



# **Single Wavelength GUI**

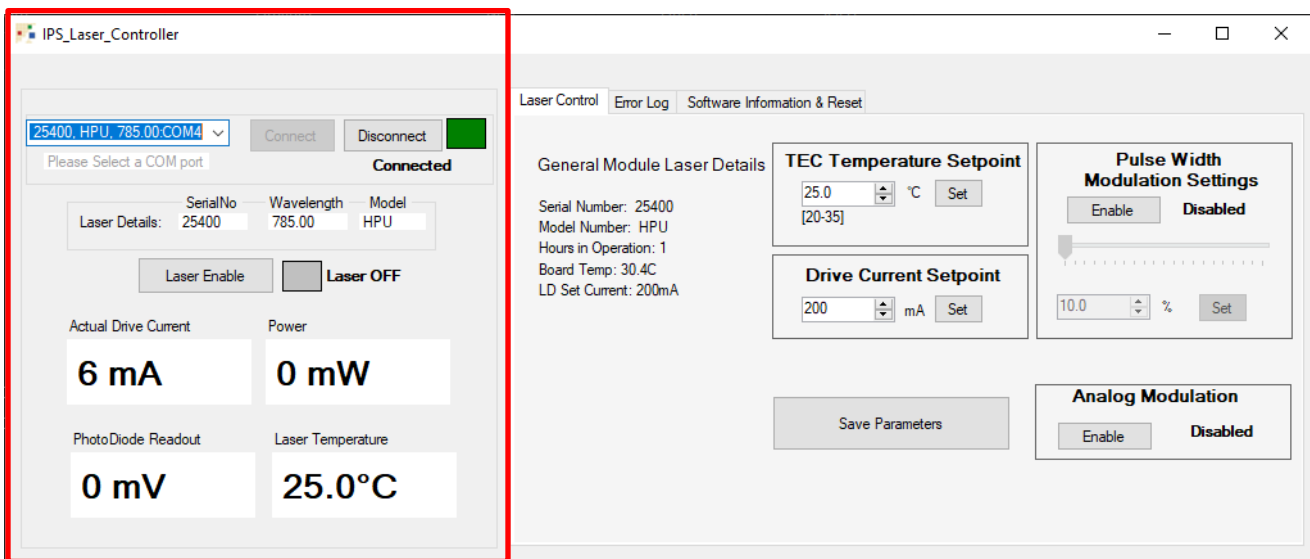
## **USER GUIDE-APC control**

## Connecting the Laser:

- I. To Connect the laser, plug the USB A into the top port on back panel and plug the other end of the cable into your device. Note: The cable going from laser to computer needs to be plugged into the top port or you will get an error code.
- II. The bottom USB A port can be used to connect the laser to a spectrometer or other device.

## Selecting the Laser:

- I. Select a COM port in the “Select a Laser” drop down. Once you have selected a laser click Connect. The indicator to the right will turn GREEN when the laser is connected.
- II. The laser details will auto fill in with the Serial Number, Wavelength, & Model.



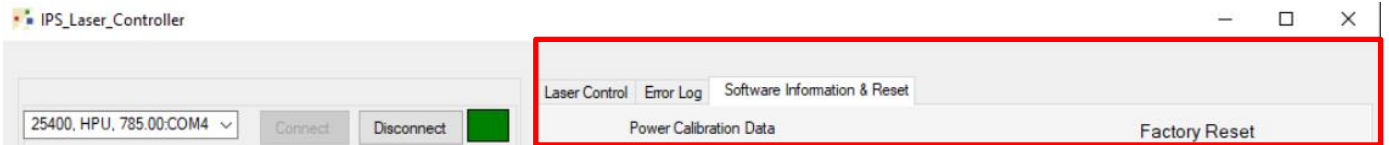
## Turning the Laser on:

- I. Click the button labeled “Laser Enable” The indicator to the right will turn GREEN when the laser is connected.
  - a. NOTE: If the “**Front Panel Activate**” Check Box at the bottom is checked, the software graphical user interface (GUI) will be disabled. This allows the laser to be adjusted in manual mode via the controls on the front of the module.
  - b. If the interlock on the laser module is open, the laser will not turn on and an error message will be shown on the GUI

## Controlling the Laser:

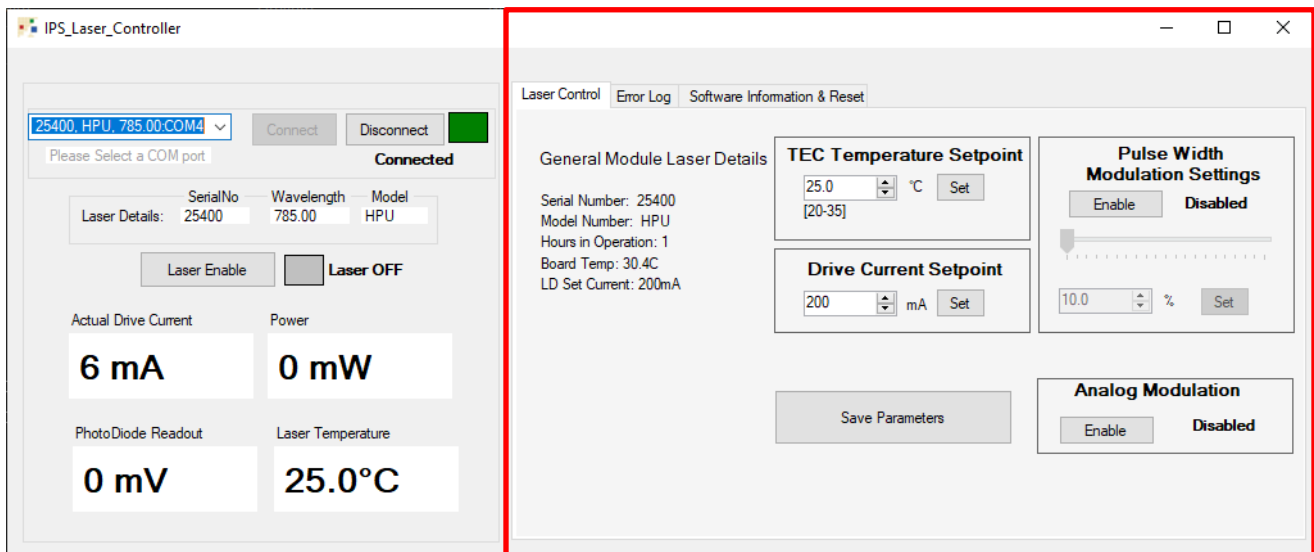
- I. On the right side of the GUI three different tabs will be displayed: Laser Control, Error Log, and Software Information & Reset. These will be used to control the laser and

make adjustments.



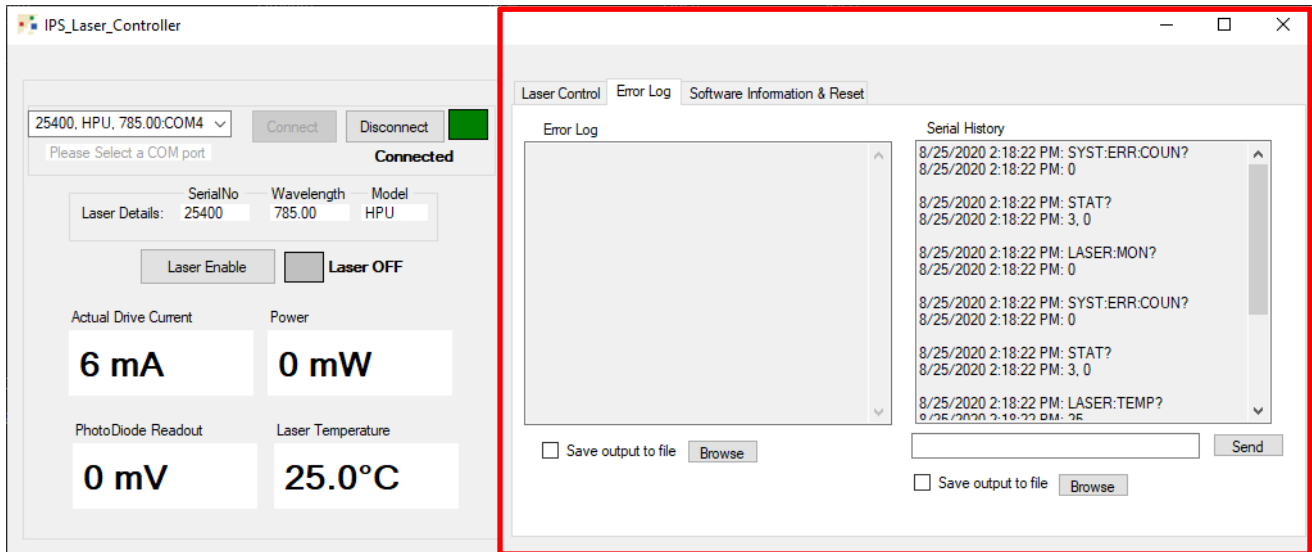
## Setting the Laser Parameters:

- I. The “Laser Control” tab allows for the adjustment of Laser TEC Temperature, Drive Current, & Pulse Width Modulation (PWM)
- II. NOTE: When enabling PWM the “Laser Enable” switch on the front panel of the module must be toggled off then on again for safety purposes. (This operation only needs to be done once each time the laser is power cycled. This does not need to be done in between power cycles.)
- III. Temporary changes to drive current, TEC temp set point, and PWM can be made at any time “on the fly”. Changes can be saved permanently by clicking “Save Parameters”. These settings can be reset to factory defaults by clicking the RED “Reset” Button. (Reference Section [“Software Information & Reset”](#))
- IV. Please refer to APC section for questions about [APC settings](#).
- V. Once “Save Parameters” is clicked the values will be permanently saved until a reset is done. These values will be saved even when power is removed from the unit.



## Error Log & History:

- I. Under tab “Error Log” the Error Log and Laser History is displayed.
- II. Both the Error Log and the Serial History can be saved by checking the box next to “save output to file” then clicking Browse and choosing the file path.



- III. The “Module Operation Guide” may contain additional commands that are not included in this GUI. To utilize these commands, enter the command string in the field below “Serial History” and hit SEND. You can also use this field to test command codes when programming your own laser control software.

## Software Information & Reset:

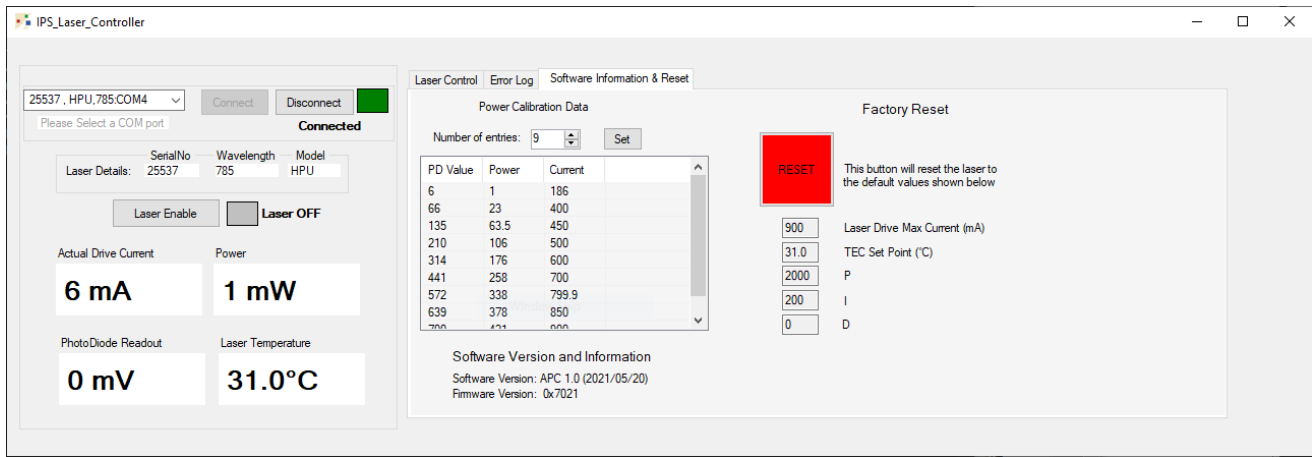
- I. The Power Calibration Data for U-Type, L-Type, and M-Type modules will be located under the tab "Software Information & Reset". (This data will not be available for the D-Type and Tethered Head D-Type Modules).
  - a. Users may enter their own power calibration data in the table provided up to nine values. (PD power value is in mV and the Power values is in mW and current is in mA) The PD Value for a particular drive current setting is located on the "Main" tab of the GUI and is labeled "Photodiode Readout". The Power Value should be taken from a calibrated power meter and the current value is the set current.
  - b. After entering the values in the table shown, click set to save the values and click on save parameters in Laser Control tab to save the parameters to the board so it remembers it on a power cycle.

Number of entries: 9

PD Value	Power	Current
0	0	0
15	1	372
160	65	500
310	145	600
440	233	700
639	324	800
799	418	900
888	464	950
1000	500	0

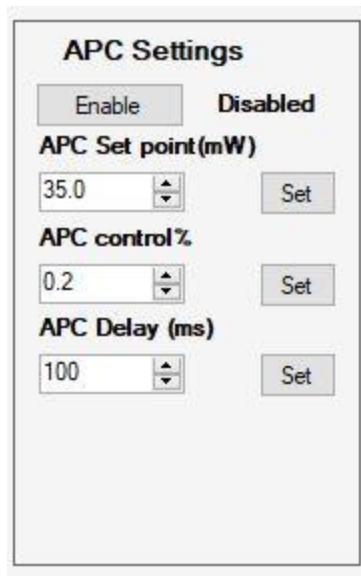
Software Version and Information  
Software Version: APC 1.0 (2021/05/20)  
Firmware Version: 0x7021

- c. **Note: It is recommended to add the first entry as 0,0,0 and the second value just above the threshold current of the laser. Adjust the current such that power meter shows 1mW of power and enter the current and corresponding PD values to the table as 2<sup>nd</sup> entry. Include the last entry at max power the laser can output.**
    - d. The changes made in this table will be reflected in the power readout display on the "Main" tab.
- II. To reset to factory settings, click the **RED** reset button.
- III. The factory defaults are detailed immediately below the reset button.



## APC Settings:

- I. To Enable APC (Automatic Power Control), click Enable under APC Settings as shown below. The indication to the right side of Enable button shows the state of APC control.
- II. APC set point is the required Power in mW. To change this value, enter the desired power (within calibration table) and click “Set”. Once “Set” is clicked, either APC enable/disable or Laser enable/disable must be toggled for changes to take place.
- III. APC control % is the specification for the algorithm to maintain the power level within +/- APC control% of PD power.
- IV. APC Delay(ms) is the delay in milliseconds for the algorithm to change the current setting to maintain the desired power +/- APC control %



**Note: Power stability at lower power levels is not great. It is recommended to use Open Loop (Constant Current Mode) for low power levels.**

**Note: APC (Constant Power mode) doesn't work in PWM mode**