

# S7000 SERIES





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## Attention

Thank you for buying SMTHELP's odd-form insert machine. In order to use the device safely, you should read the relevant safety precautions and function instructions

carefully before using the device to avoid accidents. odd-form insert machine is

simulated and instead of original manual operation. The machine used multi-axis motion to insert the odd-form components into the PCB. Objects unrelated to

production are not allowed to appear in the operating area during equipment

operation ; Therefore, all safety protection devices installed in the equipment are strictly forbidden to dismantle or short connect ,etc, so please confirm whether the safety device is in place and effective before using the machine. When the safety

device malfunctions, please stop and shut down the equipment before carrying out maintenance work. Please do not remove the safety warning signs of each part of the equipment at will. If there is any damaged, please contact SMTHELP!

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#### 1.Device profile



【Three color signal lamp】 Equipment alarm prompt

- 【Visual display】 Displays Mark & Part images
- [Operation display] Display software interface parameters and parameter modification
- [Operation panel] Controls device running/stopping status
- A Start Device running
- B Pause Stop in the middle of running, press start to continue running
- C Dot single step, discontinuous
- D Lighting Internal light switch
- E Computer Computer start switch
- f Emergency switch very stop, for use in dangerous situations
- 【X axis oiling window】 Easy to oil X axis screw/slide rail during maintenance
- 【USB interface】 Mouse/keyboard and offline data transfer
- 【Conveyor】Transportation of products
- 【The power switch】Total power control of equipment
- [ Cooling fan ] Maintain the temperature inside the electrical box of the equipment
- [Axis Rocker] Manual operation controls are used to move the X/Y/Z/R axis
- [Foot cup] Load bearing and level adjustment
- [Oil-water separator ] Air filtration/display and adjustment
- [Safety cover] Avoid touching the inside of the machine when the equipment is running, safety protection
- [Safety grating] Avoid touching the inside of the machine when the equipment is running, safety protection



#### 1.2 Precautions

① The equipment should be installed indoors in a dry and ventilated place and the humidity of the working environment should be between 30% and 80%.

(2) It is forbidden to open the safety cover during the automatic operation of the system. If you need to work inside the equipment, please be sure to press the emergency stop button before operating. Multiple users are prohibited to operate one equipment at the same time, so as to avoid danger.

③ Before shutting down the equipment, please send out the PCB safely, exit the operating software after confirming no error, turn off the computer, and switch off the general power supply of the equipment.

#### 2.1Software operation

- 2.1.1 Startup process
- a.Ensure that the power supply /air source is connected
- b.Turn on the main power switch to "ON"
- c.Press the computer startup button to start the computer.

d.Double-click the software icon on the desktop to start the operating software

e. The software default in operator grade authority. Click the operator position to pop up the user switching interface, select the user and enter the corresponding password to log in.

		close the software
	<u>⊧</u> ∎ •× ×	
Automatic Production	System Information	Turn off alarm sound
Program Edit	Machine Parameter	
C Adjust Machine	white Calibration	
Program File	Lincence	Program Edit Warkins Parameter
System Log	10.3-50.17 - COURS	Adje Password Change Built
Main Form	<b>R</b> 0	Program File

f.Click [Adjust Machine] - [Motion Control] - [Zeroing] Machine automatically return to zero position, then return to main page wait for



production.



Tota .	Name	line .	long things.	and the set	height [an]
	1000	Report of	10.00	10.00	16, 86
	1000	Comp	10.00	10.00	85.86
1	1083	Class	10.00	10.00	83.00
-	1004	Class	10.00	10.00	83.00
-	1000	Cing	31.00	10.00	81.60
	1018	Cire	10.00	0.00	61,60
Nakap Nobil 1	inelan)	100 2	Measur open	distance (and	10.00
Tag held the	e beightland	30 2	Tanan breaki	58	
fing hold the	index)	200 0	Names failur	legilecter s	-1.00

- 2.1.2 New programming
- 1. New program name

Open the [Program File] interface, click [New] to manually enter the program name, and return to the menu interface.

	C:\Release\File\		
Humber	Nume	LastTime	Size
0	655M236V0.prj	2022年6月24日	101811 k
1	AGILE BDE2-1. prj	2022年6月30日	98239 k
2	cpk. pr j	2022年5月8日	7095 k
3	eeee.prj	2022年5月31日	98731 k
4	training 7-1. prj	2022年7月3日	12884 k
5	TRAND. pr j	2022年7月6日	62856 k
6	uuuu. prj	2022年6月1日	30 k
7	瑞兴.prj	2022年7月4日	54888 k
8	编了.prj	2022年7月5日	24911 k
9	编子1. prj	2022年4月14日	32334 k
N	ew Delete	Load	Copay

2. Program editing

Open [ Part Library] in [ Program Edit] to add part data.

= 🔊 Error Confirmed I	₂ ≛ ◙ €	= k Errer Confirmed 12	≝ @ € ×
Part Library	Plug Data Learn	Automatic Production	System Information
NB Buta Teach	Function Switch	Program Edit	- Machine Parameter
Black Bata Tarch		-C	Machine Calibration
Pickap Teach	Nozzle Library	Program File	C Lincence
Array Data Teach		System Log	8.8.9-mmz
Program Edit	<b>8</b> 0	Bain Form	<u>8</u> 0

3 . Parts data and editing

a.Click [ Add] and enter the component name to confirm the new component name. Select the new component and click Edit or double click to enter the current component database. Ver. : 01 30-2

0         MAX         SEE2/V/3 9:25:17         SEE2/V/3 10:22:06           1         20000000 y         SEE2/V/3 10:22:06         SEE2/V/3 10:22:06           2         20000000 y         SEE2/V/3 10:16:14         SEE2/V/3 10:20:06           2         20000000 y         SEE2/V/3 10:16:14         SEE2/V/3 10:20:06           2         20000000 y         SEE2/V/3 10:16:14         SEE2/V/3 10:16:14           0         0         SEE2/V/3 10:15:14         SEE2/V/3 10:16:14           0         0         SEE2/V/3 10:15:14         SEE2/V/3 10:16:14           0         0         SEE2/V/3 10:15:14         SEE2/V/3 10:15:14           0         0         SEE2/V/3 10:15:14         SEE2/V/3		logition time	he	France	Great time	Beditication time
Pinace ester part name         1         20140007         20121/10         9.32/14         20022/10         9.32/14         20022/10         10.22/10           Pinace ester part name         2         20140007         20022/10         20121/10         10.12/10         20022/10         20121/10			0	MARK	2822/3/38 9:26:17	2022/7/5 15:22:45
Piezze ester part same           Sit           Confirm         Gancile           Betalle             Teald feed Pickap         pressare:80 × Piez           Betalle				25/68807	2022/3/30 9:37:44	2022/7/8 15:22:55
Finance exter part name     St     Confirm     Co				arreever_1	20120-0-10-11-10-11	101102-111 1111-100
Finance stater parts name         B         C1         BHED/7/5         14.37/3         14.37/3         16.45.16           SC         Condine         Genetic         B         C1         BHED/7/5         14.37/3         16.45.16           SC         Condine         Genetic         B         C1         BHED/7/5         14.37/3         16.45.16           SC         Condine         Genetic	Barrow and an east name			20VIERST_3	20022/2/10 11:15:24	3823/7/1 20:34:24
Confirm Cancile  Texid feed Picksp pressere: 50 × Pisg pressere: 50 × Befs Stitch recognition Large 5 06 Window 12.5	Finance enter part mass		-	0	DB023/7/3-14(37)38	20022/1/5 16:05:16
	Confirm Canele					

b.Open the [ Take and Place Data ] interface, configure the following function data (it is recommended to configure the nozzle first, do not move the other changes according to the actual situation).

Suction nozzle name Deploy an appropriate suction nozzle.

▶ 【Insert level】 Divides into four levels. A larger number gives the insertion priority. If the level is the same, the program allocates it automatically.

Feeder responding time Defaults to 100ms, and the larger the value is, the longer the taking time.

Camera Angle The default automatic allocation.

[Insert compensation] The actual insert is highly compensated.

> [ Decelerate distance ] Insert decelerates the distance between the component and the PCB. The larger the value is, the slower the insert speed. The default is **1mm**.

> [ Material confirmed or not] Discharge alert, allows by default.

> [Feeder delay] Alarm time for lack of component default 2000ms.

[Insert pressure detection] Insert pressure detection - [Insert pressure] Default
 50N, which can be set according to the actual situation (Original manufacturer use only)

Fickup pressure detection Take pressure detection - [Pickup pressure] Default
 50N, which is set according to the actual situation (Original manufacturer use only)

> [ Orientation identification ] Component orientation identification function -

[ Orientation identification method] Default to I/O detection (Original manufacturer use

Nozzle Name	1	-	Last pickup	⊂ Eable	
Plug level	0Level		compensation 2[mm]	-2.00	
compensation X[mm]	0.00	+	compensation Y[mm]	0.00	- 2
alow down [mm]	1.00	-	Photo Angle[deg]	0.03	3
Test allowed	T Bable		Feeding pressure[%]	50	1
detection allowed	□ Eable		Plug pressure[%]	50	
Start position [mm]	20.00	+	Start position [mm]	20.00	

only

c. Open the interface of [Feeder] to configure the corresponding parameters (it is recommended to select the feeding mode first)

[ feeder type ] Select the type of feed

C Quantity in X-direction Default 1, multi-row material for tray type (vendor permission to change)

Quantity in Y direction as above.

Feeding way	Tape feeder ·	Behind the position	default	
Pallet check	F Emble	Quantity in X(PCS)	1	2
opening time[ms]	100 : 한	Quantity in ¥(PCS)	1	1
haveormot tested	9 Eable	detection timeout[ms]	2000	ż
Directional allowed	- Eable	Direction mode	10 check	

d.Open the [ Speed ] interface, the default is high, can be changed according to the actual. The larger the multiple of the pickup hold and insert hold, the slower the speed.

Ref Speed	lleight	Wid	Low
Plug Speed	Height	Mid	Low
Pickup Speed	Height	Mid	Low
Feeder Speed	Height	Wid	Low
Pickup hold	4Times	2Times	Std
Plug hold	4Times	2Times	Std

4. PCB data and MARK instruction

a.Open the interface of [ PCB data Teach] to set the MARK parameters

Input board length and width (actual board width +1mm= conveyor width)

Input the PCB or Fixture thickness. Irregular thickness of some PCB or Fixture will leads to clamping failure. The plate thickness can be adjusted appropriately (see step 8), Click
 [ Adjust track Width ] to pop up the confirmation dialog box. Click
 [ OK ] to automatically adjust the track to the set width.



ate mode *		Search Range	3 2	Locate mode - *	earth Range 3 g
Board lenght[mm]	388.00	± Board width[mm]	276.00	Board lenght[mm] 300.00 <	Board width(mm) 276.00
igin offset X[mm]	0.00	Origin offset %[mm]     ■	0.00	Grigin offset X[mm] 0.00	Ovigin offset Y[am] 0.00
rd thickness[mm]	1.60	1 Max height[mm]	5.00	Board thickness[mm] 1.60 🔆	Max height[mm] 5.00
MarkID	S[mm]	¥[ma]	Part Name	BarkID Xfmm]	Visal Part Same
	-100, 200	124, 100		Terify substrate exist     Confirm	- Adjust track width? MASS
Add	Deleto	Adjust width	Teach data		Television and the

b.Select [ Add MARK] in the part number bar, automatically jump out of the data line, select the data line and click [ Teaching Data] to enter the MARK point teaching interface, put PCB into the conveyor, and click [ Enter Board] to put the PCB in place

= 10 Erro	r Confirmed 10	, <u>∔</u> =	<b>e</b> •	×	≡	1	Error Confir	med 10		1	<b>∗</b> ×
Locate mode *	-	Search Range	3 <u>3</u>		<u>m</u> -	entities and	. 8/9/8		Name	timi	Timi
Bourd Lenghtlast	200.00	I Board widthinks	114.00	- 22	22/38		and the	1000	WHEN A	-10.005	14.476
Origin offset X[mm]	0,00	S Origin offset Time)	0.00	- 21	1000	1 FB	Contractor (	- <b>B</b>	and it.		
Board thicknesss[mm]	19.00	☆ Mux height(mm)	5.00	2	ALC:	2	A CONTRACTOR	STORE ST	Previou		Next
MurkID	X mm	Y(m)	Part Name		- PC-	STON .	THE PARTY NAME	98253		1	
			RAFE		10.0		<hr/>	1000			
			2594880F 2594880F 2594880F 2594880F 2594880F 2594880F 3 C1		· ·					Ref edit	
	Perlata	L Marrie and A	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		10.0	Losd	tale	1 1	Bet edu	Teach data	Classe
Program Edit/	PCS Data Teacl	wagaant wildte		the second	0	Program	Edit/Mark Tee	sch			

c.Press and hold down the start button and click [ Move to photo position], then click the icon in the lower left corner to enter the movement interface. Click the axis of the circle to move **XY** axis. The smaller the circle, the slower the speed. After finding **MARK**, continue to click back to **MARK** teaching screen.



d.Return to the MARK teaching screen, click [Ref edit] to enter the recognition editing interface



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e.Enter the interface for identifying and editing the current **MARK**. Note on the left that **[** white and black **]** / **[** black and white **]** indicates the color difference between **MARK** and the PCB (for example: **MARK** is white, select white and black, **MARK** is black, select black and white) Click **[** Edit Template **]** and press the green text prompt, point the mouse to **MARK**, hold down the left button and drag the mouse to an appropriate size, and release the mouse template training successfully



f.Click **[**Test **]** to identify the coordinate successfully and return to the teaching interface. Click **[**Teach current data **]** to pop up the confirmation dialog box to save the current MARK data. Click **[**Test **]** to confirm **MARK** identification again.



5.Block and Hole data instruction

a. Click [Block Data Teach] to enter the interface and add positions to be inserted

ock 16 co	ount A	dd Block	Delete E	lock	mport Data
k0	X[mm]	Y[mm]	R[deg]	Part Name	Remarks
0	-136, 411	18.052	-179.420	C1	
1	-144.966	16.655	-89.618	25V680UF 1	
2	-136, 500	87.758	179.874	25V680UF 2	
3	-145. 158	86. 387	-89.720	25V680UF 3	
4	-95. 741	18.052	-179. 420	C1	
5	-104.296	16.655	-89.618	25V680UF 1	
6	-95.830	87.758	179.874	25V680UF 2	
7	-104. 488	86. 387	-89.720	25V680UF 3	
8	-55.071	18.052	-179.420	C1	
9	-63. 626	16.655	-89.618	25V680UF 1	
10	-55. 160	87.758	179.874	25V680UF 2	
11	-63.818	86. 387	-89.720	25V680UF 3	
12	-14. 401	18.052	-179.420	C1	
13	-22.956	16.655	-89.618	25V680UF 1	
14	-14. 490	87.758	179.874	25V680UF 2	
15	-23. 148	86. 387	-89.720	25V680UF 3	
Add par	rt De	lete part	Arra		leach data

b. Click [Teach Data] to enter the block teaching interface, hold down the start button and click [Move to target location], click move **XY** to the insert hole, click again to exit the mobile interface, and click [Identify edit] for point image processing



c. After entering the recognition and editing interface, click [Edit Template]] to select the point box according to the green text prompt. If the message indicating that the training is successful, the recognition interface will be returned

3







d.Click [ The edit characteristics] into the interface, based on green text, and then the right mouse button to choose start point and end point (note: the starting point and destination choice needs corresponding element to identify the direction, so please keep in mind that the current setting), back to the main screen click [ recognition test ] prompts recognition success click [ teach photograph position ] saves the current coordinates.



6.Feeding position and parts instruction



to configure suction nozzle and write data from right to left.



ont:4		Skip	use count:0	Set a	up virtual fee
Address	X[mm]	Y[mm]	Z[mm]	R[deg]	Part name
1					
2					
3					
6		_			
6	14				C1
7 V		Please selec	t nozzle name		25V680UE 1
8	none				25V680UF 2
9 V	DODO				25V680UF 3
10	1000				
11	1054				
12	2054				
	4056				
	1				
	2	BOBO		- nonio	
		Pett	Pola	Potz	Pest
-	1		1	- T	
Front		Rear	Pickup teach		Part teach

b.Corresponding choice position, choose corresponding component data click the part number column names, open [ feeding position teaching ] interface, press launch a click on the [ move to the feeding position ], at the same time, the use of the direction of the panel buttons or handle the work head moves to the corresponding position (Switch the illumination mode on front panel for adjustment).

::4		Skip	use count	:0 Set u	p virtual feed						24
ddress	X[mm]	Y[mm]	Z[mm]	R[deg]	Part name				)(•••)	Move to pick	up position
1						100					
2											
3								FR /	(to U	XV data	78 data
4									- Le	AT UBVG	an ours
6	0.000	0.000	0.000	0.000	C1			12/2/			
7 V	47,877	-0, 135	-16,976	0.000	25V680UF 1				-		
8	-2. 488	0.785	-16, 801	90.000	25V680UF 2					Teach	data
9 V	47.424	-0.115	-16.675	-59, 940	25V680UF 3				GI		Concession of the second se
10									-		
11								A	n		
12						R		- 1*	K-	Pickup	test
						4	X-	height	X+		
								COMP. COMP.			
		Pest	Proz	Pusz	Post	Z+ 🔫		🔷 Ү-	▲ Z-	Thr	OW
	1	n	Distance day			Nozz	le cente	r Ca	mer center	Feeder feed	Close

c.Adjust the material pickup position, select **XY** data and **ZR** data, and then click **[** Teaching Data **]** to save the current coordinate (note: before clicking **[** Teaching Data **]**, you must first select XY data or ZR data, and select the axis changed. If you do not select it, no change will be made.)





d.Click the pickup test, the machine is automatically pickup current component after confirmation, close the interface of 【 teaching material position 】 .Click 【 Part Identification Instruction 】 to edit component identification data. Press the start button and click 【 Move to Photo Position 】 to adjust the image sharpness of the component using the direction key on the panel until the adjustment is clear.

:4		Skip	use count	:0 Set u	p virtual feed	Part	C1	Angle[deg]	0.03 🛨 he	ight[mm] 13.2
ddress	X[mm]	Y[mm]	Z[mm]	R[deg]	Part name			Pi	ckup	Open the vacu
1									1	
2										100 No. 1
3									Nove to Photo	Position
9									77-	1
5	0.000	0.000	0.000	0.000	C1					
7 V	47.877	-0.135	-16.976	0.000	25V680UF 1			D+	Heigh	it p-
8	-2.488	0,785	-16.801	90,000	25V680UF 2					
9 V	47.424	-0.115	-16.675	-59.940	25V680UF 3	0			Z+	
10						0				
11								lightl	light2	Photo
12					4	The second second				
								Ref	edit	Feature edit
		none	none	none					1	
									Thow	e
Front		Rear	Pickup tea	ch I	Part teach	Continuous feeding	Continuous ref	Ref	test	Close





e.Click 【Identify Edit 】 to edit the component image. According to the color of the component lead, select lead detection and write in proportion to the minimum recognition area and detection range.



f. Click [ Edit Template] to operate according to the green text prompt, select the lead to be identified in the box, indicating that the training is successful, and close the interface.



g.Click [Edit Features] and to add, operating according to the green text prompts. Point the mouse to one side of the feature point, press the left button, and drag the feature point to an appropriate size.

P03GY5-00011B	🗜 連 🗼 🗙	P03GY5-00011B	
Part 25V680UF_1	Angle[deg] 91.61 🛓 height[mm] 13.75 📩	Model set □ white ⊽ black ◦	circle Crectangle range 3.50 📩
	Pickup Open the vacuum	count	appro
D	Move to Photo Position		
	<u>Z-</u>		
	R+ Height R-		
O	light1 light2 Photo		
	Ref edit Feature edit		
	Thew	o the side of the feature point, press	the pift button, and drag the mouse to the a
Continuous feeding Continuous ref	Ref test Close		
		1 auto ref delete	add close 1
Program Edit/Part Teach	25% 0	Program Edit/Part Teach	
			25% 505





h.Select the starting point and ending point, right-click the mouse and choose [Set Starting point] & [Set End point] (note: the selection needs to correspond to the starting point and end point of the insert hole in [Block Data]). If the setting is successful, there will be change the color and the interface will be closed



i. Click 【Identification Test】 to test the current component. If the test fails (as shown in the figure), you need to check the definition of the component or enter 【Identification Edit 】 to change the detection range until the test is OK. After the test is OK, you can 【continuous identification】 test.



30-2



7. Panel and bad board instruction.

a. Add line(s) of data same as the number of the panel in PCB. Add just one line for single PCB (no panel form) (note: insert data cannot be extended without adding this item)

ar. 1					Array		Barco	de
Num	OX[mm]	OY[mm]	OR[deg]	BadX[mm]	BadY[mm]	BarX[mm]	BarY[mm]	Blco
	_							

8.Insert data with automatic learning

a. Open the [ Plug Data Learn] interface, click the panel form extension to update the current insert location data, select the data bar and click [ No insert] to skip the insert location. When the base board insert position has component interference and needs to dodge, click [ Dodge Setting] to write the dodge distance according to the actual situation.

:16 Sk	ip:0	Red	is skip	The	plug in	Up		Down	g:16 Skip:0	Red	is skip	The	plug in	Up		Down
m	Remark	X[mm]	Y[mm]	R[deg]	Part	Block ID	Array ID	Stauts	ium Remark	X[mm]	Y[mm]	R[deg]	Part name	Block ID	Array ID	Staut
		-136. 411	18.052	-179.420	C1	0	0	A	0	-136, 411	18.052	-179, 420	) C1	0	0	A
		-144.966	16.655	-89.618	25V68	0	0		1	-144.966	16.655	-89, 618	25V68	0	0	
		-136. 500	87.758	179.874	25V68	0	0	Α	<b>^</b>	102 - 44	AP PER	194 494	in-trea	^	~	
		-145.158	86. 387	-89.720	25V68	0	0			17-			n.t.t.	ar 1	2 00	-
		-95. 741	18.052	-179. 420	C1	0	0	A	XY		Avo	10	Eable	Z[mm]	3.00	
		-104. 296	16.655	-89.618	25V68	0	0			X-	-					
		-95.830	87.758	179.874	25V68	0	0	A			vſm		00	VImml	3 00	-
		-104. 488	86. 387	-89.720	25V68	0	0		-		11.00			. At mus	0.00	-
		-55.071	18.052	-179. 420	C1	0	0	A								
		-63. 626	16.655	-89.618	25V68	0	0				Confi		Canad			
		-55.160	87.758	179.874	25V68	0	0	A			Contra	т <u>ш</u>	cance	<u>,</u>		
		-63.818	86. 387	-89.720	25V68	0	0				10.050	100 101				
		-14. 401	18.052	-179. 420	C1	0	0	A	12	-14. 401	18.052	-179.420	C1	0	0	A
		-22.956	16.655	-89.618	25V68	0	0		13	-22. 956	16.655	-89.618	25768	0	0	
		-14, 490	87.758	179.874	25V68	0	0	A	14	-14. 490	87.758	179.874	25768	0	0	A

b.Select the first line of insert data to open the

【insert Data Teaching】 interface. Click

【Automatic Learning Position】 and the machine will automatically learn all insert holes. After learning, the machine will return to the interface.





#### 9. Function switches

A.Machine running mode selection and track running speed (Original manufacturer use only).

Pass Mode		close					
Test Mode		close					
Mark Recognition	close						
Bad Mark Recognition	close						
Barcode Recognition	close						
Convyer Speed	Low Speed	Mid Speed	Height				
Work Order Number							

#### 10.Suction nozzle data

a.Establish nozzle/gripper database, corresponding to input actual nozzle/gripper size data (note: input data must be correct)

> [ Pickup holding time] the default is **100ms**. The longer the time, the slower the speed.

Vacuum/Gripper advance opening distance ] 35mm by default. The vacuum is broken or the gripper is opened in advance to prevent the possibility of the gripper bringing material.

[Insert hold time high-speed] defaults to 200ms, the insert hold time when the machine is operating at 100% speed.

[ Vacuum value] defaults to -80kpa, do not change.

▶ [Insert hold time low speed] the default is **200ms**, the insert hold time when the machine runs at **20%** and **50%** speed.

[vacuum detection failure value] default -5kpa, the low vacuum alarm.



Num	Namo	Type	longth[mm]	width[mm]	hoight[mm	1
0	1000	W IN:	10 00	10.00	76 00	u.
1	1054	吸嘴	10.00	10,00	83,00	
2	2054	吸嘴	10.00	10,00	83.00	
3	3056	吸嘴	10.00	10.00	83.00	
4	4056	吸嘴	10.00	10.00	83.00	
5	1	吸嘴	10.00	10.00	83.00	
6	2	吸嘴	10.00	10.00	83.00	
7	3	吸嘴	10.00	10.00	83.00	
8	4	吸嘴	10.00	10.00	83.00	
Pickup hold ti	me[ms]	200 ÷	Advance open o	listance[ms]	5. 00	
Plug noid time	e neight[ms]	300 <b>·</b>	vacuum breakin	ng time[ms]	50	- 2
Plug hold time	e low[ms]	200 ÷	Vacuum failure	value[kpa]	-5. 00	
Conv	1	Paste	Add	1	Delete	

#### 11.insertion array

Insert point editing can be divided into two ways: **a**. General editing (applicable to single PCB and Panel form PCB, biased to single PCB); **b**. Array editing (for panel form PCB only).

**Common editing mode: a**. For single PCB, add all the hole positions for insertion, assign the part number, and directly show the hole positions.

- **b**. For panel form PCB,
- 1. You can select the panel form mode in the PCB positioning

mode (Multiple Mark coordination can be added only in the panel form mode);

- 2. Add corresponding Mark data to the parts database;
- 3. Add corresponding panel blocks;
- 4. Add the location data of insert holes in corresponding blocks and teach them;
- 5. The insert data is displayed automatically, and the hole position is edited.

#### Array editing mode:

- **a.** For example with two panel in PCB , establish two **Mark** data in the parts database (as shown in Figure 1);
- **b**. Select the panel form mode in the PCB positioning mode and add two groups of **Mark** coordinates (as shown in Figure 2);
- c. Add the insert position of the first panel to the block data and teach it (as shown in Figure 3);
- d. Add two rows of array data in the panel form demonstration, click the panel form demonstration and use Mark camera to locate the symmetry points of the first and second panel PCB (see Figure 4);
- e. In the insert data will automatic learning and the whole PCB data will automatic done.



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Ξ	Error (	Confirmed 19			<b>€ ×</b>	$\equiv$		r Confirmed 1	9	<b>J</b> init	<b>e</b>	×
Total:6						Loca	te mode 🦷 🚬		Search Ran	ge	3 🗄	
Num	Name	Creat tim	bD	Iodificati	on time	F	Board lenght[mm]	300.00	Board	d width[mm]	184.00	÷
0	MARK	2022/3/10 9:	25:17	2022/7/5 1	15:22:45		in the second of the second se	0.00			0.00	
1	25V680UF	2022/3/10 9:	37:44	2022/7/5 1	15:22:55	Orig	in offset X[mm]	0.00	· Origin of	ffset YLmm]	0.00	1
2	25V680UF_1	2022/3/10 11	:14:54	2022/7/5 1	4:51:56	Boar	d thickness[mm]	19.00	÷ Max	height[mm]	5.00	÷
4	25V680UF_2 25V680UF_3	2022/3/10 11	:15:34	2022/3/31	20:26:24		MarkID	¥[m]	v	[]	Bont Non	
5	Cl	2022/7/5 14:	37:28	2022/7/6 1	6:24:23		Markib	-30 085	54	626	MARK MARK	-
Braid fe Long: 5.00	ed Pickup pressu Width:5.00 Heigh	ure:50 × Plug nt:0.00	pressure:50 ×	<pre>     Ref: datum m </pre>	ark-•		• Add 4	-152. 330	124	4. 100	none <u>WARK</u> 25V680UF 25V680UF_1 25V680UF_2 25V680UF_3 C1	
1	udd	Delete	Edit		Сору		Add	Delete	Adjus	t width	Teach da	ta
Р	rogram Edit/Par	rt Library		Fig 1	25%		Program Edit/	PCB Data Teac	h	Fig	2	25%
≡	Error (	Confirmed 19	1		<b>€</b> ×	≡	Erro	or Confirmed	19	<b>H</b> erest	•	×
1 block 1	6 count	Add Block	Delete E	Block	Import Data	Total	:2			Array	Barco	de
*Block0						Nu	m OX[mm] OY	[mm] OR[deg]	BadX[mm] Bad	dY[mm] BarX	[mm] BarY[mm]	Blcok
Num	X[mm]	Y[mm]	R[deg]	Part Name	Remarks -	C	0.000 0.	000 0	0.000 0	. 000 0. 0	000 0.000	0
1	-144 966	16,655	-89 618	25V680UE 1		1	0.000 0.	000 0	0.000 0	.000 0.0	000 0.000	0
2	-136, 500	87, 758	179.874	25V680UF 2					1			
3	-145. 158	86. 387	-89.720	25V680UF 3					1			
4	-95. 741	18.052	-179. 420	C1								
5	-104. 296	16.655	-89.618	25V680UF 1				/				
6	-95.830	87.758	179.874	25V680UF 2								
7	-104. 488	86. 387	-89.720	25V680UF 3					4			
8	-55.071	18.052	-179. 420	C1				,				
9	-63. 626	16.655	-89.618	25V680UF 1			A dd	2 data				
10	-55. 160	87.758	179.874	25V680UF 2			Add	z udid.				
11	-63. 818	86. 387	-89.720	25V680UF 3			L					
12	-14. 401	18.052	-179. 420	C1		-						
13	-22. 956	16.655	-89.618	25V680UF 1								
14	-14. 490	87.758	179.874	25V680UF 2								
15	-23. 148	86. 387	-89.720	25V680UF 3	•				511			
Add	part	Delete part	Arra	у	Teach data		Add	Delete	Arra	ay teach	Bad mark	teach
P:	rogram Edit/Bl	ock Data Teac	h	Fig	3	Ş	Program Edit/	'Array Data 1	each		Fig4	25%

#### 2.1.3The machine parameters

#### 1.Shaft control parameters

a. Click to open the [ Axis Parameters] interface, which contains the Proper value of the axis data. (Please do not modifv it.)

Error Confirmed 11	. ∎ ≰ ×	Total:20ard 16Axis	Error	Confir	ned 11			LOW.		E.	×
Axis Information		Item	0Aris	1Azis	2Axis	3Aris	4Axis	5Axis	6Azis	7Axis	84.*
		Bone: Lode	2	2	2	2	2	2	2	15	
		Home Direction	1	U	0	0	0	0	0	U	
		Return Reference P	1	1	1	1	1	1	1	1	
Machine Function		Nome Offset	0	0	1.802	2.219	1.024	1.0	0	0	
		Locating offset	0	0	10000	10000	10000	10000	1000	1000	
		Home Baximum Speed	20000	20000	10000	10000	10000	10000	1000	1000	
		Home Acc dec time	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Intrinsic Parameter		Home Stop Speed	2000	2000	1000	1000	1000	1000	500	500	0
L N.		Home Start speed	2000	2000	1000	1000	1000	1000	50	50	10
		Ranual Speed	20000	20000	10000	10000	10000	10000	500	1000	10
8888		Ranual Acc dec time	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Machine Seting		Sanual Stop Speed	2000	2000	2000	2000	2000	2000	500	500	0
<u>60</u>		and Speed	5000	5000	5000	5000	5000	5000	5000	5000	
IO Input Output Seting	Ö.	قکابا Machine F	Paramet	er/Axi:	s Infor	mation	)				

#### 2. Function switches

Yer Click to open the [ Machine Function ] interface, and you can set related functions (Original manufacturer use only).



Soper Have or not	Open	Jacking motor	Open
Left to right	Open	Hand wheel	Open
Right to Left	Close	Distortion calibration	Close
Vacuum pump	Close	Up light	Open
Bender	Close	Dow light	Open
Orbital transfer	Open	Surface calibration	Close
Torque	Open	Mes Function	Close
Thermal compensation	Close	Pre drop switch	Close
Save all Image	Close	R axis common switch	Close

#### 3. Basic and MES parameters

a.Click [Intrinsic Parameter] to change the corresponding parameters (Original manufacturer use only).

Parame	ters Postion Parameter MES Settings Torqu	ue Settings	
Num	Parameter Name	Numerical	Factory
0	Visual coarse positioning through	23	Seting
1	Substrate movement(low speed)[pul	25000	Seting
2	PCB fix delay time[ms]	900	Seting
3	PCB in place delay time[ms]	300	Seting
4	PCB out board delay [ms]	300	Seting
5	PCB board delay[ms]	15000	Seting
6	PCB unload overtime (mid speed)[ms]	5000	Seting
7	Delay out board delay[ms]	50	Seting

b.Click **(** Other Settings **)** to open MES connection and elevation detection. You can set the format and method of MES communication, and upload MES data after setting the IP and port of the communication.

MES communication test: MES communication test, which contains test information;

MES update path: Path where the program MES information is saved;

MODUBUS port: component floating detection servo communication port (the red mark of below figure is the servo communication parameter setting, which is

generally set as the default);

Device number: The device number contained in MES communication.



ther Parameters P	Postion Parameter WES Settings Torque Settings					
MES Capture	• POST API					
MES URL	192. 168. 0. 1					
WebServer	Api name					
Post Type application/json						
MES path	C:\Users\jjsu\Desktop\ALL-11-电统(1)\2\imgNG\101电统					
MES share						
Result	Result					
Equipment Number	设备编号:C0112					
language English						





#### 4. Machine settings

a.Click [ Machine Settings ] to set the factory Settings of each signal node (Please do not modify it.)

#### 5. Input/output Settings

a.Click [Input/output Settings] to check out I/O interface.

6.System logs

a.Click [System Log] to view the system information of the current machine, click Clear

[Historical Document] to delete the historical system information, and click [Open Historical Document] to view the previous system log information.

umber 0	Type E E	SL I tem Time Crystellar 安全报答 2022/7/7 8:16:40 量数 第2012 日本			a 2022/1/12 14:05 文件来 KYO 2022/2/10 16:40 文件来 orporation 2021/1/39 14:50 文件来 2021/1/3 8:04 文件来	Time 2022/7/7 8:16:40 2022/7/7 8:16:51		
2	¥	轨道报警	2022/7/7 8:38:46	◎ 文相 ↓ 下館	<b>2012</b> 2022/3/22 17:46 文纳美	2022/7/7 8:16:51		
3	W	供料器报警	2022/7/7 8:56:16	う 音乐 二日 会司		2022/7/7 8:56:16		
					打开(0) 取用			
KA ider	ntified an err	or		6号供料器卡料				
				C1	earing historical	Open a histo		

#### 7. Machine debugging

a. Click [ Motion Control] to open the axis debugging screen, and click JOG+/JOG- to move the corresponding

axis;	Error Confirmed 11	< ×	≡		134		1		• × ×
	Machine Calibration		Clic	ck the b	button to move	the selected a	xis Th	row All	Home All
			3	X轴	-357. 986	JOG+	JOG-	Home	Stop
	Machine Validation			Y轴	140. 398	JOG+	JOG-	Home	Stop
				Z1	15.632	JOG+	JOG-	Home	Stop
			12	Z2	9. 996	JOG+	JOG-	Home	Stop
				Z3	9.996	JOG+	JOG-	Home	Stop
				Z4	9. 992	JOG+	JOG-	Home	Stop .
			This	s interi	face can contro is	l the uniaxial no other inte	movement, bef rference in th	ore moving to e e device	ensure that there
	Machine Calibration			Ad	just Machine/	Motion Contr	rol		25%
		- 3 /0 C							

b.Click [In-Out] to open the I/O information screen. Click the red dot to test the corresponding I/O signal.

Ξ,	134	1 🕂 🕂 👘 🗐 🕹	K = 134	1 I I I I I I I I I I I I I I I I I I I				
Display I/	/O status information		Display I/O status information					
Input Ou	tput		Input Output					
0	启动按钮AUT	e 停止按钮STP	0 1#火爪ZJ1	● 2#夹爪ZJ2 ● -				
1	复位按钮RST	e 点动按钮SUT e	1 3#夹爪ZJ3	● 4#夹爪ZJ4 ●				
2	1#真空检测A-T		2 1#真空ZK1	● 2#真空ZK2 ●				
3	3#真空检测C-T	🛑 4#真空枪测D-T 🛑	3 3#真空ZK3	● 4#真空ZK4 ●				
4	1#插件错误信号2W1	● 2#插件错误信号2₩2 ●	4 1#破真空ZQ1	2#破真空ZQ2				
5	3#插件错误信号2W3	● 4#插件错误信号Z₩4 ●	5 3#破真空ZQ3	● 4#破真空ZQ4 ●				
6	备用输入1	R轴到位RINP	6 PCB相机触发信号TRCM3	R釉启动RQD				
7	直连0UT14与0UT15	急停按钼EMG	7 元件相机触发1激光TRCM1	● 元件相机触发2条形TRCM2 ●				
Click the icon to change the status of the output outlet. The status change will cause the linkage of the solenoid valve. Please ensure safety before operation Click the icon to change the status of the solenoid valve. Please ensure safety before operation								
Ad	djust Machine/Input Out	tput 25% 2	Adjust Machine/Input Outp	ut 25%				

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#### 2.1.4 Abnormal Mark handling

a. If PCB stuck in the conveyor, PCB did not reach the specified position, resulting in Mark position de viation;

b. Flux on the conveyor causes stuck of the fixture, leading to Mark identification error;

c. The PCB on the fixture is not properly placed, resulting in dislocation or reverse placement of the PCB, which also makes Mark failure;

d. Mark is blocked by foreign bodies or Mark itself is irregular, resulting in abnormal recognition.

#### Mark Process instance



- a. Normally to lead the target in the green box ;
- b. If Mark runs half out of the green search box, its position is offset and the camera cannot recognize it; It is necessary to exit the PCB from the conveyor, check and ensure the conveyor mechanism is normal, and also check whether there is foreign matter on the conveyor edge or fixture. If so, please clean it, and put the PCB into the conveyor again after confirmation;
- **c.** Mark is not in the display range, blocked or **PCB** reversed, so the camera cannot recognize it; The **PCB** needs to exit the conveyor, remove the shielding or change the direction of the **PCB** return to continue production.

#### 2.2 Insertion head structure

#### 2.2.1 Nozzle/gripper replacement

The suction nozzle/gripper belongs to the quick disassembly mode, just need to push the base buckle, the suction nozzle/gripper will automatically disengage from the base; Also push the base buckle to attach the nozzle/gripper to the base. (No tools required)



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#### 2.2.2Feeder installation

Pull the positioning buckle to align the positioning slot and install feeder on the feeder platform (the station position should be consistent with the program station position).



#### 4. 3.Additional items

- **3.1**Maintenance and maintenance
- 3.1.1 Maintenance Tools preparation







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Tip nozzle



#### 3.1.2 XY Screw & slide maintenance

XY screw & slider cleaning/refueling, add 2# butter monthly.





#### 3.1.3 Z-axis mechanism maintenance

Z-axis mechanism cleaning/refueling, filling AFC or special high speed grease monthly (the protective cover of insert head needs to be removed before cleaning refueling)



#### 3.1.4 Conveyor mechanism maintenance 1

Check whether the belt or chain is loose, clean and maintenance monthly.





#### 3.1.5 Conveyor mechanism maintenance 2

Check whether the guide wheel is worn and stuck, clean and fill with chain oil monthly.



3.1.6 Conveyor width adjustment mechanism maintenance

Conveyor width adjustment mechanism/transfer mechanism cleaning/refueling, filling 2# butter monthly.



#### **3.2.**Device Failure Handling

- a .The equipment alarm pressure is low, please check whether the total air input of the equipment is normal. The standard **4-6kg** anhydrous air source is normal. If the air source input is normal, the pressure controller and **I/O** control system need to be checked;
- b. After starting the software, each shaft control alarms. Please check whether the emergency switch is pressed;
- c. If the gripper takes abnormal material or the feeder has no material, it means that lack of the materials, the feeder need refill material;
- e. Mark handle failure and confirm whether PCBA is in place. If Mark point is fuzzy and incomplete, you can directly click Mark center with the mouse;
- f. When the emergency switch is pressed, the emergency switch on the operation panel or the operation handle is pressed, pull it up;

The command position of axis W H X/Y exceeds the limit, which can be divided into the following situations:

- 1. Check whether the signal of X-Y limit sensor is normal; 2. If the drive
- & motor is abnormal, reset it back to zero;
- h. The machine is not reset, please reset the machine to zero;
- i. When the safety door is open during operation, it means that the front and back safety doors are opened during normal operation of the machine and the machine stops running. The safety door can be closed to reset the machine;
- g. Trigger the safety grating, and the machine stops running. Confirm that there is no foreign body blocking on the front and rear safety grating, and the operator has left the machine. Press the reset button.



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