QOMOLANGMA RDC6442S

QOMOLANGMA RuiDa RDC6442S CO2 Laser Controller Instruction Manual

1. Introduction

The QOMOLANGMA RuiDa RDC6442S is an advanced motion control system designed for CO2 laser engraving and cutting machines. This controller provides high-speed and precise control over the laser head, enabling efficient processing of various materials including wood, acrylic, leather, and metal. This manual provides essential information for the proper setup, operation, and maintenance of your RDC6442S controller.

2. Product Overview

The RDC6442S controller is an upgraded version of the RDC6442, featuring a larger screen display, increased memory, and enhanced software compatibility. It integrates a dedicated DSP processor to ensure smooth and accurate laser head movement during cutting and engraving operations. The system includes a USB interface for convenient data transfer from a computer.

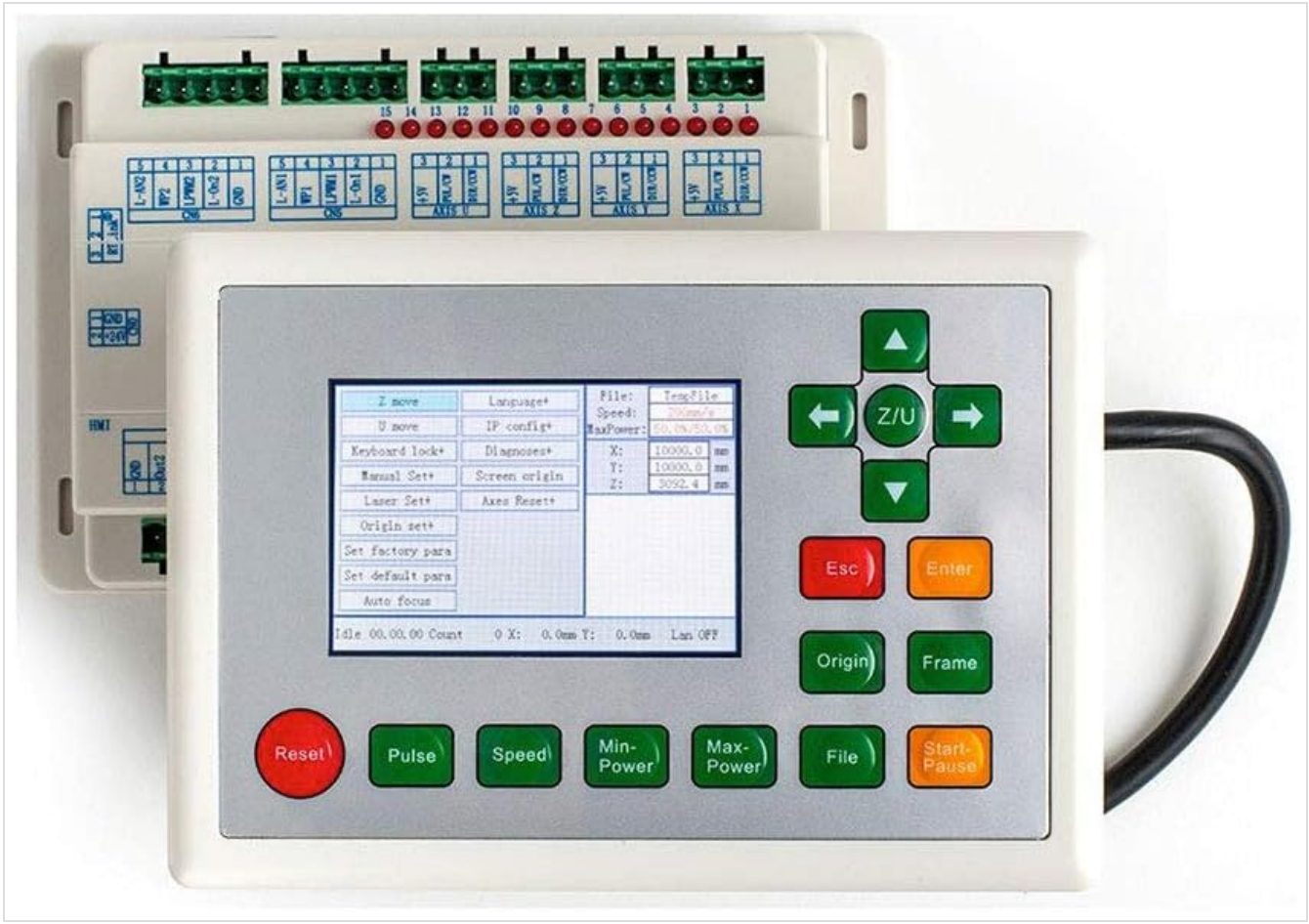


Figure 2.1: RuiDa RDC6442S CO2 Laser Controller and Control Panel. This image displays the main controller unit and its accompanying control panel, showcasing the user interface and physical layout.



Figure 2.2: RDC6442S Controller highlighting software compatibility. This image illustrates the controller's compatibility with various software programs such as RDWorks, EngraveLab Laser, and LightBurn, essential for designing and executing laser jobs.

3. Package Contents

Upon unpacking, please verify that all the following items are included in your package:

- 1 x Control Panel
- 1 x Mainboard (Controller Unit)
- 1 x U-Disc Cable I
- 1 x U-Disc Cable II
- 1 x Adapter & Screws Set
- 1 x Network Cable I
- 1 x Network Cable II
- 1 x Five-core Cable

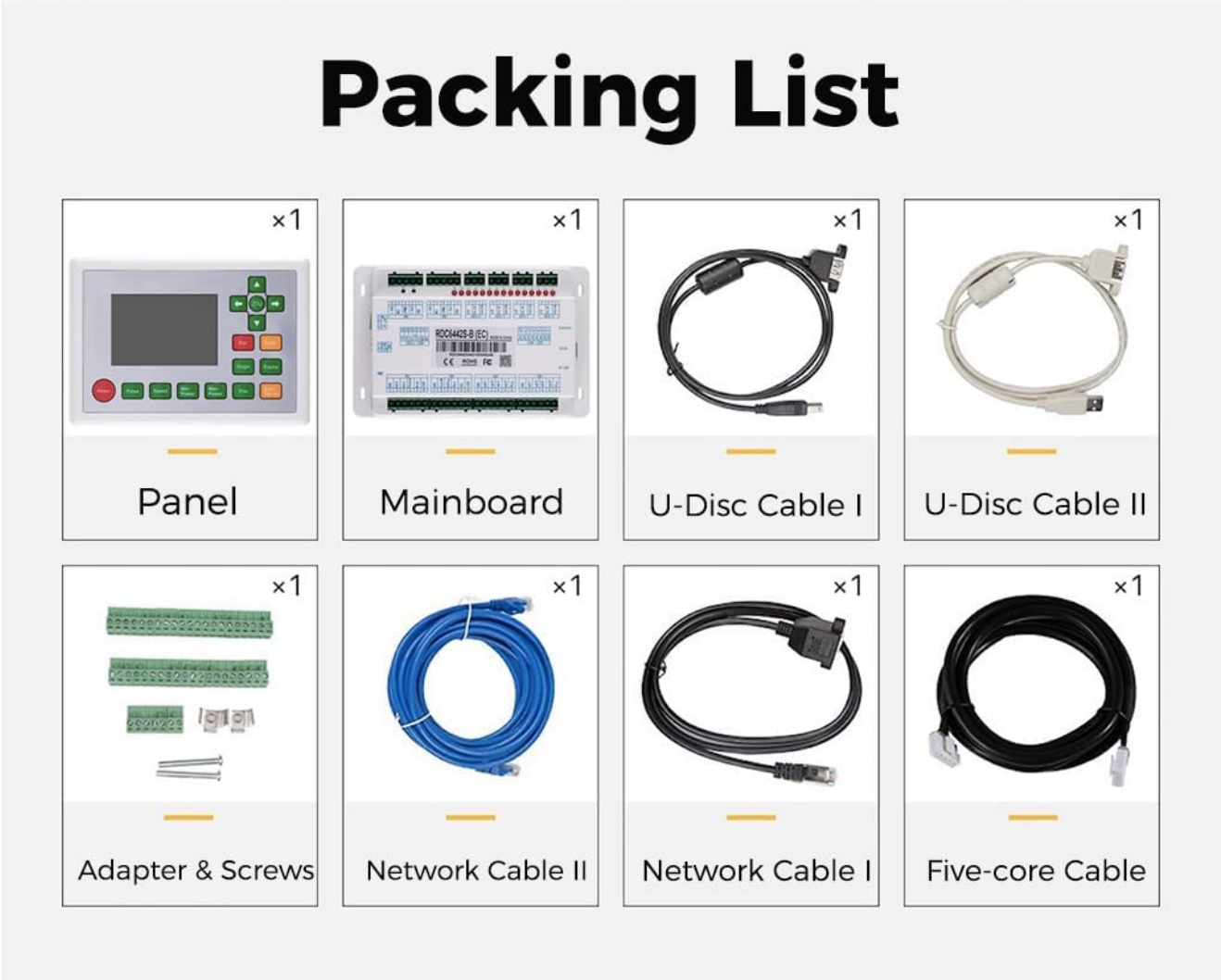


Figure 3.1: Detailed view of the RDC6442S package contents. This image shows all components included in the product package, such as the control panel, mainboard, various cables, and mounting hardware.

4. Technical Specifications

Feature	Specification
Software Compatibility	RDWorks V8, LaserCut, LightBurn
Supported File Formats	PLT, HPG, AI, DXF, DST, SPL, NC, CNC, PLY, BMP, DIB, JPG, TIF, CLS
Operating System Environment	Windows 2000 / XP / Vista / 7 / 8 / 10 (32 and 64 bit)
Power Supply	24VDC 3A
Number of Axes	4 axes (Pulse + DIR signal)
Maximum Pulse Frequency	400KHz
Laser Control Channels	2 channels
Safety Protection	Limit protection, Water protection, Cover protection
Virtual Print	Supported
Engraving Functions	Plan/Shape engraving

Docking Position	Manual input / Automatic extraction of docking coordinates
Adaptive Laser Types	CO2 glass tube, CO2 metal RF, Fiber, UV laser
Precision	+/-0.5 pulse
Product Licensing	Supported
Firmware Upgrade	Remote upgrade for mainboard and touch screen program
Product Dimensions	9.84 x 7.87 x 7.87 inches (250 x 200 x 200 mm)
Item Weight	4.4 pounds (2 kg)

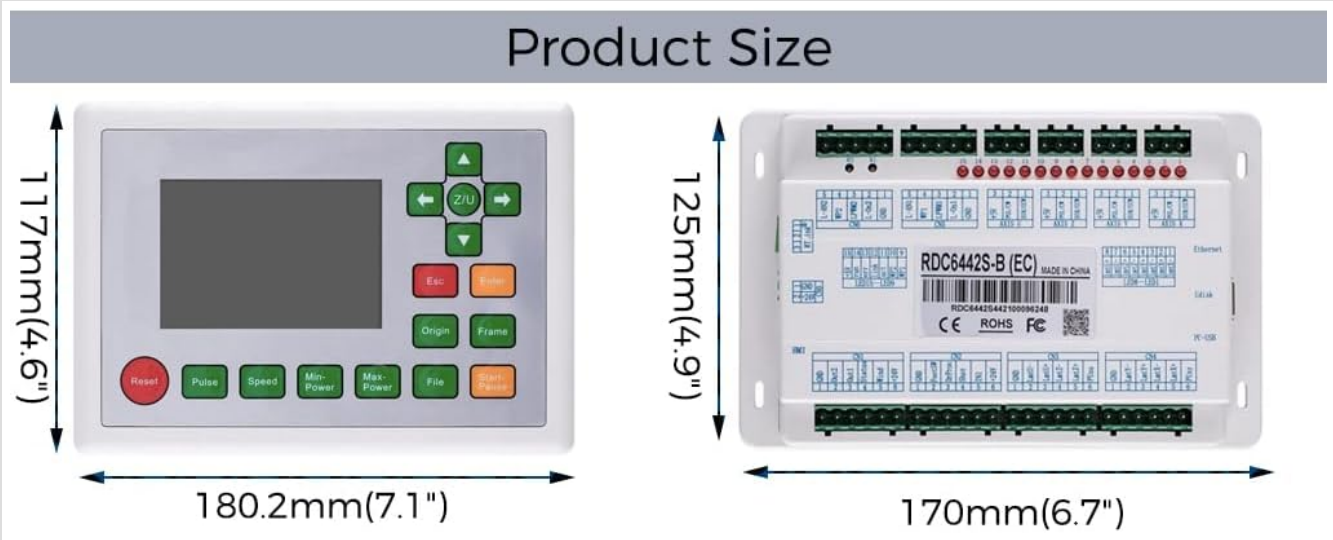


Figure 4.1: Dimensions of the RDC6442S controller and control panel. This image provides precise measurements for both the mainboard and the control panel, useful for installation planning.

5. Software and Language Support

The RDC6442S controller is compatible with several industry-standard software programs, providing a user-friendly interface for designing and executing laser jobs. These include RDWorks, LaserCut, and LightBurn. The controller supports a wide range of file formats for design input.

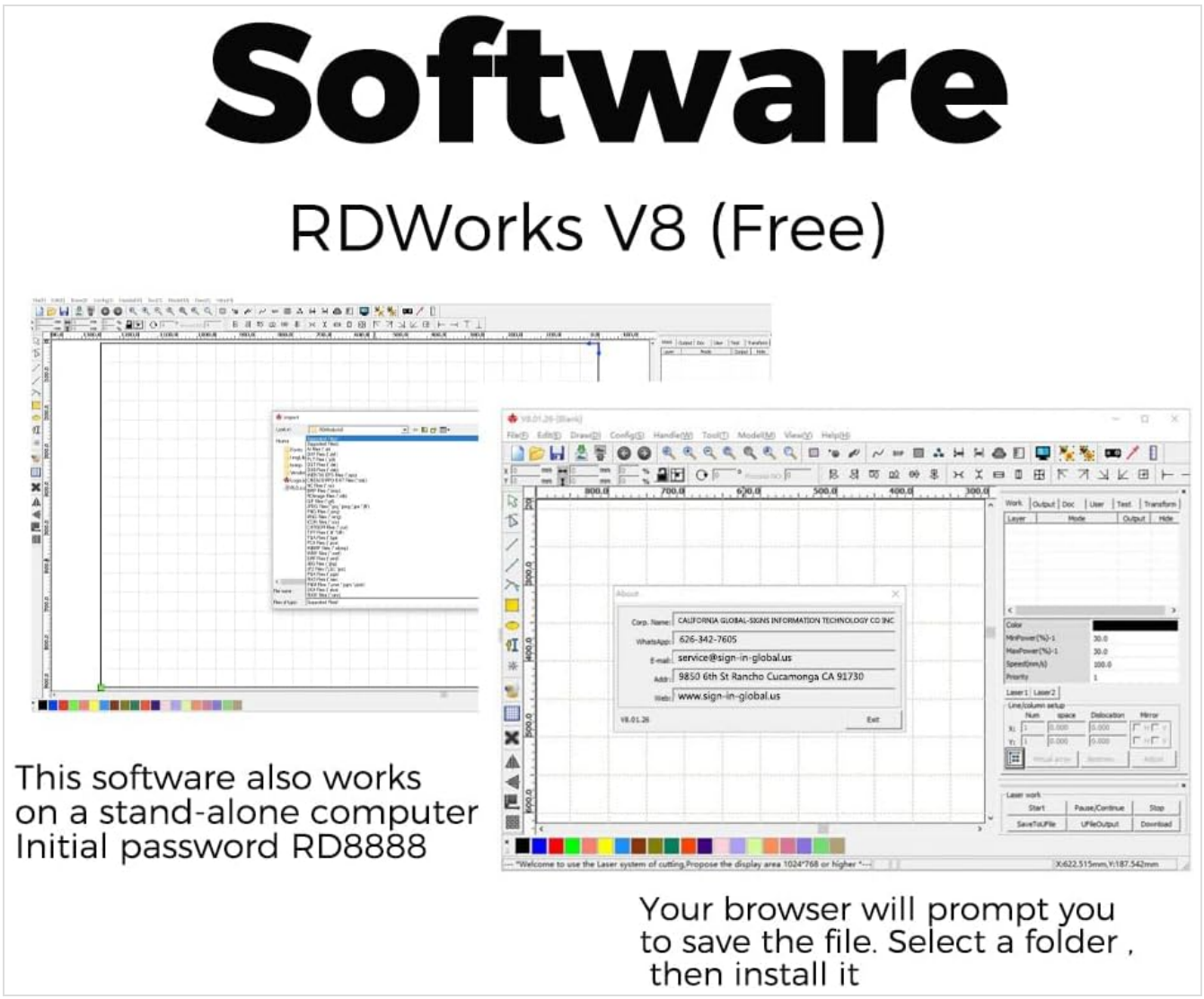


Figure 5.1: Screenshot of the RDWorks V8 software interface. This image displays the graphical user interface of RDWorks V8, a common software used with RuiDa controllers for laser job design and control.

The controller's interface supports multiple languages for global usability:

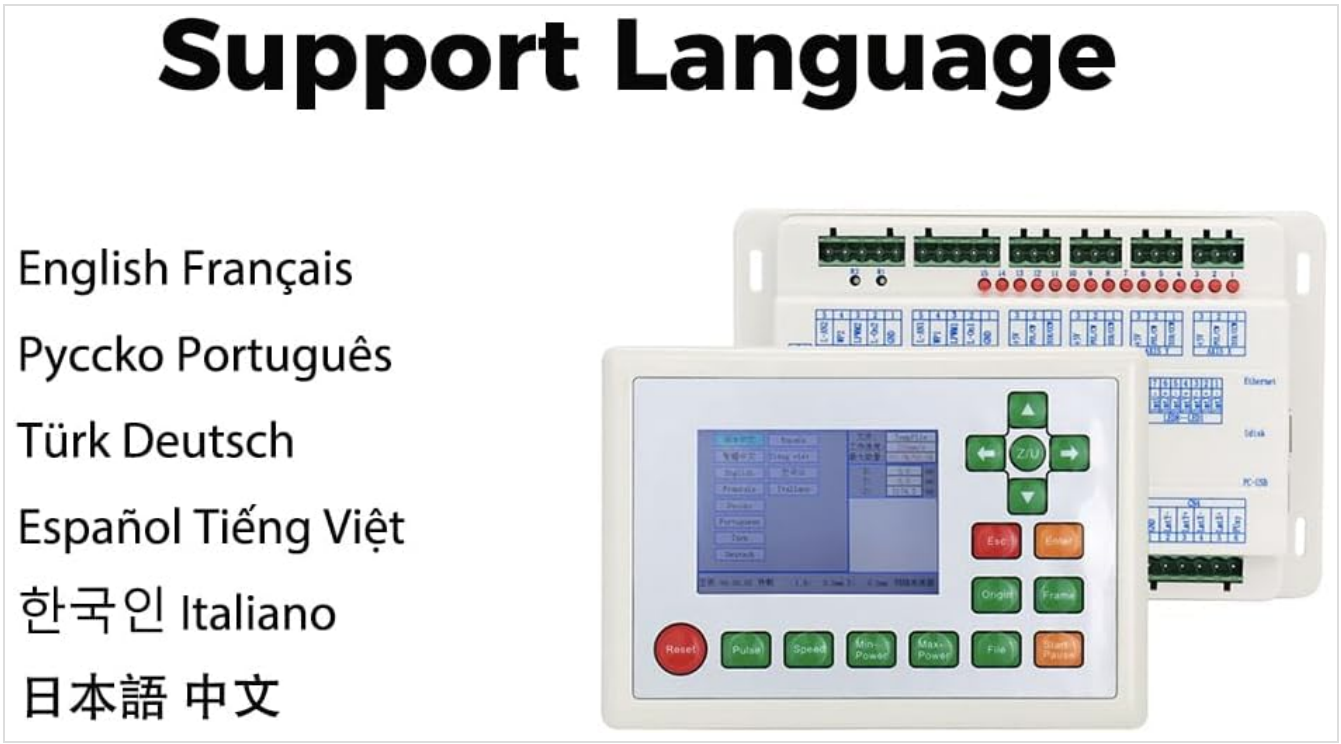


Figure 5.2: List of supported languages for the RDC6442S controller. This image shows the various languages the controller's display and interface can be set to, enhancing user accessibility.

6. Setup and Installation

Proper installation of the RDC6442S controller is crucial for its optimal performance and safety. Ensure that the power supply meets the specified 24VDC 3A requirement. Connect the mainboard to the control panel and other laser machine components according to your machine's wiring diagram.

6.1 Connecting the Mainboard

The mainboard features various ports for connecting to the laser machine's motors, sensors, and communication interfaces. Use the provided cables to establish connections.



Figure 6.1: Close-up view of the RDC6442S mainboard ports. This image details the various connection points on the mainboard, including USB and Ethernet ports, for integrating with a laser system.

6.2 System Identification

Each controller unit has a unique identifier. For example, a common serial number format is **RD6442S44201070003864**, which can be found on the mainboard label.



Figure 6.2: Assembled RDC6442S controller and mainboard. This image shows the control panel connected to the mainboard, illustrating how the components fit together and highlighting the serial number label on the mainboard.

7. Operating Instructions

Once installed and powered, the RDC6442S controller is ready for operation. The control panel provides an intuitive interface for managing laser jobs.

7.1 Control Panel Functions

The control panel features buttons for navigation, job initiation, and parameter adjustments. Key functions include:

- **Reset:** Resets the controller.
- **Pulse:** Fires the laser for a short duration (for testing).
- **Speed:** Adjusts the laser head movement speed.
- **Min-Power** / **Max-Power:** Sets the minimum and maximum laser power.
- **File:** Accesses stored job files.

- **Start/Pause:** Initiates or pauses a laser job.
- **Esc:** Exits current menu or cancels an operation.
- **Enter:** Confirms selection or enters a menu.
- **Origin:** Sets the job origin point.
- **Frame:** Outlines the job area for verification.
- **Directional Arrows (Z/U, X, Y):** Moves the laser head along respective axes.



Figure 7.1: Front view of the RDC6442S control panel. This image highlights the various buttons and their labels, providing a visual guide to the controller's user interface for operation.

7.2 Executing a Laser Job

1. Prepare your design using compatible software (e.g., RDWorks V8).
2. Transfer the job file to the controller via USB or network connection.
3. On the control panel, select the desired file using the 'File' button.
4. Set the origin point and frame the job area to ensure correct positioning.
5. Adjust speed and power settings as required for your material.
6. Press 'Start/Pause' to begin the laser operation.

8. Maintenance

To ensure the longevity and reliable performance of your RDC6442S controller, follow these general maintenance guidelines:

- Keep the controller and control panel clean and free from dust and debris. Use a soft, dry cloth for cleaning.

- Ensure adequate ventilation around the controller to prevent overheating.
- Regularly check all cable connections for security and integrity.
- Periodically check for firmware updates to ensure optimal performance and access to new features. Remote firmware upgrades are supported.

9. Troubleshooting

This section addresses common issues you might encounter with the RDC6442S controller. For more complex problems, refer to the manufacturer's official support resources.

- **Controller not powering on:** Verify the 24VDC 3A power supply connection and ensure the power source is active.
- **Laser head not moving:** Check motor connections and ensure limit switches are not triggered. Verify axis settings in the software.
- **Communication errors:** Ensure USB or network cables are securely connected. Restart both the computer and the controller.
- **Job not starting:** Confirm the file is loaded correctly and the origin/frame is set. Check for any safety interlocks (e.g., water protection, cover protection).

10. Support

For further assistance, technical support, or warranty information, please refer to the official documentation provided by QOMOLANGMA or contact your product vendor. Always provide your product model (RDC6442S) and any relevant serial numbers when seeking support.