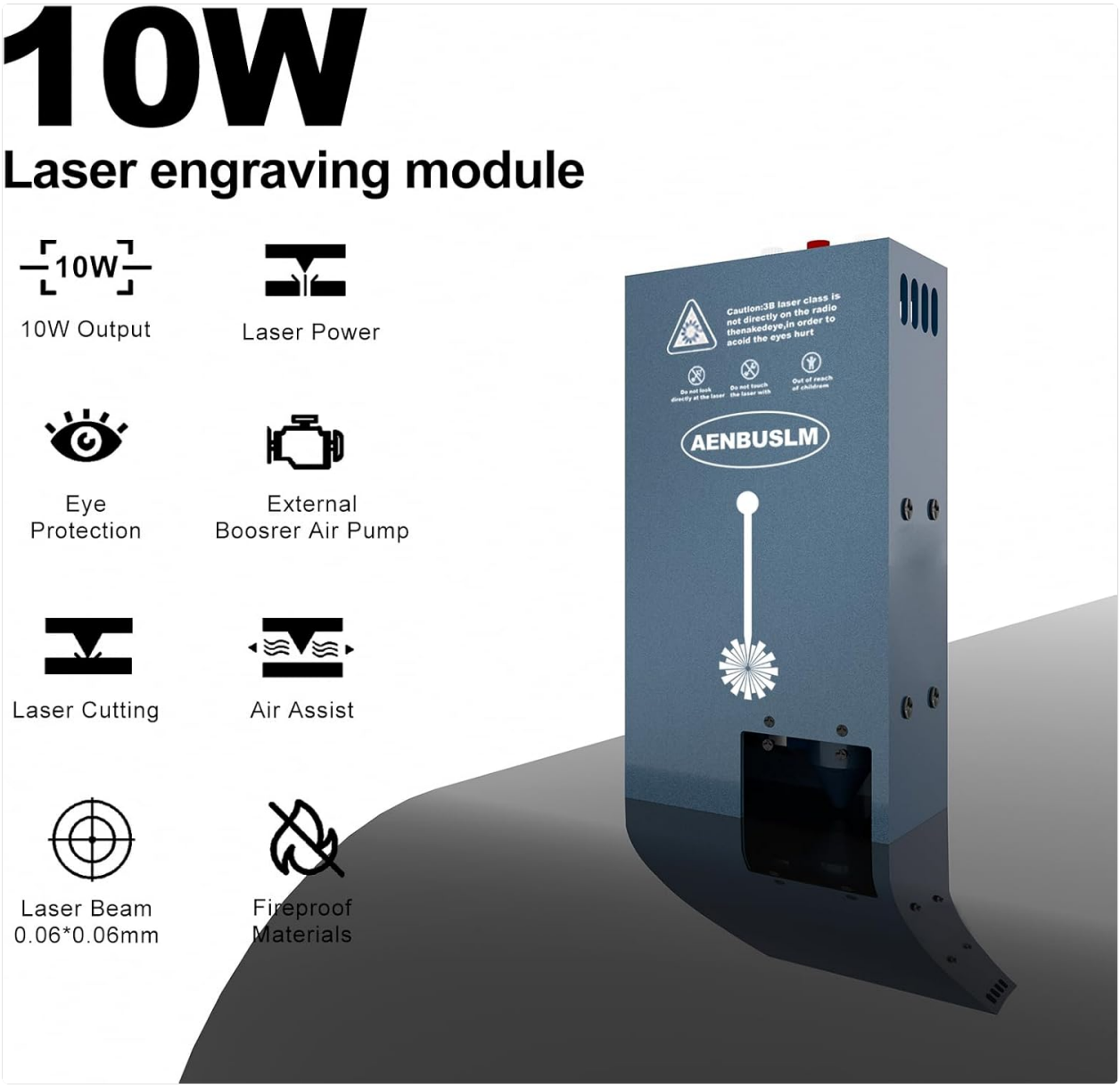
2. Product Overview

The AENBUSLM 80W Laser Module is a high-performance, fixed-focus laser head designed for CNC carving, cutting, and engraving machines. It features a powerful 10W optical output and an 80W machine power, making it suitable for a wide range of materials and applications.

Key Features:

- **High Output Power:** 10W (10000mW) optical output power for efficient engraving and cutting.
- **Built-in Air Assist:** Enhances cutting performance and provides a cleaner working environment by dispersing smoke and debris.
- **Fixed-Focus Design:** Simplifies operation and ensures consistent beam quality.
- **FAC Technology:** Built-in Fast Axis Collimation (FAC) for a double ultra-fine compressed spot size of 0.08*0.08mm, enabling high precision.
- **Wide Compatibility:** Universal 12V and 24V input, compatible with 3D printers, DIY laser machines, laser engravers, laser cutters, and CNC routers.

- **Durable Diode:** Original diode with a lifespan of 20,000 hours.
- **Detachable Eye Protection Cover:** Filters blue light for added safety.

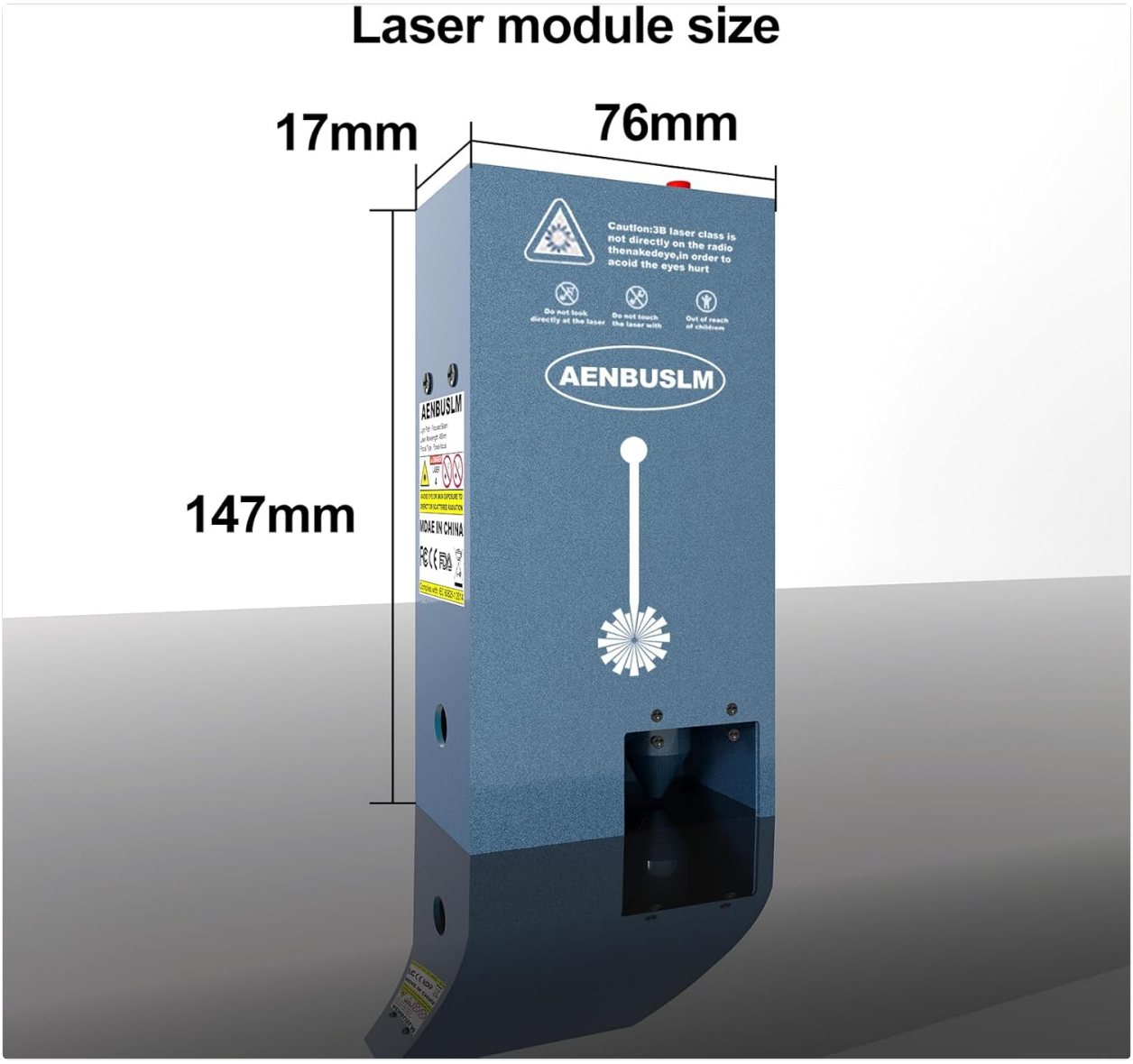


An infographic detailing the key features of the laser module, including its 10W optical output, eye protection, air assist capabilities, and precise 0.06*0.06mm laser beam.

3. Specifications

Feature	Specification
Model Number	DLC-JG-3.0
Optical Output Power	10W (10000mW)
Machine Power	80W
Laser Wavelength	450nm
Spot Size	0.08mm * 0.08mm
Input Voltage	DC 12V 3.2A (Universal 12V and 24V compatible)

Feature	Specification
Input Socket	XH2.54-3P
Modulation	5V PWM modulation support
Product Dimensions	1.57 x 1.57 x 5.71 inches (40 x 40 x 145 mm approx.)
Item Weight	1.32 pounds (0.6 kg)
Manufacturer	AENBUSLM
Diode Lifespan	20,000 hours



A diagram illustrating the physical dimensions of the laser module, measuring 17mm in width, 76mm in depth, and 147mm in height.

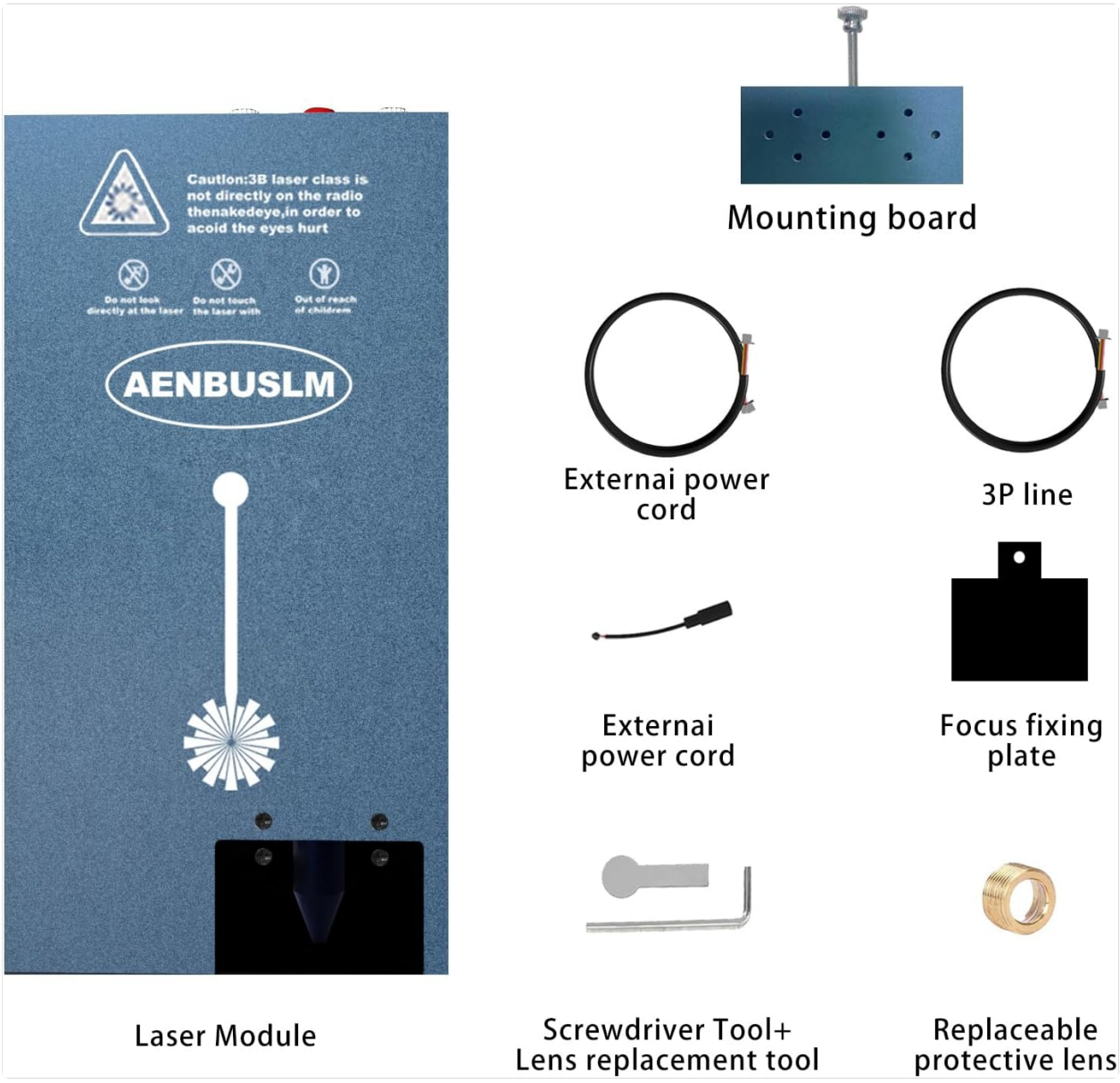
4. Setup

This section outlines the general steps for installing and connecting your AENBUSLM laser module. Specific mounting and integration details may vary depending on your laser engraving/cutting machine or CNC router.

4.1 Unpacking and Component Identification

Carefully unpack all components and verify against the list below:

- AENBUSLM Laser Module
- Mounting Board
- External Power Cord
- 3P Control Line
- Focus Fixing Plate
- Screwdriver Tool + Lens Replacement Tool
- Replaceable Protective Lens



An exploded view showing the various components included with the laser module, such as the mounting board, power cords, focus fixing plate, and tools for lens replacement.

4.2 Mounting the Laser Module

1. Attach the provided mounting board to your machine's gantry or designated laser head mount point using appropriate screws (not always included, refer to your machine's manual).
2. Securely fasten the AENBUSLM laser module to the mounting board. Ensure it is stable and perpendicular to your work surface.

4.3 Electrical Connections

The laser module supports both 12V and 24V systems. Connect the power and control lines as follows:

- **Power Input (VIN):** Connect the positive power supply line (12V or 24V DC) to the VIN+ pin.
- **Ground (GND):** Connect the negative power supply line to the GND pin.
- **PWM/TTL Control:** Connect the PWM or TTL signal line from your control board to the PWM/TTL pin. This signal controls the laser's power output.

Ensure all connections are secure and correctly polarized to prevent damage to the module or your control board.

Detailed wiring diagrams illustrating how to connect the laser module's power (VIN), ground (GND), PWM, and TTL signals for both 12V and 24V universal systems.

4.4 Focus Adjustment

The module features a fixed-focus design. Use the provided focus fixing plate to set the optimal working distance between the laser nozzle and the material surface. Typically, this involves placing the plate on the material and lowering the laser module until the nozzle touches the plate, then securing the module in place.

5. Operating Instructions

Once the laser module is properly installed and connected, you can begin operation. Always ensure safety precautions are in place before starting any laser process.

5.1 Material Compatibility

The AENBUSLM laser module is compatible with a wide range of materials for cutting and engraving, including:

- Pine board, Wood, Bamboo, Basswood, Plywood
- Black acrylic, Plastic
- Stone, Coated glass, Ceramics
- Lacquered metal, Aluminum oxide, Stainless steel (direct engraving)
- Leather

5.2 Engraving and Cutting

1. **Prepare Your Design:** Use compatible software (e.g., LightBurn, LaserGRBL) to create or import your design.
2. **Set Parameters:** Adjust laser power, speed, and passes according to the material and desired effect. Start with conservative settings and gradually increase as needed.
3. **Position Material:** Place your material on the workbed and ensure it is flat and secure.
4. **Focus:** Verify the laser focus is correctly set for the material thickness.
5. **Start Operation:** Initiate the engraving or cutting process through your machine's control software. Monitor the process closely.

Illustration showcasing the module's ability to perform a single-pass cut on 8.34mm thick acrylic, indicating its superior cutting power.

5.3 Air Assist Function

The built-in air assist significantly improves cutting performance and engraving quality by blowing away smoke and debris from the laser's focal point. This results in cleaner cuts, reduced charring, and deeper penetration.

A visual comparison demonstrating the effect of air assist on laser engraving, with the AENBUSLM module (with air pump) producing cleaner cuts on wood compared to a module without air assist.

An illustration depicting the "superatmospheric currents" created by the built-in air assist, effectively dispersing smoke for a cleaner working environment.

A visual representation emphasizing the integrated air pump within the laser module, indicating its capacity and contribution to a smoke-free environment.

6. Maintenance

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

6.1 Cleaning the Protective Lens

Dust and debris can accumulate on the protective lens, reducing laser power and quality. Clean the lens regularly:

1. Ensure the laser module is powered off and cooled down.
2. Carefully remove the protective lens using the provided lens replacement tool.
3. Gently clean the lens with a lint-free cloth and a small amount of isopropyl alcohol or a specialized optical lens cleaner. Avoid abrasive materials.
4. Reinstall the clean protective lens. A replaceable protective lens is included for convenience.

6.2 Fan Cleaning

The built-in cooling fan can accumulate dust, which may hinder heat dissipation. Periodically clean the fan blades using compressed air or a soft brush to maintain efficient cooling.

7. Troubleshooting

This section addresses common issues you might encounter with your laser module.

7.1 No Laser Output

- **Check Power:** Ensure the module is receiving adequate power (12V or 24V DC) and the power connections are secure.
- **Check Control Signal:** Verify the PWM/TTL signal line is correctly connected and your control software is sending a valid signal.
- **Safety Interlocks:** Some machines have safety interlocks (e.g., door sensors). Ensure all interlocks are engaged.
- **Module Status:** Check for any indicator lights on the module that might signal an error.

7.2 Poor Engraving/Cutting Quality

- **Focus:** Re-check the laser focus. An incorrect focal distance is a common cause of poor quality.
- **Lens Cleanliness:** A dirty protective lens can scatter the laser beam. Clean the lens as described in the Maintenance section.
- **Parameters:** Adjust engraving/cutting speed and power settings in your software. Different materials require different parameters.
- **Material Flatness:** Ensure the material is perfectly flat on the workbed. Uneven surfaces lead to inconsistent focus.
- **Air Assist:** Ensure the air assist is functioning correctly, especially for cutting, to remove debris and prevent charring.

7.3 Overheating

- **Fan Operation:** Verify the cooling fan on the module is spinning freely and not obstructed.
- **Ambient Temperature:** Operate the laser in a reasonably cool environment.
- **Duty Cycle:** While designed for continuous operation, prolonged use at 100% power in high ambient temperatures may require breaks.

8. Warranty and Support

AENBUSLM is committed to providing high-quality after-sales service. If you encounter any problems when using this product, please contact our after-sales service team. Our professional technicians will provide timely solutions and assistance.
Please refer to your purchase documentation for specific warranty terms and contact information.

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