Superpro

SB0X User Manual

Rev. 03 **User Manual**

手册信息

Info	Content
Keywords	**Vision**，SB02&05&05X&05E&05EX, V8，SP7500
Abstract	This document describes the programming system from XELTEK

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More information

Welcome to visit our website: **http://www.xeltek-cn.com**
Emails for more information : **Sales02@xeltek-cn.com**

Contents

1. System introduction

1.1. About this manual

This manual applies to SB02 & SB05 & SB05E & SB05X & SB05EX programming systems.In addition to special instructions, this document is fully applicable to all the systems.

1.2. Model comparison

	SB02	SB05	SB05X	SB05E	SB05EX
Model	SP7500	SP7500	SP108X	SP7500	SP108X
Maximum programmer	4	8	6	4	4
Maximum sockets	16	32	48	16	32
Nozzles	1	4	4	2	2
I/O	**tape&tube&tray**	**tape&tube&tray**	**tape&tube&tray**	**tape&tube&tray**	**tape&tube&tray**

2. System Operations

2.1. Installation

Please set the machine to a horizontal location and suspend the rolling wheel with a height adjustment device.

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

2.2. 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 SB0X 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 ,the industrial PC,the control button in turn.

2.3. Introduction for the applications

SB0xprogramming system consists of two parts， the mechanic application SB0X and the programming software SP7500.

2.4. Quick Start

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

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

Step3：Edit the IO，set the input and out of components，tray and tape are available.

Step4：Go to configuration setting  ，set the orientations if need.

Step5：Go to positioning setting  ，set the positions and heights of the sockets or IIO cells.

Step6；Go to automatic sessions, start.

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

3. Application Instruction

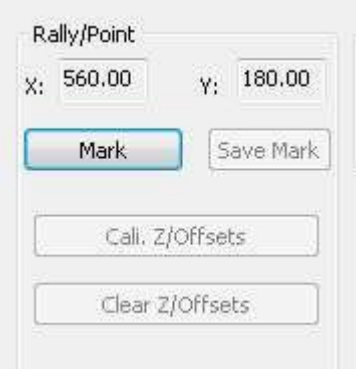
3.1. SP7500 introduction

The application SP7500 in SB0X are same to the single SP7500 programmers.

The project files can be shared from each other.
More details please reference to SP7500 user manual.

3.2. New Specifications of SB0X

3.2.1. Automatically nozzle heights compensation

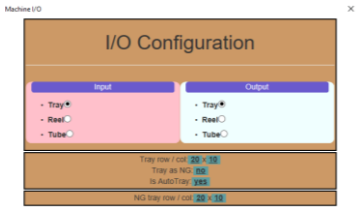


This function is suitable for multiple nozzle programming system (such as SB05);

Set the MARK point, test the height of four suction nozzles with one click, and the corresponding compensation value will be calculated automatically;

In the normal programming process, the system will use the compensation value to improve the height consistency of the pickup plate of each suction nozzle.

3.2.2. Added NG tray function



The system can take the tray as the NG tray when the I/O of the chips are all tapes.

3.2.3. Added the position setting of the NG corner

3. 2. 4. The second tray is added.

This tray can be used to collect NG chips or provide chips programmed in advance.

3. 2. 5. Added instant pause, status retention, and recovery features

The system will be able to stop or recovery at all situation immediately.

3. 2. 6. New information display interface, real-time display of UPH and work order status

3. 3. SB0X Specifications

3. 3. 1. Tool Bars

From left to right ,the icons are：

Welcome-Start up interface, showing I/O configuration

Settings-Setting interface

Positioning-Positioning interface

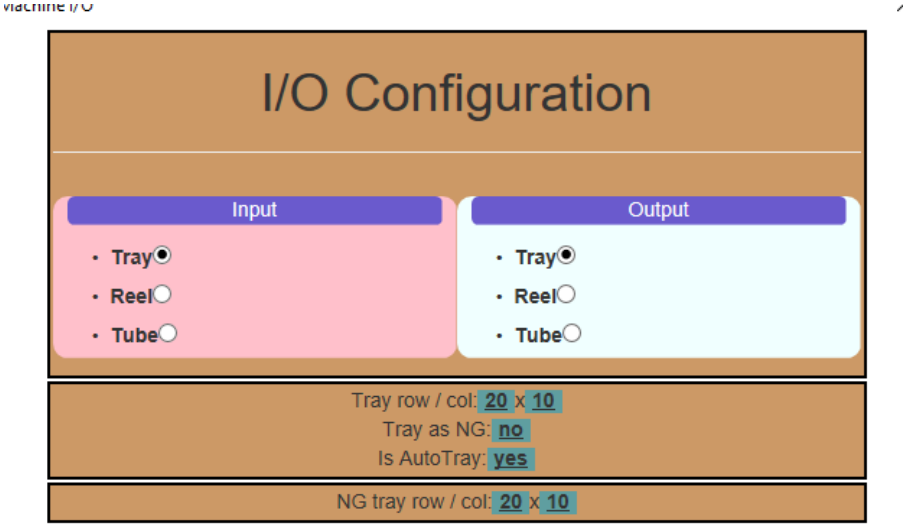
Automatic-Automatic programming interface

Reports-Reports of sessions

Connect-connect the SB0X and the SP7500

Home-Back to the original point

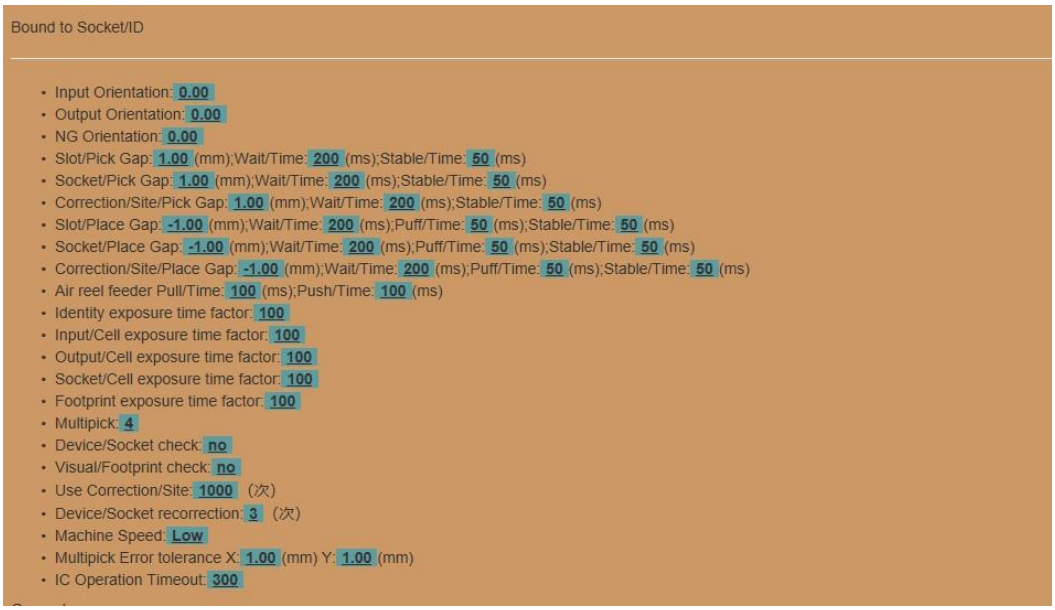
3. 3. 2. I/O settings



Input and output settings can be selected in this part.

NG tray function has been added to this version !

3. 3. 3. Configuration settings



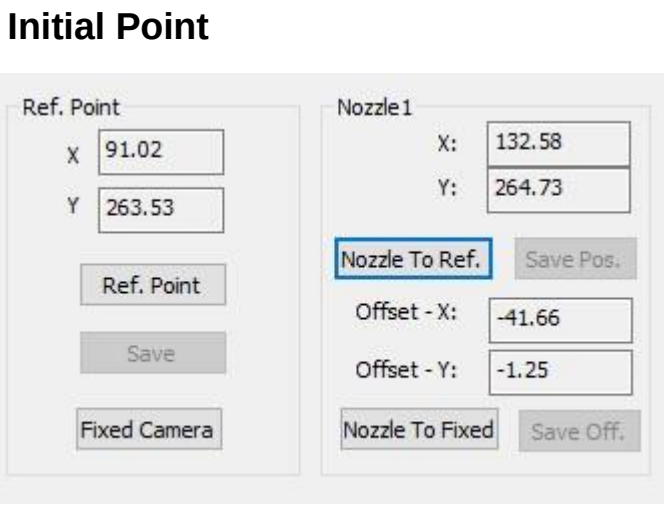
I/O Orientation：0，90，180.

Height：compensation for the picking or placing height.

Multiple nozzles：two or four nozzles can be selected,the machine will pick two or four chips at a time.

Correction ：the system will do the correction when chips were found not placed well.

3. 3. 4. Positioning settings



Fixed Camera -

Activate the camera below the countertop.

This function is used to adjust the actual target point of initial point.

Move the cross of the target to the center of the camera.

After setting the target point, the next is reference point.

Ref. Point

Activate the camera at the top side.

Adjust the camera to meet the target point.

After the setting of the reference point,please take out the target tool.
Nozzles position

Nozzle - Activate#nozzle

Save - Save the potion of the nozzle,and initial the U Axis to 0.

Auto Pos. - use the template to assist us to set the potions

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.
- 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
- Camera(2)(Pick&Move) - Pick up the chip to the fixed camera and make a template.
  - Using the fixed camera to make a template for vision check.
- 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 socket.
- Place - Place the chip back to the socket.

All modules Auto. Pos.

- Automatically adjust the sockets' positions by vision system.
- 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.
- Minor adjustments can only be made within the range of machine vision deviations.

Module Auto.Pos

- Use machine vision system for automatic position adjustment.
- 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.
- Minor adjustments can only be made within the range of machine vision deviations.

Clamp control (Applies only to superpro/sb05)

- Clamp_[XX] - XX：Corresponding Programmer flags/locations
- State
  - Red- Closed
  - Green - Open
- On - Open
- Off - Close

Positions of input/output

Tray - Activate the tray position adjustment interface

- Click on the camera to activate the corresponding cell/slot.

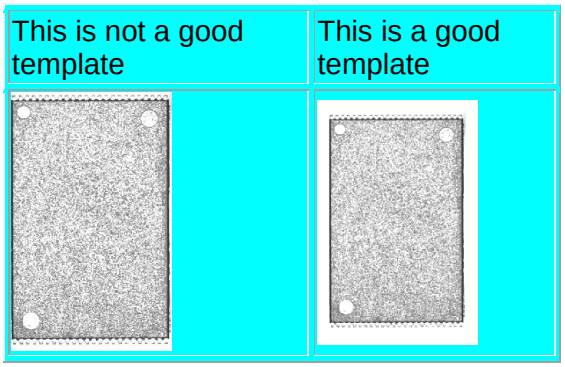
Position adjustment of the input

- Camera - activate the corresponding cell/slot
- Save - Use the coordinates of the current XY axis as the XY coordinates of the cell
- Auto Pos. - N/A
- Camera(2)(Pick&Move) - N/A
- 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.

3. 3. 5. Camera and Vision Check

SB0X systems possess two camera for positioning and vision check respectively.

- An example for taking a template

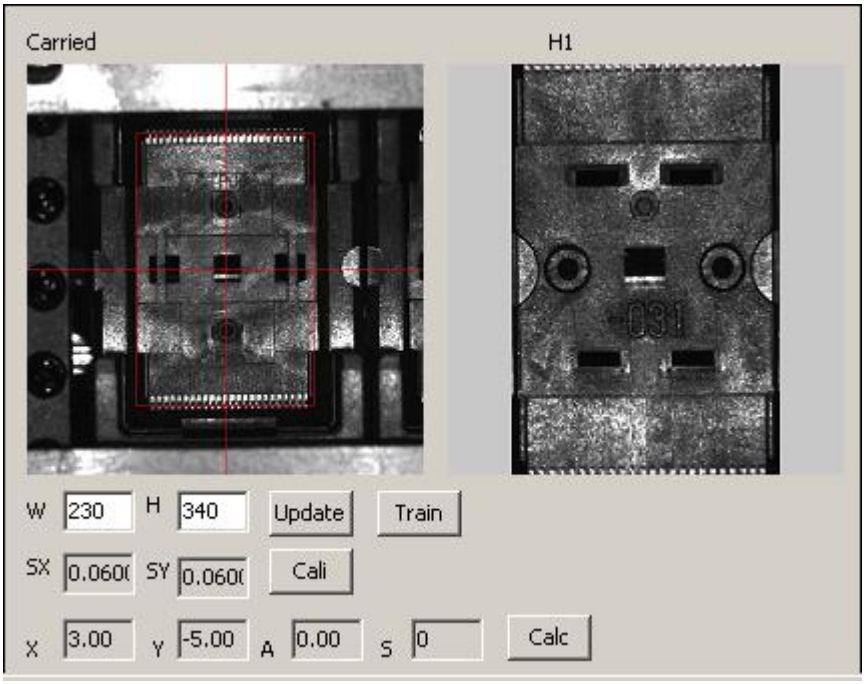


- Taking the template for the socket positioning

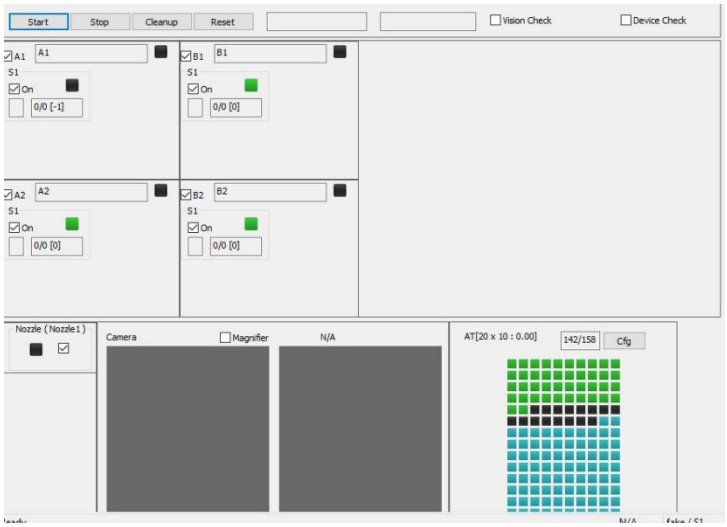
Try to cover the whole socket;

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.



3. 3. 6. Automatic programming



Start

- Start the programming session

Pause

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

Clear up

- All the sockets will be cleared

Reset

- **Reset the status of the programmers**

Vision check

- On - Enable

Device check

- On - Enable

3. 3. 7. Reports

Programming information

3. 3. 8. Connect

Connect to SP7500

4. Introduction of the mechanical system

4.1. System composition

4.1.1. Total power supply and load switch

The red knob above is the load switch, after opening the system on the whole machine power, the industrial computer automatically start.

4.1.2. 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.

4.1.3. 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,

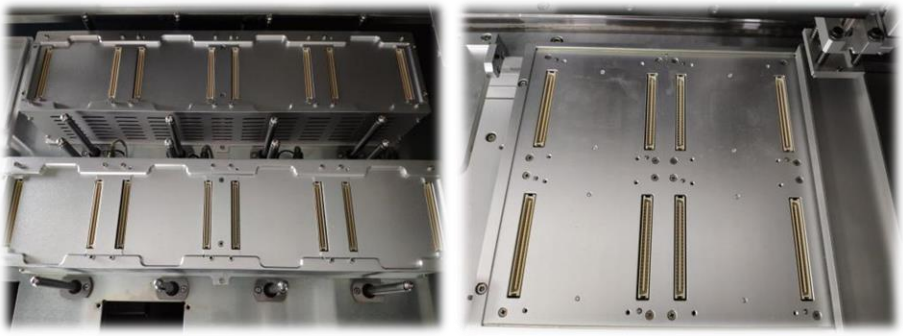
4.1.4. Security Door

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.

4.1.5. Control Circuit

4.1.6. Programmers



On the left is the SB05 applicable programmer group, divided into two groups before and after, a total of 8 modules, through the 8usb line alone communication.

On the right is the programmer group for SB02, and the 4 module is centralized to 1 USB cable communications via the hub board.

4.2. System Specification

4.2.1. Motion parameters

Maximum machine efficiency: up to 2500UPH.

Composition: High performance Motion Control Board + servo system + screw and guide rail.

Accuracy: X-axis: ±0.02Mm;y axis: ±0.02Mm;z axis: ±0.02mm.

Effective Stroke: X-axis: 1000Mm;y axis: 500Mm;z axis: 40mm.

Nozzle accuracy:±0.07mm.

4.2.2. Visual parameters

Camera: 512x512 pixels.

Visual Range: 30mmx30mm

Visual system adjustment accuracy: x= y=0.07 mm, θ =0.1°

4.2.3. Input and output components

A. Fixed Tray: The loading capacity of the tray disk is one.

B. Automatic Tray: To be burned tray disk load of 15 sets, place the trays in the position to be programmed, click on the automatic Tray touch screen, it will automatically send a plate to the host designated position and automatically moved out to the position (optional) after the tray finished.Laser marks can be optional when the tray is on the way back.

C. Tape in: Tape feeder, strap width depends on the chip.

D. Tape out: Tape out machine, compile the bandwidth degree 12~40mm, air pressure or heat seal.

E. Tube in: Tubular feed, the user can adjust the mounting position of each pipe according to the width of the pipe used, can install up to 4, at the same time, the corresponding pipe front end connecting block should be selected.

F. Tube out: Tubular discharge, according to the size of the chip different users need to replace the different feeder mounting board, up to 4 parallel

4.2.4. Power supply

Operating voltage：200~245V/50~60Hz.

Power：2KW.

4.2.5. Air pressure

Pressure：0.6MPa.

Flow：130l/min

5. Maintenance

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.

5.1. 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.

E. Check that the tape gun is properly placed.

5.2. Regular Maintenance

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

Periodically check items:

1) Maintenance of air pressure circuit

Detect air pressure loops without leaks, remove or clean air pressure sources and air pressure adjustments. Detect voltage regulator pressure regulating valve and confirm air pressure (0.5Mpa).

Detect the pressure switch and confirm that the alarm air pressure is set to 0.5Mpa.

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 servo 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.

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.

6. Trouble shooting

Q：Alarm on the servo， No.21.0.

A: Servo signal problem， please check the code cable。

Q：Alarm on the servo， No.16.0.

A: The motor is over loaded,please check the movement of the motor.

Q：Picking error。

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

7. Appendix

Part of the Servo drive Alarm information table

Alarm Code		Alarm information
Main	Second	
11	0	Control power supply Insufficient voltage protection
12	0	Over voltage Protection
13	0	Insufficient voltage protection for main power supply
	1	(insufficient PN voltage)
14	0	Over-current protection
	1	IPM Exception Protection
15	0	Overheat protection
16	0	Overload protection
18	0	Regenerative discharge overload Protection
	1	Regenerative Tr anomaly Protection
21	0	Encoder Communication Disconnection exception
	1	Encoder Communication Exception Protection
23	0	Encoder Communication Data Exception protection
24	0	Too much protection for position deviation
	1	Too much speed deviation protection
25	0	Excessive protection of mixing deviation
26	0	Over-speed protection
	1	2nd Over speed protection
27	0	Instruction pulse input Frequency anomaly protection
	2	Instruction Pulse split frequency anomaly protection
28	0	Pulse Regeneration Boundary protection
29	0	Position Deviation Counter Overflow protection
30	0	Safety Check-out