How to use the Thunder Nova Plus 51 Laser

Purpose

This document is a training guide for UQ students on how to use the Thunder laser nova plus 51 safe responsible manner.

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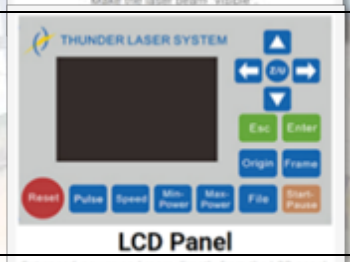
Specifications

Name	Thunder laser nova 51 CO2 laser cutting and engraving machine.
Location	COLAB 51A
Laser Tube Wattage	80 watts
Work Area	1300x900mm
Max working height	225mm - note this is for engraving not cutting
Laser type	RF laser system
Materials	Cardboard, Grey card, Acrylic and Balsa wood
Material thickness	Standard materials are max 6mm thick
Material library	RF80w
More specifications here	https://www.thunderlaser.com.au/nova-plus-51/

Components of the laser

	The Alarm lamp glows green or red indicating the state the laser is in. • Alarm lamp glows green = laser is ready for use • No lights = not turned on • Alarm lamp glows red = error or is actively doing an operation. The laser must be always monitored when it is red. For safety do not open any door or covers. • When there is an error there will also be an alarm.
	A red dot pointer shows where the laser is positioned on the work area. It can be used to: • Set an origin or laser file starting point, anywhere in the work area. • To frame or show where your laser file is sitting on your materials before you cut. • Adjust the hight of the work area • Move the laser pointer
	The LCD panel allow you to do these actions: • Select your sent file, check settings. • Set an origin • Frame up where your file is in space • Start and pause
	Emergency stop button • Press to stop the machine in an emergency. • e.g. fire
	Power Pannel- to the right side if the laser. • Press the main swich and the power switch to turn on the laser.



Card Reader

- Insert your card to send files to the laser ad to be able to start the laser.
- The induction needs to be renewed each year.
- You must only use your own ID card.
- In special circumstances staff can use their card to assist.

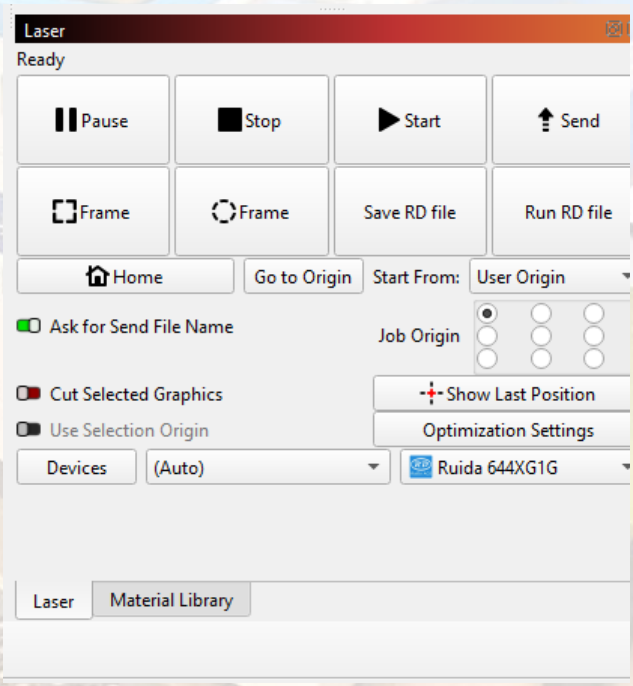
Getting Started With LightBurn: Set up & First Project

a. Run un the link and watch the video

Home the laser

b. Press the Home button.

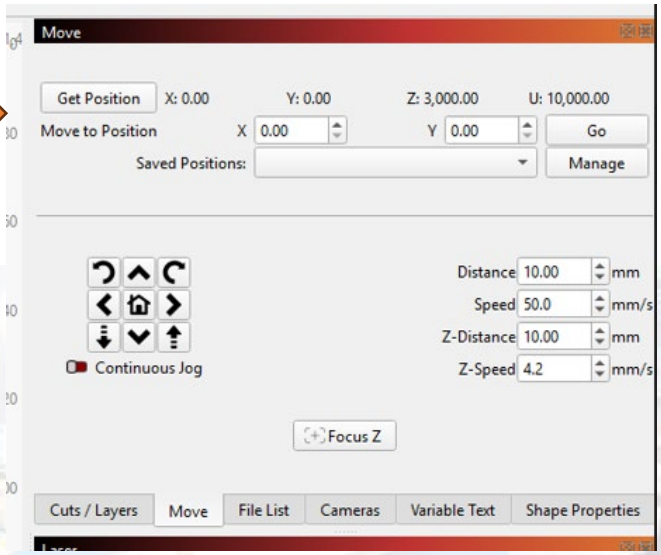
HOME



Position laser to specific point

c. Hit the “Get Position” button to determine the current position of the laser.
d. Enter the X & Y numbers and hit the “Go” button to move the laser to a specific point.

Enter X & Y positions values and hit Go.



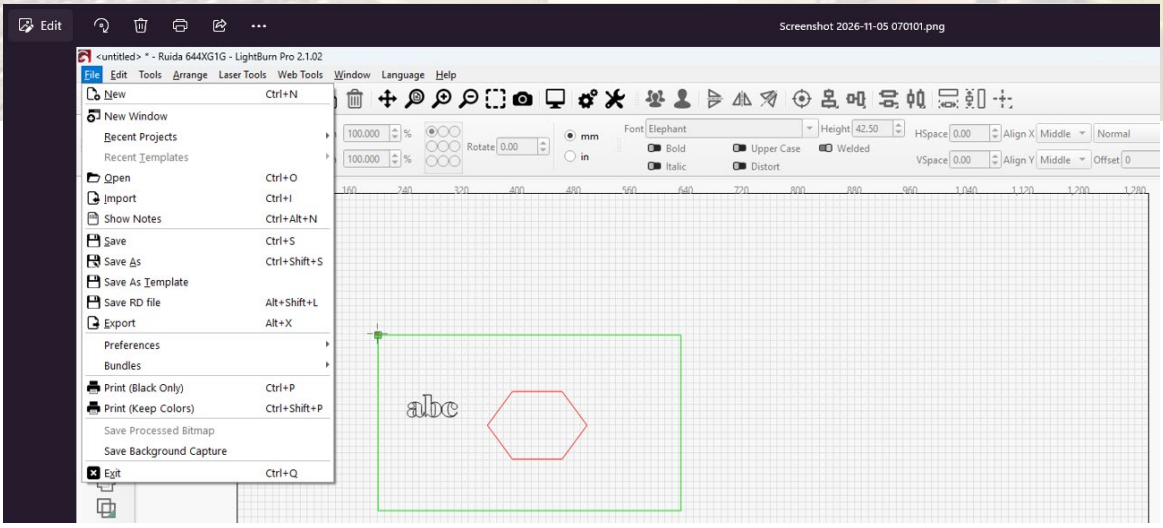
Setting up a file - demonstration given during induction

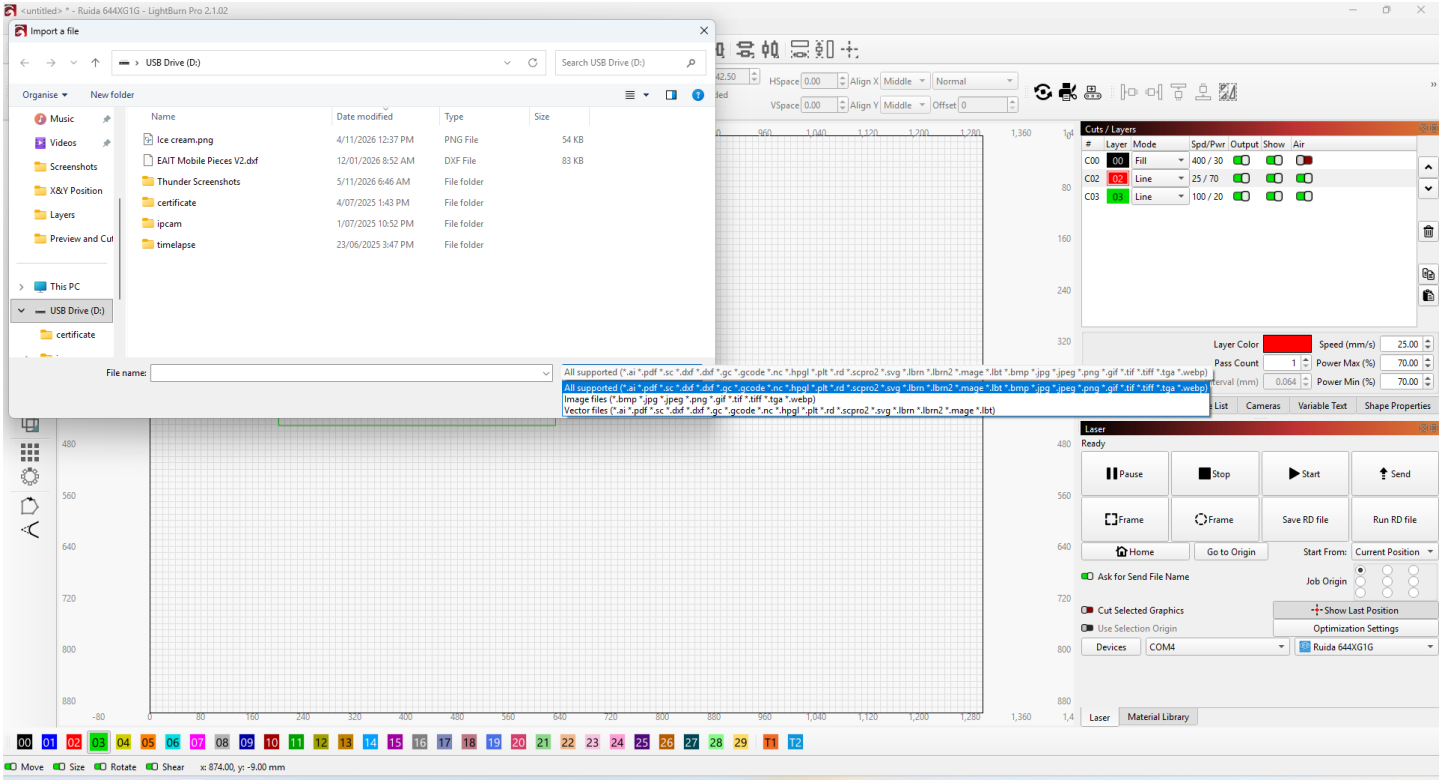
a. Log into the connected computer using the login code. Given to you in the in-person induction. This allows you to access the software licence for light burn.

b. Open Lightburn software

c. Import file

Common file types	
.dxf	A line drawing file from most 3d modelling software
.ia	From adobe illustrator
.jpg and .png	For image engraving

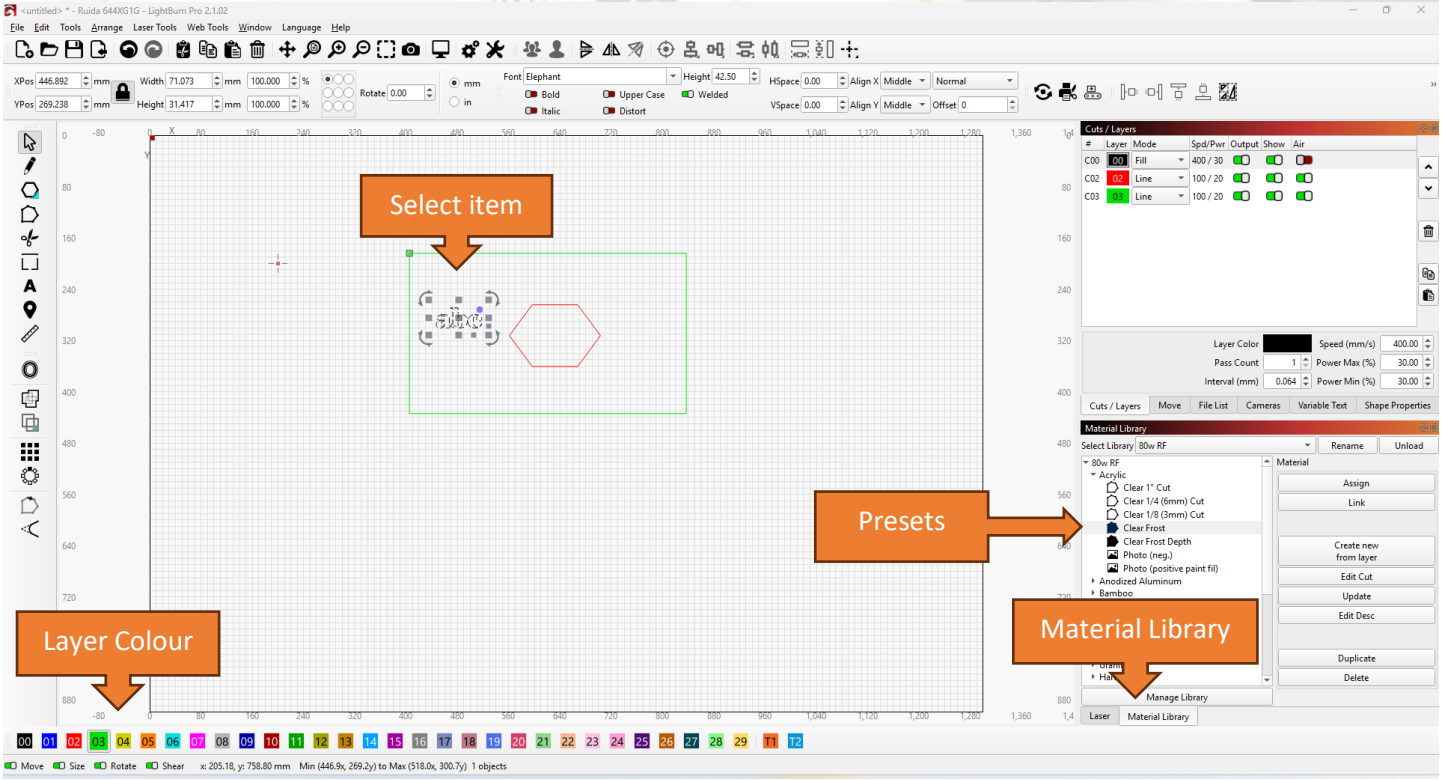




d. Select items in your drawing and set a specific layer colour to each item.

e. There are some pre-set settings available for materials under the material library. Select the closest material.

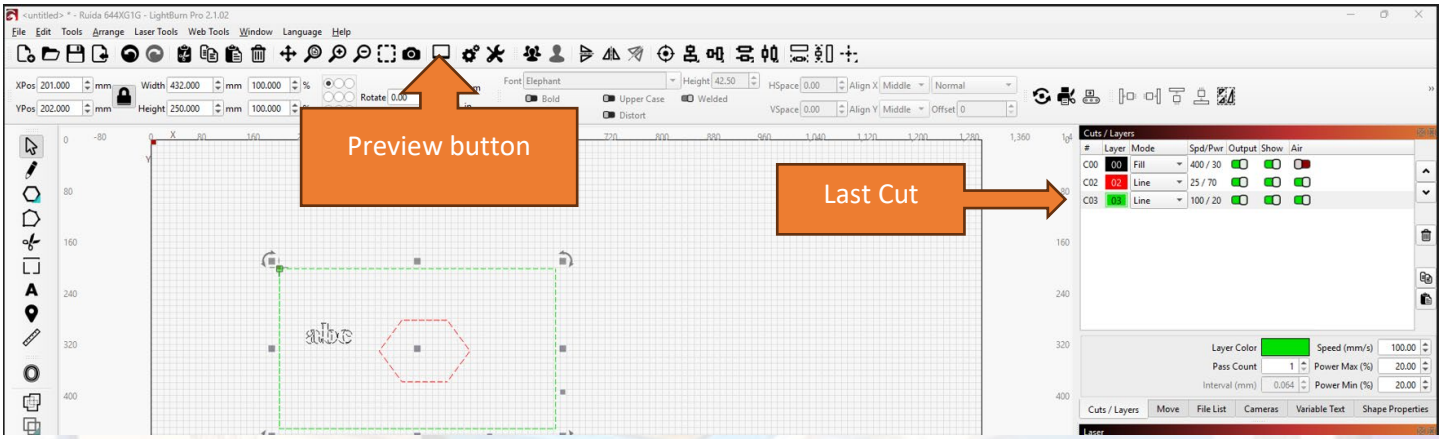
f. In the material library select a function for each item and assign it to that item.



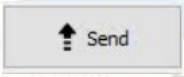
g. Setting the job origin in the software. If in doubt always set to the top left corner. Match this by setting the origin on the laser.



h. Take note to ensure the outside cut is the last cut in the process.
i. Before sending file to laser do a preview of the process.



j. Double check the settings.



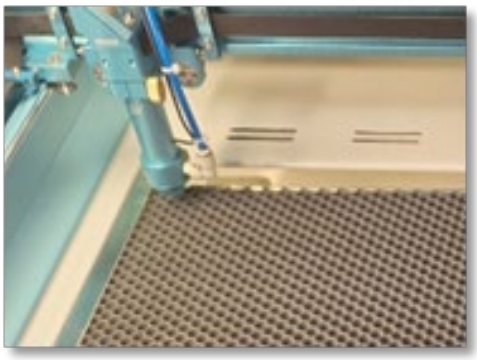
k. Press send>name the file>send.

Setting up the laser

a) Visual check the machine for errors, out of order signage, current jobs.
b) Am I using standard materials or non-standard materials. See the materials section. Ans always check in with staff.
c) Check the machine alarm lamp is on and green. If off, turn on the main and the laser switches.
d) Load your card into the reader and check valid induction.



e) Use the buttons to locate the laser in the top left corner.



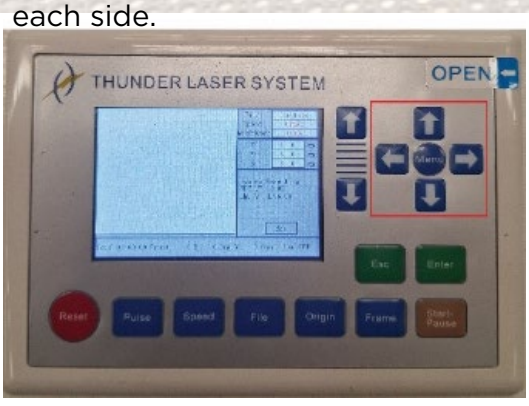
f) Drop the work bed to give space for materials

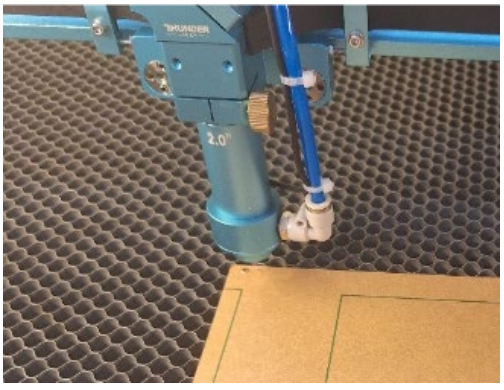


g) Give approx. 30mm taller a gap than the materials.
h) Use the up and down arrows to adjust.
i) Open the hatch and load your materials



j) Use the arrow keys to locate the laser in the top right of your materials 5mm in from each side.

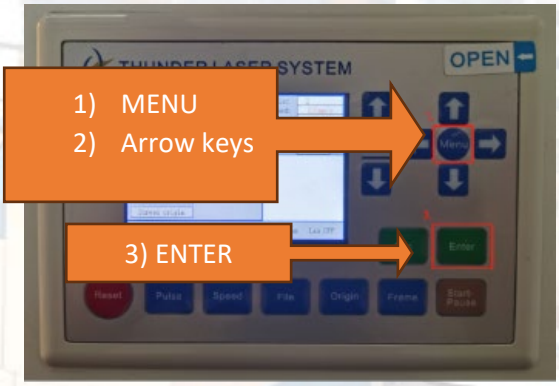




k) Then set the origin (start location) by pressing the button.



l) Autofocus



m) 1 - Press menu, 2 - Use the arrow keys to selects Auto focus, 3 - Click enter.

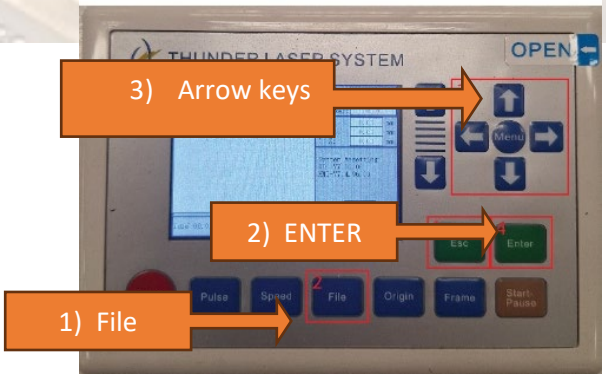
n) The laser will move to touch the materials then set to the correct focus distance.

Laser cutting

a) Send from the software

b) Press escape to get out of the other selection items

c) 1 - Press file, 2 - Use the arrow keys to select the file, 3 - Then press enter



d) Check the power and speed match the software as well as the picture on the screen. If not escape and go back through the process.



e) Press frame to check the size and placement of your file. You may need to reset the origin.



f) Quick check:

i) Have you set the auto focus?
ii) Have you loaded your materials?
iii) Have you framed up?
iv) Have you checked all the setting?

g) All check completed, press start. It will cut/engrave and the alarm lamp will turn red.

i) Monitor the laser at all times. There could always be an error or fire.



h) The laser will beep and the light will turn green when the laser job is complete.

i) If you did a lot of lasering? Ask staff to clear the internal waste bin.

j) Housekeeping: clean up and remove excess scrap. Remember to take your ID card.

Materials

a) CoLab shop materials

i. These are pre-approved materials to use on both the Trotec speedy 400 and the Thunder laser nova 51. Some are available for purchase.

Approved materials	Cut	Engrave	Available for purchase
Grey card sheets from 0.6mm	yes	yes	yes
Cardboard	yes	yes	no
Paper	yes	yes	no
Acrylic sheet 3mm and 6mm	yes	yes	yes
Balsa wood	yes	yes	yes
Wood	No	Yes	No

ii. **Other approved materials:**

b) Some materials may be able to be cut by the laser but may not be safe to do so on our current set up. To cut materials not listed prior approval must be requested through UQ Innovate approval process. Material SDS (Safety Data Sheet) must be provided with request. Always check with a staff member before cutting or engraving on non-supplied materials.

c) Other machines available that can cut and may be more suitable to your materials

i) Cnc milling machine, Waterjet, Metal laser, Saws and Cricut.

Help and support

a) If in doubt always ask a staff member and casuals: in the space, in the office or via email colab@eait.uq.edu.au

b) Other currently inducted users can give advice

You need to register and attend the in-person induction portion before you are granted card access to the Thunder laser nova plus 51

This can be found on the UQ innovate website
https://student.eait.uq.edu.au/urite/index.wphp?act=show&schedule=2166