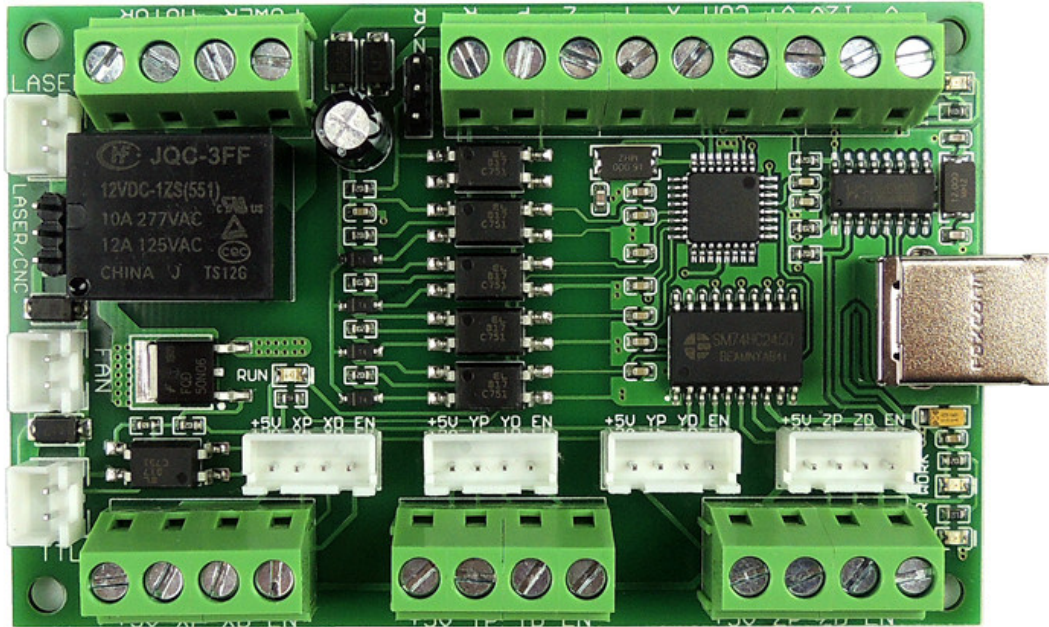


RYC-GRBL-V3 LASER CNC Controller Manual



The motion control card for machine control, with strong professional. Requires the operator to have the relevant expertise! When using a laser, you need to be protected against laser damage to your eyes. Before using the tool for engraving, familiar with the software operation, be careful to operate to prevent accidents.

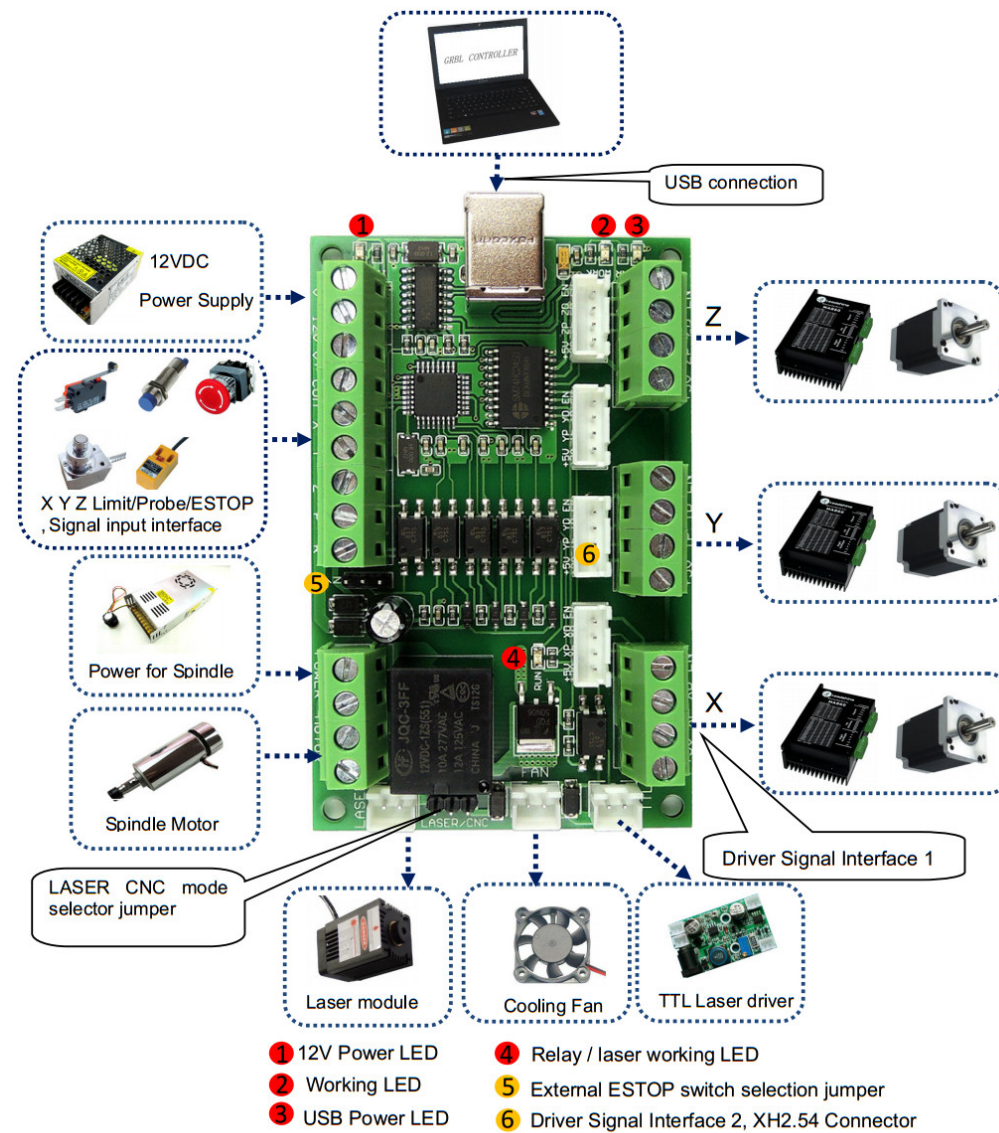
Contents

Features:	3
Basic connection diagram (an Overview):	4
PCB mark Description:.....	4
Mechanical dimensions diagram.....	5
Select power supply	6
About E-STOP connection and Reset:	6
Z axis tool zero operation:	6
Spindle motor control:	6
Note on using TTL laser power module:	6

Features:

- 1.Application:use for DIY Engraving machine or Toy laser engraving machine, need external connect stepper motor driver, suitable for users who make large stroke engraving machine.
- 2.Applicable software: GRBL control, Un Gcode Sender, GRBL controller, or other software that supports GRBL code
3. The maximum pulse frequency of the control board: 30KHZ
- 4.Communication: USB (USB-CH340).
- 5.Power supply: voltage: 12V,
6. Applicable to stepper motor driver: as long as the stepper motor driver with direction + pulse signal control can be used.
- 7.Support stepper motor: Determined by the external connect driver, the stronger of the driver's capability, the larger motor that can be connected
- 8.Laser interface: 12V, suitable for 12V laser head
- 9.Spindle motor interface: the maximum support 400W DC spindle motor.
- 10.With fan interface and TTL signal output interface (for controlling the laser module with TTL module).
- 11.Limit interface: X Y Z limit interface, can be connected to NPN photoelectric sensor
- 12.Probe interface: for Z axis tool zero.
13. Can connect emergency stop switch. In an emergency, the MCU can be reset to stop the machine.

Basic connection diagram (an Overview):



PCB mark Description:

Mark	Description
+5V	+5V Driver signal common
XP	X Axis Pulse signal
XD	X Axis Direction signal
YP	Y Axis Pulse signal
YD	Y Axis Direction signal
ZP	Z Axis Pulse signal
ZD	Z Axis Direction signal
EN	All Axis Enable signals

Select power supply

1. The controller is powered by 12VDC. Other voltage parameters cannot be used. If the laser interface is not used, only the input interface and relay, 12VDC 0.5A power supply is enough.
2. If you connect the laser head, increase the power of the power supply according to the laser power.

About E-STOP connection and Reset:

1. When connecting an emergency stop, please connect the normally closed contact of the emergency stop switch. You need to select "R" for the controller jumper.
2. In order to be safe, the emergency stop uses the method of resetting the MCU to stop the machine. When the emergency stop is triggered, the machine stops, but the software will not prompt. After troubleshooting, please reset the emergency stop switch and reconnect the controller.

Z axis tool zero operation:

1. Connect the probe device according to the wiring diagram
2. Input probe code: **"G38.2 Z-20 F3"**, Z axis start probe,

Spindle motor control:

1. Use the relay on the controller to control the spindle to start and stop, the maximum can be connected 400W DC motor , Wiring method, please refer to the wiring diagram.
2. Code M3 control relay works, motor rotation, Code M5 control relay is disconnected, motor stops

Note on using TTL laser power module:

1. When using a TTL laser power module, the LASER interface of the controller cannot be used as the power supply interface, because the 12V PWM modulation interface of the LASER interface cannot be used as a power supply.
2. When using TTL laser power module, please strictly follow the wiring diagram and ensure that the power of the power supply is sufficient.