ZONESTAR

How to upgrade laster kit

For Marlin Firmware

Ver 1.1

Download the newest document:

https://drive.google.com/drive/folders/0B9Z1DbrxfqbpLUd1d0NfZng5cmc

Firmware upgrade

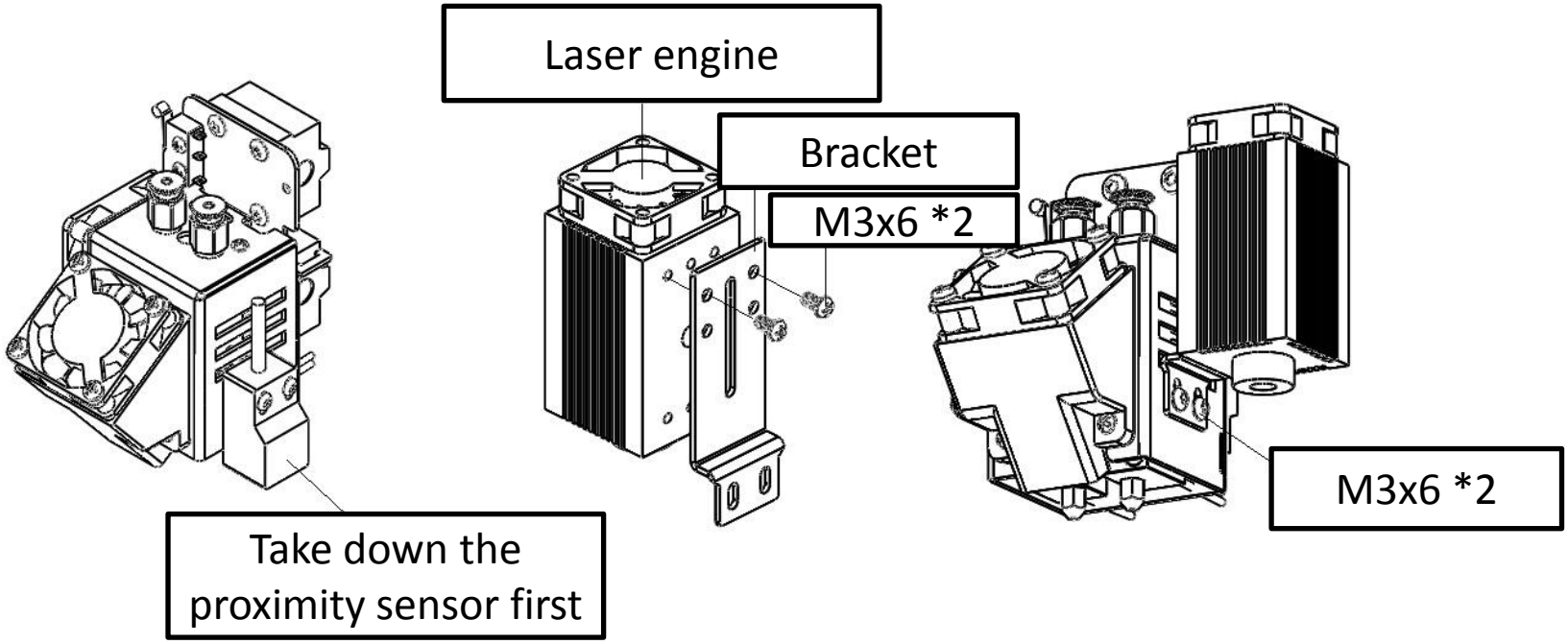
Some versions of the machine may be shipped without laser control and you will need to upgrade the control board firmware.

Upload firmware steps:

1. Unzip the firmware upgrade tool “Firmware Upload tools.zip” to your computer.
2. Copy the firmware “HEX “to "Firmware Upload tools” directory.
3. Connect the printer to your PC, making sure the driver is installed well.
4. Refer to the “AVRUpdateTools user Guide_ZRIB.pdf” to upload the firmware to the control board.

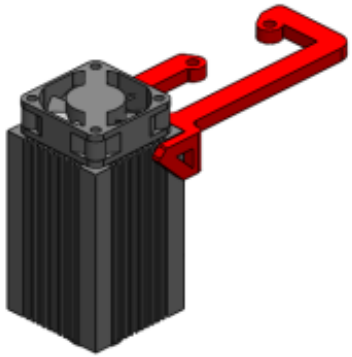
Install laser engine

Install the laser kit to the print head, usually we can install it to the housing of HOTEND.

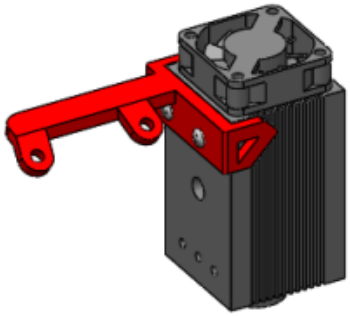


Laser engine bracket

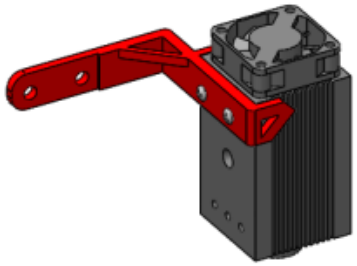
For some older versions and models of printers, we also created 3D files for the mounts that mount the laser engine. You can print these brackets and refer to the image below to install the laser engine.



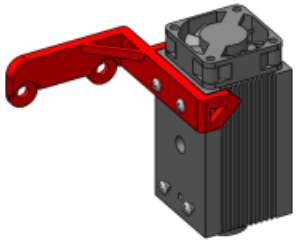
For Z9



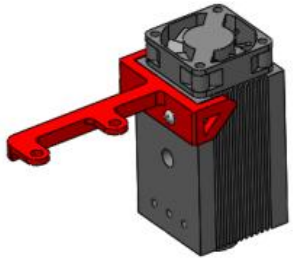
For D805S



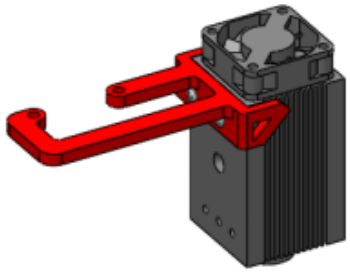
For P802C



For P802N/M



For P802Q(older version)



For Dual Extruder hotend

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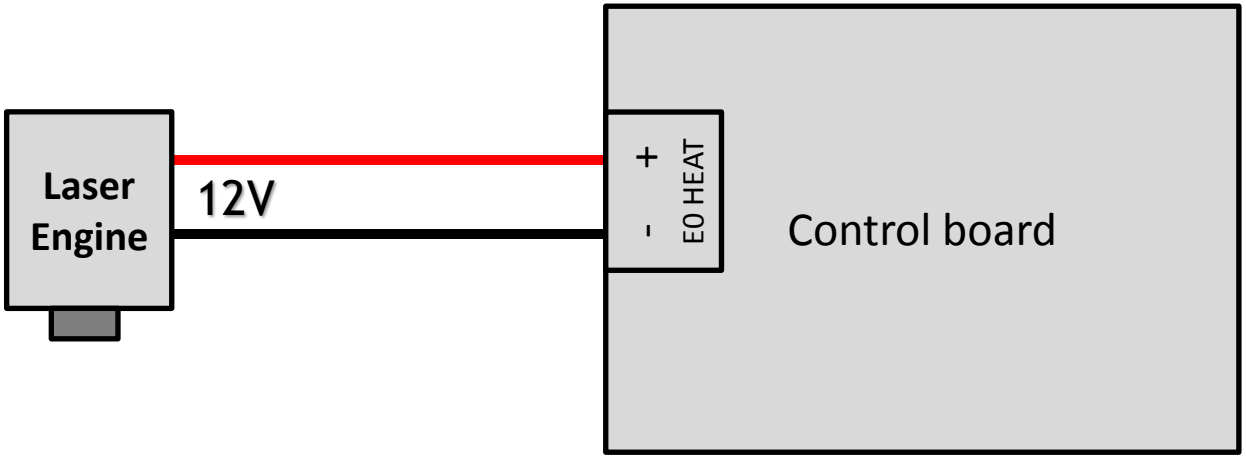
Wiring

NOTE: For Z10, juse need to simply to connect the laser to AUX1 connector of control box.

Wiring type 1: For the Laser engine without TTL interface/signal

!!Attention!!: Wrong connection may burn out the laser engine!

Laser engine		Control Board
12V	+	PIN+ of **E0 HEAT connector**
	-	PIN- of E0 HEAT **connector**



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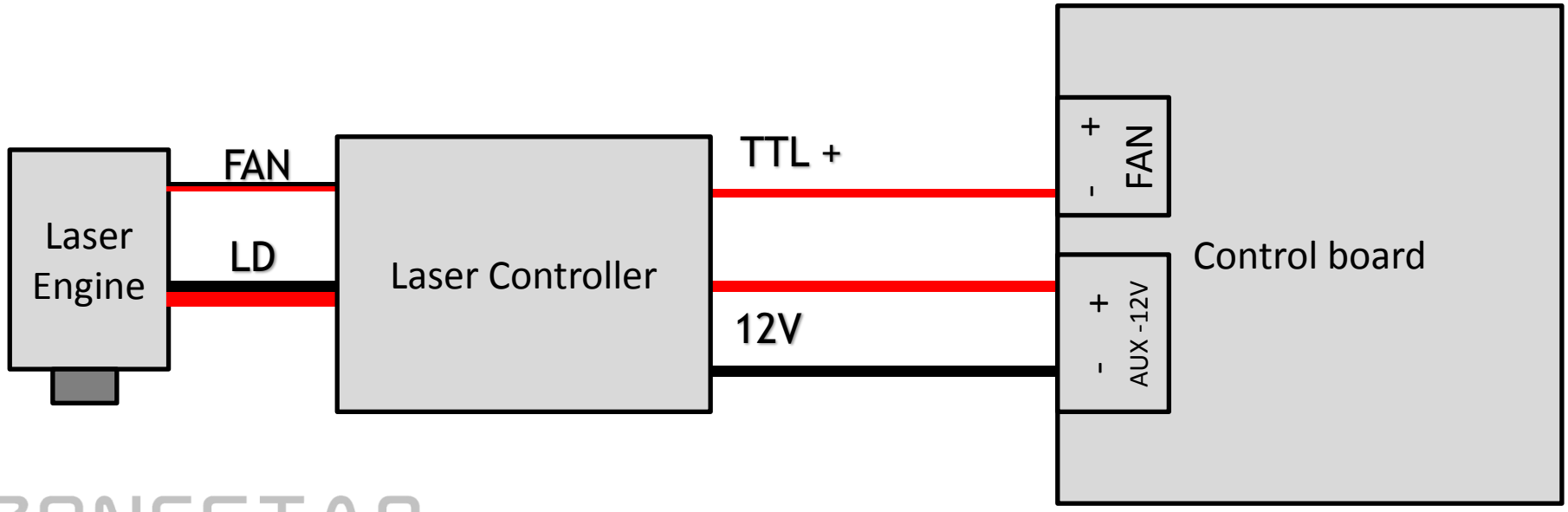
Wiring

Wiring type 2. For the Laser engine with TTL interface/signal

!!Attention!!: Wrong connection may burn out the laser engine!

Laser controller		Control Board
TTL	+	FAN -
	-	NC
12V	+	AUX + or V+ of Power supply
	-	AUX – or V- of Power supply



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Adjust the focus of laser engine

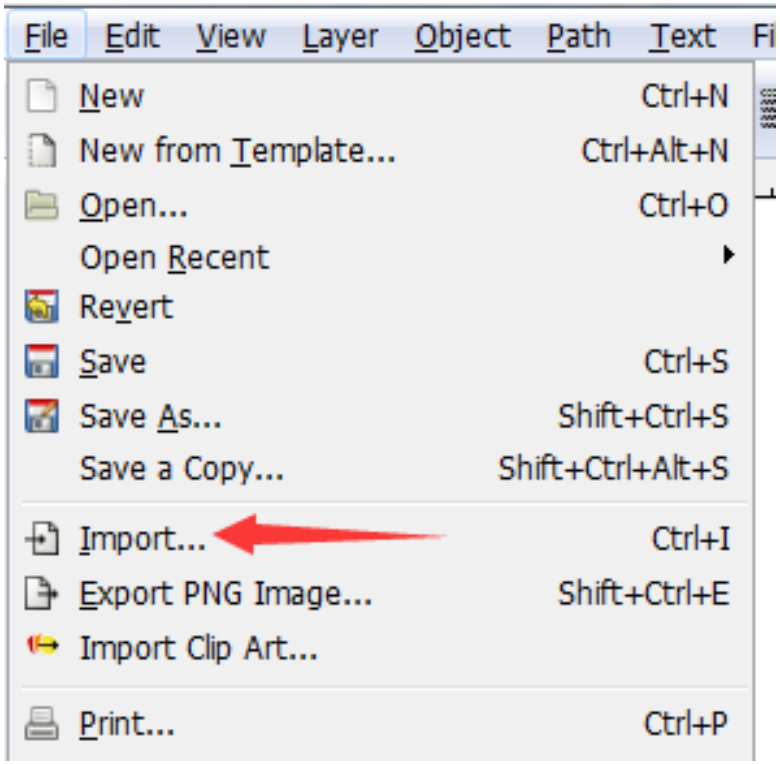
1. Move the Z-axis heigh to 30~50mm.
2. Put a wood board on hot bed.
3. **Wear protective glasses.**
4. If the laser engine without TTL signal: Heating the extruder 0
4. If the laser engine without TTL signal, Heating the extruder 0 and set the fan speed.
5: Turn the lens of the laser head carefully to adjust the focal length.

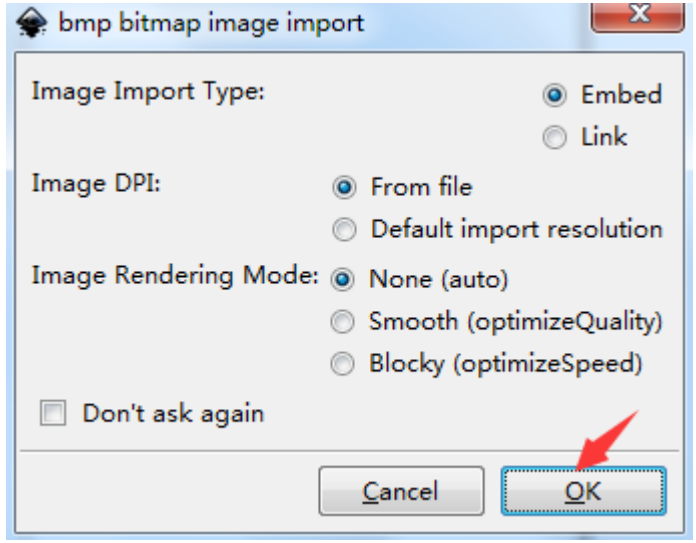
Install Inkscape and laser plugin

1. Download Inkscape From below link:
https://inkscape.org/en/download/
2. **Install Inkscape**
3. Install zonestar laser plugin.
unzip ZONESTAR Laser Plugin for Inkscape.zip and copy all of the files to C:\Program Files\Inkscape\share\extensions

Convert image to gcode file

1. Open Inskscape and import picture





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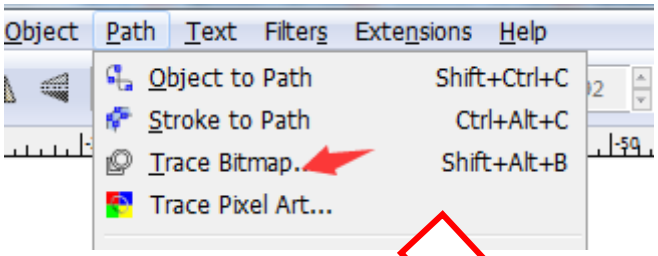
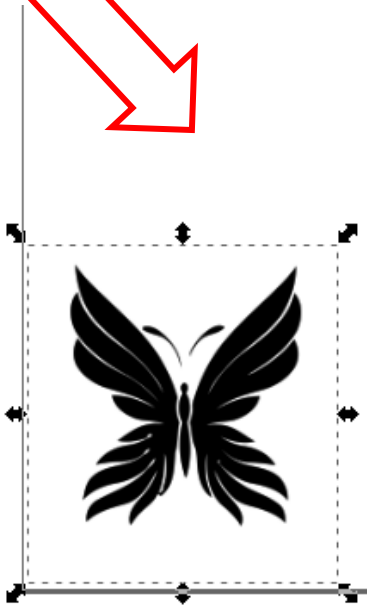
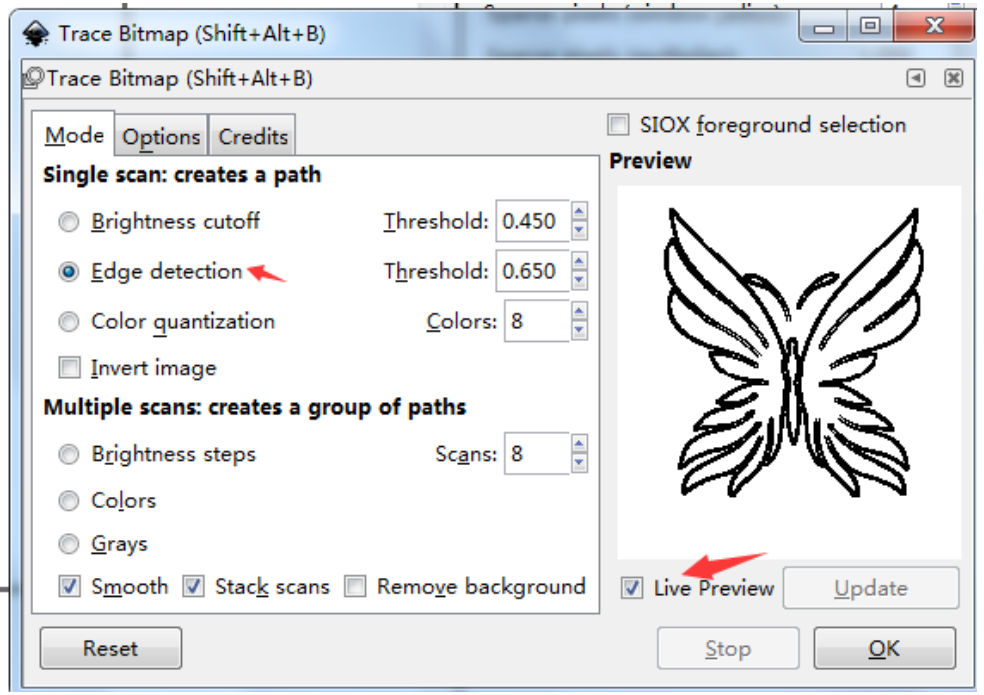
Convert image to gcode file

2. choose the picture and get its trace







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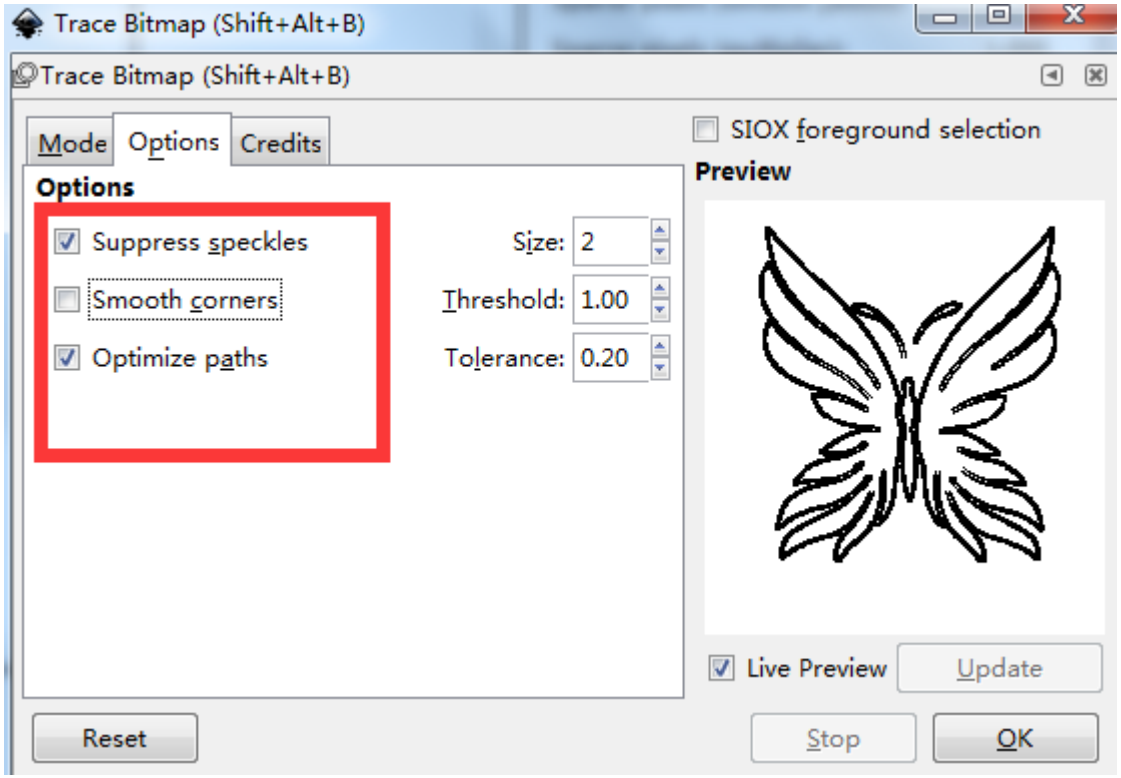
Convert image to gcode file

3. Set options, and then press “OK”



NOTE: *Disable “smooth corners”.*

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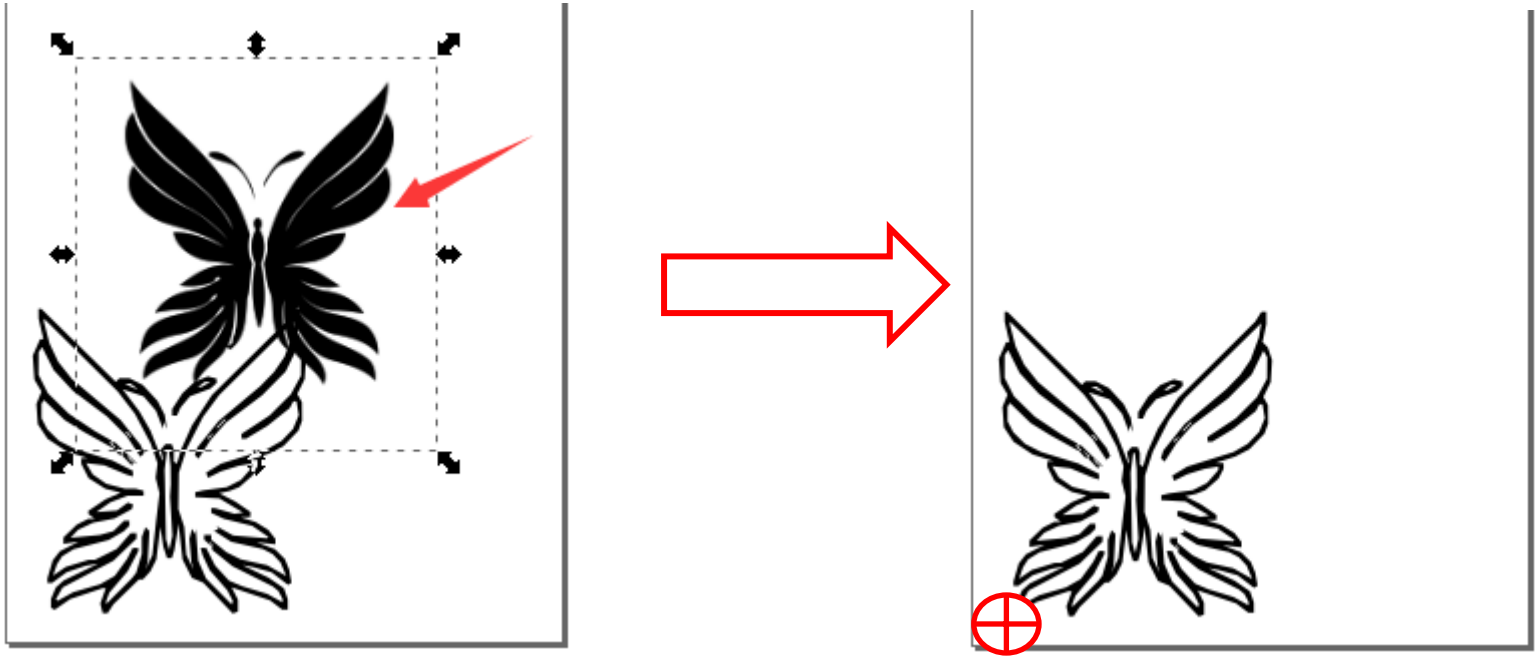
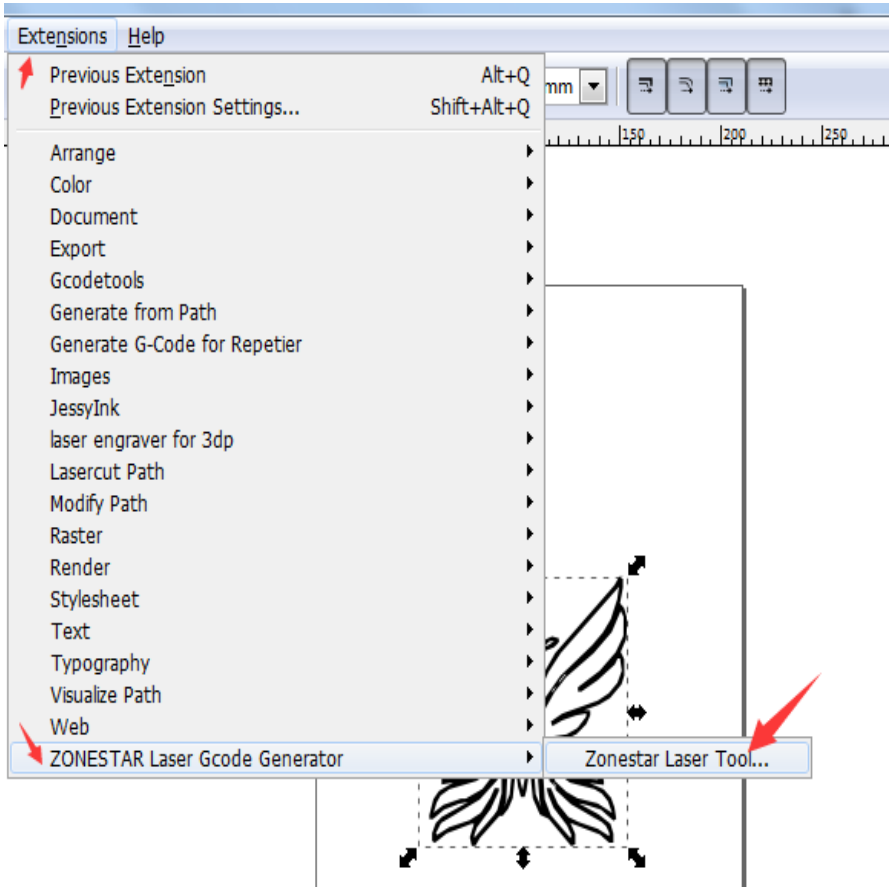
Convert image to gcode file

4. Delect the orig image and move the trace map to the left and bottom corner



Convert image to gcode file

5. Choose *ZONESTAR Laser Tool…*from *Extensions* menu



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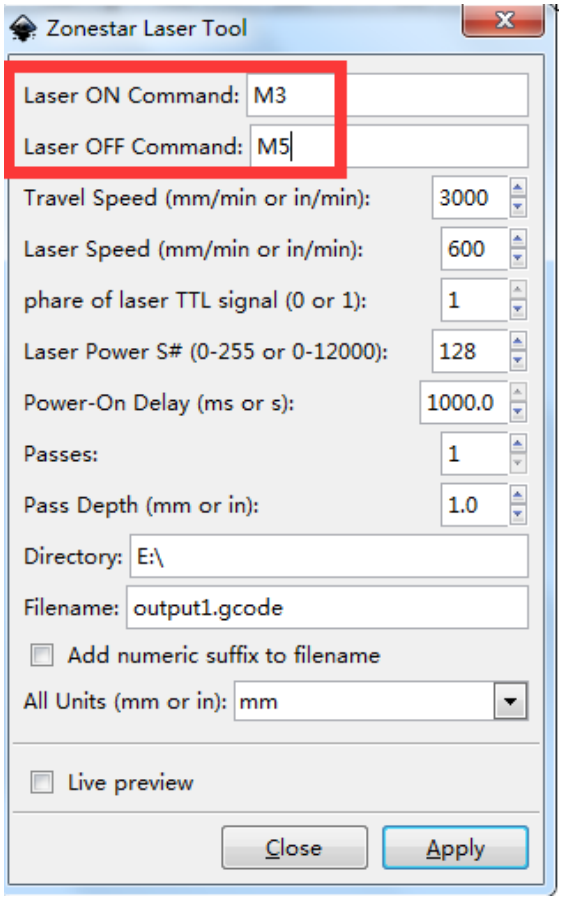
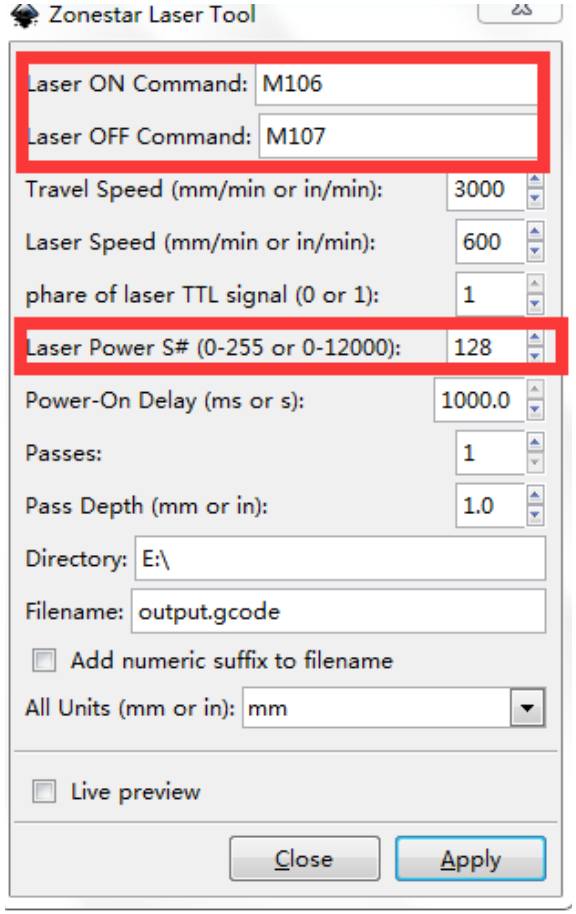
Convert image to gcode file

If the laser engine without TTL Pin, use M3 and M5 command to turn on/off laser power.
If the laser engine with TTL Pin, use M106 and M107 command to set the laser power.



Laset engine without TTL signal



Laset engine with TTL signal

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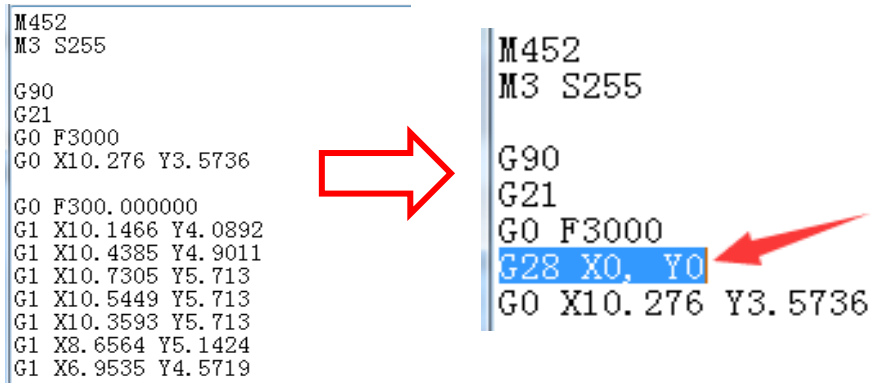
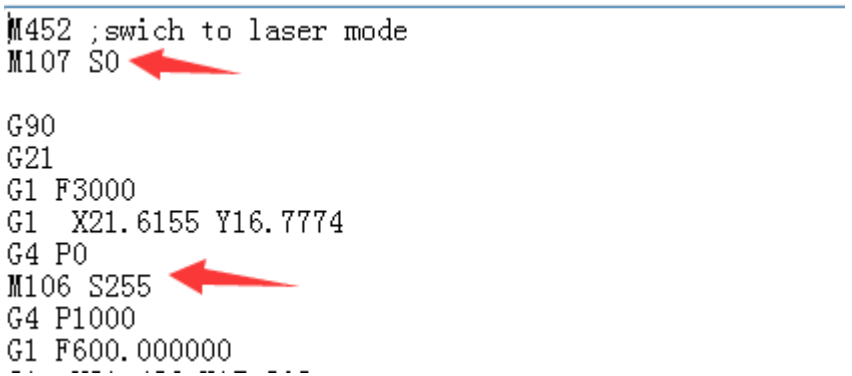
Convert image to gcode file

6. Use notepad to open the gcode file and check it.
7. You can add "*G28 X0, Y0*" command into gcode file to ask the printer do "*HOME X*" and "*HOME Y*" before start to engrave.
8. Home Z and manual move Z axis to about 30~50mm(operate by repetier-host or LCD Menu).
9. "Print" the generated gcode file and adjust the focus if need when laser start to work.

Laset engine without TTL signal



Laset engine with TTL signal



The gcode command description to control laser

M451 ; Swith to 3D printer mode (default)
M452 S0 ;Swith to Laser mode, set the phase of TTL signal is positive
M452 S1 ;Swith to Laser mode, set the phase of TTL signal is negative

Laser engine without TTL signal:

M3 S255 ;Turn on laser engine
M5 S0 ;Turn off laser engine

Laser engine with TTL signal:

M106 S??? ;Set the laser power (0~255)
M107 S0 ;Turn off the laser