Buffer Machine

Users Manual

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Thanks for using Southern Machinery, our company here would like to express our heartfelt thanks. This manual describes the composition of the hardware, equipment operation, electrical drawing and maintenance. Please fully understand the contents of this manual and use it correctly.

Although the contents of this manual are correct, but if you find any questions or mistakes, please contact the company.

warn:

- The equipment can only be operated by professional maintenance and maintenance personnel or qualified personnel
- Before power on, confirm that the external input power supply complies with the rated voltage and power of the equipment
- Please ground the equipment reliably
- All mechanical transmission of this equipment should pay attention to personal safety during operation

pay attention to:

- Please read the user manual carefully before operating the equipment and remember the matters needing attention
- Please do not install this equipment near the electromagnetic interference source
- Do not modify the hardware and software programs in the electric box, and the transformation is dangerous
- Please keep the manual properly and maintain the equipment as required by the manual

catalogue

Chapter 1. brief introduction

1.1 summary

Use for SMT production line connection and transmission, furnace rear cache, cooling, and other functions.

Features of the machine:

■ Using Panasonic PLC, precision step, precision ball screw

1.2 technical parameter

project	main parameter
The PCB	Left to right, right to left
source	AC 110 50 / 60Hz power: 40 0W.
control method	Touch-screen + Panasonic PLC control.
Transmission	Belt transfer
PCB thickness	0.7～30mm。Can be customized according to the product
delivery head	Adjuable according to usage.
The fuselage	
Machine model	
User	Password (minimum permission)
Engineer	password
Manufacturer	Password 512212 (maximum permission)

repare items before use

- The machinery must be safely grounded and must be connected to the grounding bus
- The ground wire must be well fixed in the metal part of the fuselage
- To ensure safety, prohibit moving bodies close to running equipment
- Do not install the machinery in the dust, oil mist, conductive dust powder, corrosive gas, flammable gas, moisture, shock and vibration, strong interference, high temperature and outdoor environment
- Avoid the corrosive solvent wiping machine, neutral cleaner should be used
- Please keep the price manual for future maintenance and maintenance

 pay attention to:

☞ No reliable grounding, there may be a risk of electric shock.

Chapter 2. Hardware operation

1.3 Start-up precautions

1. To ensure safety, the body is prohibited from contacting the running parts

2. Check the machine for debris.

3. Check for debris or PCB on the track.

1.4 operation declaration

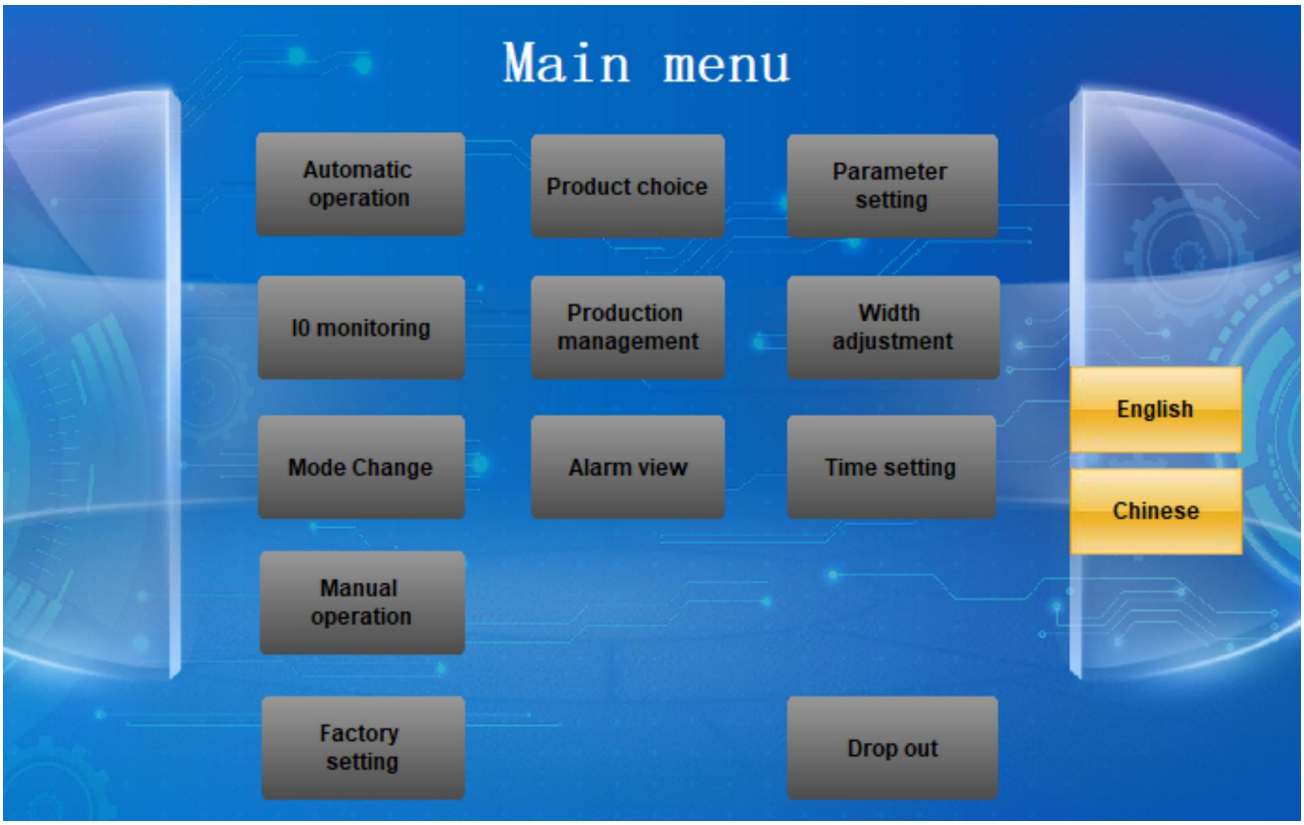
2.2.1 Boot-on display page (Figure 1 below)

graph 1

- **This page is the boot page.**

  Click the enter button to enter the menu page.

2.2.2 Main Menu page (as shown in Figure 2 below)



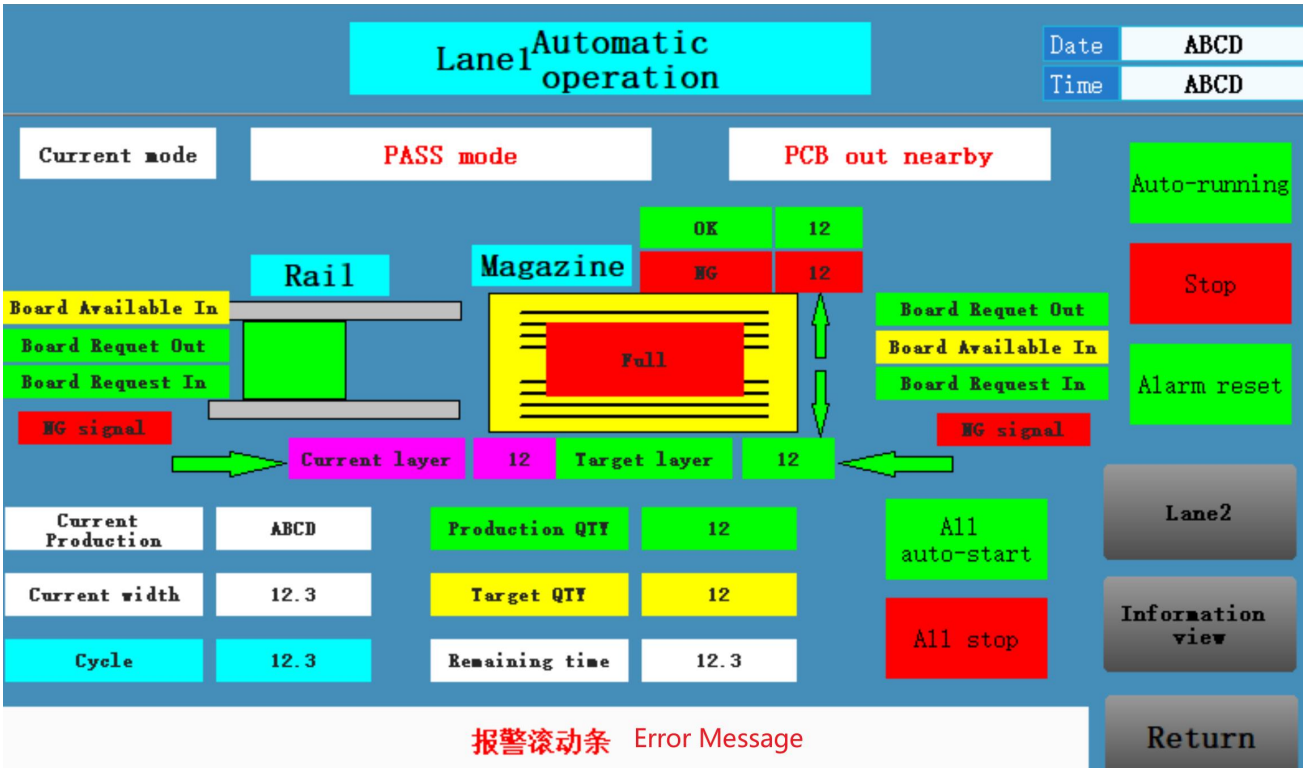
graph 2

- **This page is a menu page;**
- **This page can enter each page through the button.**

- **Automatic operation —— into the automatic operation page, used for machine automatic operation.**
- **Manual operation —— into the manual page, can manually operate each action of the machine.**
- **Parameter setting —— Enter the parameter setting page to set each parameter of the machine.**

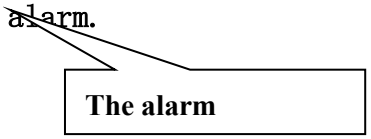
- **IO monitoring —— enters the IO monitoring page to monitor machine input / output status, and is generally used for problem finding during machine failure.**
- **Alarm view —— Go to the alarm view page, used to view the historical alarm.**
- **Mode selection —— Go to the mode selection page for switching modes.**

2.2.3 Automatic operation page (Figure 3 below)



graph 3

- This page is an automatic operation page,
- In this page can be the automatic machine operation;
- This page can display the current operation mode;
- This page can enter the storage board state to view;
- Can monitor the current NGOK board and frame memory board status;
- This page can be called out of the NG board;
- Display the running status of the machine and monitor the signal status of the machine and the local machine;
- Displays the current real-time alarm.



■ Button instructions

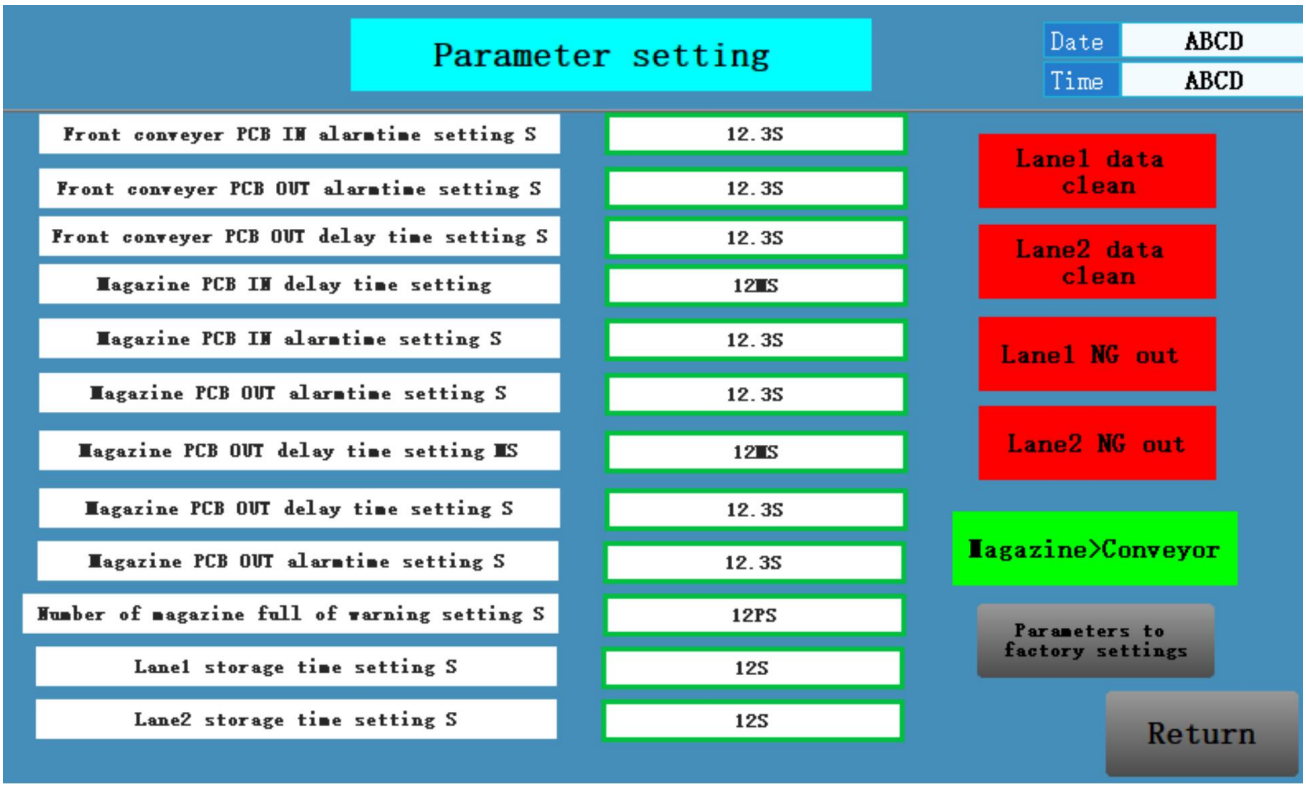
- Start —— click the button and the device enters the automatic running state
- Alarm reset —— The equipment runs automatically. When the fault alarm beep, handle the abnormality, click the button to remove the alarm state and continue to run
- Stop —— Click the button, the device stops all running state
- Running status —— displays the current machine status.
- Current mode The —— displays the current operating mode of the machine.
- Current level level —— shows the current level of the machine.
- Call up the NG board —— Click this button to call up the NG board inside the box.
- Current number of vacancies —— Empty empty in the current cache box.

- Current OK number —— The number of OK boards stored in the current box.
- Current number of NG boards —— the number of NG boards stored in the current box.
- —— The number of PCB that can be released of the plate in the box.
- Current production number —— Number of PCB currently produced
- Current cycle —— Current time required to produce a piece of PCB (this cycle is affected by the PCB production beat)
- Count reset —— Clear current production (after clear current production is 0, target production is unchanged)

  - **Signal instructions**

- **Inboard signal: front board feedback signal**
- **NG signal: the front machine NG signal feedback**
- **Board signal: the main board**
- **Board outgoing signal: the rear key board signal feedback**
- **This machine has board signal: this machine has board signal**

2.2.5 Parameter setting page (Figure 5 below)



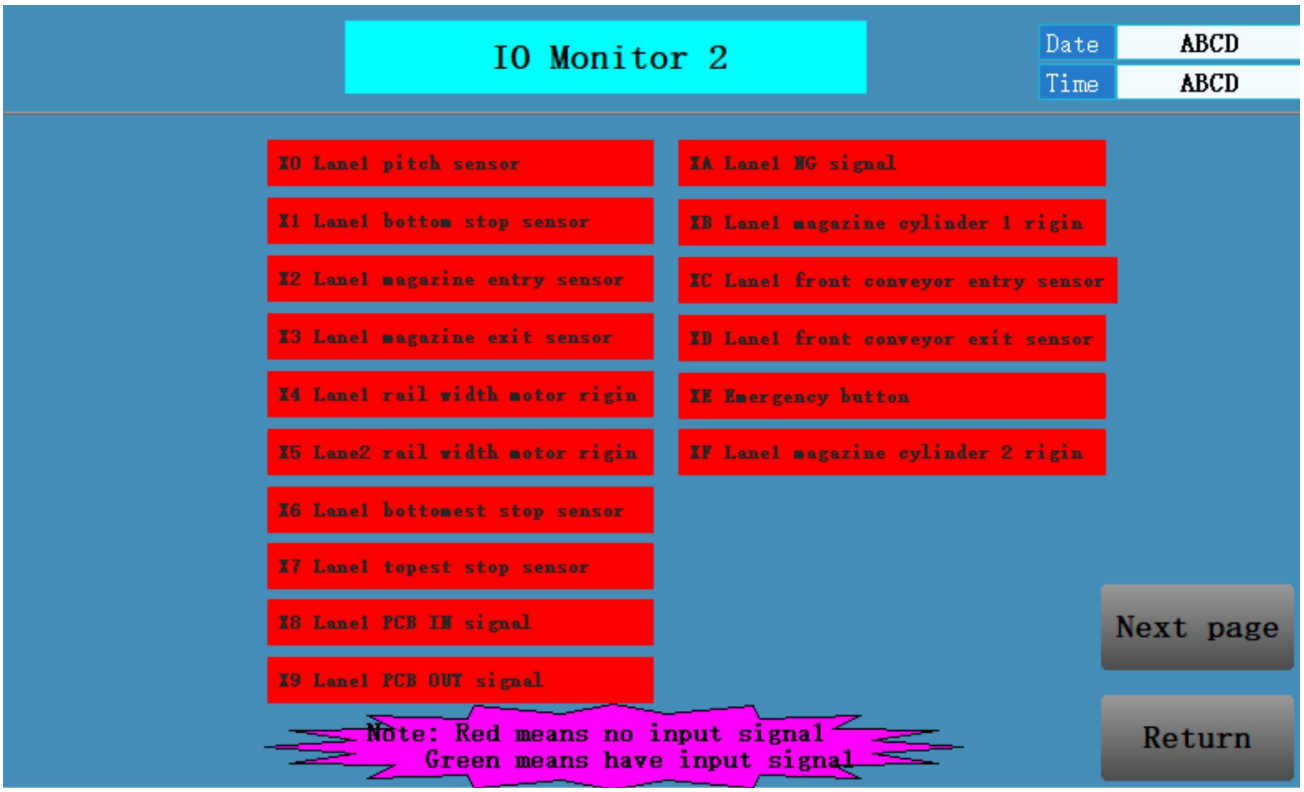
graph 5

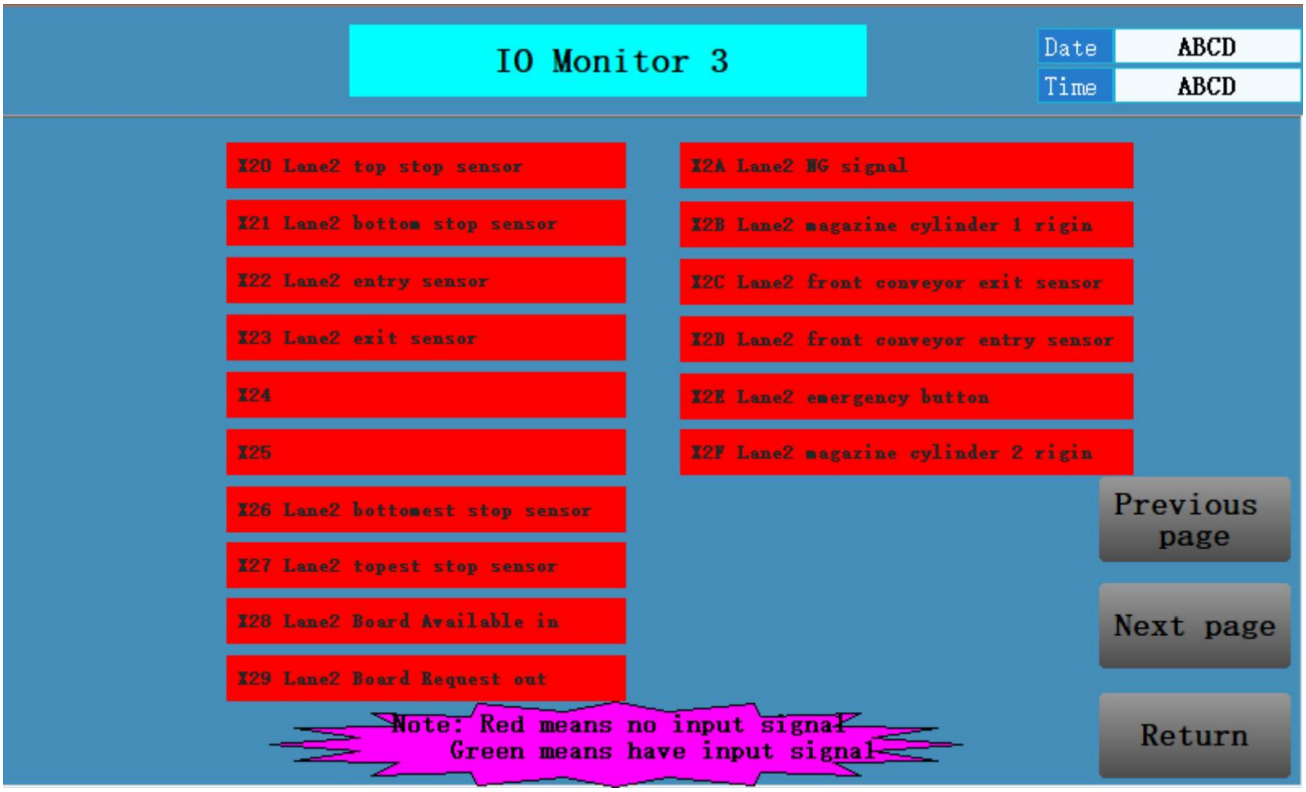
- **This page is a parameter page used to adjust the delay and alarm time.**
- **This page blocks the buzzer alarms.**
- **This page shields the protective door system.**
- **This page changes the direction of the box.**

- **Enter the box function description**
  - **Track incoming board alarm time S: track incoming board transmission time time, over the time alarm**
  - **Alarm time S; timeout time**
  - **Track exit board time S: delay transmission time of track exit board.**

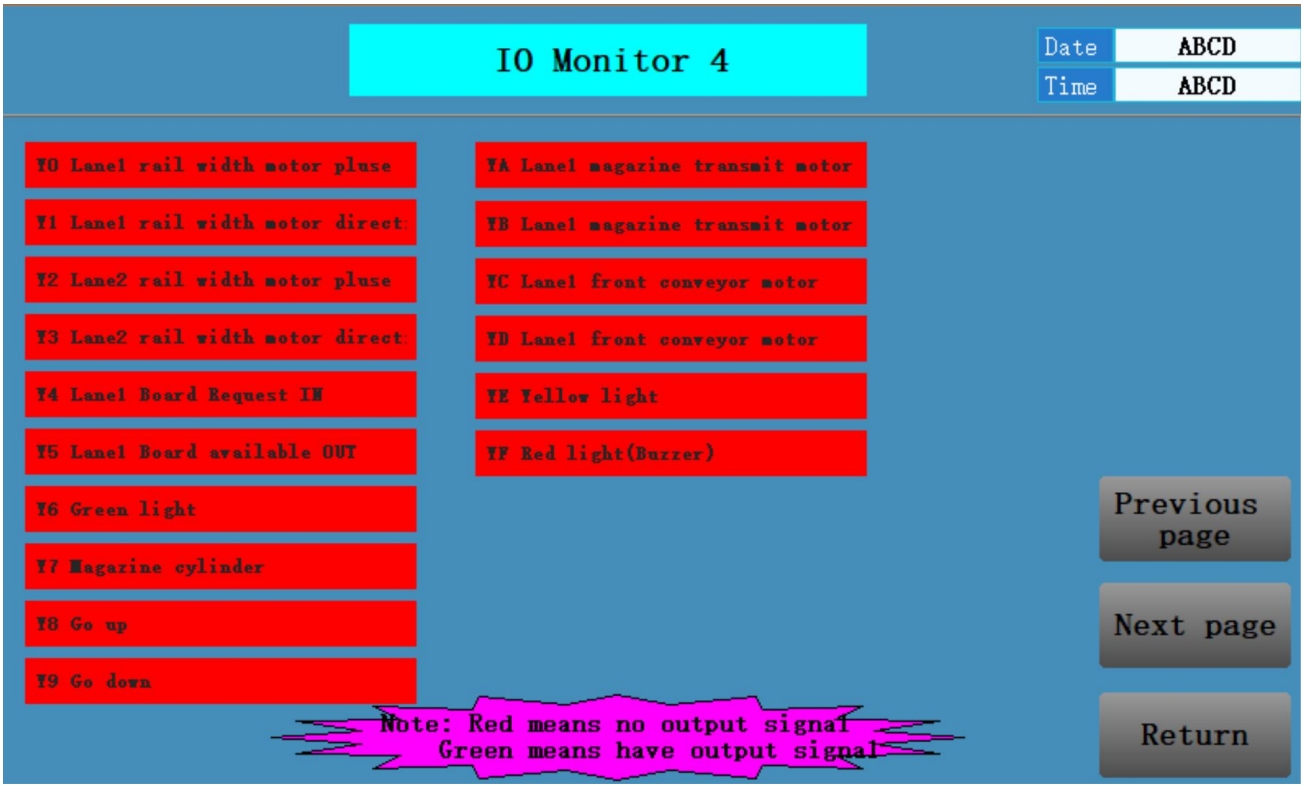
- **Frame cylinder alarm time S: the set time of frame cylinder launch is that the sensor will alarm.**
- **S: Material frame incoming board transmission time time, beyond the time alarm.**
- **Warning time S: The transmission time out after the time exceeds.**
- **Completion time S: the delayed transmission time after the entry of the material box (the length of this time will determine the stop position of the PCB after entering the material frame).**
- **Completion time S: the delay time after the transmission of the material frame exit board.**
- **Box board skip time S: after the box board transmission reaches the time, the PCB will default this layer board skip this layer.**
- **Automatic zero times: the plate will automatically zero once it reaches the set times.**
- **Front rail cooling storage plate time S: the front rail cooling time to the plate.**
- **Material box empty too small warning number PS: when the empty layer of the major general alarm reminder.**

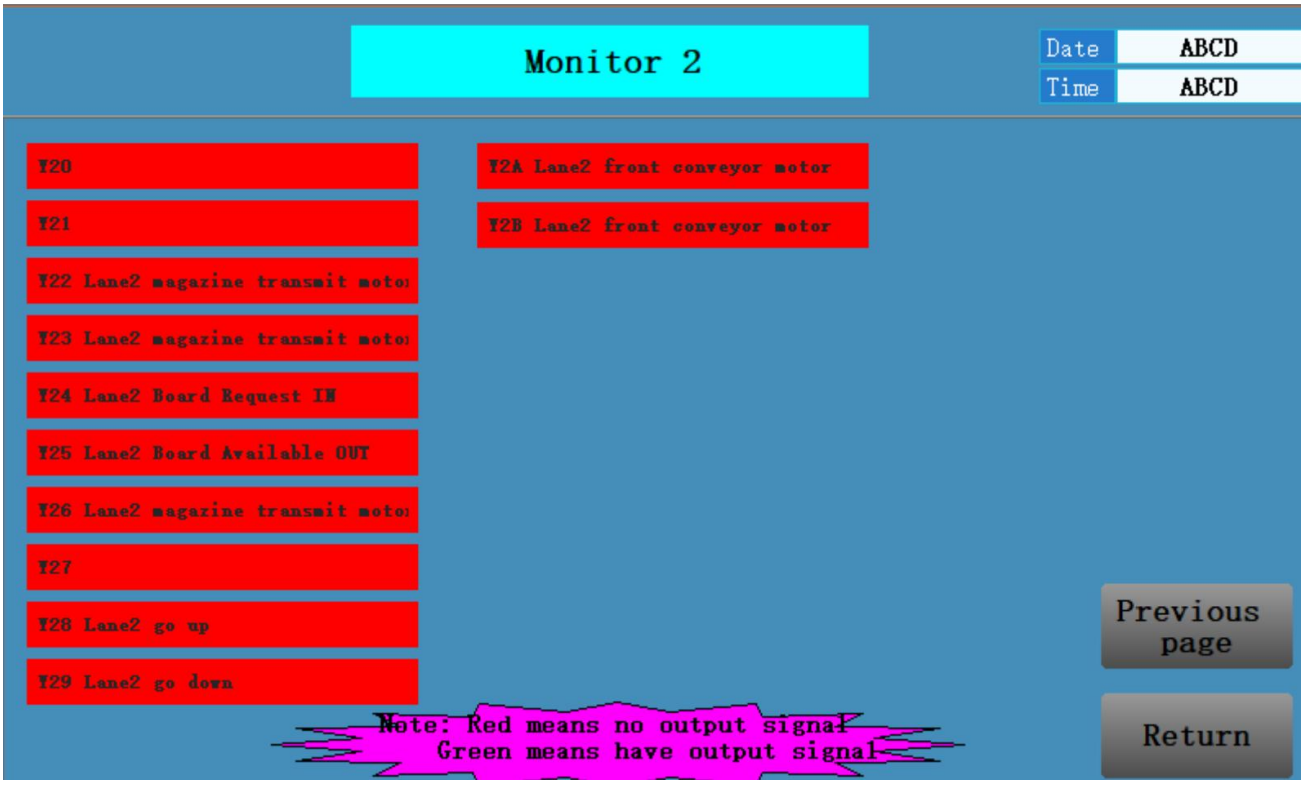
2.2.6 IO monitoring page (Figure 6 below)


IO Monitor 2
Date ABCD
Time ABCD
X0 Lane1 pitch sensor
X1 Lane1 bottom stop sensor
X2 Lane1 magazine entry sensor
X3 Lane1 magazine exit sensor
X4 Lane1 rail width motor rigin
X5 Lane2 rail width motor rigin
X6 Lane1 bottomest stop sensor
X7 Lane1 topest stop sensor
X8 Lane1 PCB IN signal
X9 Lane1 PCB OUT signal
XA Lane1 NG signal
XB Lane1 magazine cylinder 1 rigin
XC Lane1 front conveyor entry sensor
XD Lane1 front conveyor exit sensor
XE Emergency button
XF Lane1 magazine cylinder 2 rigin
Note: Red means no input signal
Green means have input signal
Next page
Return


IO Monitor 3
Date ABCD
Time ABCD
X20 Lane2 top stop sensor
X21 Lane2 bottom stop sensor
X22 Lane2 entry sensor
X23 Lane2 exit sensor
X24
X25
X26 Lane2 bottomest stop sensor
X27 Lane2 topest stop sensor
X28 Lane2 Board Available in
X29 Lane2 Board Request out
X2A Lane2 NG signal
X2B Lane2 magazine cylinder 1 rigin
X2C Lane2 front conveyor exit sensor
X2D Lane2 front conveyor entry sensor
X2E Lane2 emergency button
X2F Lane2 magazine cylinder 2 rigin
Note: Red means no input signal
Green means have input signal
Previous page
Next page
Return

graph 6

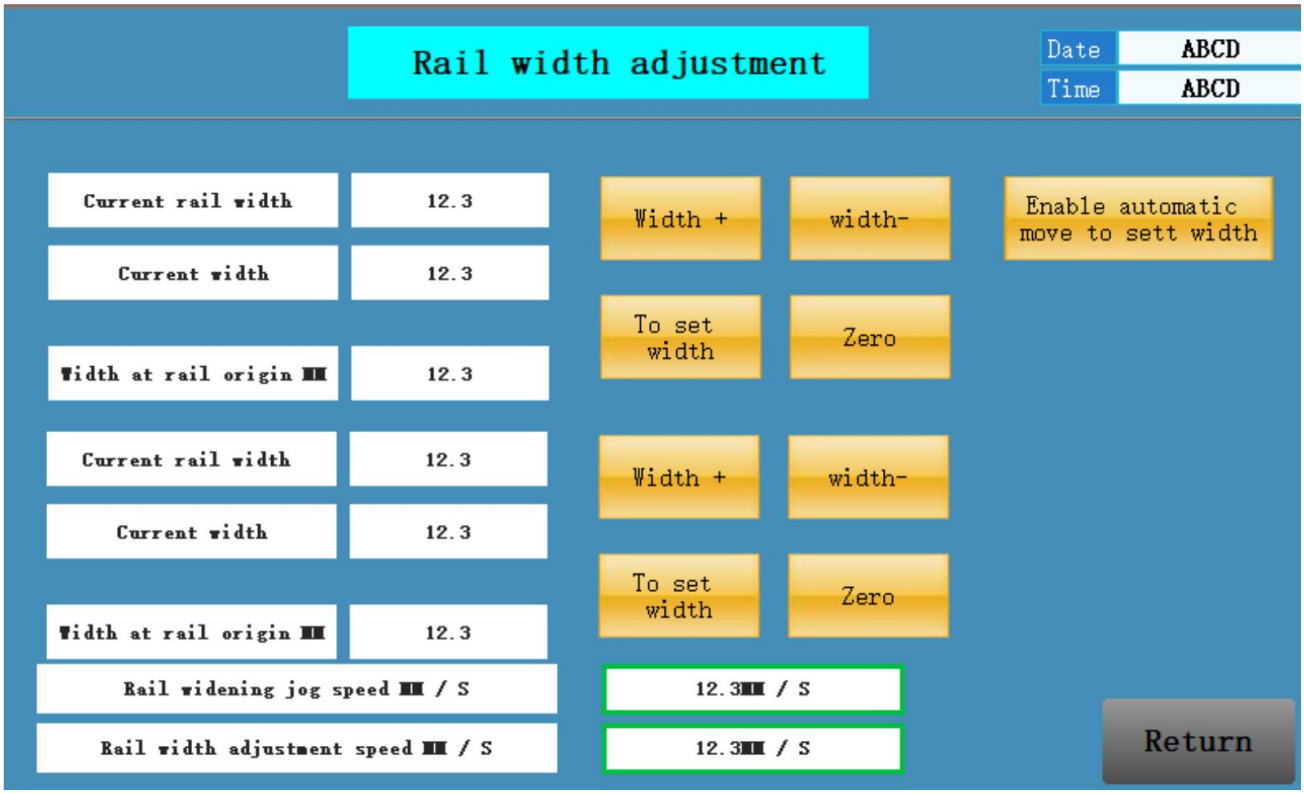

IO Monitor 4
Date ABCD
Time ABCD
Y0 Lane1 rail width motor pluse
Y1 Lane1 rail width motor direct
Y2 Lane2 rail width motor pluse
Y3 Lane2 rail width motor direct
Y4 Lane1 Board Request IN
Y5 Lane1 Board available OUT
Y6 Green light
Y7 Magazine cylinder
Y8 Go up
Y9 Go down
YA Lane1 magazine transmit motor
YB Lane1 magazine transmit motor
YC Lane1 front conveyor motor
YD Lane1 front conveyor motor
YE Yellow light
YF Red light(Buzzer)
Previous page
Next page
Return
Note: Red means no output signal
Green means have output signal


Monitor 2
Date ABCD
Time ABCD
Y20
Y21
Y22 Lane2 magazine transmit moto
Y23 Lane2 magazine transmit moto
Y24 Lane2 Board Request IN
Y25 Lane2 Board Available OUT
Y26 Lane2 magazine transmit moto
Y27
Y28 Lane2 go up
Y29 Lane2 go down
Y2A Lane2 front conveyor motor
Y2B Lane2 front conveyor motor
Previous page
Return
Note: Red means no output signal
Green means have output signal

graph 7

- This page is the IO monitoring interface, which can immediately monitor the input and output status of the current equipment. When the machine fails, you can also observe the status of each electrical device through IO.

2.2.7 Automatic widen the page



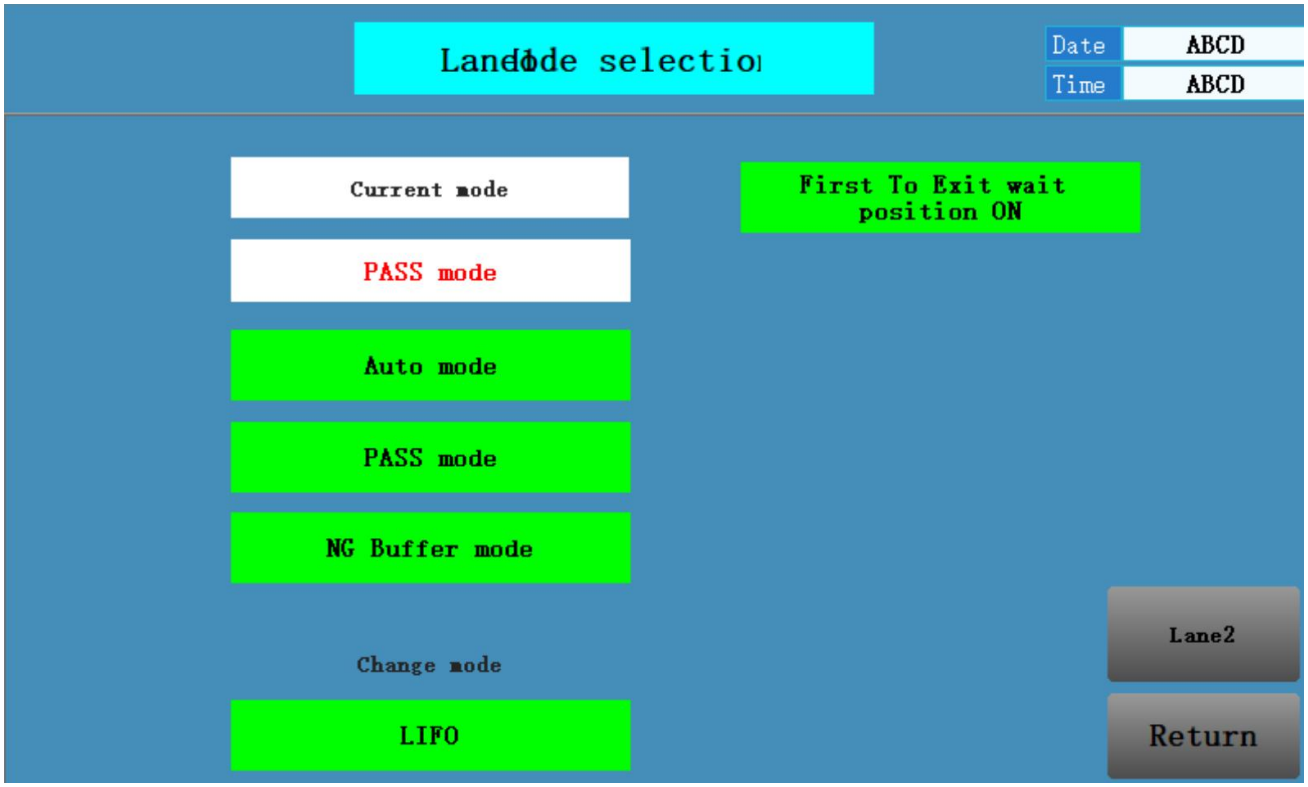
- This page is the track width page to change the track width.

- **Button instructions**

  - The ed connection speed MM/S —— track speed to the adjustment position.

- **Widening point movement speed MM/S —— track point movement width is the speed (the speed used when adjusting width + adjusting width-).**
- **Track current width MM —— track current width.**
- **MM —— Track origin width (this width is not recommended)**
- **Track maximum width MM —— Track maximum limit width.**
- **PCB width MM —— current PCB width.**
- **Width + —— point motion adjustment width track.**
- **Width- —— point motion adjustment for narrow track.**
- **To wide adjustment —— track automatically to PCB plate width position stop.**
- **The zero —— track back to the origin.**

2.2.8 Mode selection page



■ This page bit mode selection page is used to change the buffer board mode and access mode.

- Automatic pass mode —— Cache mode on (NGOK board in cache mode)
- NGOK cache mode OFF —— NGOK cache mode is open (this mode distinguishes NGOK board, OK board to the time board (for example, set 1 minute, 1 minute after the board to 1 minute), NG needs to manually remove the board.
- —— This button does not light the priority exit board (after the entry board, the box will wait at the exit layer of the board), and after the light board, the priority entry board (the box will wait at the next PCB entry layer).
- PASS pass mode —— After PASS pass mode is opened, the box will wait at the first PSB box, and click PASS to exit the board
- **Current press time out —— This button does not light the board will press the set time out**
- Rear rail —— Click the button to enter the rear rail mode selection page for mode operation setting

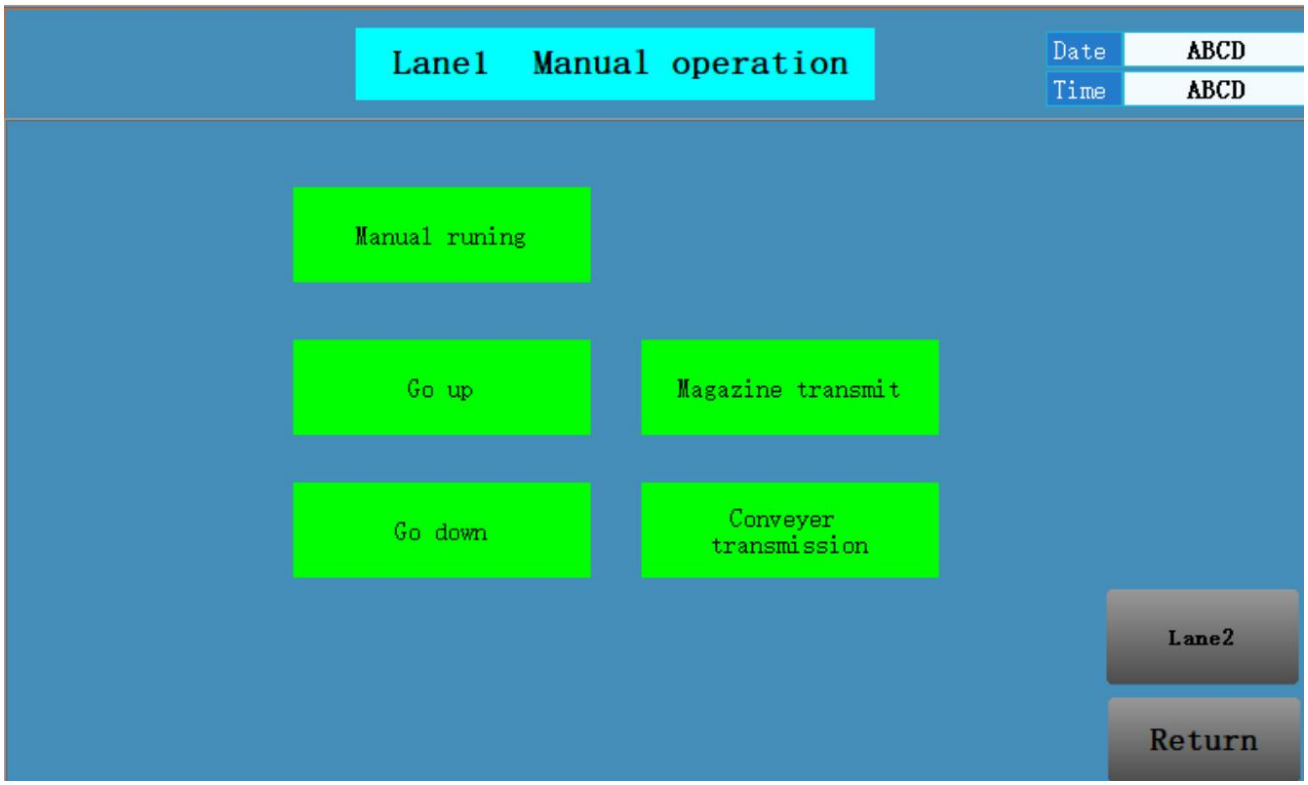
2.2.9 Alarm viewing page (Figure 11 below)

graph 11

- **View the alarm information on this page when the alarm occurs**

➢

2.2.11 Manual operation page (see Figure 13 below)



graph 13

- **This page is a manual page before the button on this page can be lit manually.**
- **Manual operation operations is performed on this page.**

■ **Button function description**

- Material frame transmission: material frame transfer motor transmission.
- Rail transmission: extended rail transmission.
- Lift shaft rise; click the button box to rise one layer
- Lift shaft down: click the button material box down one layer
- Current position of the lifting shaft: where the current material frame is located

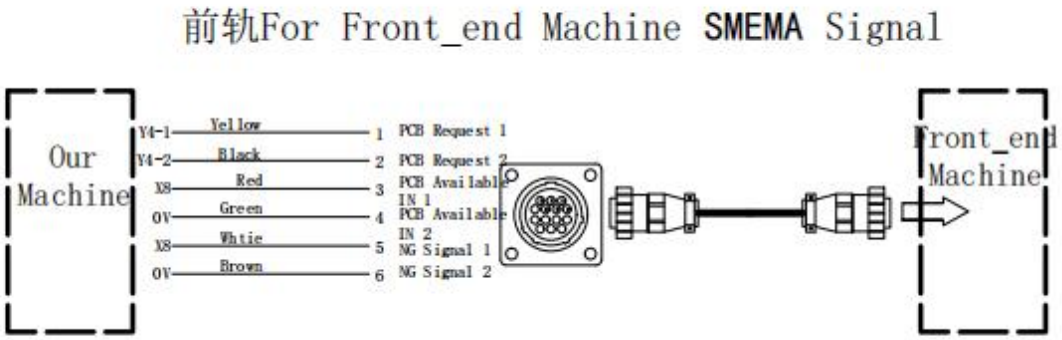
2.2.12 Status modification page (Figure 14 below)

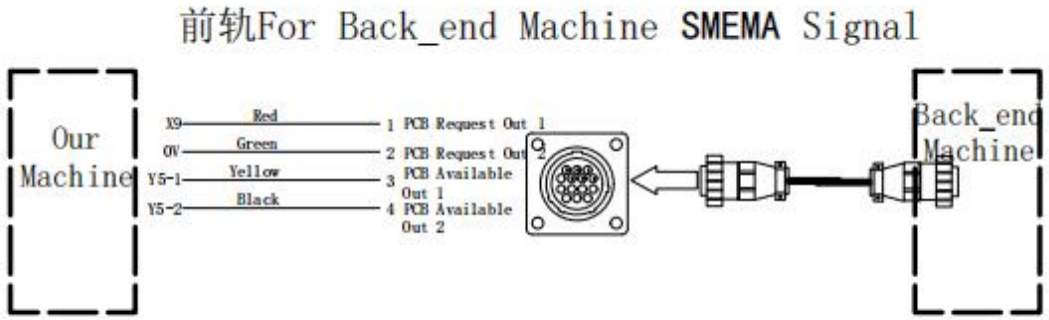

L State OFF L State OFF L State OFF
1 OK 11 OK 21 OK
2 OK 12 OK 22 OK
3 OK 13 OK 23 OK
4 OK 14 OK 24 OK
5 OK 15 OK 25 OK
6 OK 16 OK
7 OK 17 OK
8 OK 18 OK
9 OK 19 OK
10 OK 20 OK
Close
Lane1 information
Date ABCD
Time ABCD
L State OFF Time L State OFF Time L State OFF Time
1 OK OFF 12.3457 11 OK OFF 12.3457 21 OK OFF 12.3457
2 OK OFF 12.3457 12 OK OFF 12.3457 22 OK OFF 12.3457
3 OK OFF 12.3457 13 OK OFF 12.3457 23 OK OFF 12.3457
4 OK OFF 12.3457 14 OK OFF 12.3457 24 OK OFF 12.3457
5 OK OFF 12.3457 15 OK OFF 12.3457 25 OK OFF 12.3457
6 OK OFF 12.3457 16 OK OFF 12.3457
7 OK OFF 12.3457 17 OK OFF 12.3457
8 OK OFF 12.3457 18 OK OFF 12.3457
9 OK OFF 12.3457 19 OK OFF 12.3457
10 OK OFF 12.3457 20 OK OFF 12.3457
Lane2
Return

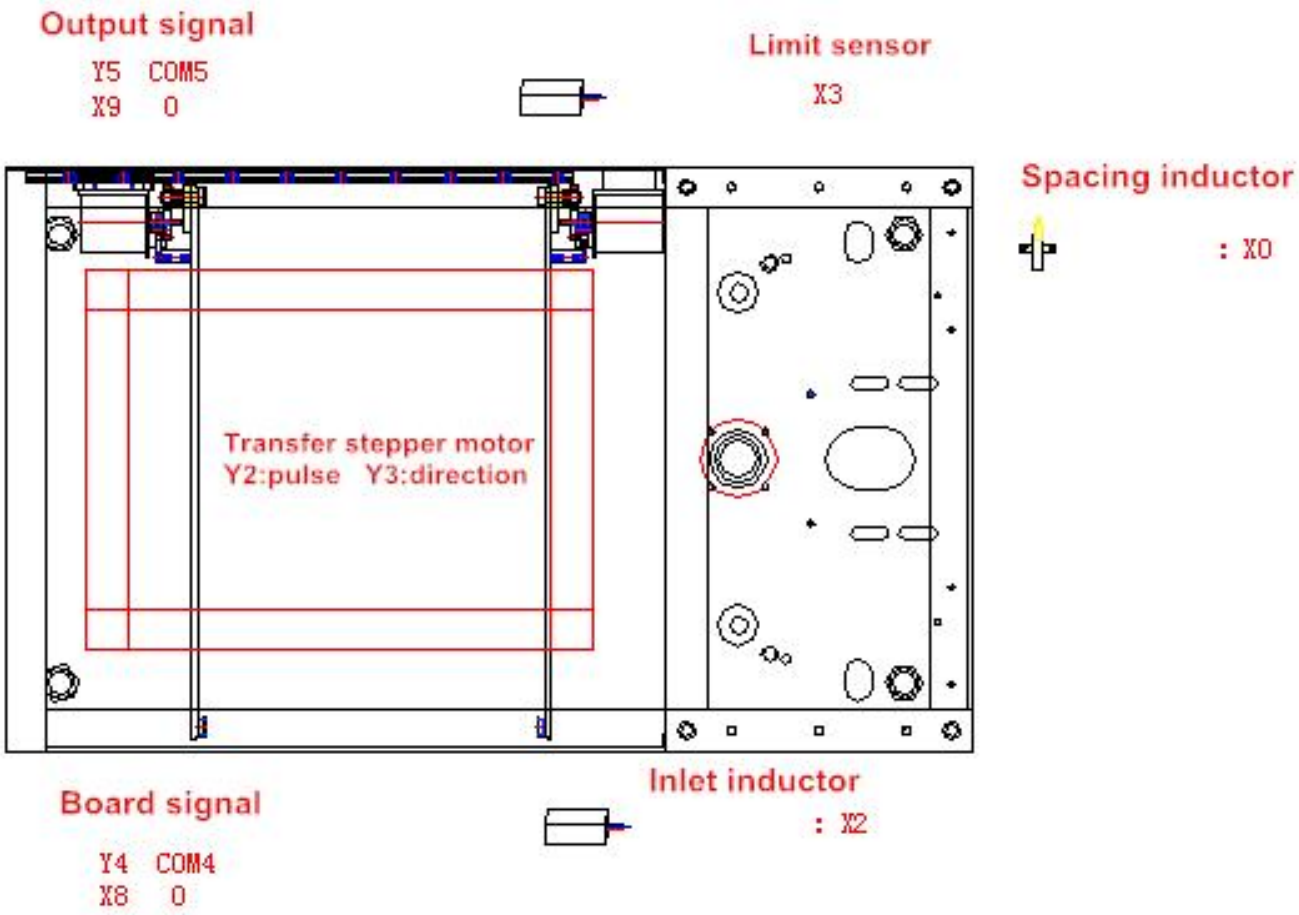
graph 14

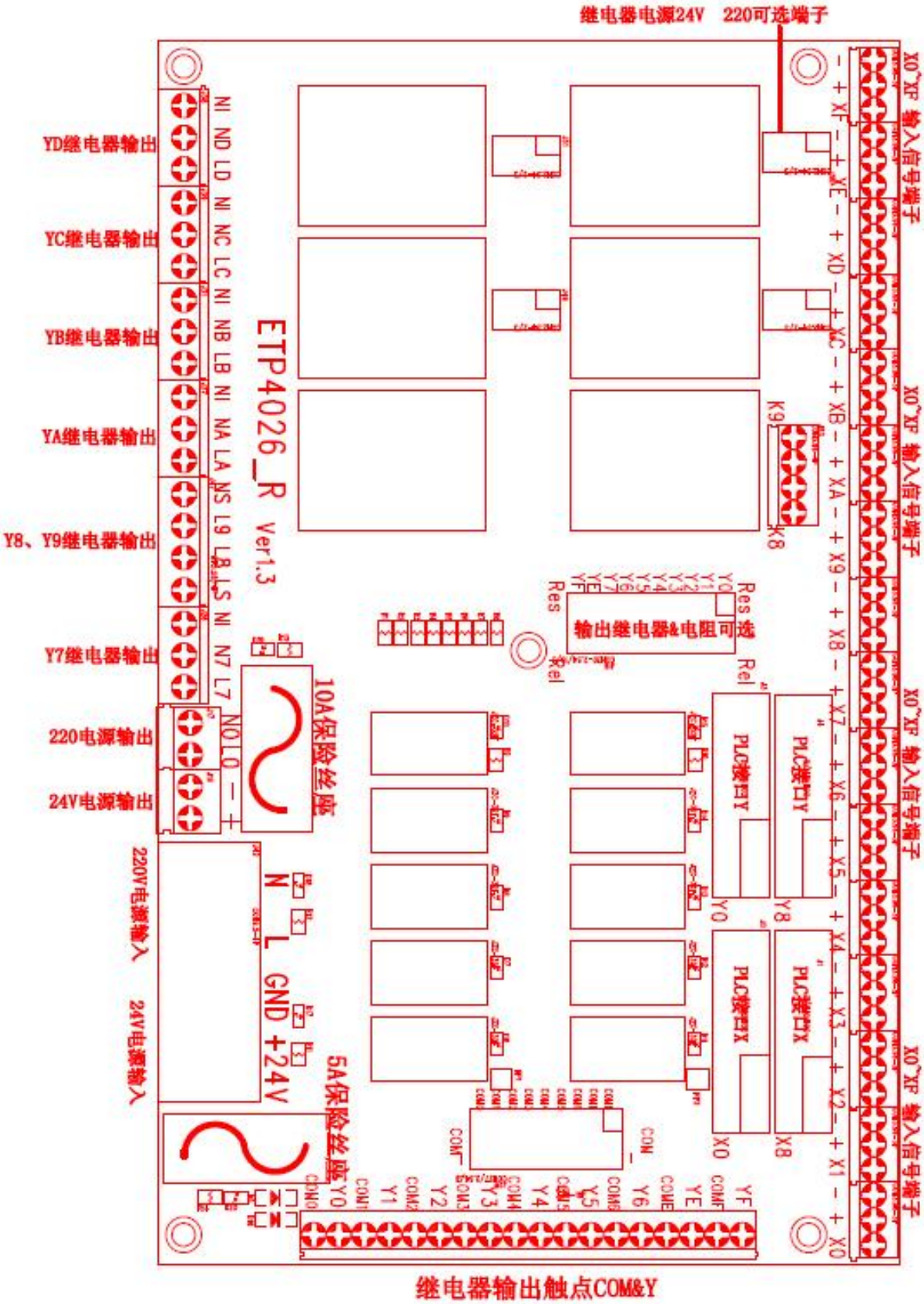
- **This page is a status modification page. Click the modify status button to enter the modification status page. This page can modify the PCB status in the box (first confirm the PCB status of the layer).**
  - **Status: 0-No board 1-OK board 2-NG board 3-disabled**
  - **Save board information clear 1S —— Click the button for one second all PCB status in the back box change to no board (please confirm that there is no PCB in the box click the button)**

1.5 Signal docking






Output signal
Y5 COM5
X9 0
Limit sensor
X3
Spacing inductor
: X0
Transfer stepper motor
Y2:pulse Y3:direction
Board signal
Y4 COM4
X8 0
Inlet inductor
: X2



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Chapter 3

1. Familiar with the principle and electrical schematic diagram of the equipment.
2. Be familiar with the installation position of various mechanical devices and original electrical equipment, and understand its performance and function.
3. Correctly analyze the cause of the failure.
4. Locate the faulty part and the failed component
5. Targeted maintenance.

1.5.1 Reasons for common faults and troubleshooting methods

NO	Fault phenomenon	Reason	The barrier in row
1	Power on touch screen display	No power supply	Check the 220V power supply and 24V power supply
2	Transmission motor sound	With the transfer gear motor and each layer is loose	Adjust transmission motor fixed plate, loose match is good
3	Show that the plate is locked	The calculation of the position of the output plate of the lower computer is wrong	Whether the plate is normal, whether there is a card board situation?
4	Non entry plate	Is the current status automatic?	Switch to automatic state or whether the PCB plate is full
5	You need to transfer the electric machine	Whether or not the belt is turned?	Check whether the layers are not turned, or whether the transmission motor gear is loose
6	The lift has been rising and falling	Is the spacing inductor responsive?	Check if the positioning rack is induced and if the U-type sensor is damaged

7	The lifting platform does not rise or fall	Is the induction sensor in or out of the board?	Whether the induction is induced in the manual state and the inlet plate and the outlet port
8	Into the board stuck	The left side height is different from the height of the upper machine	Adjust the screw bar with a movable wrench to align the height
9	The main power switch indicator light is not on	The ch is broken, loose, power cord broken circuit	Unplug the plug, open the panel, check whether the wire is loose If there is a loose compaction again, if not loose, please replace the button

 pay attention to:

☞ To repair or replace electrical components, disconnect the power supply and prohibit live operation.

Chapter 4 Important Safety Matters

1. Adjust the cup foot of the machine to the equipment track level before use.

2. Check whether the power supply matches the specifications of the conveyor before startup.

3. If the power supply is unstable, the power supply regulator must be installed.

4. The machine must be safely grounded, and the ground wire must be well fixed in the fuselage part.

5. To ensure the normal operation of the machine, do not download or change the screen program.

6. If the machine is not used for a long time, the power supply should be cut off and dust prevention measures should be taken.

7. Do not put your hand into the machine when the equipment is running.

8. No debris should be piled up or placed in the equipment.

9. Do not install the machinery in more dust, oil masonry, conductive powder, corrosive gas, easy combustion gas, moisture, shock, high temperature and outdoor environment use

10. Operate the equipment, please follow the instructions.

11. Do not trample the power cord and cable on the walkway.

12. Do not open the distribution box arbitrarily. If necessary, please operate by an electrician and other professionals.

Chapter 5 Equipment Maintenance

Machine maintenance directly affects the safe and efficient work and service life of the machine, requiring regular maintenance:

1. Test whether all the keys function properly.

2. Test whether the delivery of the PCB board on the equipment is smooth.

3. Wipe the machine regularly to keep the whole machine clean and dust-free.

4. Regularly cleaning the transportation part, belt, pulley and transportation guide rail, to ensure smooth and smooth transportation.

5. Transmission part: add grease at the transmission sprocket and chain. Note that this item must be executed in the shutdown state.

6. Wipe the ball wire rod clean with a dust-free cloth, and then add the grease. The amount of the added grease is better to form a uniform oil film on it.

7. Power supply part: the equipment does not have waterproof function, pay attention to moisture-proof. Do not accumulate dust in the slot to prevent poor contact or short circuit.

a. 、Maintenance cleaning project

1	Equipment shell	Ensure the appearance of the shell, no dust	Every day / time
2	Width adjustment optical axis	WD-40 can be used to prevent embroidery oil clean, no debris	Every day / time
3	Clean conveyor chain	There is no electronic component, paper tape and other sundries	Every day / time

b. Oiling project

1	All ball nuts	Lubricating grease (using grease gun)	Times / month
2	Rotary bearing	Lubricating grease (jet lubrication)	Times / month
3	All guide bar, wire rod	Grease (hand pouring lubrication)	Times / month
3	PCB conveyor chain	Lubricating grease (jet lubrication)	Times / six months

c. Adjustment project

1	PCB conveyor belt (chain)	The inner track bearing is adjusted when it is slack	Every quarter / time
2	Track width	Is it consistent?	Every quarter / time

d.Equipment inspection

- Check the conveyor belt is too loose, keep the belt clean
- To keep the lifting platform and axis linear bearing cleaning
- Cloth or paper used to wipe dirty oil, then add the lubricating oil to the ball screw
- To test all automatic and manual operation
- Transfer to test PCB is smooth
- To shut the power supply to the high lift, elevator checks has declined
- To check cylinder movement is smooth
- To check whether the wear track belt
- To check the photoelectric sensor, magnetic sensor is working properly
- Check whether the transport steel belt is too loose and keep the transport belt clean.

- Wipe off the dirty oil with silk cloth or paper and grease the ball screw.
- Test for smooth product delivery.
- Check the steel strip track for wear.

Pay attention

1、before any maintenance and maintenance, ensure that the power supply is in "OFF" position.

2.special attention should be paid to the positioning piece and some inductive switches during the maintenance, and the device will cause the loss of the machine to be estimated.