Trocen 乾诚

AWC708 Plus Motion Control System Panel Instruction

Laser Motion Control System

RV 1.4

2017.06

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Version

Ver. No.	Revision Date
V1.0	2015/08/17
V1.1	2015/12/17
V1.2	2016/3/17
V1.3	2016/5/09
V1.4	2017/06/12

Relevant Documents

- AWC708 Plus Panel Instruction
- LaserCAD User Manual

AWC708 Plus Panel Instruction

Contents

1. Panel

1.1. Overview

1.2. Button

Buttons can be divided into 3 categories based on their functions.

1.2.1. Button Functions

- ***Reset***
  Reset controller.
- ***File***
  Browse the file list in the panel.
- ***Laser***
  To check if laser tube will emit laser beam or not. For testing.
- ***Box***
  Preview the size of pattern remaining to be machined and confirm the current position.
- ***Shift***
  See following page for more details.
- ***Menu***
  Display main menu.
- ***Origin***
  Set machine's home position.
- ***Stop***

Stop the working machine and put laser head back to preset original point.

- ***Start/Pause***
  Start or pause the machine and leave the laser head in current position.
- ***Enter***
  Enter edit mode and confirm the current operation.
- ***ESC***
  Exit from edit mode or return to previous page.

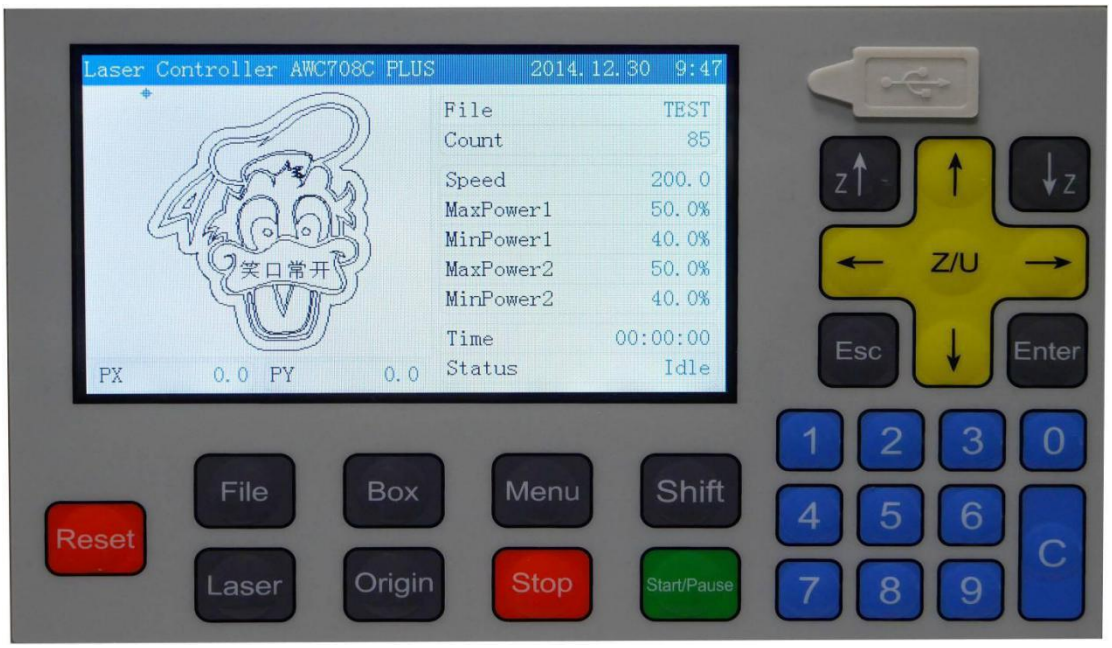
1.2.2. Number Button

- ***0-9***
  0 stands for moving up on U axis(feeding axis).
- ***C***
  It stands for moving down on U axis(feeding axis).

1.2.3. Arrow Buttons

- ***【↑】【↓】***
  Moving axis up/down or cursor.
- ***【←】【→】***
  Moving axis or cursor.
- ***【Z↑】【Z↓】***
  Moving Z axis.
- ***【Z/U】***
  Z axis auto-focus and Z, U, V and W axis motion. It also stands for calibration when it comes to metal cutting.

2. Main Menu

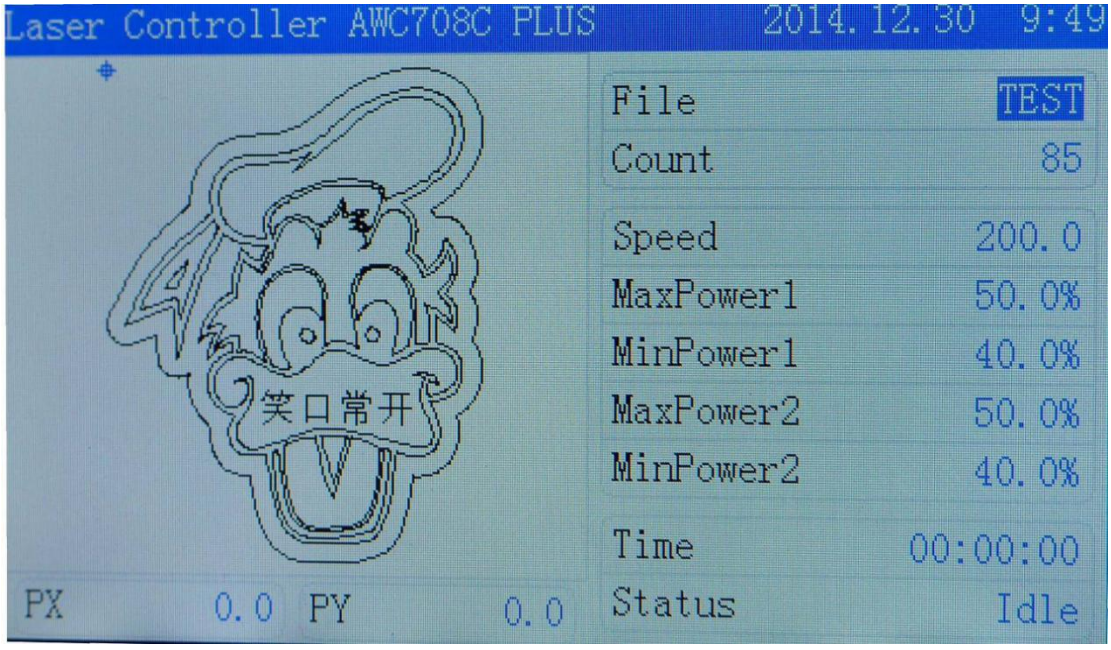


- ***Top bar***

Display software version, date and time.

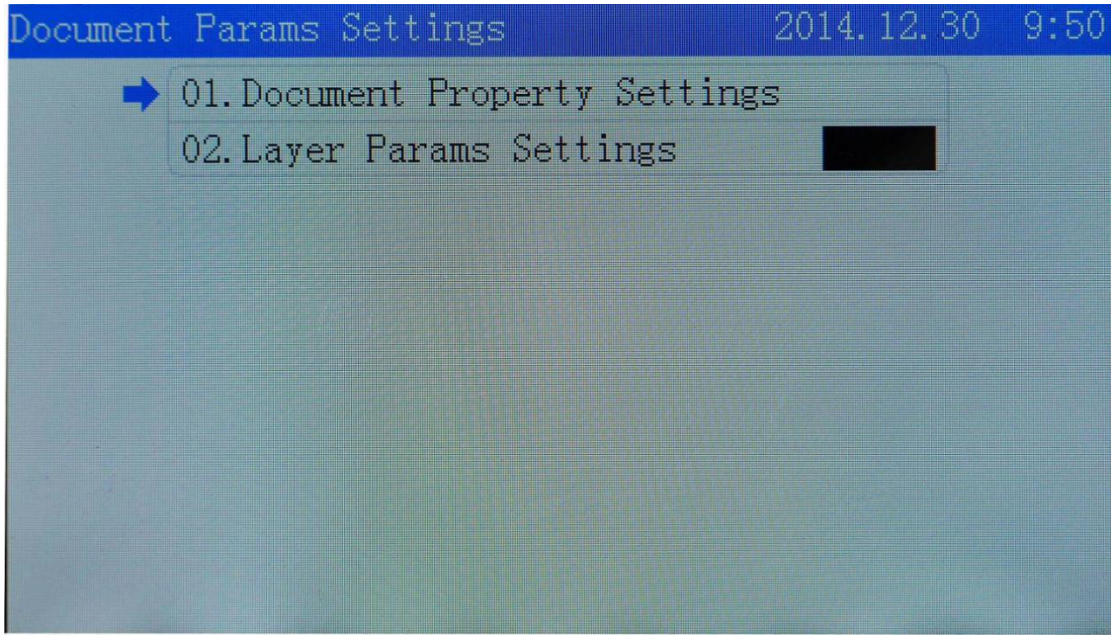
- ***Count***
  Show the number of finished file.
- ***Speed***
  Display the working speed.
- ***MaxPower1 MinPower1 /MaxPower2 MinPower2***
  Max power means working power while min power means corner power.
- ***Time***
  Display the time worked.
- ***Status***
  Display the machine's working state including working, idle and pause state. Machining process will be showed in form of percent bar.
- ***PX PY***
  Display the XY coordinate.

3. Main Viewing Display



3.1. Document Parameters Settings

On the main viewing display, press 【Enter】 to make the file name shown in color inversion.



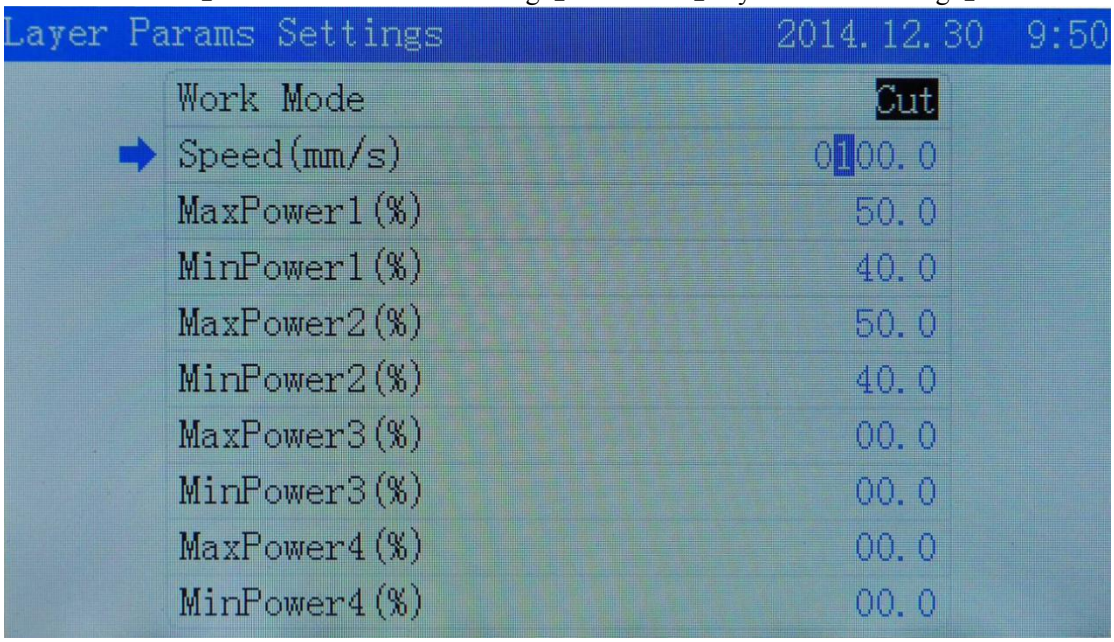
Click【Enter】and you will see【Document Params Settings】, click【Document Property Settings】.

- ***Repeat Count***
  Machine repeat working times.
- ***Repeat Delay(s)***
  Time interval between the previous job and next job.
- ***Feeding Distance(mm)***
  The distance of axis transmitting cutting material of each time.
- ***X Size(mm)***
  The length of pattern on X axis.
- ***Y Size(mm)***

The width of pattern on Y axis.

3.2. Layer Parameters Settings

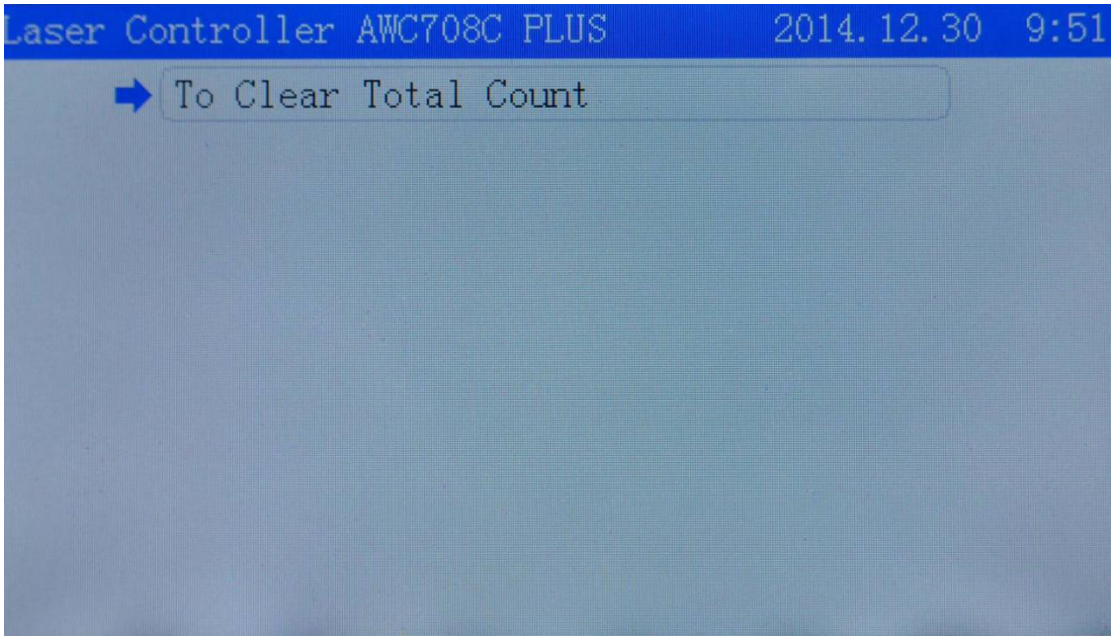
Back to 【Document Parameter Settings】and click【Layer Params Settings】.



- ***Work Mode***
  Machining mode.
- ***Speed(mm/s)***
  Pattern processing speed.
- ***Max Power***
  The max working power of laser head.
- ***Min Power***
  The min power of laser head and also known as corner power.

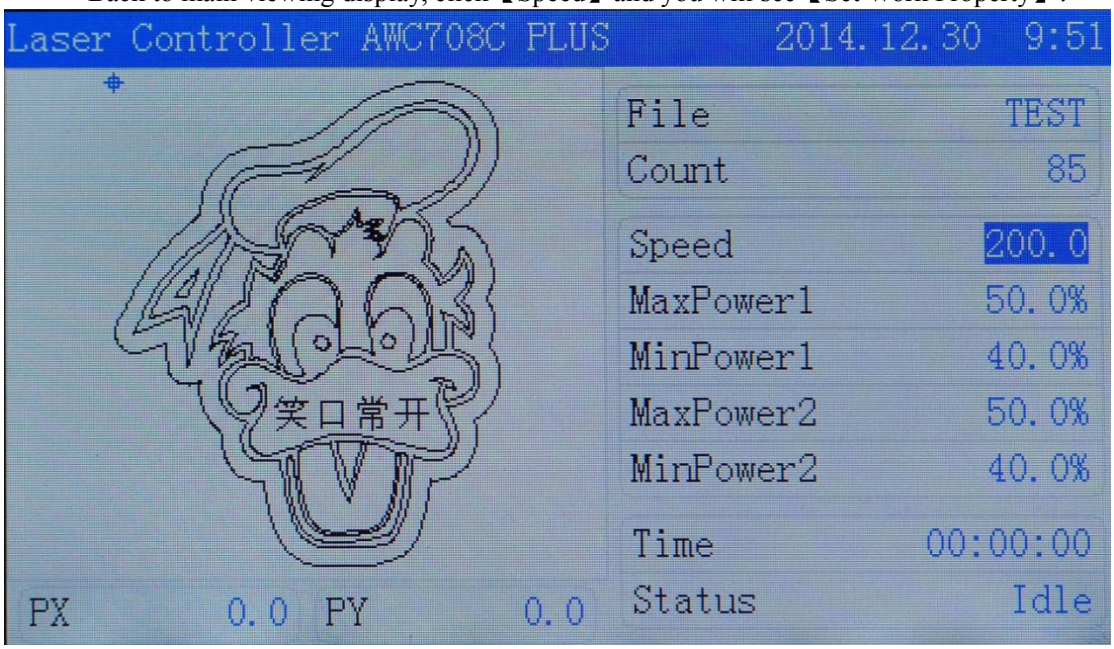
3.3. Cleaning Total Count

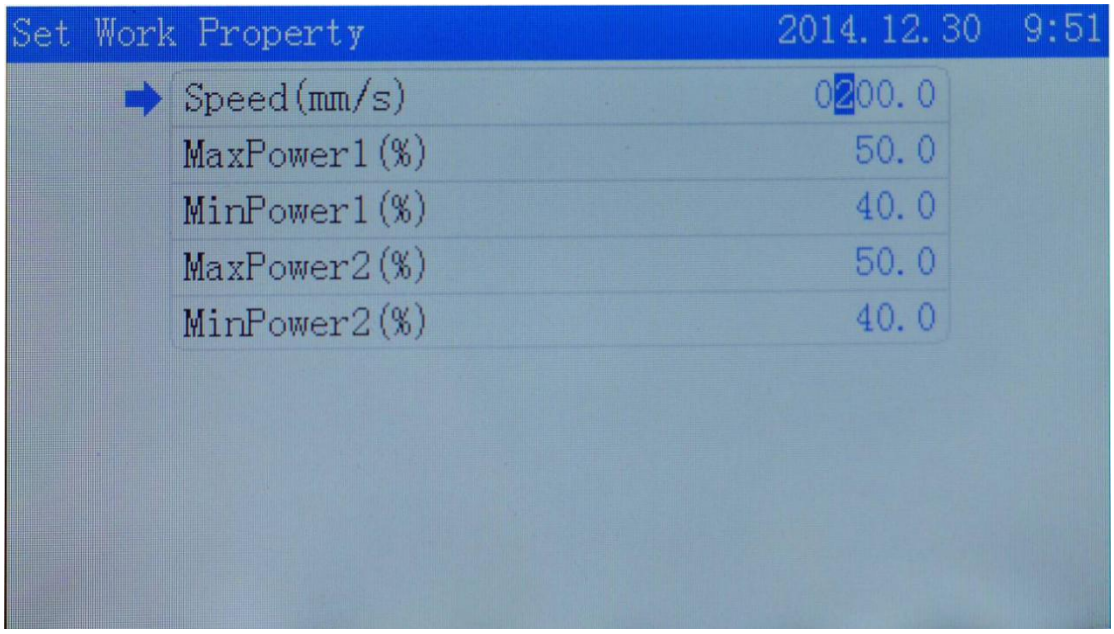
Click【To Clear Total Count】to clear all the machining count.



3.4. Set Work Property

Back to main viewing display, click【Speed】and you will see【Set Work Property】.





Notice: How to tell differences of【Speed】, 【Max Power】 and 【Min Power】 between 【Idle】, 【Pause】 and 【Working】.

Back to main viewing display and if the state bar on the bottom-right showing *idle*, 【Speed】 stands for laser head's moving speed without powering-on while【Max Power】&【Min Power】 here stands for the power of laser burst.

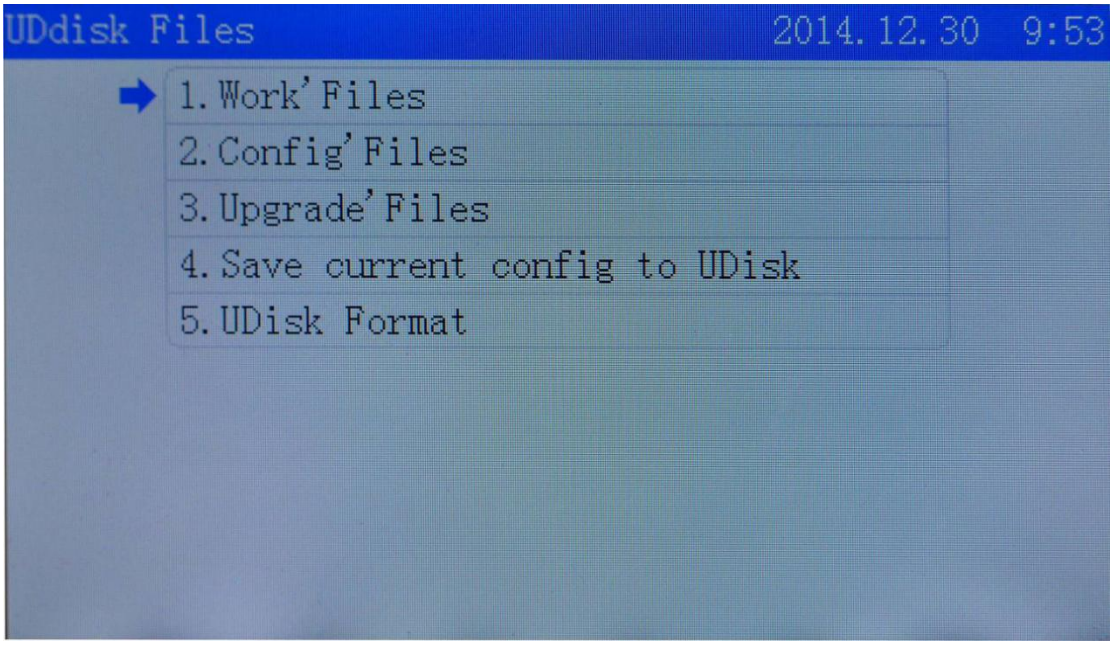
If the state bar on the bottom-right showing *pause* and it is valid one-time for current situation when you change the value of【Speed】, 【Max Power】or【Min Power】. The changed value will not be valid for the next time cutting and it will be turned back to that of changing before instead.

If the state bar on the bottom-right showing *working*, 【Speed】stands for laser head's working speed while 【Max Power】 & 【Min Power】 here stands for working power.

4. Main Menu Function Settings

4.1. U Disk Files

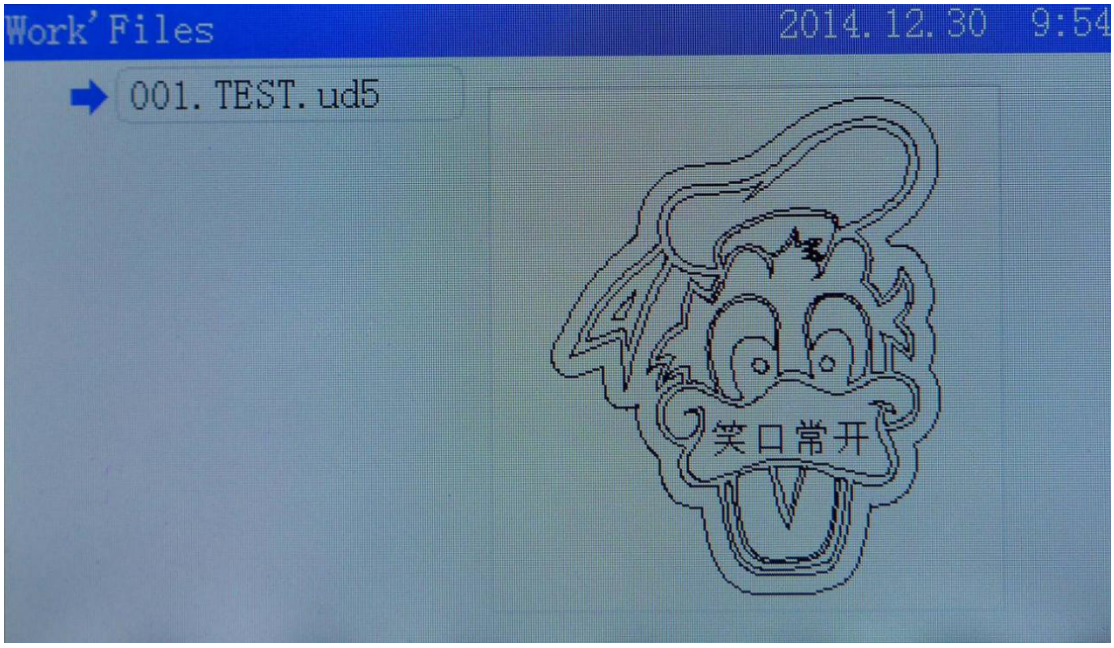
Insert U disk to USB port until you see the U disk indicator lighting up, then click 【U Disk Files】.



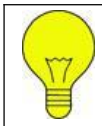
	- U disk should be formatted to FAT 32 File system.Quick Format is forbidden .Any other files formations are not supported. - Recommend use U disk with Indicator to ensure if U disk connected successfully with main board. - Please use origin and regular U disk.When the U disk has never been able to read , try to replace other U disk.

4.1.1. U Disk Work Files

Click【Work' Files】.

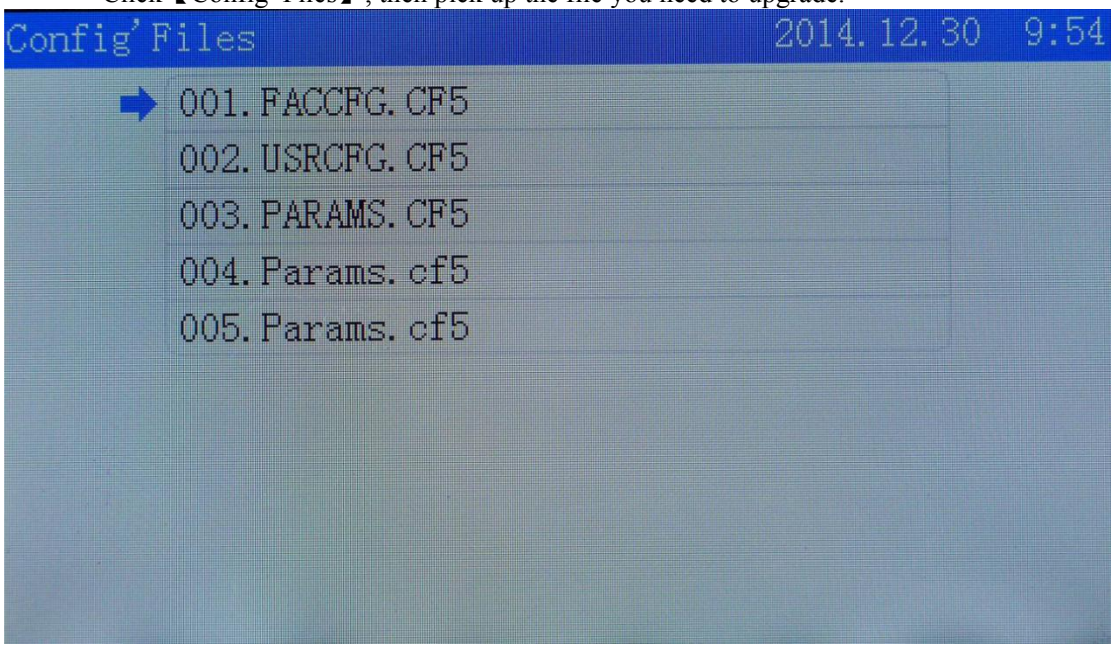


You can see graph previewing on the right side and click【Enter】to copy the working file from U disk to main board storage.

	The working file in U disk means off-line file saved in U disk that with file suffix ud5.Files with JPEG formation saved in U disk cannot be read directly.

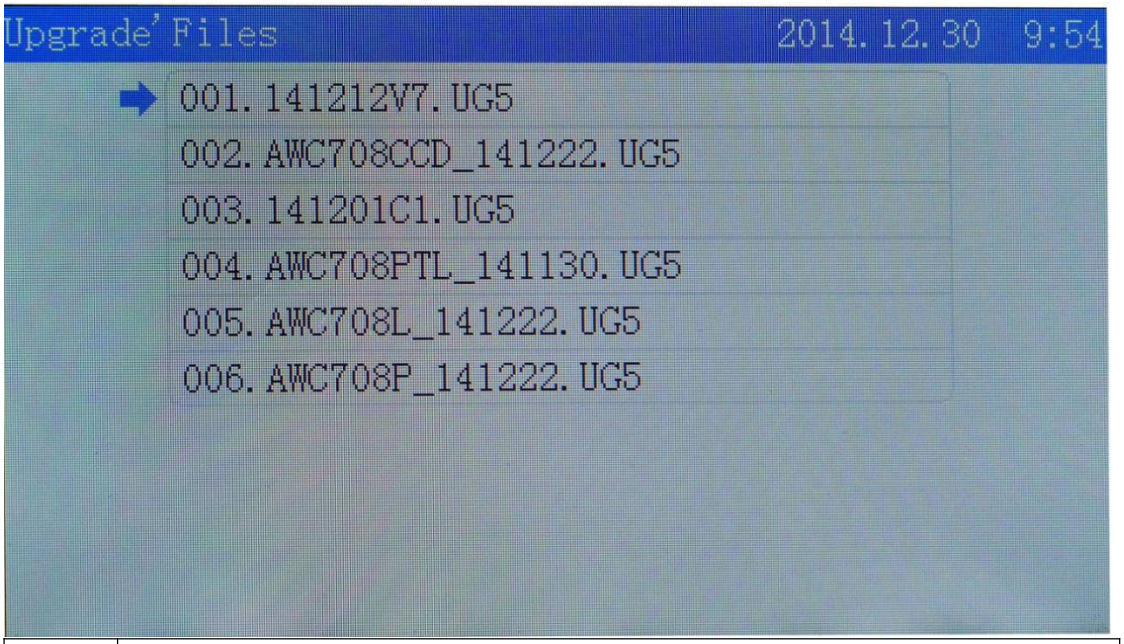
4.1.2. Config. Files

Click【Config' Files】, then pick up the file you need to upgrade.



4.1.3. Upgrade Files

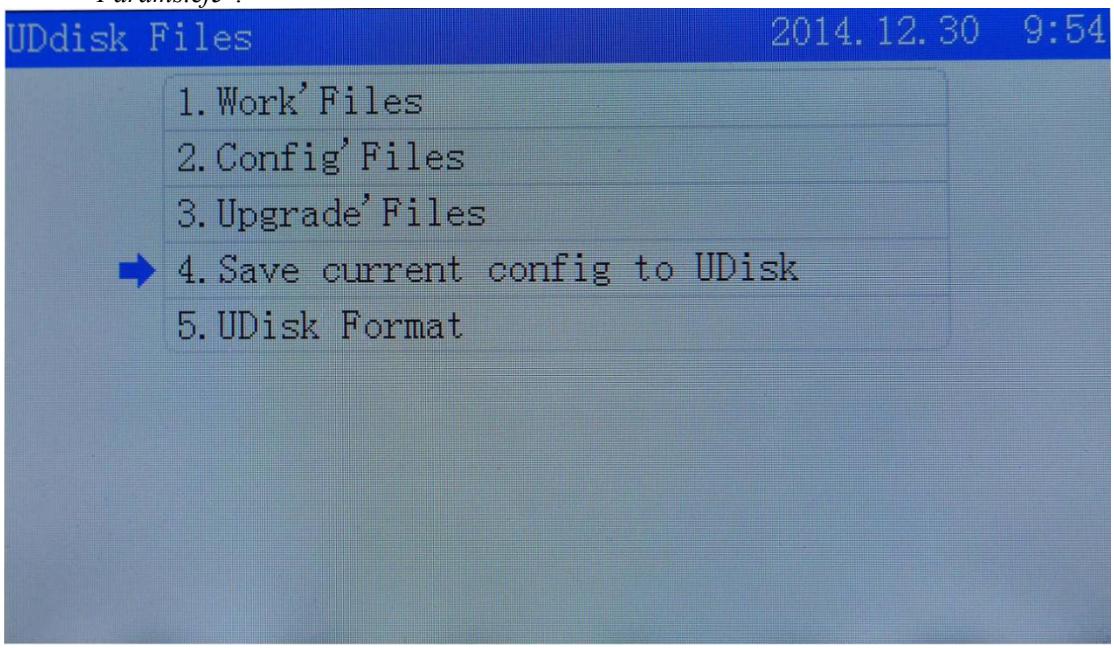
Click【Upgrade' Files】, then choose the file you need to upgrade. The upgraded file of LITE series is AWC708L while those of PLUS series is AWC708P.



	Do not cut off electricity before upgrade finished, otherwise, it may lead a burnt out of main board. Upgrade will last for 30 seconds and then auto reset.

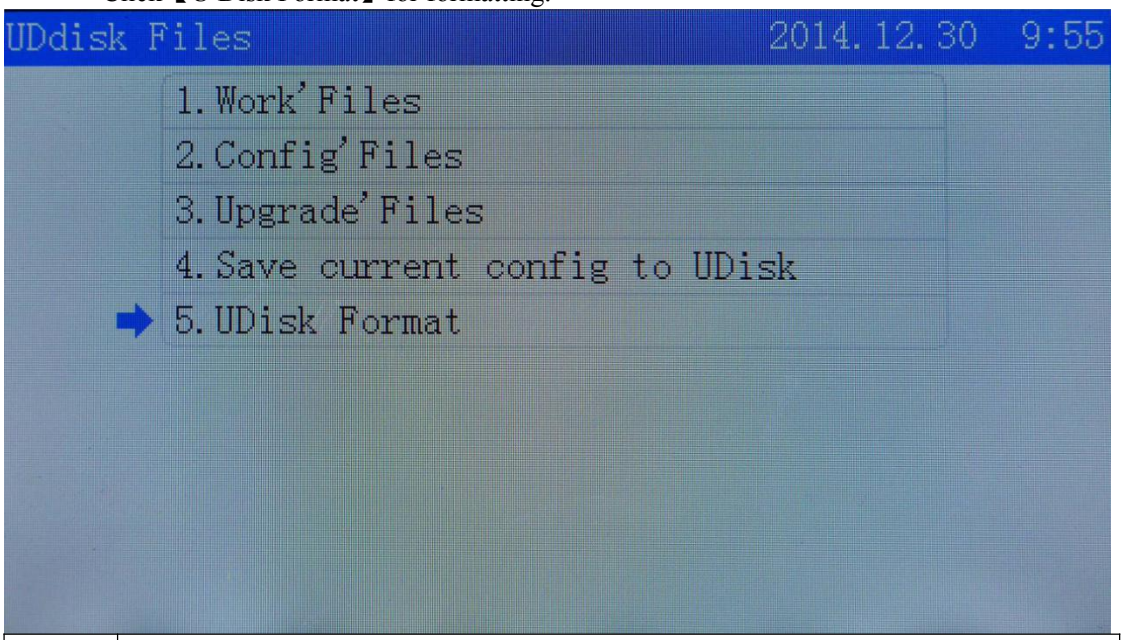
4.1.4. Save Current To U Disk

Click【Save current config to U disk】and the file will be saved as the name of *'Params.cf5'*.



4.1.5. U Disk Format

Click【U Disk Format】for formatting.

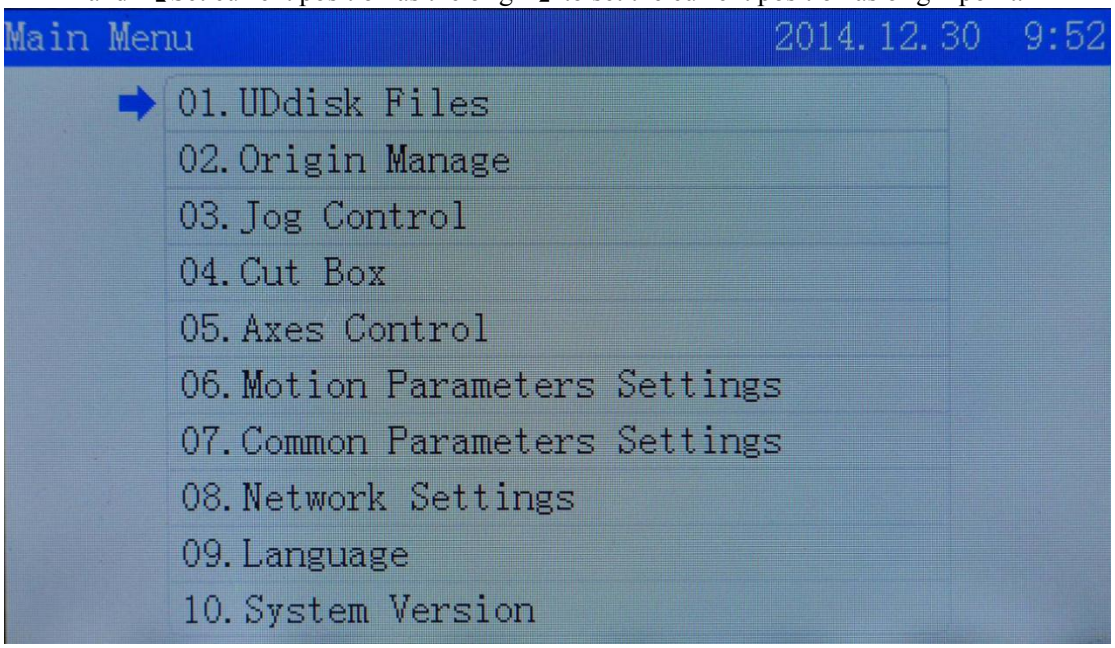


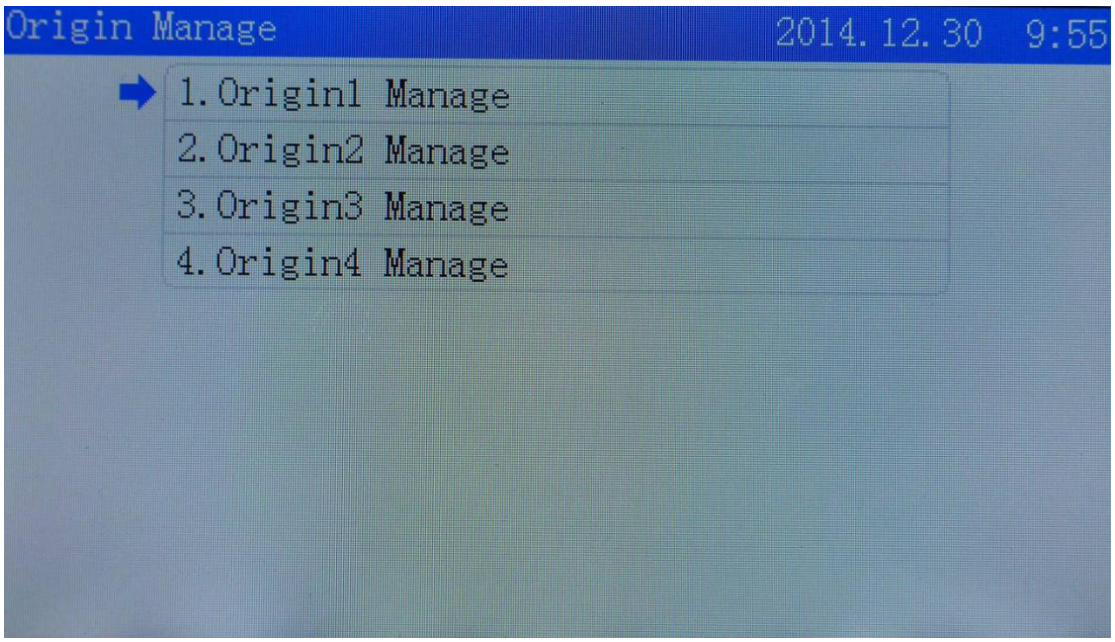
⚠	All files will be lost if you click *'U Disk Format'*.

4.2. Origin Manage

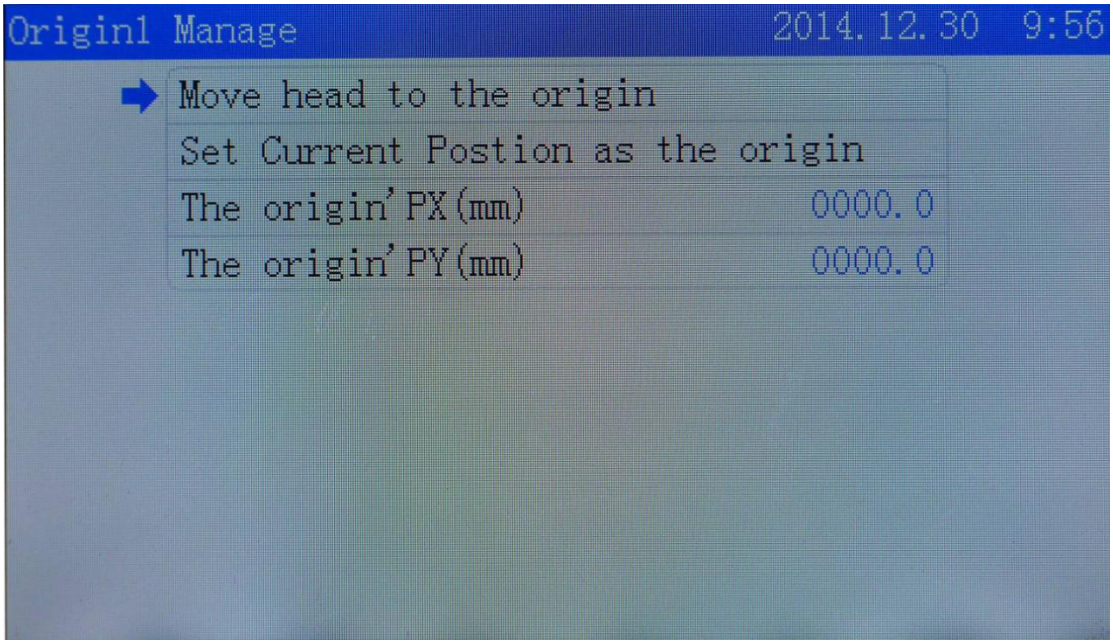
Go back to main menu and find out【Origin Manage】. For example, click【Origin1 Manage】

and 【Set current position as the origin】to set the current position as origin point.





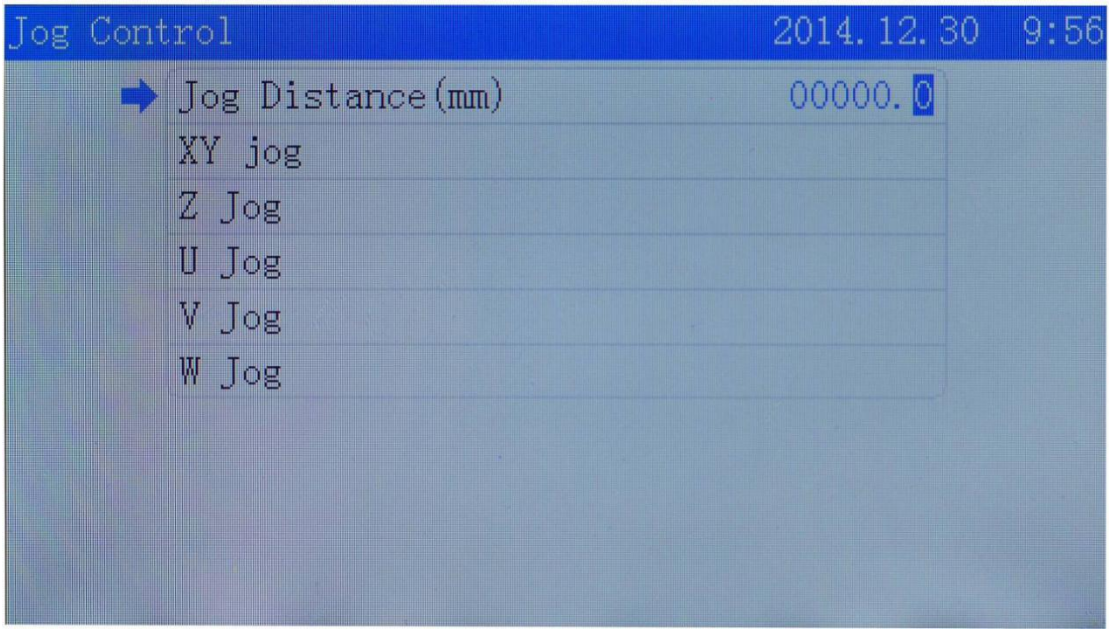
Turn to *'The origin'PX(mm)'* and *'The origin'PY(mm)'* to modify coordinate position of origin point.



4.3. Jog Control

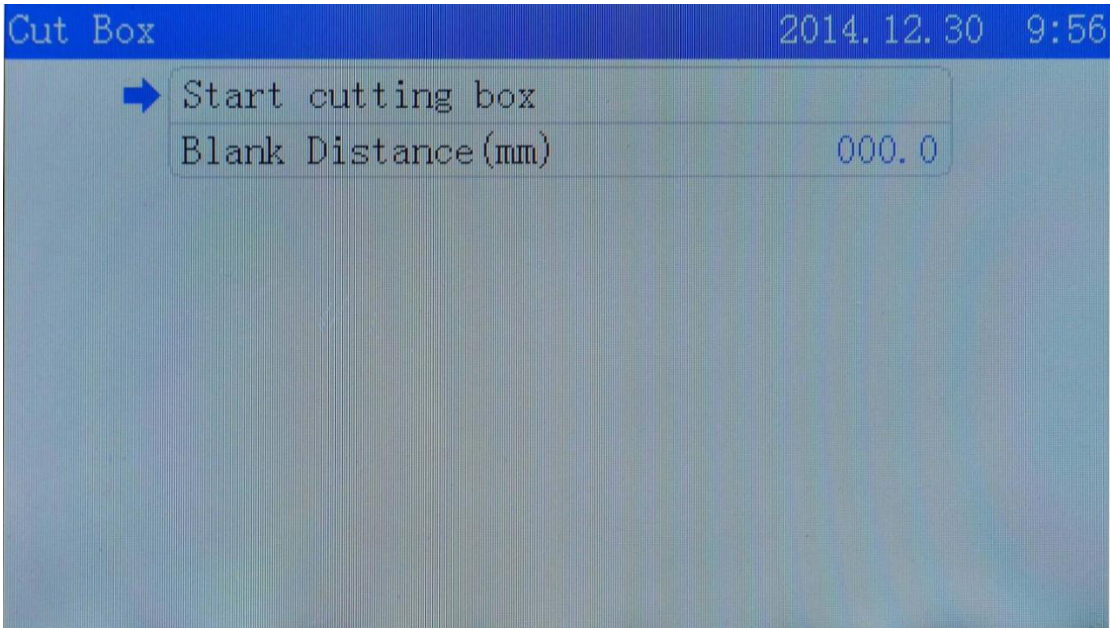
Go back to main menu and click 【Jog Control】to find out 【Jog Distance】and modify the distance of one step.

On【Jog Control】page, click【Z↑】【Z↓】to move cursor to relative jog axes. Click【↑】【↓】【←】【→】to control movement of each axis.



4.4. Cut Box

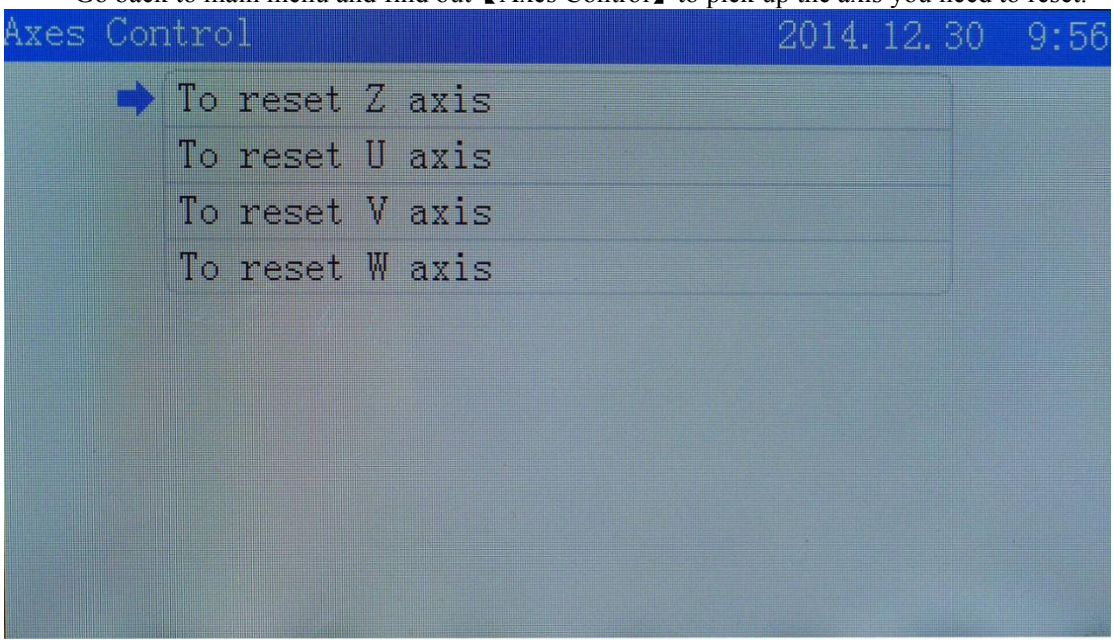
Go back to main menu and find out 【Cut Box】and turn to 【Blank Distance】at first to modify the distance value. Second, click【Start cutting box】to see the actual effect.



- ***Blank Distance(mm)***
  The distance between pattern's border box and actual cutting box.

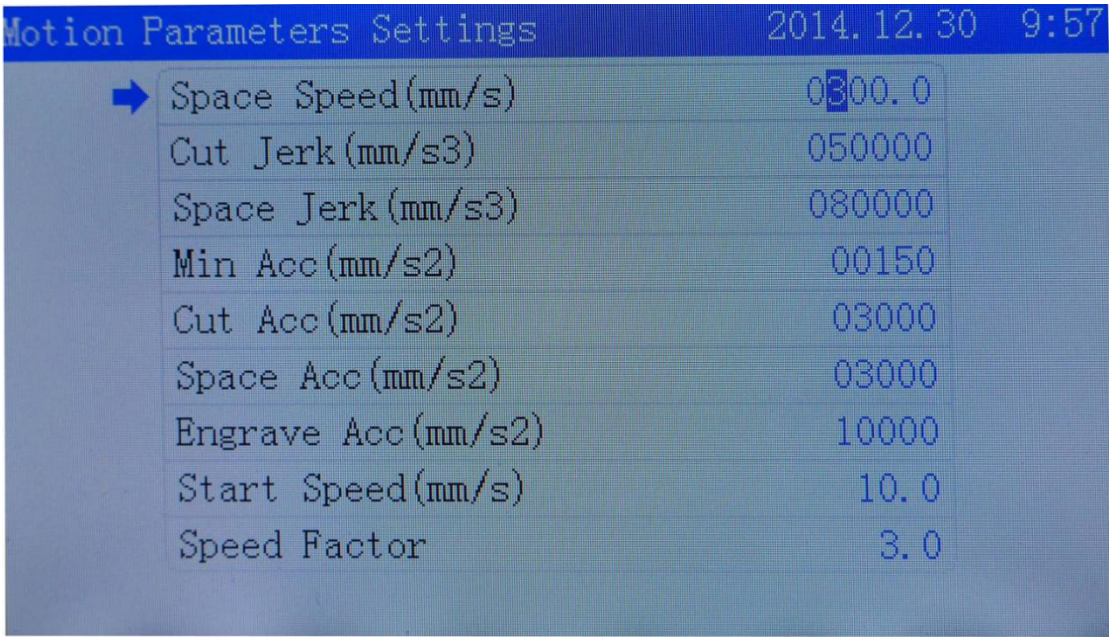
4.5. Axes Control

Go back to main menu and find out【Axes Control】to pick up the axis you need to reset.



4.6. Motion Parameters Settings

Go back to main menu and find out【Motion Parameters Settings】and then modify the value.



- ***Space Speed(mm/s)***
  Also known as air-travel speed. The speed of laser head moving without laser powering on and should be filled in the number with an increase or decrease of 50 each time.

- ***Cut Jerk(mm/s3)***
  The variation of cutting acc and should be filled in with the number of an increase or decrease of 10 thousand each time.

- ***Space Jerk(mm/s3)***
  Also known as air-travel jerk. The variation of laser head's moving speed acc without laser powering on and should be filled in the number with an increase or decrease of 10 thousand each time.

- ***Min Acc(mm/s2)***
  This option should be filled in number with an increase or decrease of 50 or 100 at a time at least.

- ***Cut Acc(mm/s2)***
  The variation of cutting speed and should be filled in with an increase or decrease of 500 each time.

- ***Space Acc(mm/s2)***
  The variation of laser head's moving speed without laser powering on and should be filled in the number with an increase or decrease of 500 each time.

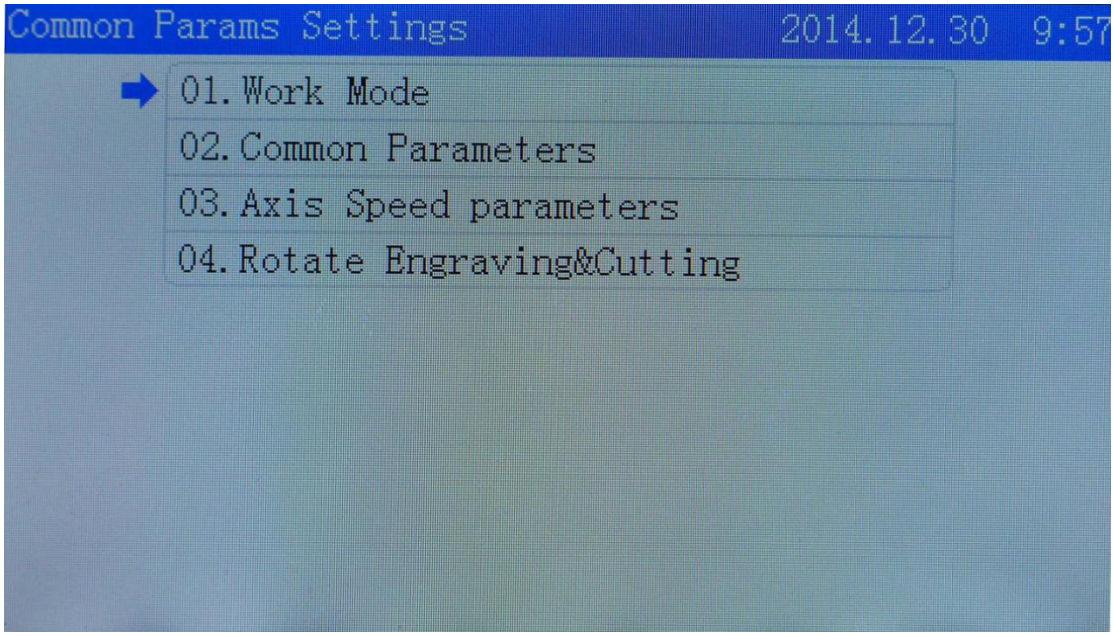
- ***Engrave Acc(mm/s2)***
  The variation of engraving speed and is only effective to engraving.

- ***Start Speed(mm/s)***
  The initial speed of laser head from static condition to movement.

- ***Speed Factor***
  We suggest that lower speed is going to be filled in with 0.5 or 1 while regular speed with 2 and high speed with 3 or 4.

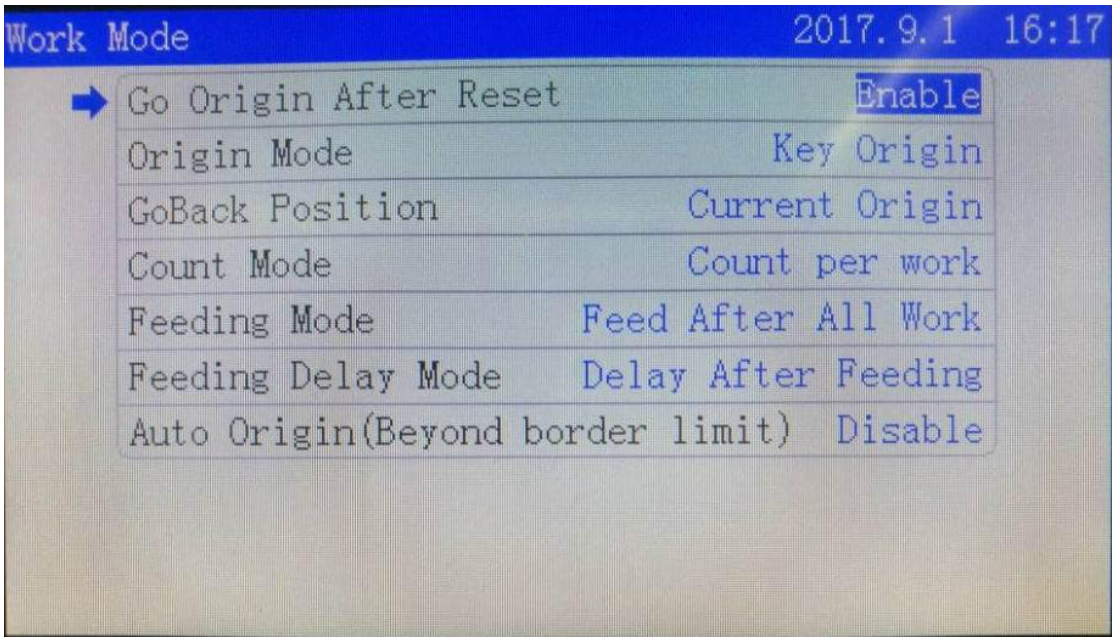
4.7. Common Parameters Settings

Go back to main menu and click【Common Parameters Settings】.



4.7.1. Work Mode

Click【Work Mode】and the interface will be like this.



Click【Go Origin After Reset】and you can choose *'Enable'* or *'Disable'* with【←】【→】.

Click【Origin Mode】and you can make choice of【Software Origin】【Machine Zero As Origin】【Current Position】【Key Origin】with【←】【→】.

Click【Go Back Position】 and you can switch over 【Go Back Machine Zero】【Current Position】【Current Origin】with【←】【→】.

Click【Count Mode】and you can make choice of【Count Per Work】【Count Per Light】【Single of Array】with【←】【→】.

- ***Go Origin After Reset***
  Machine is going to reset before laser head turning back to locating point, otherwise, it will stay at machine origin point.

- ***Origin Mode***
  Current origin refers to laser head staying at current position.
  Key origin refers to moving laser head by arrow keys to where you want and the coordinate position set is only the same as shown on panel but different from software.
  Software origin refers to pattern's coordinate position on software.
  Machine zero refers to locating point set coincident with machine zero.

- ***Go Back Position***
  Current Position means laser head staying exactly at the current position after finishing job.
  Current Origin refers to laser head going back to set locating point after finishing job.
  Go Back Machine Zero refers to laser head going back to machine zero directly after finishing job.

- ***Count Mode***
  Count Per Work refers to laser head cutting all the objects on one page that is counted as one.
  Count Per Light refers to laser beam lighting once that is counted as one.
  Single of Array refers to laser head cutting one pattern of one page that is counted as one.

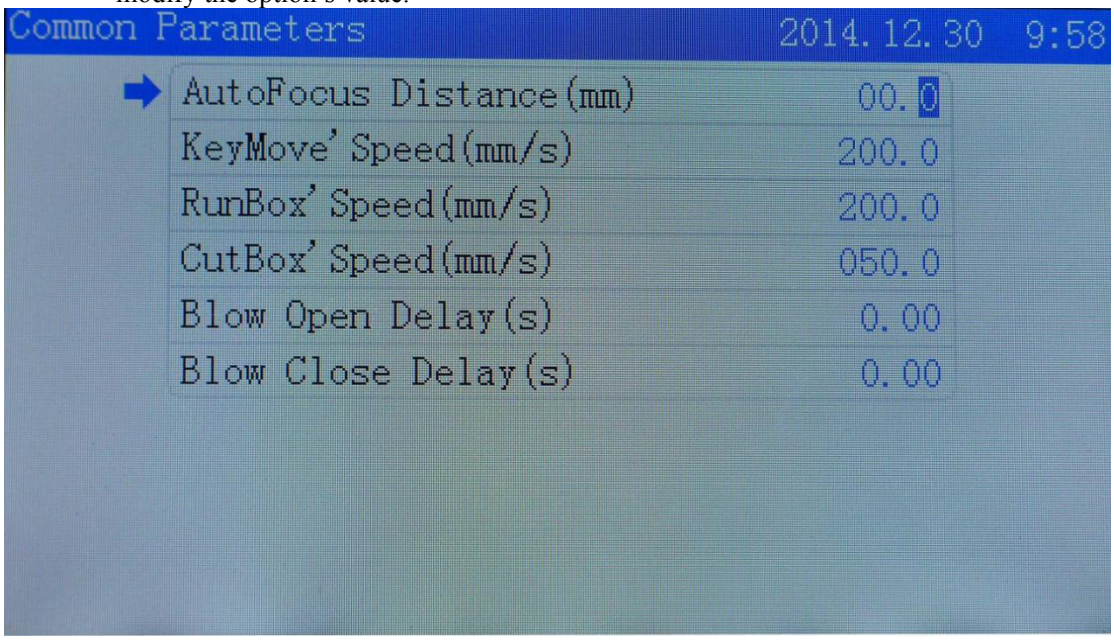
- ***Feeding Mode***
  Feed After All Work and *Feed After Array* is allowed to selected.

- ***Feeding Delay Mode***
  The time interval between the previous and next job when feeding.

- ***Auto Origin (Beyond Border Limit)***
  Dialogue box will pop up when graphic goes beyond border limit if this option is enabled.

4.7.2. Common Parameters

Go back to【Common Parameters Settings】and click【Common Parameters】. You can modify the option's value.



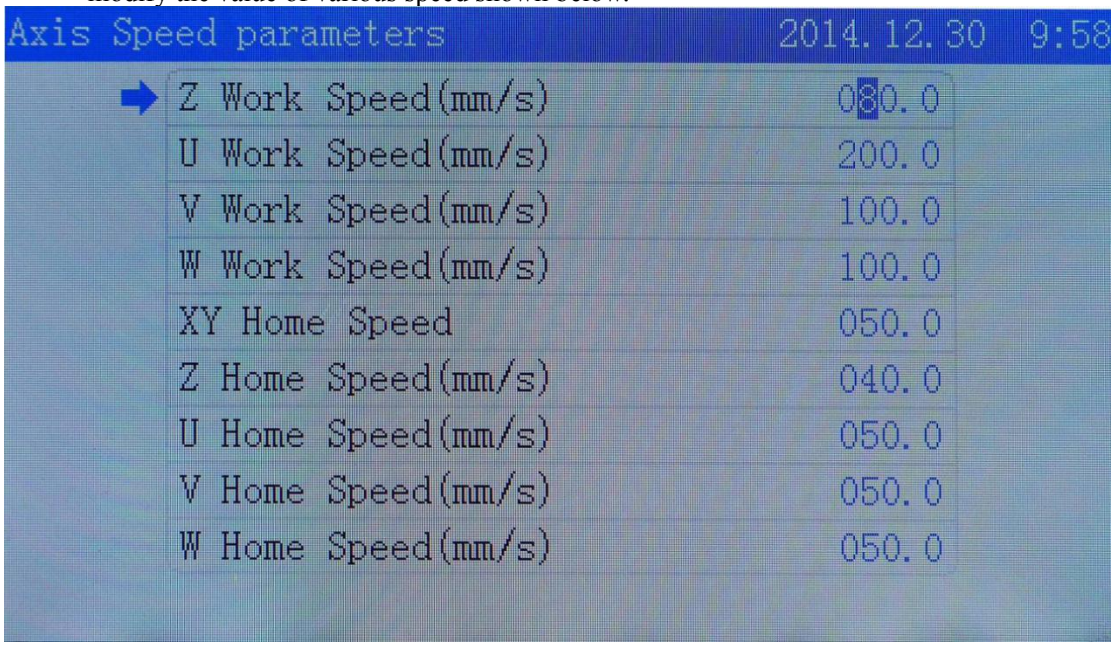
- ***AutoFocus Distance(mm)***

The distance between laser head's focus lens and origin point of Z axis.

- ***KeyMove'Speed(mm/s)***
  The speed of laser head moving on axis when pressing button on panel.
- ***RunBox' Speed(mm/s)***
  Laser head's speed of outlining cutting/engraving object area without laser powering on.
- ***CutBox's Speed(mm/s)***
  The speed of laser head cutting box with laser powering on.
- ***Blow Open Delay(s)***
  The delay at which the laser powers on.
- ***Blow Close Delay(s)***
  The delay at which the laser powers off.

4.7.3. Axis Speed Parameters

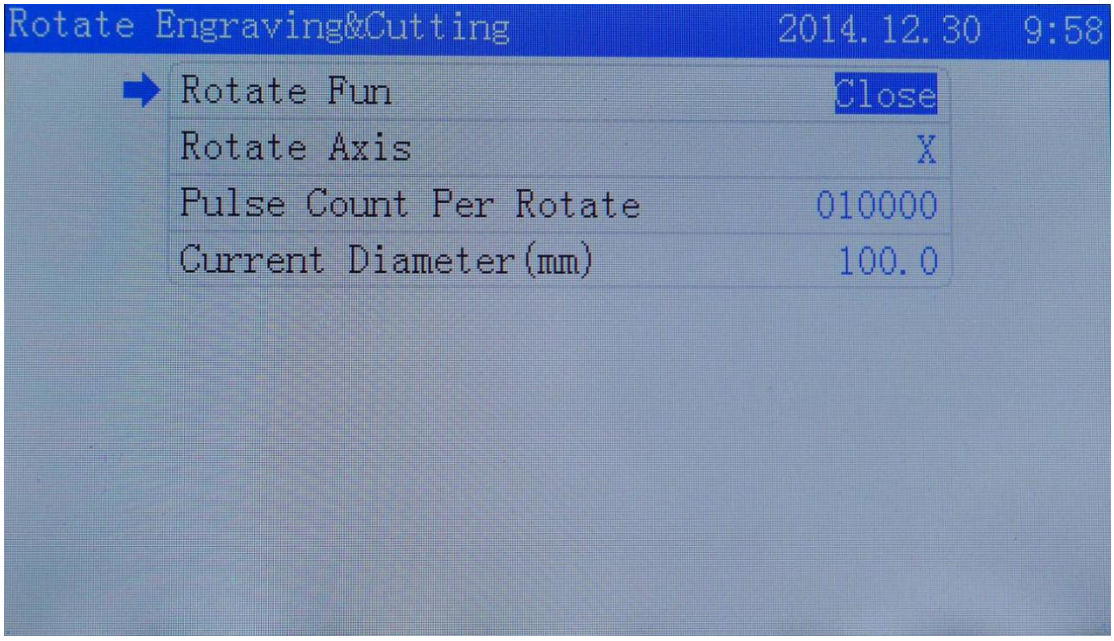
Go back to【Common Parameters Settings】, click【Axis Speed Parameters】and you can modify the value of various speed shown below.



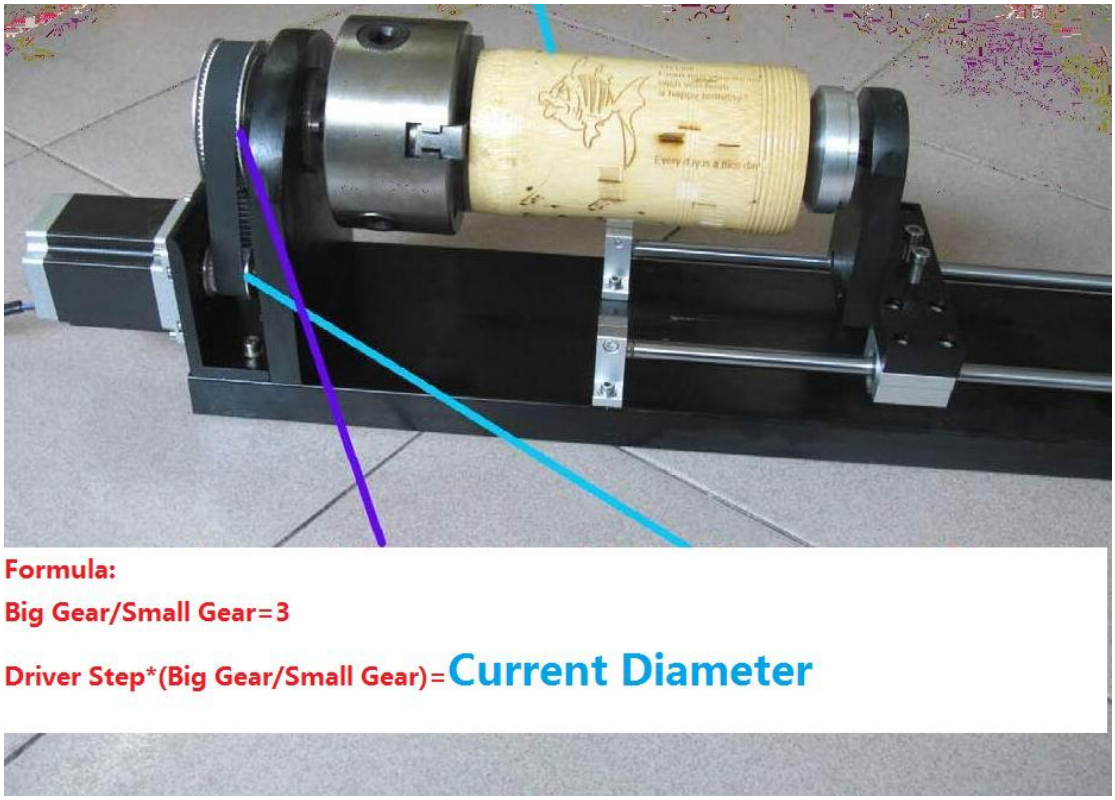
- ***Z/U/V/W Work Speed***
  The working speed of axis-Z/U/V/W.
- ***XY/Z/U/V/W Home Speed***
  The reset speed of axis-XY/Z/U/V/W.

4.7.4. Rotate Engraving&Cutting

Go back to 【Common Parameters Settings】, click 【Rotate Engraving&Cutting】. You can shift over with【←】【→】or modify the value.



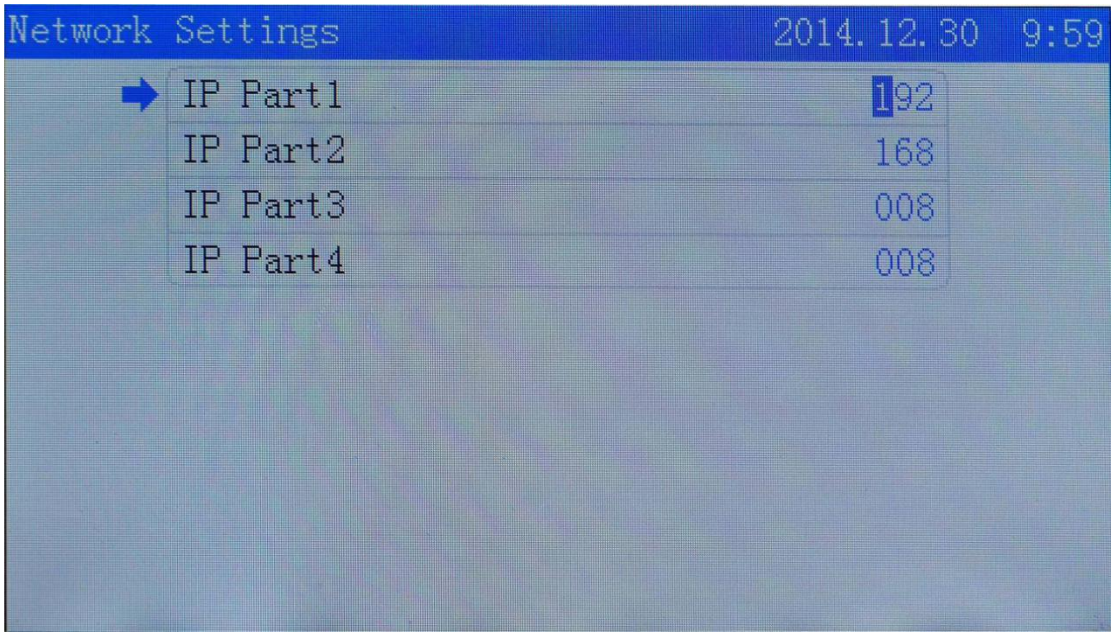
- ***Rotate Function***
  The switch of rotate engraving function. Click *open* when required.
- ***Rotate Axis***
  It is the rotating axis for rotating and engraving function.
- ***Pulse Count Per Rotate***
  The number of pulses refers to axis rotation per round. Users can change distance per pulse of X and Y axis by comparing the expected length of a rectangle drawing on a blank sheet of paper with actual length that is needed to be measured. (Please go see Distance Per Pulse in the following page).
- ***Current Diameter(mm)***
  The diameter of machining workpiece.



For example, driver step is 6400, then current diameter is 6400*3=19200. Notice: this formula is only applied for work-holding device like pic shown above.

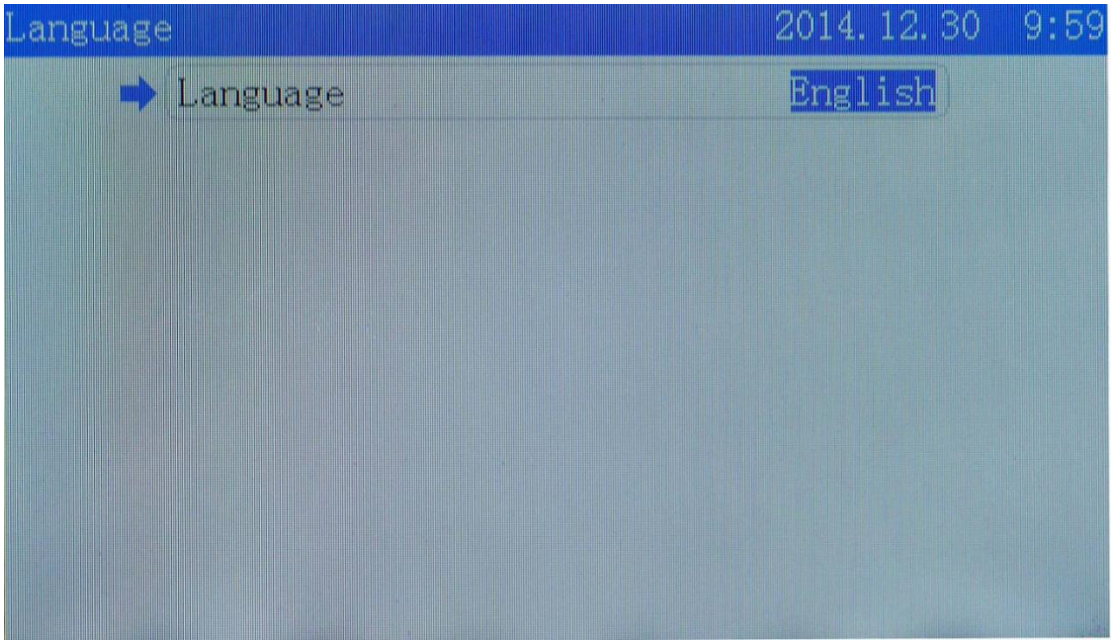
4.8. Network Settings

Go back to main menu, click【Network Settings】and you can modify the value.



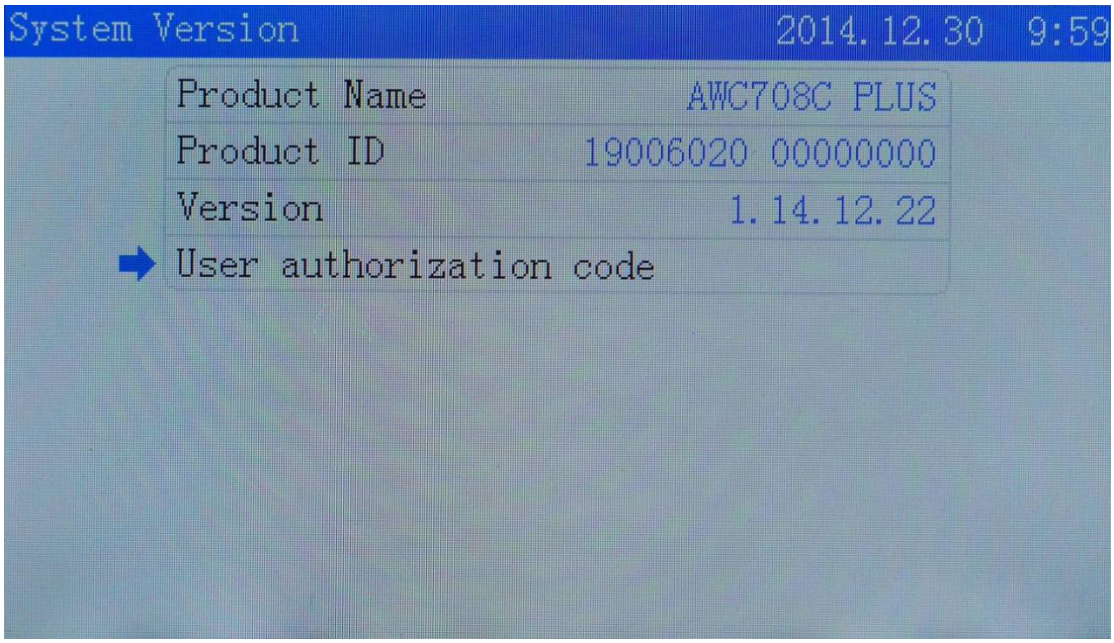
4.9. Language

Go back to main menu, click【Language】to change language that fits you.



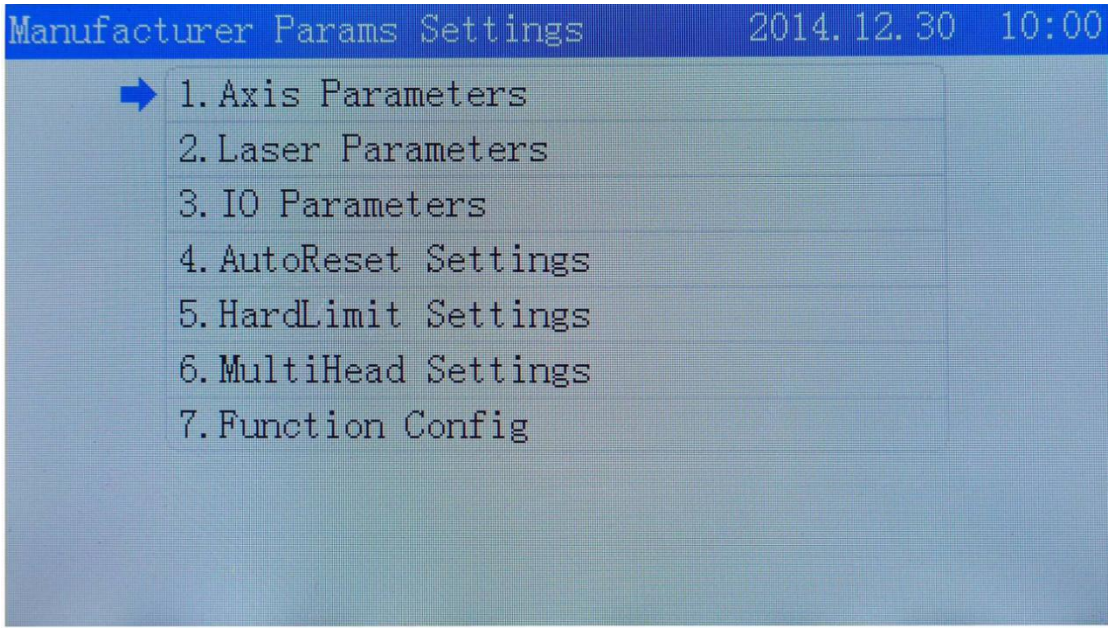
4.10. System Version

Go back to main menu, click【System Version】to go through system info.



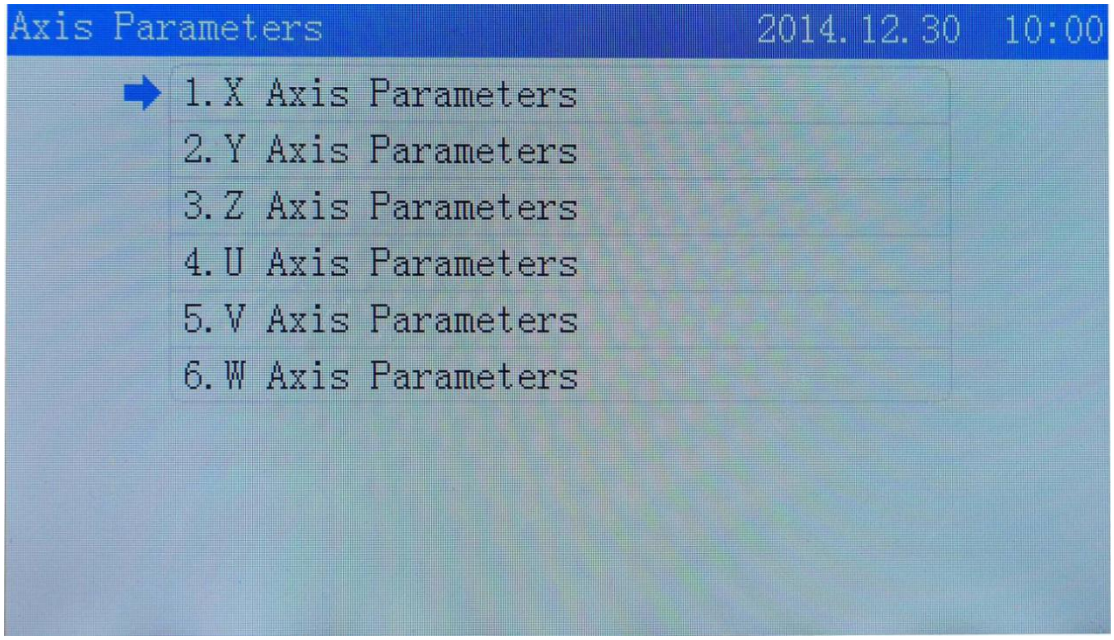
5. Manufacturer Parameters Settings

Go back to main menu, click key combination of 【Stop】and【6】【0】【8】 to shift to【Manufacturer Parameters Settings】.

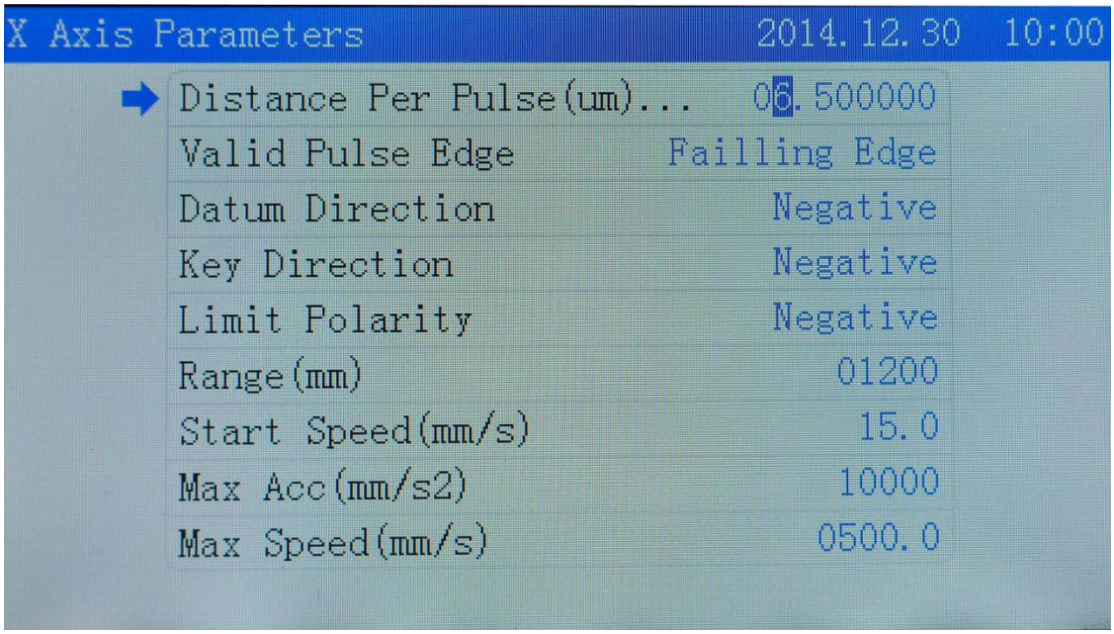


5.1. Axis Parameters

Go back to 【Manufacturer Parameters Settings】,click 【Axis Parameters】.

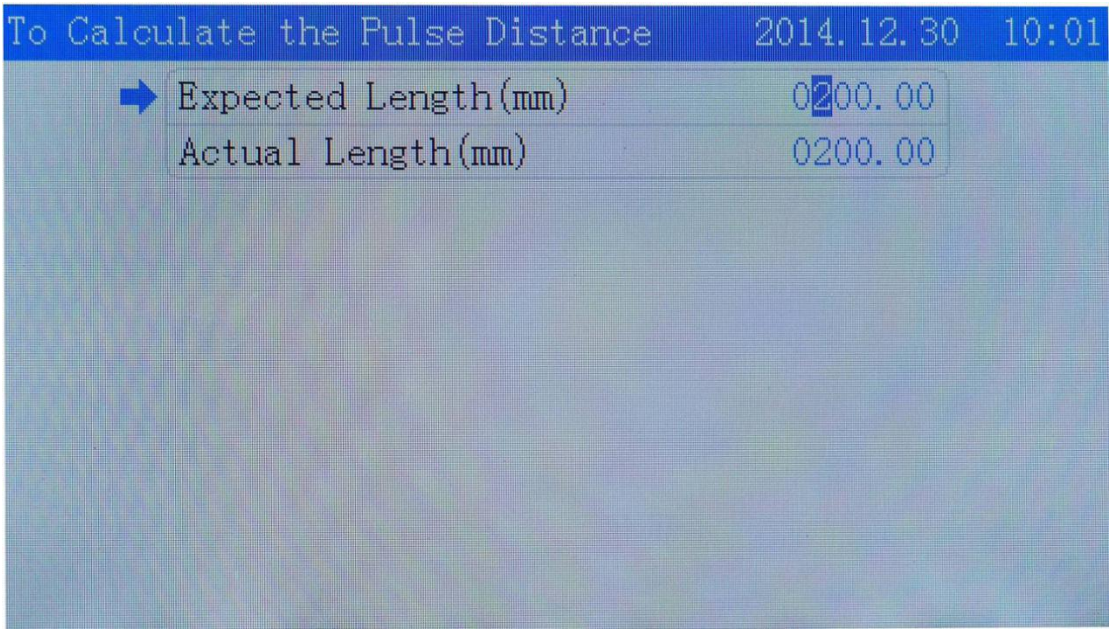


Click 【X Axis Parameters】and you will see the interface like below.



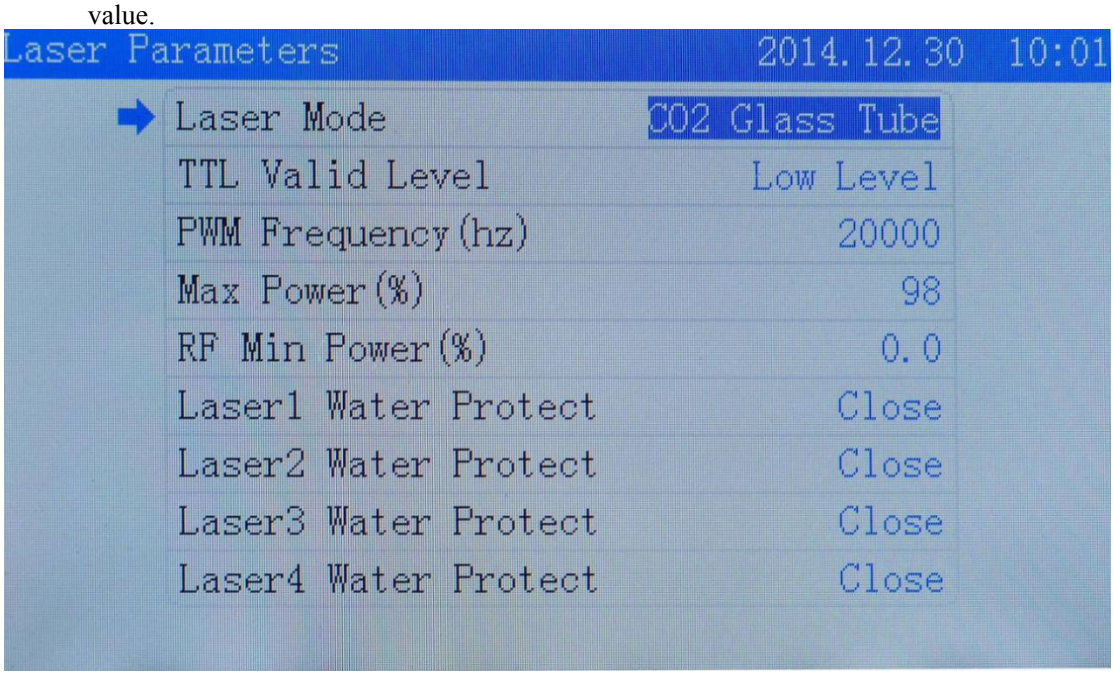
- ***Distance Per Pulse(um)***
  There is displacement when a single pulse output by controller. Wrong setting will cause pattern deformation.
- ***Valid Pulse Edge***
  It refers to valid value for logic level change of driver.
- ***Datum Direction***
  It refers to laser head's moving direction when resetting. Wrong reset will cause deviation for laser head's moving direction.
- ***Key Direction***
  It refers to laser head's moving direction when pressing arrow key on panel. Wrong setting will cause laser head moving on axis in the opposite direction.
- ***Limit Polarity***
  Logic level signal sent from limit switch to panel. Wrong setting will cause limit function failure.
- ***Range(mm)***
  The size of machine's working table.
- ***Start Speed(mm/s)***
  The initial speed of laser head from static condition to movement.
- ***Max Acc(mm/s2)***
  It should be filled in number with an increase or decrease of 50 or 100 at a time at least.
- ***Max Speed(mm/s)***
  Max speed that axis can stand.

  Go back to 【X Axis Parameters】, click【Distance Per Pulse】to modify expected length and actual length and you will get an auto value result of distance per pulse.



5.2. Laser Parameters

Go back to【Manufacturer Parameters Setting】, then click【Laser Parameters】to modify the value.

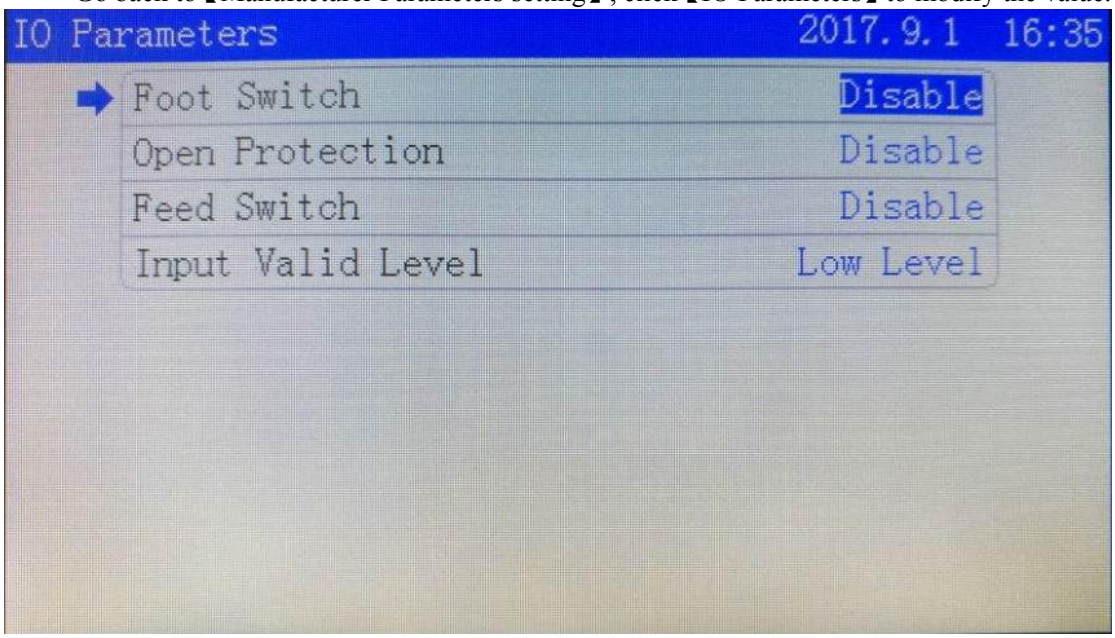


- ***Laser Mode***
  It refers to laser types.
- ***TTL Valid Level***
  It refers to logic level of laser head.
- ***PWM Frequency(hz)***
  It is used for setting pulse frequency of control signal for laser.
- ***Max Power(%)***
  Max power also known as limit power. You may not set the power higher than limit power. The power value will be showed in percent bar.
- ***RF Min Power(%)***
  Min power of laser tube.

- ***Laser Water Protect***
  Enable *water protection switch* when required.

5.3. IO Parameters

Go back to【Manufacturer Parameters setting】, click【IO Parameters】to modify the value.



- ***Foot Switch***
  Enable 【Foot switch】 when required.

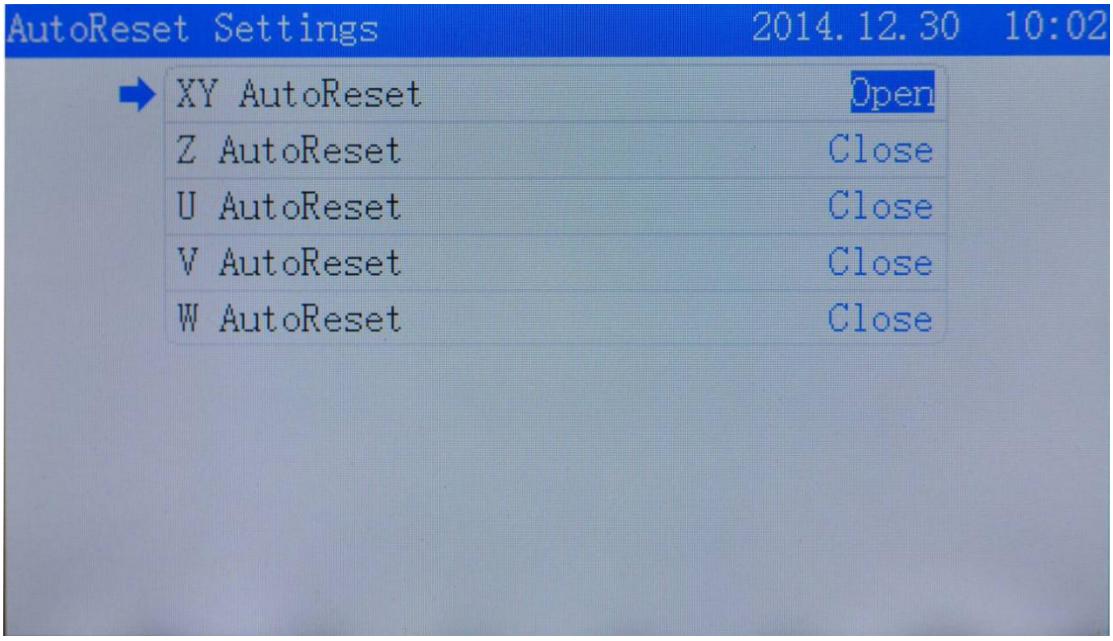
- ***Open Cover Protection***
  Enable 【Open Protection】when required.

- ***Feed Switch***
  Output signal.

- ***Input Valid Level***
  High/low level is allowed to selected.

5.4. Auto Reset Settings

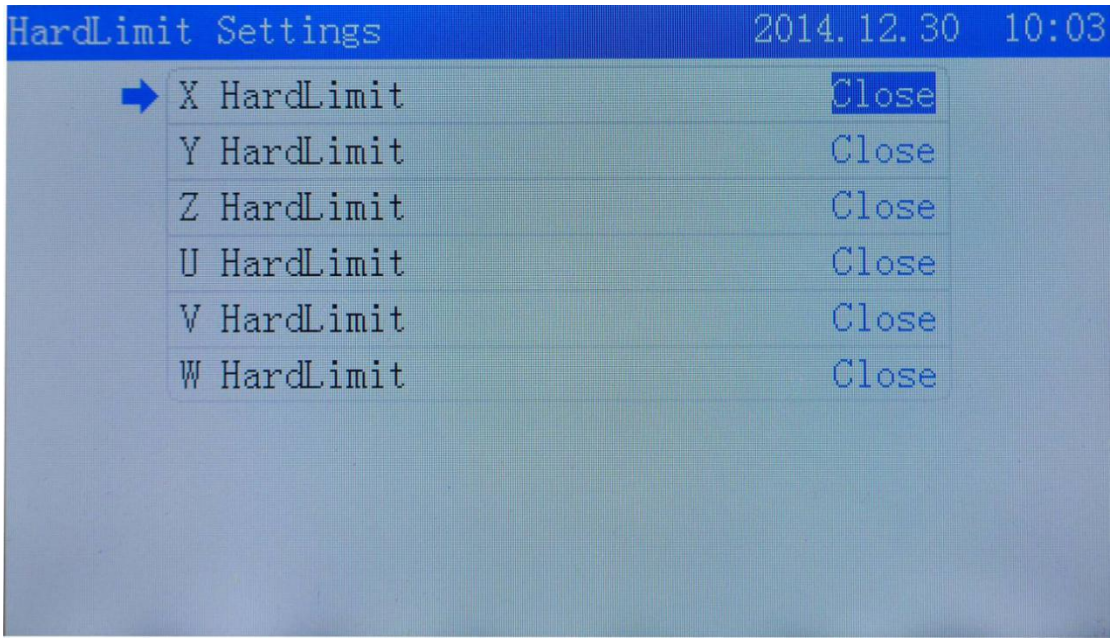
Go back to【Manufacturer Parameters Setting】, the click 【Auto Reset Settings】to modify the value.



- ***XY/Z/U/V/W Auto Reset***
  Enable *auto reset* when required.

5.5. Hard Limit Settings

Go back to 【Manufacturer Parameters Setting】, click【Hard Limit Settings】.



- ***X/Y/Z/U/V/W Hard Limit***
  Enable *hardware limit switch* when required.

5.6. Multi-Head Settings

Go back to【Manufacturer Parameters Setting】, click【Multi-Head Settings】.

- ***Nearer Laser for Leftover***
  The proximity principle. The laser head closest to leftover is going to cut it.

- ***ZX Head Space***
  The distance between X and Z axis (or the first head and second head) after reset. The first and second head here is predicated on reset state and laser head starts ordering from limit switch in axis positive direction.

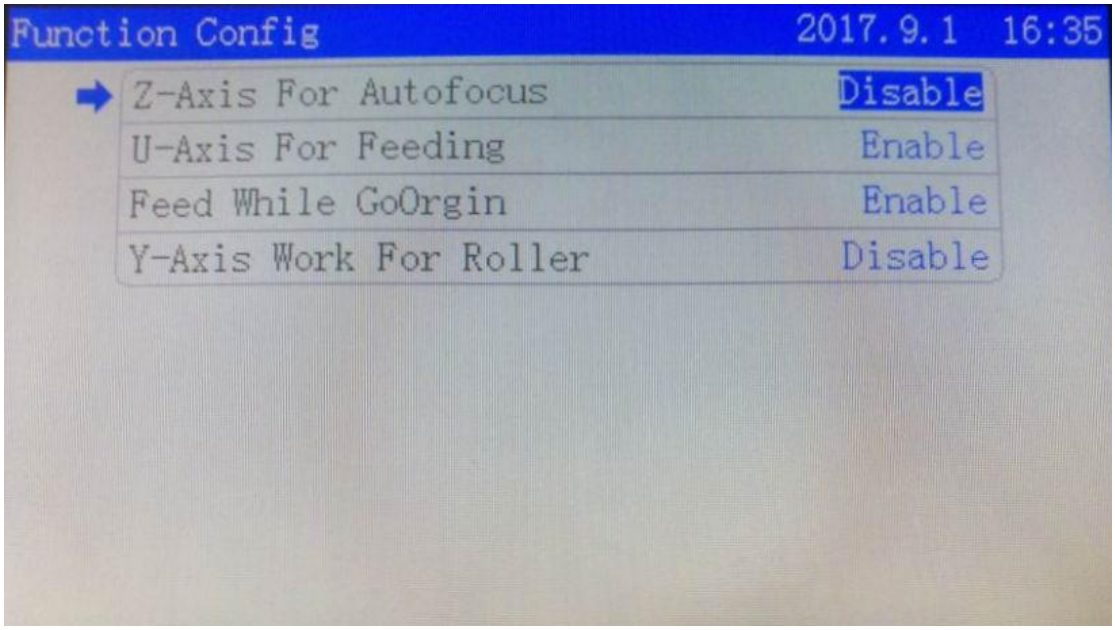
- ***VZ Head Space***
  The distance between Z and V axis (or the second head and third head) after reset. The second and third head here is predicated on reset state and laser head starts ordering from limit switch in axis positive direction.

- ***WV Head Space***
  The distance between V and W axis (or the third head and forth head) after reset. The third and forth head here is predicated on reset state and laser head starts ordering from limit switch in axis positive direction.

Notice: *Laser 1* should be connecting to *Laser 1* accordingly on wiring board and it cannot be connecting to *Laser 2* or any other port.

5.7. Function Config.

Go back to 【Manufacturer Parameters Setting】, then click【Function Config.】.



- ***Z For Autofocus***
  Enable auto focus when required.
- ***U For Feeding***
  Enable *U For Feeding* when required.
- ***Feed While GoOrigin***
  Feeding before going back to origin.
- ***Y Axis Work For Roller***
  For example, cutting a coil of rope.