01 Before You Start

1.1 Disclaimer

Make sure that anyone who uses this product knows and understands the contents of the Quick Start Guide. Failure to observe this guide may lead to personal injury, inferior results, or damage to the Snapmaker products. Snapmaker does not assume responsibility and expressly disclaims liability for any personal injury, inferior results, or damage to the product arising out of or in connection with your improper operations or failure to follow the instructions of the guide.

When using Snapmaker products, you should comply with the following requirements:

- Follow the instructions of this guide, the applicable laws and regulations, and the safety regulations in the assembly, handling, storage, use, maintenance, or disposal of this product.
- Ensure there is no infringement on any third-party intellectual property rights or violation of any applicable laws or regulations when making objects using this product.

The conditions or methods of using Snapmaker products are beyond the control of Snapmaker. For this reason, Snapmaker does not assume responsibility and expressly disclaims liability for any consequences resulting from:

- your improper methods, failure to follow the instructions of this guide or impacts of other uncertain factors when operating this product;
- your infringement on any third-party intellectual property rights or violation of any applicable laws or regulations when making objects using this product;
- personal injury, inferior results, or damage to the product arising out of or in connection with the assembly, handling, storage, use, maintenance, or disposal of this product.

This manual is provided for reference purposes only. We do not warrant the absolute accuracy or completeness of the information provided by this manual. No part of this guide may be reproduced, edited, or revised by any means without the prior written permission of Snapmaker. We reserve the right to modify or revise this manual in our sole discretion at any time without notice. You can download the most up-to-date version of this manual at our Support Center (https://support.snapmaker.com/): select **Snapmaker Ray** > **Quick Start Guide**.

1.2 Intended Use

The Snapmaker Ray laser engraving and cutting machine offers exceptional laser engraving and cutting performance and should be used in accordance with the product manual to achieve its intended purpose. When using this product to create items, it is the user's responsibility to ensure that the application of the created items complies with the intended purpose, especially for applications that are subject to strict control.

1.3 Safety Information

1.3.1 General Safety

- Follow the applicable local laws and regulations in the operation and application of this product.
- Follow the instructions of the guide to use and maintain this product for safety purposes.
- Do not expose this machine to rain or wet conditions.
- Always operate this machine indoors on a solid horizontal table or workbench.
- Minors are only allowed to use this product under adult supervision and assistance.
- Ensure that bystanders also read and understand all the safety notes of this product and keep bystanders away while operating this product for safety purposes.

- Stay alert, watch what you are doing, and pay attention to the surrounding environment when operating this product.
- Do not use this product while you are tired or under the influence of drugs, alcohol, or medication.
- Do not reach inside the product or touch the moving parts while the product is still in operation.
- Do not leave the product unattended while it is still powered on.
- Always unplug the power cable from the electrical outlet before performing maintenance or modifications.

In all EU member states and the UK, operation of 5150-5250 MHz is restricted to indoor use only.

BE	BG	CZ	DK	DE	EE	IE	EL
ES	FR	HR	IT	CY	LV	LT	LU
HU	MT	NL	AT	PL	PT	RO	SI
SK	FI	SE	NO	IS	LI	CH	TR

Turn off the machine immediately and stop using this product if any of the following occurs:

- You smell burning in this product at any point.
- You see any damage to the interior components of this product.
- The machine stops working unexpectedly.
- Unusual lights, sparks, or sounds come out of this product which has never occurred previously.

1.3.2 Laser Safety

- This product is a Class 4 laser product. When you use this product correctly and in combination with the Enclosure, the overall laser classification of this product is Class 1.
- You should operate this product only if you have sufficient knowledge of (i) the physical properties of laser radiation, (ii) Laser Hazard Classes and associated health implications, and (iii) safety measures.
- The product is recommended to be used together with the Enclosure. When correctly assembled, the Enclosure helps to prevent the risk of laser leakage during the laser process by effectively filtering laser radiation and pausing the ongoing job if the Enclosure door is opened.
- An air purifier should be used depending on the type and constituent of the materials you are going to use, as some materials may release hazardous and toxic fumes when laser engraved or cut. Ensure that the air purifier you choose is effective enough to protect human health and prevent environmental pollution.
- Do not directly look at or touch the laser aperture or expose yourself to the laser beam during operation.
- Ensure that there is no reflective material within the work area during operation, as it may cause scattered radiation and pose safety risks.
- Ensure that there is no flammable and explosive material within the work area or around the machine during operation, as it may cause a fire.

1.3.3 Enclosure Safety

- To move the Enclosure or the machine, you must first separate the machine and the Enclosure.
- Do not scrape, bend or break the acrylic panels, profiles, or the door handle. Doing so can compromise protection, cause permanent damage to the Enclosure, or even cause personal injuries.
- Do not place the power module inside the Enclosure when using this product.
- Do not place any objects on top of the Enclosure door. Otherwise, the door panel might be damaged.
- Do not put any objects or body parts into the exhaust fan when the fan is operating.
- Keep the cables away from the exhaust fan blades to avoid damaging the exhaust fan or other parts of this product.

1.3.4 FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Changes or Modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Radiation Exposure Statement: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

1.3.5 ISEDC Compliance

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

The device complies with RF exposure guidelines, users can obtain Canadian information on RF exposure and compliance. The minimum distance from the body to use the device is 20 cm.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:

(1) L'appareil ne doit pas produire de brouillage.

(2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Le présent appareil est conforme Après examen de ce matériel aux conformité ou aux limites d'intensité de champ RF, les utilisateurs peuvent sur l'exposition aux radiofréquences et la conformité and compliance d'acquérir les informations correspondantes. La distance minimale du corps à utiliser le dispositif est de 20 cm.

1.4 Warnings & Signs

1.5 Parts List

- Machine
  - Laser module × 1
  - Left linear module adapter board × 1
  - Right linear module adapter board × 1
  - X-axis linear module × 1
  - Y-axis linear module × 2
  - Quick-change slide for the toolhead × 1
  - Laser engraving and cutting platform × 1
  - Power module × 1
  - Straight support legs × 8
  - Support leg adapters × 4
  - microSD card × 1
  - microSD card reader × 1
  - Material pack × 1
  - M5 × 12 screws × 30
  - M5 × 16 screws × 5
  - Cable ties × 14

- Toolhead connection wire × 1
- AC power cord × 1
- USB cable × 1
- Cable management sleeve × 1
- Laser lens protective glasses × 1
- Cotton swabs × 5
- Cable ties × 2
- Birch plywood × 2
- Calibration card × 1
- Air assist pump × 1
- Air tube × 1
- M5 air tube connector × 1
- M8 air tube connector × 1
- Silica gel desiccant pack × 1

- Enclosure
  - Vertical columns × 4
  - Short beams × 2
  - Short beams (with light strip) × 2
  - Long beam-1 × 1
  - Long beam-2 × 1
  - Long beam-3 × 1
  - Long beam-4 × 1
  - Front/back panels × 2
  - Left side panel × 1
  - Right side panel × 1
  - Enclosure door × 1
  - Enclosure connection wire × 1
  - Light strip wires × 2
  - H2.5 L-shaped wrench × 1
  - H3.0 L-shaped wrench × 1
  - M5 × 30 screws × 18
  - M5 × 12 screws × 18
  - M4 × 40 screws × 5
  - M4 × 12 screws × 4
  - Butterfly nuts × 4
  - Profile connectors × 8
  - End caps × 8
  - Cable management strip × 1
  - Sealing strip × 1
  - Exhaust fan × 1
  - Exhaust fan guard × 1
  - Air duct adapter × 1
  - Air duct × 1
  - Air duct clamps × 1
  - Wire protection sleeve × 1

1.6 Preparing Creating Space

1.7 About This Guide

This Quick Start Guide is intended to guide you through the assembly of Snapmaker Ray and the first-time operation of Laser engraving and cutting with concise instructions and graphics. The workflows of the three functions described in this guide are what we consider to be the most convenient ones for you to get started quickly. For other workflows and more information about Snapmaker Ray, refer to our online User Manual in Snapmaker Wiki (https://wiki.snapmaker.com).

02 Assembly

2.1 Assembling Machine

a. Fix the straight leg to the leg adapter.

b. Select one of the two straight modules labeled "400" as the left Y-axis and fix the leg assembly to it.

c. The other straight module labeled "400" will serve as the right Y-axis.

d. Fix the leg assembly to the right Y-axis.

e. Align the pins on the left straight module adapter with the pin holes on the left Y-axis carriage.

f. Secure the left straight module adapter to the left Y-axis.

g. Align the pins on the right straight module adapter with the pin holes on the right Y-axis carriage.

h. Secure the right straight module adapter to the right Y-axis.

i. Move the straight module adapter to its lowest possible position.

j. The straight module labeled "600" will serve as the X-axis. Align the pins on the left straight module adapter with the pin holes on the X-axis.

k. Secure the X-axis to the left straight module adapter. The screws installed in this step should be fully tightened in step X.

l. Align the pins on the right straight module adapter with the pin holes on the X-axis.

m. Secure the X-axis to the right straight module adapter. The screws installed in this step should be fully tightened in step X.

n. Move the X-axis to its lowest possible position, adjust the Y-axis position to ensure they are level with each other.

o. Tighten the screws on the straight module adapter.

p. Secure the wire clamp to the X-axis.

q. Secure the wire clamp to the left Y-axis.

r. Secure the wire clamp to the right Y-axis.

s. Secure the quick-change slide of the tool head to the X-axis.

t. Rotate the handle of the quick-change slide to the unsecured position and slide the slider into the slide.

u. Rotate the handle of the quick-change slide to the secured position.

v. Insert the tool head connection wire into the tool head.

w. Secure the tool head connection wire to the wire clamp on the X-axis.

x. Secure the tool head connection wire to the wire clamp on the left Y-axis.

y. Secure the wire on the left Y-axis to the wire clamp on the left Y-axis.

z. Secure the wire on the X-axis to the wire clamp on the right Y-axis.

aa. Secure the wire on the right Y-axis to the wire clamp on the right Y-axis.

ab. Secure the M5 air fitting to the tool head.

ac. Insert the air tube into the M5 air fitting.

ad. Use cable ties to secure the tool head connection wire and air tube as shown in the diagram.

ae. It is recommended to move the X-axis to the position shown in the diagram to prevent collisions between the tool head and other parts when moving the machine into the housing.

2.2 Assembling Enclosure

a. Select two short crossbeams without LED strips and fix the profile connectors to both ends of them. Make sure that all the positioning knobs on the profile connectors are inside the grooves of the beams. This detail should also be considered for similar steps below.

b. Fix four columns to the profile connectors.

c. Select the long crossbeam-03 and fix it to the profile connectors. Make sure the inner side of the profile connectors is inward. Make sure the eight-pin socket of the external shell adapter module on the outer cover of the long crossbeam-03 is facing right.

d. Select the long crossbeam-01 and fix it to the profile connectors.

e. Insert one front/back plate, left plate, and right plate with an exhaust fan opening into the external shell frame. Make sure the exhaust fan opening is near the top and the wiring harness opening is under the exhaust fan opening. Make sure the edges of the acrylic plate are inserted into the corresponding beam grooves. This detail should also be considered for similar steps below.

f. Select the remaining two short crossbeams with LED strips and fix the profile connectors to both ends of them.

g. Fix the short crossbeam with the profile connectors to the column. Make sure the inner side of the profile connectors is inward.

h. Select the long crossbeam-04 and fix it to the profile connectors. Make sure the screw hole on the hinge of the long crossbeam-04 is upward.

i. Insert the two ends of one LED strip wire into the port of the left LED strip and the 2-pin port on the left end of the external shell adapter module, and insert the wire into the gap between the column and the left plate.

j. Fix the wiring harness to the right plate.

k. Fix the exhaust fan and the duct adapter to the right plate. Make sure the installation direction of the exhaust fan is correct.

l. Install the exhaust fan guard. Make sure the installation direction of the exhaust fan guard is correct.

m. Insert the exhaust fan wire into the middle port on the left end of the external shell adapter module and fix it with a wire clamp.

n. Fit the duct into the duct clamp and fix it to the duct adapter.

o. Insert the external shell connection wire into the external shell adapter module, and pass it through the wiring harness to the outer side of the external shell.

p. Cut out 4 sealing strip bars of appropriate length and press them into the gap between the beam and the back plate on the outside. Make sure to install the sealing strips correctly.

q. Insert 8 sealing plugs into the outside of all profile connectors.

r. Move the machine into the external shell. Move the machine carefully and slowly to avoid collisions with the external shell beams. It is recommended to operate with at least two people.

s. Pass the tool head connection wire, three straight module wires, and air tube through the wiring harness to the outside of the external shell.

t. Insert the remaining acrylic plate into the front of the frame as the front plate.

u. Fix the long crossbeam-02 to the profile connectors. Make sure the orientation of the Hall switch is correct.

v. Insert one end of a LED strip wire into the port of the left LED strip and the other end into the port of the right LED strip.

w. Cut out suitable length wire slots and place the LED strip wire into the slot of the long crossbeam-02.

x. Remove the adhesive tape from the Hall switch wire, insert the other end of the wire into the 4-pin port on the left end of the external shell adapter module, and then insert the wire into the gap between the profile and the acrylic plate.

y. Cut out 12 sealing strip bars of appropriate length and press them into the outer gaps between the profile and the side panels and front panel.

z. Secure the external shell door to complete the assembly of the external shell.

03 Setup & Preparations

3.1 Connecting Cables & Connecting to Power

a. Insert the toolhead cable, the Enclosure cable, and the three linear module cables into the power module.

> Before plugging in, make sure the machine is not powered and the power switch is off.

b. Insert one end of the AC power cable into the power module and the other end into the power socket, then turn on the power switch.

> When the machine is powered on, do not plug or unplug any cables unless otherwise specified.

c. Insert the safety key into the safety lock on the top of the power module and rotate the key 90° clockwise.

d. Long-press the work switch for 3 seconds to unlock the machine.

> After the machine is correctly unlocked and turned on, the laser module will emit a safe cross-shaped red light.

3.2 Installing Snapmaker Luban

a. On the Snapmaker official website, click **Software** in the navigation bar, or visit the official Luban website (**https://snapmaker.com/snapmaker-luban**). Then, download and install our tailormade software Snapmaker Luban (hereafter Luban).

b. Launch Luban, select the language, machine model, and module type, and then click **Complete** to save the settings.

> To change these settings later, click **Settings** > **Preferences** in the menu bar.

3.3 Connecting Snapmaker Luban with Machine

3.3.1 Connecting via the Serial Port

> Only after establishing a connection through the serial port can you further establish a Wi-Fi connection.

i. Use the provided USB cable to connect the computer to the machine.

ii. In Luban, click **ICON** to enter **Workspace**, and then select **Serial Port** in the **Connection** panel.

iii. Find your machine in the drop-down list and click **Connect**.

> If the machine is not found in the list, the reason may be that the corresponding serial port driver is not installed on your computer. Please go to our Support Center, download and install the driver from Ray's resource library, then click the **Refresh** button and retry Step 3.

3.3.2 Connecting via Wi-Fi

> To connect the machine to Luban via Wi-Fi, you need to follow the instructions in section 3.3.1 to establish a serial port connection first, and then take the steps below.

i. In **Workspace**, click **Machine Network** > **Wi-Fi Config**.

ii. In the pop-up window, select an available Wi-Fi network and enter the password.

iii. Click **Connect** to connect the machine to the Wi-Fi network. After successful connection, close the Wi-Fi Config window.

> Upon successful connection, the fixed IP address of the machine will be displayed in the bottom left corner of the popup.

iv. In the **Connection** panel, select **Serial Port** and click **Disconnect**.

v. Select **Wi-Fi** on the right side and choose your machine from the dropdown list.

vi. Click **Connect** to establish a Wi-Fi connection between Luban and the machine.

> If the machine is not found in the list, click the **+** button and enter the fixed IP address obtained in **Step 3** to establish a manual connection.

04 First Work

In order to help you quickly get familiar with the workflow for Ray with Luban and complete your first laser creation with Ray, this chapter will guide you through Luban's **Beginner's Guide**, using the provided laser material to create an example project tailored for your first creating experience.

> This manual will demonstrate the most user-friendly and convenient workflow for first-time users. For more information on other workflows (such as transferring files to the machine via a card reader), please refer to our online user manual in Snapmaker Wiki (https://wiki.snapmaker.com).

4.1 Preparing the G-code File

a. At the top-left corner of **Workspace**, click **Back** to return to the Home page. Then, click **Laser** > **3-axis** to enter the Laser G-code Generator.

b. Follow the Beginner's Guide to get familiar with the basic operations. During this process, Luban will automatically load the example project and generate the G-code file.

> If the Beginner's Guide does not pop up or quits unexpectedly, you can click **Help** > **Beginner's Guide** in the menu bar.

> You can also click to import your own files and configure the parameters.

c. After the G-code file is generated, click **Export** > **Load G-code to Workspace** at the bottom-right corner. 界面将自动跳转至工作区。

4.2 Focusing Laser

a. Turn the knob on the front side of the module counterclockwise to loosen it, and then pull out the focus lever until the line above the knob is aligned with Scale 0.

> The focal length of the 20W/40W Laser Module is fixed. Therefore, when the focus lever touches the material:
>
> - If aligned with Scale 0, the laser beam will focus right on the surface of the material.
> - If aligned with other scales, the focal point will move deeper inside the material.

b. Hold the laser module steady with one hand, and then release the handle of the toolhead bracket with the other hand.

> Before releasing the handle, be sure to hold the laser module steady to prevent product damage from the module falling.

c. Manually move the module up and down until the focus lever touches the surface of the material and there is a slight resistance when horizontally moving the material.

d. Lock the handle of the toolhead bracket, then retract the focus lever and tighten the knob clockwise.

> If the height of the module changes inadvertently before the machining starts, repeat the steps above to refocus.

4.3 Setting the XY Work Origin

The work origin set in this step corresponds to the **Origin Position** in Luban's **Job Setup**. The machine will perform machining in the expected area only if the two are consistent.

For example, if the origin position set in Luban is the center of the workpiece, then the work origin set in this step should also be located at the center of the workpiece.

a. In Luban's **Workspace**, find the **Machining** panel, and select the **Manual Mode**.

b. Manually move the module horizontally until the center of the red crosshairs emitted by the module falls on the target position.

> It is recommended to observe the position of the red crosshairs from a horizontal perspective.

c. **Optional**: Click **Run boundary** to verify the machining area corresponding to the current working origin. If it does not match the expectation, you can continue to adjust the position of the work origin and verify it again.

> Before the machining begins, you can also run boundary by short-pressing the work switch.

4.4 Sending Files to Machine

In Luban's **Workspace**, click **Upload Task**.

If Luban has been successfully connected with the machine via serial port or Wi-Fi, the file will be transferred to the microSD card of the machine.

4.5 Start Laser Machining

a. Close the Enclosure door.

b. Long-press (for 3 seconds) the work switch to start the laser process.

> Keep the machine attended throughout the process!

> During the process, you can control the machining status through the following methods:
>
> • Work switch
>
> ◦ Short-press to pause/resume.
>
> ◦ Long-press for 3 seconds to stop.
>
> • Luban
>
> ◦ Click **Pause**/**Resume**/**Stop** to perform the corresponding operation.

> The Ray Enclosure features Door Detection, which can detect the real-time opening and closing status of the Enclosure door.
>
> When the sensor detects that the Enclosure door is opened:
>
> • If the machine is on standby, new processes can not be started until the Enclosure door is closed.
>
> • If the machine is working, it will immediately pause the on-going process. To resume, you need to first close the Enclosure door, then short-press the work switch or click the **Resume** button on Luban.

05 Common Operations

5.1 Updating Firmware

When a new firmware is available, Luban will prompt for an update once connected to the internet. To ensure optimal user experience, we recommend following the steps below to promptly upgrade the firmware to the latest version:

a. Connect Luban to the machine using either the serial port or Wi-Fi.

b. On Luban's workspace interface, click on the machine settings in the top left corner, then select "Firmware Upgrade".

c. Click on "Upgrade Firmware".

5.2 Locking/Unlocking Machine

Ray's power module has a built-in safety lock. Insert the safety key and rotate it clockwise 90° to unlock the machine, and vice versa to lock it.

After using the machine, be sure to lock it. If the machine is locked during laser operation, the operation will immediately terminate and cannot be resumed.

Please keep the two standard safety keys safe.

5.3 Controlling LED Strips & Exhaust Fan

You can turn on or off the enclosure light strip and exhaust fan in Luban, or adjust the speed of the exhaust fan.

It is recommended to increase the speed of the exhaust fan during laser cutting operations.

You can turn on or off the enclosure light strip and exhaust fan in Luban, or adjust the speed of the exhaust fan.

During laser cutting operations, it is recommended to increase the speed of the exhaust fan.

06 Maintenance

6.1 Cleaning Laser Engraving and Cutting Platform

6.2 Cleaning Laser Lens Protector

07 Quick Reference

7.1 Technical Specifications

	A	B	C
1		**Ray 40W Laser Engraver and Cutter**	**Ray 20W Laser Engraver and Cutter**
2	**Laser Module Output Power**	40W	20W
3	**Laser Electric Power**	140W	65W
4	**Machine Power**	245W	170W
5	**Laser Type**	450 - 460nm Semi-conductor	450 - 460nm Semi-conductor
6	**Dimensions**	932.7mm × 665mm × 416.6mm	932.7mm × 665mm × 416.6mm
7	**Weight**	26.42kg	25.96kg
8	**Maximum Work Speed[1]**	450mm/s	450mm/s
9	**Maximum Cutting Speed[1]**	20mm/s	10mm/s
10	**Maximum Workpiece Height**	160mm (with two sets of cylindrical feet)	160mm (with two sets of cylindrical feet)
11	**Work Area**	400mm × 600mm	400mm × 600mm
12	**Maximum Thickness of One-pass Cutting**	15mm Basswood Plywood	10mm Basswood Plywood
13	**Frame Material**	Aluminum Alloy	Aluminum Alloy
14	**Laser Spot Dimensions**	0.1mm × 0.15mm	0.08mm × 0.1mm
15	**Supported Engraving Materials**	Basswood, Pinewood, Plywood, Beech, Walnut, Bamboo, MDF, Painted Metal, Tinplate, Stainless Steel, Anodized Aluminum, Dark Glass, Slate, Brick, Ceramic, Jade, Marble, Shale, Leather, Fabric, Canvas, Corrugated Paper, Cardboard, Plastic, Dark Acrylic (Blue excluded)	
16	**Supported Cutting Materials**	Basswood, Pinewood, Plywood, Beech, Walnut, Bamboo, MDF, Leather, Fabric, Canvas, Corrugated Paper, Cardboard, Plastic, Dark Acrylic (Blue excluded), Stainless Steel (0.1mm)	Basswood, Pinewood, Plywood, Beech, Walnut, Bamboo, MDF, Leather, Fabric, Canvas, Corrugated Paper, Cardboard, Plastic, Dark Acrylic (Blue excluded)
17	**Supported Design File**	STL, SVG, JPEG, PNG, JPG, BMP, DXF, SNAPLZR	STL, SVG, JPEG, PNG, JPG, BMP, DXF, SNAPLZR
18	**Supported Processing File**	NC	NC
19	**Air Assist**	YES	YES
20	**Focus Method**	Material Touching Measuring (using Focus Lever)	Material Touching Measuring (using Focus Lever)
21	**Overheat Protection**	YES	YES
22	**Orientation Detection**	YES	YES
23	**Compatibility**	Enclosure for Snapmaker Ray, Air Purifier, 20W & 40W Laser Module, 1064nm Infrared 2W Laser Module(coming soon)	Enclosure for Snapmaker Ray, Air Purifier, 20W & 40W Laser Module, 1064nm Infrared 2W Laser Module(coming soon)
24	[1] The data is obtained based on the 3mm Basswood Plywood performing one pass cutting. Depending on your material, the cutting speed might vary.		

7.2 Materials

7.2.1 Supported Materials

7.2.2 Banned Materials

7.3 Indicator Light Meanings

Color	Pattern	Illustration	State
Yellow	Steady		Standby
Green	Flashing		Working
	Steady		Pausing
Red	Flashing		Toolhead disconnected/Machine locked
	Alternating flashing		microSD card not detected

Yellow & Red			
Yellow & Green	Alternating flashing		Ready for power-loss recovery

7.4 Work Switch Controls

Before machining	
Turn on the machine	Long press for 3 seconds
Run Boundary	Short press
During machining	
Stop	Long press for 3 seconds
Pause/Resume	Short press

> Long press: press and hold
>
> Short press: quickly tap

This radio transmitter [FCC ID: 2AVDG-RAY ; IC: 26217-RAY] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

Resources