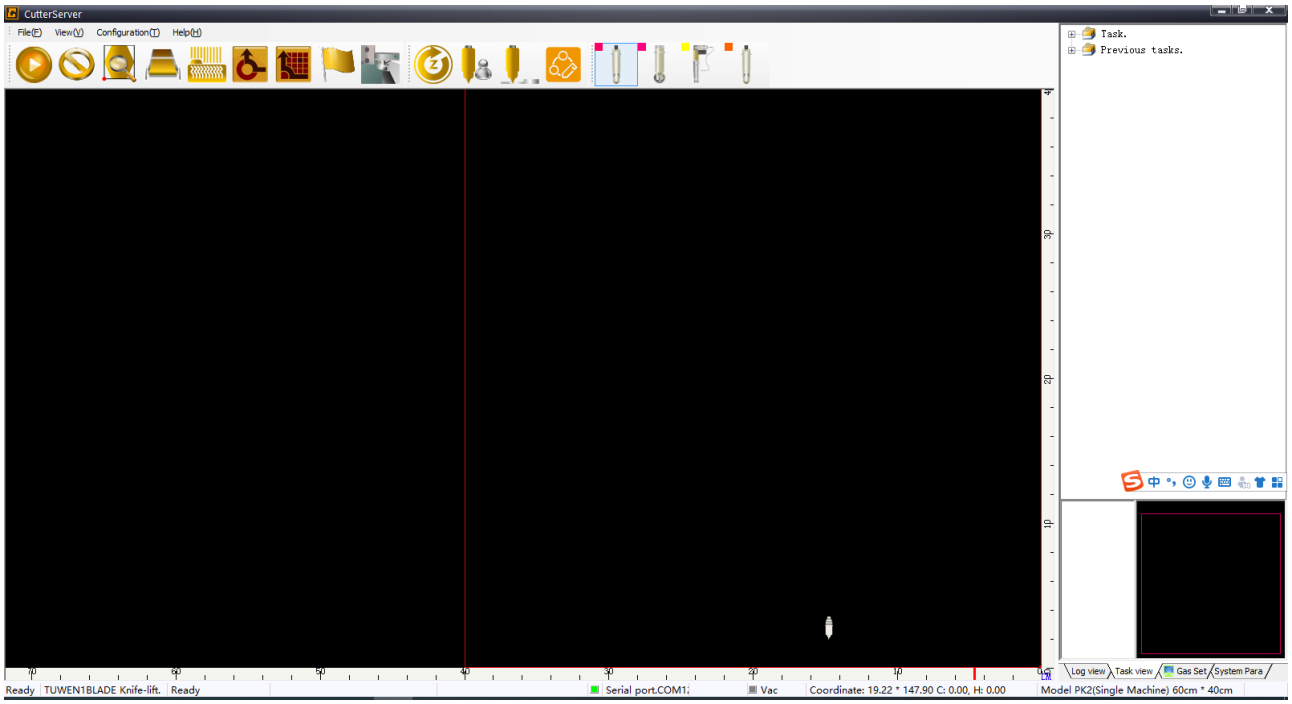
INSTRUCTION MANUAL FOR TESTING PK

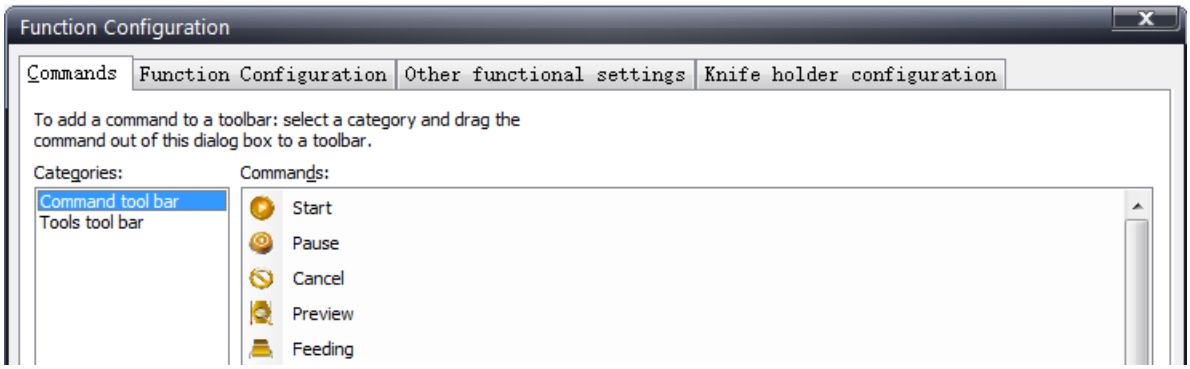
Note:

1. This document is applicable to whom have basic operating knowledge of IECHO machineries.
2. This document is version of July 2019, along with software's updates, testing methods will be simplified.

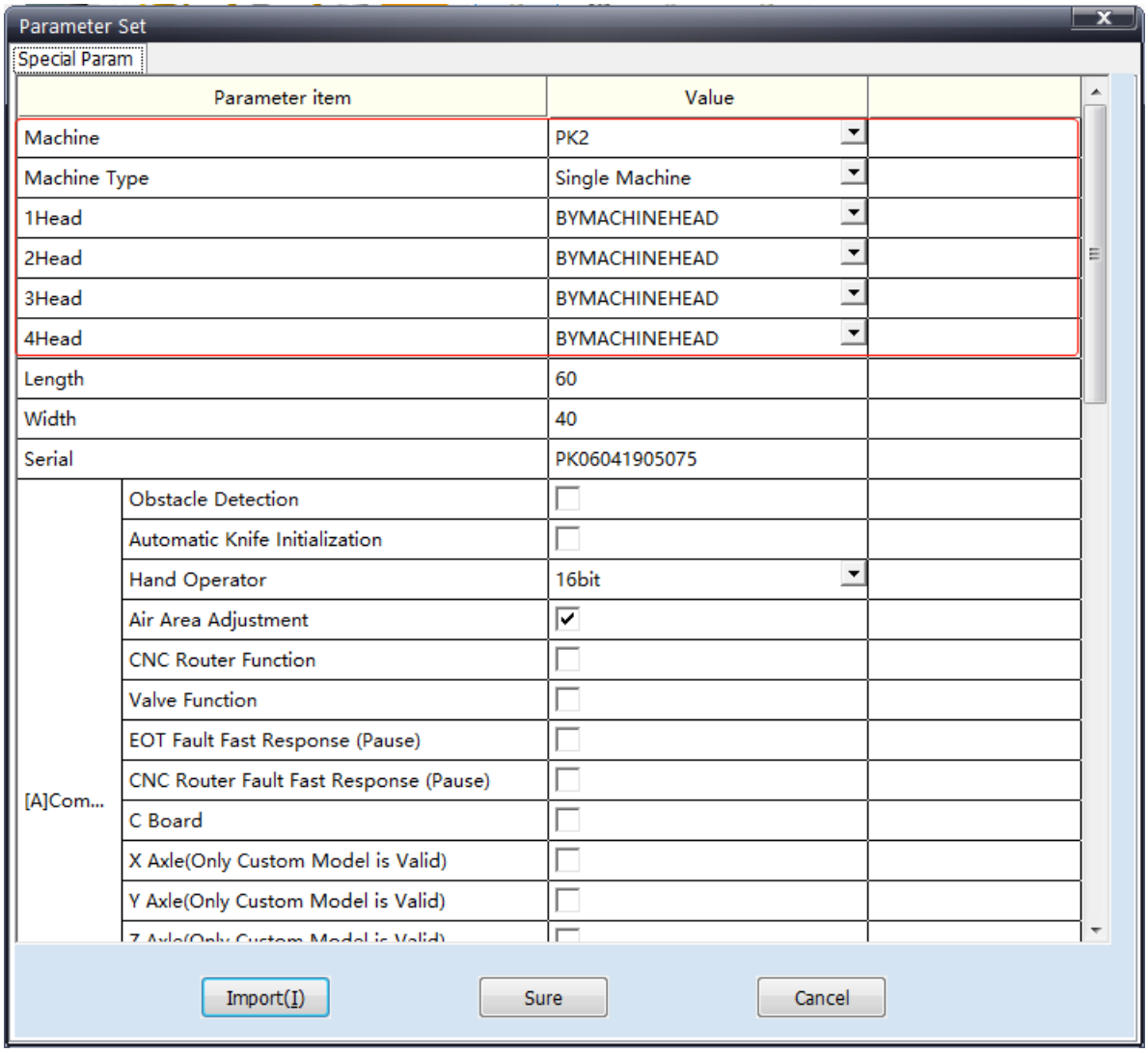
Software Interface



CUTTERSERVER interface in PK machines have a collecting material button icon. If cannot find it, press Ctrl+Alt+Shift+C, open function configuration window, add icon.



Special Parameters



Machine model choose PK2, machine heads are 4, set all type to BYMACHINEHEAD

Socket 1 is TW 1
Socket 2 is CREASE
Socket 3 is EOT
Socket 4 is TW 2

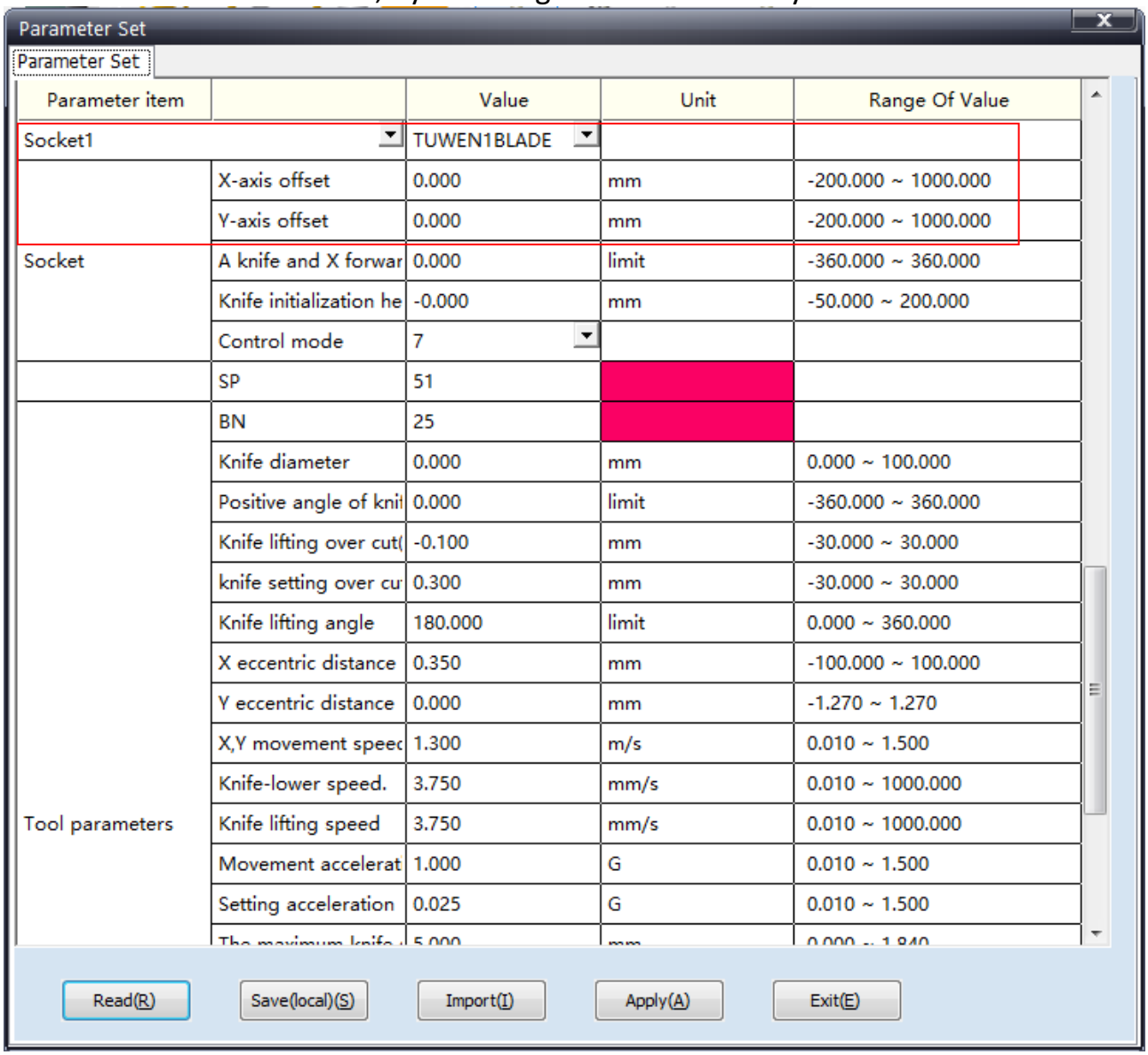
Correspondence of sockets and tools is fixed. Machines without EOT can remove socket 3 icon in function configuration window.

Machine origin and socket offset

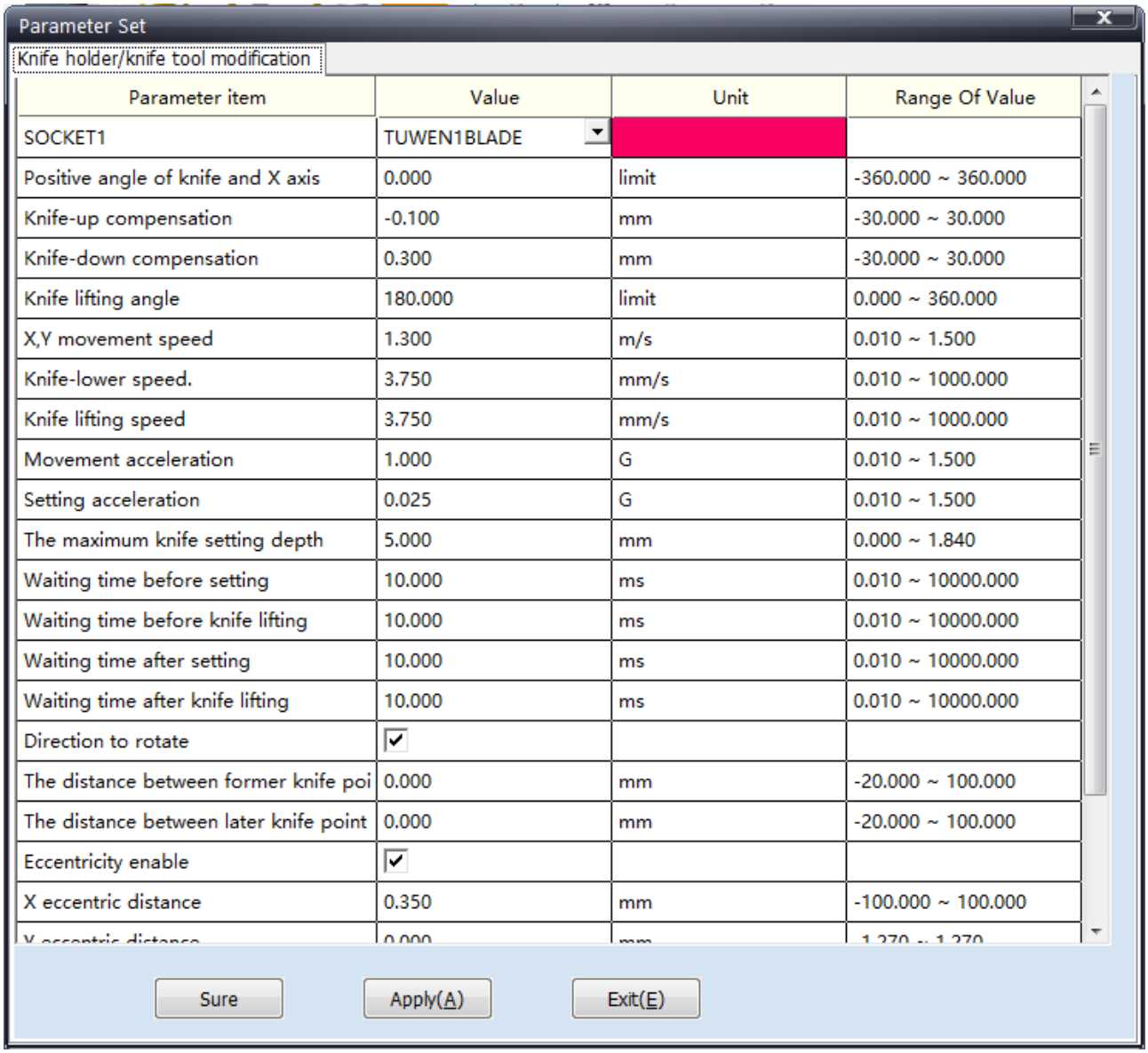
The machine does not have red dot, can set both coordinate of socket 1 and red dot to (0,0), adjust offset of other sockets referring socket 1.

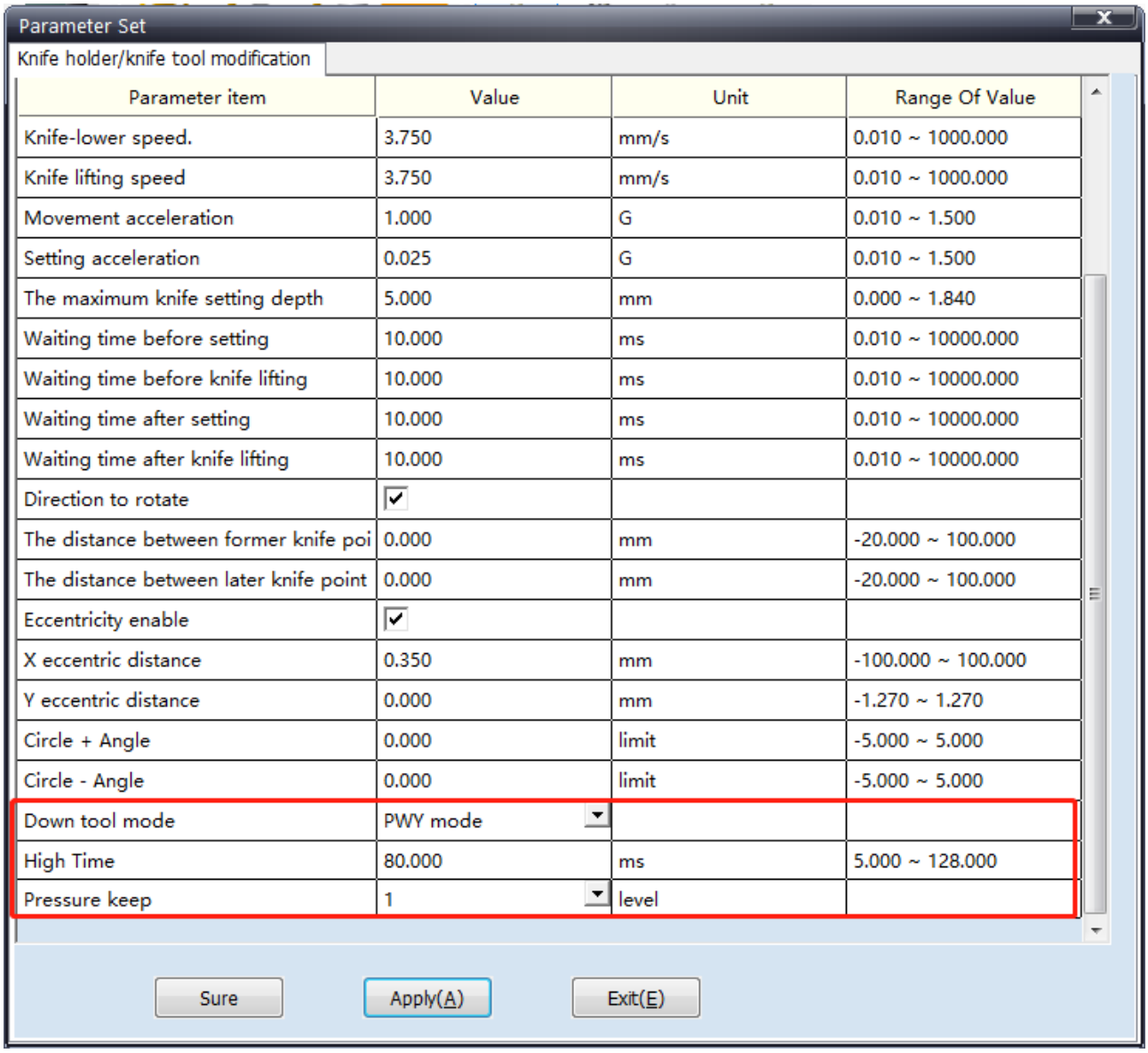
First have to check machine origin, when socket 1 is activated, by changing origin parameter of the machine, set socket 1 in the corner of the table, move the machine head and observe moving range of socket 1, make sure cutting area of socket 1 is inside 600*400 and centered.

Following socket offset configuration method, adjust respectively for socket 2,3,4 offset in relative to socket 1, by selecting socket and modify X and Y axis offset value.



TUWEN blade configuration





Three new parameters added for Tuwen blade:
Down tool mode: set to PWM mode.
High time: full power working time of electromagnet when down tool starts.
Pressure keep: tool pressure when is down, there are 5 levels, level 1 is the lowest.

An important parameter of Tuwen blade
X eccentric distance: for 1.5 blade normally set to 0.8

For Tuwen blade there is not knife setting depth, to cut materials of different thickness, need to adjust blade length and pressure. Blade length need to be adjusted manually, by rotating knife cap to adjust knife length exposed. Change pressure by setting “pressure keep” parameter.

Creasing tool configuration

Except parameters of knife setting depth, knife lower speed and acceleration are not working, the rest are same as BK,TK machines.

Creasing tool depth adjustment:
Rotate manually knob on the head, clockwise to lift, anti-clockwise to lower. To check knife lower height can operate on software, let it down to observe.
When changing different thickness of materials, adjust depth relatively.

Creasing tool pressure adjustment:
Adjust manually pressure regulator, normally no more than 0.4MPa

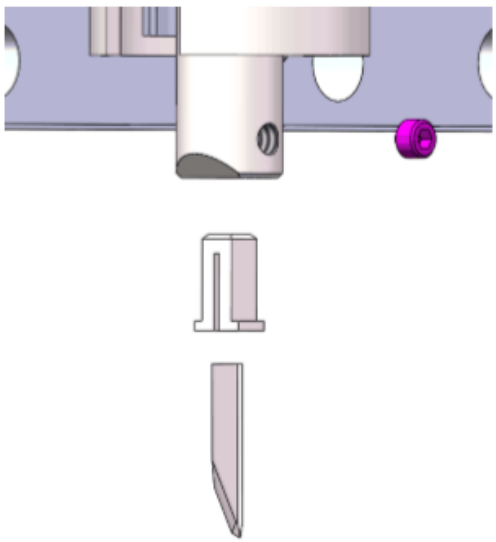
Oscillating tool configuration

Except parameters of knife setting depth, knife lower speed and acceleration are not working, the rest are same as BK,TK machines.
Note normally oscillating tool on PK model, X eccentric value should be set to 2 theoretically.

Oscillating tool depth adjustment:
Rotate manually knob on the head, clockwise to lift, anti-clockwise to lower. Can push knob to let blade down, to observe down depth.

Oscillating tool pressing plate pressure adjustment:
Adjust manually pressure regulator, normally no more than 0.4MPa

Oscillating tool blade changing:
Turn off the machine, move machine head to side, rotate oscillating tool to appropriate angle to loose screw. Install new blade following picture shown below. Pay attention to install blade in proper direction.



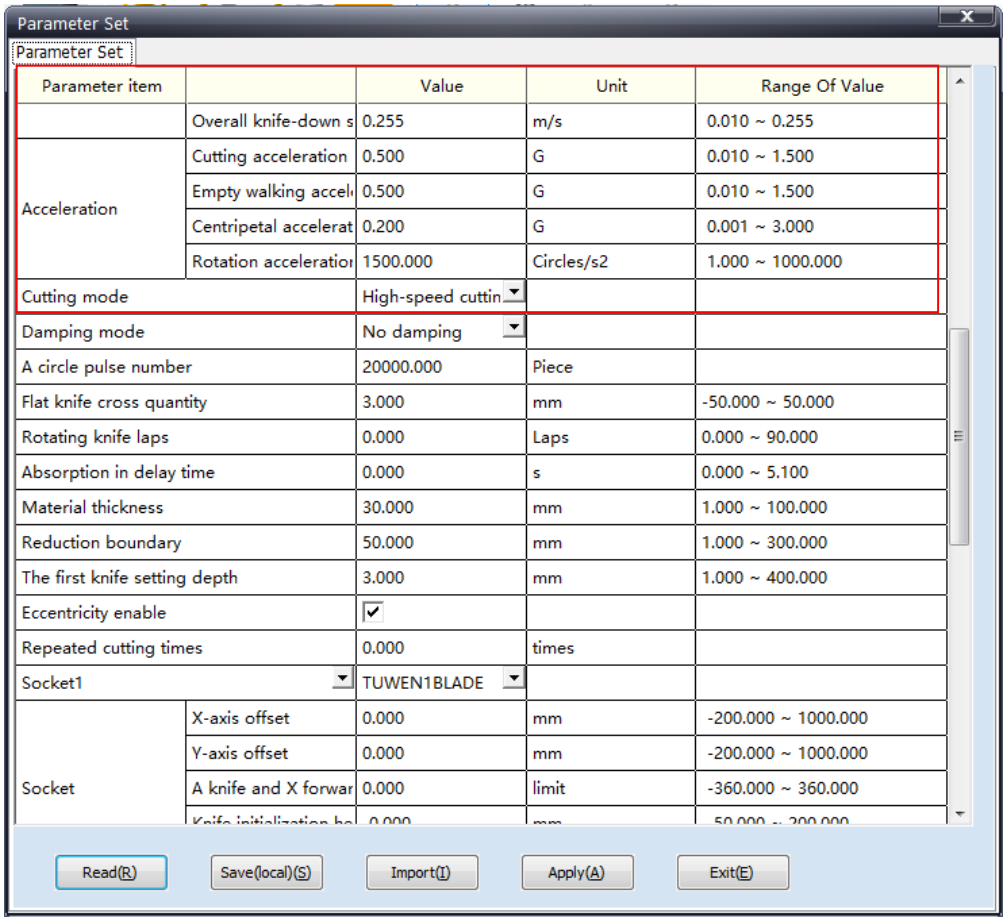
Parameters related to PK

Parameter Set

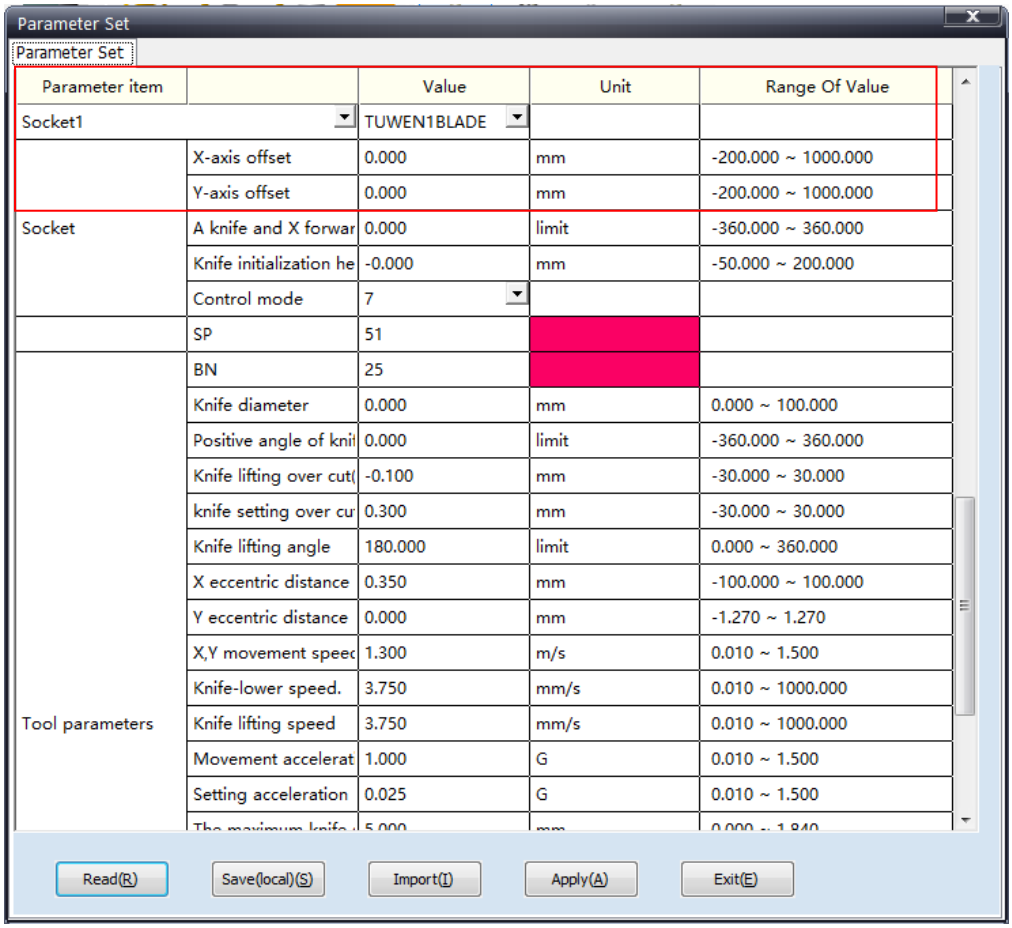
Parameter Set

Parameter item		Value	Unit	Range Of Value
Adjustment	Measured length	1000.000	mm	0.000 ~ 60000.000
	Scheduled length	1000.000	mm	0.000 ~ 60000.000
Cutting scope	Length	600.000	mm	0.000 ~ 600.000
	Width	400.000	mm	0.000 ~ 400.000
Origin coordinates...	X-axis offset	150.000	mm	-500.000 ~ 600.000
	Y-axis offset	45.000	mm	-500.000 ~ 400.000
Pen offset	X offset	0.000	mm	-200.000 ~ 1000.000
	Y offset	0.000	mm	-200.000 ~ 1000.000
Red-light position	X offset	0.000	mm	-200.000 ~ 1000.000
	Y offset	0.000	mm	-200.000 ~ 1000.000
Camera	X offset	5.000	mm	-200.000 ~ 1000.000
	Y offset	5.000	mm	-200.000 ~ 1000.000
	Height	0.000	mm	0.000 ~ 300.000
Feeding	Feeding length	0.800	m	-50.000 ~ 50.000
	Feeding speed.	0.600	m/s	0.050 ~ 0.600
	Material press time	3.000	s	0.000 ~ 100.000
Speed	Minimum speed	0.006	m/s	0.001 ~ 0.020
	Cutting speed.	0.500	m/s	0.010 ~ 1.500
	Idling speed	0.500	m/s	0.010 ~ 1.500
	Knife lifting speed	1000.000	mm/s	1.000 ~ 10000.000
	Knife lower speed	1000.000	mm/s	1.000 ~ 10000.000

Read(R) Save(local)(S) Import(I) Apply(A) Exit(E)

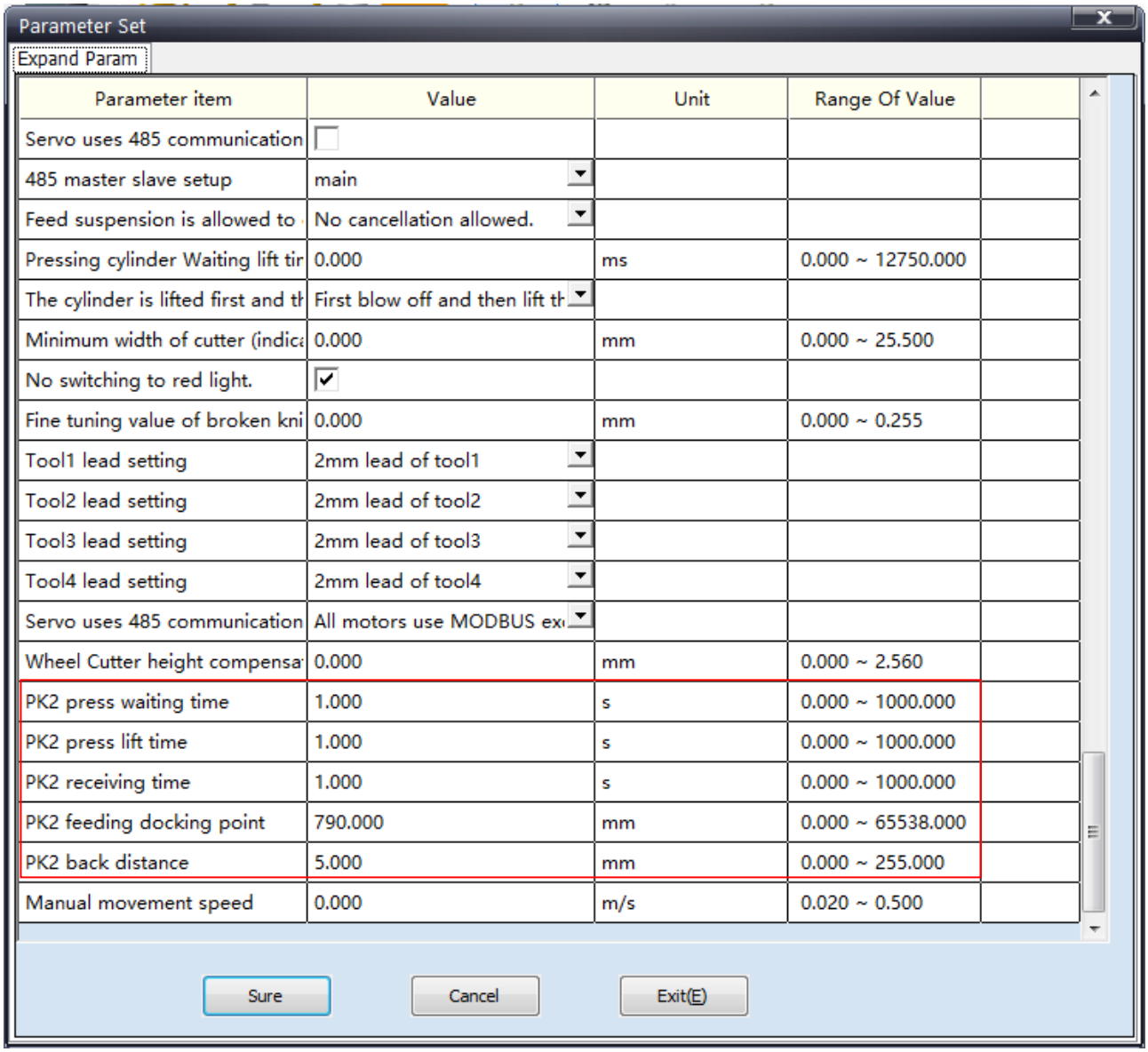


Parameter item		Value	Unit	Range Of Value
	Overall knife-down s	0.255	m/s	0.010 ~ 0.255
Acceleration	Cutting acceleration	0.500	G	0.010 ~ 1.500
	Empty walking accel	0.500	G	0.010 ~ 1.500
	Centripetal accelerat	0.200	G	0.001 ~ 3.000
	Rotation acceleratior	1500.000	Circles/s2	1.000 ~ 1000.000
Cutting mode		High-speed cuttin		
Damping mode		No damping		
A circle pulse number		20000.000	Piece	
Flat knife cross quantity		3.000	mm	-50.000 ~ 50.000
Rotating knife laps		0.000	Laps	0.000 ~ 90.000
Absorption in delay time		0.000	s	0.000 ~ 5.100
Material thickness		30.000	mm	1.000 ~ 100.000
Reduction boundary		50.000	mm	1.000 ~ 300.000
The first knife setting depth		3.000	mm	1.000 ~ 400.000
Eccentricity enable		✔		
Repeated cutting times		0.000	times	
Socket1		TUWEN1BLADE		
Socket	X-axis offset	0.000	mm	-200.000 ~ 1000.000
	Y-axis offset	0.000	mm	-200.000 ~ 1000.000
	A knife and X forwar	0.000	limit	-360.000 ~ 360.000
	Knife initialization he	0.000	mm	50.000 ~ 200.000

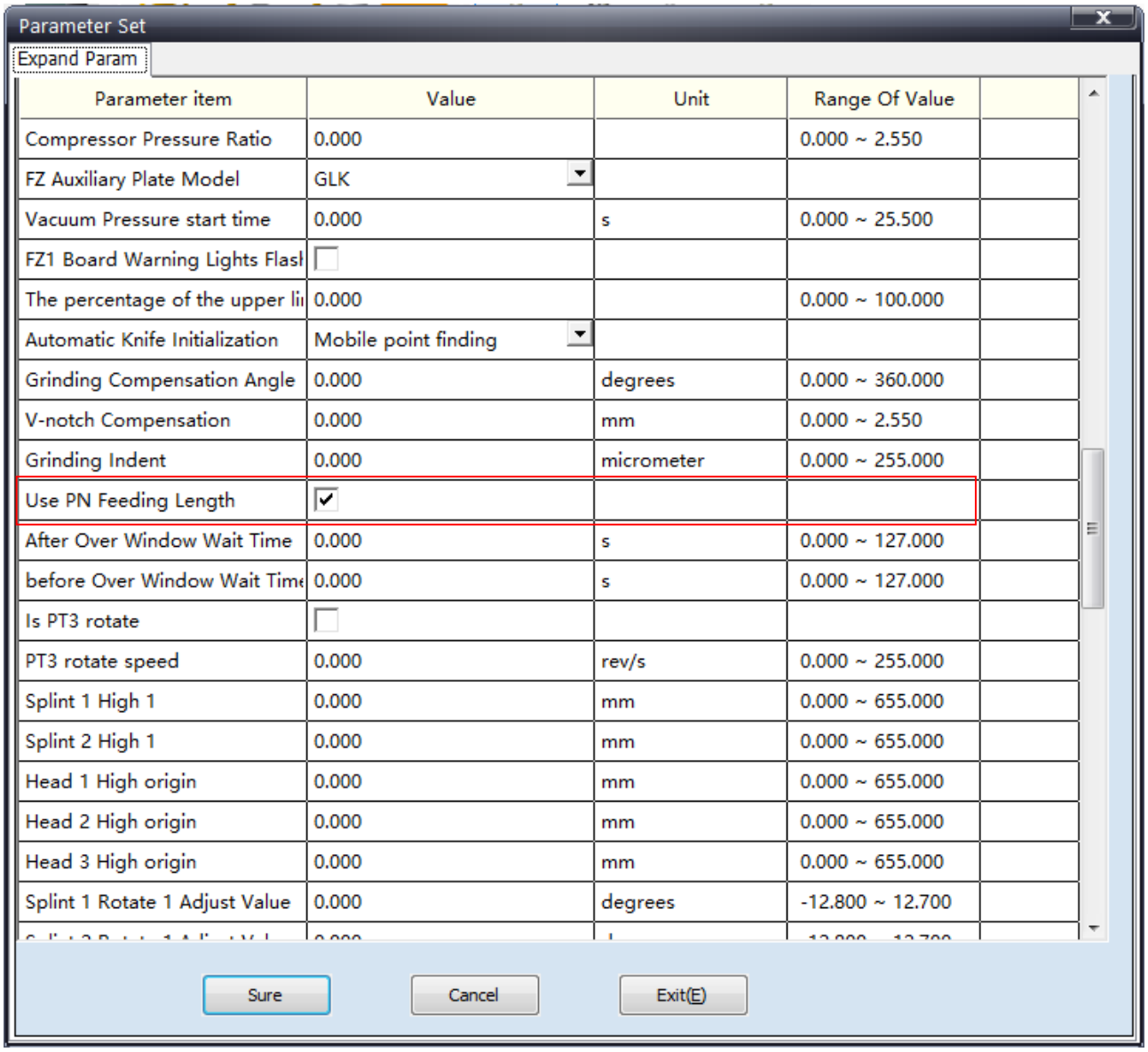


Parameter item		Value	Unit	Range Of Value
Socket1		TUWEN1BLADE		
	X-axis offset	0.000	mm	-200.000 ~ 1000.000
	Y-axis offset	0.000	mm	-200.000 ~ 1000.000
Socket	A knife and X forwar	0.000	limit	-360.000 ~ 360.000
	Knife initialization he	-0.000	mm	-50.000 ~ 200.000
	Control mode	7		
	SP	51		
	BN	25		
Tool parameters	Knife diameter	0.000	mm	0.000 ~ 100.000
	Positive angle of knif	0.000	limit	-360.000 ~ 360.000
	Knife lifting over cut(	-0.100	mm	-30.000 ~ 30.000
	knife setting over cu	0.300	mm	-30.000 ~ 30.000
	Knife lifting angle	180.000	limit	0.000 ~ 360.000
	X eccentric distance	0.350	mm	-100.000 ~ 100.000
	Y eccentric distance	0.000	mm	-1.270 ~ 1.270
	X,Y movement speec	1.300	m/s	0.010 ~ 1.500
	Knife-lower speed.	3.750	mm/s	0.010 ~ 1000.000
	Knife lifting speed	3.750	mm/s	0.010 ~ 1000.000
	Movement accelerat	1.000	G	0.010 ~ 1.500
	Setting acceleration	0.025	G	0.010 ~ 1.500
	The maximum knife	5.000	mm	0.000 ~ 1.840

Expand parameter

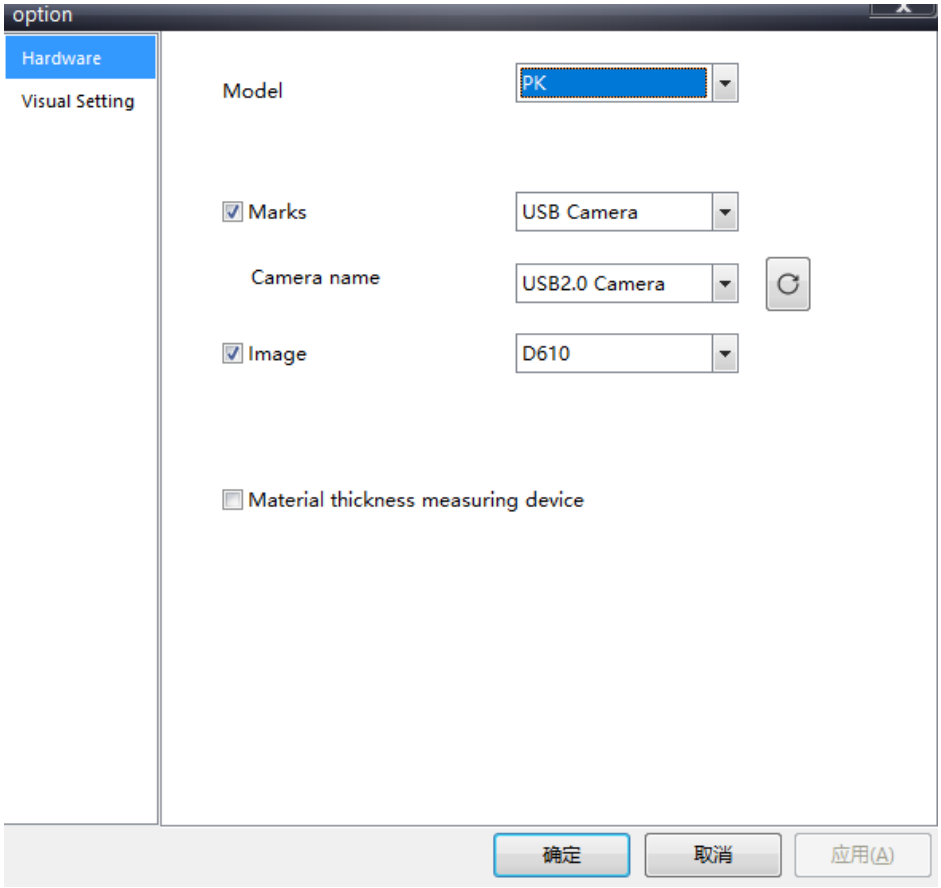


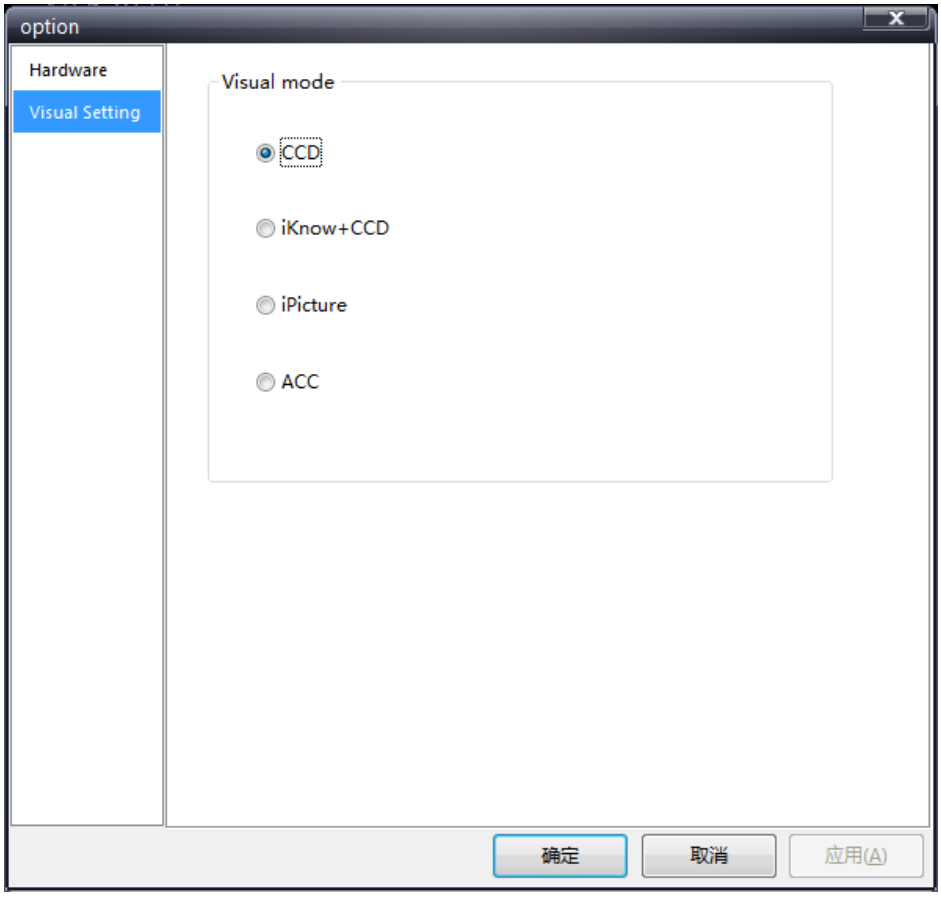
PK2 press waiting time: waiting time after suction cylinder lower down
PK2 press lift time: beam's waiting time after suction cylinder lift up.
PK2 receiving time: material collecting motor's working time when material collecting starts.
PK2 feeding docking point: while feeding, position which beam will move to (position where suction cylinder takes the material).
PK2 back distance: After suction cylinder lift up, distance of the material pushed back. This function is for separating materials. Set to 0 for disable the function.


Parameter Set
Expand Param
Parameter item
Value
Unit
Range Of Value
Compressor Pressure Ratio
0.000
0.000 ~ 2.550
FZ Auxiliary Plate Model
GLK
Vacuum Pressure start time
0.000
s
0.000 ~ 25.500
FZ1 Board Warning Lights Flash
The percentage of the upper li
0.000
0.000 ~ 100.000
Automatic Knife Initialization
Mobile point finding
Grinding Compensation Angle
0.000
degrees
0.000 ~ 360.000
V-notch Compensation
0.000
mm
0.000 ~ 2.550
Grinding Indent
0.000
micrometer
0.000 ~ 255.000
Use PN Feeding Length
After Over Window Wait Time
0.000
s
0.000 ~ 127.000
before Over Window Wait Time
0.000
s
0.000 ~ 127.000
Is PT3 rotate
PT3 rotate speed
0.000
rev/s
0.000 ~ 255.000
Splint 1 High 1
0.000
mm
0.000 ~ 655.000
Splint 2 High 1
0.000
mm
0.000 ~ 655.000
Head 1 High origin
0.000
mm
0.000 ~ 655.000
Head 2 High origin
0.000
mm
0.000 ~ 655.000
Head 3 High origin
0.000
mm
0.000 ~ 655.000
Splint 1 Rotate 1 Adjust Value
0.000
degrees
-12.800 ~ 12.700
Sure
Cancel
Exit(E)

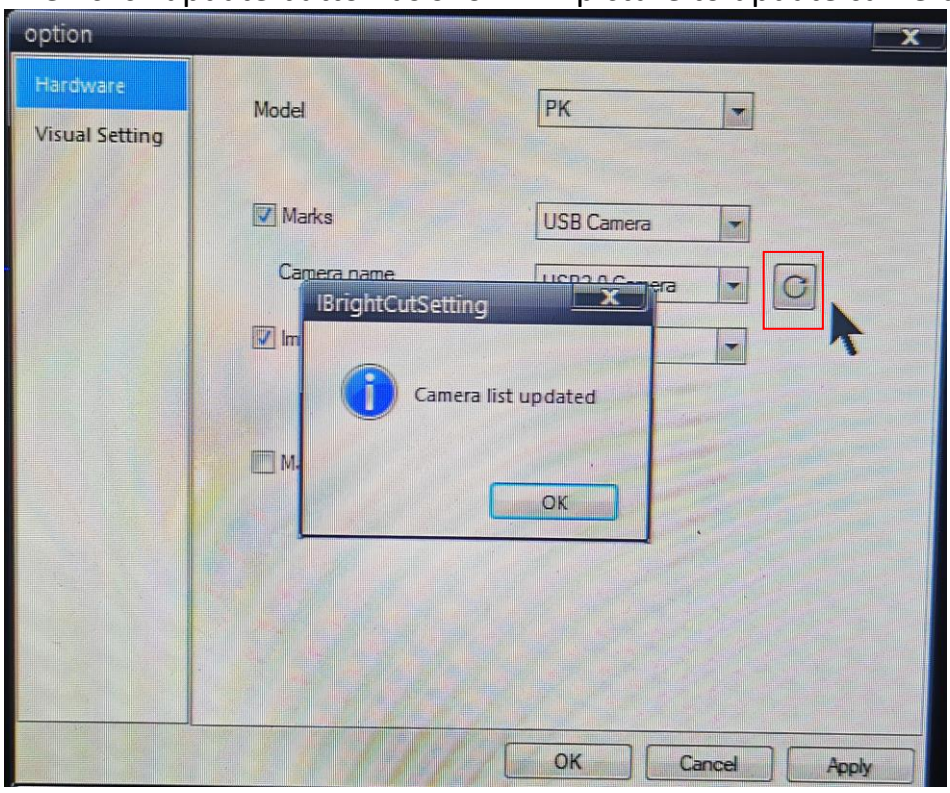
Camera configuration

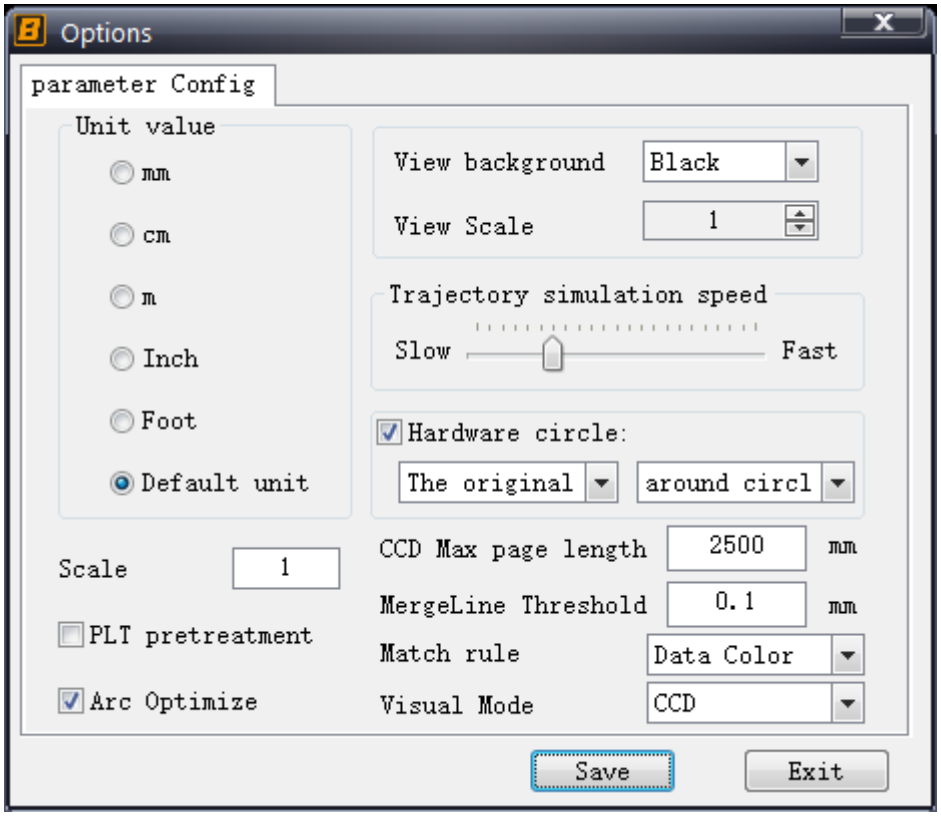
IBrightCut Settings >> Hardware configuration, settings as per pictures below.





Then click update button as shown in picture to update camera list.

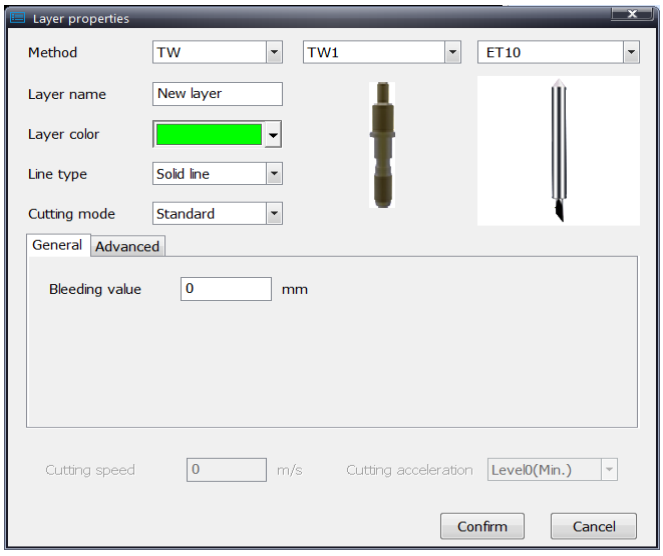




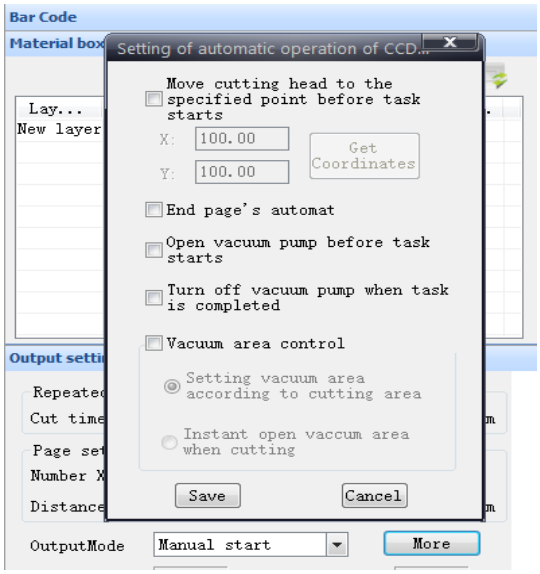
Camera offset adjustment

(1) Create layer

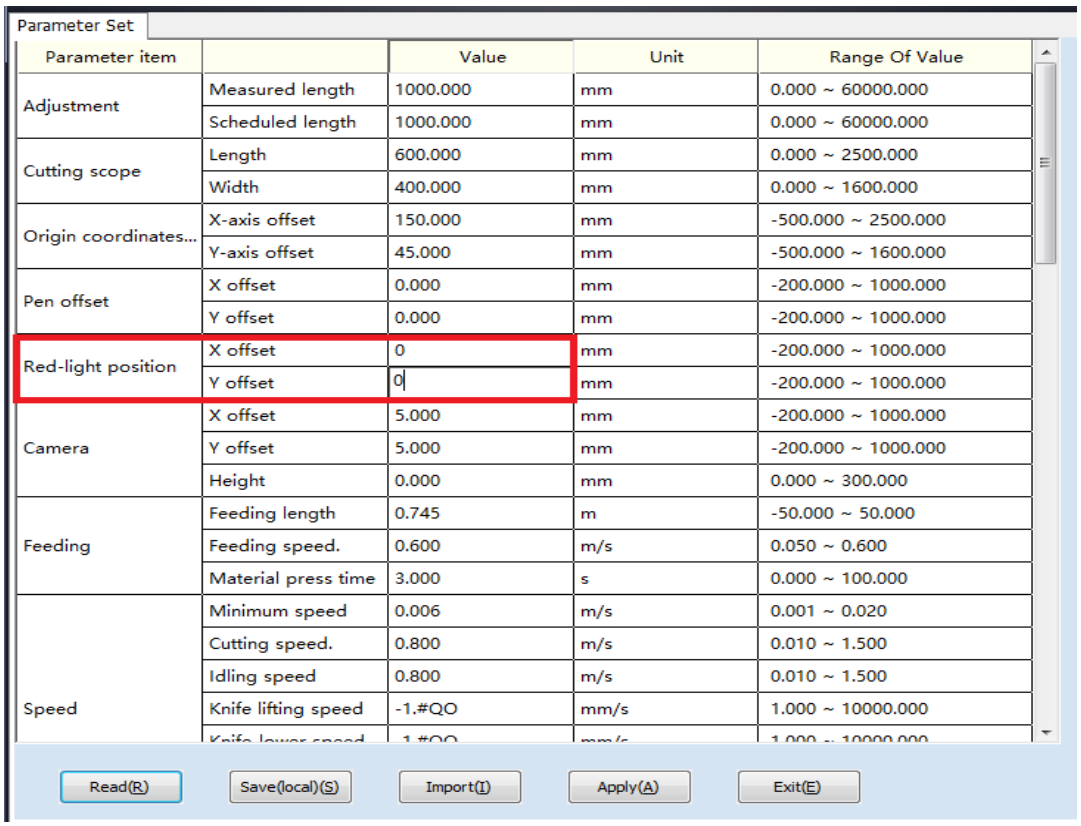
Click  create a new layer, double click on this layer, set layer configuration as TW and choose TW1 tool, click ‘save’



Click MORE in output settings, and do not select any feature in this interface

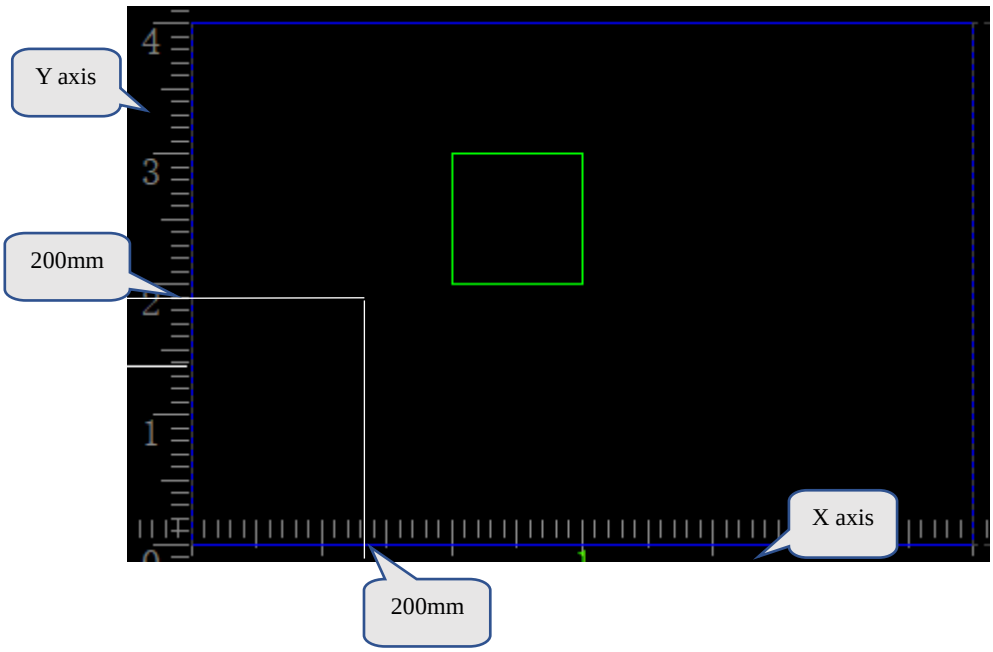


(2) Press Shift+Ctrl+Alt+P keys. Set red-light position coordinates as (0,0)mm.



Parameter item		Value	Unit	Range Of Value
Adjustment	Measured length	1000.000	mm	0.000 ~ 60000.000
	Scheduled length	1000.000	mm	0.000 ~ 60000.000
Cutting scope	Length	600.000	mm	0.000 ~ 2500.000
	Width	400.000	mm	0.000 ~ 1600.000
Origin coordinates...	X-axis offset	150.000	mm	-500.000 ~ 2500.000
	Y-axis offset	45.000	mm	-500.000 ~ 1600.000
Pen offset	X offset	0.000	mm	-200.000 ~ 1000.000
	Y offset	0.000	mm	-200.000 ~ 1000.000
Red-light position	X offset	0	mm	-200.000 ~ 1000.000
	Y offset	0	mm	-200.000 ~ 1000.000
Camera	X offset	5.000	mm	-200.000 ~ 1000.000
	Y offset	5.000	mm	-200.000 ~ 1000.000
	Height	0.000	mm	0.000 ~ 300.000
Feeding	Feeding length	0.745	m	-50.000 ~ 50.000
	Feeding speed.	0.600	m/s	0.050 ~ 0.600
	Material press time	3.000	s	0.000 ~ 100.000
Speed	Minimum speed	0.006	m/s	0.001 ~ 0.020
	Cutting speed.	0.800	m/s	0.010 ~ 1.500
	Idling speed	0.800	m/s	0.010 ~ 1.500
	Knife lifting speed	-1.#QO	mm/s	1.000 ~ 10000.000

(3) Draw a 100x100mm rectangle at coordinate (200,200)mm



Click 

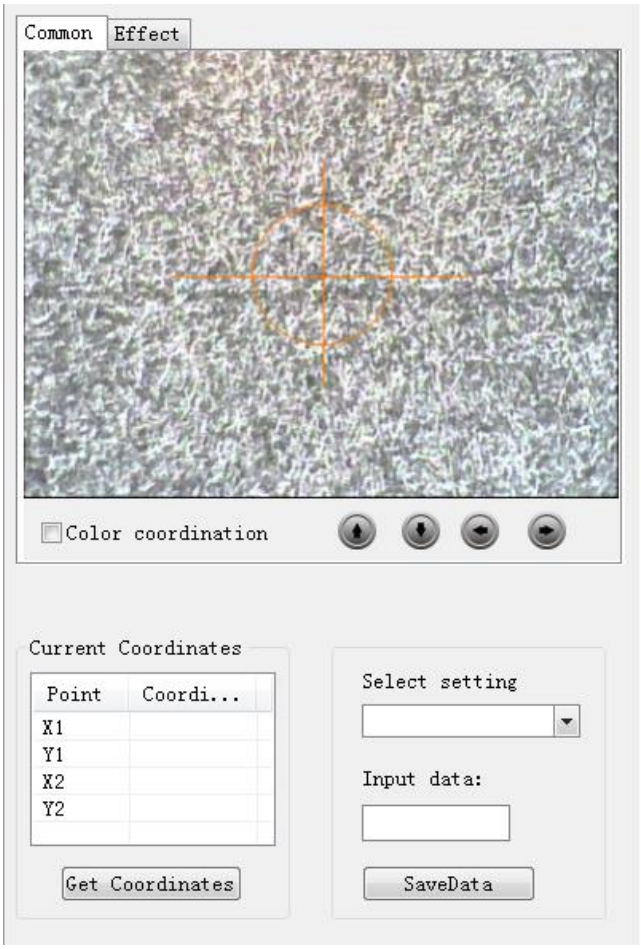
the toolbar, input 200-> Tab-> 200-> Enter (specify the first corner coordinate), 100-> Tab-> 100-> Enter (specify the length and the width of the rectangle).

Click  back to original point, open the pump and click  , IBrightCut will send the cutting date to CutterServer.

CutterServer will make machine cut 100x100mm rectangle in coordinate (200,200)mm.

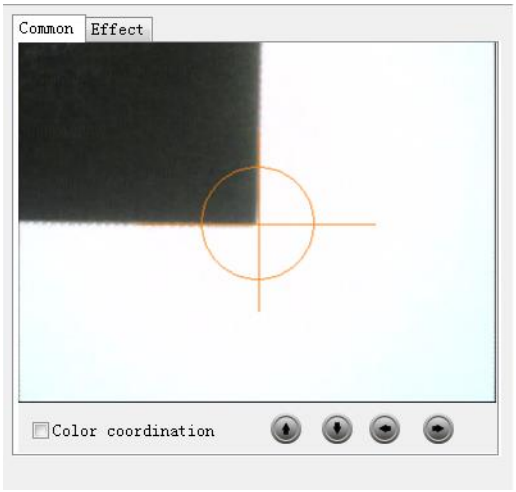
(4) Open CCD

Click on CCD, there will be a CCD configuration setting panel shown as below.

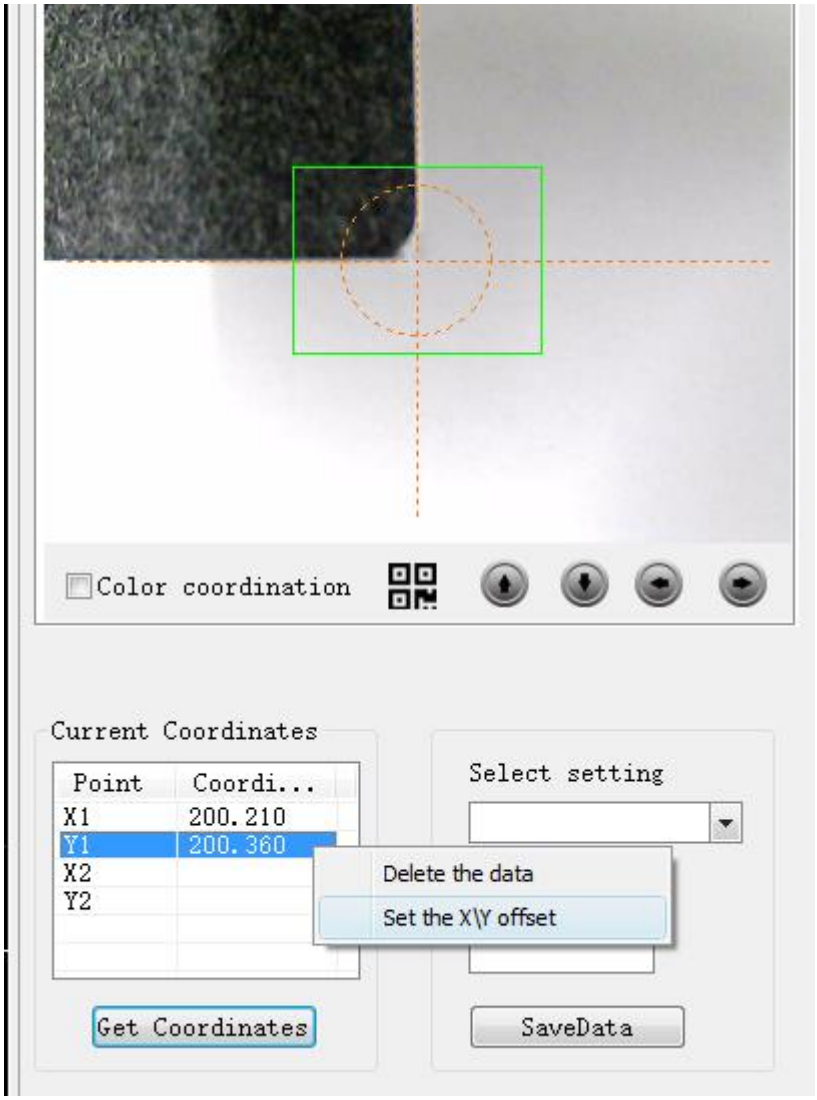


(5) Set offset

Make sure the center cross mark coincides with rectangle corner (200,200).



click on 'get the coordinate' then get present coordinate (X1,Y1), right click on X1 or Y1, Set the X\Y offset choose [set x/y offset] from the dialog box,

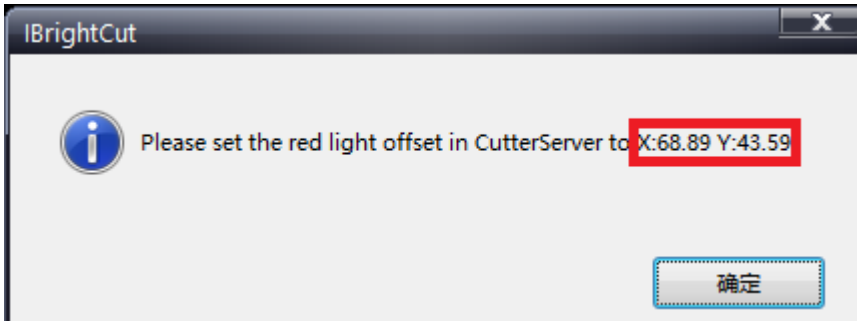


then input 200 in both [X offset] and [Y offset],

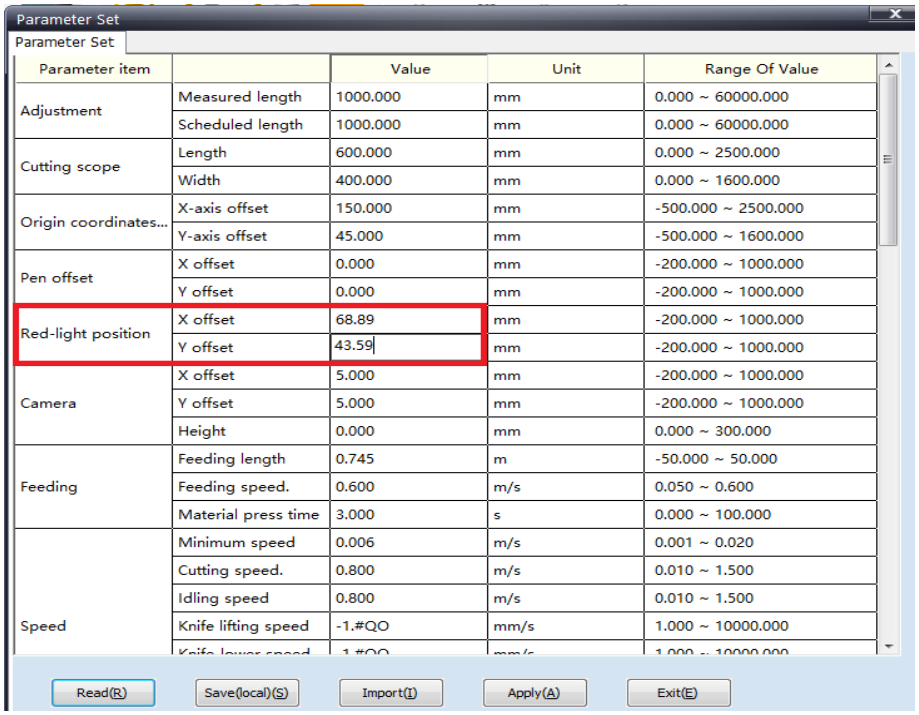
then click OK to save the parameter.

(6) fill in coordinates

The software prompts for new coordinate



Fill coordinate in Red-light position

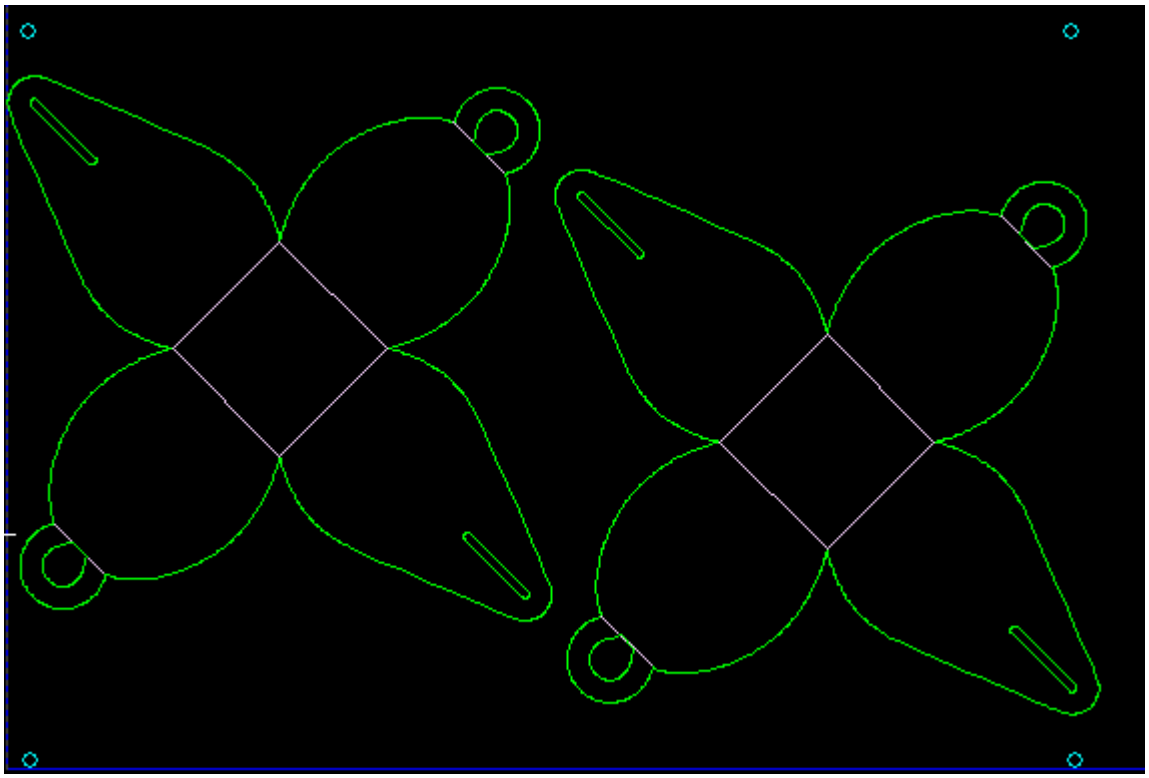


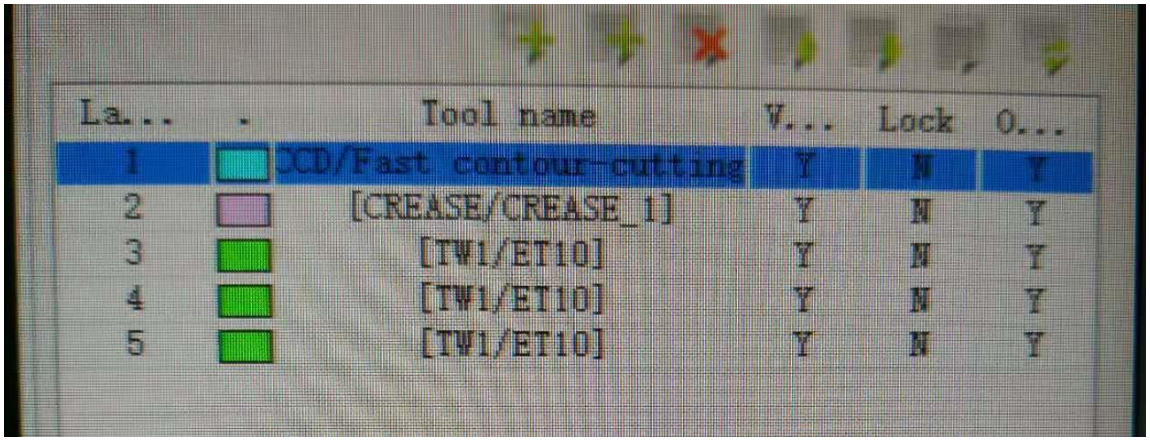
Parameter item		Value	Unit	Range Of Value
Adjustment	Measured length	1000.000	mm	0.000 ~ 60000.000
	Scheduled length	1000.000	mm	0.000 ~ 60000.000
Cutting scope	Length	600.000	mm	0.000 ~ 2500.000
	Width	400.000	mm	0.000 ~ 1600.000
Origin coordinates...	X-axis offset	150.000	mm	-500.000 ~ 2500.000
	Y-axis offset	45.000	mm	-500.000 ~ 1600.000
Pen offset	X offset	0.000	mm	-200.000 ~ 1000.000
	Y offset	0.000	mm	-200.000 ~ 1000.000
Red-light position	X offset	68.89	mm	-200.000 ~ 1000.000
	Y offset	43.59	mm	-200.000 ~ 1000.000
Camera	X offset	5.000	mm	-200.000 ~ 1000.000
	Y offset	5.000	mm	-200.000 ~ 1000.000
	Height	0.000	mm	0.000 ~ 300.000
Feeding	Feeding length	0.745	m	-50.000 ~ 50.000
	Feeding speed.	0.600	m/s	0.050 ~ 0.600
	Material press time	3.000	s	0.000 ~ 100.000
Speed	Minimum speed	0.006	m/s	0.001 ~ 0.020
	Cutting speed.	0.800	m/s	0.010 ~ 1.500
	Idling speed	0.800	m/s	0.010 ~ 1.500
	Knife lifting speed	-1.#QO	mm/s	1.000 ~ 10000.000

Note: Generally, X,Y offset only need to be set for the first time and should set again when install new software, uninstall the camera or head.

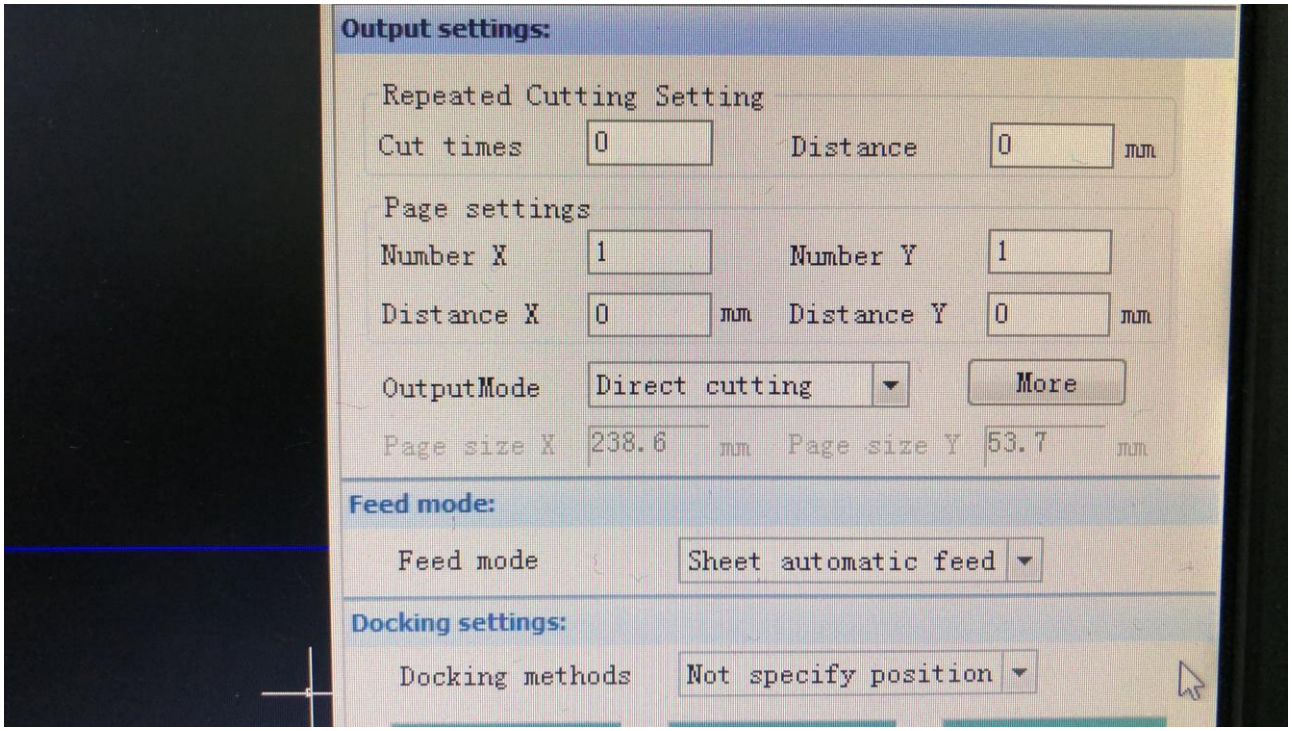
Automatic continuous cutting

1. Open file, set layers.

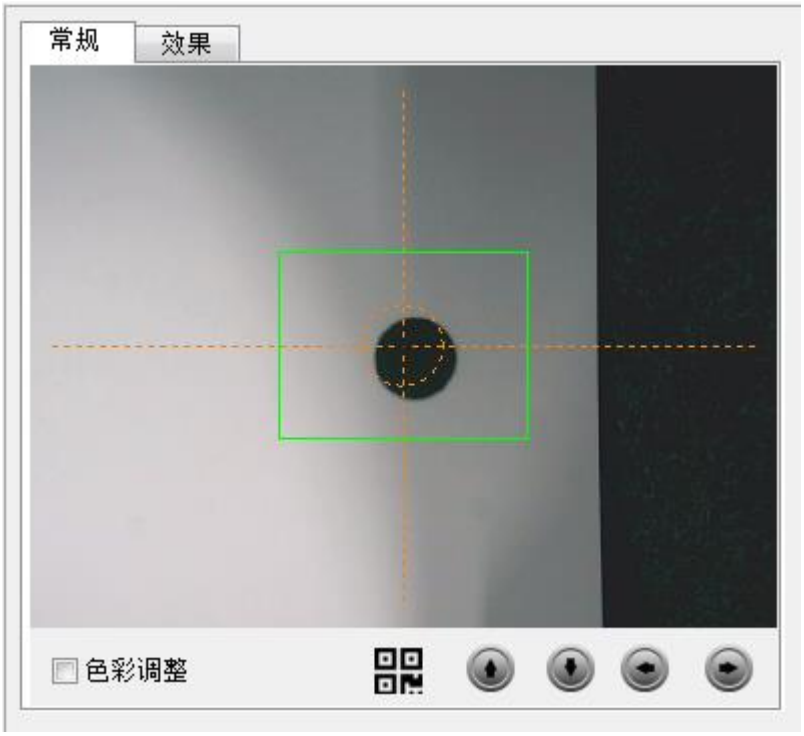




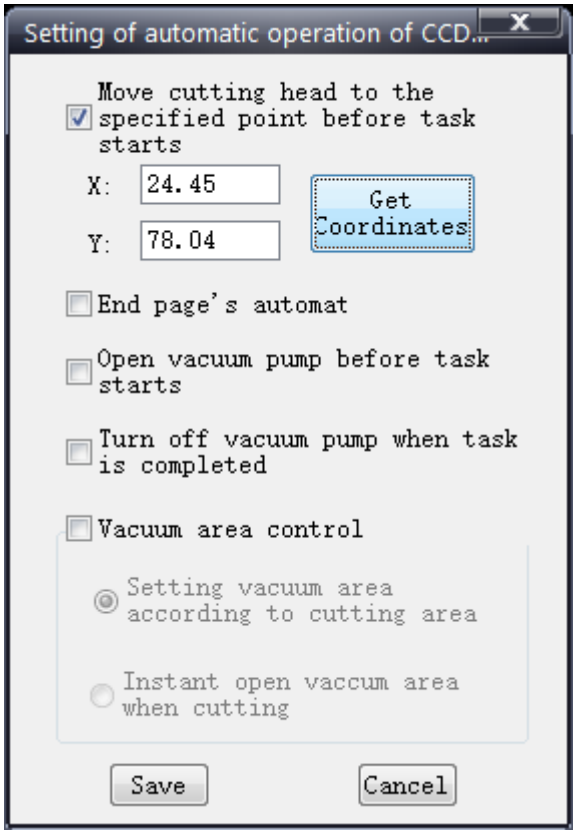
3. Set cut times, output mode set to Direct cutting, feed mode set to Sheet automatic feed.



4. Make ready the material, turn on pump, click manual feed and send material to table, then manually open camera window, move camera to the first position point.



5. Click “More” in “Output settings”, open “Setting of automatic operation”. Check box “Move cutting head to the specified point before task starts”, and click Get coordinates. Then click save and exit.



5. Exit camera window, click start cut and automatic cutting begins.

Notes about automatic continuous cutting

1. First need to set suction cylinder's operating position.
   And PK2 feeding docking point in Expand parameter

2. Adjust anti-static air tube's position and air pressure.
   Loose knob, can adjust up and down position of air blow hole.

3. Set material collecting time.

4. If material can't separate properly, can increase air blow time or use back function.
   PK2 press lift time and back distance in Expand parameter.

5. In case of feeding material but the table does not finish reset operation, a window of wait PLC to be ready will pop-up. When feed and reset is finished, click confirm to finish.

iECHO Science & Technology Co., Ltd.
R&D Department
24 July 2019