Superpro

SB0X User Manual

Rev. 03

手册信息

Info	Content
Keywords	**Vision**, SB04
Abstract	This document describes the programming system from XELTEK

编辑日志

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More information

Welcome to visit our website: **http://www.xeltek-com**

Emails for more information : **Sales@xeltek.com**

SB0X

User Manual **Rev. 02 - 5th February 2019** **2 of 17**

Contents

1. System introduction

1. 1. About this manual

SB04 programming machine belongs to the high-speed universal automatic programming system. This manual is customized for the SB04 machine.
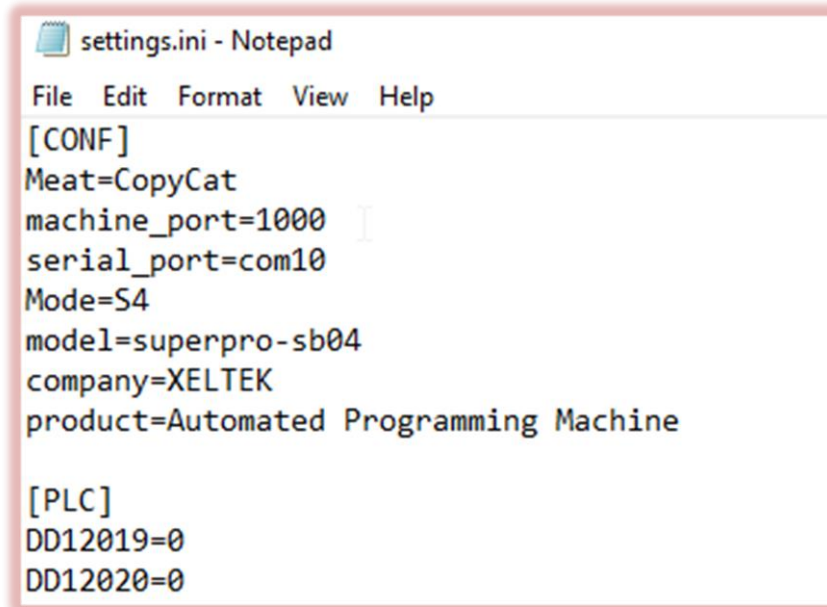
2. Software Installation

2. 1. System and application requirements

o   Operating system: windows 7, 10; 32/64bit

o   Basic drivers required by system

o   Driver for Panasonic PLC,FP0r

> **http://spbot.xeltek.com.cn/dists/superpro-sb04/dist/fpwin_gr_salesv293c.exe**
> **Serial Code: AFPS10823-MEW1374**

o   Driver for DAHENG MER Camera

> **http://spbot.xeltek.com.cn/dists/superpro-sb04/dist/DAHENG_MER_Series_Win_en.rar**

o   Driver for the safenet lock-key : HASPUserSetupwin10

> **It should be included in the source package.**

o   Software for Xeltek superpro-sp7500

> **http://www.xeltek.com.cn**

o   Software for Xeltek superpro-sp04

> **http://spbot.xeltek.com.cn/dists/superpro-sb04/**

o   **VC_redist.x86**

> **It's packaged in the SB04 software.You can get it in the following location after the installation of SB04 which should be installed in C disk.**
> **C:\xeltek\superpro-sb04\bin\vc_redist.x86.exe**

2.2. Configure file

```
settings.ini - Notepad

File   Edit   Format   View   Help
[CONF]
Meat=CopyCat
machine_port=1000
serial_port=com10
Mode=S4
model=superpro-sb04
company=XELTEK
product=Automated Programming Machine

[PLC]
DD12019=0
DD12020=0
```

Configuration File name : %ProgramData%/suprpro-sb04/settings.ini

-Normally the file is at: c:\programdata\superpro-sb04\ settings.ini

-Enter %ProgramData% into Windows explorer location bar, with enter you can go directly into the folder

-You need to restart the software to take effect.

3. <u>System Operations</u>

3. 1. **Placement of the machine**

Please set the machine to a horizontal location.

Please make sure that the platform for the machine is stable and unshaken.

The SB04 programming system has gas generator inside, no need additional air source.

The power plug should be connected to the I/F cable, please secure it in place.

Tips: The cable for the camera of the machine must be connected to the USB3.0 port.
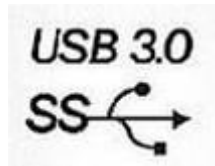
Port mark：

3. 2. **Steps of power on/off**

Power on：Visually check that the machine is in normal condition and turn on the switch to on state;
Waiting for the industrial computer ready;
Press the control buttons on the front panel, respectively, for the system button and programmer control button;
Open the application SB04 and SP7500 to enter debugging or working status.

Power off：End the session and move the mechanic arms to the home point,then Turn off the applications and the control button in turn.

Tips：Turn on the programmers when the computer is ready,or the programmers may not be able to work properly.

SB0X

User Manual **Rev. 02 - 5th February 2019** **6 of 17**

3.3. Introduction for the applications

SB04 programming system consists of two parts，the mechanic application SB04 and the programming software SP7500.

3.4. Quick Start

Step 1：Open the SP7500，load an exist project.

Step2：Open SB04，click on ，connect the SB0X and SP7500.

Step3：Go to configuration setting ，set the orientations if need.

Step4：Go to positioning setting ，set the positions&heights of the sockets or tray.

Step5；Go to automatic sessions ，set the job and start.

Tips：All the settings will be auto saved according to the sockets.

4. Application Instruction

4.1. SP7500 introduction

The application SP7500 in SB04 are same to the single SP7500 programmers.

The project files can be shared from each other.

More details please reference to SP7500 user manual.

4.2. SB04 Specifications

4.2.1. Tool Bars

From left to right ,the icons are：

Settings-Setting interface

Positioning-Positioning interface

Automatic-Automatic programming interface

Connect-connect the SB04 and the SP7500

Home-Back to the original point

4.2.2. Configuration settings

| Setting	Value
Tray Height:(0 - 1900)	1321
Socket Height:(0 - 1900)	1000
Clamp Height:(0 -)	6000
Socket Pick Gap:(0 -)	50
Tray Pick Gap:(0 -)	50
Socket Place Gap:(0 -)	50
Tray Place Gap:(0 -)	50
Pick Wait (ms):(0 -)	200
Place Wait (ms):(0 -)	200

Tray Height：Show the height of the tray.

Socket Height: Show the height of the socket.

Gap ：Set the compensation for the tray height and socket

For example,the height is 10mm and the pick gap is 1mm,the probe will pick the chip at the height of 11mm(deeper).And the gap should be a minor value for place gap.

4. 2. 3. **Positioning settings**

Initial Point
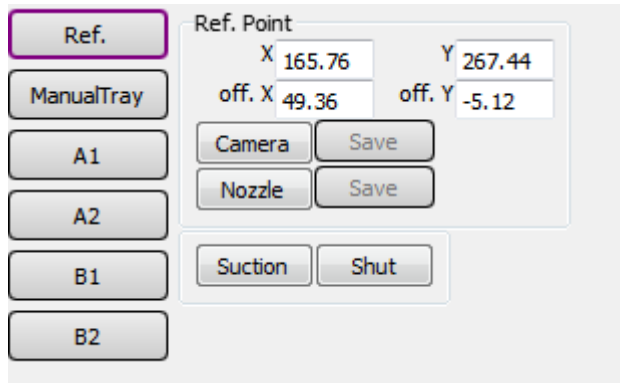
How to calibrate the initial point:

The SB04 machine has mark point as the so-called initial point.

At first, activate the camera button and use the camera to find the center of the point,

Second,we just move the nozzle to above the point generally,

Then we can press the nozzle to the mark point manually,

If the nozzle's not at the center,please try to move it until it's precisely at the center,
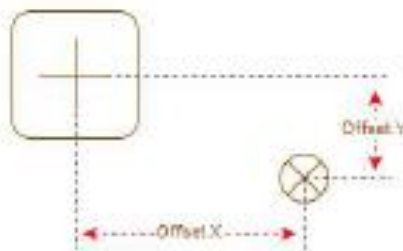
Save it at last.

So the distance between the camera and the nozzle has been be calculated and we can use the camera instead of the nozzle to find the positions of trays and sockets.
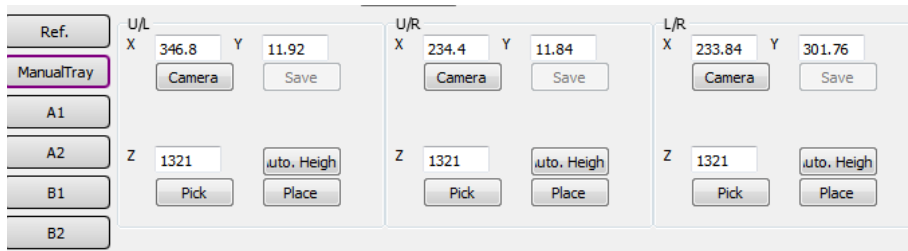

Superprobis uses camera to position whole machine,
coordinate can be recorded when camera is centered on target.

Camera Nozzle Offset

Positions of the tray

Tray - Activate the tray position adjustment interface.

**The sb04 system use three points to locate the tray ,**

and the rows and columns will help to calculate every chips' positions.

As we can see in the above picture, Upper left point, Upper right point and Low right point.

Position & height adjustment

- Click on the camera to activate the corresponding cell/slot.
- M.Camera - activate the corresponding cell/slot
- Save - Use the coordinates of the current XY axis as the XY coordinates of the cell
- AutoHeight - Test the height for the unit.
  - Please make sure that there's a chip in the sockets.
  - Please make sure that the air pressure sensor in right setting.
- Pick - Pick up the chip in the cell.
- Place - Place the chip back to the cell.

Position of Programmers
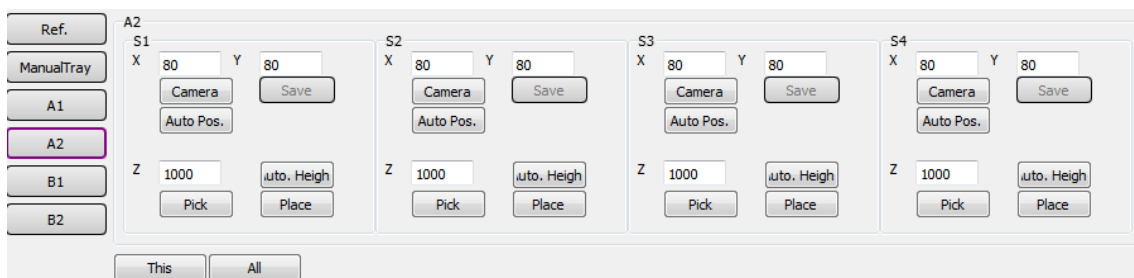
Adjust the positions of the sockets

- Camera - Activate the socket part
  - Move the camera to the center of sockets and take an template for the function of auto-position.
  - More information please check the chapter 4.2.4.
- Save - Use the coordinates of the current XY axis as the XY coordinates of the cell.
- Auto Pos. - Automatically set XY coordinates using the socket templates

- o AutoHeight - Test the height for the unit.
  - ▪ Please make sure that there's a chip in the sockets.
  - ▪ Please make sure that the air pressure sensor in right setting.
- o Pick - Pick up the chip in the socket.
- o Place - Place the chip back to the socket.

All modules Auto. Pos.

- o Automatically adjust the sockets' positions by vision system.
- o The current location of the sockets should not be too large for the corresponding position configuration deviation, which cannot exceed the deviation range allowed by the machine vision.
- o Minor adjustments can only be made within the range of machine vision deviations.

Tips:If you are using more than one sockets or adapter.Please take care of the "this"&

"ALL" buttons.These two buttons will help you to automatically find the positions of this adapter or all the four adapters.

SB0X

User Manual   **Rev. 02 - 5th February 2019**   **11 of 17**
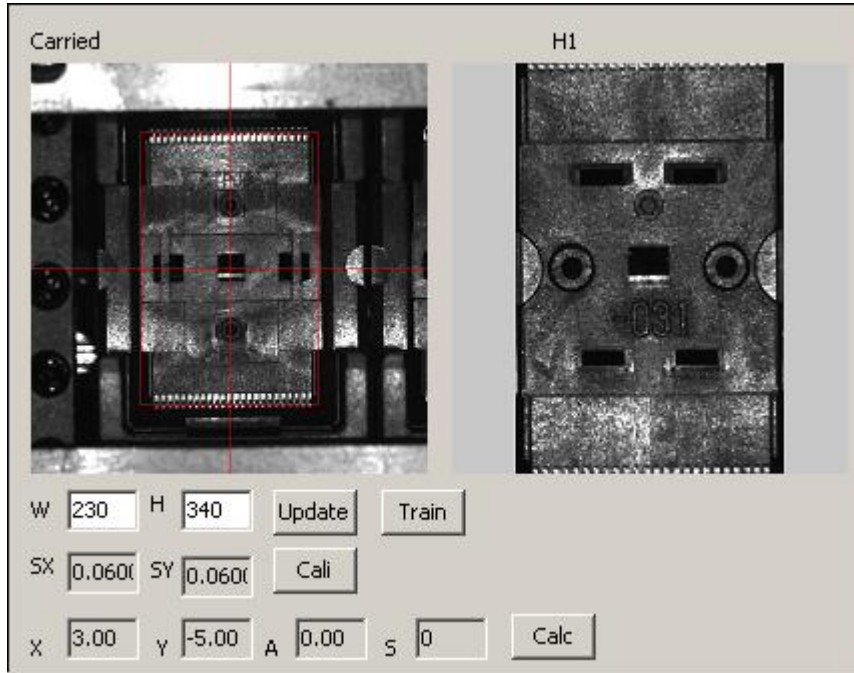
4.2.4. Camera and Vision Check

SB04 system possess a camera for positioning.

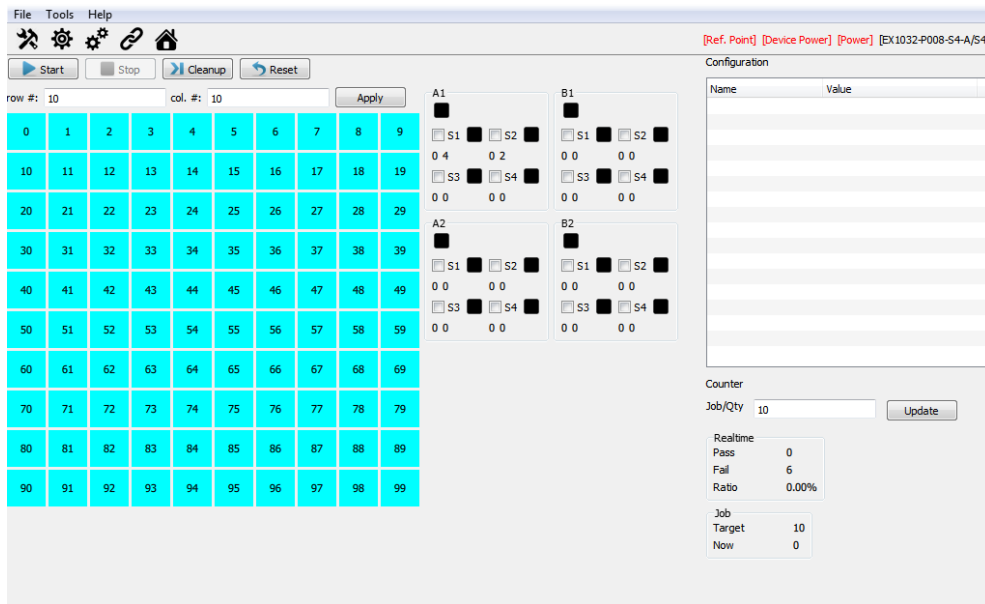o An example for taking the template for the socket positioning

Try to cover the whole socket;

We can use the calculate button to check the differences between from the picture and the template.

The deviation will be showed in the next X\Y\A bar.

4. 2. 5. **Automatic programming**

Start

- o Start the programming session

Stop

- o Only when the pause [paused] prompt to enter the pause state.
- o The machine will stop right after the current movement.
- o The button would be disable if the clear up process is under way.

Clear up
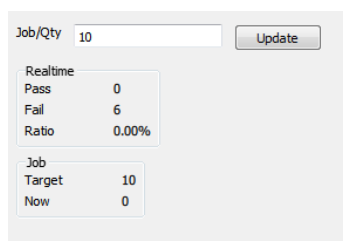
- o All the sockets will be cleared

Reset

- o Reset the status of the programmers and tray

Device check

- o On - Enable

Tips:Please set the job quantities before starting.
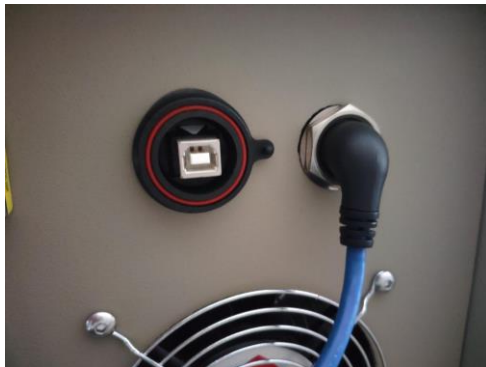
5. <u>Introduction of the mechanical system</u>

5.1. **System composition**

5.1.1. **Total power supply and load switch**

The red knob above is the load switch which is on the back of the machine, after opening the system is on power.

5.1.2. **Plugs**

Left USB port :programmers&plc.

Right USB port:camera(usb3.0only).

5.1.3. **Device switch button and emergency stop button**

Programmer：Button controls the power supply of the programmers.

System：Button controls the power supply of the motors.

Emergency Stop：Emergency button.

5. 1. 4. **Warning lights**

Lights：The middle orange light is lit when the machine is preparing;

The green light is lit when the system is running;

The red light is lit when it met an error or stop,

5. 1. 5. **Security Door**

Security door rule: When the system is running, the security door must be turned off. Once the security door is turned on, the system will stop immediately.

5. 1. 6. **Programmers**
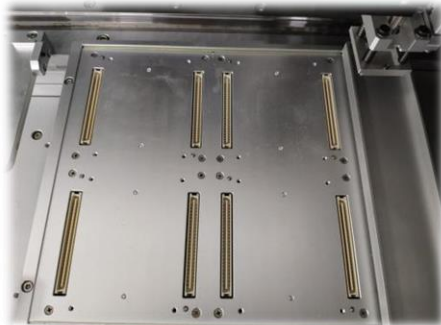
This is the programmer group for SB04, and the 4 module is centralized to 1 USB cable communications via the hub board.

5.2. **System Specification**

5.2.1. **Motion parameters**

Maximum machine efficiency: up to 800UPH.

Accuracy: X-axis: $\pm$0.05Mm;y axis: $\pm$0.05Mm;z axis: $\pm$0.02mm.

Effective Stroke: X-axis: 400Mm;y axis: 330Mm;z axis: 30mm.

Nozzle accuracy:$\pm$0.07mm.

5.2.2. **Visual parameters**

Camera:One piece of DAHENG camera of mercury series.

Camera pixel: 512x512 pixels.

Visual Range: 30mmx30mm

5.2.3. **Power supply**

Operating voltage：200~245V/50~60Hz.

Power：500W.

5.2.4. **Air pressure**

Pressure：Air source inside.

6. <u>Maintenance</u>

The maintenance of the equipment shall be carried out by professionals, such as arbitrary demolition and maintenance, which may cause damage to the equipment.When repairing and replacing parts, please choose the original parts, any replacement of unqualified parts, may cause damage to the equipment or be harmful to the Operation safety.

6.1. Daily Maintenance

Daily Check Items:

A. Temperature and Humidity: the temperature is between the 20℃~26℃ and the humidity is between the 45~70%.

B. Indoor environment: Requires air cleaning, non-corrosive gas.Confirm that there is no debris in the range of screw, slide rails and robotic arm movement.

C. Check to see if there is no clutter on the fixed camera and if the lens is clean.

D. Check that the suction nozzle is dirty, deformed, clean or replace the suction nozzle.

6.2. Regular Maintenance

Equipment is recommended to do the regular maintenance once 1~2 months.

Periodically check items:

1) Maintenance of air pressure circuit

Check the tubes and the vacuum generator.

Clean Vacuum occurrence Kit filter sponge, as appropriate to replace.

Check the action of Z-axis cylinder and suction nozzle and blow clean suction nozzle.

2) Maintenance of transmission mechanism

X, Y, Z axis slide rail and ball screw need lubricating oil maintenance.

Check the X, Y, Z axis motor transmission belt has no loosening, wear, fracture.

The position of the motor and the balance of the belt are confirmed.

Check the fastening status of all screws and distribution cabinet screws on the machine, be sure to confirm.

Check that the connectors and connectors are loose.

Especially check the couplings.

3) Maintenance and repair of the device for taking and releasing tablets.

4) Check the rotary motor. Check that the Z-axis cylinder is telescopic properly.

7. <u>Trouble shooting</u>

Q：Camera is disabled.

A:Please check the USB3.0 cable.

Q：Picking error.

A: Please investigate the picking process.The error is cause by one of the two sensors.

Q: The movement of the machine is not accurate .

A:Check the belt,pulley and the couplings.

SB0X

User Manual　　　　　　　　　　**Rev. 02 - 5th February 2019**　　　　　　　　　　**18 of 17**