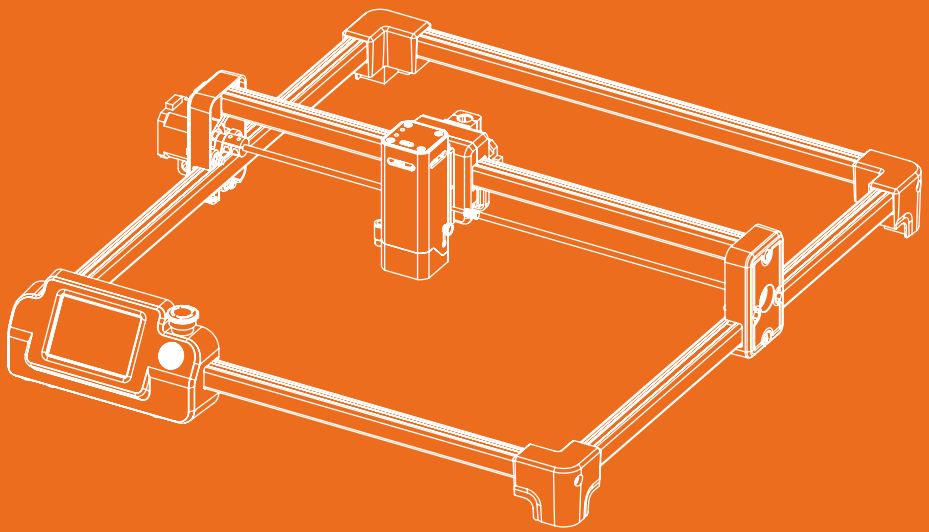
AlgoLaser DIY KIT MK3

QUICK START GUIDE

Laser Engraver



Always read the instructions before you start.

Versions: A-02

ENGRAVING/CUTTING

HAPPINESS

Thanks for choosing AlgoLaser!

We are so glad that you give it a home.

We've organized everything into a clean, all-in-one setup with our laser engraving and cutting machine. It is designed to simplify your workflow, improve efficiency, and help you bring your ideas to life with ease.

Juston Tan

The Founder of AlgoLaser

After-Sales Policy

- **12-Month Limited Warranty**

  We provide a 12-month warranty for every product from the date of purchase, covering defects in materials and workmanship. Repair or replacement services will be offered based on the product condition. Please note that this warranty does not cover damage caused by misuse or abuse.

- **Return or Exchange Policy**

  For detailed information, please refer to the return and exchange policy on the platform where you made your purchase.

- **Misdelivery & Missing Parts**

  If you receive an incorrect product or find any missing parts after delivery, please contact our customer service team. AlgoLaser will cover the return shipping cost for the incorrect product or provide replacement parts.

- **Troubleshooting Support**

  AlgoLaser offers online troubleshooting guides to help you resolve issues step by step. Please visit algolaser.com for tutorial videos, FAQs, and technical support from our professional engineers.

After-Sales Support

1. Please visit http://algolaser.com/support/ to submit your inquiry. To help our engineers make faster and more accurate assessments and provide effective solutions, please include relevant photos and videos in your submission.

2. Information Required

   To help us resolve your issue efficiently, please provide the following information:

Machine Model	Laser Module	Purchase Channel
Date of Delivery	Computer System	Software Used
Issue Description	Photos & Videos (if available)	

3. After submitting, our engineer will reply within 24 hours.

CONTENTS

01 Before You Start

1.1 Safety Guidelines & Disclaimer

1. The machine emits high-intensity laser light. It is strictly forbidden to place any part of a living body under the laser emission port (marked with the orange warning sign).

2. Individuals with photosensitive epilepsy are prohibited from using or approaching the laser engraver.

3. Operators and anyone nearby must wear laser safety goggles at all times. Operation without eye protection is prohibited. The included goggles cover 400-445nm (±5nm) with an OD4+ rating. Any additional goggles must meet these identical standards.

4. The use of this machine carries a high risk of fire. Keep the workspace clear of flammables and never leave the machine unattended during operation. Ensure the engraver is set up in a fireproof, well-ventilated area. Keeping a fire extinguisher nearby is strongly recommended.

5. Ensure sufficient operating space. As engraving certain materials produces smoke, exhaust equipment must be used to vent fumes outdoors.

6. Avoid contact with the laser beam to prevent serious injury or reflection. Do not touch the radiator during or immediately after operation, as it remains hot.

7. Children under 14 are prohibited from using the machine. Any use by minors requires constant adult supervision.

8. The machine's operating temperature range is -10°C to 40°C.

9. Due to fire risks, ensure a person is available at all times to handle potential fire emergencies during operation.

CAUTION: Use of controls or adjustments, or performance of procedures other than those specified herein, may result in hazardous radiation exposure.

Wavelength	435±10nm
Maximum output power	3W
Laser safety level	Class4

The laser safety classification of this product is based on IEC 60825-1:2014.
The laser safety level of laser radiation emitted through laser aperture exceeds Class4.

CAUTION: Use of controls or adjustments, or performance of procedures other than those specified herein, may result in hazardous radiation exposure.

Wavelength	435±10nm
Maximum output power	8W
Laser safety level	Class4

The laser safety classification of this product is based on IEC 60825-1:2014.
The laser safety level of laser radiation emitted through laser aperture exceeds Class4.

CAUTION: Use of controls or adjustments, or performance of procedures other than those specified herein, may result in hazardous radiation exposure.

Wavelength	435±10nm
Maximum output power	15W
Laser safety level	Class4

The laser safety classification of this product is based on IEC 60825-1:2014.
The laser safety level of laser radiation emitted through laser aperture exceeds Class4.

CAUTION: Use of controls or adjustments, or performance of procedures other than those specified herein, may result in hazardous radiation exposure.

Wavelength	450±10nm
Maximum output power	20W
Laser safety level	Class4

The laser safety classification of this product is based on IEC 60825-1:2014.
The laser safety level of laser radiation emitted through laser aperture exceeds Class4.

1.2 Parts List

Front Frame

Rear Frame

Left Y-Axis Frame

Right Y-Axis Frame

X-Axis Frame

X-Axis Guide Rod

M5X20 Screws

M5X10 Screws

M3x6 Screw

Laser Goggle

Allen Keys

Wrench & Brush

USB Cable

Thumb Screw

Material Kit

Spare Timing Belt

Type-C to Type-A Adapter

10mm Corrugated Pipe Cap

13mm Corrugated Pipe Cap

Power Adapter

Cable Ties

Laser Module

DIY KIT MK3 series have 4 different specifications, please refer to the product model you have purchased to confirm the list.

ALM-3BD(3W)Laser Module

ALM-8BD(8W)Laser Module

ALM-15BD(15W) Laser Module

Air Nozzle

ALM-20BD(20W) Laser Module

Air Pipe

Power Cable

Power Adapter

Air Pipe

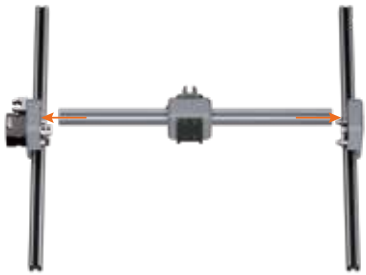
Air Pump

* The above images are for reference only. Please refer to the actual product.

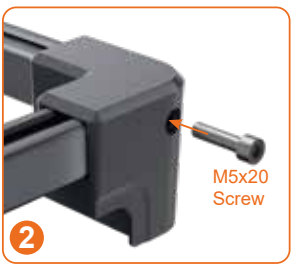
02 Machine Assembly

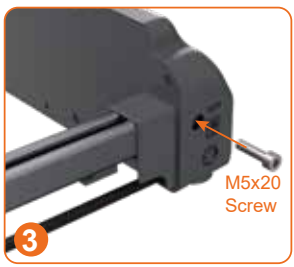
01 Assemble the Frame

Snap the X-Axis Frame into the Left Y-Axis Frame and Right Y-Axis Frame.
Then assemble the Front Frame and Rear Frame.



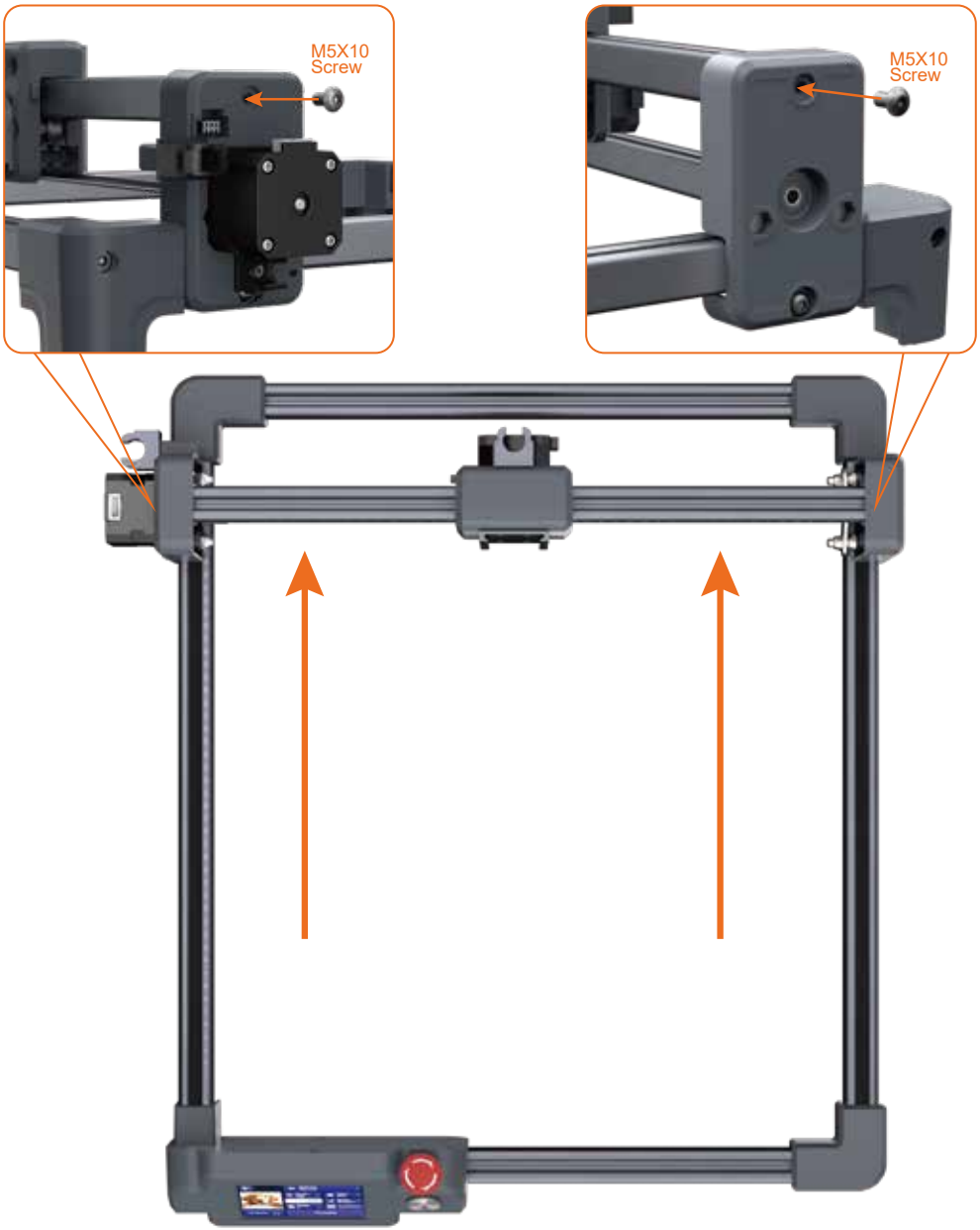
Then use M5x20 screws
to secure the four feet (front and rear).



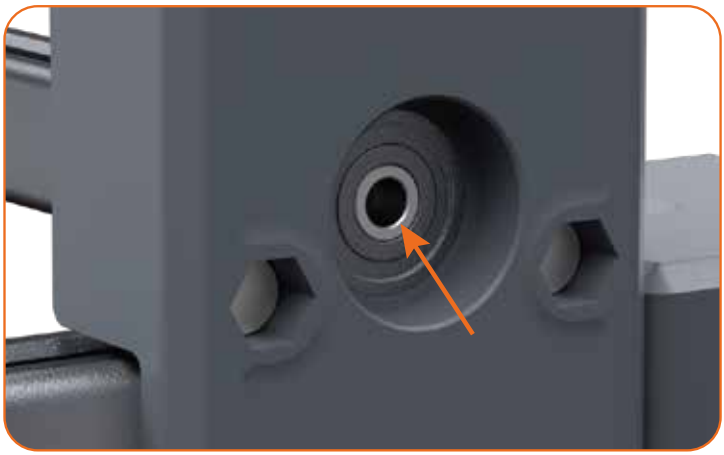


Please refer to the installation video in the DIY KIT MK3 playlist on https://www.youtube.com/@algolaserofficial/playlists.

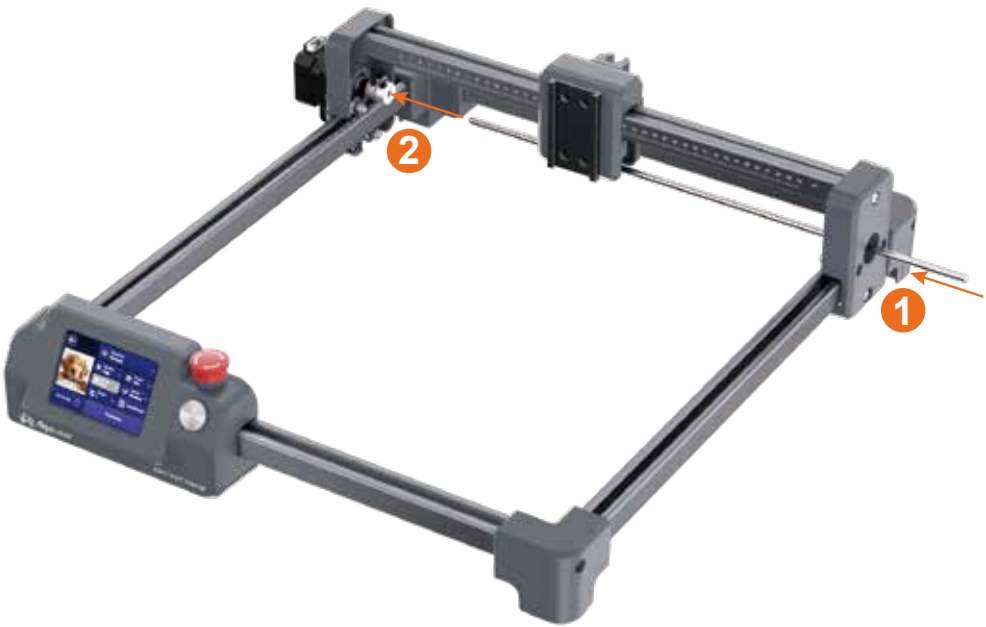
First push the X-Axis Frame all the way to the end, check whether both sides are symmetrical, then install the screws at both ends of the X-Axis Frame.



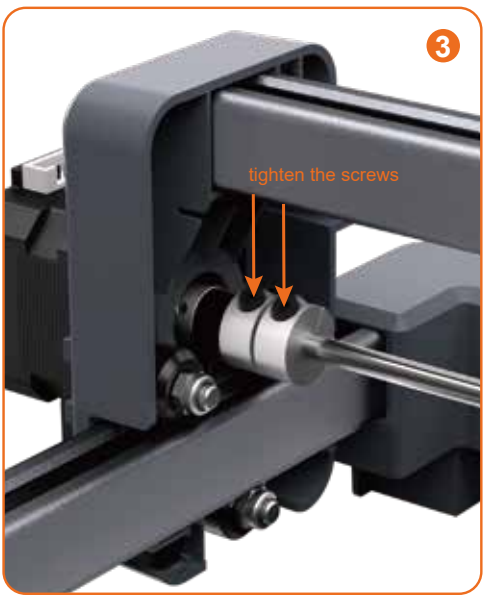
The bearings and couplings on the Right Y-Axis Frame may loosen or shift slightly during shipping. Please check and adjust them if needed before installation.
Gently push the X-Axis frame to ensure the gear is fully engaged with the timing belt. Then, insert the X-Axis Guide Rod through the bearing on the Right Y-Axis Frame and slide it into the coupling on the Left Y-Axis Frame.

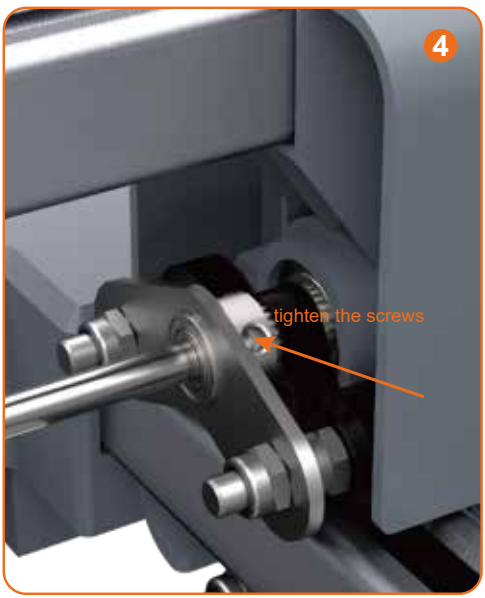


Push the X-Axis Frame all the way forward until the right end of the Guide Rod is flush with the outer edge of the bearing. Check that both sides are perfectly symmetric and aligned, then securely tighten the screws on the timing pulley and coupling.



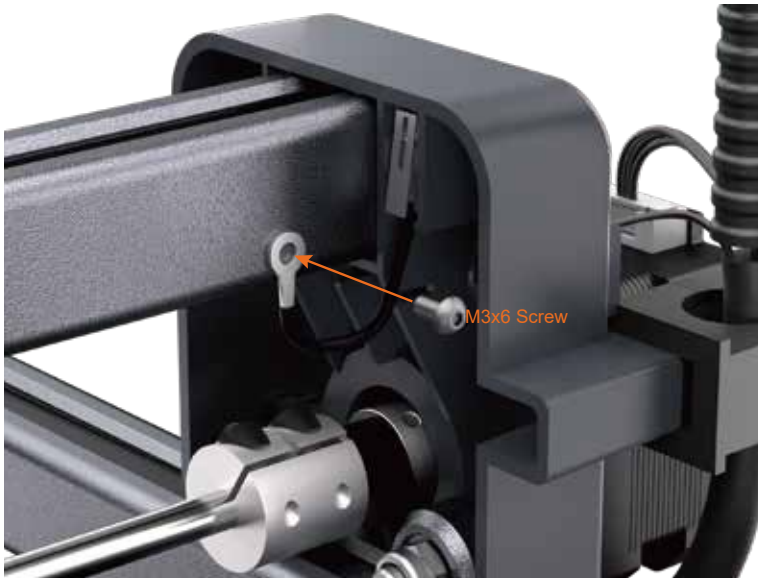
Note:
Ensure the shaft end is perfectly flush with the bearing





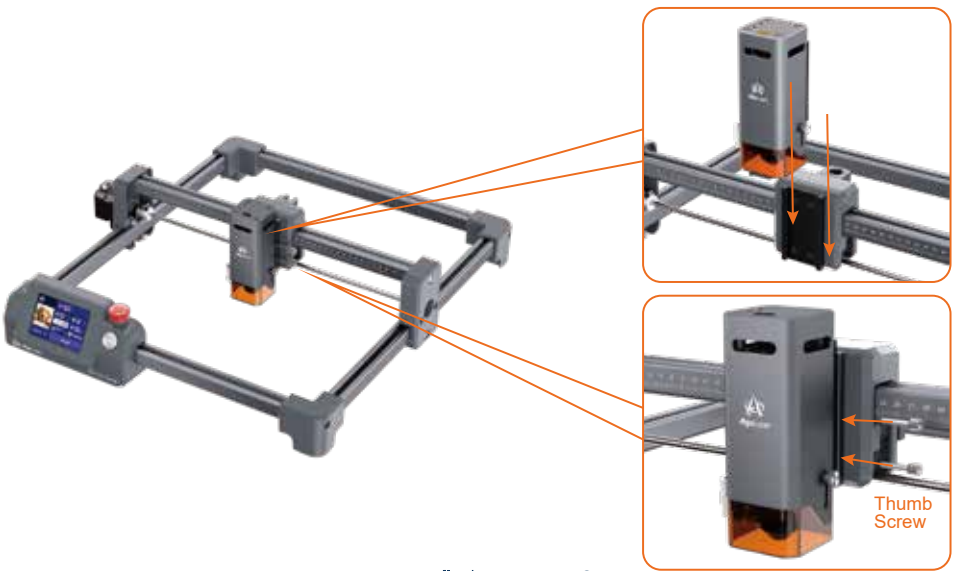
02 Ground Wire Installation

Locate the ground wire from the limit switch cable, then secure the ring terminal to the X-axis profile using the M3×6 screw, as shown.



03 Assemble the Laser Module

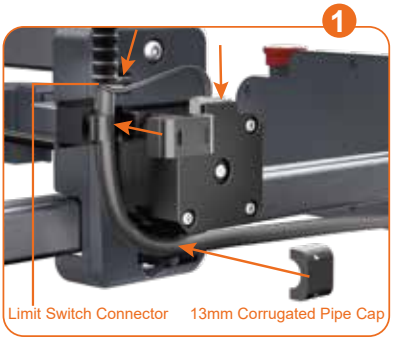
Take out the laser module, slide it into the simple fixture on the X-axis via the groove, and tighten it using the Thumb Screw

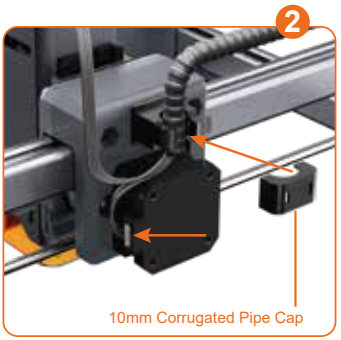


04 Assemble the Main Cable

● Connect the motor cable (the section encased in braided sleeving) extending from the back of the screen to the limit switch connector on the Left Frame and the Y-axis motor.

● Connect the cables (the section encased in corrugated tubing) extending from the back of the screen to the X-axis motor and the laser module.





05 Air Pump Connection (For 15W/20W Laser Module)

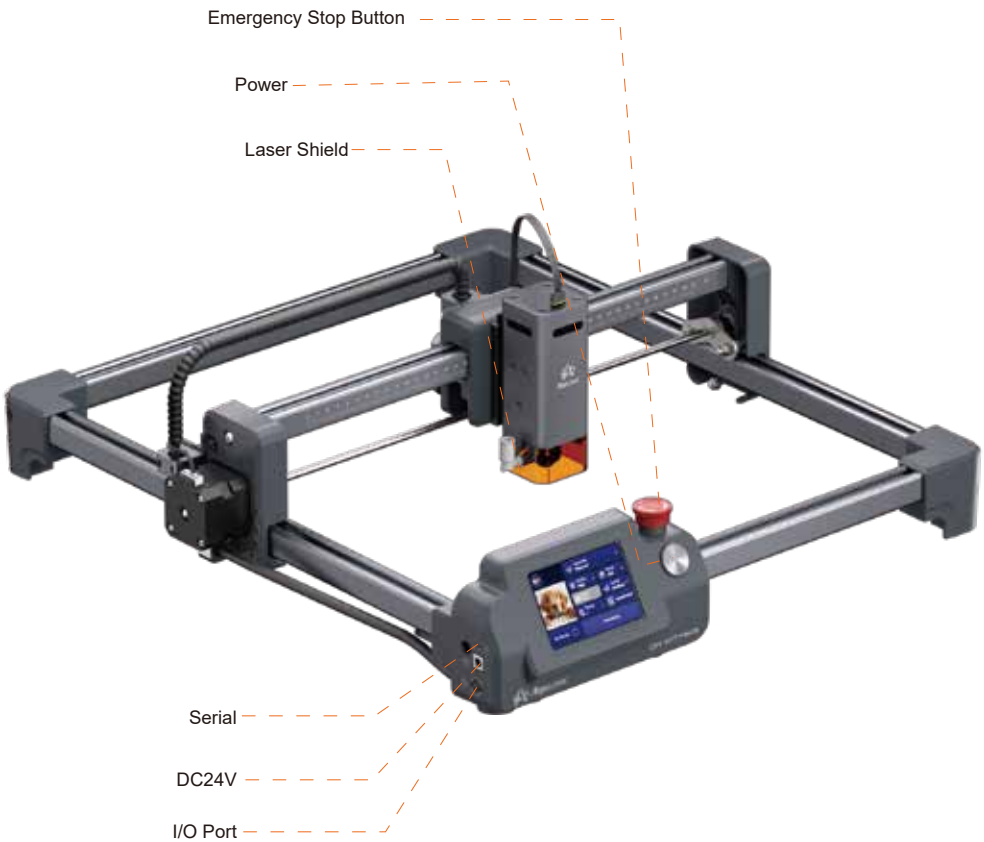
Refer to the air pump connection instructions for the ALM-15BD module. The ALM-20BD follows the same procedure.

Tips

Please note that the 15W laser module is sold without an air pump. An air pump is recommended for safer and more optimal performance. If no air pump is used, remove the air nozzle before operating the laser to help extend the service life of the module.

03 How to Use

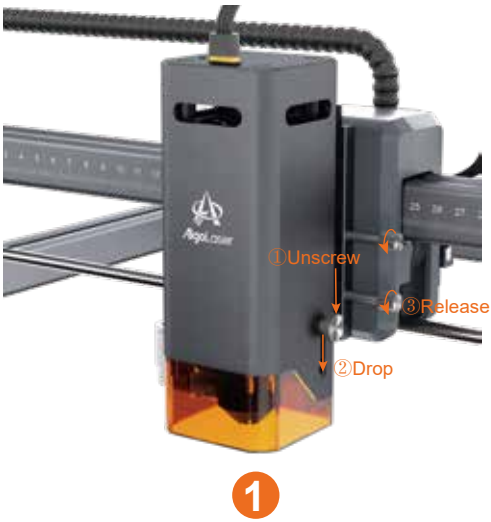
3.1 Getting to Know AlgoLaser DIY KIT MK3



3.2 How to Find Focus

Using the ALM-15BD as a reference, the ALM-3BD and ALM-8BD share the same focusing method.

To begin, loosen the side thumb screw on the laser head to let the focusing column slide down to its limit. Next, release the clamp screw at the rear and adjust the laser module's height until the column makes contact with the engraving surface, then secure the clamp. Finally, slide the focusing column back up and tighten the thumb screw to lock it in place, ensuring it is ready for operation.



ALM-20BDU(20W)

Loosen the thumb screw on the Focal Gauge, pull it down to the bottom, and then tighten it.

Loosen the Lever on the module Fixture, allow the laser module to move downward until the Focal Gauge touches the engraving surface, then pull the Lever back up to secure the laser module.

Loosen the Focal Gauge thumb screw and retighten after pulling it back to its original position.

Adjust the Focus Distance

Note: To cut thicker materials, remove the Laser Shield and adjust the Focal Gauge to extend the length. This will allow the laser to center focus down (adjustment range 3-8mm) and achieve a better cutting effect. Please note that this operation is risky and should only be performed under the guidance of a professional. Otherwise, you will be responsible for any consequences.

3.3 Machine Maintenance & Cleaning

ALM-3BD(3W)

How to Replace the Lens

①Remove the magnetic cover. ②Remove the lens and clean it thoroughly. ③Finally restore it in order.

ALM-8BD(8W) & ALM-15BD(15W)

How to Replace the Lens

①Remove the magnetic protective cover.
②Unscrew and remove the air nozzle using an M2.0 Allen Key.
③Extract the lens and clean it thoroughly with a lint-free cloth or specialized cleaner.
④Restore all components in the reverse order.

Please note that the M2.0 Allen Key must be used to remove and install the air nozzle. Using your hands directly may cause damage to the air nozzle.

ALM-20BDU(20W)

How to Replace the Lens

① Remove

Remove the Air Assist Nozzle first, then loosen the Brass Lense Nut with a Lens Tool, pay attention to the rotation direction of the wrench, and take out the old seal ring and lens.

②Install

The notched side of the Brass Lense Nut faces up. Pay attention to the order in which you put it in. Then tighten it with a Lens Tool, but do not use too much force, or the lens may be damaged.

⚠ These three parts can only be tightened after they are placed flat, otherwise the lens will be broken!

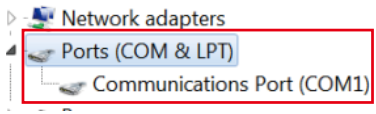
3.4 How to Connect to a PC

- Install the driver: Before installing the computer driver, please power on the machine and connect it to the PC using a USB cable. Then, choose the appropriate driver file based on your computer system and proceed with the installation.

Operating System	Operation	Phenomenon
WIN 7/WIN 8	zadig-2.8.exe	To install the driver, make sure the machine is powered on and connected to the computer via USB. The installation process can only be carried out when the machine is in the powered-on state and connected to the computer.
WIN 10/WIN 11	No installation required	
Mac	No installation required	

- To check the driver installation, follow these steps:

① Find the Device Manager on your computer.
② Navigate to the Ports section.
③ Disconnect the USB cable from the computer.
④ Observe that the new serial port disappears from the Ports section.
⑤ Reconnect the USB cable.
⑥ Verify that a new serial port appears, indicating successful driver installation.

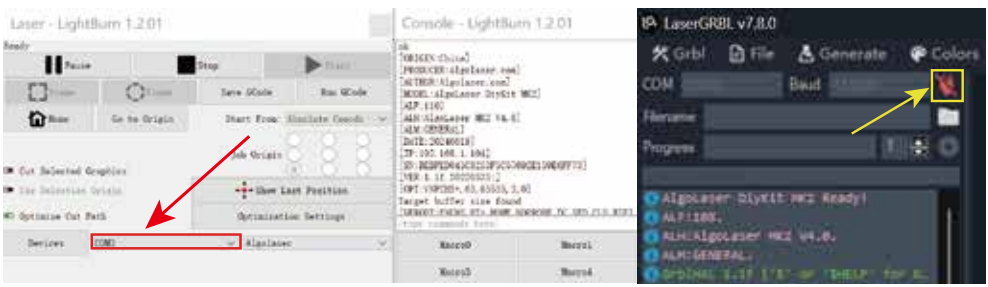


- Connecting the machine

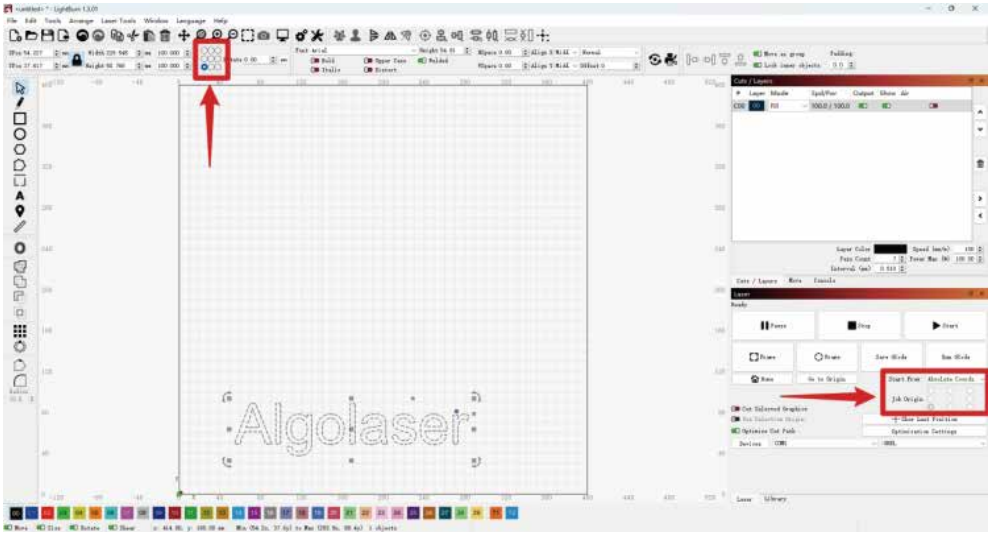
① Launch the LaserGRBL / LightBurn software.

LightburnSoftware.com Note: The LightBurn software requires a purchase to use. lasergrbl.com

② Select the COM port that corresponds to the one identified in step two of the installation process.
③ Click on the “Connect” button.
④ If a welcome message appears in the command box, it indicates a successful connection.

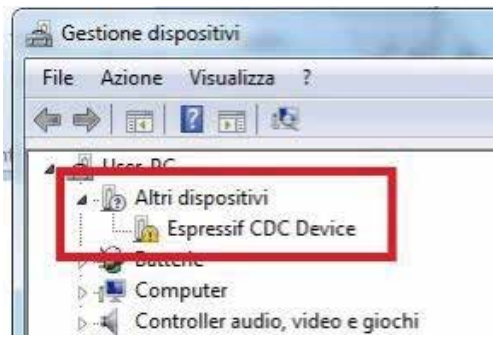


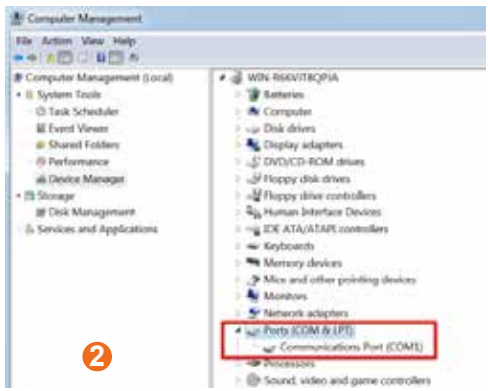
Notice:
If you are using LightBurn for the first time, please ensure the Origin is set to the Front-Left (lower-left corner) to synchronize with the AlgoLaser hardware logic.



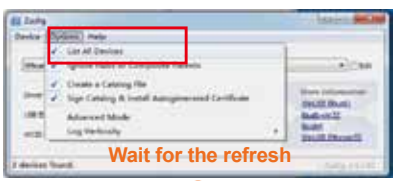
Win7 & Win8 Driver Installation Tutorial

If the "Espressif CDC Device Error" appears (Figure 1) or the driver is not detected (Figure 2), please follow these steps to fix the connection:



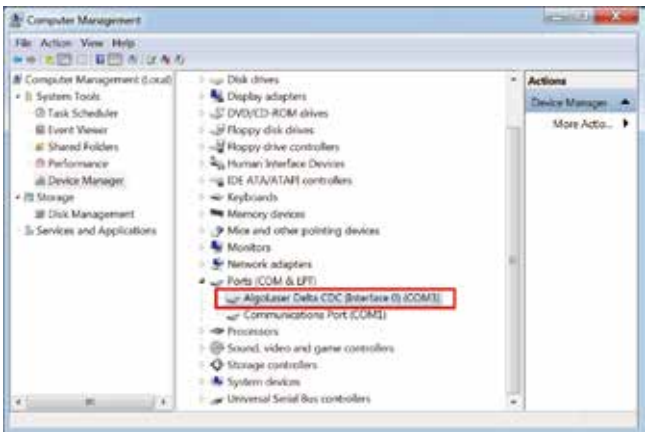


- Download: Visit zadig.akeo.ie and click the download button at the bottom of the page.
- Run: Open the application with Administrator Rights (Figure 1).
- List Devices: Go to the "Options" menu and select "List All Devices" (Figure 2).
- Select: From the drop-down list, choose the device starting with "Algo" (Figure 3).



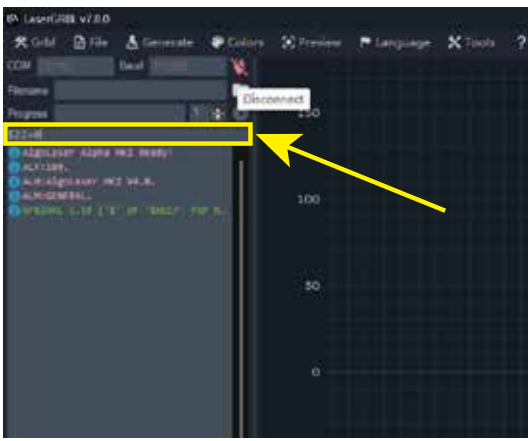
- Install: Select USB Serial (CDC) from the driver list, click "Install Driver," and wait for the process to complete.

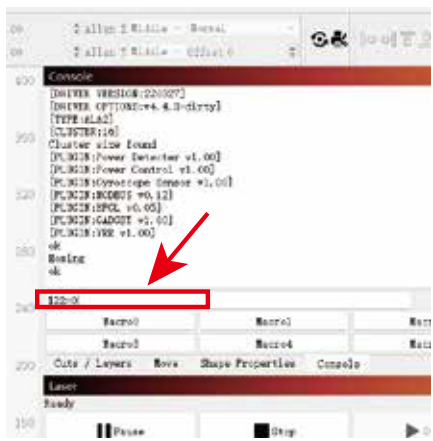
- Finish: Once complete, close Zadig. You should now see AlgoLaser X CDC (Interface 0) under "Ports (COM & LPT)" in Device Manager.
- Note: The COM port number (e.g., COM3) may vary depending on your computer.



3.5 RR2/ARC Connection Guide

- Unplug the Y-axis motor cable and connect it directly to the RR2/ARC motor port.
- Connect your machine to the computer and send the command $22=0 to disable the homing cycle:
- LaserGRBL: Type $22=0 in the "Type gcode here" field and press Enter.
- LightBurn: Type $22=0 in the "Console" window and press Enter.





3.6 How to Connect to the App via WiFi

Download the App: Scan the QR code below to download, or search for "AlgoLaser" in the Google Play or Apple App Store.

Google Play

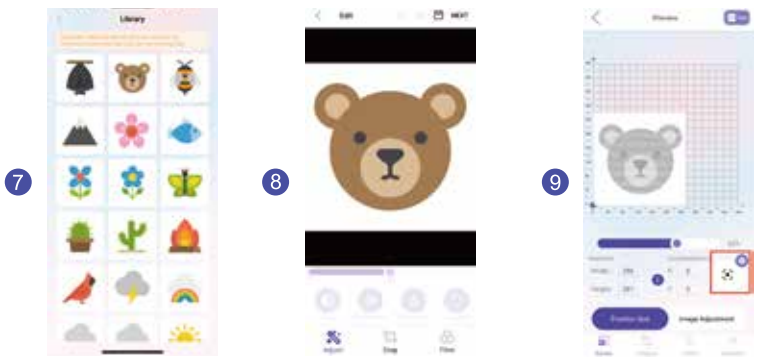
App Store

● Pre-connection Check: Ensure your phone is connected to a 2.4GHz Wi-Fi network before starting the pairing process. (Note: 5GHz Wi-Fi is not supported for setup).
● Pairing Process (Example: Alpha MK2): Open the AlgoLaser App and select your model (e.g., Alpha MK2). Tap "Beginner's Course" to start the step-by-step setup guide (Figure 2). Follow the on-screen instructions to complete the network pairing (Figure 3). Once the machine confirms the network is available, tap "Proceed" to continue (Figure 4).
● After pairing, the App will automatically redirect to the homepage, displaying your machine's status and information (Figures 5 & 6).

1 2 3 4 5 6

Start Your First Engraving

● Import Image: Tap "Library" to browse and select a pattern you wish to engrave (Figure 7).
● Image Editing: On the editing page, first-time users can simply tap "Next" to proceed with the default settings.
● Size & Position (Framing): Adjust the image size for your project. Tap the Framing button (as shown in Figure 8) to let the laser head move slightly. This helps you determine the exact engravinag area and position on your material.
● Parameter Setup: Tap "Configure" to enter the parameter settings page (Figure 9).



7 8 9

Setting Parameters & Starting Engraving

● Select Presets

On the Configure page, choose from a wide range of AlgoLaser presets. Simply find the one that matches your material and tap to select (Figure 10).

Module Selection: Ensure "Algo 22W" is selected to match your hardware.

Mode: Select "Scans" for engraving tasks.

Material: Choose the specific material (e.g., Basswood). You can adjust these settings manually if the desired effect differs from the preset.

● Focus Check

Tap "Start" in the upper right corner. The app will prompt a focus check.

If focused, tap "Checked" to proceed.

If not, refer to the Manual Focusing section of this guide before continuing (Figure 11).

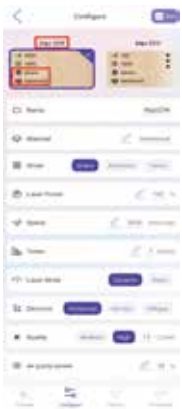
● Set Starting Point

Choose the starting position for the laser head, then tap "Start" again to move to the final step (Figure 12).

● Conversion & Execution

Wait for the image conversion to complete (Figure 13).

Tap "Run" to officially begin the engraving process (Figure 14).



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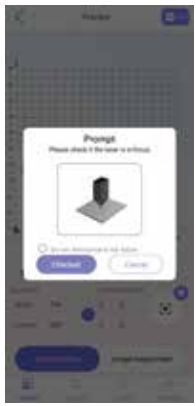

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FAQ

No response from the machine when being powered on.

- No power supply: Please check the socket and switch as well as the machine power socket to ensure that they have been correctly plugged with normal power supply.

It cannot be connected to computer.

- USB cable not connected: Please check the USB data cable interface on the machine and computer to ensure it's correctly plugged in.The USB interface on the front panel of some desktop computers is invalid, it's better to connect to the interface on the back.
- Driver not properly installed: Install the driver according to the instructions. After the installation is done, the computer will recognize the device as a serial port, which means the hardware connection is OK.
- Other special problems: Pull out the USB data cable and power cable, keep the machine power off for 5 seconds and then try the connection once again.

No response from the phone APP when being connected to the machine.

- Wrong WiFi connection: Please make sure your phone and machine are connected to the same 2.4G WiFi according to the APP's connection guide.
- Incompatibility: In the case of abnormal connection due to incompatibility of newly-released phone or upgraded system, please contact our customer service with the screenshot of phone configuration so as to get technical support as soon as possible.

Shallow engraving effect or no traces.

- Inaccurate focus: Refer to the "How to Find Focus" in the User Manual to make the correct focus.
- Engraving speed: Too fast speed is due to short burning time. Please read the“Engraving Parameters" in the Manual to readjust the parameters.
- Photo color is too light: The photo added should be clear. If the line is too thin or the color is too light, the engraving effect will be directly influenced.
- Position of object to be engraved: If the object is placed obliquely, the focal length of laser is fixed, so the object should be placed horizontally in parallel to the machine; otherwise, the inaccurate focal length will result in bad engraving effect.

Offline engraving unexpectedly stops

- The photo is not completely downloaded when being connected to computer, please download the photo once again.

Certificate

FCC Compliance Statements

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

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.

ISED Compliance Statements

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-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.
This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment.

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.
Cet équipement est conforme aux limites d'exposition aux radiations IC CNR-102 établies pour un environnement non contrôlé.

RF Exposure Compliance

This equipment complies with FCC/IC RSS-102 radiation exposure limits set forth for an uncontrolled environment.
This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
Cet équipement est conforme aux limites d'exposition aux radiations IC CNR-102 établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec une distance minimale de 20cm entre le radiateur et votre corps. Cet émetteur ne doit pas être colocalisé ou fonctionner en conjonction avec une autre antenne ou un autre émetteur.

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蓝色色号：PANTONE 2955 C

橙色色号：PANTONE 16-1358TP（Orange Tiger）

版本/REV.		修订内容/Revision Note				日期/Date	确认人/Check By
比例 SCALE	1:1	单位 UNIT	毫米 mm	深圳奥菲诺科技有限公司			
版本 REV.	A-02						
核准 APR.		图号 Drawing NO.	DK-MK3-A-02	材料 Material.	封面 200g铜版纸 内页 80g铜版纸	数量 QTY.	1
审核 CHK.		品名 P/N.	DIYKIT MK3 说明书	装订方式 ST.	骑马钉	页次 Page.	28
绘图 DRAWN.	曾玲玲	机型 Model.	Algo DIY KIT MK3	物料编码: Part NO.	4050000324	日期 Date.	2026.06.23