

Preface

- This operating instruction is included with machine. Please keep this manual for reference at any time.
- Please read this manual carefully before operating this equipment.
- Due to the technical update and the special requirements of the product, the product may be partially different from the manual description, please in kind prevail, we will add additional instructions as much as possible.
- When the equipment is in normal use, please keep a certain space in front and behind the equipment, as necessary space for operation and maintenance. In addition, please do not obstruct the setting of the heat emission space for this equipment.
- Equipment operating environment: temperature: 5 ~ 25 °C, relative humidity:
 20% ~ 95%, free from direct sunlight, no dew, no splashing water, no oil, no chemical liquid.
- The machine's technician who operates and maintains it must have computer operation skills.
- The computer configured on this machine can only be used for this machine, it is strictly forbidden to carry other movable storage device which can bring virus into the machine, so as to protect the control system.
- The U disk is properly configured to prevent the invasion of virus, and it is strictly prohibited to be used on other computers.
- For personal safety, when the equipment is running or standby, please do not open the front door or chains or the station head cover without taking safety measures, clothing and limbs must not get near the mechanical parts, otherwise, may incur body injury accidents.
- Repeated switching power supply on and off can be one of the reasons for equipment failure. After the power is turned off, please wait for at least 20 seconds before you turn on the power again.
- Do not expose the device to shock or strong vibration, otherwise it may cause malfunction.
- When cutting off the power, proceed the system exit / shutdown process in the following order. If you cut off the power supply or restarted it without following



this process, the data can not be saved completely and the hard disk can be damaged. Exit / Shutdown Procedure: Exit the application \rightarrow exit Windows \rightarrow disconnect the device from power.

- If the equipment is suspended, store the equipment in the proper environment: ambient temperature (0-40) °C, relative humidity (20 ~ 95)%, free from direct sunlight, no dew condensation, no splashing water, no oil and chemical liquid. Protective measures(such as covering cloth) can be taken to prevent dust and moisture.
- Please contact us in case of any questions, please do not operate blindly.

Note: Please note above mentioned matters!

Machine overview:

S-400 laser marking machine for high-speed, high-precision, high-performance equipment, is specifically developed for PCB Barcode marking. Its laser head marking on PCB by moving the X, Y units with high precision in the PCB board area. The series of control software and operating software is developed by our company independently, all operations are controlled by a computer.

This laser marking machine has following major advantages:

 \triangle Full computer control, English version operating system, based on the Windows platform, easy to operate, fast, simple, easy to learn.

 \triangle Machine vision technology applied, online automatic programming, automatic correction, automatic identification of the MARK point, highly automotive.

 \triangle AC servo system provide stable line operation, excluding the instability caused by line failure, to achieve a stable high-speed, energy saving.

Safety check before operation.



Please be aware: the machine for the new installation or long-term idle state, before supply the machine with power and compressed air and operation, we must do following security checks carefully:

1) Check whether the power supply is the specified rated voltage.

2) Check whether the main power supply is connected to the machine, and the fuse is intact, branch circuit breaker is closed.

3) Whether the equipment is properly grounded.

4) Ensure no unrelated objects remain in the electronic control box and the machine movable parts.

5) Check if conveyor belt and synchronous belt fall off during transportation.

6) Check if the lead screw, slide track, insertion shaft and other heavy-duty, high-speed operational units are properly connected.

7) Turn X, Y, units to see if they can move smoothly.

8) Check the limit detector and limitation are dislocated or not.

9) Check whether the emergency switch is pressed down, check the overall gas

source, the power switch is at the OFF state.

10) Check wiring plug and air pipes between the computer, electric control box, the main and auxiliary parts are properly connected.

Operation interface description, divided into the following areas:

IST-DB100





Fig. 1

1) Production operation area: This area is for the operation of the machine and

the control of production(as shown above):

Button and selection explanation:

Systems Reset: reset all unit on machine to home position .

Start marking: run machine to marking barcode after read program.

Stop marking: machine stop

Single object marking: machine run and marking only one next barcode.

Single board marking: machine run and marking only one PCB.

Continuous marking: machine run with current setting quantity.

Load PCB: machine run with loading PCB from conveyor.



Not load PCB: machine run with current PCB and stop once finish.

Not marking: machine run without laser working.

Using mark: use barcode from EZcad

Ignore mark: skip barcode from EZcad

Scan barcode: camera read&check barcode after machine marking.

Ignore scan barcode: machine only marking barcode without camera

read&check.

The front and back face marking same scancode: double side marking

Safety gate: to on/off the gate alarm

Marking file: to show the path of program

Marking total: to show the current production quantity

Marking time: to show the current production duration

Current Marking Barcode: to show the current barcode from server

Marked Result: to show the scan result by camera check



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3	-242.605	17.982	31714	print	front	Red Showing	EXIL
4	-218.667	-8.403	31714	print	front		
5	-200.069	-9 501	31714	print	front	scan size 5.00 X	5.00
7	-110.051	-0.591 17 893	31714	print	front	P	
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Fig 2

Load PCB: to load a PCB from conveyor

The front-face : to move table in 0 degree

The back-face: to move table in 180 degree

Exposure times: to adjust lightness of imaging from camera

Scan timeout: to adjust the scan duration of result checking

Read mark file: to read the barcode template from EZcad

Large PCB: in this mode machine will only receive PCB in table , PCB will never

stop in L&R conveyor

BarCode type: choose the type of Barcode from EZcad

Entry-name : the name of EZcad file

XY speed: to adjust the speed of table while programming



Add: to add the barcode marking position in current camera area

Insert: to insert a new command line

Delete: to delete current selected line

Adjust: to adjust the position of current marking area

Per: move to previous mark position

Next: move to next mark position

Offset: to move all mark position as current mark position adjust

Red showing & Red: to let laser head give out a red light for positioning

Scan size: to set up the result checking area in MM while machine is running

Exit: Exit current page



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Radius: to choose the range of mark point size

Binary threshold: to adjust the lightness of current imaging

Length1 & Length 2: to set up the search range of mark point

Calibrate camera & Calibrate & test: useless , manufacturer only

Load PCB: to load a PCB from conveyor

The front-face : to move table in 0 degree

The back-face: to move table in 180 degree

Add mark 1 : Add the first mark point on current camera area

Add mark 2: Add the last mark point on current camera area

Red showing & Red: to let laser head give out a red light for positioning

Fine&Print&Marked: useless , manufacturer only



X: to adjust the relative position in X of camera , by MM

Y: to adjust the relative position in Y of camera , by MM

Adjust-Begin: to positioning current mark position by camera

Adjust-End: to positioning new position you want of mark by camera

Planned production: to set up the PCB quantity you want

Batch: set up the batch number(as in sever)

Exit: to exit current page



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Fig 4

Most time of ask PCB: to set up the MAX time of machine asking PCB from upstream

Operation time of baffle cylinder: to set up the delay of baffle cylinder after

PCB was detected in table

Operation time of pressure plate cylinder: to set up the delay of pressure plate

cylinder after baffle cylinder complete move

Most time of load PCB: to set up the MAX time of machine loading PCB from

conveyor

Delay time of load time: to set up the delay of loading PCB after current PCB

was move out to next position

Most time of unload PCB: to set up the MAX time of machine unloading PCB



Delay time of Acq img: to set up the delay of computer build a photo when NG

result happen

Delay time of Laser: to set up the delay of laser marking after head was move

in position

Delay time of PCB stable: to set up the delay of machine start to run after PCB

was detected in table



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Fig 5

Mark loop: to set up the number of times for marking in one position

Speed(mm/s) : to set up the speed of laser running

Power : to set up the rate of laser power in %

The rest : manufacturer only, do not change



Motion Test										
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INO3 Export signal 🛛 🔵	IN11 Safety gate	🗇 OUT04 Reverse belt				UT18 Entrance belt 🛛 🔴				
IN05 Front signal 🛛 🔵	IN17 Next paragrapl requests board	OUT05 Ba	ustrade cyli	inder 2 🛛 🗢	00	٠				
IN06 Back signal 🔵		📝 OUT11 Cai	nera light	•	V 0U	☑ OUT20 Require board				
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Motion Test : this page is for monitor machine status , including : buttons,

sensors, motors, cylinders, lights

- IN01: L conveyor PCB in coming
- **IN02:** L conveyor PCB in position
- IN03: R conveyor PCB in position
- IN05: table 0 degree PCB in position
- IN06:table 180 degree PCB in position
- IN08: start button detect
- IN09:stop button detect
- IN10: Emergency stop button detect
- IN11:safety gate detect



- IN17: signal detect from downstream
- OUT01: cylinder control for PCB stop in position
- OUT02: cylinder control for PCB clamp
- OUT03: table belt control while in 0 degree
- OUT04: table belt control while in 180 degree
- OUT05: cylinder control for PCB clamp
- OUT11: camera light control
- OUT12: machine lamp control
- OUT13: tri-colour light control in red
- OUT14: tri-colour light control in green
- OUT15: tri-colour light control in yellow
- OUT16: buzzer control
- OUT18: L conveyor belt control
- OUT19:R conveyor belt control
- OUT20: machine send require PCB signal to upstream

Motion Param:

- This page is for adjust motor speed and homeing
- X: machine X position motor
- Y: machine Y position motor
- F: machine table rotate motor
- Origin: motor run in zero position



Distance mm: set up the distance that motor runs

Org speed(low): set up the speed of machine homeing in first cycle,

manufacturer only, do not change

Org speed(high): set up the speed of machine homeing in last cycle,

manufacturer only, do not change

Start speed : set up the speed of motor starting

Run speed: set up the speed of motor runs after starting

ACC: set up the delay of motor speed up, manufacturer only, do not change

EL+ : motor limit+ position detect

EL- : motor limit- position detect

Org: motor home position detect

Stop position (X,Y) : manufacturer only

Stop: stop all running parts

Save: save new setting

Exit: to exit current page



2	IST-DB1	100							
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Fig 7

Server domain name: to set up the name of server and establish a connection

Marker's name : to set up the machine computer name

Log path : to bulid the path of NG mark photo saving.







Fig 1

This software is for bulid a new template of barcode for IST-DB100 reading and marking

Step1: Choose new file and name it

- Step2: choose barcode font you want (in picture shows BarCode Font-21)
- Step3: choose barcode format(in picture shows DATAMATRIX)
- Step4: fill content(in picture shows 30805)
- Step5: fill barcode size in X and Y (in picture 3.111 / 3)

Setp6:set position X/Y/Z in 0



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Fig 2

Step7: open Hatch , setting hatch 1& 2 as picture

Step8: check barcode and save file



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This page is for reverse barcode black and white color(if needs), choose "reverse" as picture shows.

After choose reverse function , barcode must add edge for normal display , in Blank area choose "top" & "Left" & "Right" & "Bottom" ,and change the value from 0 to 0.5 (as picture shows).

The rest function and other page are manufacturer only