ZEKOLO MKS DLC32 V2.1

ZEKOLO Makerbase MKS DLC32 V2.1 Control Board and TS24-R Display User Manual

Comprehensive instructions for installation, operation, and maintenance.

1. Product Overview

The Makerbase MKS DLC32 V2.1 is a 32-bit control board designed for laser engraving machines, featuring integrated WiFi connectivity. This manual specifically covers the use of the MKS DLC32 V2.1 board in conjunction with the MKS TS24-R V2.0 display, providing a user-friendly interface for controlling your laser module.

Figure 1.1: Makerbase MKS DLC32 V2.1 control board shown with both TS24-R and TS35-R display options. The board features various ports for motors, power, and laser modules.

2. Safety Information

Please read and understand all safety instructions before operating the device. Failure to follow these instructions may result in injury or damage to the equipment.

- Always wear appropriate personal protective equipment, including laser safety glasses, when operating a laser engraving machine.
- Ensure the work area is well-ventilated to dissipate fumes produced during engraving.
- Never leave the laser engraving machine unattended during operation.
- Keep the control board and all electrical connections away from moisture and conductive materials.
- Disconnect power before performing any maintenance or making electrical connections.
- Ensure proper grounding for all components.

3. Package Contents

Verify that all items listed below are present in your package. This manual focuses on the TS24-R V2.0 configuration.

- MKS DLC32 V2.1 Control Board (x1)
- USB Cable (x1)
- MKS TS24-R V2.0 Display (x1)
- 10PIN 40CM Flat Cable (x2)

Figure 3.1: The MKS TS24-R V2.0 display unit and a typical ribbon cable for connection to the control board.

4. Setup

4.1 Component Identification

Familiarize yourself with the various ports and components on the MKS DLC32 V2.1 control board.

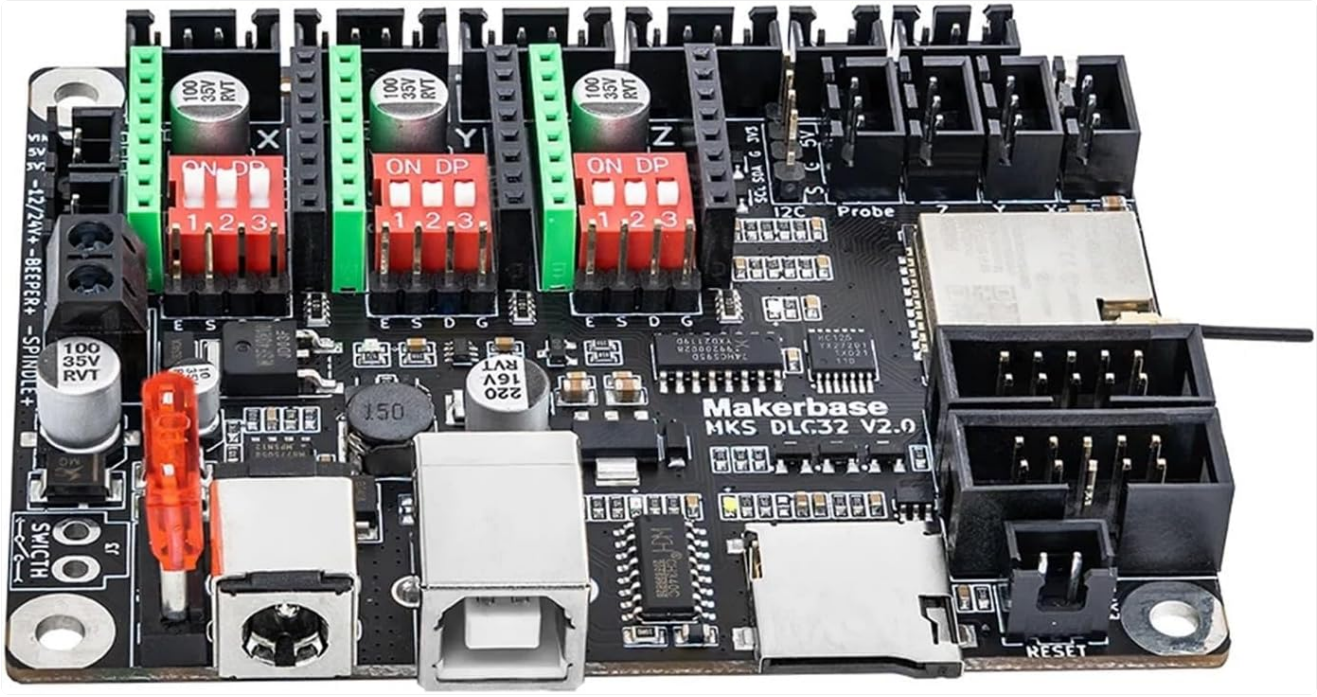

Figure 4.1: Detailed view of the MKS DLC32 control board (V2.0 shown, V2.1 is similar), highlighting motor driver slots, power input, USB port, SD card slot, and various pin headers.

4.2 Connection Instructions

Follow these steps to connect the control board and display:

1. **Install Motor Drivers:** Insert A4988 or TMC2209 motor drivers (not included in basic package) into the designated slots on the MKS DLC32 V2.1 board, ensuring correct orientation.
2. **Connect Stepper Motors:** Connect your laser engraving machine's stepper motors to the X, Y, and Z motor ports on the control board.
3. **Connect Laser Module:** Connect your laser module to the designated laser output port. Ensure polarity is correct and the laser module's power requirements are met.
4. **Connect TS24-R Display:** Use the provided 10PIN flat cables to connect the MKS TS24-R V2.0 display to the corresponding display port on the MKS DLC32 V2.1 board.
5. **Power Supply:** Connect a compatible 12-24V DC power supply to the power input port of the MKS DLC32 V2.1 board. Ensure the power supply meets the current demands of your motors and laser.
6. **USB Connection (Optional):** For initial setup or firmware updates, connect the MKS DLC32 V2.1 board to your computer using the USB cable.

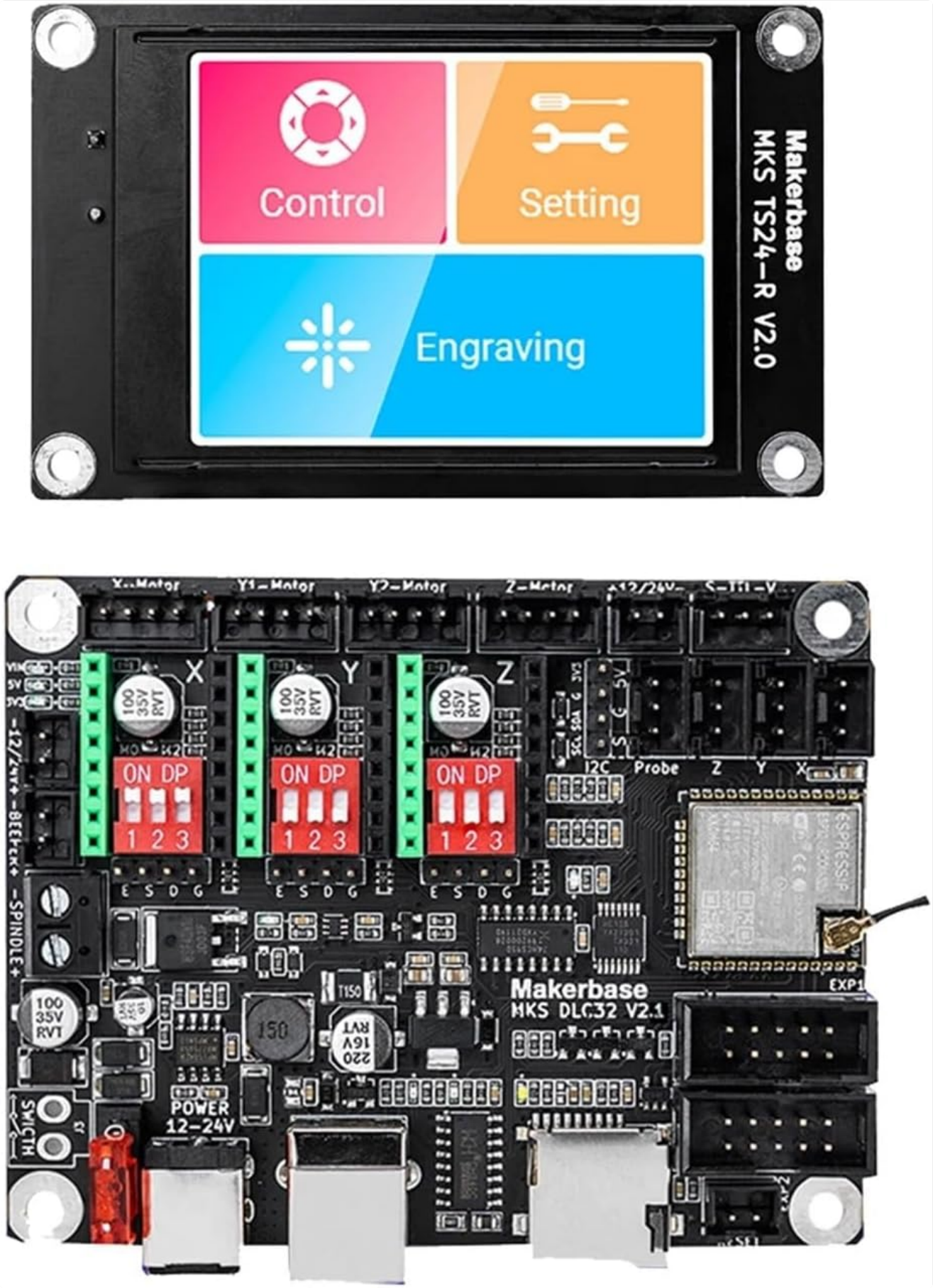

Figure 4.2: The MKS DLC32 V2.1 control board shown connected to the MKS TS24-R display, illustrating a typical setup configuration.

5. Operating Instructions

5.1 Initial Power-Up

After all connections are secure, connect the power supply to an electrical outlet. The MKS DLC32 V2.1 board and TS24-R display should power on. The display will show the main interface.

5.2 Display Navigation (TS24-R)

The MKS TS24-R V2.0 display provides a touch interface for controlling your laser engraver. The main screen typically features the following options:

Figure 5.1: The MKS TS24-R V2.0 display interface, featuring touch buttons for 'Control', 'Setting', and 'Engraving'.

- **Control:** Access manual movement controls, homing functions, and other real-time operational commands.
- **Setting:** Configure machine parameters, network settings (WiFi), and display preferences.
- **Engraving:** Select and start engraving jobs from files loaded via SD card or WiFi.

5.3 Basic Engraving Process

To perform a basic engraving task:

1. **Prepare G-code:** Create your engraving design using compatible software and generate the G-code file.
2. **Transfer File:** Transfer the G-code file to an SD card and insert it into the MKS DLC32 V2.1 board, or transfer it wirelessly via WiFi.
3. **Select File:** On the TS24-R display, navigate to the 'Engraving' section and select your G-code file.
4. **Position Material:** Place your material on the laser bed and ensure it is properly secured.
5. **Set Origin/Home:** Use the 'Control' menu to home the laser or set a custom origin point for your engraving.
6. **Start Engraving:** Confirm settings and initiate the engraving process from the display. Monitor the process closely.

6. Maintenance

Regular maintenance ensures optimal performance and longevity of your control board and display.

- **Cleaning:** Periodically clean the control board and display with a soft, dry brush or compressed air to remove dust and debris. Ensure power is disconnected before cleaning.
- **Firmware Updates:** Check the official Makerbase GitHub repository for the latest firmware updates. Updating firmware can provide new features and bug fixes.
- **Connection Checks:** Regularly inspect all cable connections for looseness or damage.

7. Troubleshooting

This section addresses common issues you might encounter.

- **Board Not Powering On:**
  - Check power supply connection and ensure it is providing the correct voltage (12-24V).
  - Verify the power switch on the board is in the 'ON' position.
- **Display Not Responding:**
  - Ensure the flat cables connecting the display to the board are securely seated.
  - Restart the board by cycling the power.
- **Motors Not Moving:**
  - Verify motor driver installation and orientation.
  - Check motor wiring for correct connections.
  - Ensure motor current settings are appropriate for your motors.
- **Laser Not Firing/Weak:**
  - Check laser module connections and power supply.
  - Verify laser power settings in your G-code or control software.
  - Ensure the laser module is enabled and not in a safety lockout state.

- **WiFi Connection Issues:**
  - Confirm correct WiFi credentials in the board's settings.
  - Ensure the board is within range of your WiFi router.
  - Restart the board and your router.

8. Specifications

Feature	Specification
Control Board Model	Makerbase MKS DLC32 V2.1
Display Model	MKS TS24-R V2.0
Processor	32-bit
Connectivity	WiFi, USB
Input Voltage	12-24V DC
Supported Laser Module Power	Up to 80W
Item Weight	50 Grams (approx. for board)
Display Type	LCD or OLED (TS24-R is LCD)

9. Warranty Information

This product is sold without an explicit warranty. Please refer to the seller's return policy for details regarding returns or exchanges.

10. Support

For additional resources, technical documentation, and community support, please visit the official Makerbase GitHub repository:

https://github.com/makerbase-mks/MKS-DLC32