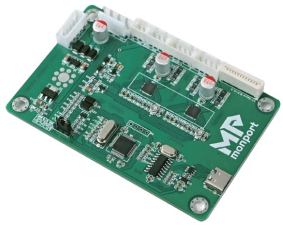

MONPORT GRBL 40W Laser Engraver Controller User Manual

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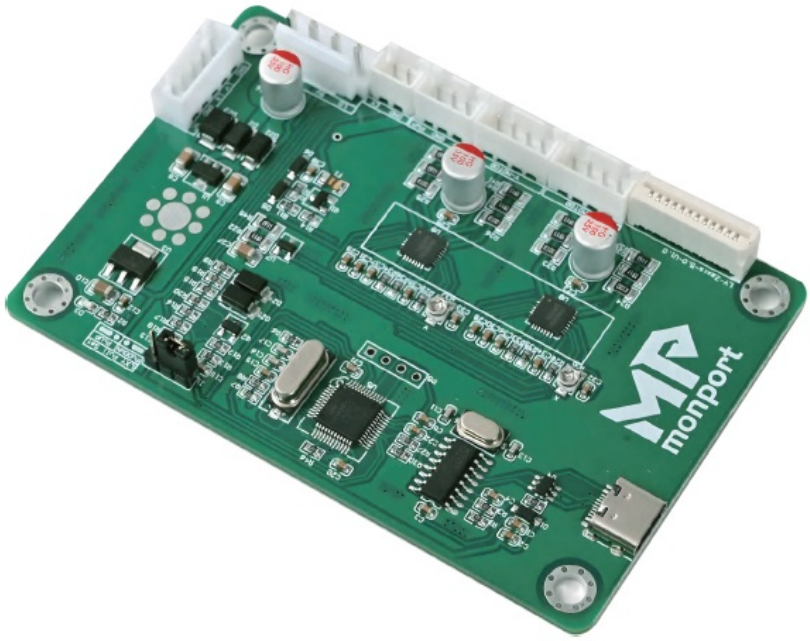
MONPORT GRBL 40W Laser Engraver Controller



Product Information: 40W Laser Engraver Controller

The 40W Laser Engraver Controller is an electronic device that allows you to operate your laser engraver directly from its control panel or through a direct connection with your computer. It comes with a separate manual for safe use of your laser and operating your engraving software.

Introduction

Overview

Once you have fully connected this control board to your engraver, you will be able to operate your laser directly from its control panel or through a direct connection with your computer.

Symbol Guide

The following symbols are used on this machine's labeling or in this manual:

-  These items present a risk of serious property damage or personal injury.
-  These items address similarly serious concerns with regard to electrical components.
-  This product is sold in conformity with applicable EU regulations.
-  This product contains electrical components that should not be disposed of with regular garbage.

Designated Use

This product is intended to be used with a laser engraver and its engraving software in accordance with local and national laws and regulations.

This control board is intended for use with MONPORT's low-wattage laser engravers and cutters using glass (DC) or metal (RF) carbon dioxide (CO_2) tubes. Its firmware and ports can also be used to control similar engravers from other manufacturers and some CNC machines, although such configurations are outside the scope of this manual and must be done at the user's own risk. This board must be installed, operated, maintained, and repaired by personnel familiar with its field of use and the dangers both of the machine and its components.
Laser engravers and CNC machines are dangerous. The manufacturer and/or seller bear(s) no responsibility and assume(s) no liability for any improper use of this device or for any damage or injury arising from such use. The operator is obliged to use this control system only in accordance with its designated use and to use its engraver only in accordance with the instructions in all its manuals and all applicable local and national laws and regulations.

Technical Specifications

Model	CPU Type	Board Dimensions	Input Power	Output Power	Signal Output	Max. Clock Frequency	Firmware Compatible	Software Compatible	File Systems	Maximum USB Speed
40W Laser Engraver Controller	N/A	N/A	N/A	N/A	N/A	N/A	Yes	Yes	FAT32	USB 2.0 (480 Mbit/sec.)

Model	40w laser engraver&cutter 2.0
CPU Type	ARM
Board Dimensions	2.4″ x3.7″ x0.3″ (6.1cmx9.4cmx0.8cm)
Input Power	24V DC
Output Power	24V DC
Signal Output	0-5V
Max. Clock Frequency	120 MHz
Firmware	GRBL
Compatible Software	LightBurn (Windows/Linux/MacOS)
Compatible File Systems	FAT32
Maximum USB Speed	USB 2.0 (480 Mbit/sec.)

Product Diagram

MONPORT GRBL 40W Laser Engraver Controller FIG-1

The product diagram shows the different connections on the control board:

- Limit switches
- Laser control line
- PWR Air assist switches Control Laser Y Motor X Motor
- Integrated control

- USB Type-c
- Type c line

Safety Information

Disclaimer
Your control board may differ somewhat from those shown in this manual due to options, updates, etc. Please contact us if your device came with an outdated manual or if you have any other questions.

General Safety Instructions
Use this device only in accordance with this instruction manual, the manuals for your laser engraver and its engraving software, and all applicable local and national laws and regulations. Only allow this device to be installed, operated, maintained, repaired, etc. by others who are familiar with these manuals and have read and understood all their warnings and safety information. Ensure that this manual is also included with your engraver if it is ever given or sold to a third party

- DO NOT install this control board if it arrives or becomes damaged. Contact customer service for help with repair or replacement.
- DO NOT leave this device separate from your engraver or loosely housed within it. Make all connections securely and then firmly secure the device to your engraver's casing.
- After any adjustment of this device's electrical connections with your engraver and its accessories, carefully test that the connections have been made correctly and the engraver and accessories are responding properly to your commands. Be especially careful of any connections to the water cooling system, heat sensors, and other safety equipment. If your engraver did not come with an interlock sensor that automatically cuts power to the laser when the work bay's protective cover is opened, it is highly recommended that you get and install one.

Electrical Safety Instructions

- ONLY use this device with a compatible and stable power supply with less than 5%fluctuation in its voltage. If your engraver's power supply is unable to maintain such consistency, replace the power supply before further use.
- Adjustment, maintenance, and repair of this device and other electrical components of your engraver must be done ONLY by trained and skilled professionals to avoid fires and other malfunctions, including potential radiation exposure from damage to the laser components. Because specialized techniques are required for testing the electrical components of your engraver, it is recommended such testing only be done by the manufacturer, the seller, or a specialized repair service.

Unless otherwise specified, ONLY undertake adjustment, maintenance, and repair of this device and its electrical connections when it, your engraver, and any connected accessories are turned off and disconnected from their power supplies.

- ALWAYS check that the electrical polarities are correct at every stage of installation. Reversing the polarity of power inputs can damage or destroy your board and other components. Use of a multimeter to ensure correct installation is recommended, especially for use with custom projects. Also ensure that new connections are properly grounded.

- DO NOT allow anything metallic to come into contact with this device while it is powered. Allowing a metal tool or fastener to fall against the board during use can cause short circuits, damaging or destroying the board.

Fire Safety

- NEVER leave your engraver alone during use.
- Always keep a fire extinguisher, water hose, or another flame retardant system nearby in case of accidents. Ensure the local fire department's phone number is clearly displayed nearby. In the case of a fire, cut electrical power before dousing the flame. Familiarize yourself with the correct range of your extinguisher before use, as its high pressure can produce blowback.

Installation

Step 1: Unpacking Your Control Board
Your control board should arrive protected by an antistatic bag and insulating foam. If you find any damage during unboxing or installation, please contact customer service immediately. Do not continue with the installation until customer service can confirm the devices' safety or provide safe replacement(s).

Step 2: Preparation
Before installation, ensure that the device is turned off and disconnected from its power supply. Read and understand the instruction manual for your laser engraver, engraving software, and this control board.

DO NOT install this device while your engraver is connected to its power supply. Turn off your laser engraver and fully disconnect it from its power supply. Open the part of your engraver's casing that holds its control panel. Place the cover to the side while taking care not to pull or damage its wiring. IIt is recommended that you use a few pieces of tape to join the various sets of wires connected to your engraver's current control board. Add labels similar to those shown in the picture below. Here, "PWR" is used for the main power input, "Y" and "X" for the motor drivers, and "END" for the limit switches. Any clear phrasing is fine. If your old board already has other connections in addition to these, use its manual or the board's markings and the diagram in §1.5 as well.

Step 3: Replacing the Old Control Board
If you are replacing an old control board, follow the instructions in your laser engraver manual to remove the old board.
Then, follow the instructions in this manual to install the new control board.

1. Remove the 3 bolts(Marked with A, B, C) which is holded on your engraver.
2. Remove the plate and remove the four bolts(Marked with a,b,c,d) at the corners of the old control board.

You can mount the new control board into place now (being careful to position its USB port beside your casing's access hole) or make all the necessary electrical connections first before bolting it into place.

Step 4: Electrical Connections
Follow the instructions below to connect the control board to your laser engraver:

- Control Board Power
- Laser Tube Connection
- Control Laser Connection

- X-MOTOR & Y-MOTOR Connection
- Limit Switch Connection
- Air Assist Switch Connection
- Integrated Control Connection

Control Board Power
As shown below find the “PWR” terminal on the control board. Connect the “PWR” terminal block previously removed from your old board to this terminal.

MONPORT GRBL 40W Laser Engraver Controller FIG-4

Laser Tube Connection
This control board does not directly connect to your laser tube.

Control Laser Connection
As shown below find the “Control Laser” terminal on the control board. Connect the “Control Laser” terminal block previously removed from your old board to this terminal.

X-MOTOR & Y-MOTOR Connection
As shown below find the “X-MOTOR” terminal on the control board. Connect the “X-MOTOR” terminal block was previously removed from your old board to this terminal.
If there is no such terminal, please ignore it.

As shown below find the “Y-MOTOR” terminal on the control board. Connect the “Y-MOTOR” terminal block previously removed from your old board to this terminal.
If there is no such terminal, please ignore it.

Limit Switch Connection
As shown below find the “Limit Switch” terminal on the control board. Connect the “Limit Switch” terminal block previously removed from your old board to this terminal.

MONPORT GRBL 40W Laser Engraver Controller FIG-8

Air Assist Switch Connection
As shown below find the “Air Assist Switch” terminal on the control board. Connect the “Air Assist Switch” terminal block previously removed from your old board to this terminal.

Integrated Control Connection
As shown below find the “Integrated Control” terminal on the control board. Connect the “Integrated Control” terminal block previously removed from your old board to this terminal.
If there is no such terminal, please ignore it.

It does not need to be connected if your original machine does not have some terminal listed above.
Please connect the terminals according to the actual situation.If you have any questions, please do not hesitate to contact us as soon as possible, and we will solve the problems you encounter as soon as possible.

Step 5: Software Configuration
Configure your engraving software to work with the new control board following the instructions in the software manual.

- Step 1: Check out whether the USB cable is connected to the PC.
- Step 2: Open the Lightburn Software.
- Step 3: Choose the device
- Step 4: Find my laser

MONPORT GRBL 40W Laser Engraver Controller FIG-11

- Step 5: Add devices
- Step 6: Name whatever you like.

MONPORT GRBL 40W Laser Engraver Controller FIG-12

- Step 7: Enjoy your new journey

MONPORT GRBL 40W Laser Engraver Controller FIG-13

Maintenance

Maintain the control board according to the instructions in this manual and the instruction manual for your laser engraver. Only undertake maintenance and repair when the device, your engraver, and any connected accessories are turned off and disconnected from their power supplies.

Always disconnect your engraver from its power source before any adjustment, cleaning, or other maintenance of these devices.
You can remove dust from these devices with a soft cloth. Do not use harsh chemicals or allow any electrical components or connections to become wet. If they accidentally become wet, immediately use your engraver's emergency stop button, disconnect your engraver from its power source, and leave it disconnected until all water has completely dried.
For maximum safety and best results, leave all other adjustments, maintenance, and repair to trained and skilled professionals. If this control system is ever damaged or malfunctions during use, immediately use your engraver's emergency stop button, disconnect your engraver from its power source, and leave it disconnected until all damage or malfunctioning equipment has been fully repaired or replaced.

Common Problems

If you encounter any problems with your control board, refer to the troubleshooting section in this manual or contact customer service for assistance.

FAQ 1: The software controls the movement direction to be opposite to the actual movement direction.
ANSWER1:
Option 1:Move the axis in the opposite direction, exchange its 1A and 1B.
Option 2:Modify the grb1 parameter $3. If the x-axis motion is opposite, adjust
$3=0. If the Y-axis motion is opposite,adjust $3=3.

FAQ 2: The hard limit cannot be used correctly.
ANSWER2:
Check that the limit connection wire is correct and confirm that the limit is a normally open switch or a normally closed switch.
If the normally open switch confirms that the jumper cap on the controller is in PuUP, modify $5=0.
If the normally closed switch confirms that the jumper cap on the controller is in PuUP, modify $5=1.

FAQ 3: Prompt ERROR: Travel exceeded.
ANSWER3:
Confirm the grbl parameter $20=1.

FAQ 4: How to view grbl parameters?
ANSWER4:

Option 1:Use Lightburn Software by default, edit – machine settings. Option 2:Console Window Send $$.

Contact Info

If you have any questions or concerns about your control board, contact customer service at [insert contact info here].

Thank you for choosing this controller to upgrade your 40w machine! Welcome to join in the official Facebook group or visit our Monport website at www.monportlaser.com for more information! If you need any after-sale support, please do not hesitate to contact customer service with your order number at help **support@monportlaser.com** or visit **https://app.helpdesk.com/tickets**.Our teams will respond within 12 hours to make things right. Thank you and we hope you will choose us again for all your laser needs.

Documents / Resources

	**MONPORT GRBL 40W Laser Engraver Controller** [pdf] User Manual GRBL 40W Laser Engraver Controller, GRBL 40W, Laser Engraver Controller, Engraver Controller, Controller

References

- Laser Engraver and Cutter Machines — Monportlaser
- HelpDesk