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FONLAND RDV6442G

FONLAND Ruida RDV6442G CO2 Laser Engraving and Cutting Control System

User Manual

1. Introduction and Overview

The FONLAND Ruida RDV6442G is a state-of-the-art control system designed for CO2 laser engraving and cutting machines. This system offers high performance and precise control, making it suitable for a wide range of applications. It integrates advanced features to streamline your laser processing tasks.

Key Features:

- **High Performance:** Supports 4-axis laser engraving control and 2-channel laser control. Features TTL level output with a 50mA drive capability.
- **Advanced Communication:** Equipped with Ethernet (10/100M) and USB2.0 transmission, allowing the controller to automatically query the communication mode.
- **Flexible Operation:** Supports manual/continuous point setting, automatic focus, and docking point functions for enhanced operational flexibility.
- **Precise Visual Control:** Features a 3.5-inch true color TFT screen that displays real-time processing graphics, precise coordinate positions of the laser head, dynamic trajectory, and a processing progress bar.
- **Broad Compatibility:** Suitable for various brands of laser cutting and engraving machines. Supports visual mark point cutting, special shape matching cutting, and projection cutting methods.
- **Power Failure Recovery:** Supports resuming laser cutting operations after a power failure.
- **Multi-language Support:** The control panel supports multiple languages including English, Russian, French, Portuguese, Turkish, German, Spanish, Korean, Italian, and Chinese.



Image 1.1: The RDV6442G CO2 Laser Controller with its vision camera module.

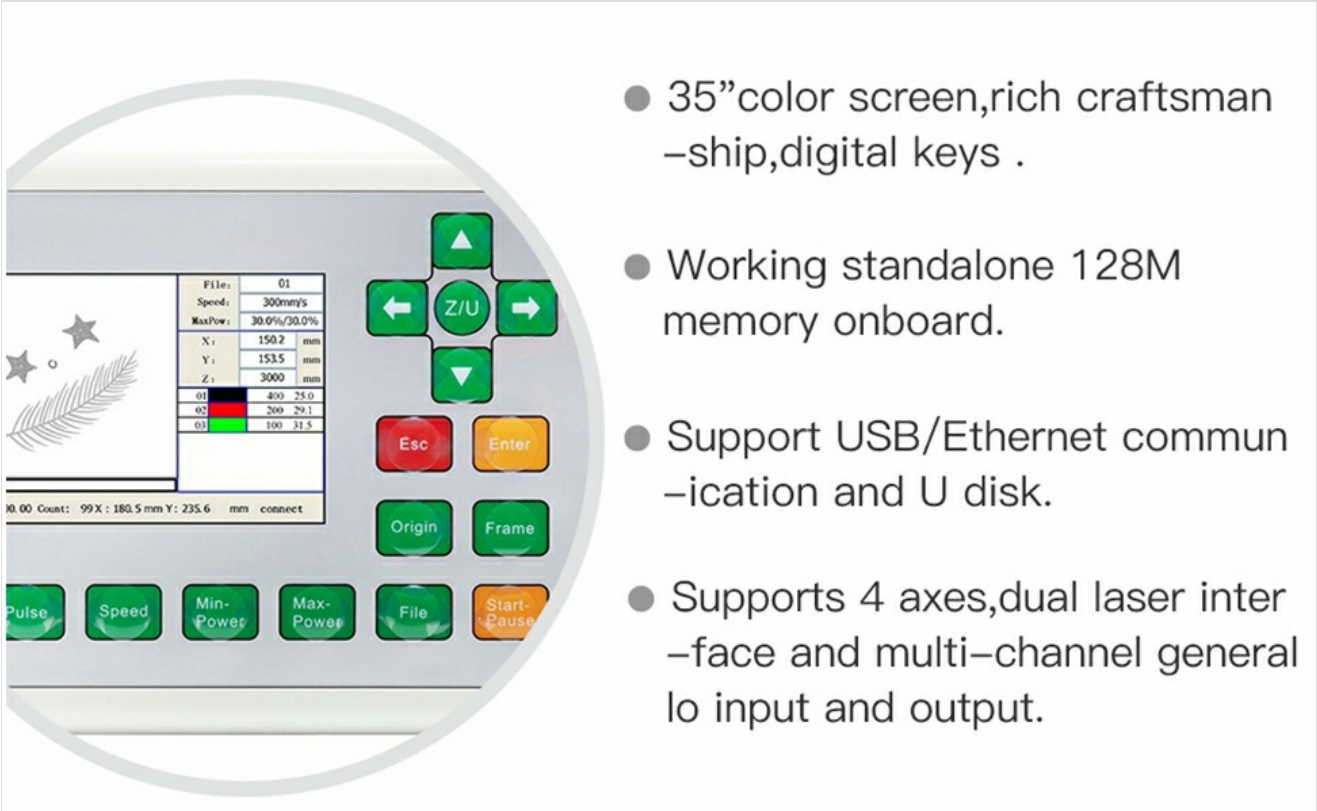


Image 1.2: Overview of the RDV6442G controller's features, highlighting the 3.5-inch color screen, 128M memory, USB/Ethernet communication, and 4-axis support.

2. Setup and Installation

Proper installation of the RDV6442G control system is crucial for optimal performance and safety. This section outlines the general steps for connecting the components.

2.1 Components Overview

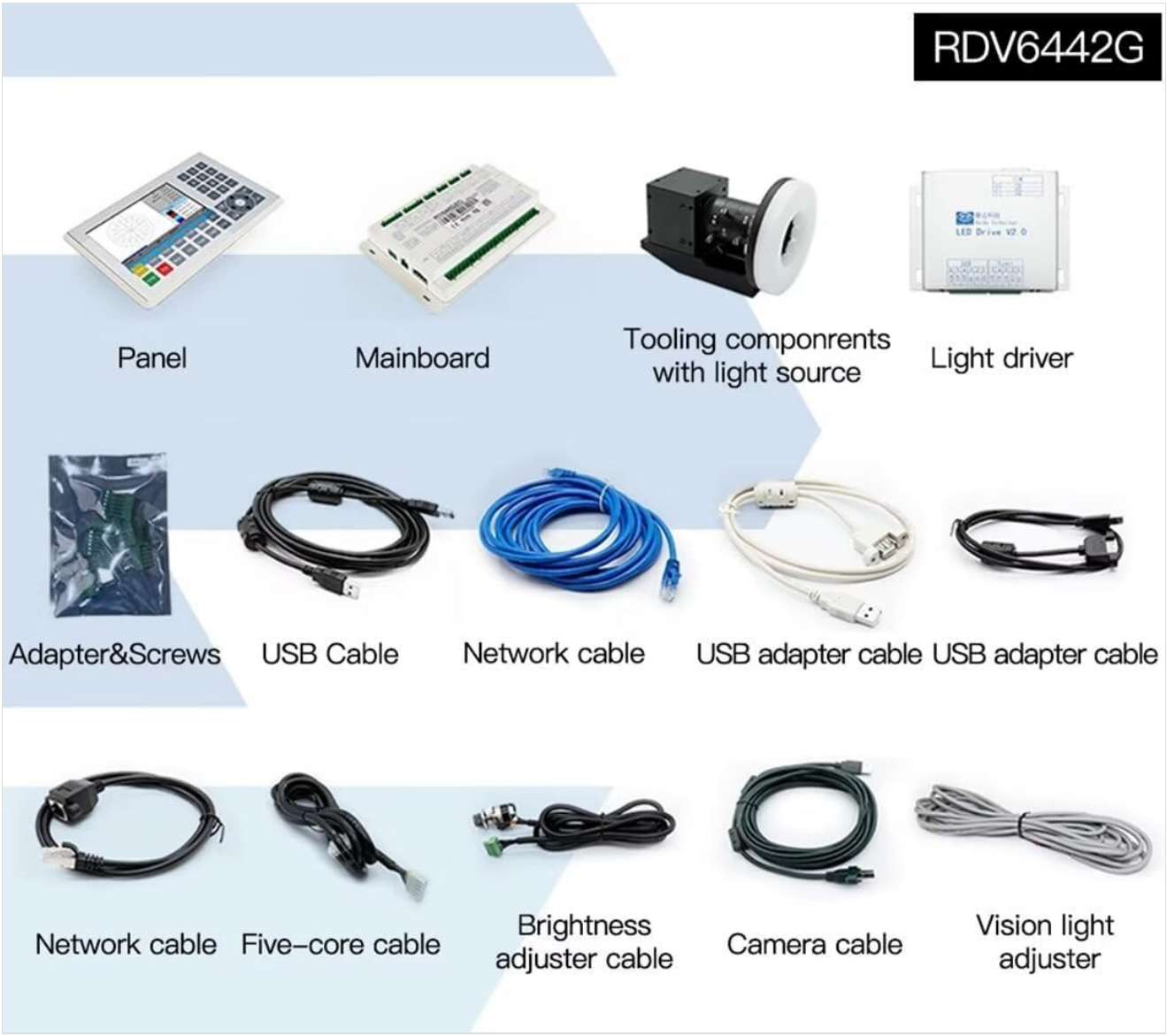


Image 2.1: Various components included with the RDV6442G system, such as the control panel, mainboard, tooling components with light source, light driver, adapters, screws, and various cables (USB, network, five-core, brightness adjuster, camera, vision light adjuster).

2.2 System Connection Diagram

Refer to the following diagram for a comprehensive overview of how to connect the RDV6442G control system to your laser machine, PC, and other peripherals.

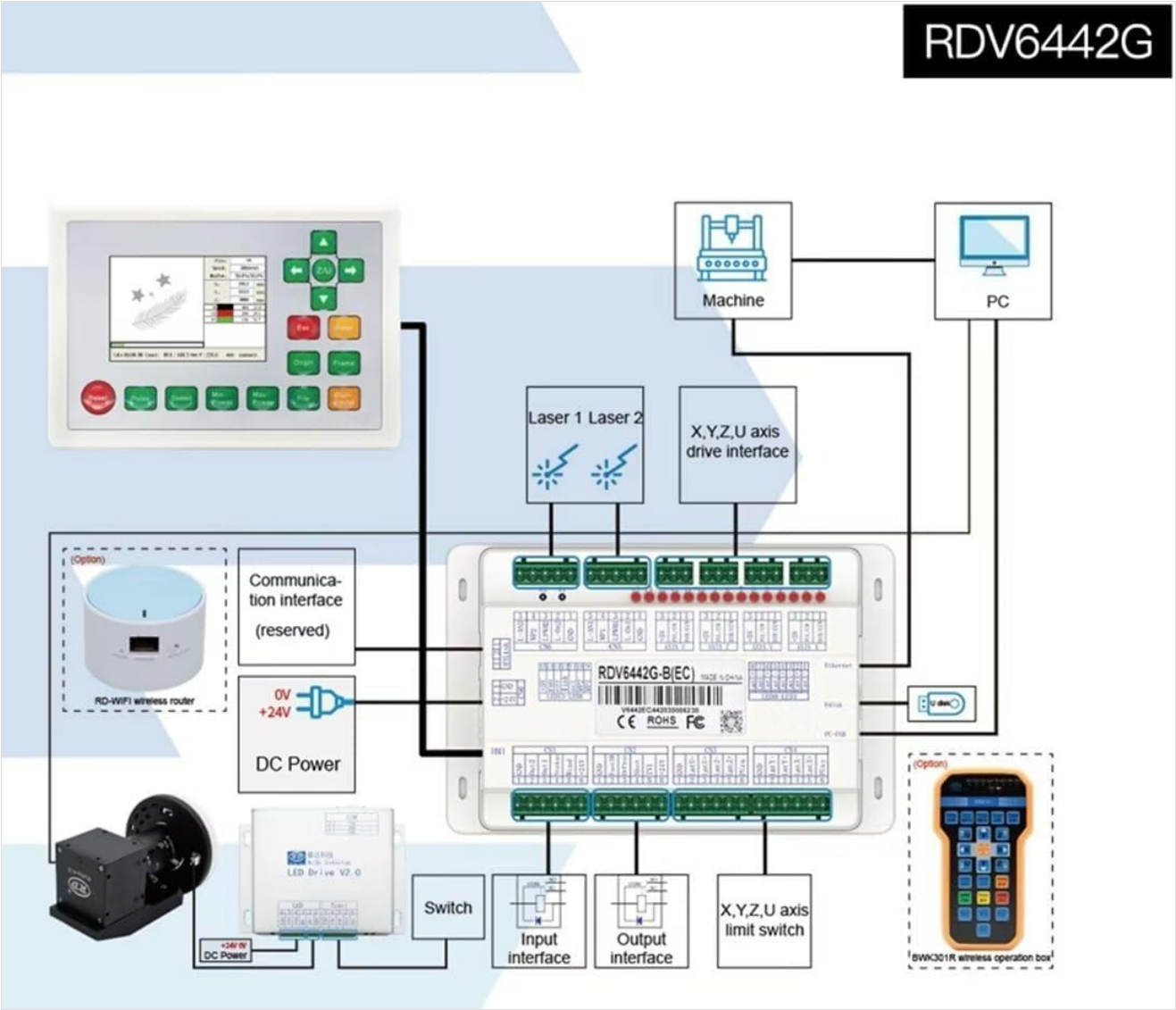


Image 2.2: Detailed system connection diagram showing the interconnections between the control panel, mainboard, laser sources (Laser 1, Laser 2), X, Y, Z, U axis drive interfaces, input/output interfaces, limit switches, DC power, communication interfaces (Ethernet, USB), PC, and optional accessories like a Wi-Fi router and wireless operation box.

2.3 Mainboard Connections

The mainboard serves as the central hub for all electrical connections. Ensure all wiring is secure and correctly aligned according to the pinout diagrams.

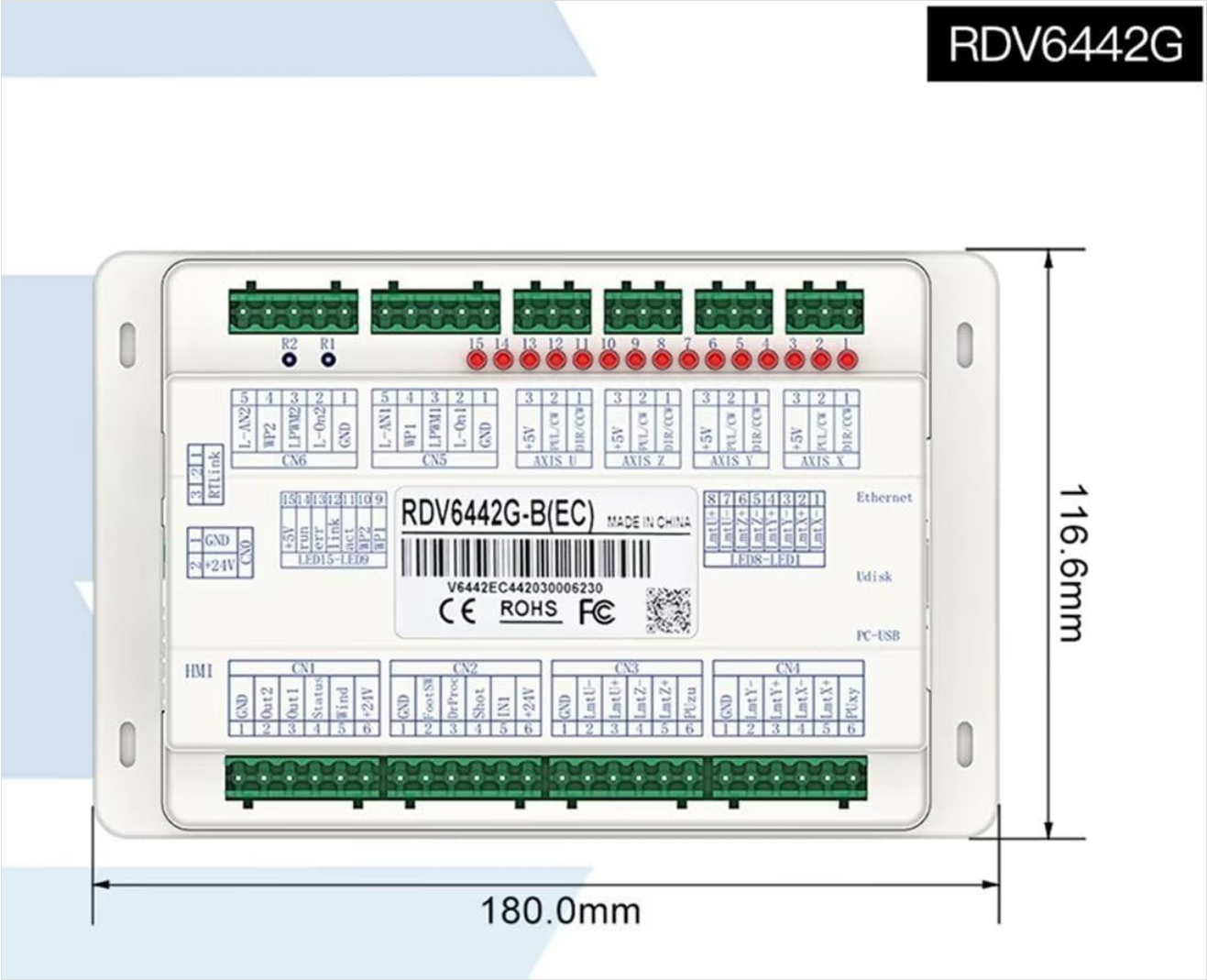


Image 2.3: Close-up view of the RDV6442G mainboard, detailing the various terminal blocks for axis control (AXIS X, Y, Z, U), laser outputs (LPWM1, LPWM2), general inputs/outputs (CN1, CN2, CN3, CN4), power supply (+24V, GND), and communication ports (Ethernet, UDisk).

2.4 Physical Dimensions

Consider the physical dimensions of the control panel and mainboard for proper enclosure and mounting within your laser machine setup.

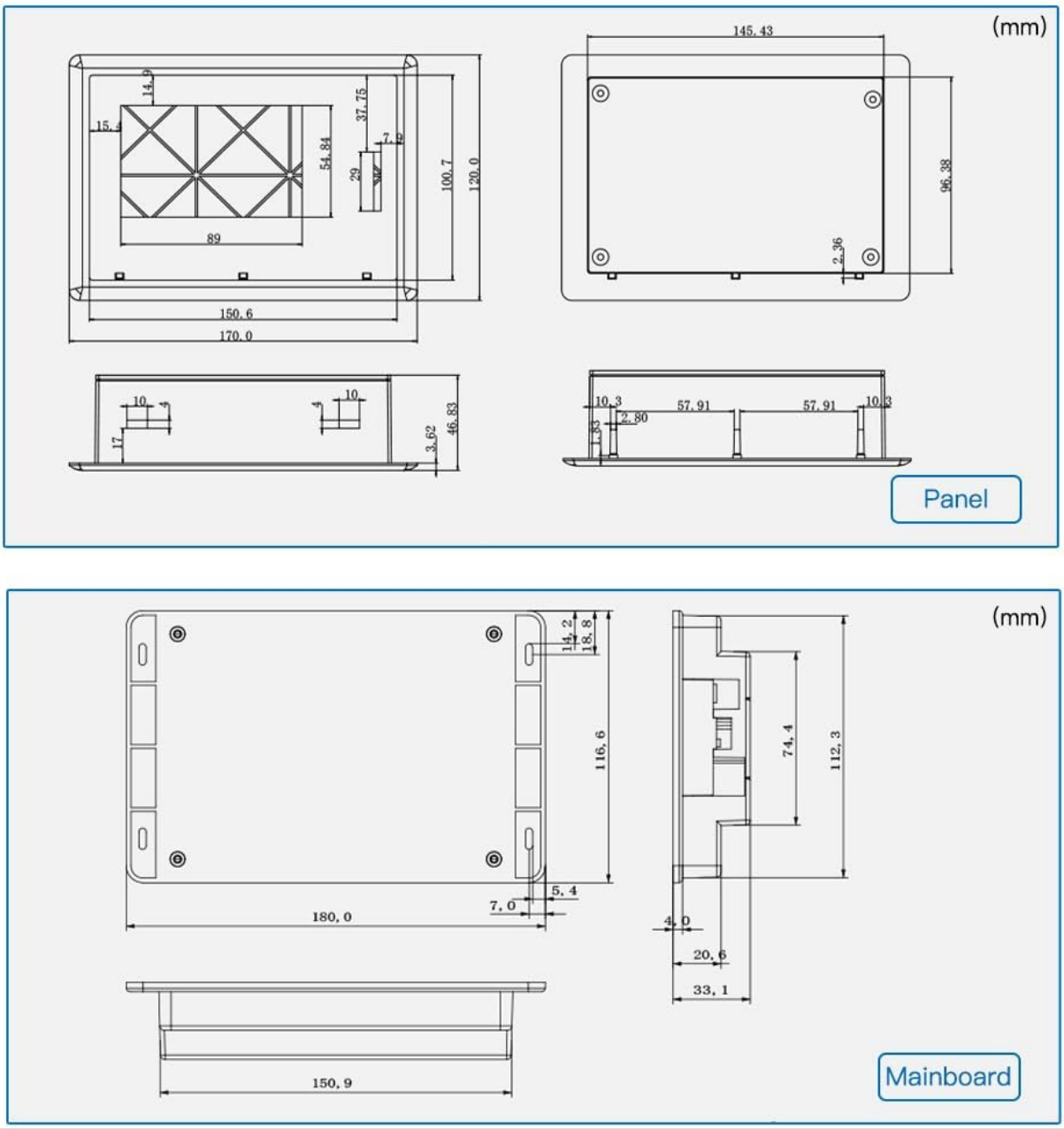


Image 2.4: Technical drawings showing the precise dimensions in millimeters for both the RDV6442G control panel and the mainboard, including mounting hole positions and overall size.

3. Operating Instructions

This section provides guidance on operating the RDV6442G control system for your laser engraving and cutting tasks.

3.1 Control Panel Functions

The 3.5-inch color TFT screen and integrated buttons provide intuitive control over your laser operations.

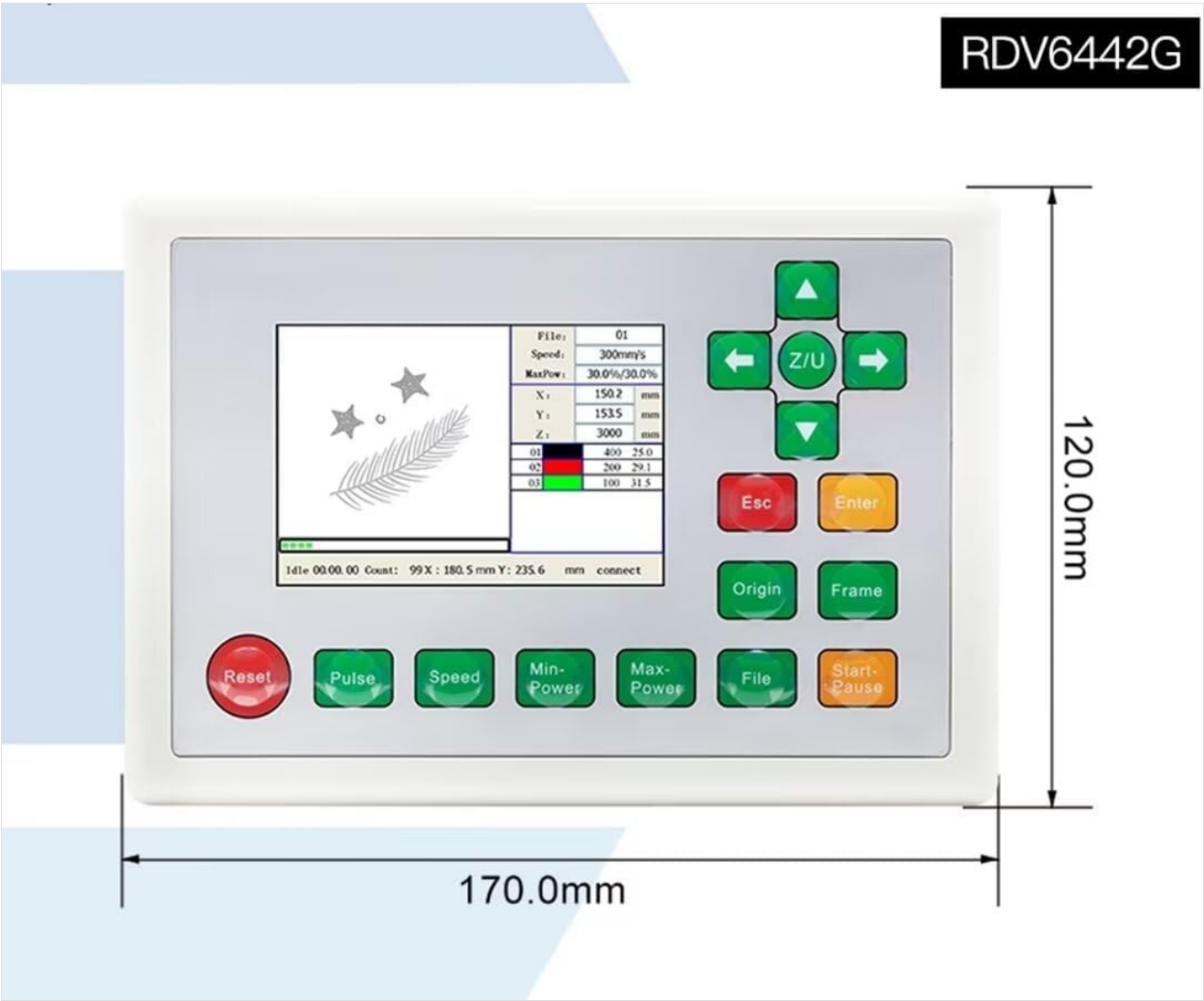


Image 3.1: Front view of the RDV6442G control panel, displaying the 3.5-inch color screen with job information and various control buttons including Reset, Pulse, Speed, Min-Power, Max-Power, File, Start-Pause, Esc, Enter, Origin, Frame, and directional Z/U arrows.

- **Screen Display:** The TFT screen shows real-time processing graphics, file information, current speed, power settings, coordinate positions (X, Y, Z, U), and a dynamic progress bar.
- **Navigation Buttons:** Use the directional arrows (Z/U, left, right, up, down) to navigate menus and adjust parameters.
- **Function Buttons:**
  - **Reset:** Resets the system or current operation.
  - **Pulse:** Fires a short laser pulse for alignment or testing.
  - **Speed:** Adjusts the processing speed.
  - **Min-Power** / **Max-Power:** Sets the minimum and maximum laser power levels.
  - **File:** Accesses stored job files.
  - **Start-Pause:** Initiates or pauses the laser operation.
  - **Esc:** Exits current menu or cancels an action.
  - **Enter:** Confirms selections or enters a menu.
  - **Origin:** Sets the current position as the job origin.
  - **Frame:** Outlines the job area with the laser to verify positioning.

3.2 Software Compatibility

The RDV6442G controller is compatible with industry-standard software like LightBurn, allowing for flexible design and job preparation.

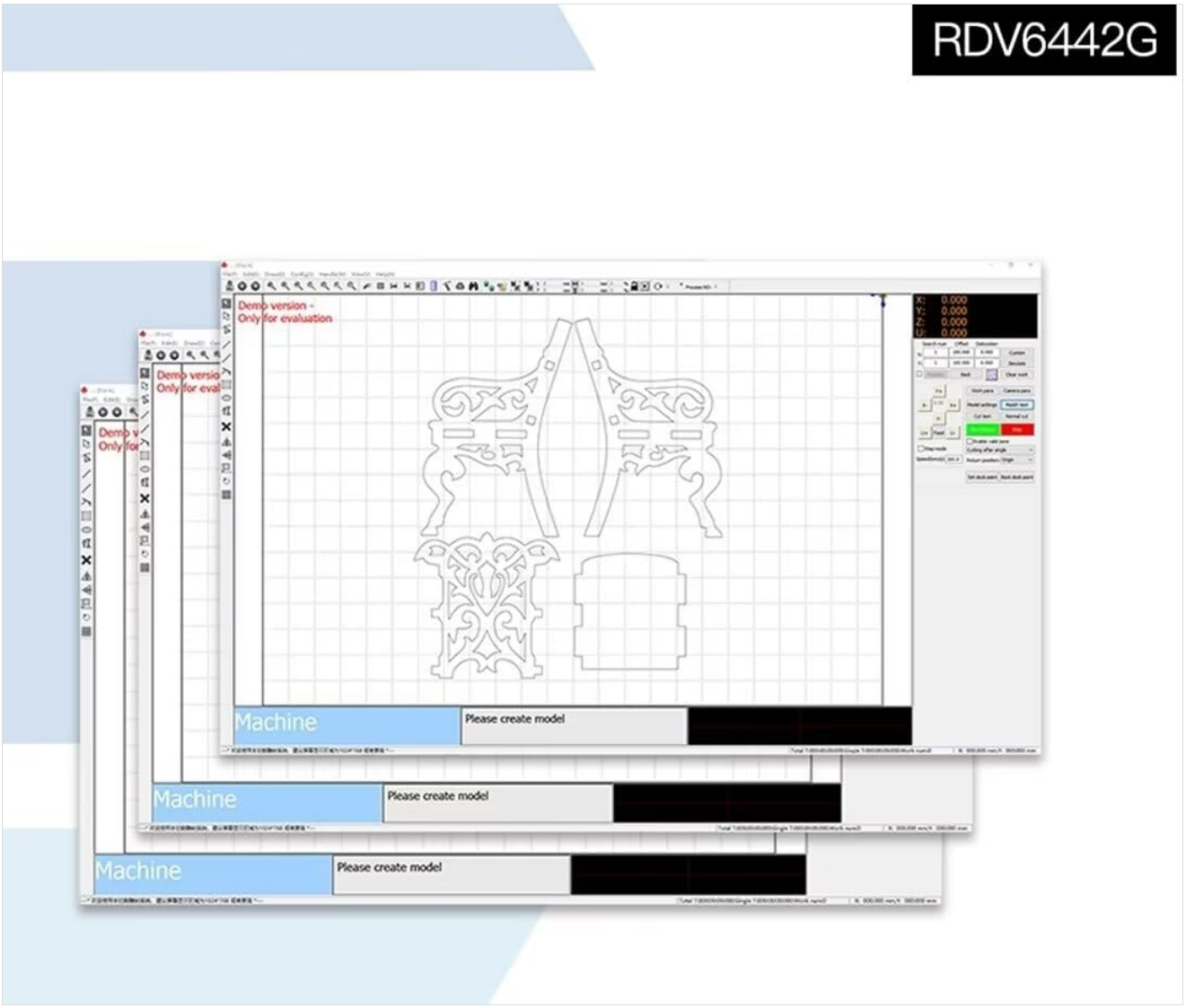


Image 3.2: Screenshot of a laser control software interface, demonstrating design and layout capabilities for laser cutting and engraving projects. This software is compatible with the RDV6442G system.

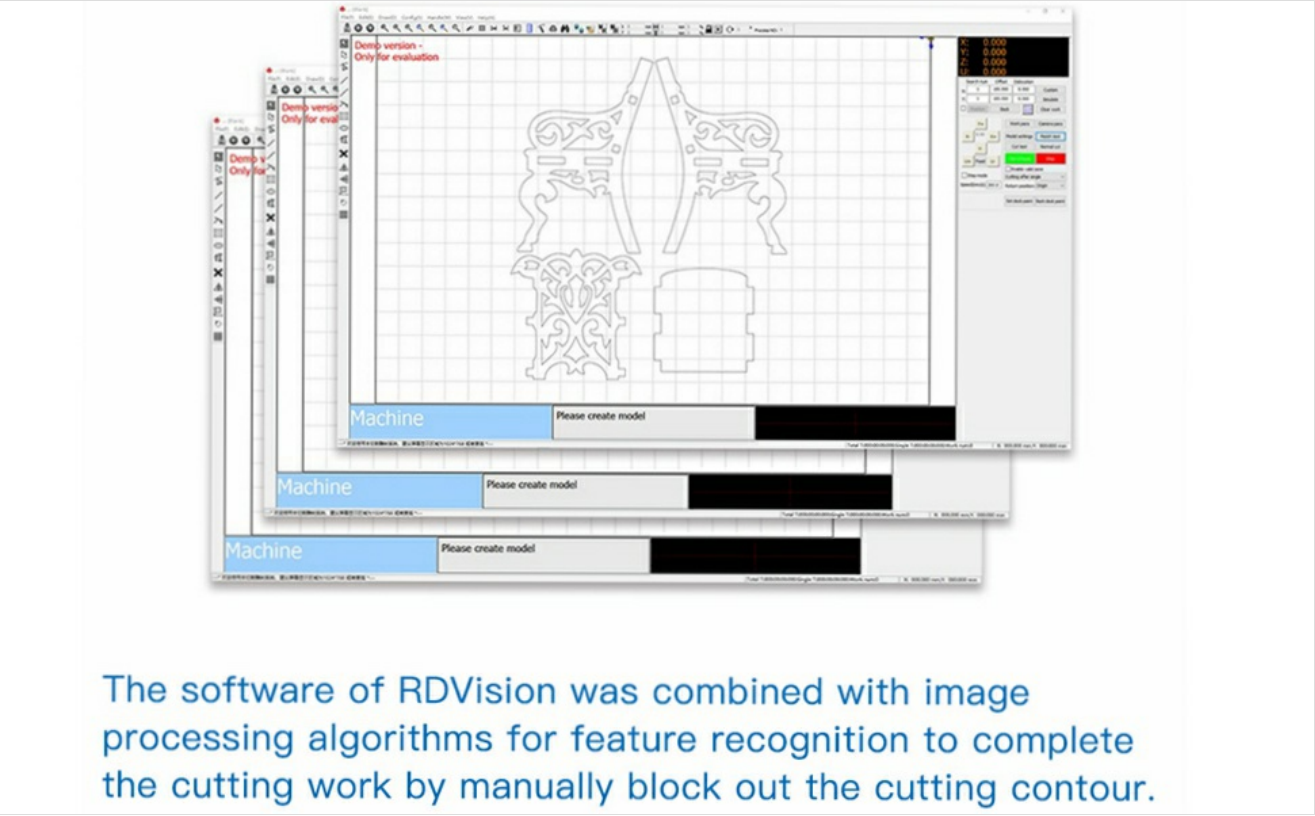


Image 3.3: The RDVision software interface, which combines image processing algorithms for feature recognition to complete cutting work by manually blocking out the cutting contour.

3.3 Advanced Features

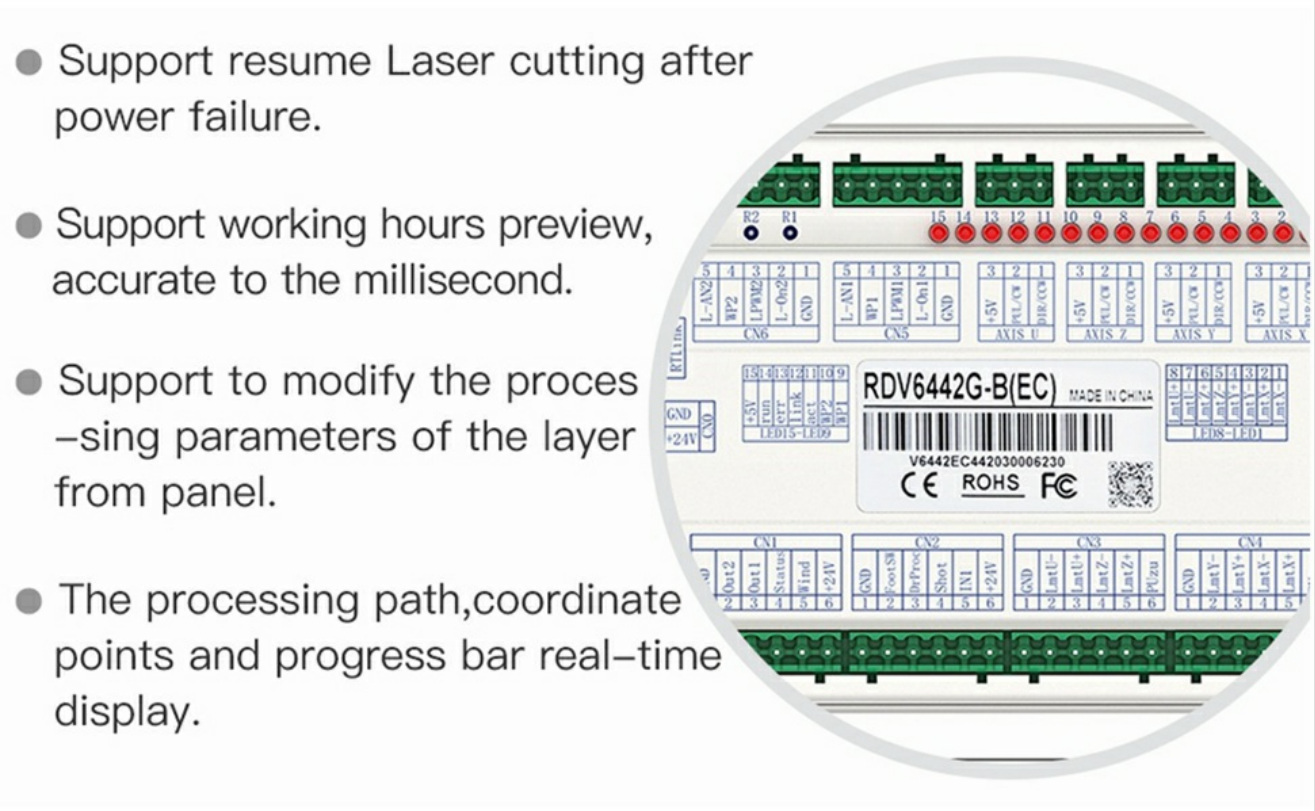


Image 3.4: Highlights of advanced features including support for resuming laser cutting after power failure, working hours preview accurate to the millisecond, ability to modify processing parameters of the layer from the panel, and real-time display of processing path, coordinate points, and progress bar.

3.4 Language Support

The RDV6442G controller supports a wide array of languages for user convenience.

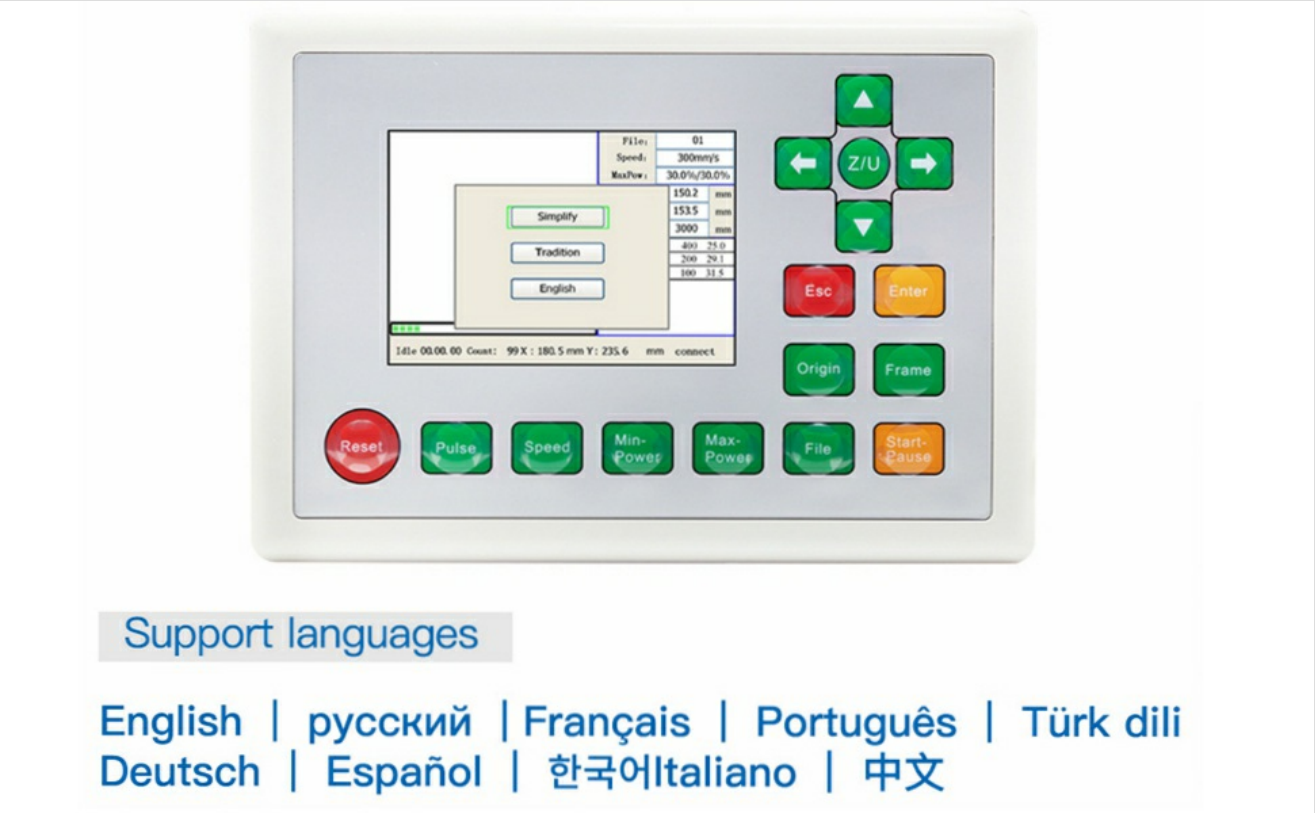


Image 3.5: The control panel displaying language selection options, confirming support for English, Russian, French, Portuguese, Turkish, German, Spanish, Korean, Italian, and Chinese.

4. Maintenance

Regular maintenance ensures the longevity and reliable operation of your RDV6442G control system.

- **Cleaning:** Keep the control panel and mainboard free from dust and debris. Use a soft, dry cloth for cleaning. Avoid liquid cleaners directly on electronic components.
- **Environment:** Operate the system in a clean, dry environment with stable temperature and humidity. Avoid extreme temperatures or direct sunlight.
- **Connections:** Periodically check all cable connections to ensure they are secure and free from corrosion or damage.
- **Firmware Updates:** Check the manufacturer's website for any available firmware updates to ensure your system has the latest features and bug fixes.

5. Troubleshooting

This section provides solutions to common issues you might encounter with your RDV6442G control system.

Common Issues and Solutions:

- **System Not Powering On:**
  - Check the power supply connection to the mainboard.
  - Verify the power source is active and providing the correct voltage (24V DC).
  - Inspect power cables for damage.
- **No Communication with PC:**

- Ensure USB or Ethernet cables are securely connected to both the controller and the PC.
- Check network settings if using Ethernet.
- Verify that the correct drivers are installed on your PC.
- Restart both the controller and the PC.

- **Laser Not Firing or Weak Output:**
  - Check laser tube connections and power supply.
  - Verify laser power settings (Min-Power, Max-Power) on the control panel or software.
  - Ensure the laser enable signal is active.
  - Check for any error messages on the control panel.
- **Axis Movement Issues:**
  - Check motor and limit switch connections for the affected axis.
  - Verify motor driver settings.
  - Ensure there are no physical obstructions preventing movement.

If you encounter issues not covered here, please refer to the support section for further assistance.

6. Specifications

Detailed technical specifications for the FONLAND Ruida RDV6442G control system.

Feature	Specification
Brand	FONLAND
Model Number	RDV6442G
Manufacturer Part Number	RDV6442G
Style	Laser
Control Axes	4-axis (X, Y, Z, U)
Laser Channels	2-channel laser control
Output Type	TTL level output
Drive Capability	50mA
Communication Interfaces	Ethernet (10/100M), USB2.0
Display	3.5-inch true color TFT screen
Memory	128M onboard (for standalone operation)
Origin Country	China
ASIN	B0CQP11R1T

7. Warranty Information

FONLAND products are manufactured to high-quality standards. This product comes with a standard manufacturer's warranty against defects in materials and workmanship under normal use. The specific terms and duration of the warranty may vary by region and retailer. Please retain your proof of purchase for warranty claims. For detailed warranty information, please refer to the documentation provided with your purchase or contact FONLAND customer support.

8. Support and Certifications

For technical assistance, troubleshooting, or any inquiries regarding your RDV6442G control system, please contact FONLAND customer support. Our team is dedicated to providing timely help and professional technical support.

Certifications:

The RDV6442G control system has passed various international certifications, ensuring its compliance with safety and quality standards.



Image 8.1: Certificates of conformity for CE, RoHS, and FCC, indicating that the product meets relevant safety and environmental standards.

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