

X-Carve Pro J Tech Photonic Laser Adaptation Project

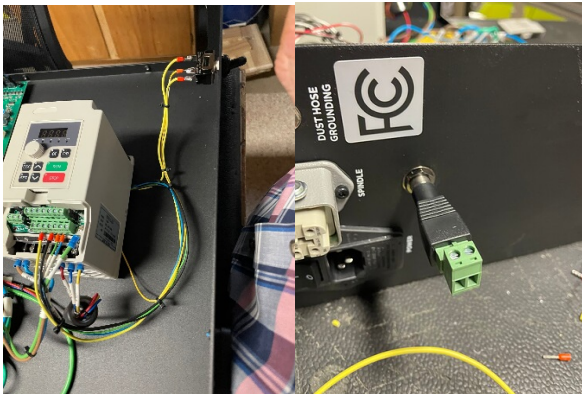
* I did this project on my own and this is not a supported solution from Inventables. This project requires that you open the case of your controller and make modifications to the factory build. Doing so may VOID your warranty and there is the potential to damage the components of your unit. Please proceed at your own risk. This project is offered without warranty or guarantee of any kind.

Overview

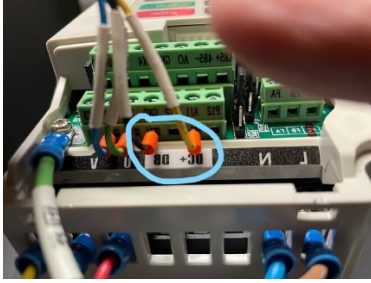
This information is being provided to folks interested in adapting their J Tech laser systems to be used with the new X-Carve Pro. The laser system, in order to operate, requires input from a PWM port from the CNC controller. This port provides the signaling required to turn the laser on at various power levels. With X-Carve machines a PWM port was accessible from the terminal blocks on the back of the controller box. With the X-Carve Pro the PWM port is internal and connected to the VFD (Variable Frequency Drive) unit inside the controller chassis. So in order to be able to connect our laser we must bring the PWM port to the outside where we can connect it to the laser. We will also add a switch to switch between the laser and the router so that they will not run at the same time.

You will also need a mount to mount the laser to the front of the spindle shroud, I made my own but you can purchase the “generic” mounting option from J Tech. The mount is attached the spindle using two-sided servo tape.

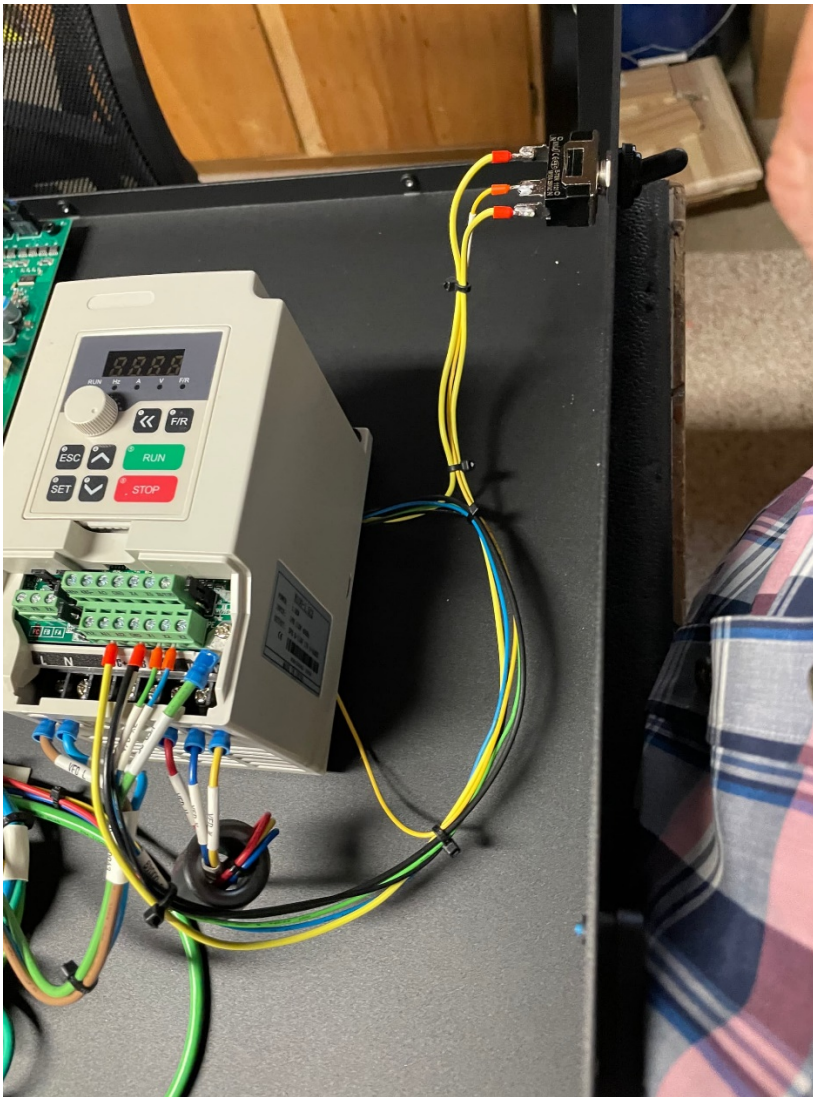
- 1) Decided on the location for the switch and the PWM jack on your controller chassis. I mounted the switch in the front and the jack in the rear. Make sure you have room and that your wiring will not be in the way of other wiring and components in the chassis.



- 2) Remove the cover from the VFD and loosen the connection at AI1, this yellow lead from the controller labeled AI1 is the PWM positive lead. Connect this lead to the center post on your switch. You may need to carefully cut some nylon ties holding that wire to the other wires.



- 3) Connect one of the outside posts of your switch with a segment of yellow wire back to the AI1 post on the VFD. This is to operate the VFD and spindle.



- 4) Connect the remaining outside switch post with another segment of yellow wire, leave the other end unconnected and able to reach your jack in the back with at least 5" of spare wire.
- 5) Connect a section of black wire at the GND (ground) terminal on the VFD. I just loosened the terminal and removed the black wire and then twisted it together with the new black wire and

reinserted them both back into the GND terminal on the VFD block. Route the black wire along the yellow wire to your jack (the loose wire). Make sure you leave the extra slack as you did for the yellow wire.

- 6) Take one of the filters and place it over both the black and yellow wires near the back and secure with a nylon tie.
- 7) Solder the loose yellow wire to the positive post on your jack and then solder the black wire to the ground post on your jack.
- 8) At this point verify your wiring is clear of other components and just tie things up and reassemble your case.

You will need 5 feet of yellow and 5 feet of black 21 gauge wire.

https://www.amazon.com/gp/product/B08365PHH8/ref=ppx_yo_dt_b_asin_title_o04_s00?ie=UTF8&psc=1 PWM Phono Jack \$7.89

https://www.amazon.com/gp/product/B07GKBPYB9/ref=ppx_yo_dt_b_asin_title_o05_s00?ie=UTF8&psc=1 Noise Filters (you only need 1) \$9.58

https://www.amazon.com/gp/product/B082QRM55X/ref=ppx_yo_dt_b_asin_title_o05_s00?ie=UTF8&psc=1 SPDT Switch (get 3 need 1) \$11.03

https://www.amazon.com/Fancasee-Replacement-Solderless-Terminal-Microphone/dp/B0819FNFI3/ref=pd_bp_sim_b2b_1/141-0623188-4493506?pd_rd_w=L8E1Q&pf_rd_p=bdb5d774-733c-4f04-8009-80f934b6d9ff&pf_rd_r=NDTKEWPB0F0MKC0QQNE5&pd_rd_r=4ddfa491-51de-44a6-ab71-23c5d69979f4&pd_rd_wg=yya0h&pd_rd_i=B0819FNFI3&psc=1 Phono Plug Jack with Screw Terminals (get three need 1) \$7.80

<https://itechphotonics.com/?product=laser-extension-cord> J Tech Extension Cables Set 20' \$24.99

Total \$ \$61.29