

Connecting Opt Lasers PLH3D-6W-XF+ to Genmitsu 3020 Pro Max v2

This document describes end to end process on how to connect and enable operations of laser module Opt Lasers PLH3D-6W-XF+ with 6W optical power to desktop CNC Genmitsu 3020 Pro Max v2.

What do we need:

- Genmitsu 3020 Pro Max v2
- Universal CNC Laser upgrade kit with PLH3D-6W-XF
 - [Laser module PLH3D-6W-KF+](#)
 - [PLH3D-CNC Adapter Pro](#)
 - [Laser Dock Pro](#)
 - [Safety glasses](#)
 - [Cable](#)
 - Mount
 - Height reference

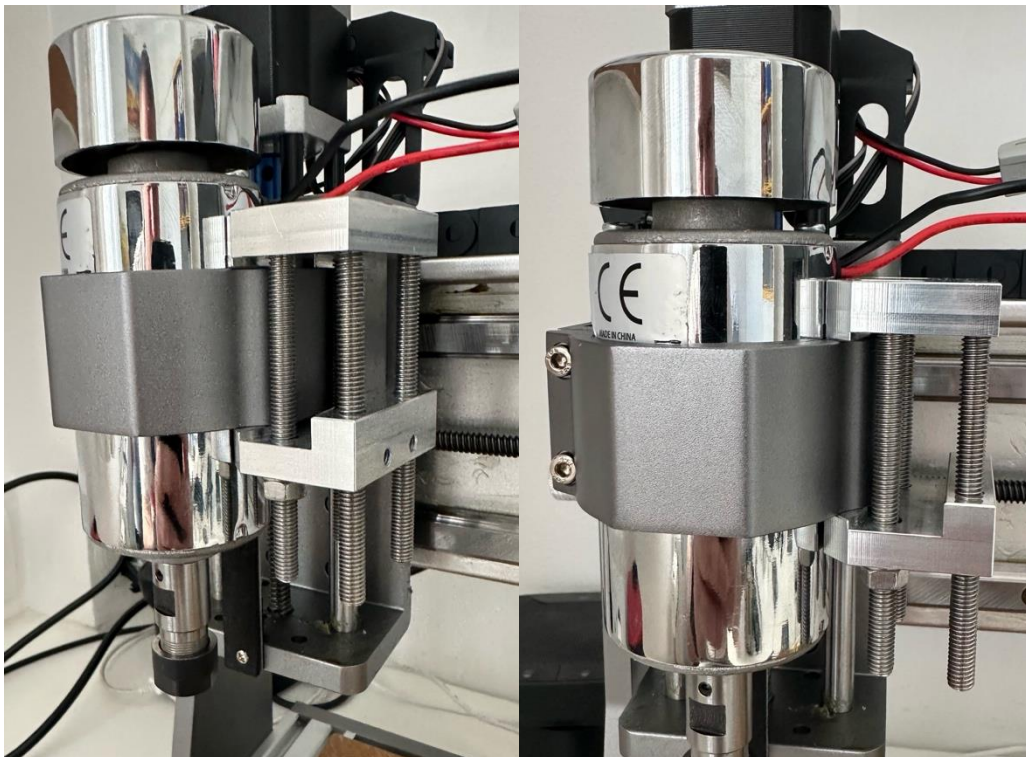


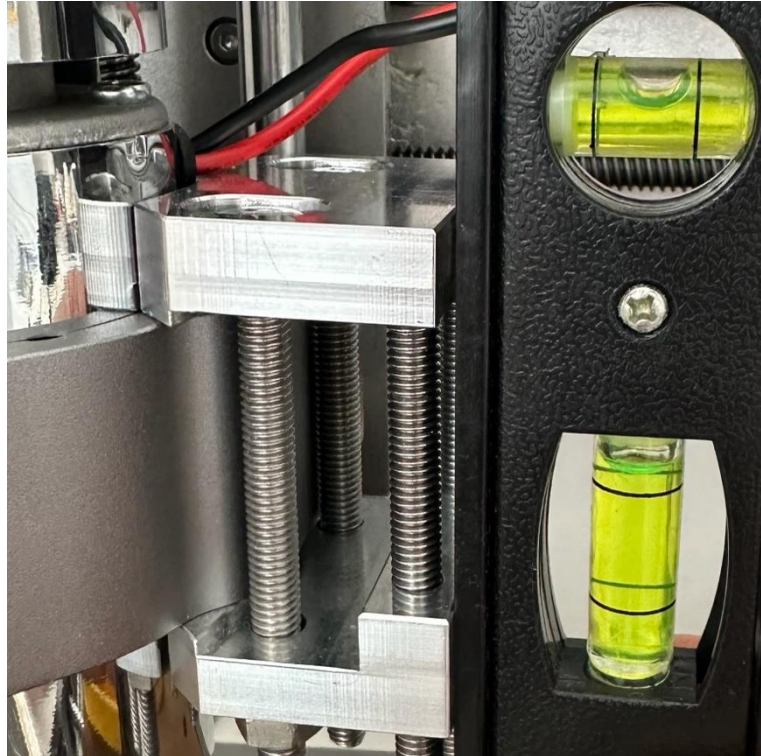
Perform the following steps to connect the laser head to your CNC.

1. Connect the laser head to the laser side part of the LaserDock Pro:



2. Connect the mount to the spindle mount of the CNC machine. Make sure that the mount is tight and aligned.





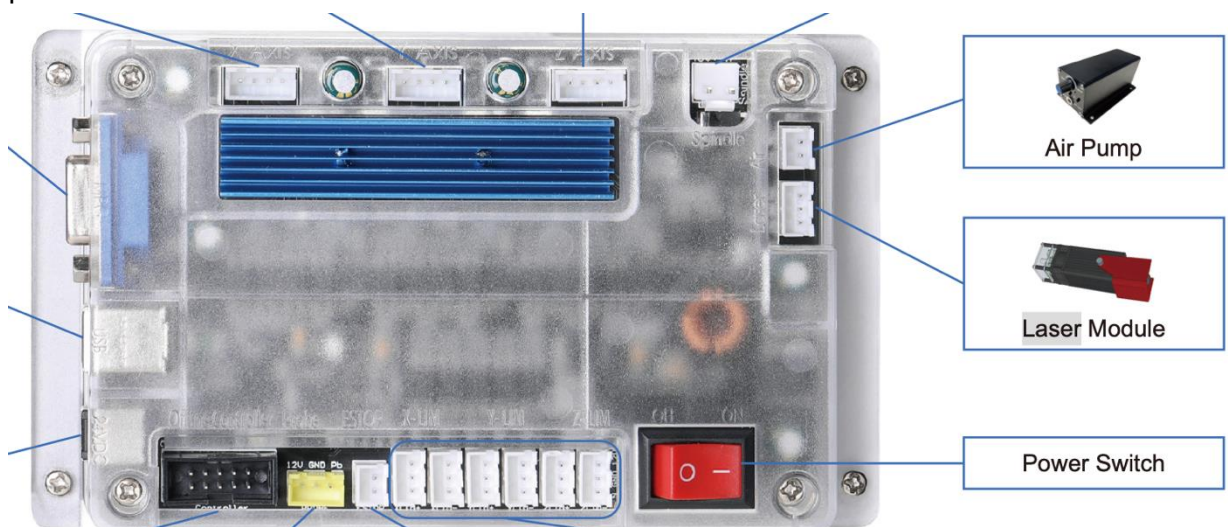
3. Connect the CNC side of the LaserDeck Pro to the mount

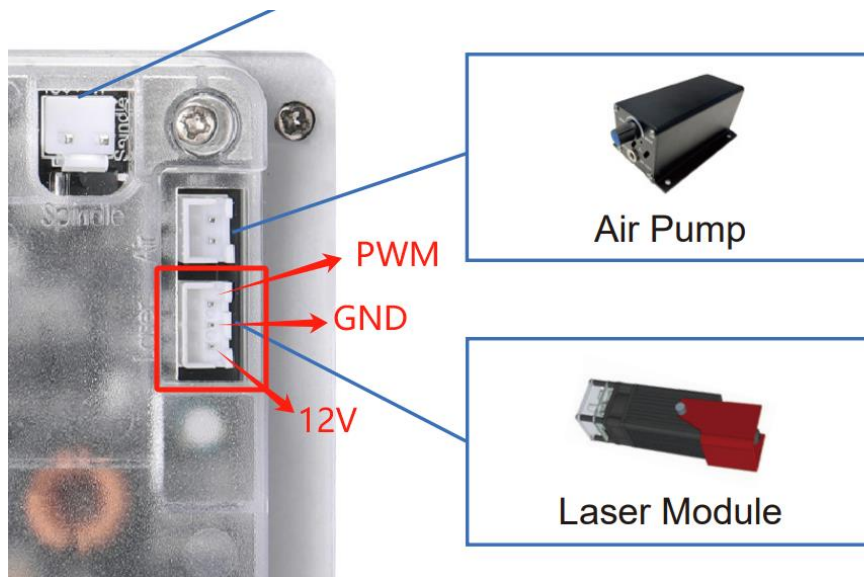


4. Attach the laser head to the LaserDeck Pro



5. Use a 2-wire cable to connect PLH3D-CNC Adapter Pro to the laser port of your CNC machine. Cable is not included in the kit. CNC Controller on the Genmitsu 3020 Max Pro v2 has a builtin laser port with 3 pins (OWM, GND and 12V power supply). PLH3D-6W-KF+ requires 24V power supply so we can't connect the module directly to the controller but use external power supply. Therefore, we will only use 2 pins from the laser module connector: PWM and GND.





We connect PWM pin from the CNC controller to the TTL/PWM pin of the PLH3D-CNC Adapter and GND pin to GND pin.



6. Connect the laser cable to the Laser Head Connector of the PLH3D-CNC Adapter Pro. This cable can have 5 or 6 pins. We need 5 pins since Laser Module has 5 pins. But we can use the cable in the kit that has 6 pins on one side and 5 pins on another.



7. Connect the other side of the cable to the laser head. Use the 5 pin side of the cable. If you want to use the LaserDock Pro connection, cable pins must be re-arranged per the documentation [here](#).



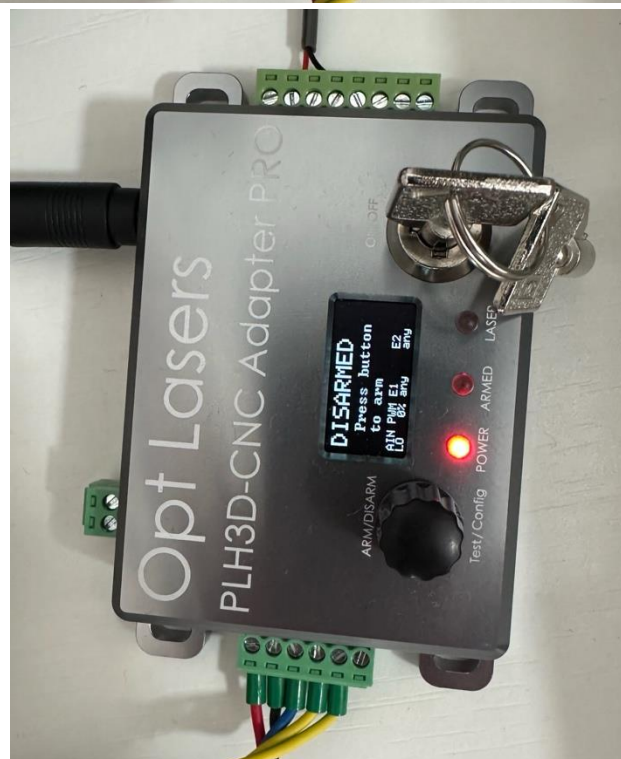


8. Disconnect the spindle motor power supply. This CNC doesn't support the option to cut spindle power supply once the laser mode is on. This will cause the spindle motor to power on together with the laser module which can cause injury. To avoid that, we recommend to disconnect the spindle from the power supply.



9. Connect the power supply to the PLH3D-CNC Adapter Pro. PLH3D-CNC Adapter Pro is turned off by default and you need to use the attached key to turn it on. This is done by pointing the key to the ON/OFF direction. You can remove the key after turning it on. The PLH3D-CNC Adapter Pro works out of the box with the default settings. If you want to change the default settings, see manual [here](#). Important settings are:

Setting	Description	Default value	Required value
AIN	Analog Input	LO	LO
E1	Enable 1	Any	Any
E2	Enable 2	Any	Any

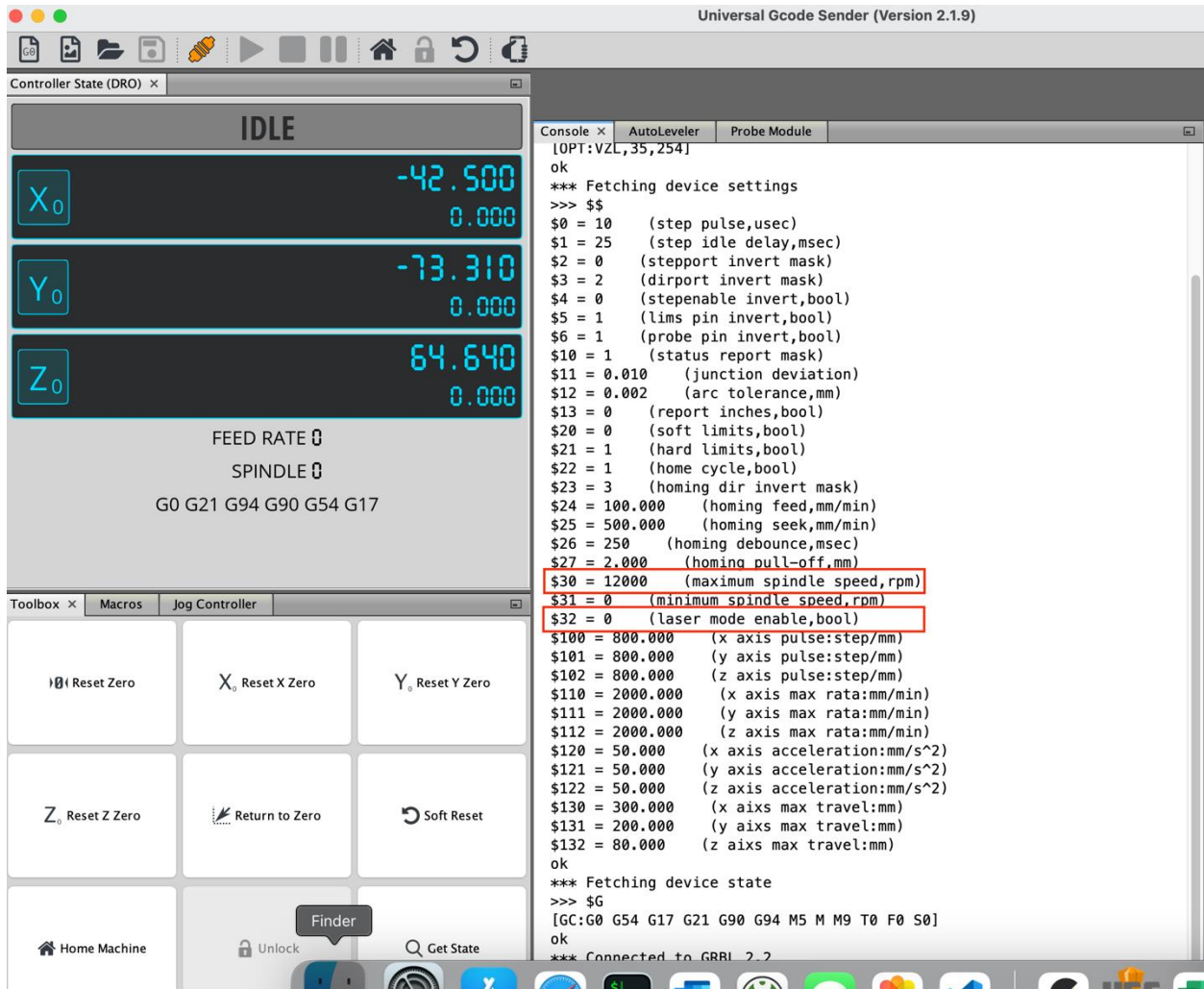


10. Laser head is factory focused at 6cm. Use height reference from the kit to adjust the laser head distance to 6cm



Laser head is now ready for operation. You can use pretty much any CNC controlling software to operate your CNC with the laser. Here is the example of one of the most popular open-source solutions [Universal G-Code Sender](#).

1. Connect the software with your CNC. Once connected type \$\$ to get the stored controller configuration. We are looking into two settings \$30 (maximum spindle speed) and \$32 (laser mode). By default, on the Genmitsu 3020 Pro Max v2 these settings are \$30 = 12000 (this could be different if you modified your original CNC setup) and \$32 = 0. Note down the default values for \$30 and \$32 as you will need to change them back before operating the spindle again.

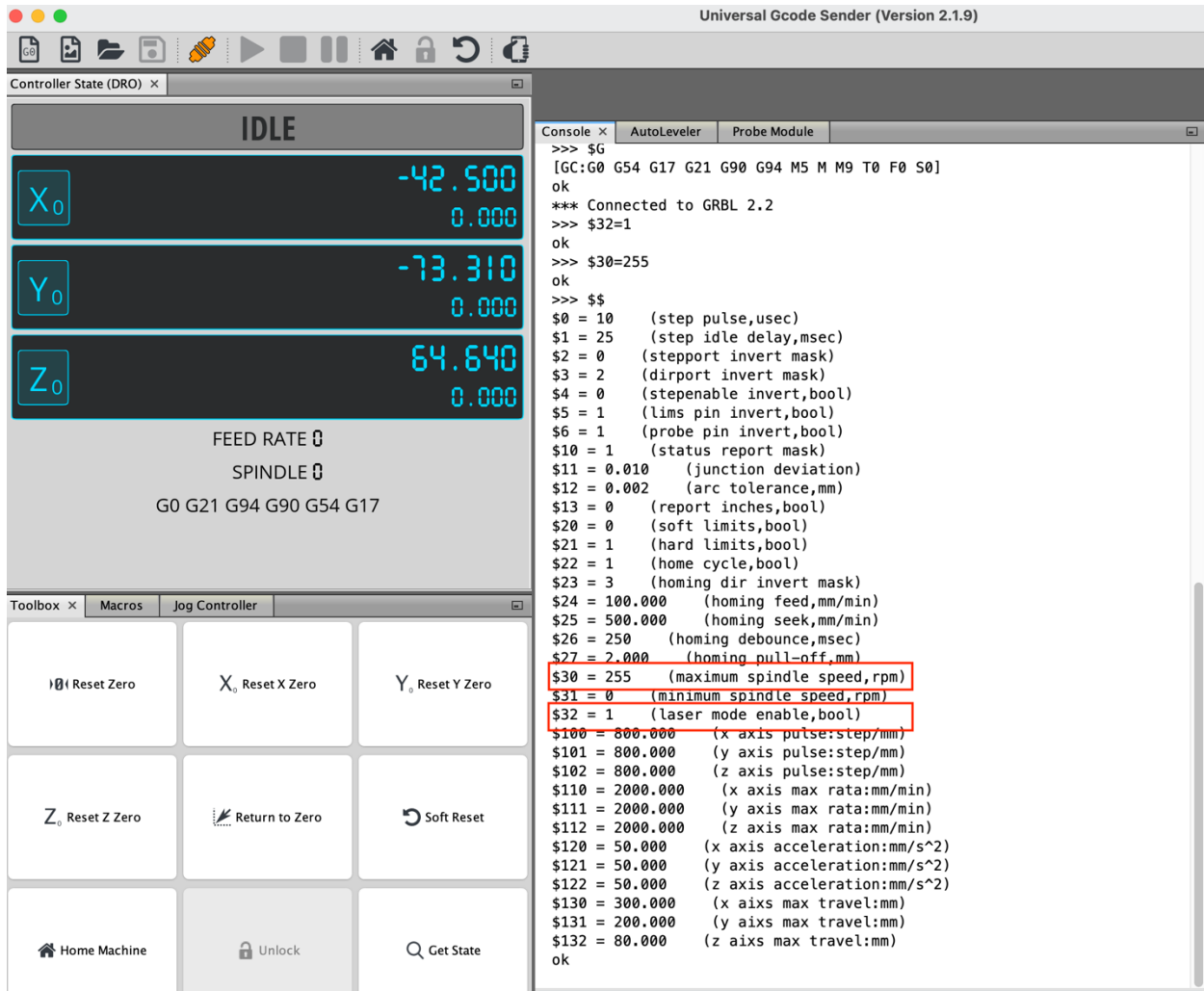


You must set these values by typing following commands in the console tab:

$\$30 = 255$

$\$32 = 1$

After typing, run $\$ \$$ again to verify new settings:



- Before running any new CNC job, you can easily check if laser works by typing following commands in the console of the Universal G-Code Sender:

M3 S1

G1 F1

After running these commands, look at the PLH3D-CNC Adapter Pro and it's PWM value should state 1%



You should now put your safety glasses on and press the ARM/DISARM button the PLH3D-CNC Adapter Pro. If everything was done correctly, you will see a small laser dot on your CNC working area.



You can either press the ARM / DISARM button again to disable the laser or type M5 in the Universal G-Code Sender console. The controller settings we changed \$30 and \$32 are automatically stored. Once you want to operate the spindle again,

connect the spindle to the power supply and run following commands in the Universal G-Code Sender consoles:

\$30 = 12000 (or whatever the default value was set before)

\$32 = 0