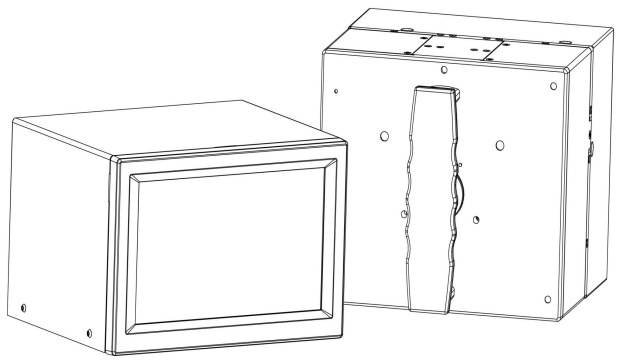
Thermal Transfer Overprinter

FC32-Li/FC32-Lc/FC32-Ri/FC32-Rc

User Manual



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Safety Instructions

Before operating and using the printer, please carefully read the following safety regulations in order to prevent any hazard or material damage.

1. Safety warning


Warning - This must be complied with in order to avoid any damage to the human body and the equipment.


Note - This shows important information and tips for printer operation.

2. Safety precautions


Warnings: Violating following instructions can cause serious injury or death.

1) Do not plug several products in one multi-outlet.
• This can provoke over-heating and a fire.
• If the plug is wet or dirty, dry or wipe it before usage.
• If the plug does not fit perfectly with the outlet, do not plug in.
• Be sure to use only standardized multi-outlets.

2) You must use the supplied adapter.
• It is dangerous to use other adapters.

3) Do not pull the cable to unplug.
• This can damage the cable, which is the origin of a fire or a breakdown of the printer.

4) Do not plug in or unplug with your wet hands.
• You can be electrocuted.

5) Do not bend the cable by force or leave it under any heavy object.
• A damaged cable can cause a fire.


Note: Violating following instructions may cause slight damage of the appliance.

1) If you observe a strange smoke, odour or noise from the printer, unplug it before taking following measures.
• Switch off the printer and unplug the set from the mains.
• After the disappearance of the smoke, call your dealer to repair it.

2) Install the printer on the stable surface.
• If the printer falls down, it can be broken and you can hurt yourself.

3) Use the original accessories only and do not try to disassemble, repair or remodel it by yourself.
• Call your dealer when you need these services.
• Do not touch the blade of auto cutter.

4) Do not let water or other foreign objects drop into the printer.
• If this happened, switch off and unplug the printer before calling your dealer.

5)Do not use the printer when it is out of order. This can cause a fire or an electrocution.
• Switch off and unplug the printer before calling your dealer.

6) Other considerations:
• Place the printer on a solid and even base so that it cannot fall.
• Leave enough space around printer for operation and maintenance.
• Keep all liquids away from the printer.
• Do not expose the printer to high temperatures, direct sunlight or dust.
• Ensure the printer is connected to a socket with the correct mains voltage.
• Switch off the printer POWER supply when it's not in use for a long time.
• To ensure the printing quality and reliability, suggest use the same quality or recommend paper supplier.
• Please switch off the POWER supply when connect/disconnect all the ports or it will cause damage to the printer control circuit.
• Never carry out maintenance or repair work yourself. Always contact a qualified service Technician.
• Keep this User Manual in a place which is easily accessible at all times.

3. Other Precautions

The copyright for this user manual and various other manuals is property of our company. Any copying or conversion into electronic form and saving of this material without the express written permission is strictly prohibited. Use of the information contained in this manual is not subject to any patent liability. This manual has been prepared with utmost care and attention to detail but may contain certain errors and/or omissions. Our company is not legally liable for any damages resulting from the use of the information in this manual. Our company and its affiliates are not legally liable (United States excluded) for any damages, loss, costs, and/or expenses that result from the breakdown, malfunction, and/or misuse of the product due to violation or neglect of the operation and maintenance information and instructions provided by our company, as well as from the unauthorized alteration, repair, and/or modification of the product by the user and/or third party. We are not legally liable for any damages and/or issues resulting from the use of options and/or parts that are not authentic or authorized products.

4. WEEE (Waste Electrical and Electric Equipment)



This mark shown on the product or its literature indicates that the corresponding item should not be discarded at the end of its working life with others household waste. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate marked items from other types of waste and recycle them responsibly to promote the sustained reuse of material resources. Household users should contact either the retailer where they purchased this product, or their local government office for details of where and how they can conduct environmentally safe recycling of such items. Commercial users should contact their suppliers and check the terms and conditions of purchase contracts. This product should not be combined with other commercial waste for disposal.



Caution: This is a Class A product. In a domestic environment this product may cause radio interference in which the user may be required to take adequate measures.

1. Product Introduction

1.1 Features

This product has the following characteristics:

- Separate module design for coding mechanism and control panel

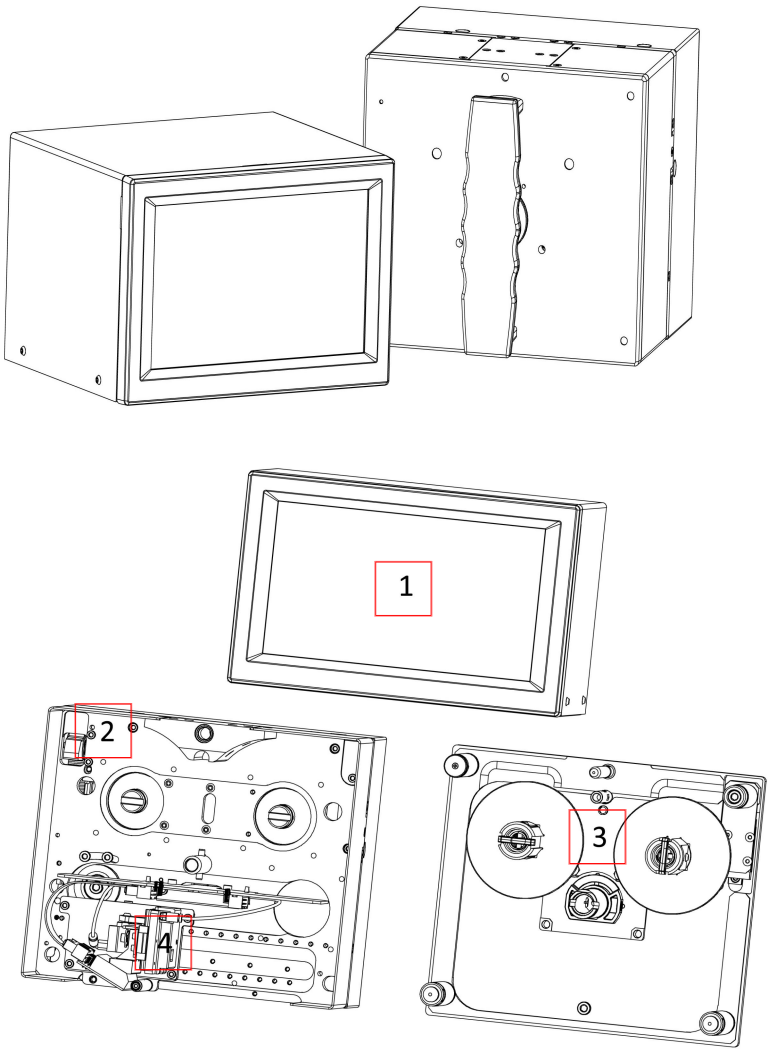
  Coder: All metal structure, strong and durable

  Control Panel: Color touch screen panel with friendly UI interface

- Automatic recognition of carbon ribbon to ensure print quality
- Automatic detection of ribbon tension and used ribbon length
- Head-up type and carbon-saving design
- Easy ribbon loading design
- Multiple print trigger mechanisms
- Supports both intermittent and continuous printing modes
- Automatically detect printer status
- Support for multiple ribbon savings modes

1.2 Appearance and Components

FC32-Li/FC32-Lc/FC32-Ri/FC32-Rc consists of a printing device and a control device (equipped with an operation interface control panel).



1. Controller user interface
2. Printer
3. Ribbon cassette
4. Print head module

● Main Components

The main components of FC32-Li/FC32-Lc/FC32-Ri/FC32-Rc are as follows:

- Printer body, including drive system and thermal transfer print head.
- Ribbon cassette of printer body, with ribbon supply shaft and old ribbon reel.
- Controller device including main operation printed circuit board and user interface.
- Connecting cable for print head power and control.
- Connecting cable for external input / output signal transmission.
- Air supply connections for print head operation.
- An encoder for substrate speed tracking. (only for FC32-Lc/FC32-Rc)

1.3 Type of Printer

- **FC32-Li/FC32-Ri Intermittent Printer**

- This model is used with intermittent packaging equipment and will print with the materials fixed.
- The FC32-Li/FC32-Ri printer has a print area of 32 mm x 75 mm in this mode and a print speed of 40 to 600 mm/s.
- During the stationary period when the packaging material is in a fixed state, the information can be printed by moving the print head.
- The FC32-Li/FC32-Ri printer can print text and barcodes in any position in the printing area with a width of 32 mm and a length of 75 mm in the intermittent mode.

- **FC32-Lc/FC32-Rc Continuous Printer**

- FC32-Lc/FC32-Rc printer is specially designed for printing on a continuously moving substrate.
- FC32-Lc/FC32-Rc printer in this mode has a print area of 32 mm x 100 mm and a print speed of 20 to 600 mm/s. When in continuous motion mode, place the print head in a fixed position and accelerate the ribbon to match the substrate speed.
- Use an encoder to determine the speed of the printed material.
- This makes it an ideal coding device for continuous dynamic form filling, sealing equipment and horizontal moving packaging materials.
- FC32-Lc/FC32-Rc printer can print text and barcode at any position in the printing area with width of 32 mm and length of 100 mm in this mode.
- FC32-Lc/FC32-Rc uses a thermal print head and a thermal ink ribbon to print information onto materials held against a print roller.

1.4 Device Setting File

- These are device-specific parameter settings.
- The setting file is usually attached to the job file downloaded to the device.
- Settings can include information such as print darkness levels and date shift rules for specific products.
- The configuration of individual settings depends on the printing conditions required for a particular job.
- The substrate used or the speed required to print a particular job may require modification of the "equipment" settings.
- FC32-Li/FC32-Lc/FC32-Ri/FC32-Rc will be configured accordingly when the “equipment” setting file is attached to the job.
- Device settings can be adjusted from the FC32-Li/FC32-Lc/FC32-Ri/FC32-Rc user interface, but device settings files can only be created by connecting to Format Designer.
- These files can then be saved as "setup" files and attached to specific jobs.

● Job

- FC32-Li/FC32-Lc/FC32-Ri/FC32-Rc use job files.
- "Job" is a combination of "Product Code", "Image Template" and "Device Settings File".
- The "Device Settings" file is used to configure the device parameters to meet specific conditions.
- For example:

  Job A prints onto polypropylene substrate at a relatively low speed.

  Job B prints at a higher print speed on a metalized polypropylene substrate.

  The printer (device) settings are different for each job.
- In many cases, the job can only require a default image template and default device settings file.
- After the job is downloaded to FC32-Li/FC32-Lc/FC32-Ri/FC32-Rc, the data is stored as an .xml file and contains a .prt file and a .param file.
- The job name is usually the same as the product code, and can be different if necessary.

- This is the name requested when executing the select job command. Job creation is done through the Format Designer.

Note: After selecting a job in producing mode, a short period of time (1 second) appears, during which printing will be disabled while the system will be updated to print the new image.

1.5 Retrieving and Downloading Jobs

There are 3 methods to download job information:

- Use the software, Format Designer.
- Use Format Designer (for networking) and a direct link to the PC.
- Use a USB flash drive.

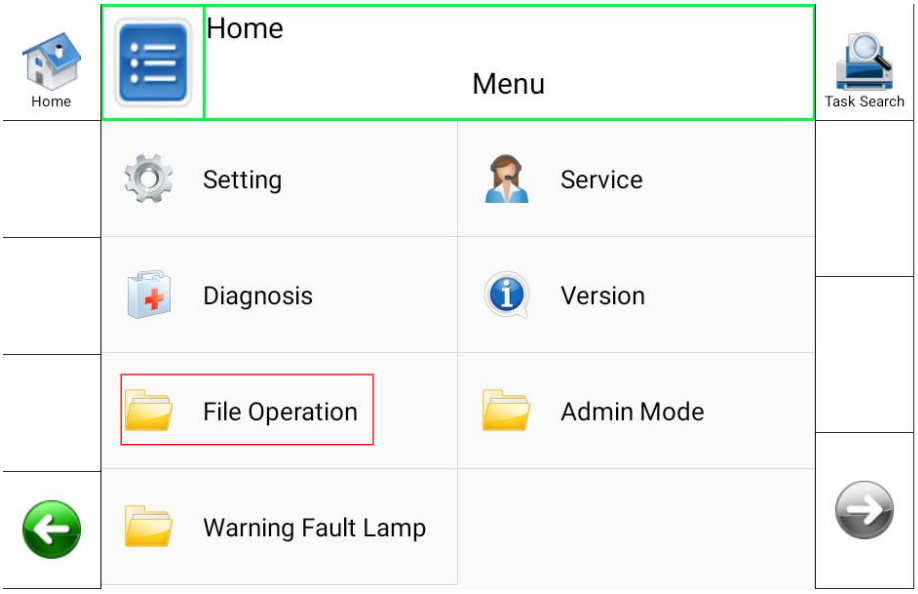
● Use a USB Flash Drive

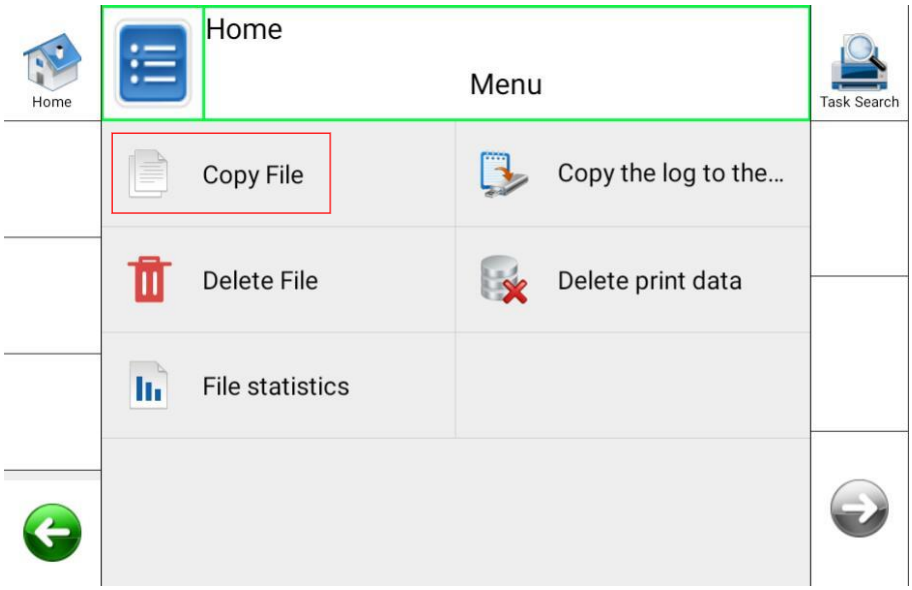
Once the required image is loaded on the USB flash drive, the relevant image can be downloaded to the local database of FC32-Li/FC32-Lc/FC32-Ri/FC32-Rc.

1. Insert the pre-loaded USB flash drive into the USB connector on the back of the controller.

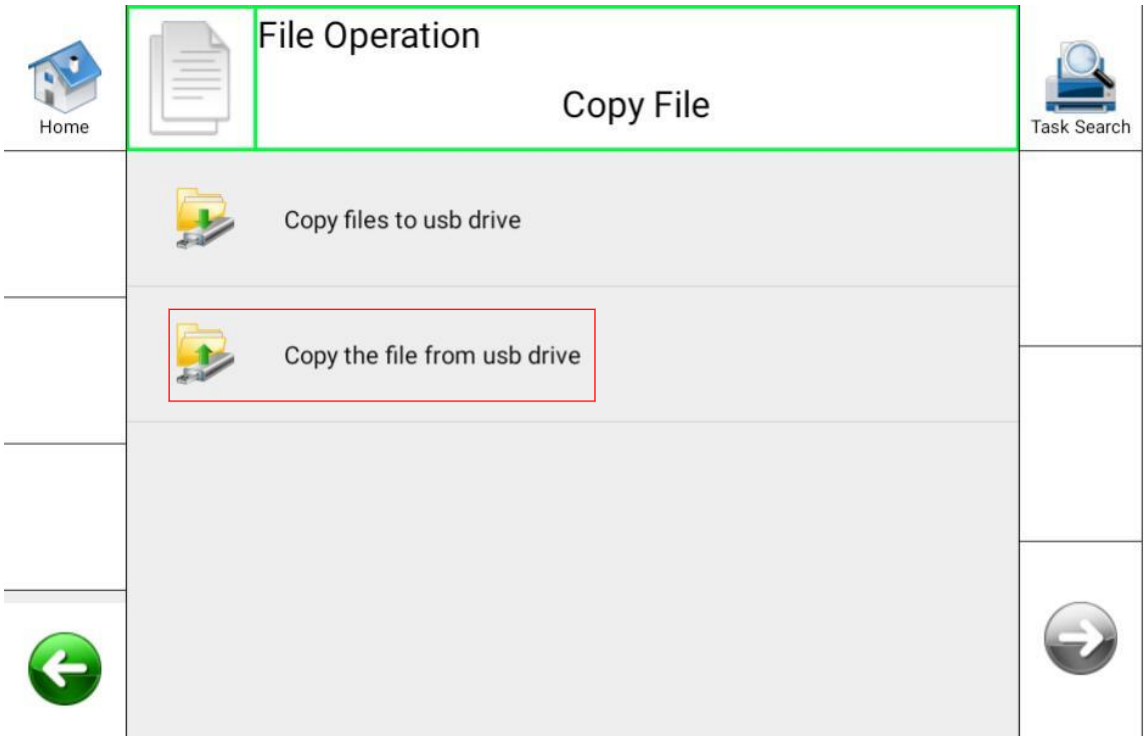


2. In the Menu screen, select File Management, and then select Copy File.





3. Select "Copy the file from USB drive".



1.6 LED Indicator Definition

LED status and color	Printer status	Possible Causes
Light off	Shutdown or without power supply	Shutdown or without power supply
Green light stays on	Functional and in standby mode	Functional and in standby mode
Red light stays on	Printer hardware error	Printer hardware error
	Print head detection error	The FPC of TPH is loose
		The FPC of TPH is damaged
		TPH damaged
	DC voltage error	Circuit element failure
	Logic voltage error	Circuit element failure
	RTC error	Circuit element failure
Green light flashes continuously	Printing paused	Printing paused
Red light flashes continuously	Tension detection is not adjusted	Use a new PCB without tuning
	Initial tension detection failed	No ribbon installed
		Ribbon installation error
		Use ribbons with mismatched widths
		Ribbon supply shaft slips
		Ribbon recycling shaft slips
		Incorrect print mode setting
	Ribbon detection check failed	Ribbon motion detection damaged
		Magnetic destruction of the ribbon's moving axis
	Ribbon diameter is out of range	Not using the correct ribbon
		The ribbon is wound directly on the recycling shaft
	Unable to detect ribbon tension	Ribbon tension detection damage
		Broken ribbon tension shaft
		Ribbon tension detection needs to be adjusted
	Ribbon error	Ribbon breaks during self-test
		Disconnected during ribbon printing
		Ribbon tension detection error
Green light double flash	In normal work	In normal work
Red and blue lights flash continuously	Temperature of TPH is too high	Temperature of TPH is too high
Green and red lights flash alternately	Memory error, which requires repair	Memory error, which requires repair
Red, green, and blue lights flash in succession	TPH, motor and other serious problems, which requires repair	TPH, motor and other serious problems, which requires repair
	TPH detection error	TPH wiring is loose
		TPH wiring is damaged
		TPH is damaged

1.7 Specifications

(1/3)

Items	Specifications
Model Name	FC32-Li (Left, Intermittent),FC32-Lc (Left, Continuous), FC32-Ri (Right, Intermittent), FC32-Rc (Right, Continuous)
Structure	All-metal structure
Print Mode	Thermal transfer printing
Print Width (Max.)	32 mm (300dpi)
Print Area	32mm*75mm (Intermittent), 32mm*100mm (Continuous)
Resolution	300 dpi (12 dots/mm)
Print Speed	20 - 600mm/s
Processor	32-bit RSIC processor
Flash Memory	8MB (minimum)
Dynamic Memory	16MB (minimum)
Real-time Clock Function	STD, battery discharge life is at least 3 years
Detector	Ribbon tension detection; thermal head position detection; cover open detection; TPH over temperature detection; ribbon break detection
Flexible Packaging Inspection	Electromagnetic induction or synchronizer
Flexible Packaging Materials	PVDC, PET, PE, NY, CPP, OPP, BOPP, BOPET, BOPA, CPP, PE, VMPET, VMCPP and other films and composite films
Ribbon Capacity	1 ”mandrel with a maximum length of 1100 meters
Ribbon Type	Type: Wax / Resin Resin width: 20 mm (0.79 ") to 34 mm (1.34")
Ribbon Saving	Support for multiple ribbon savings modes； The minimum ribbon interval between two lines of printing is not more than 0.5mm
Air Supply	Max. 6 bar/90 psi
Air Consumption	As low as 4 ml / print at 2.5 bar
Print Density Level	Level 31

(2/3)

Items	Specifications
Built-in Font	Bitmap fonts: 6, 8, 10, 12, 14, 18, 24, 30, 16x26 and OCR A & B Bitmap fonts: 90 °, 180 °, 270 ° can be rotated, single characters can be rotated 90 °, 180 °, 270 ° Bitmap font: 8 times horizontally and vertically TTF Font: CG Triumvirate ™ (Bold / Italic / Underline) Rotates 0 °, 90 °, 180 °, 270 °
Download Font	Bitmap fonts: 90 °, 180 °, 270 °, single character 90 °, 180 °, 270 ° Asian fonts: 16x16, 24x24. Traditional Chinese (BIG-5), Simplified Chinese (GB2312), Japanese (S-JIS), Korean (KS-X1001), can be rotated 90◦ , 180◦ , 270◦ , 8 times horizontal and vertical TTF font: 90 °, 180 °, 270 °
Character Set	850, 852, 437, 860, 863, 865, 857, 861, 862, 855, 866, 737, 851, 869, WINDOWS 1250, 1251, 1252, 1253, 1254, 1255, 1257, UTF-8, UTF-16BE, UTF-16LE, DBCS 932 (JIS), 936(GBK), 949 (Koran), 950(BIG5)
1D Barcode	Code 39, Code 93, EAN 8/13 (add on 2 & 5), UPC A / E (add on 2 & 5), I 2 of 5 & I 2 of 5 with carrier, Kudbar code, Code 128 (Subsets A, B, C), EAN 128, RPS 128, UCC 128, UCC / EAN-128 K-Mart, Random Weight, Post NET, ITF 14, China Post Code, HIBC, MSI, Plessey, Telepen, FIM, GS1 Data Field, German Post Code, Planet 11 & 13 Digits, Japan Post Network, I 2 of 5 with human-readable check digits, Standard 2 of 5, Industrial 2 of 5, Logmars, Code 11, Code 49, Cadablock
QR Code	Data matrix code, GS1 QR code type, GS1 database (formerly RSS), QR code, PDF417, Maxi code, Micro PDF417, Micro QR code, Aztec code
Graphics	Resident graphics file types are BMP and PCX, other graphics formats are downloaded and converted by software
Module Interface Port	STD, 1 control unit port to print engine
Touch Screen	8-inch colour capacitive screen

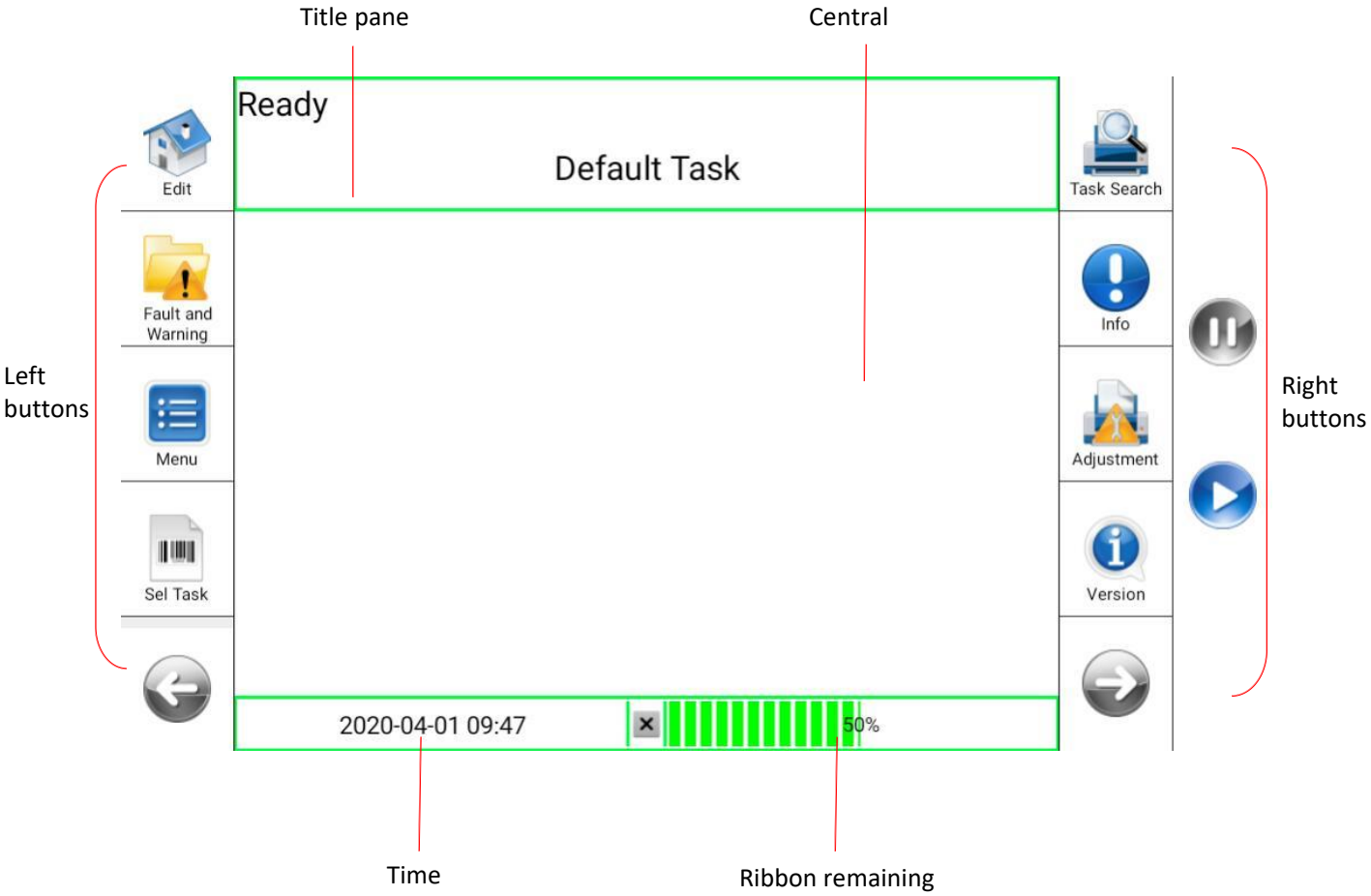
(3/3)

Items	Specifications
USB Interface	STD, 1 port, type B connector, USB device 2.0
USB Main Interface	STD, 1USB disk connection port USB Host 2.0, automatic detection and setting of connections
Serial Port	STD 1 port, female D-SUB 9-pin connector Default 9600, 8 / N / 1, variable baud rate and format
Ethernet Interface	STD 1 port, RJ-45 connector, IEEE802.3 10 / 100BASE-T
Hardware Interface Port	Input: "Print Start" and a configurable input Outputs: fault, warning and 2 configurable outputs
Power Supply	Internal switching power supply module, I / P: AC90V-264V, 47/63 Hz; 150 VA
Software	Format Designer
Drive	Android SDK
Product Packaging	Carton 1: printing device, controller, AC power cord, ribbon roll Outer box 2: mounting bracket (optional)
Environmental Conditions	Operation: 0 to 40 ° C @ humidity 10% to 90% non-condensing Storage: -40 to 60 ° C @ humidity 10% to 90% non-condensing
Machine Dimension (mm)	Printer: 219.6 * 184 * 228 Controller: 226.3 * 141.5 * 187.9
Machine Weight	Printer: less than 10 kg Controller: about 2.5 kg

2. Interface

2.1 Type of Screen

The FC32-Li/FC32-Lc/FC32-Ri/FC32-Rc user interface supports a variety of screen types.
The screen interface is generally divided into a central home screen and option buttons arranged vertically on both sides.
The rightmost column is the "Pause" key and the "Start" key.
For example:



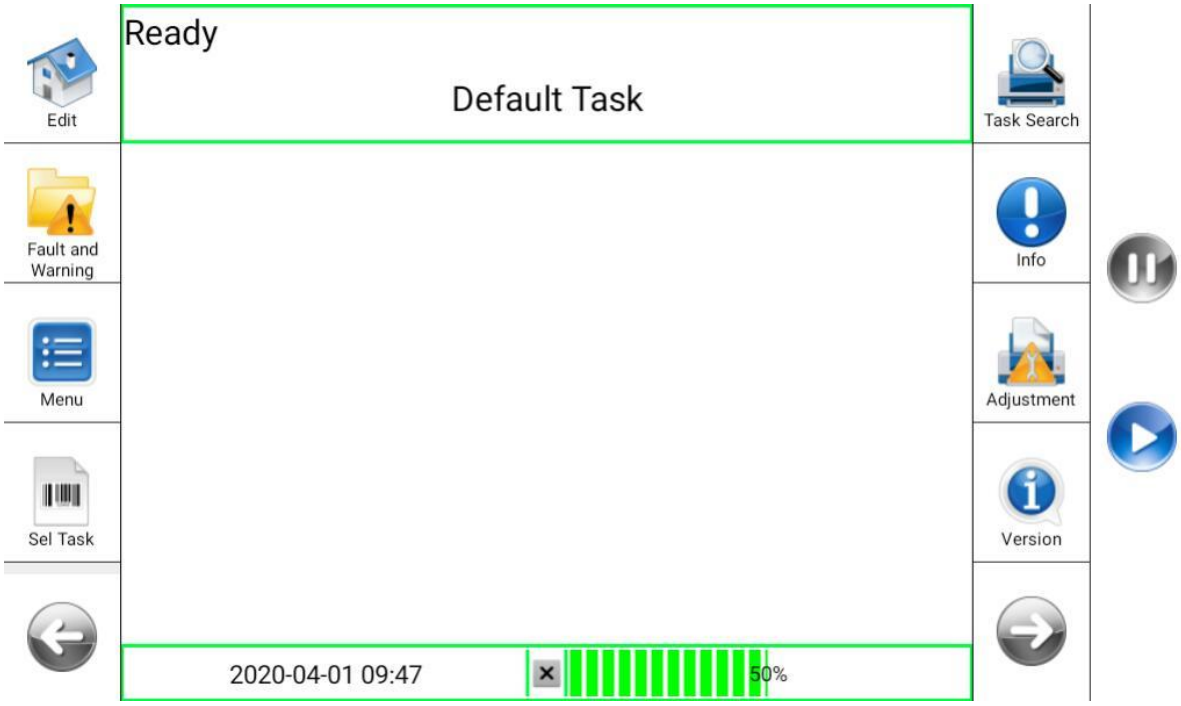
Screen Type Description:

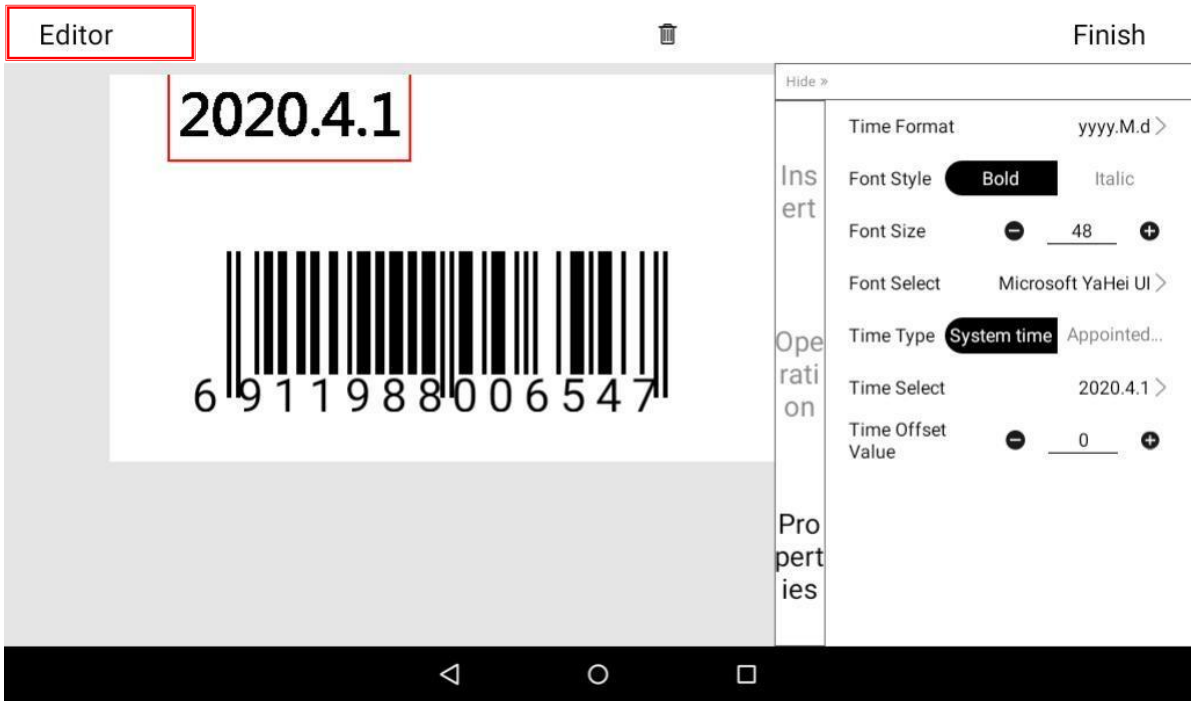
Type of Screen	Description
Home screen	Home screen where the user first started
Menu screen	To navigate between different menu options or screen types
Diagnostic screen	To display real-time dynamic data
Fault and warning screen	To display printer fault information

2.1.1 Home Screen

The home screen is the screen from which the user started to operate.
This screen can be the “Ready” screen or the “Printing” screen.
Various menus are accessible through the screens of both versions.
For example：

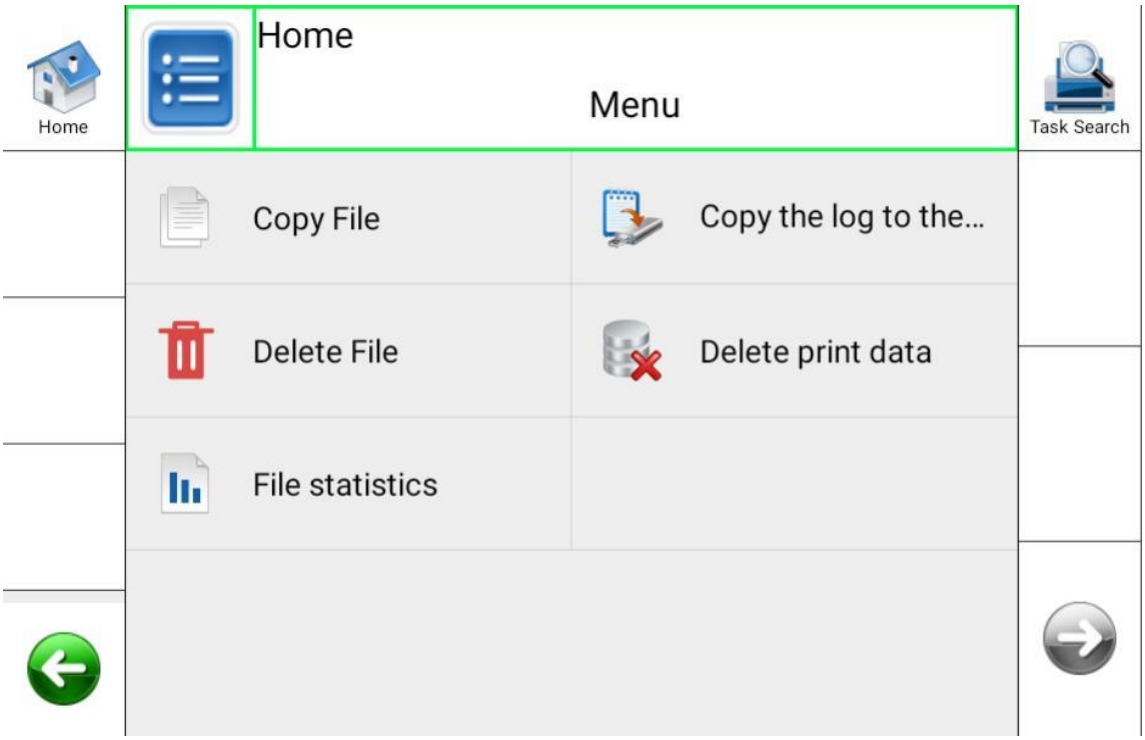
"Ready" screen, click the "Edit" button to enter the "Template Editor" to edit the task content:





2.1.2 Menu Screen

Navigate the menu by selecting the desired option button.
When you enter a menu, the top item in the list is highlighted.
You can select the green back arrow at the bottom left of the screen to return to the previous screen.
For example：



2.1.3 Diagnostic Screen

The Diagnostic screen displays current status and dynamically changing data to help troubleshoot problems.

The information displayed is read-only and cannot be changed.

This screen allows you to access the following information:

-Input status (current substrate speed)

-Temperature (print head temperature)

-Ribbon (Supply Ribbon Diameter, Rewind Ribbon Diameter)

-Internal (position of tension controller, ribbon cassette switch status, number of connection errors between controller and printer, print head voltage, print head resistance)

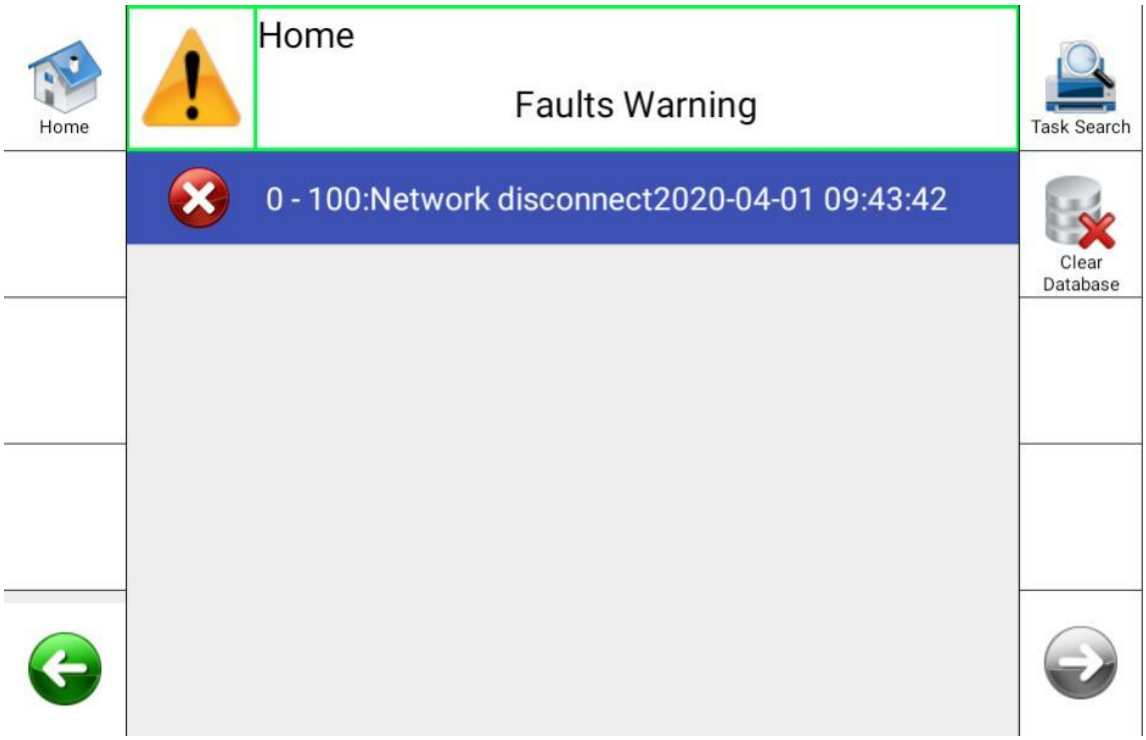
2.1.4 Fault and Warning Screen

These screens inform you of current or potential problems.

A description of the problem appears on the screen.

When a fault occurs, a warning message is displayed on the home screen.

For example：



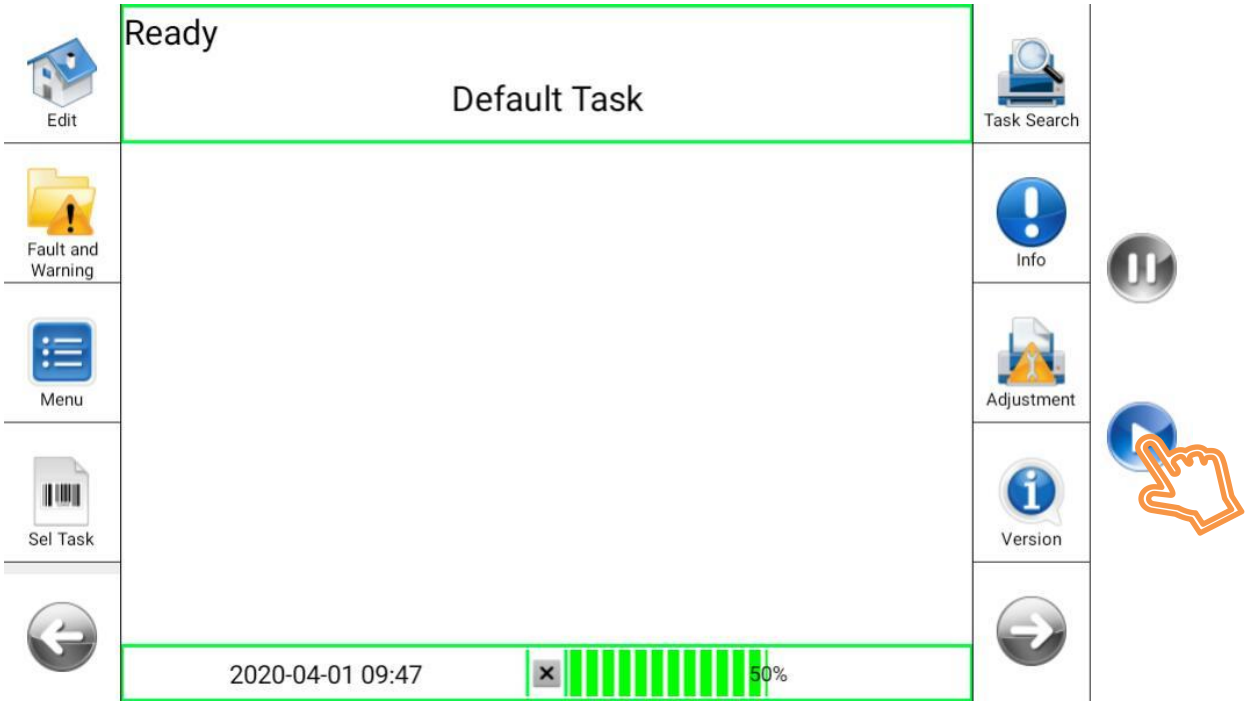
3. Operation

3.1 Turn On the Printer

1. Press the power button on the back of the controller to turn on the controller. After powering on, the printer performs a self-test.

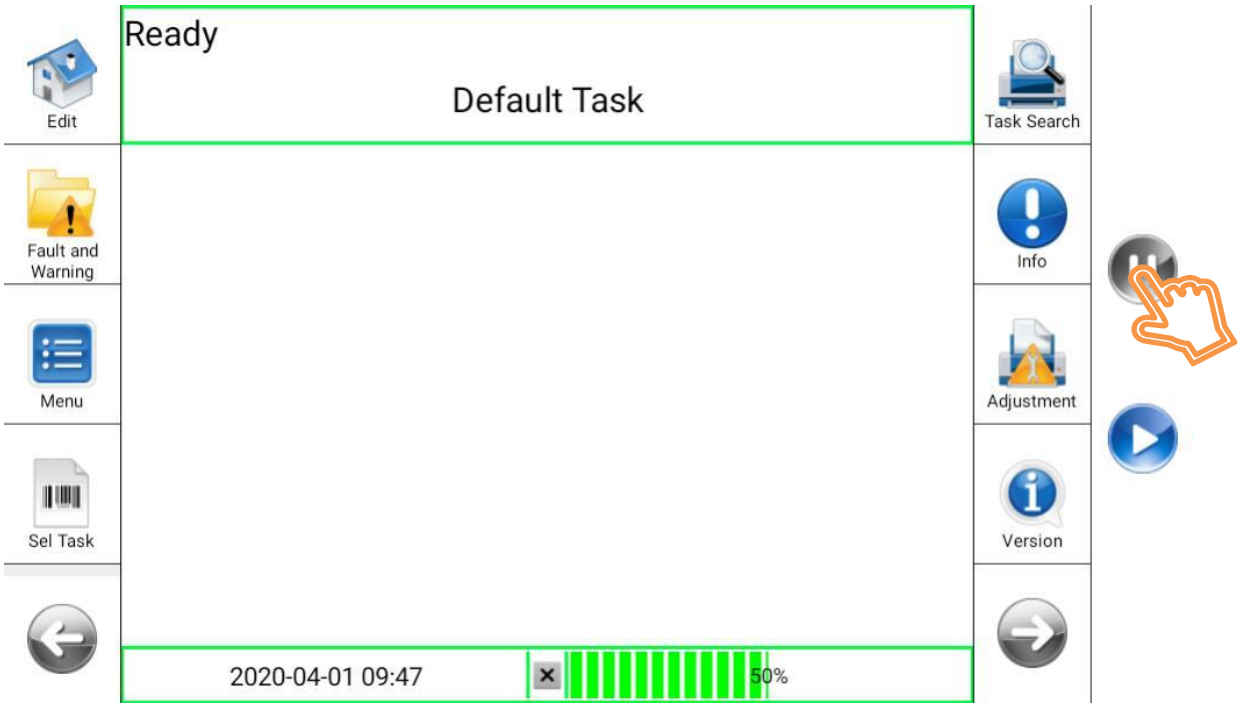


2. The controller home screen displays Ready. Press the "Start" key to start printing.



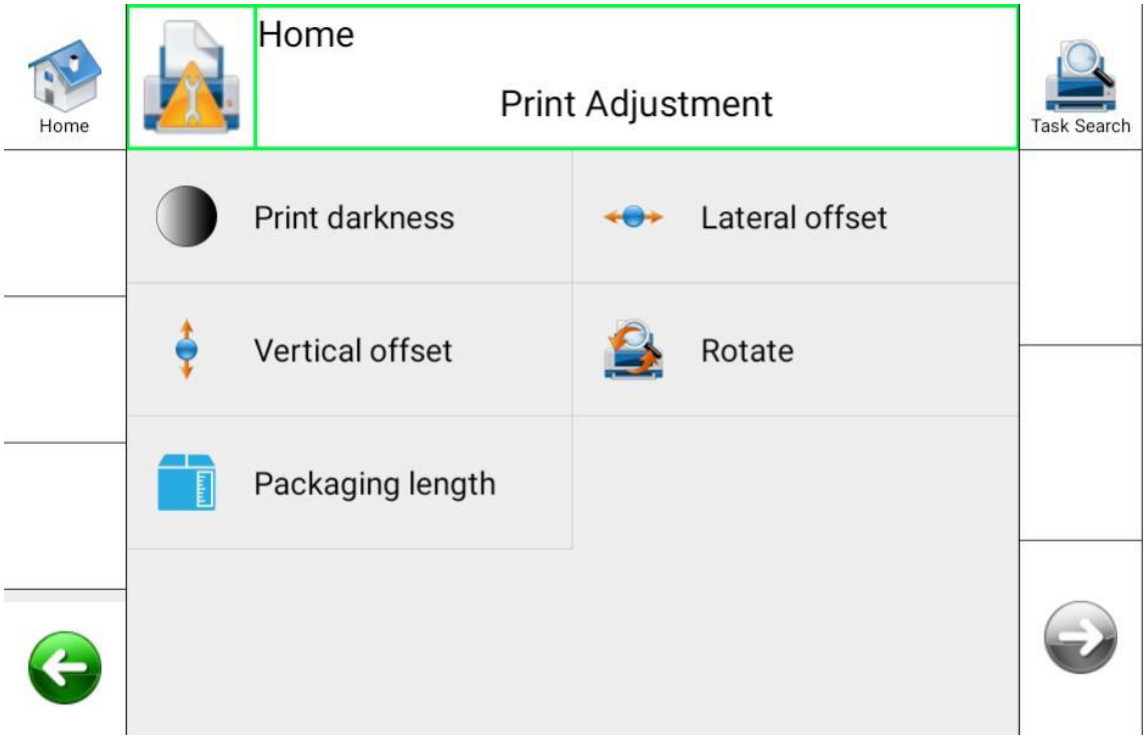
3.2 Stop the Printer

Press the "Pause" key to stop the printer.



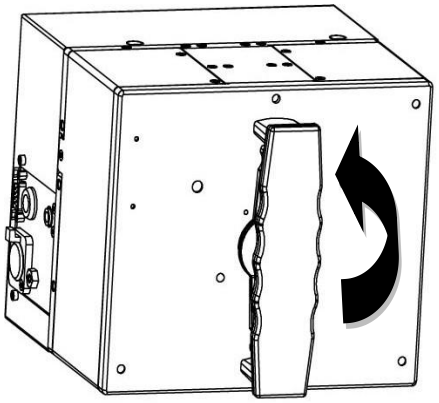
3.3 Print Adjustment Screen

Select "Print Adjustment" on the main screen to adjust the print darkness and print position.

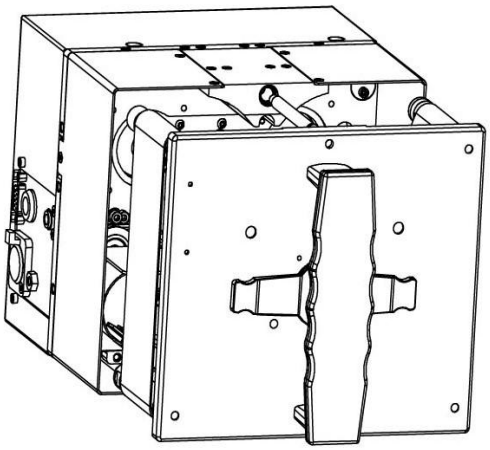


3.4 Remove the Ribbon Cassette

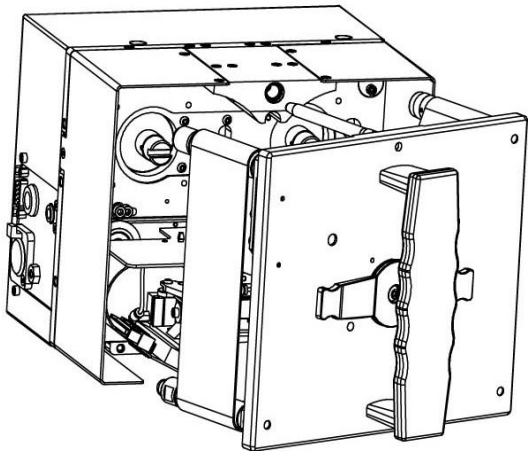
1. Rotate the locking lever on the cassette to the open position. （ ）



2. Use the handle to remove the ribbon cassette.

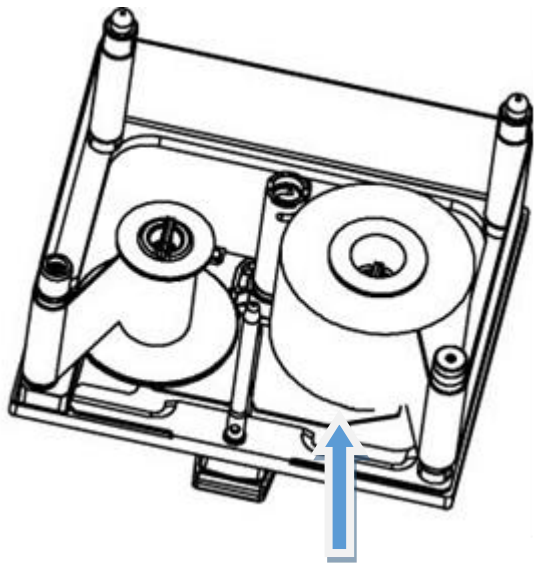


3. Remove the waste ribbon from the ribbon cassette.



3.5 Load or Replace the Ribbon

3.5.1 Remove Waste Ribbon from the Waste Take-up Core



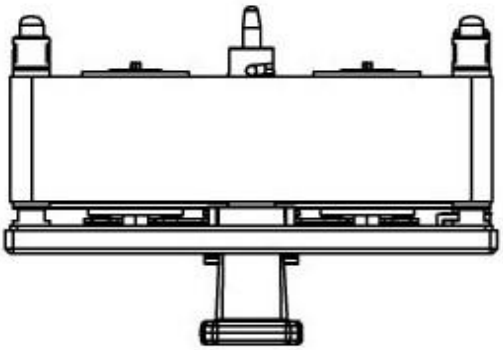
1. Pull the waste ribbon up using the tray located under the waste ribbon.

2. Push the tray back to its original position.
3. Remove the waste ribbon by hand.

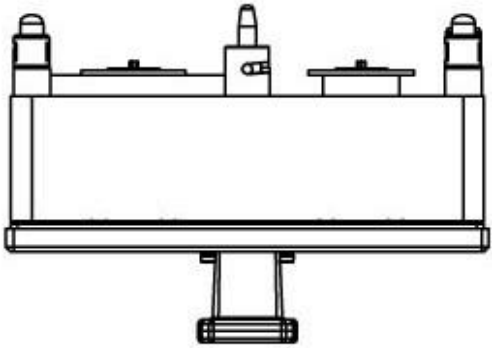
Note: Do not use sharp objects such as screwdrivers to move the ribbon, as this will cause injury.

3.5.2 Load a New Ribbon

1. Load the new ribbon in accordance with the ribbon loading instruction label (The label is attached to the ribbon cassette).
2. Pull out the ribbon and wrap it around the waste take-up core as indicated.
3. Make sure the ribbon is free of any crease by rotating the waste take-up reel by hand.
4. Make sure that the ribbon is tracking parallel on the cassette rollers and is placed correctly. The ribbon must be loaded properly so that it only touches the movable part of the rollers.
5. Make sure to wind the ribbon forward enough, so that the transparent lead section of the ribbon is not exposed under the print head.

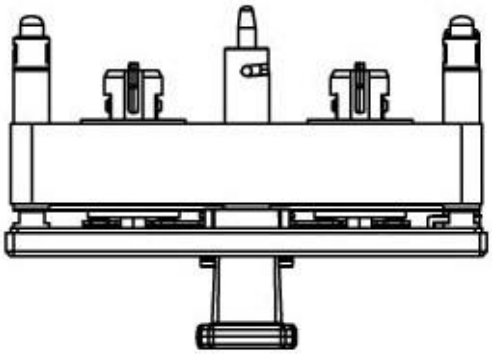


√

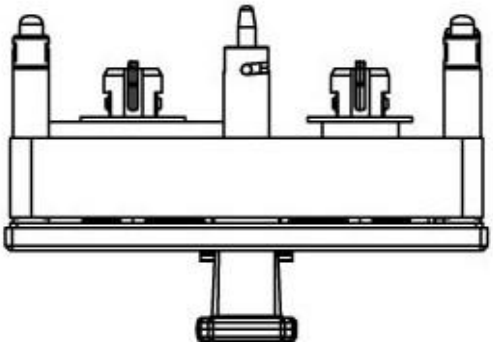


×

Full width of ribbon



√



×

Narrow ribbon

3.6.1 Reconnect a Broken Ribbon

When a ribbon break occurs, the following steps should be performed:

1. Do not knot to reconnect the ribbon.

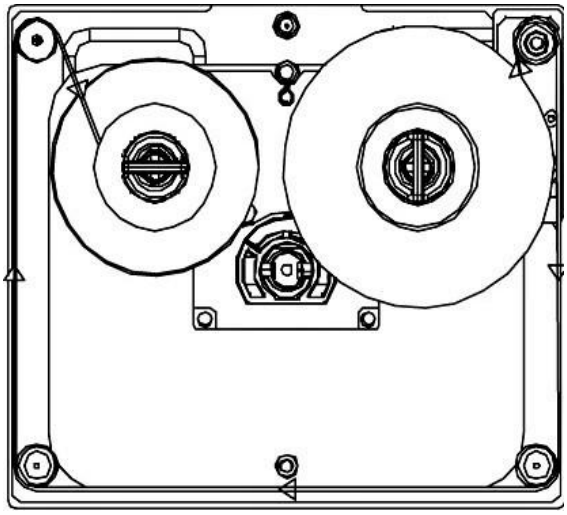
2. Wind the remaining waste ribbon around the waste take-up core.

3. Pull out some unused ribbon from the ribbon supply and wind it around the waste ribbon reel.

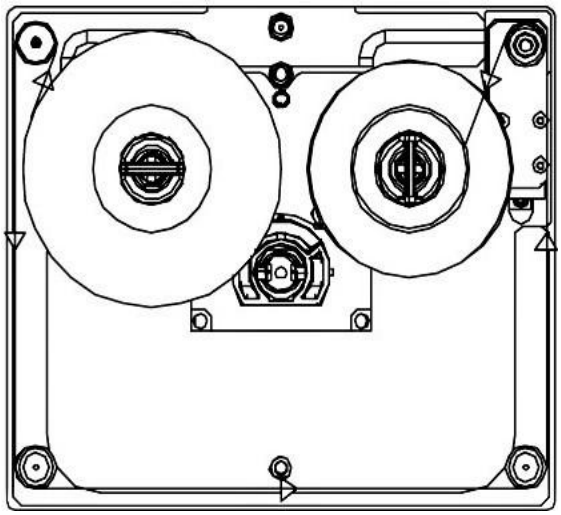
4. Turn the waste reel at least one revolution by hand to make the connection between the two ribbons as flat as possible.

Note: If this step is not performed correctly, the ribbon on the waste ribbon take-up reel may cause unacceptable deviations. The printer cannot control this fault, and it will cause ribbon tension problems.

3.6.2 Ribbon Cassette Structure Diagram



Ribbon Cassette Web Path on Left Side
FC32-Li / FC32-Lc



Ribbon Cassette Web Path on Right Side
FC32-Ri / FC32-Rc

3.6.3 Replace the Ribbon Cassette

1. Check that the locking lever of the ribbon cassette is in the OPEN（） position. Insert the printer ribbon cartridge by aligning the two guides and pressing the device in.

2. Check if the ribbon passes the peel bar correctly.

3. Rotate the locking lever to the CLOSED （） position to lock the device.

4. When the ribbon cassette returns to its original position and the key switch is turned to READY（I）, the FC32-Li/FC32-Lc/FC32-Ri/FC32-Rc will automatically drive the print head to remove all creases and calibrate the ribbon feed sensor.

5. If the message “Motor control error, the ribbon may not be properly loaded” is displayed, remove the ribbon cassette, and check if the ribbon is loaded correctly, and then try again.

6. If the message “Ribbon Breakage” is displayed, please reconnect the ribbon (refer to 3.5.3), and then reload the ribbon cassette.

3.7 Printing Principle

3.7.1 Thermal Transfer Technology

- FC32-Li/FC32-Lc/FC32-Ri/FC32-Rc machines use thermal transfer print heads, similar to that used in fax machines.
- With specially treated paper (blackened when heated), the thermal printer can also work without ribbon. This is how the fax paper works. However, printers basically use ribbon at all times.
- Both FC32 devices use thermal transfer print heads for printing.
- Along the print line, each print head has a series of heating elements (resistors). These print dots are 12 per millimeter and are protected by enamel.
- When printing, the print head is removed by turning on the cylinder. This causes the print head to press the ink ribbon against the substrate or label.
- The heat of the printing point will melt the ink, and the pressure between the print head and the substrate will transfer the ink to the substrate.
- FC32-Li/FC32-Lc/FC32-Ri/FC32-Rc equipment uses the principle of stepper motor to drive the print head / brake movement and ribbon feeding.

3.7.2 Printing process

- For intermittent printers, the stepping rate of the print head carriage motor is directly related to the linear motion of the carriage.
- The length of time that the dots are energized for is determined by the linear speed of the print head carriage.
- For continuous mobile printers, the length of time that the dots are energized is determined by the speed of the ribbon, and the speed of the ribbon is controlled by the data from the speed encoder.
- The print control processor will determine which dots to energize and when to activate them.
- In both cases, the length of each dot should ultimately be 1/12 mm to maintain the aspect ratio of the printed characters.

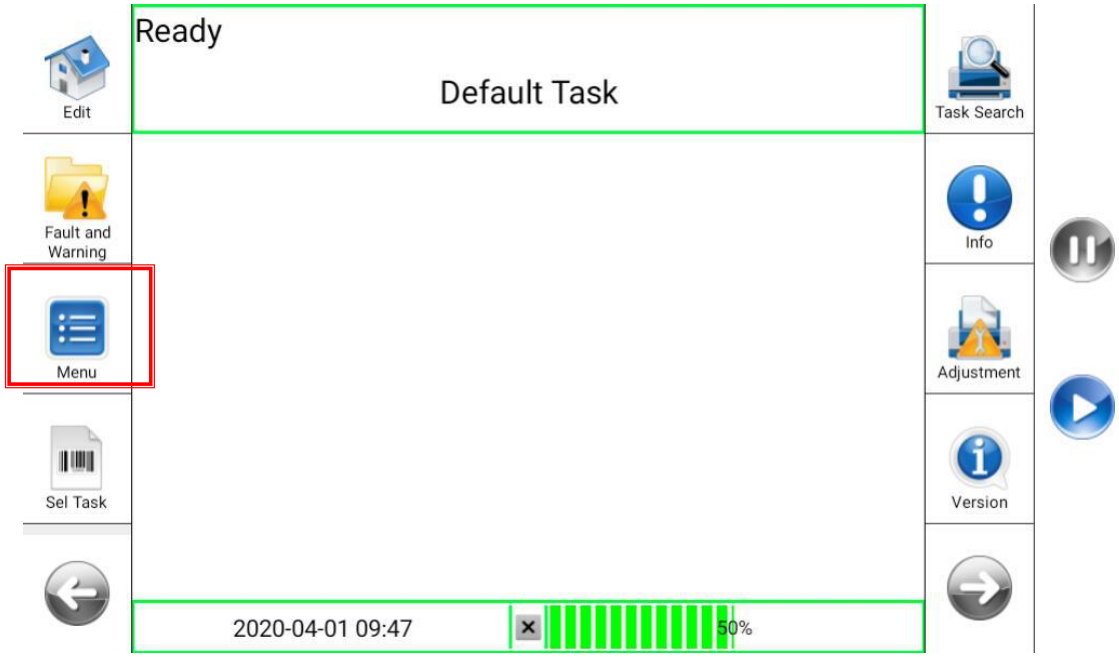
3.8 Working Principle

- These two printer types have been designed with different operating methods to suit the running mode of the packaging machines being used.
- When the ribbon cassette is inserted into the printer body and secured, the ribbon supply shaft and the waste ribbon rewind shaft will be connected to the ribbon drive motor clutch.
- The FC32-Li/FC32-Ri intermittent printer uses a thermal print head and thermal ink ribbon to print information onto the material held against a flat print platen.
- The FC32-Lc/FC32-Rc continuous printer uses a thermal print head and thermal ink ribbon to print information onto the material held against a print roller.

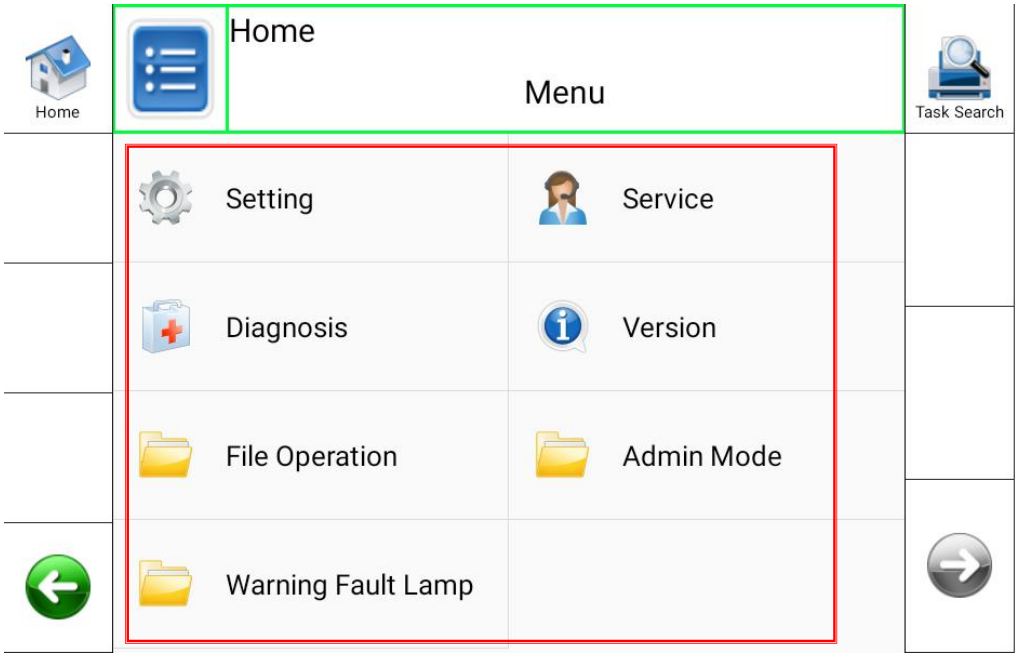
4. Printer Configuration

4.1 Access Menu

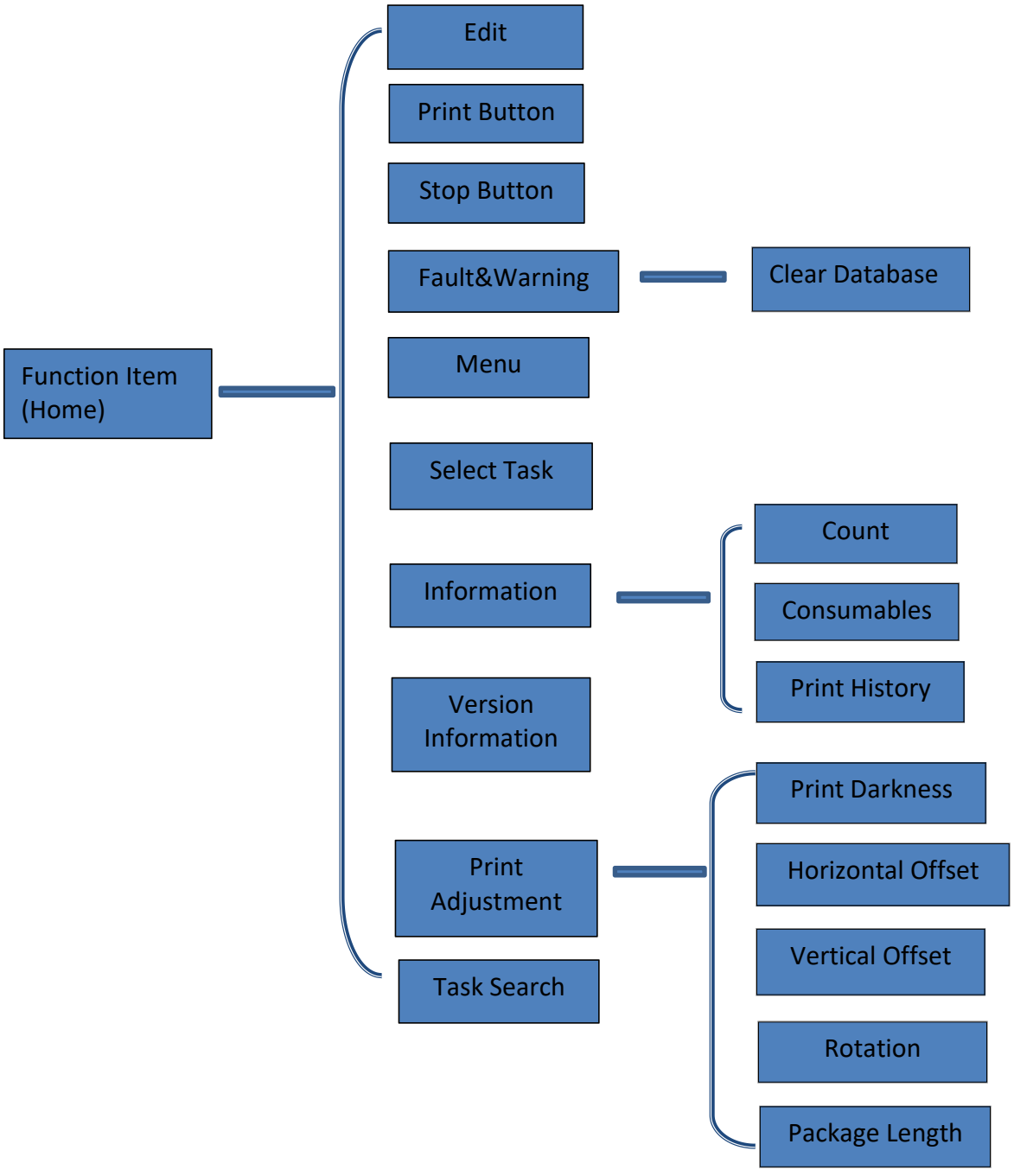
Select "Menu" on the home screen.

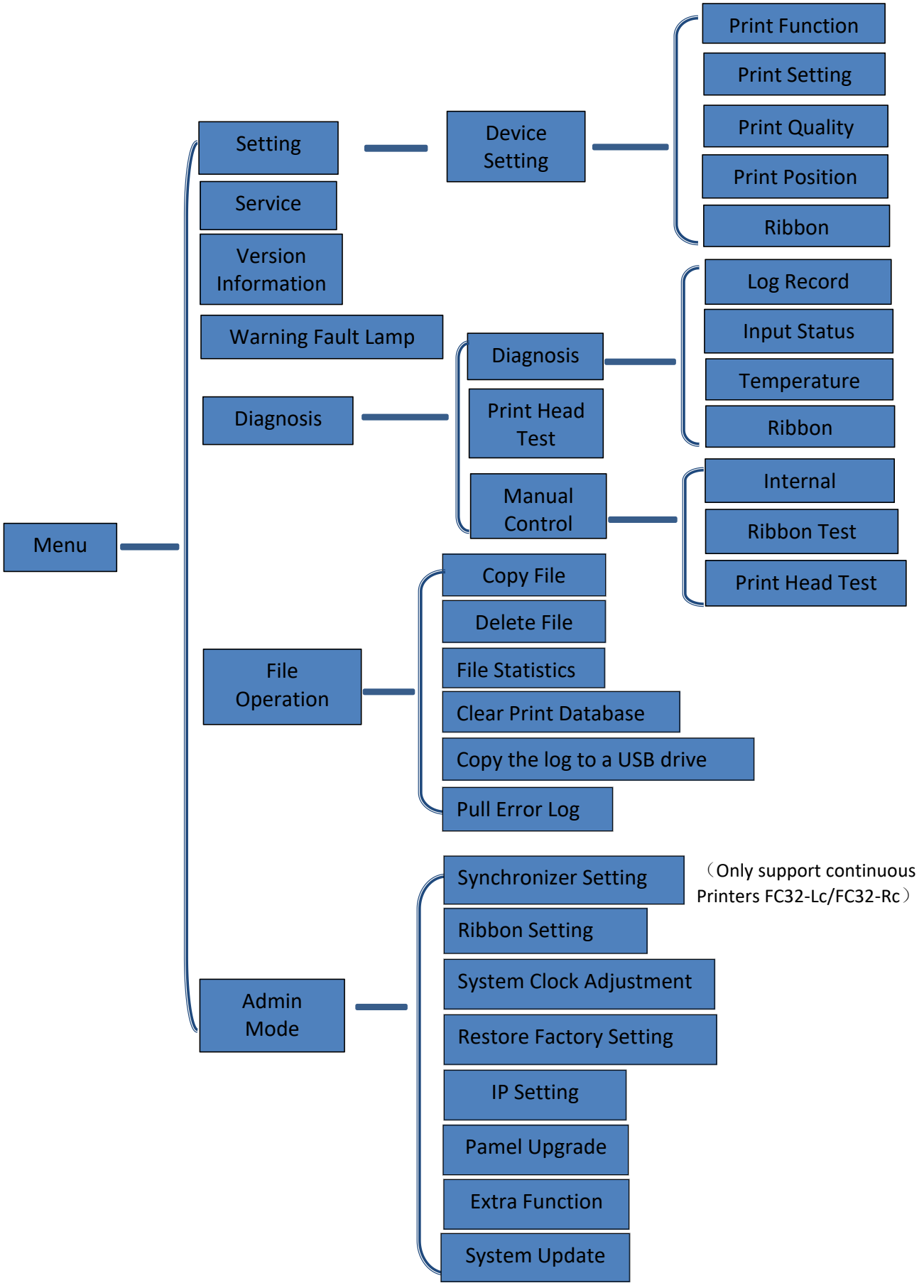


The main menu screen is displayed. The following options are accessible as needed:



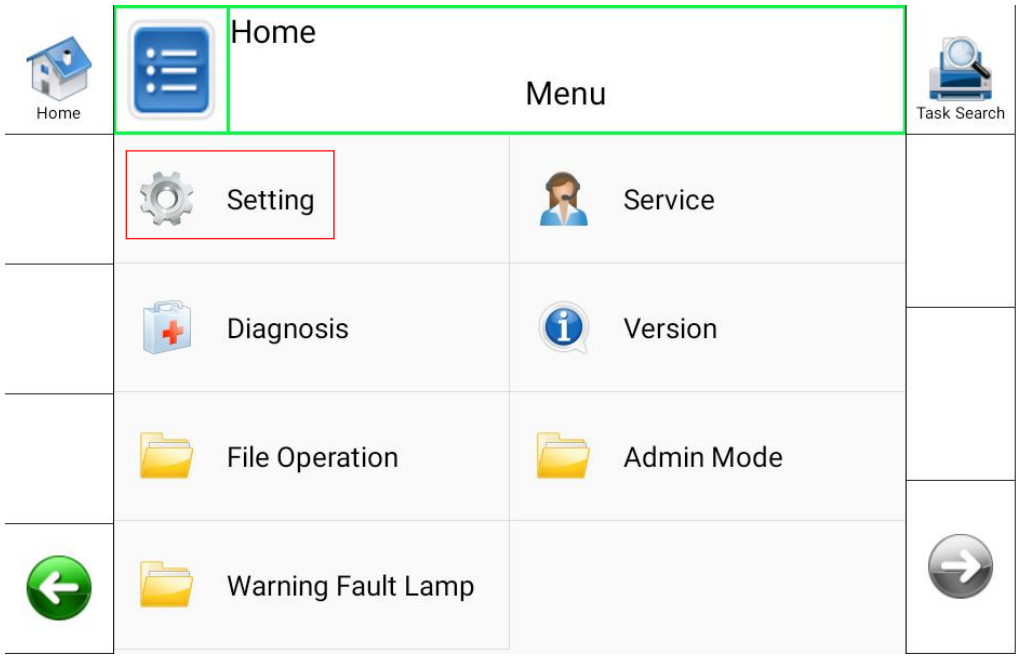
4.2 Menu Structure



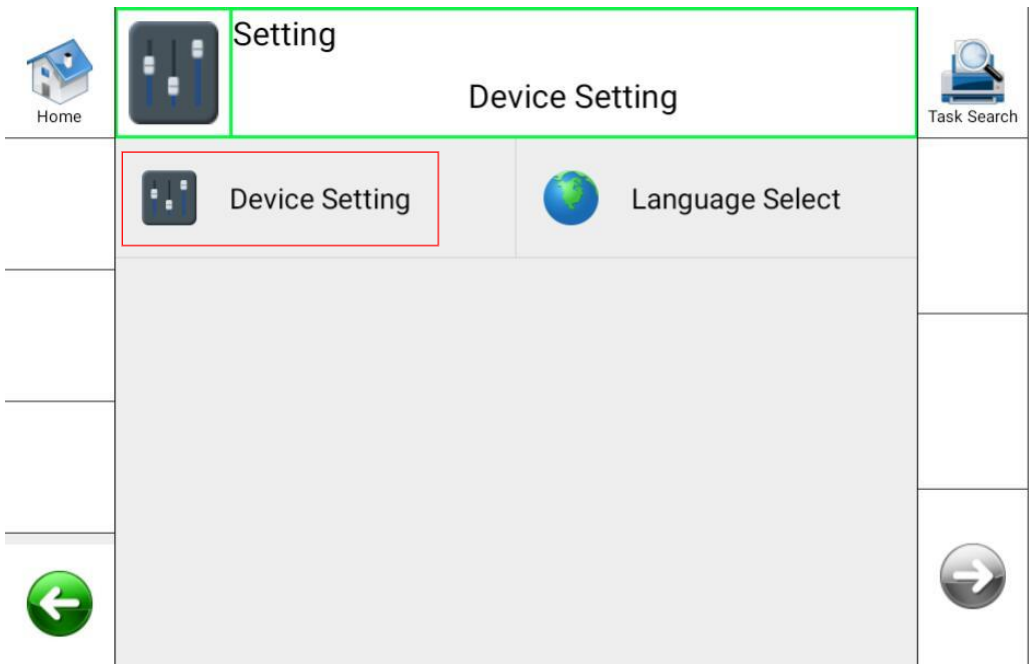

Menu
Setting
Service
Version Information
Warning Fault Lamp
Diagnosis
File Operation
Admin Mode
Device Setting
Print Function
Print Setting
Print Quality
Print Position
Ribbon
Diagnosis
Print Head Test
Manual Control
Log Record
Input Status
Temperature
Ribbon
Internal
Ribbon Test
Print Head Test
Copy File
Delete File
File Statistics
Clear Print Database
Copy the log to a USB drive
Pull Error Log
Synchronizer Setting
Ribbon Setting
System Clock Adjustment
Restore Factory Setting
IP Setting
Pamel Upgrade
Extra Function
System Update
（Only support continuous Printers FC32-Lc/FC32-Rc）

4.3 Setting Menu

1. Select "Setting" on the menu screen.



2. Enter the device setting.



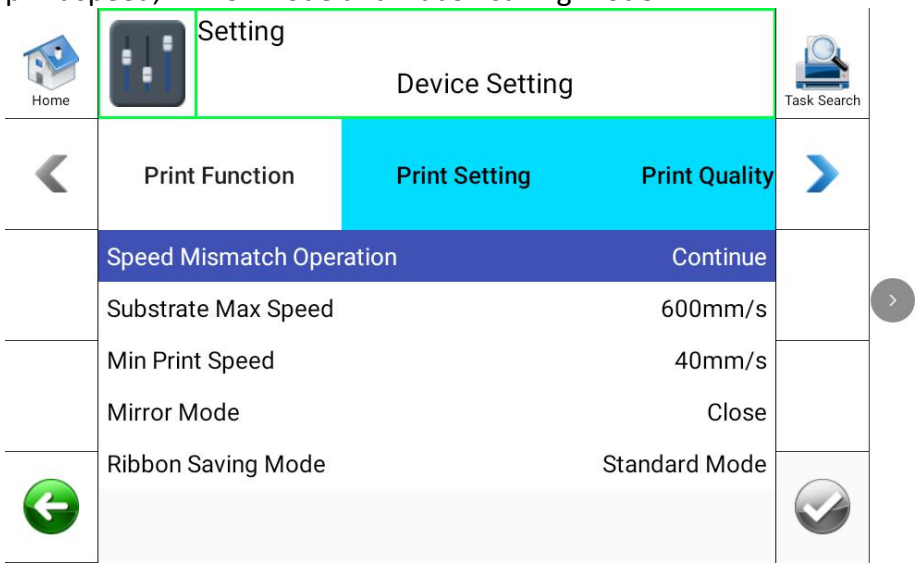
Note: Most of the above settings should be configured immediately after installation. Other settings (such as print darkness) may need to be adjusted periodically.

4.3.1 Device Setting

Select "Device Setting" on the setting screen to set the "Print Function, Print Setting, Print Quality, Print Position, Ribbon Monitor, Log Record".

- **Print Function:**

FC32-Lc/FC32-Rc Continuous Printer: You can set the maximum substrate speed, minimum print speed, mirror mode and ribbon saving mode.

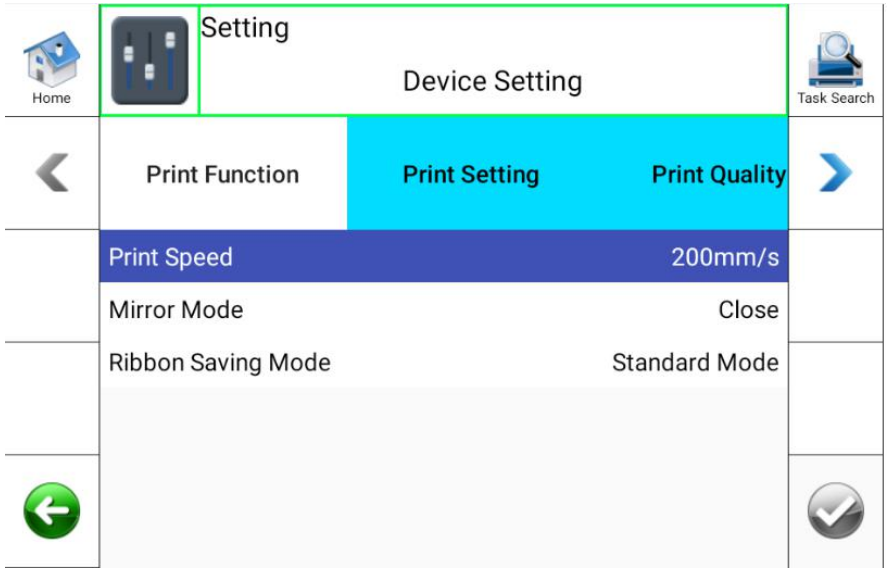


Note:

1) The maximum substrate speed is the upper limit of the substrate speed during printing. It can be set to 100, 200, 300, 400, 500, 600mm/s.

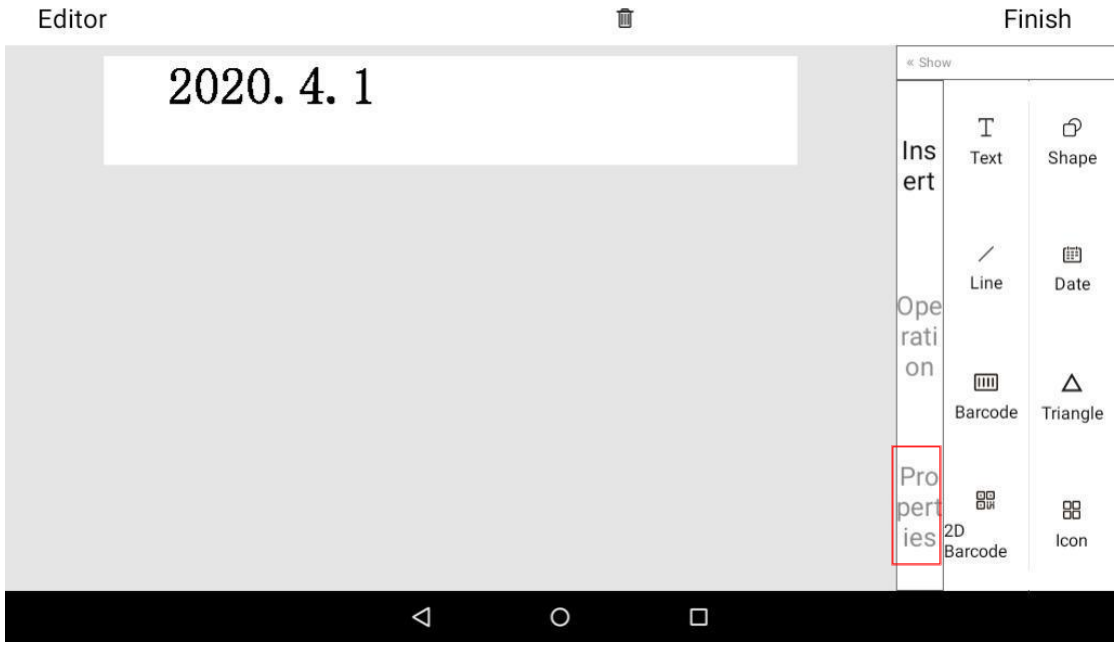
2) The minimum printing speed is the lower limit of the substrate speed during printing. The setting range is 40-200mm/s, and the setting accuracy is 1mm/s.

FC32-Li/FC32-Ri Intermittent Printer: You can set print speed, mirror mode and ribbon saving mode.



Note: the setting range of print speed is 40-600mm/s.

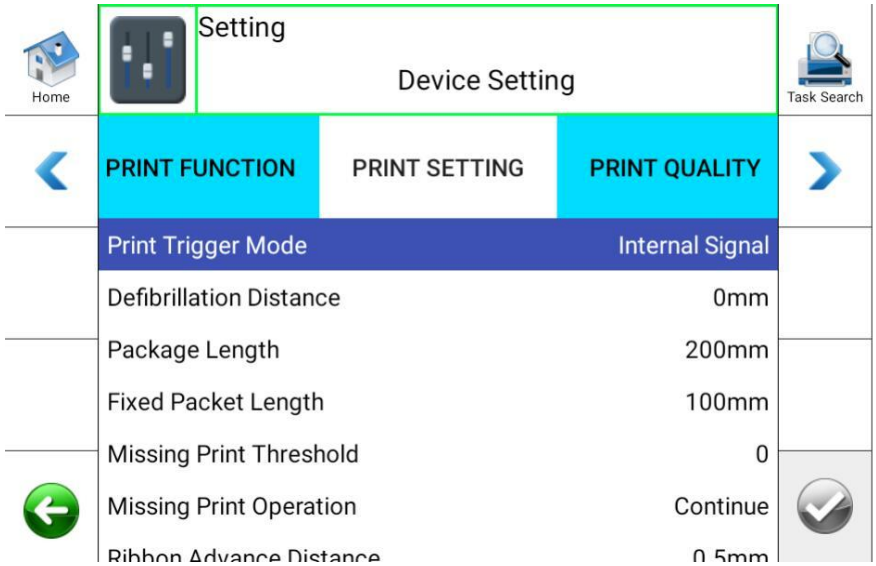
3) Set the specified task date: Home-> Click "  "-> Enter "Template Editor"-> Click "Properties"-> Edit "Time Selection"-> Click "Finish"





- **Print Setting:**

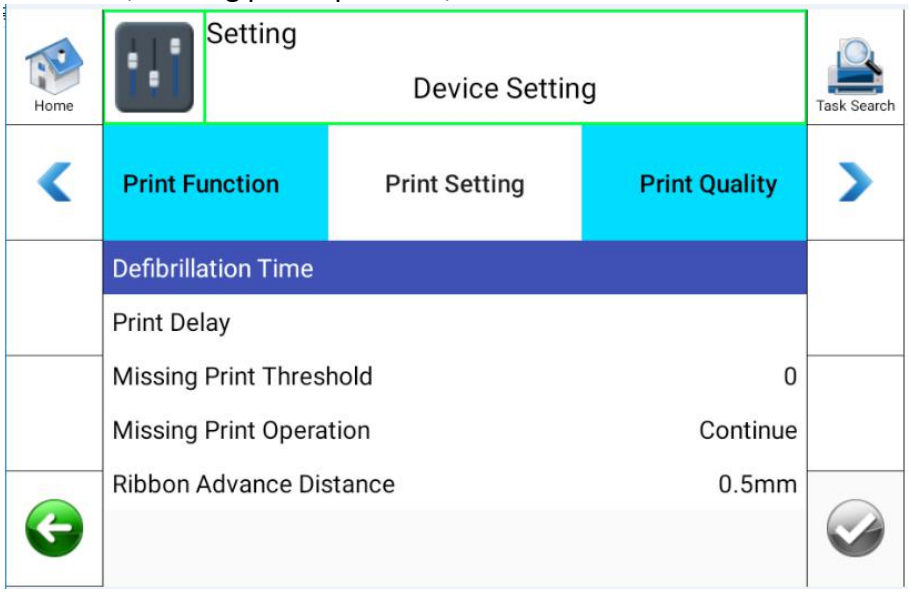
FC32-Lc/FC32-Rc Continuous Printer: You can set print trigger mode, defibrillation distance, package length, fixed distance, missing print threshold, missing print operation, and ribbon advance distance.



Note:

Print trigger mode setting: internal signal / mixed signal
Defibrillation distance setting: minimum = 0.0 mm; maximum = 5.0 mm
Package length: 30 mm-1600 mm
Fixed pitch distance setting: minimum = 30 mm; maximum =1600 mm
Missing print threshold setting: minimum = 0; maximum = 100
Missing print operation setting: continue / discard
Ribbon advance distance: range 0.5 ~ 10.0 mm

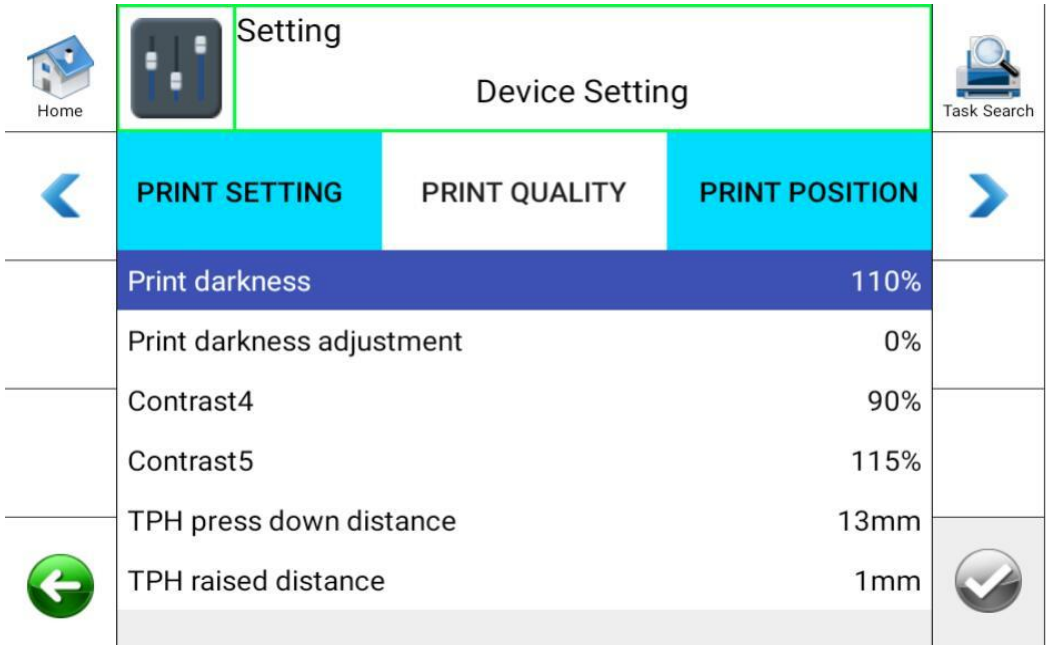
FC32-Li/FC32-Ri Intermittent Printer: You can set defibrillation time, print delay, missing print threshold, missing print operation, and ribbon advance distance.



注：the setting range of defibrillation time and print delay is 0-5000ms.

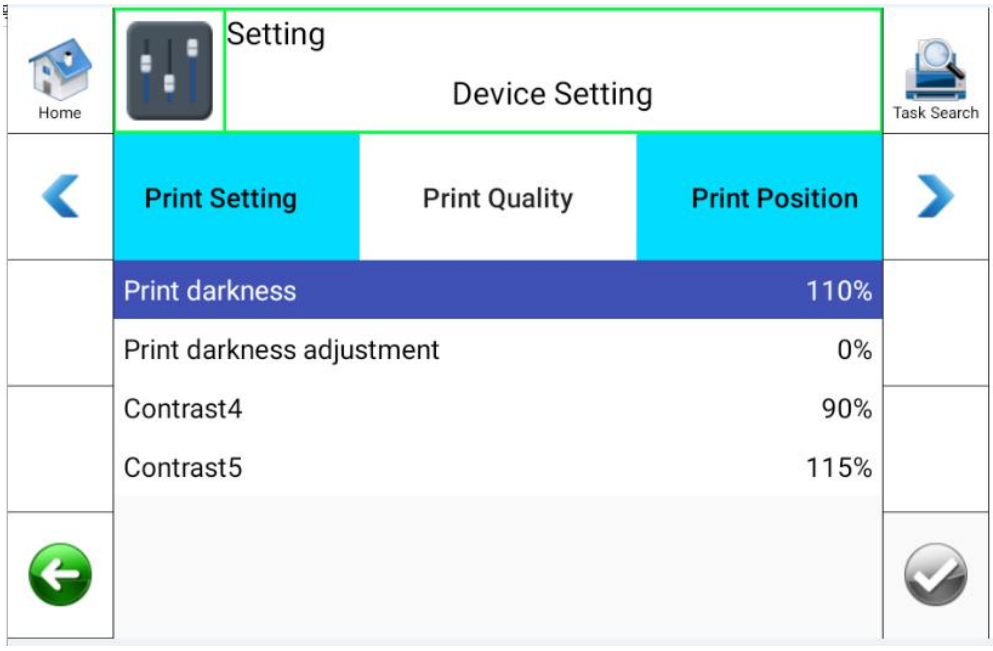
- **Print Quality:**

FC32-Lc/FC32-Rc Continuous Printer: You can set and adjust the print darkness, and set the contrast, TPH press down distance and TPH raised distance.

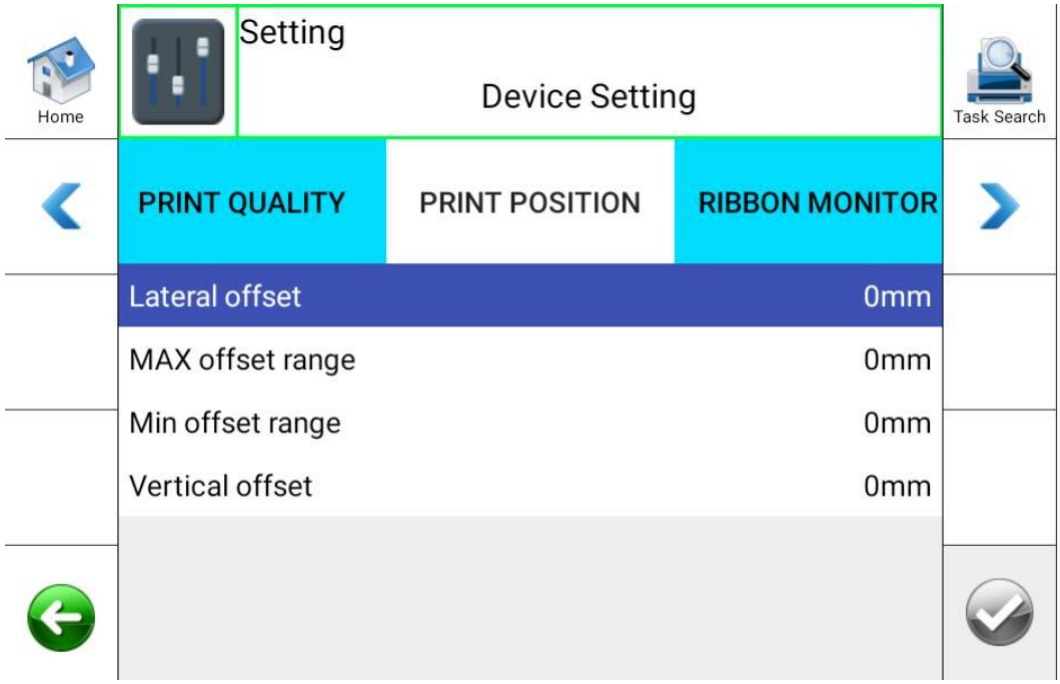


Note:
Print darkness setting: minimum = 80%; maximum = 125%
Print darkness adjustment: minimum = -25%; maximum = 25%
Contrast 4: 60% ~ 99%
Contrast 5: 50% ~ 140%
TPH press down distance: 5mm ~ 50mm
TPH raised distance: 0.5mm ~ 10mm

FC32-Li/FC32-Ri Intermittent Printer: You can set and adjust the print darkness, and set the contrast.

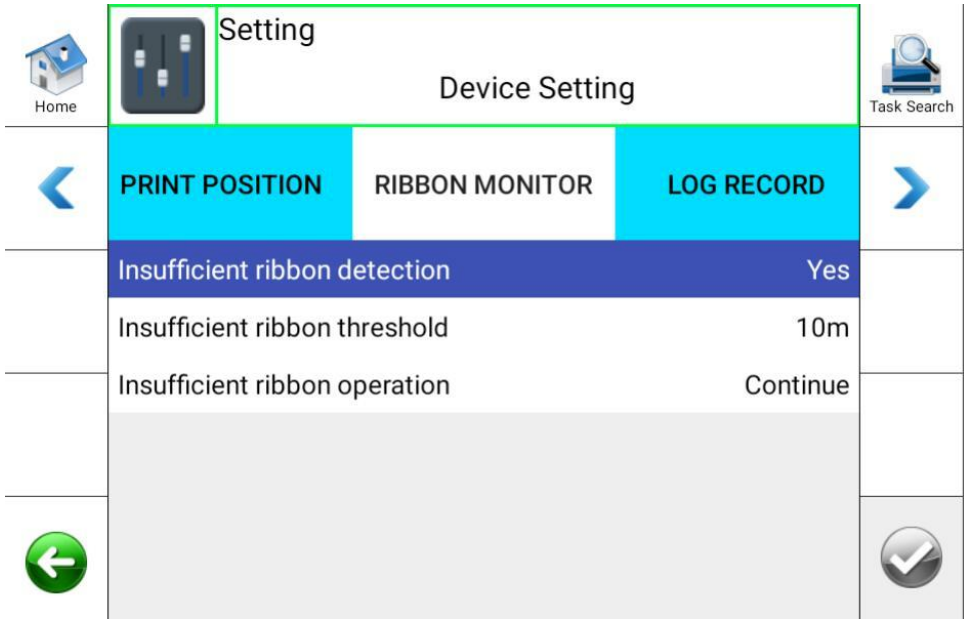


- **Printing Position:** You can set horizontal offset, maximum offset range, minimum offset range, and vertical offset.



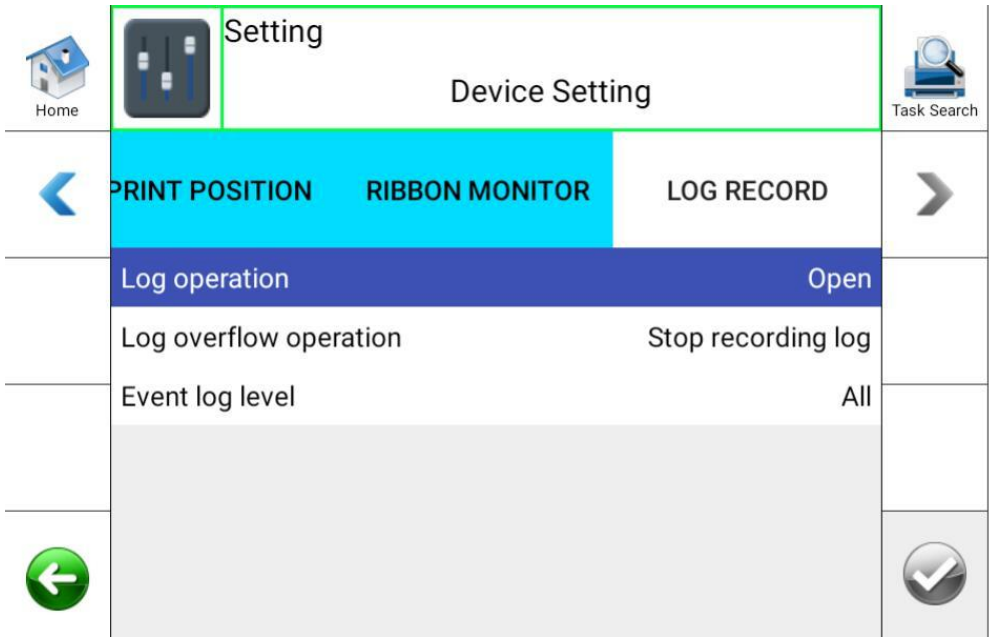
Note:
Horizontal offset setting: minimum = 0 mm; maximum = 30 mm
Maximum / minimum offset range setting: minimum = -5mm; maximum = 5mm
Vertical offset setting: minimum = 0 mm;
maximum = 600 mm (continuous printer) / 750mm (intermittent printer)

- **Ribbon Monitor:** You can set the detection of insufficient ribbon, the threshold and the operation.



Note:
Insufficient ribbon detection: Yes/No.
Insufficient ribbon threshold setting: minimum = 10 meters; maximum = 400 meters
Insufficient ribbon operation: Continue/discard

- **Log Record:** You can set log operations, log overflow operations, and event log level.



Note:
Log operation settings: on / off
Log overflow operation settings: stop logging / delete old data / stop printing
Event log level setting: all / warning / information

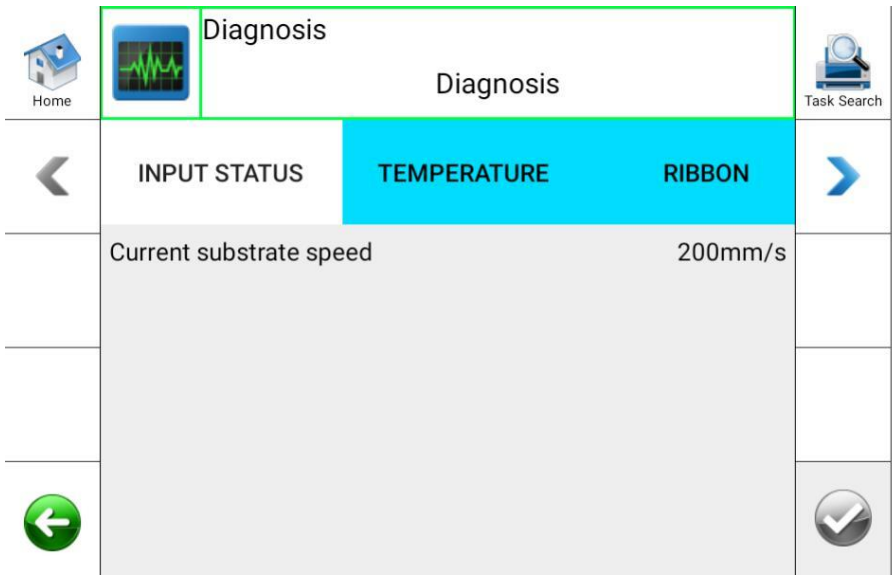
4.4 Diagnosis

Select "Diagnosis" on the menu screen to view various information about the status of the printer.

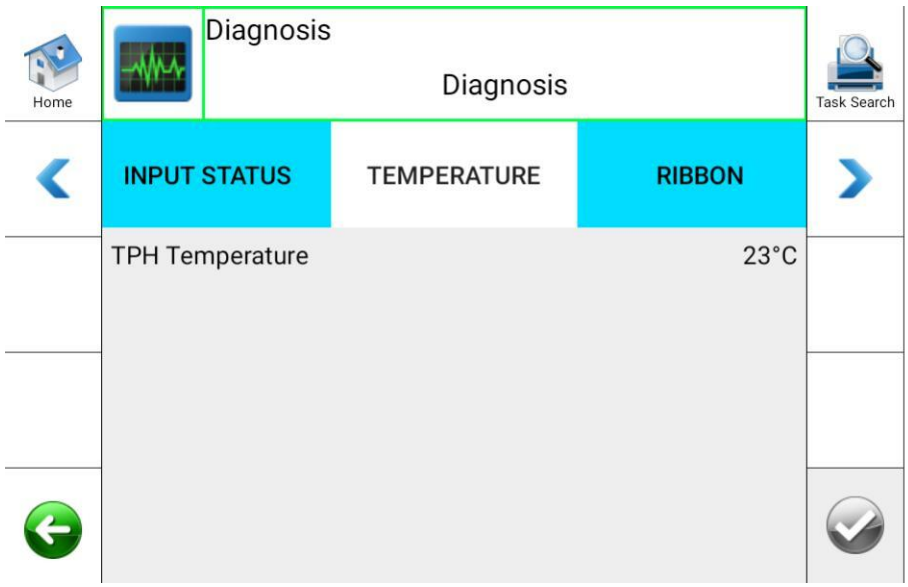
4.4.1 Diagnosis

Select "Diagnosis" to query the input status, temperature, ribbon, and internal information.

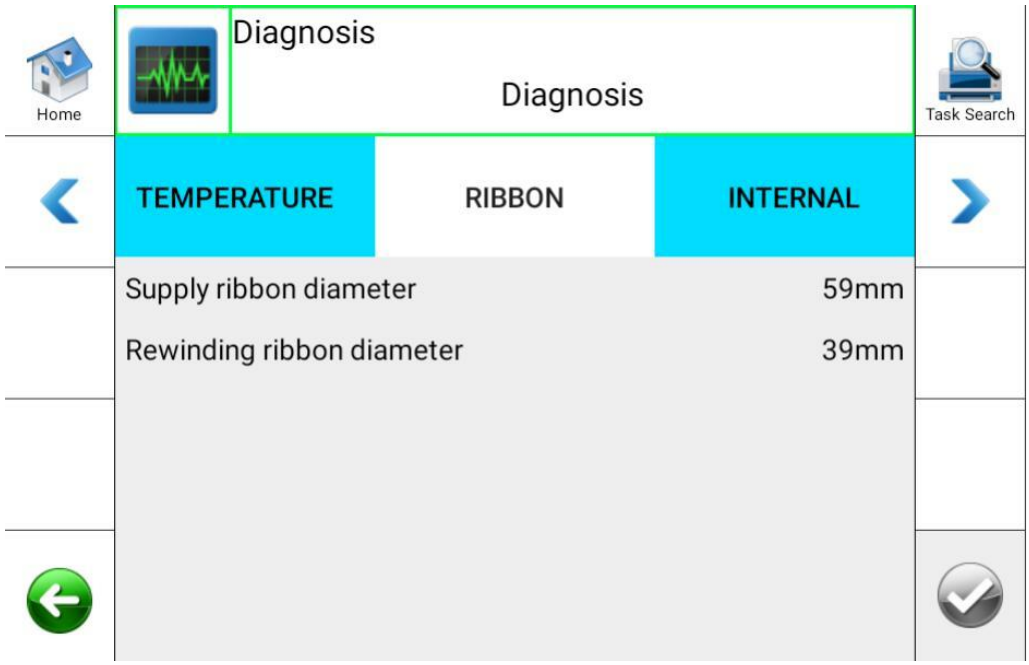
- **Input status:** Display the current substrate speed.



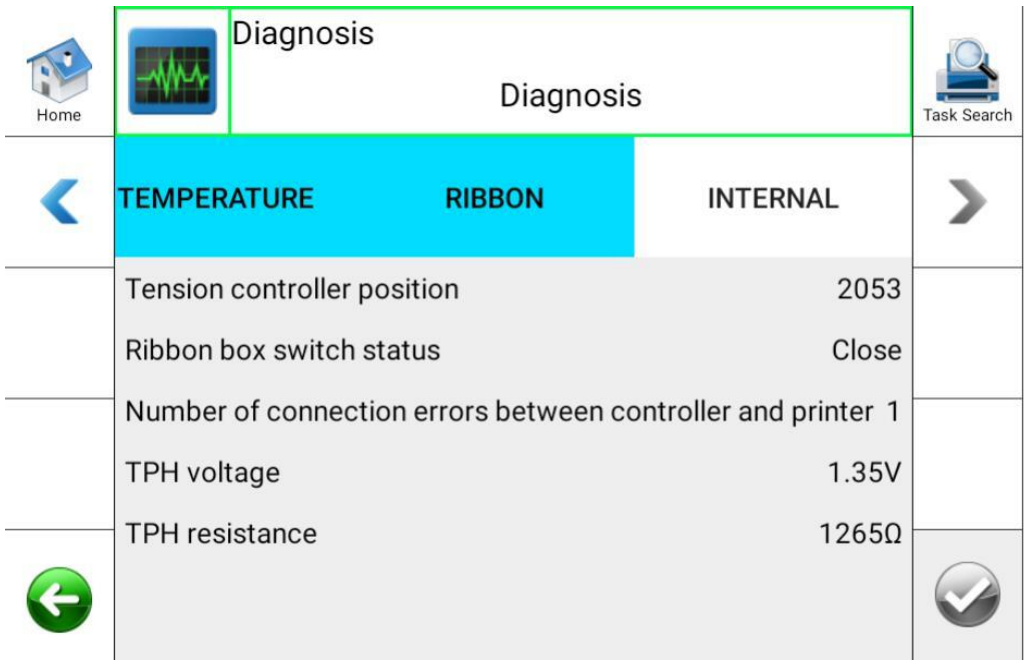
- **Temperature:** Display the current print head temperature.



- **Ribbon:** Display the diameter of the currently supplied ribbon and rewinding ribbon.



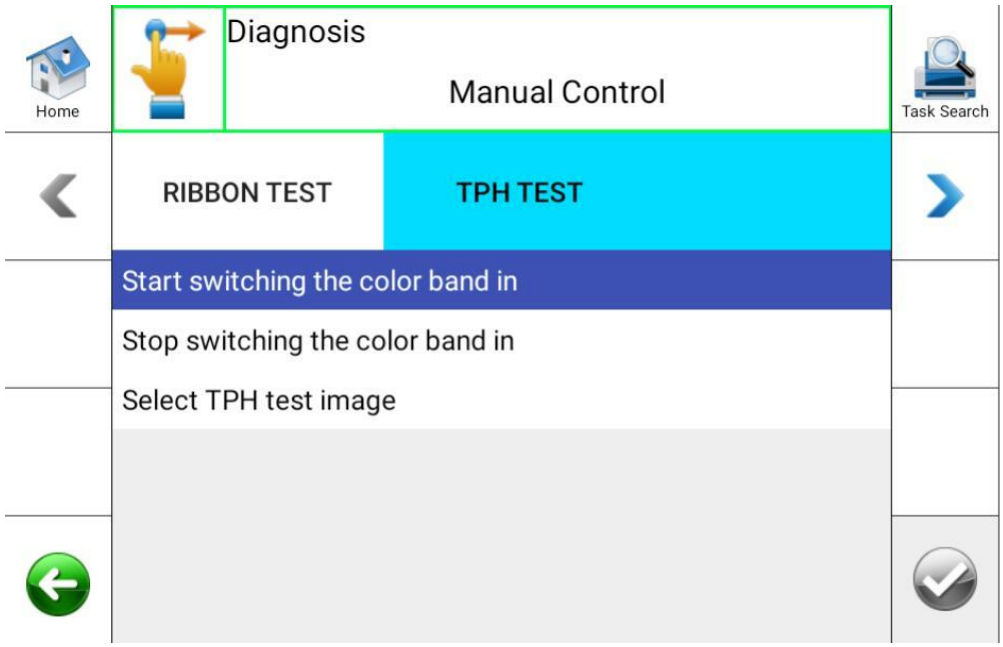
- **Internal:** Display the position of the tension controller, the status of the ribbon cassette switch, the number of connection errors between the controller and printer, the voltage of the print head and the resistance of the print head.



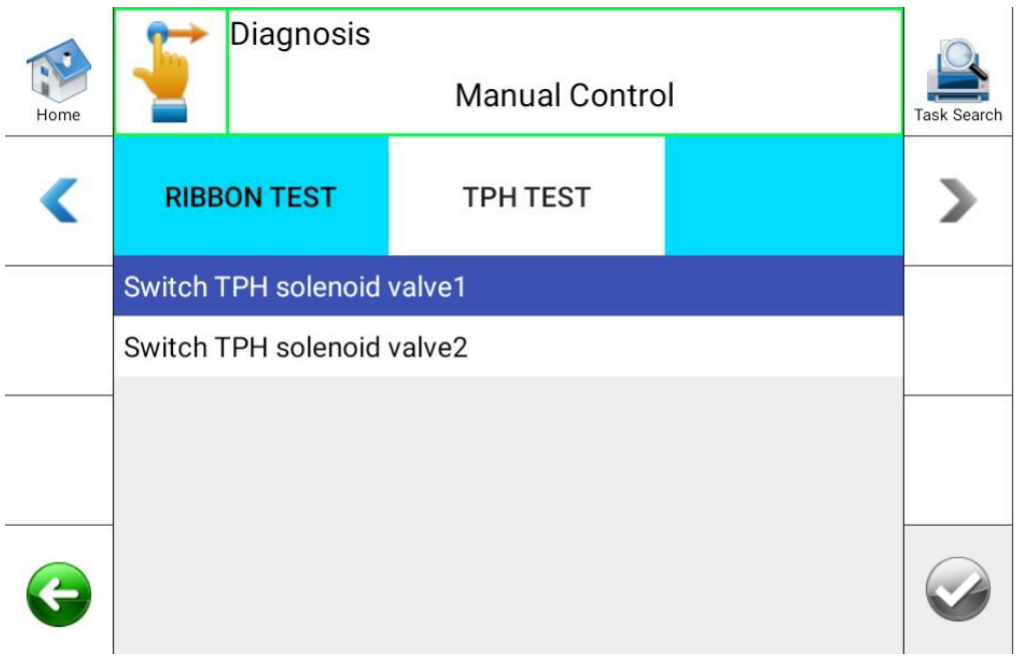
4.4.2 Manual Control

Select "Manual Control" to query information about ribbon test and TPH test.

- **Ribbon Test:** You can choose to start or stop the ribbon feed. The images selected for the print head test include ASCII code, self-test page, slash, black block, density test and barcode.

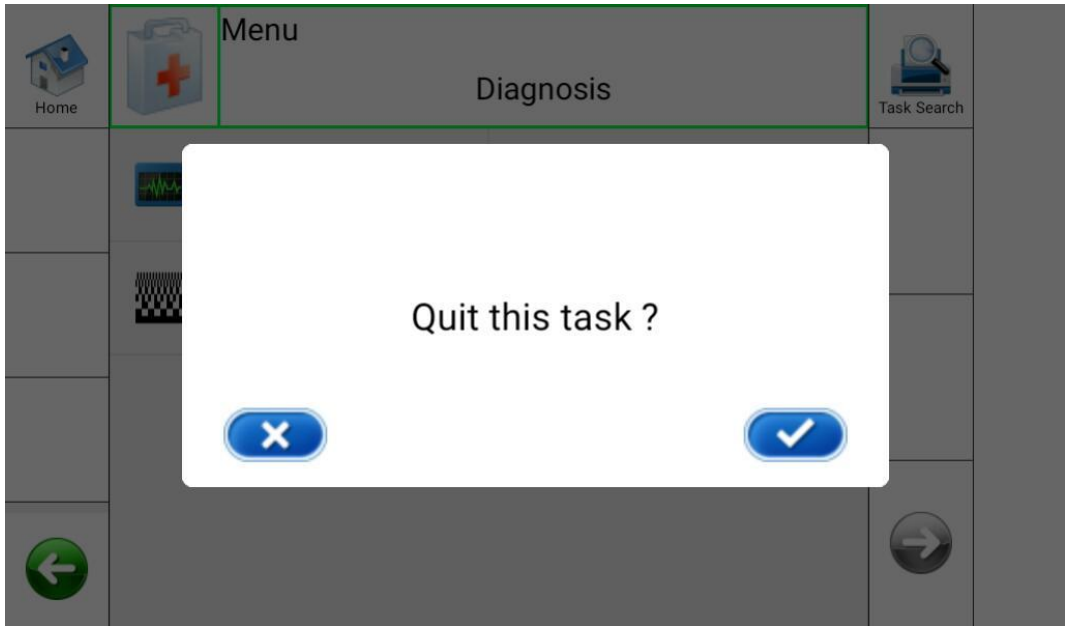


- **TPH test:** Print head solenoid valve 1 or 2 can be switched.



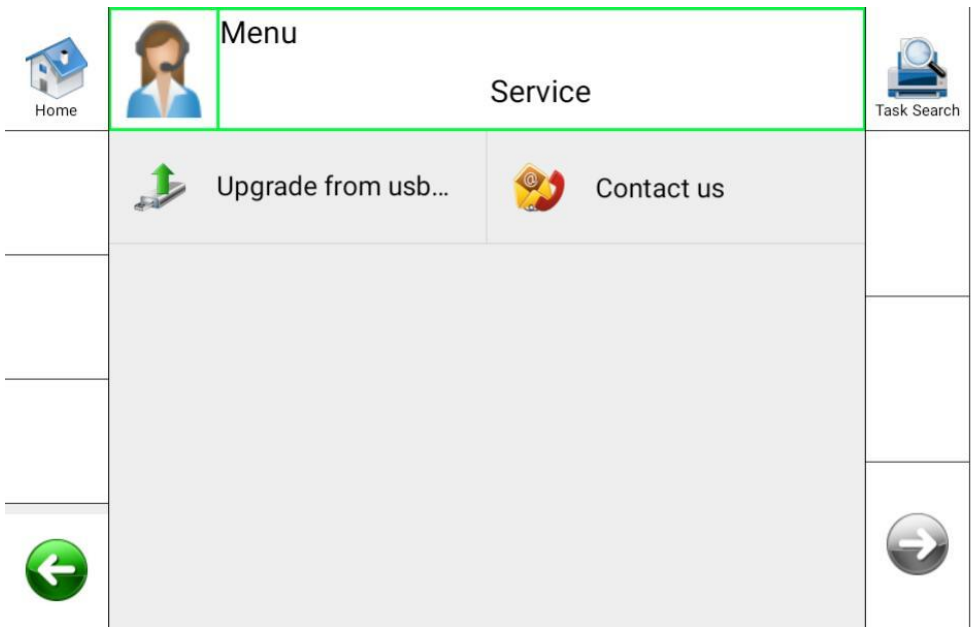
4.4.3 TPH Test

Select “ Diagnosis”---"TPH Test", the following dialog box appears, if you need to detect, click "√".



4.5 Service

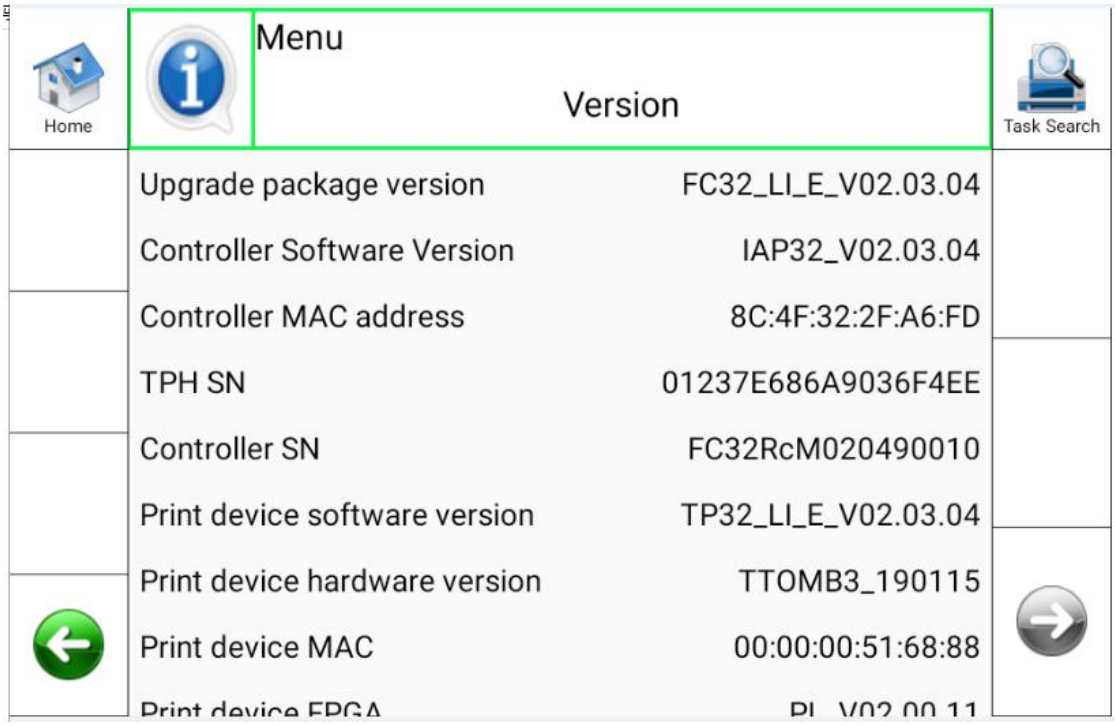
Select "Service" on the menu screen to set the upgrade from a USB flash drive.



Note: After clicking to upgrade from a USB flash drive, search for all the upgrade files in the .upd file format on the USB flash drive and select any file (different from the current version) to upgrade. You can check whether the upgrade was successful from the version information after the upgrade.

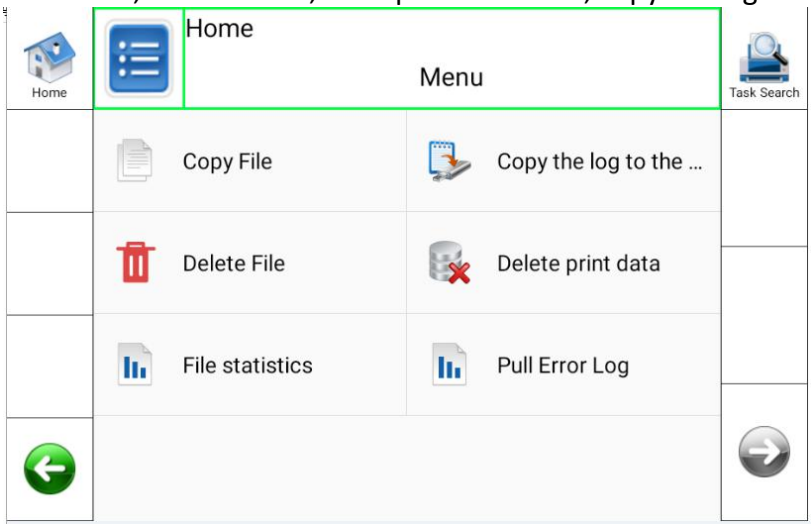
4.6 Version Information

Select "Version" on the menu screen to view the current hardware and software version.

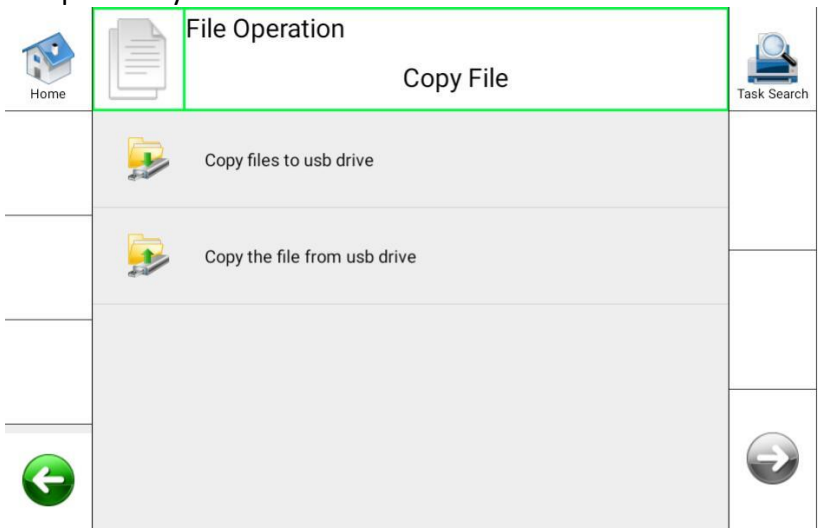


4.7 File Operation

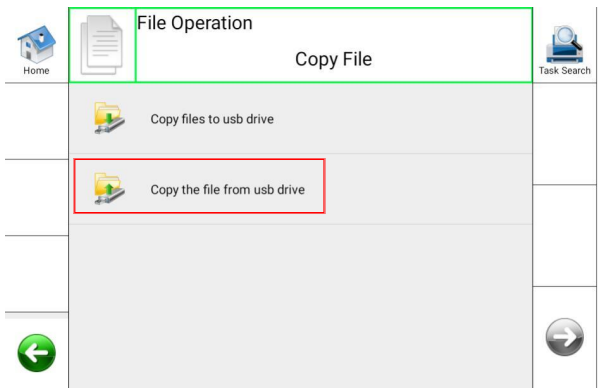
Select "File Operation" on the menu screen, you can access the following options: copy file, delete file, file statistics, clear print database, copy the log to the USB drive and pull error log.

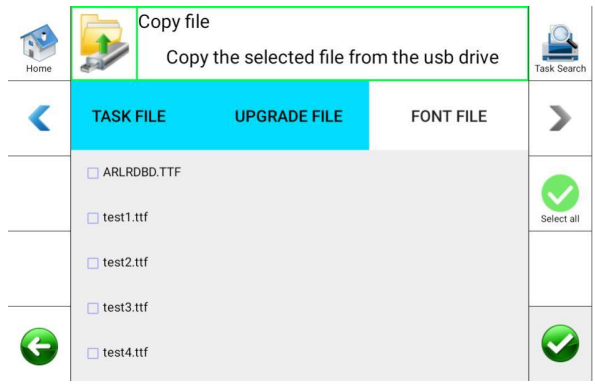


- **Copy File:** You can copy files to the USB drive or copy files from the USB drive to the printer system.

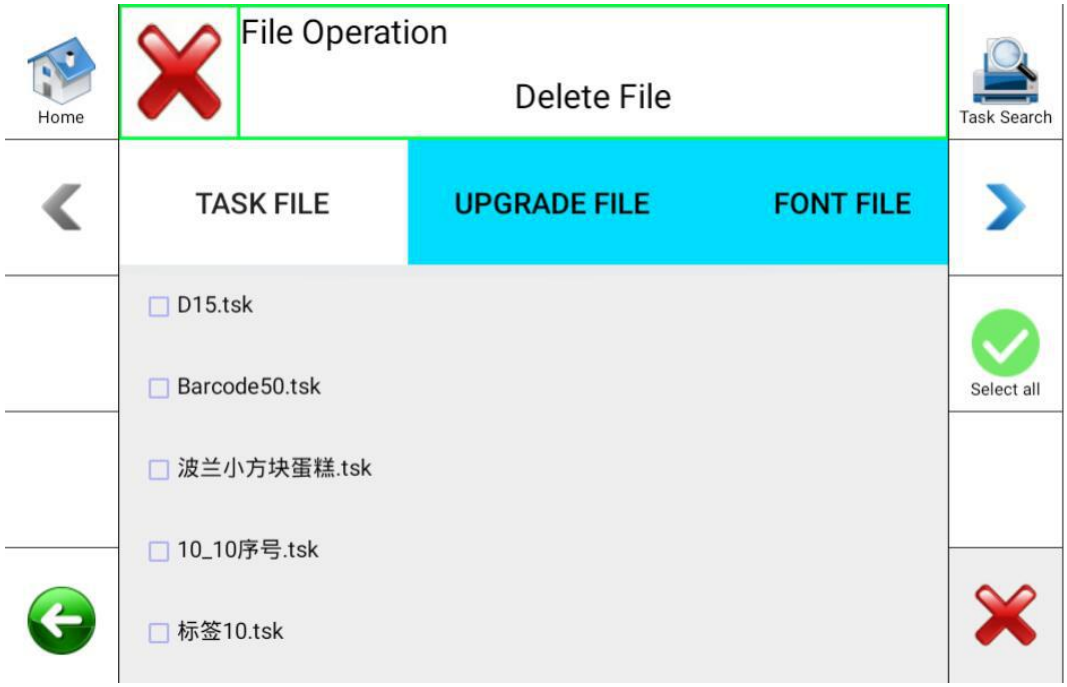


Click "Copy file from USB flash drive" to select "Task File", "Upgrade File" or "Font File".

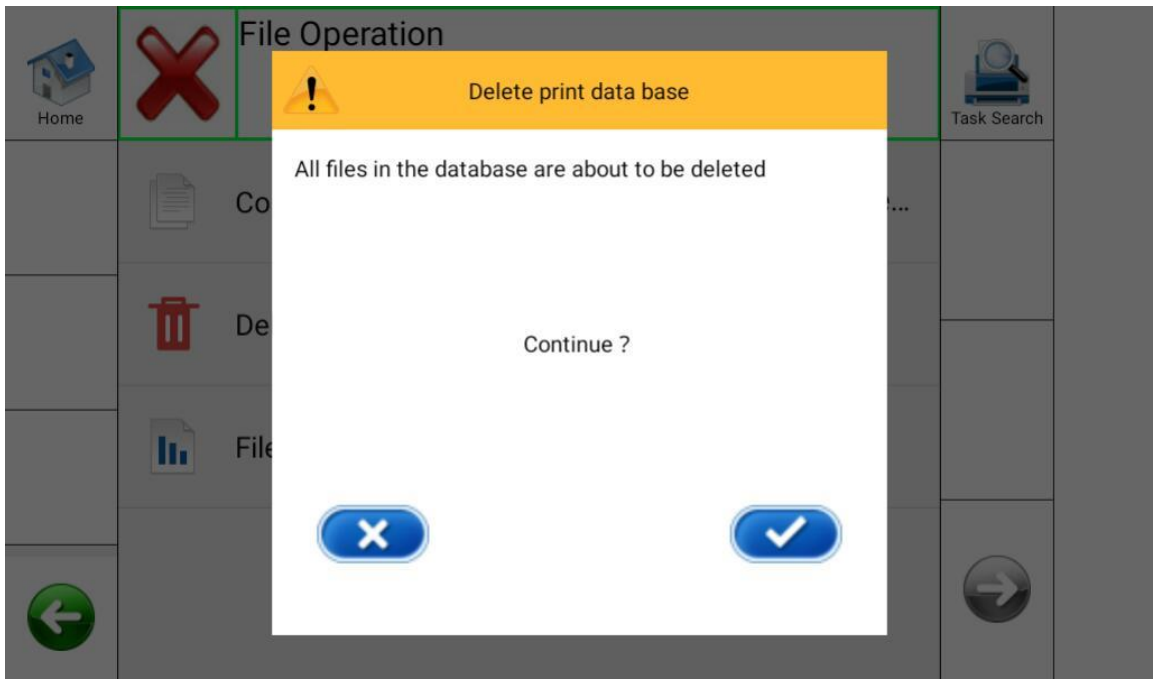




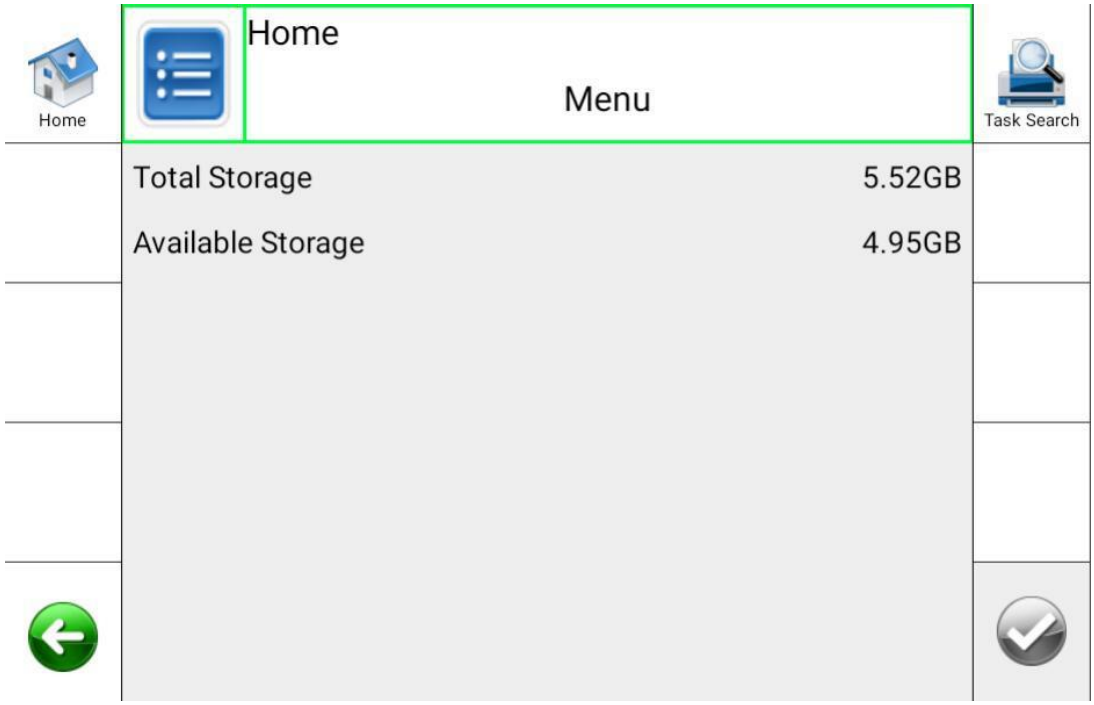
- **Delete File:** You can choose different types of files to delete.



- **Clear print database: delete all files in the database.**

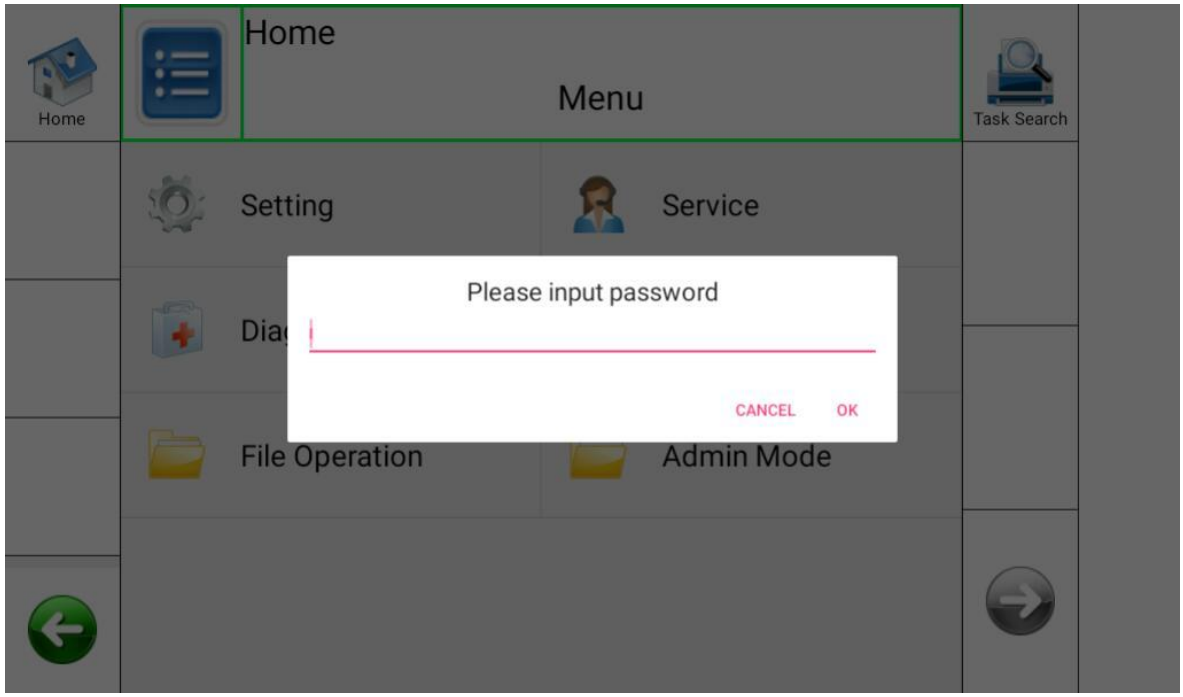


- **File Statistics:** You can view the current total storage capacity and available storage capacity.

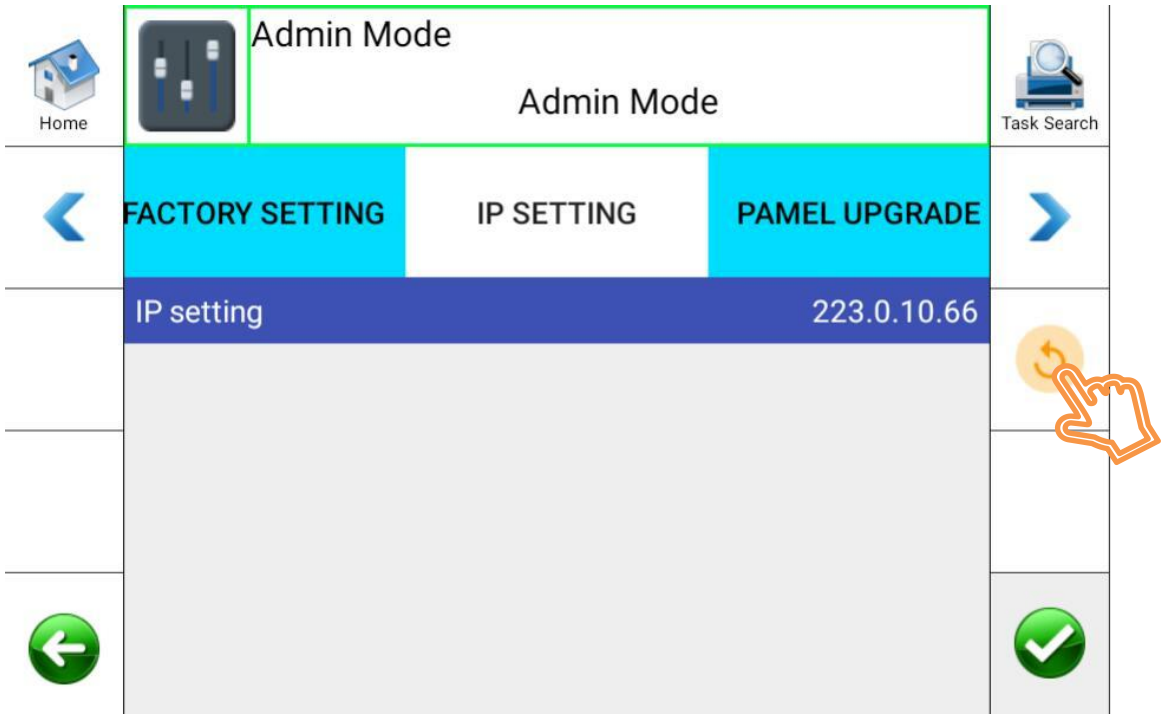


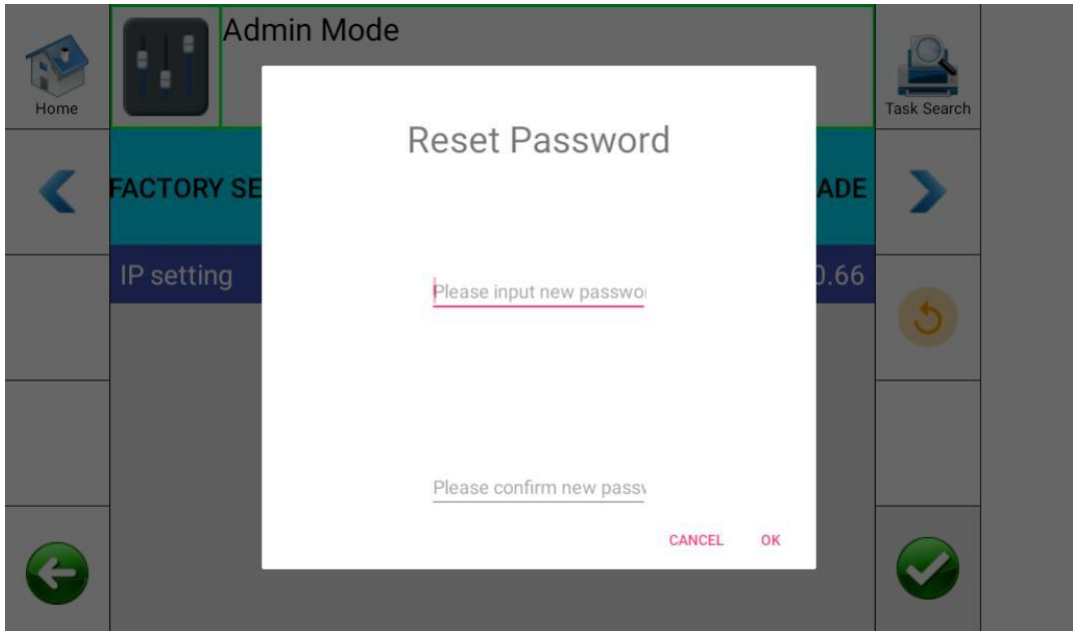
4.8 Admin mode

Select "Administrator Mode" on the menu screen and enter the password (the default password is 123456) to enter the administrator mode.



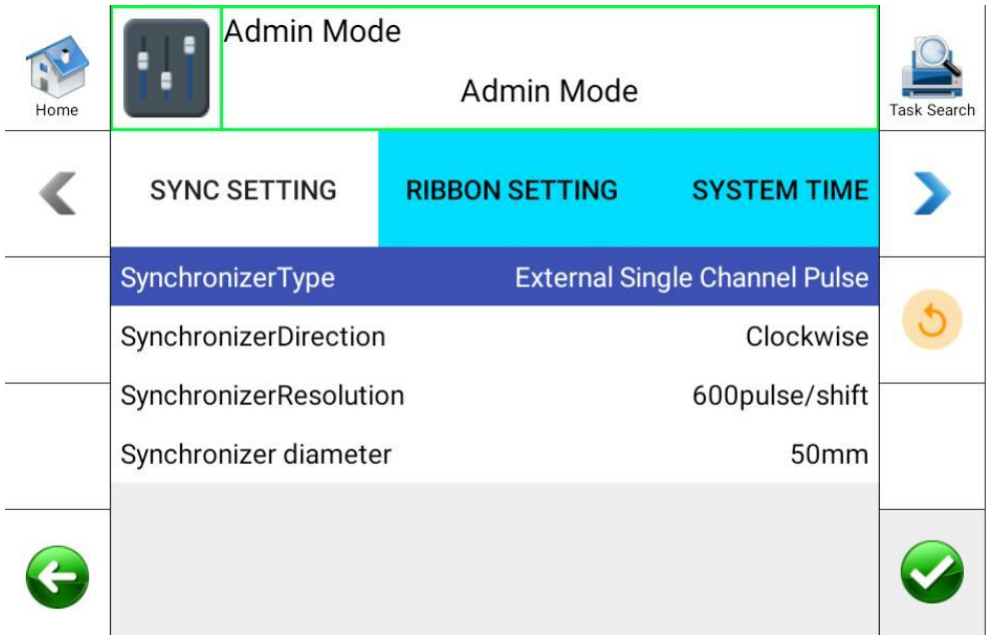
After entering the administrator mode, according to user requirements, click the orange button on the right side of the page (as shown below) to change the password.





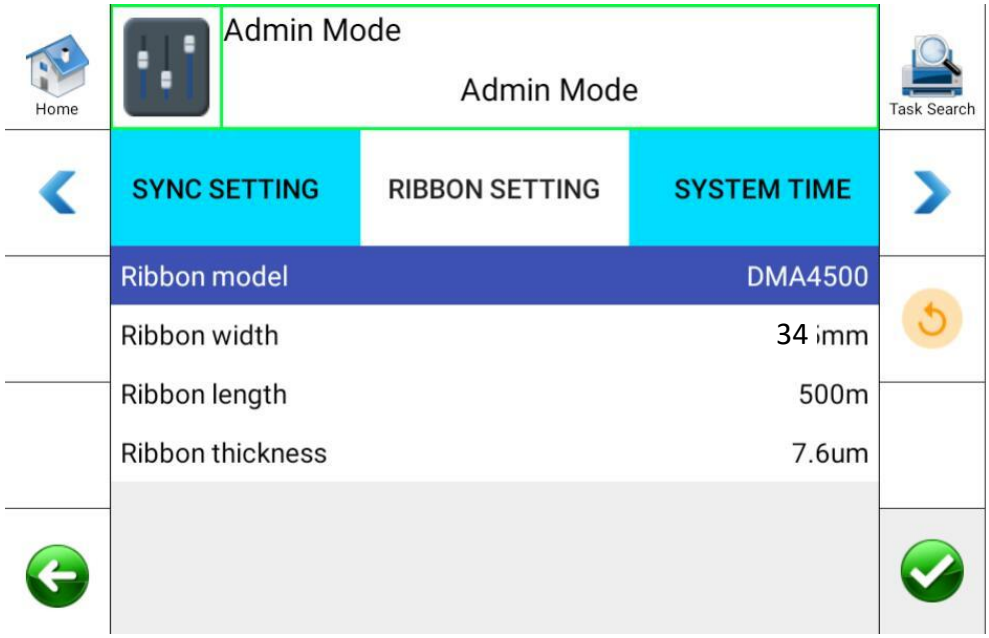
In "Administrator Mode", you can access the following options: synchronizer setting, ribbon setting, system clock adjustment, restore factory setting, IP setting.

- **Synchronizer Setting（Only support continuous printers FC32-Lc/FC32-Rc）:** You can set the type, direction, resolution, and diameter of the synchronizer.

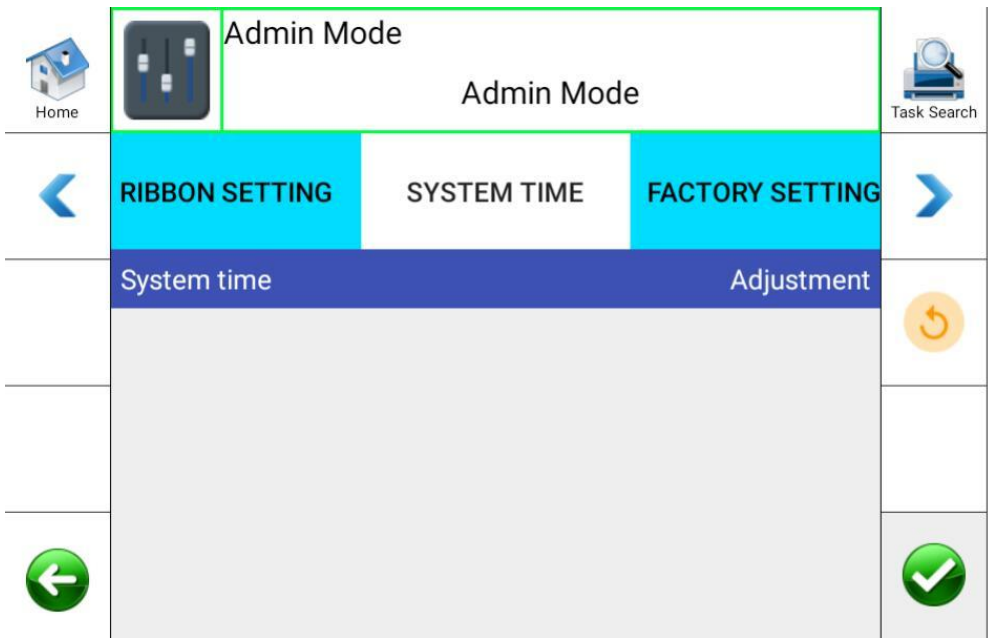


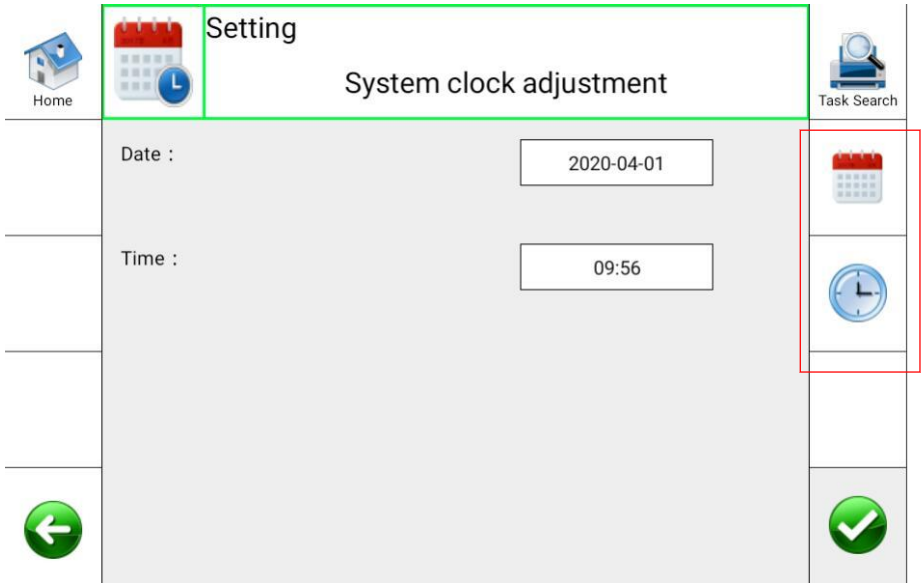
Note:
Synchronizer type setting: internal / external—single-channel pulse / external-dual-channel pulse
Synchronizer direction setting: clockwise / counterclockwise
Synchronizer resolution setting: minimum = 1 pulse / revolution; maximum = 600 pulses / revolution
Same device diameter setting: minimum = 10 mm; maximum = 500 mm

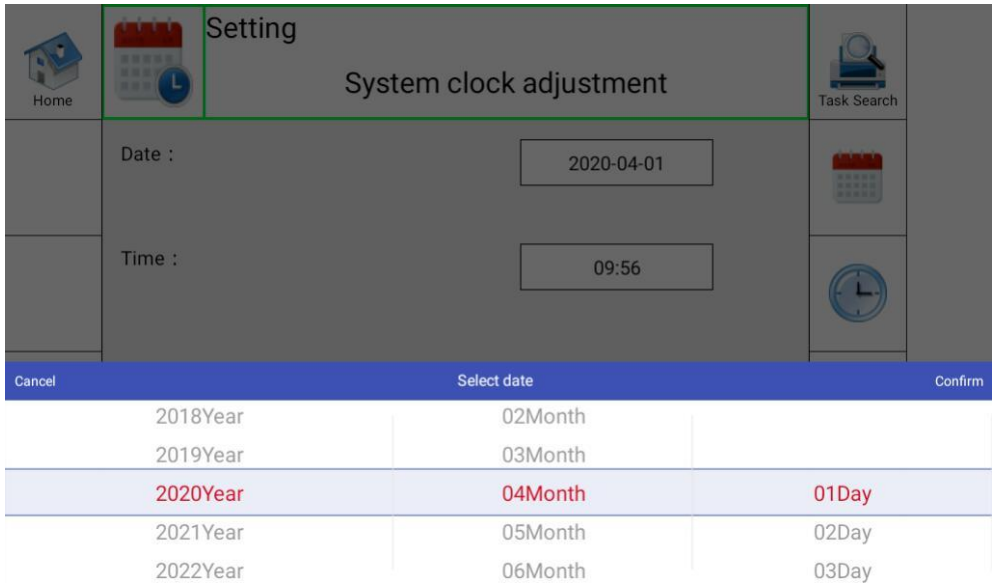
- **Ribbon Setting:** You can set the ribbon model, ribbon width, ribbon length, and ribbon thickness.

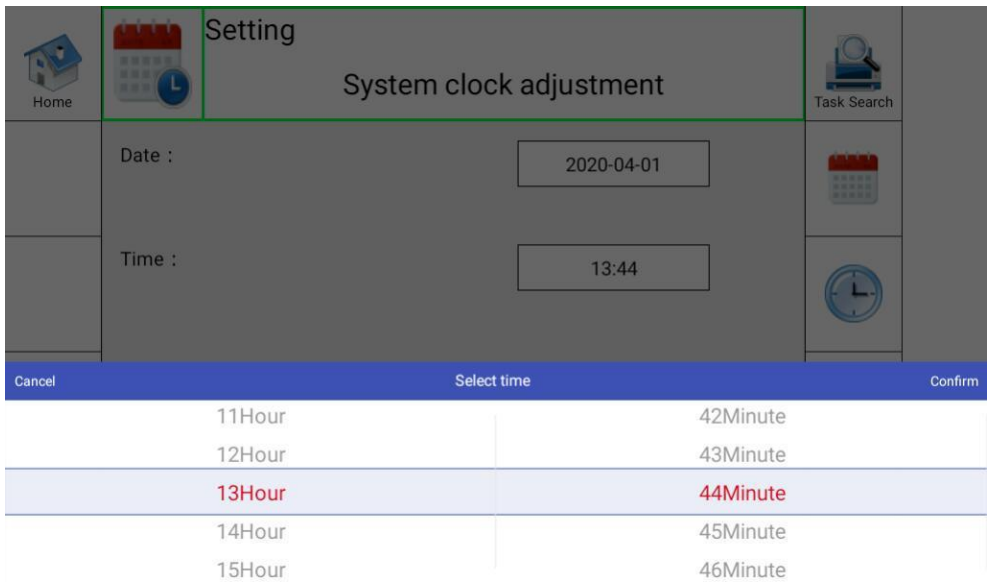


- **System Clock Adjustment:** You can set the date and time of the device's internal clock.

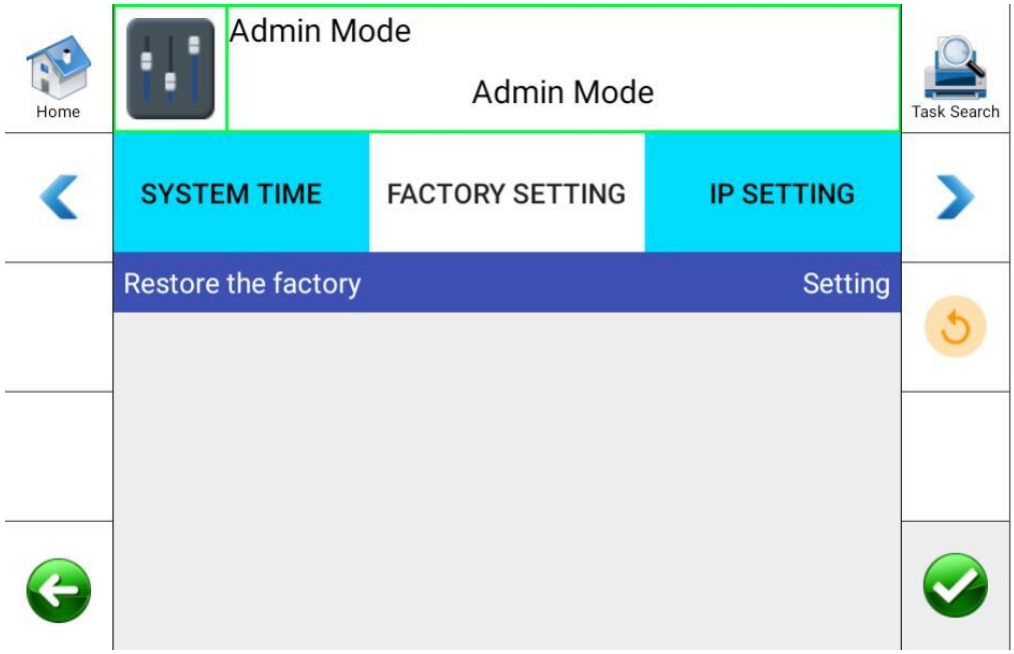


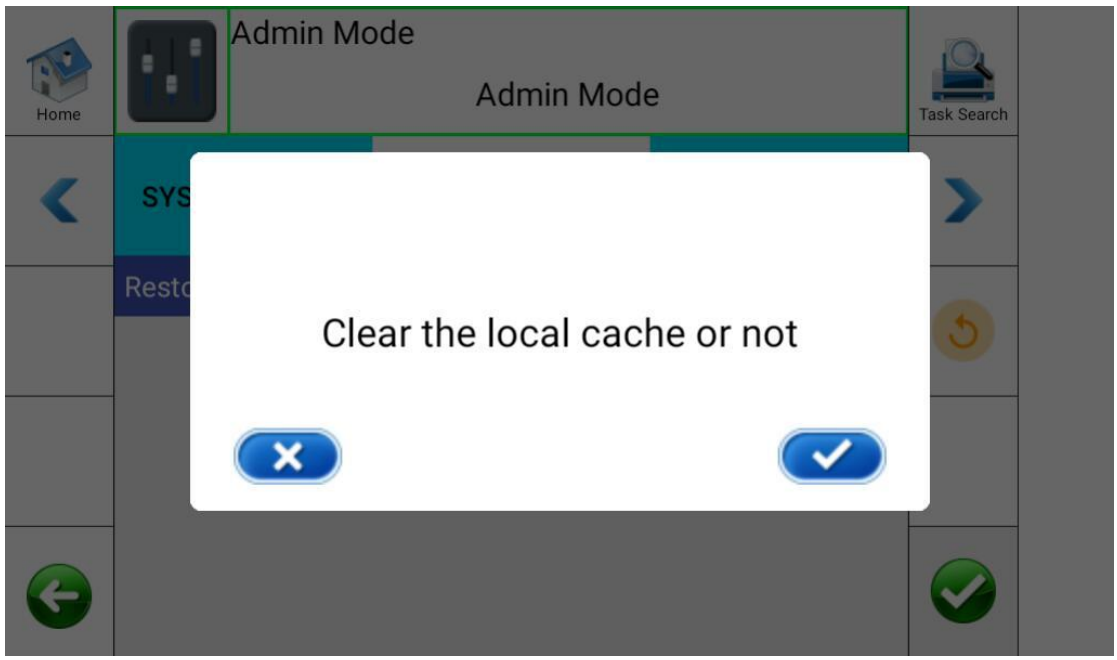

Home
Setting
System clock adjustment
Task Search
Date :
2020-04-01
Time :
09:56


Home
Setting
System clock adjustment
Task Search
Date :
2020-04-01
Time :
09:56
Cancel
Select date
Confirm
2018Year
2019Year
2020Year
2021Year
2022Year
02Month
03Month
04Month
05Month
06Month
01Day
02Day
03Day

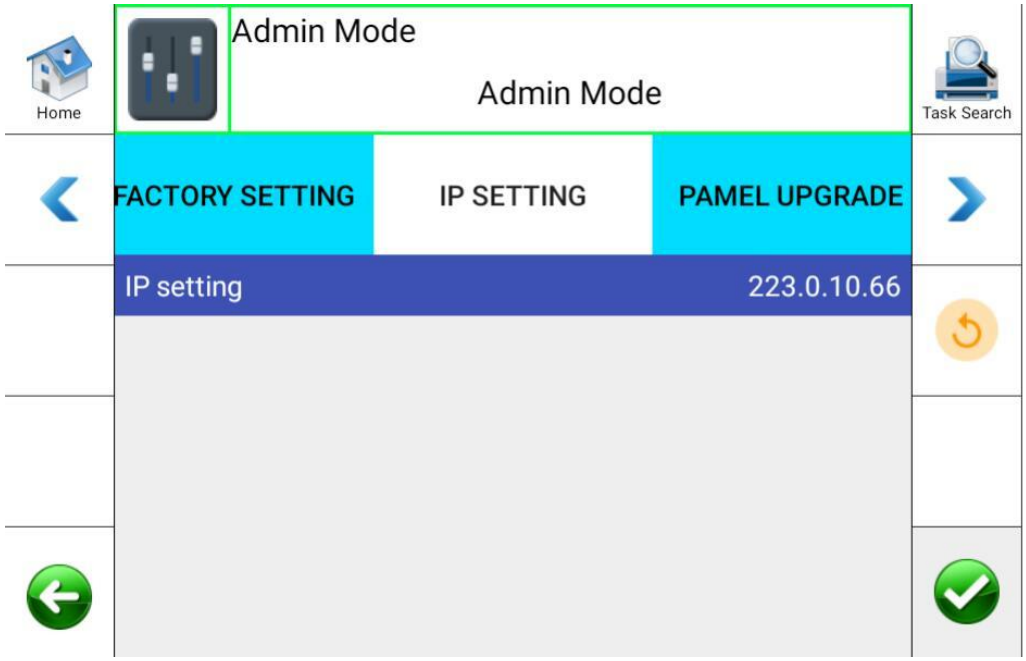

Home
Setting
System clock adjustment
Task Search
Date :
2020-04-01
Time :
13:44
Cancel
Select time
Confirm
11Hour
12Hour
13Hour
14Hour
15Hour
42Minute
43Minute
44Minute
45Minute
46Minute

- **Restore Factory Setting:** Click “Restore the factory setting”, a pop-up dialog box “Whether to clear the local cache” is displayed. Click “√” to set successfully.

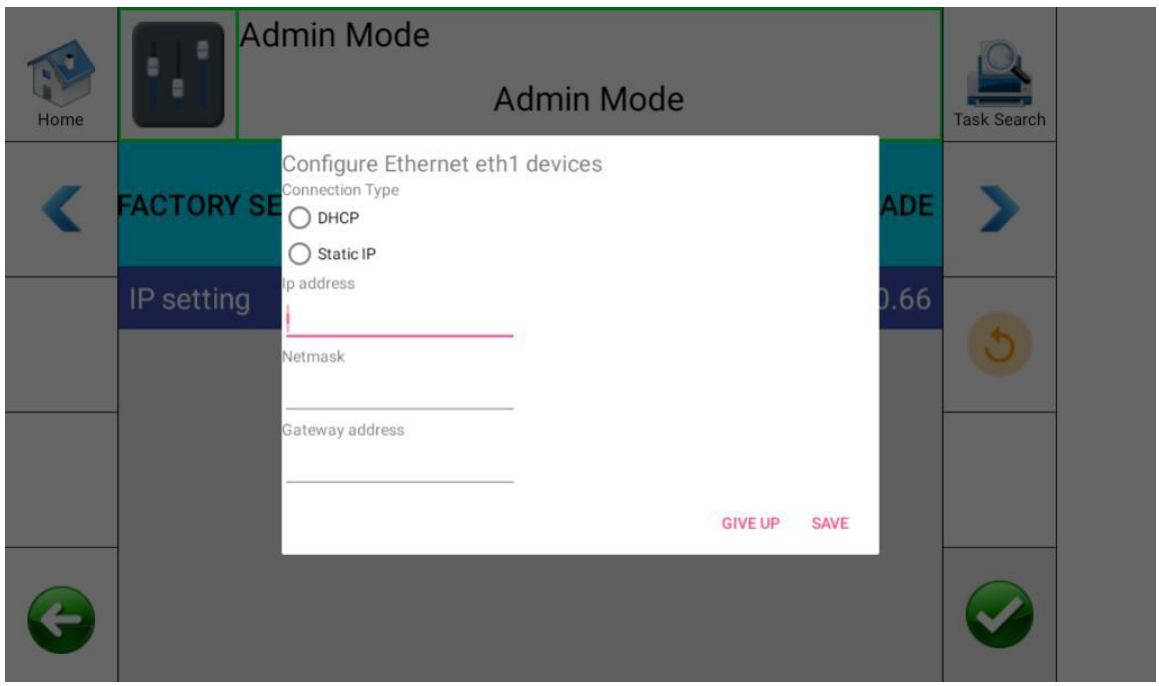




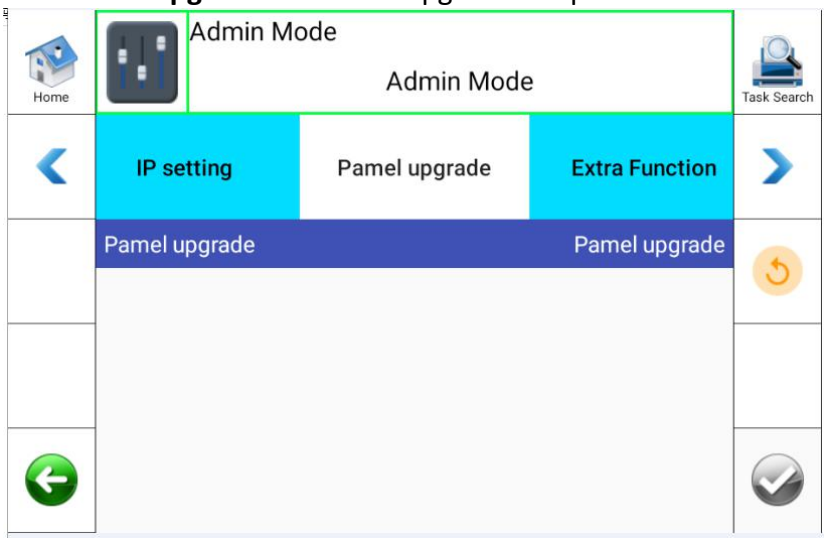
- **IP Setting**



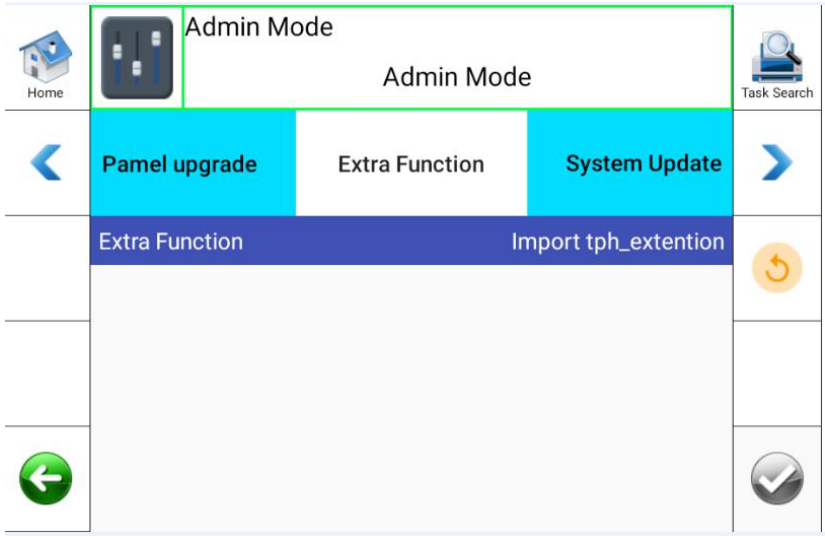
Click "DHCP", the system will automatically read the IP information; if you click "Static IP", the user will set the IP address and other information according to the network environment.



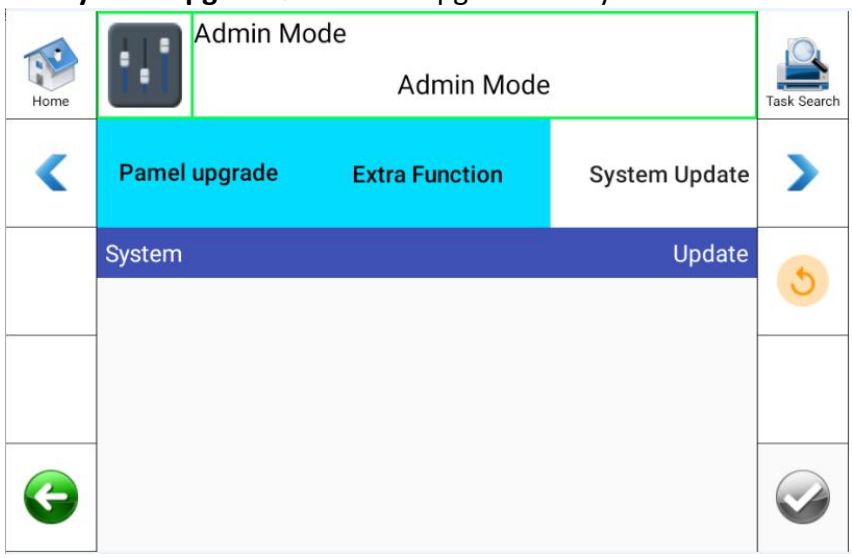
- **Pamel Upgrade：** You can upgrade the pamel.



- **Extra Function：** You can perform the “Import TPH_Extension” function.

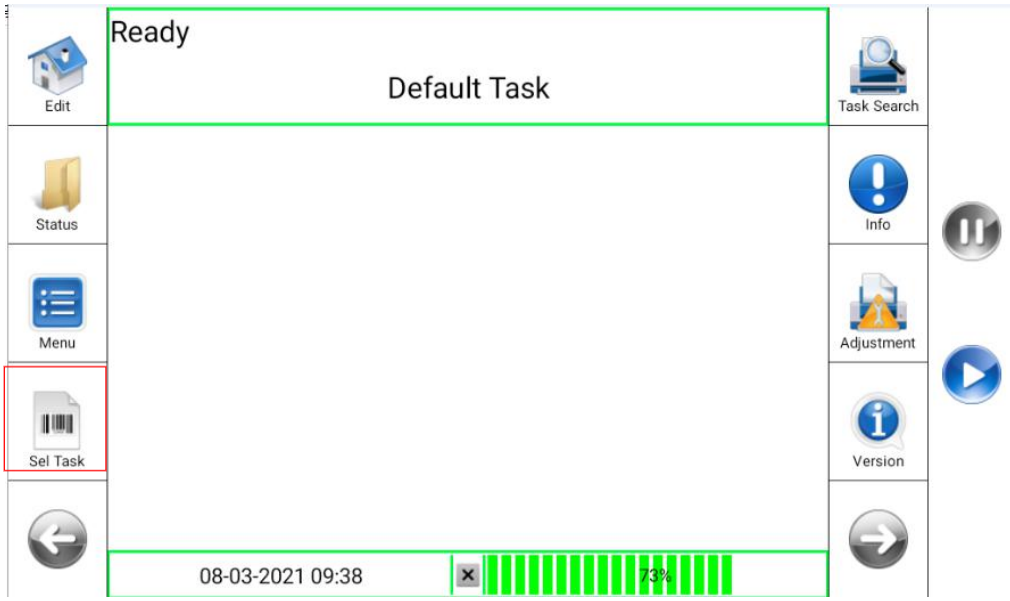


- **System Upgrade：** You can upgrade the system.



4.9 Select Task

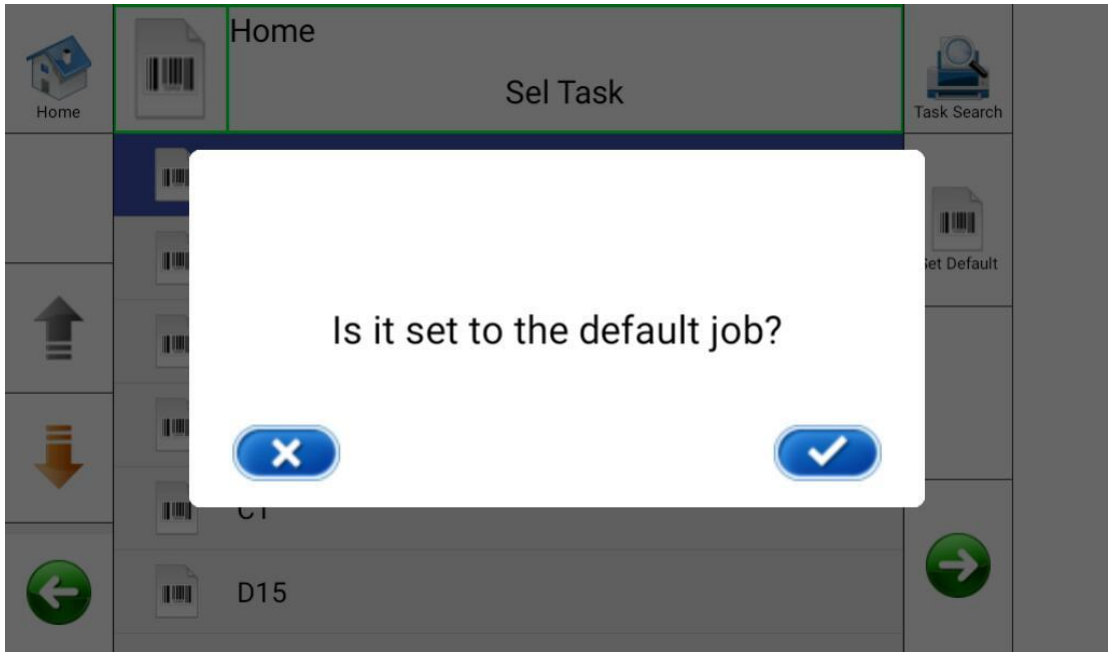
1. Choose “Select Task” on the home screen.



2. Select the file you want to print.

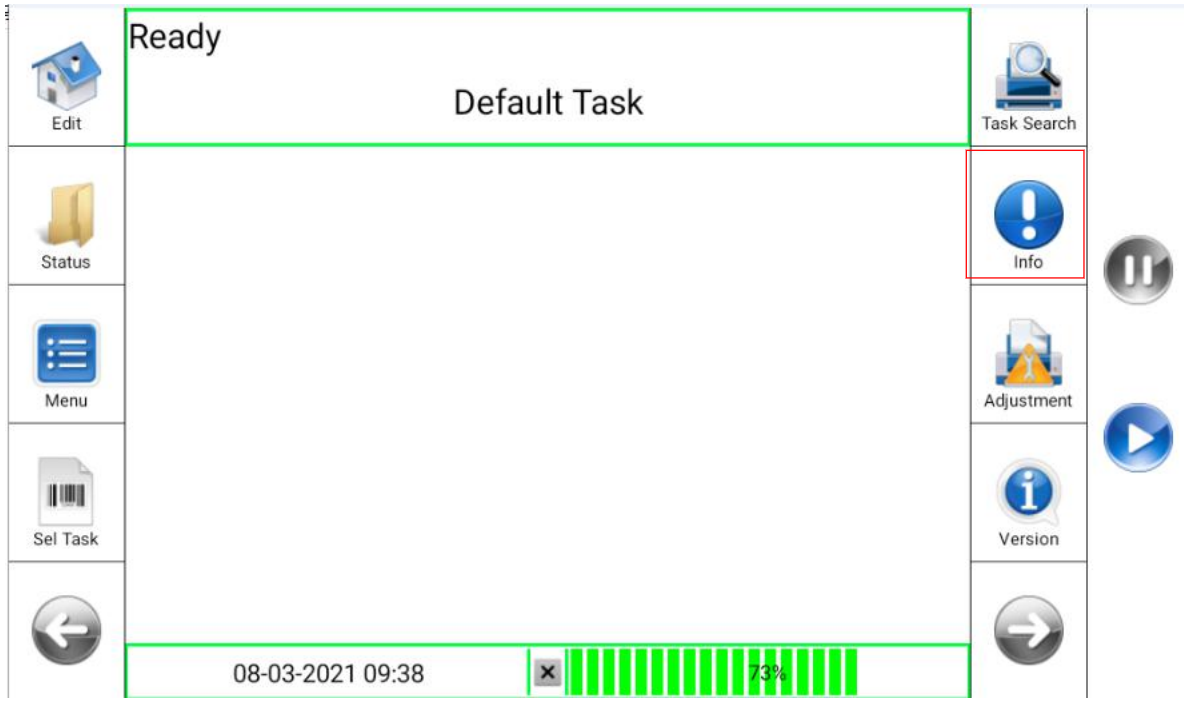


3. Select "√" to set the file as the default job.

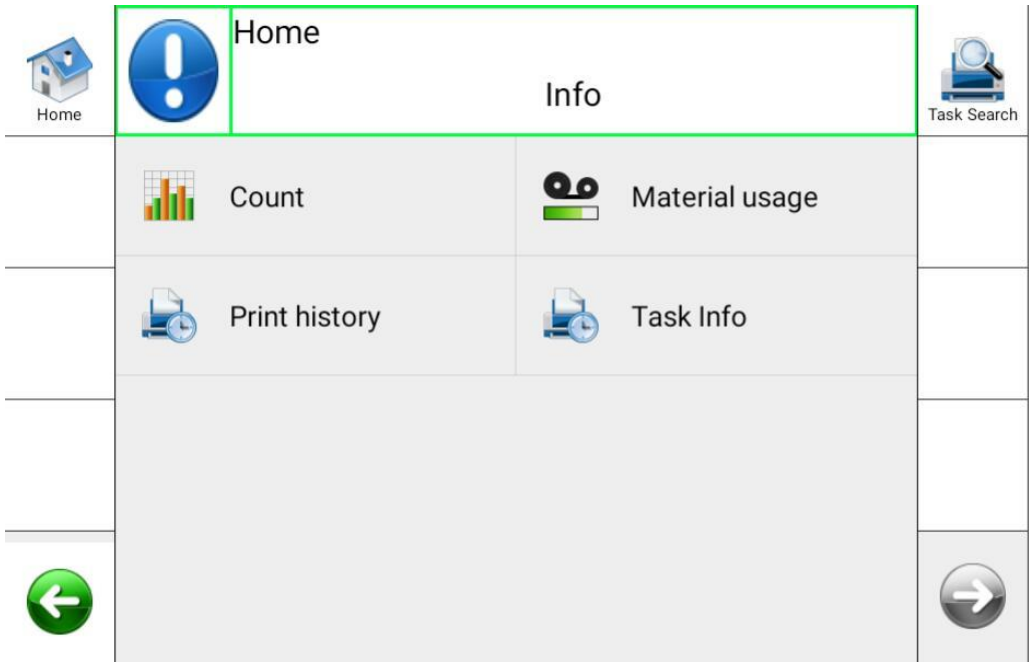


4.10 Information

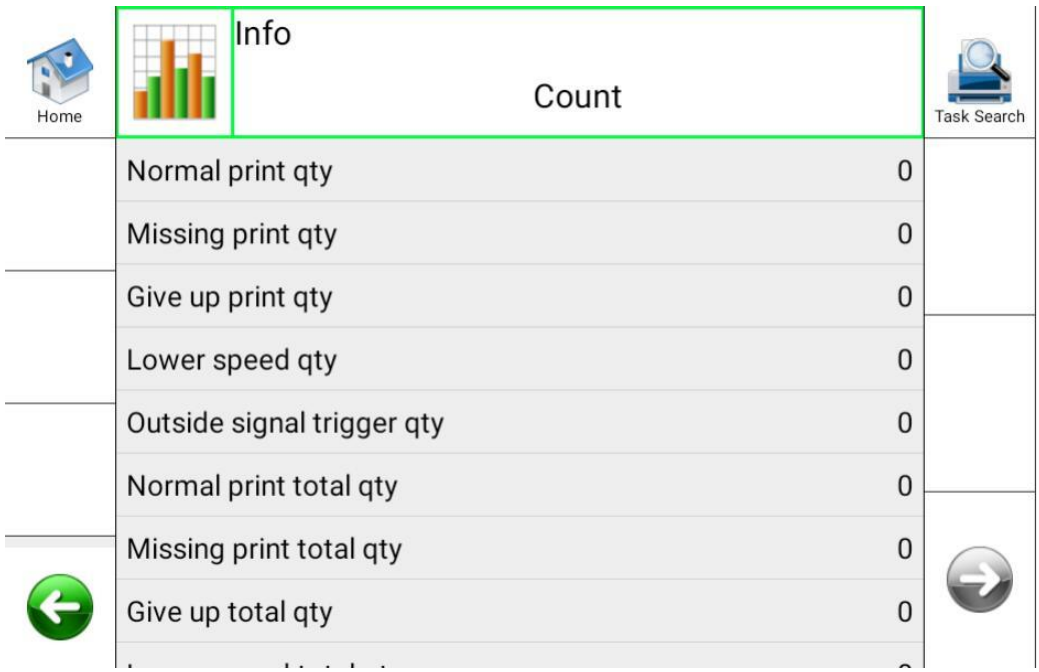
1. Choose “Information” on the home screen.



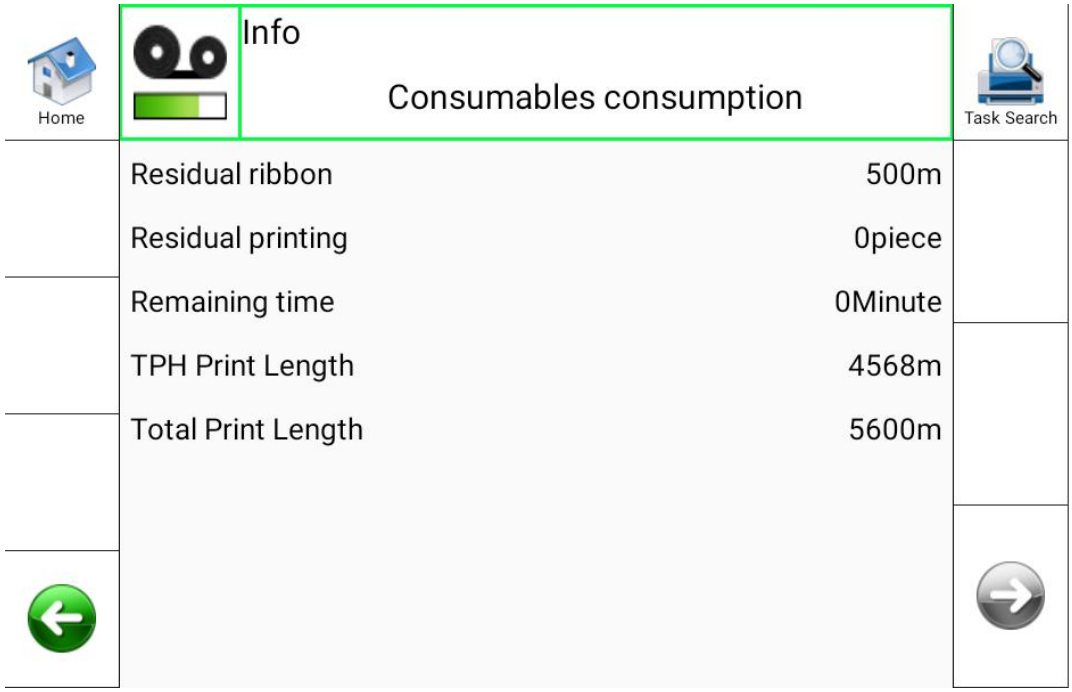
2. Enter the "Information" screen to query the count, material usage, print history and task info.



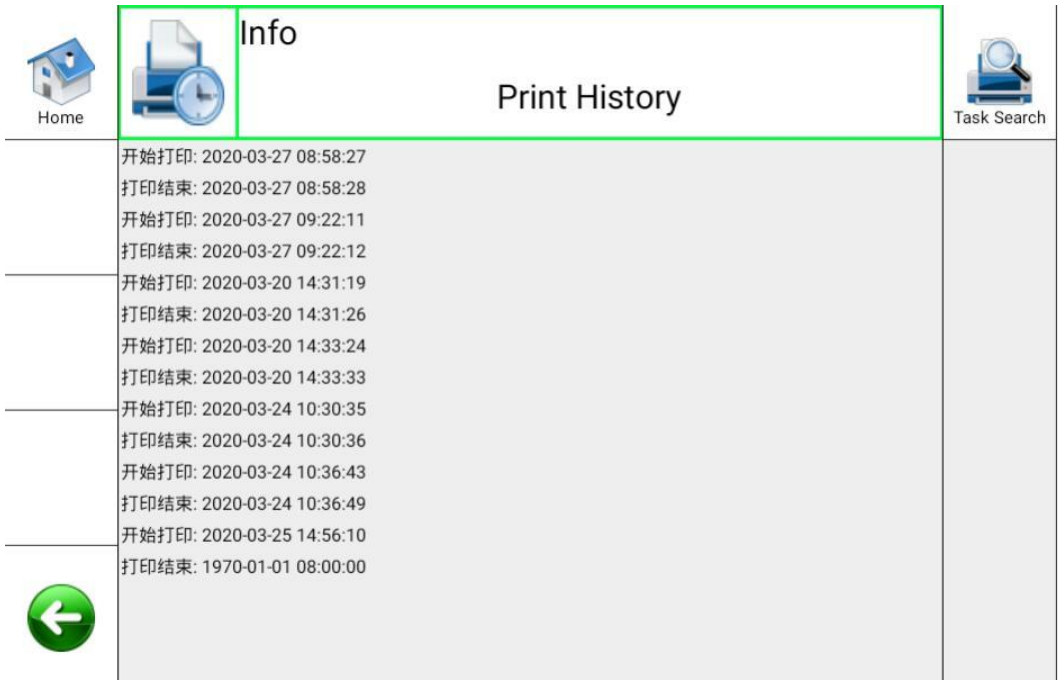
- **Count:** You can view information such as normal print qty, missing print qty, and give up print qty.



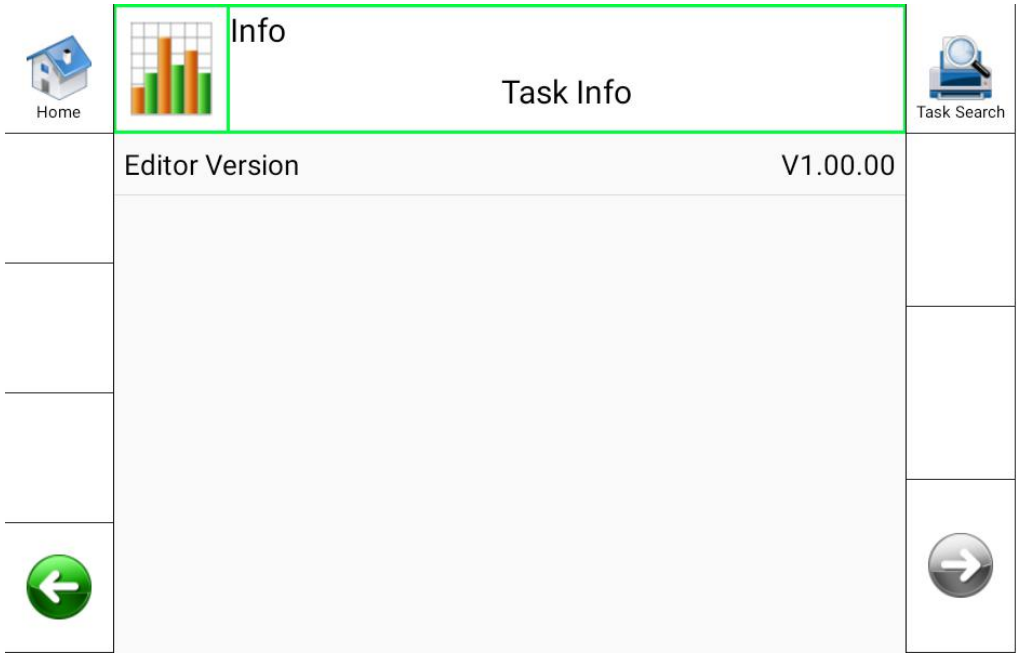
- **Consumables consumption:** You can check the remaining ribbon, the remaining printing, the remaining time of the ribbon, TPH print length, and total print length.



- **Print history:** Query the print history.

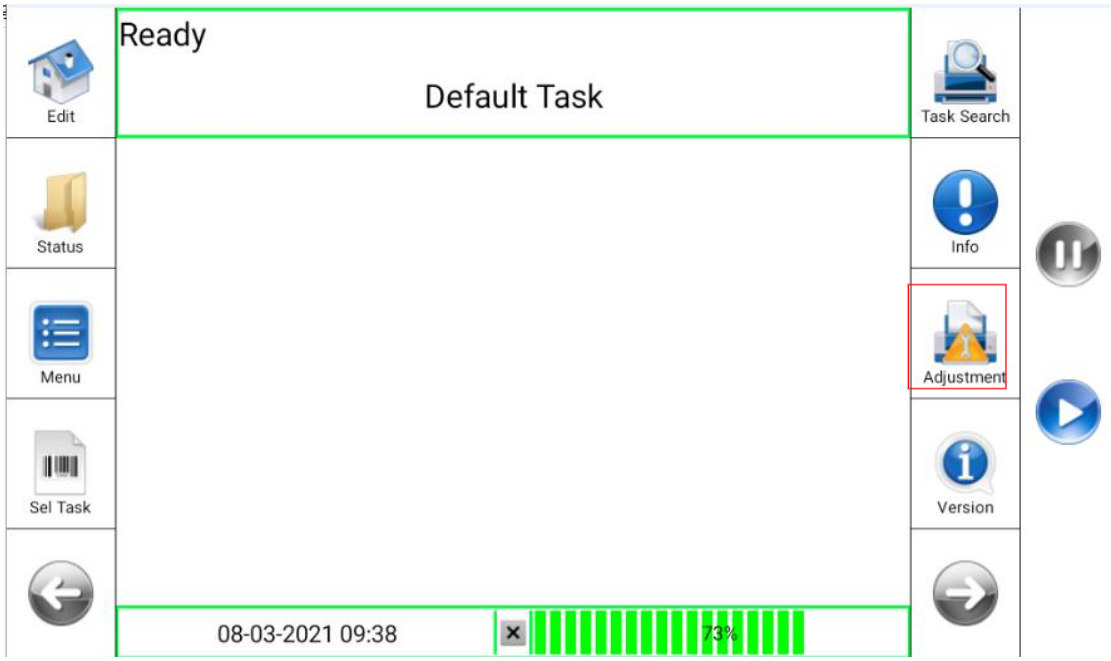


- **Task Info:** Query the editor version.

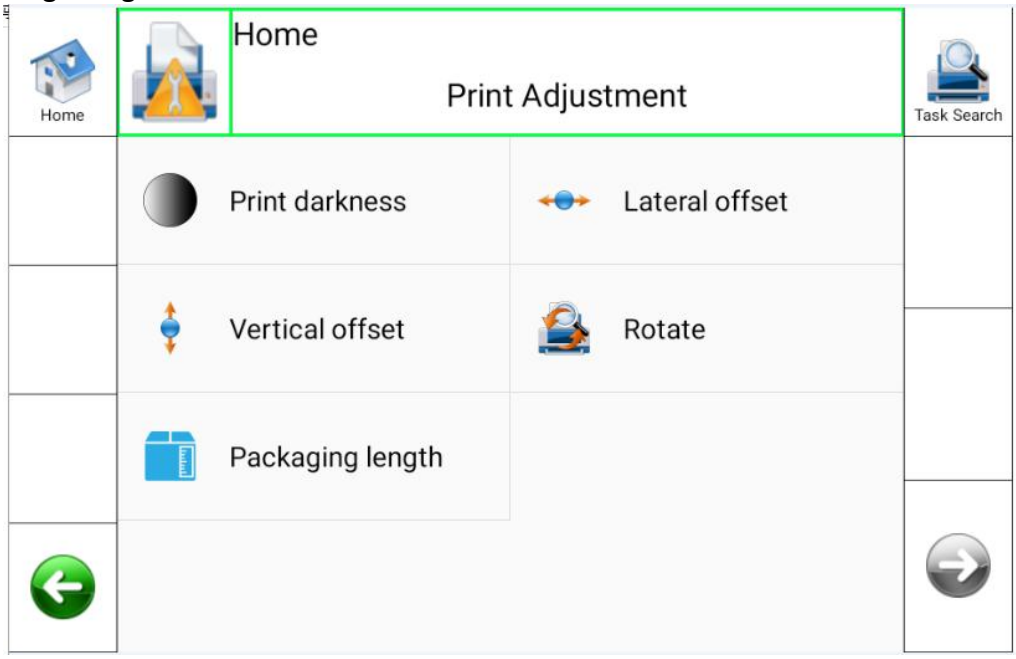


4.11 Print Adjustment

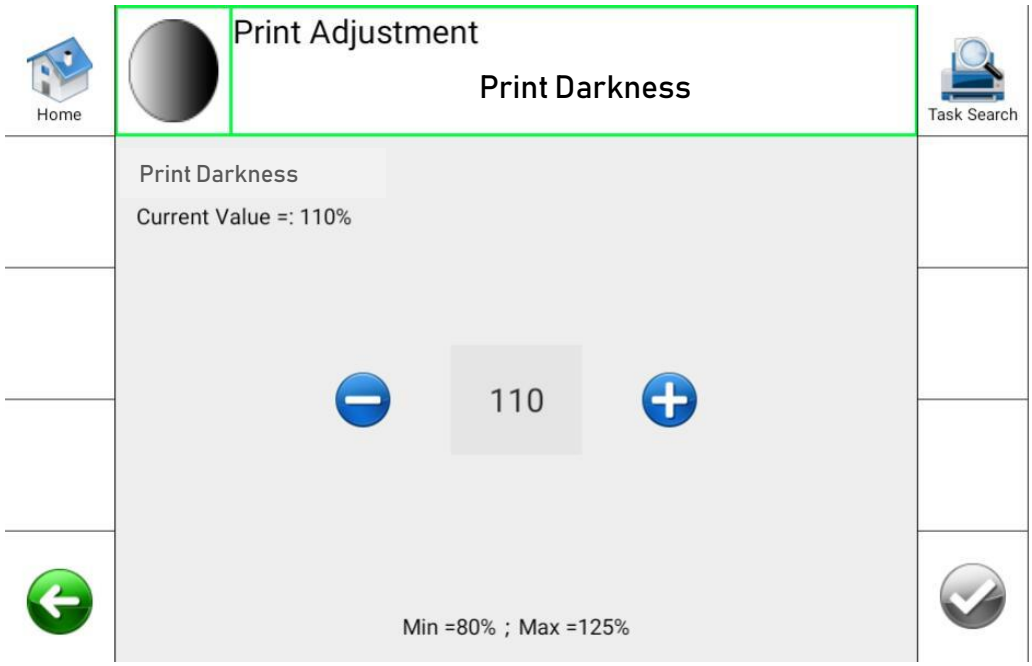
1. Choose “Print Adjustment” on the home screen.



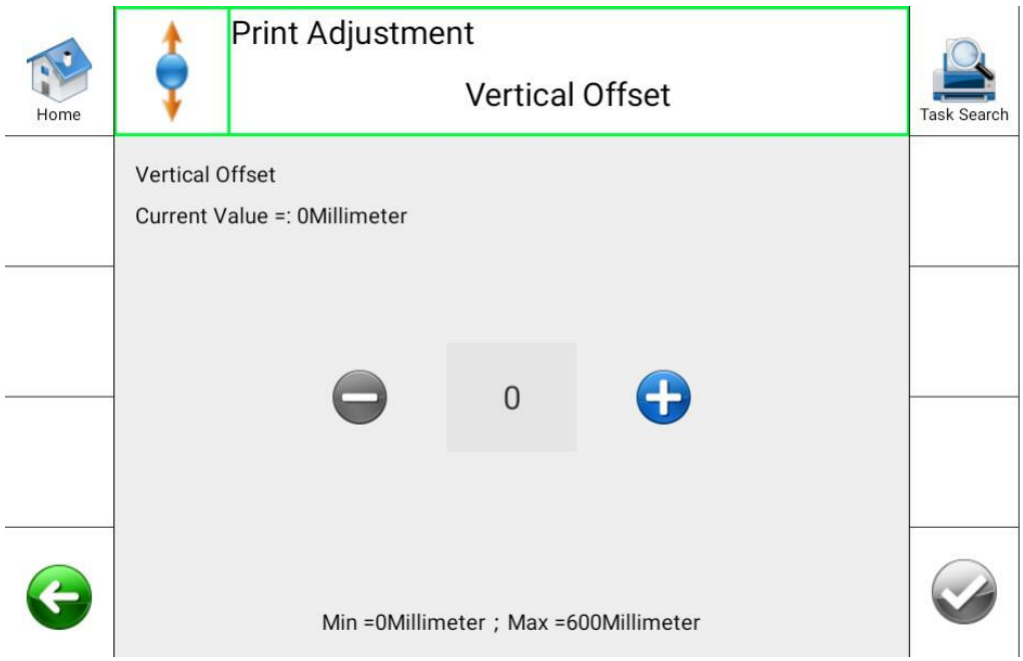
2. Enter the "Print Adjustment" screen, you can adjust the print darkness, print position and package length.

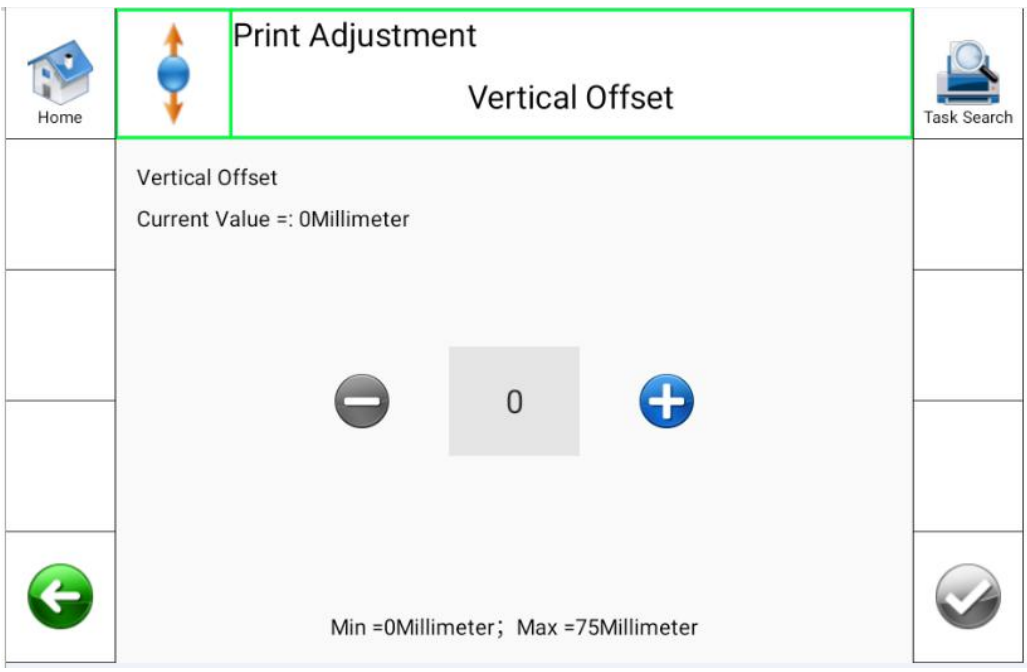


- **Print Darkness:** You can set the print darkness, and the selection range is 80% -125%.

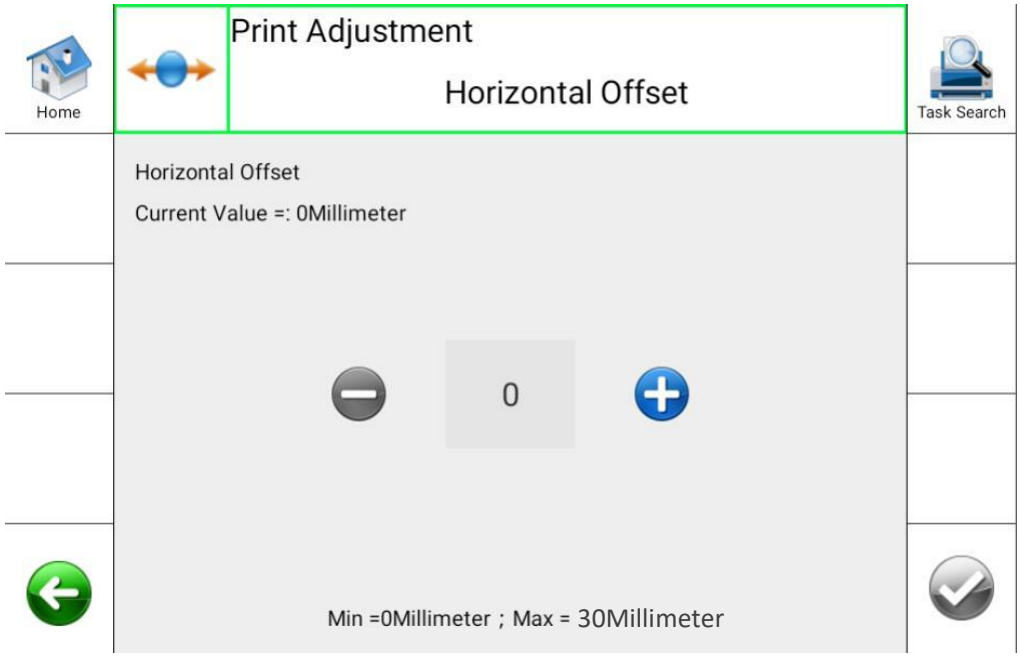


- **Vertical Offset:** The vertical offset distance can be set, and the selection range is 0-600mm (continuous printerFC32-Lc/FC32-Rc), 0-750mm(intermittent printer FC32-Li/FC32-Ri).

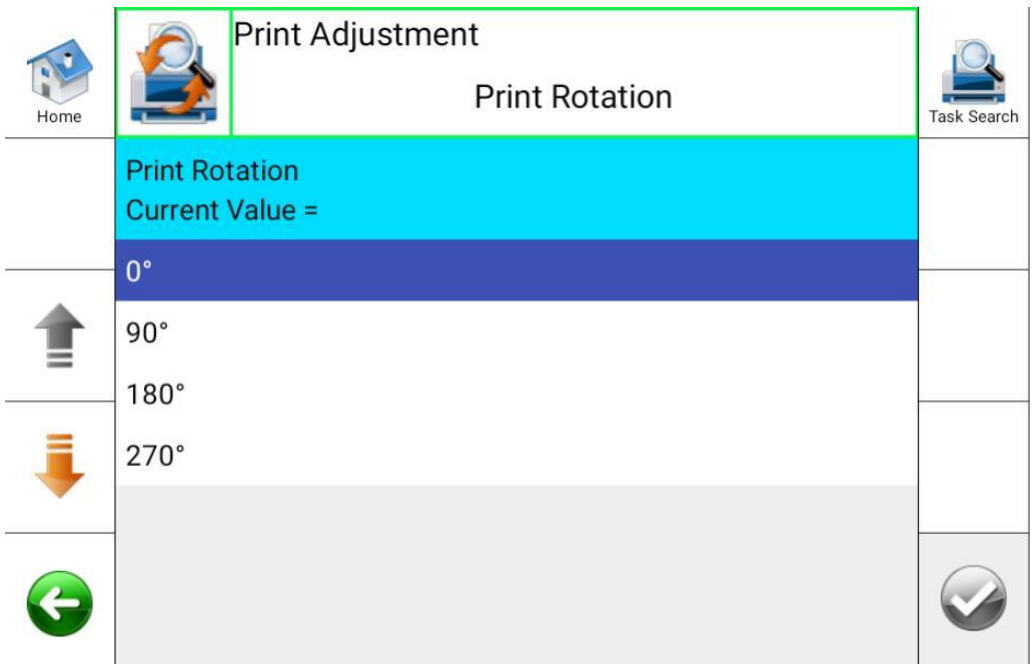




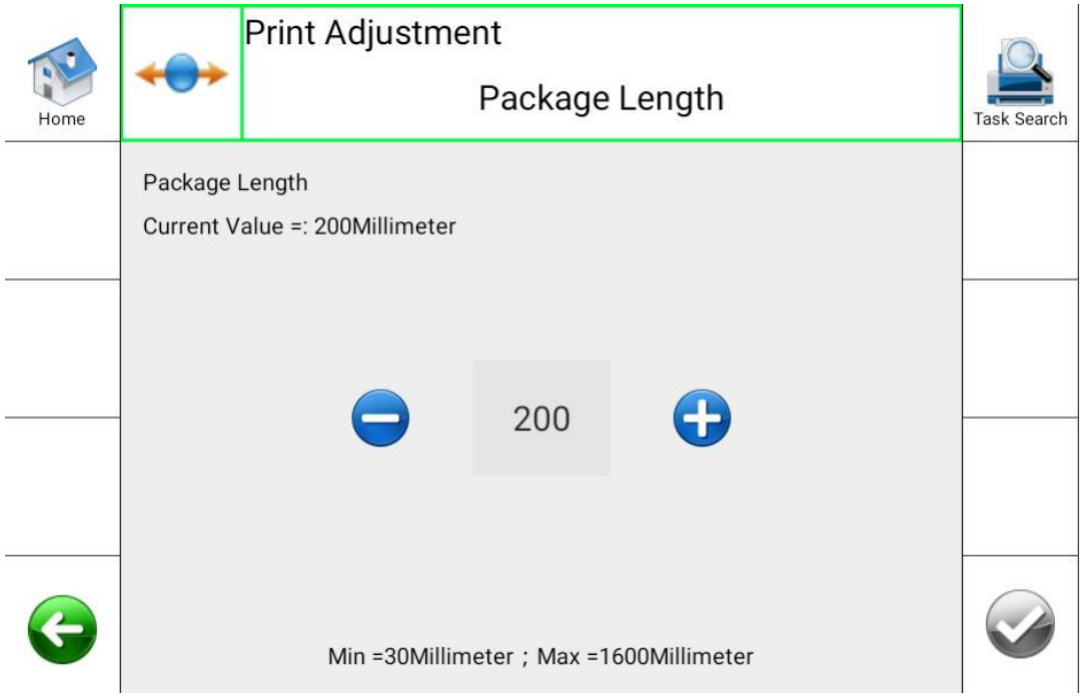
- **Horizontal Offset:** You can set the horizontal offset distance, the selection range is 0-30mm.



- **Print Rotation:** 0 ° / 90 ° / 180 ° / 270 ° can be set.



- **Package Length:** The package length can be set, and the selection range is 30 mm-1600 mm.



5. Maintenance

5.1 Clean and Maintenance

To ensure the normal operation of FC32-Li/FC32-Lc/FC32-Ri/FC32-Rc, the entire unit should be cleaned regularly.
Special attention should be paid to the inside of the printer body, especially if food residues are able to fall into the printer unit.

- Turn off the power to the controller.
- Turn off and isolate the air supply to the printer body.
- Remove the printer ribbon cassette and clean inside the printer body. Since there are multiple electronic components in this device, do not use the water to clean the unit. Use isopropanol cleaning wipes for this purpose.
- In order to clean the residue inside the printer body, it is recommended to use a soft-bristled brush for cleaning.

5.2 Maintenance Plan

5.2.1 Quick/Regular Checks

- Check and clean the print head (daily check). Use isopropanol wipes to clean.
- Check if the ribbon passes the ribbon cassette correctly. Pull the ribbon through by hand, visually check to see if the ribbon is wrinkling across the entire ribbon width.
- Check for any ink on the peel roller and use isopropanol wipes to clean it when necessary.
- Check if the “Darkness/Speed” setting meets the site standards. This will ensure excellent print quality, but it may also highlight any potential problems. For example, if the darkness is unusually high, the print head may need cleaning. The darkness has probably been set high to compensate.
- Check that the air pressure is set to the recommended pressure.
- Check the condition of the platen rubber (FC32-Lc/FC32-Rc continuous printer) / rubber (FC32-Li/FC32-Ri intermittent printer). Clean or replace it if necessary. The platen rubber needs to be smooth, flat and free of debris. To replace the platen rubber, first remove the old platen roller. Remove any adhesive from the metal platen base. For best results, replace with FC32 platen rubber.

- Check for abrasion or internal debris.

5.2.2 Regular Monthly Checks

- Check the condition of the peel roller: Remove the roller, and then check if there is any wear inside. Replace if necessary.
- Check the condition of the ribbon guide rollers: Check whether the bearing is smooth.
- Check the condition of the ribbon sensor roller. Inspect the roll coating for wear or damage. If worn or damaged, replace the roller.
- Make sure that all rollers are flat to the cassette or printer.
- Check the magnet for any damage or non-alignment. This magnet is used for ribbon detection and ribbon calibration.
- Print a test image to check the print head quality and alignment.
- Check condition of the print head carriage drive belt and its related components: pulleys, bearing, retainers and shafts.
- Check the air cylinder.
- Make sure that the tension roller slide is free to move.

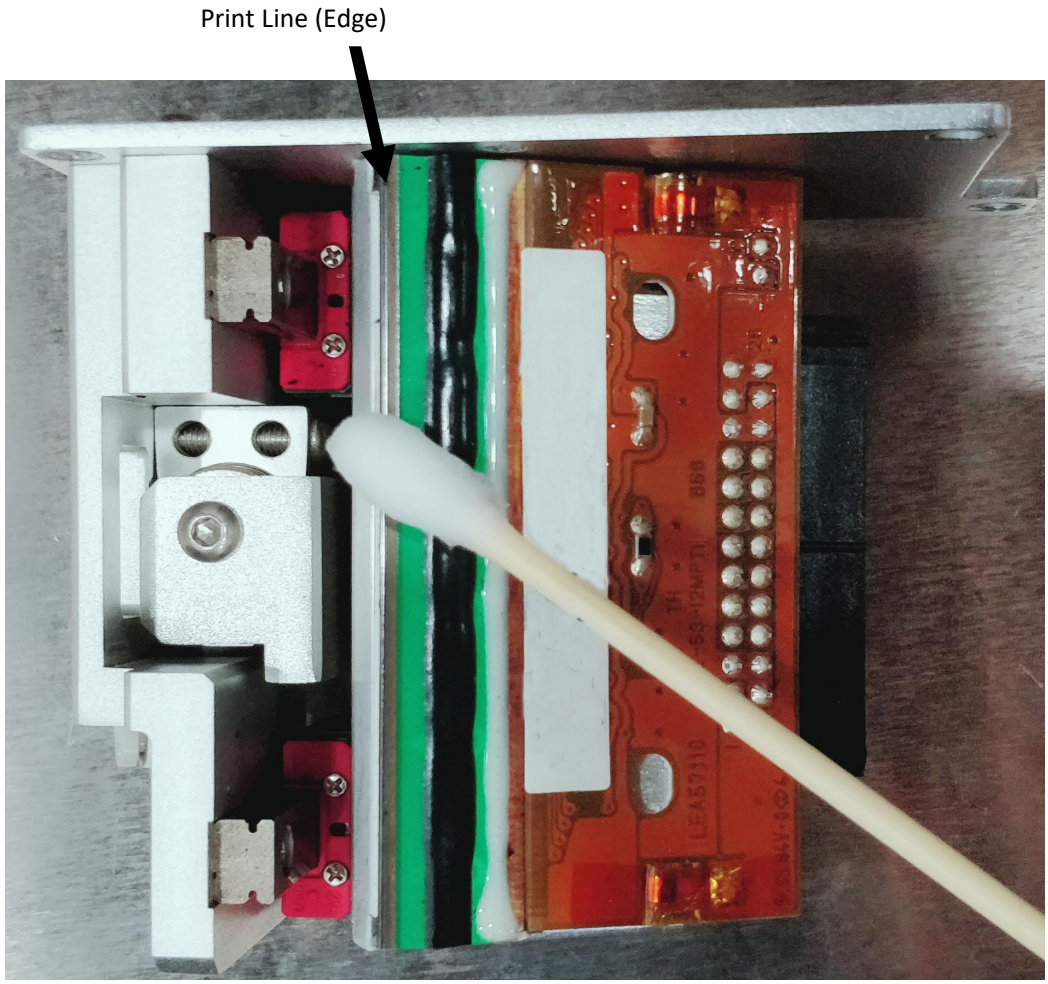
5.2.3 Maintaining the Print Head

- Although specifically designed for the application, the print head is still subject to wear or tear. For print heads, special consideration needs to be given to installation and periodic preventive maintenance, which is very helpful to maximize the life of the print head.
- The most likely cause of damage to the print head is abrasion: either from ingress of air particles or from an abrasive substrate surface. As a result, print head life varies greatly depending on the substrate materials and applications.
- The thermal ribbon will protect the print head from abrasion. Using different width ribbons and abrasive substrates may cause wear and unprotected parts of the print head. Usually, abrasive substrates have pre-printed ink. In particular, some red inks may be more abrasive than others.

➢ The steps for all thermal transfer printers are as follows:

- Clean the print head regularly. The frequency of cleaning depends entirely on the particular application and environment.
- To minimize the wear of the print head, the smallest air pressure is usually used to provide acceptable print quality. For the particular FC32-Li/FC32-Lc/FC32-Ri/FC32-Rc used, never exceed the recommended maximum air pressure.
- Use the minimum darkness setting that provides the required print quality.

5.3 Cleaning the Print Head

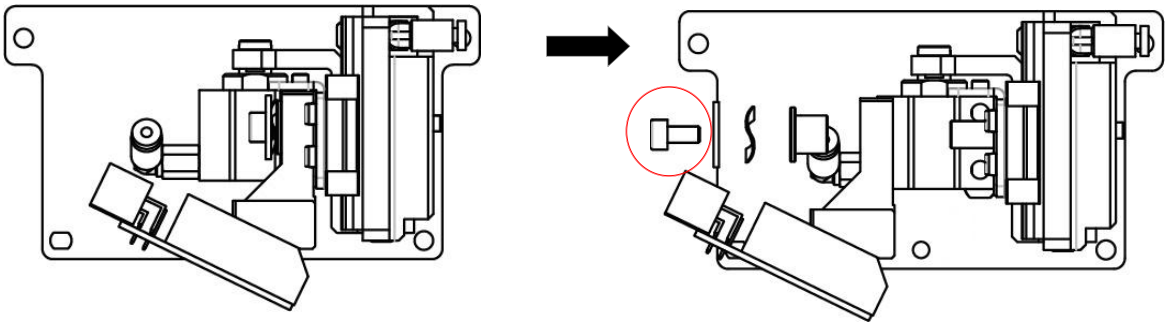


The print head should be cleaned regularly. The frequency of cleaning depends on the use of the equipment, the operating environment, and the choice of thermal ribbon.
Turn off the controller and remove the ribbon cassette. To avoid the possibility of damage from thermal shock damage, cool the print head temperature to normal room temperature before continuing printing. Use a cotton swab or a soft cloth soaked in Isopropanol solvent to remove any residue from the print head. Be careful not to use excessive amounts of solvent. The print line is located on the bevelled edge of the print head.

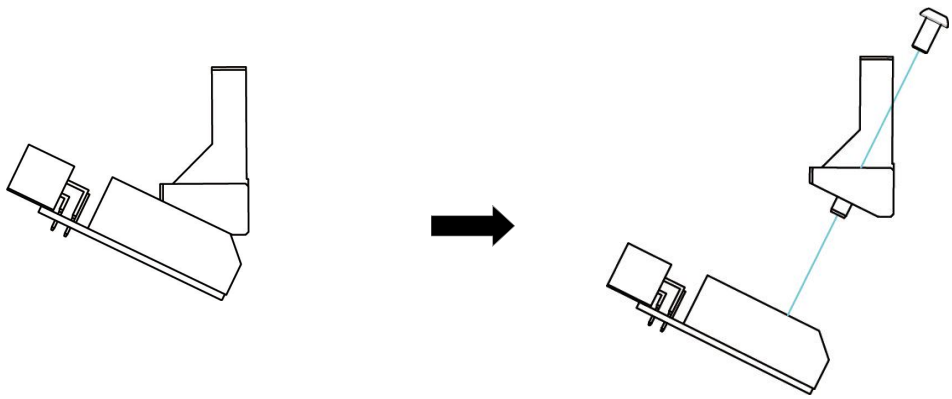
5.4 Replace Print Head

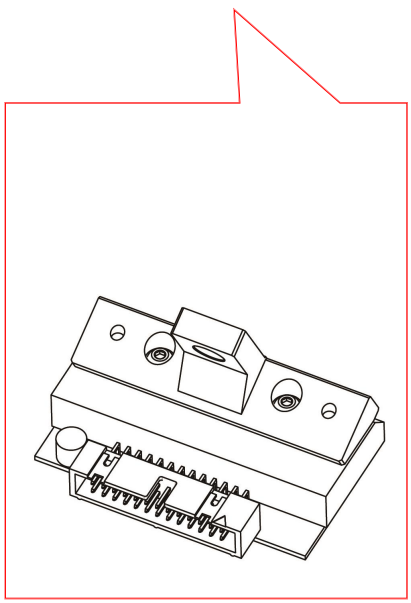
5.4.1 Remove the Damaged Print Head

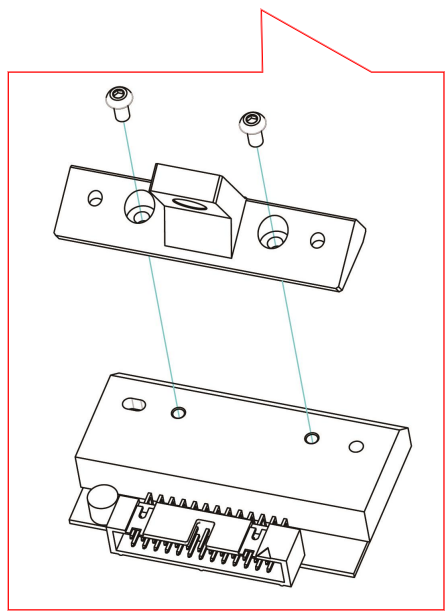
1. Remove the 3*6mm screw.



2. Remove the two screws sized 3*6mm at the bottom.

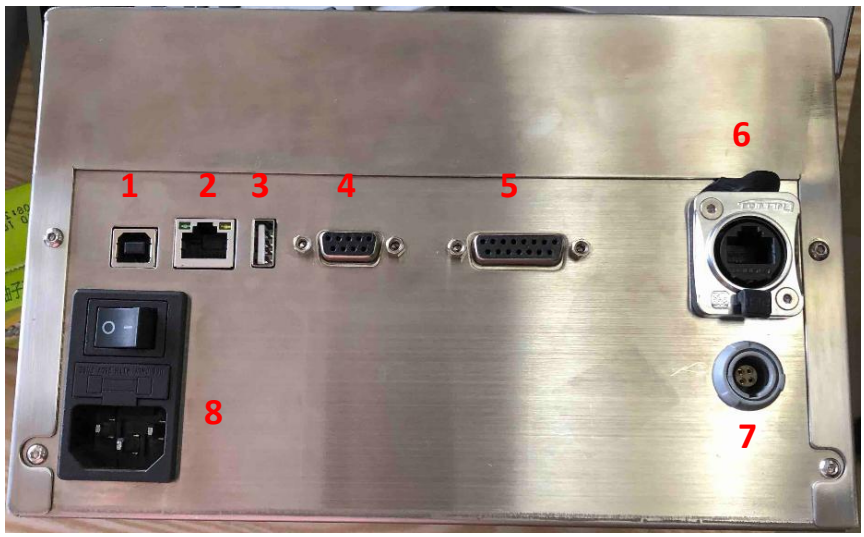






6. Interface Function Definition/ Signal Function Definition

6.1 Controller Interfaces



① Interface Type

1. USB-B type interface
2. RJ-45 Ethernet interface
3. USB-A type interface
4. RS-232 DB9 serial communication interface
5. External input / output DB15 control connector interface
6. RJ-45 water-proof Ethernet interface
7. DC: 24V power connection port
8. AC: 220V mains input port, fuse protection box, power switch

Precautions:

When installing D-type connectors 4, 5 and DC power connector 7, do not supply power to the device without ensuring that the connection is secure!

②Interface Function and Signal Definition

1. USB_Device 2.0 High Speed, transmission bandwidth 480Mbps
2. RJ-45 10M/100Mbps （IEEE802.3 10/100BASE-T）
3. USB_Host 2.0 High Speed, transmission bandwidth 480Mbps
4. RS-232 communication, baud rate can be changed
5. External input / output control DB15 cable function:
   (1) Connect to the "Start Print" input port
   (2) Allow access to "Fault" and "Warning Status" output information
   (3) Access to user-configurable digital input/ output

DB15 Pin Signal Definition

Pin	Definition	Type
1	DC +24V	POWER
2	“Start Print” signal input, provided by PNP sensor (proximity switch) or + 24V switch;	INPUT
3	GND (0V working ground of the system);	POWER
4	User can customize digital input 1 provided by PNP sensor (proximity switch) or + 24V switch;	INPUT
5	NC	Reserve
6	NC	Reserve
7	Machine fault signal output, the signal relay contact is opened when an error occurs;	Output signals for a group of faults
8	Machine fault signal output, the signal relay contact is opened when an error occurs;	
9	Machine warning signal output, signal relay contact is closed when warning;	Output signals for a set of warnings
10	Machine warning signal output, signal relay contact is closed when warning;	
11	User-definable output 1 #;	OUTPUT
12	GND (0V working ground of the system)	POWER
13	User-definable output 2 #;	OUTPUT
14	NC	Reserve
15	NC	Reserve

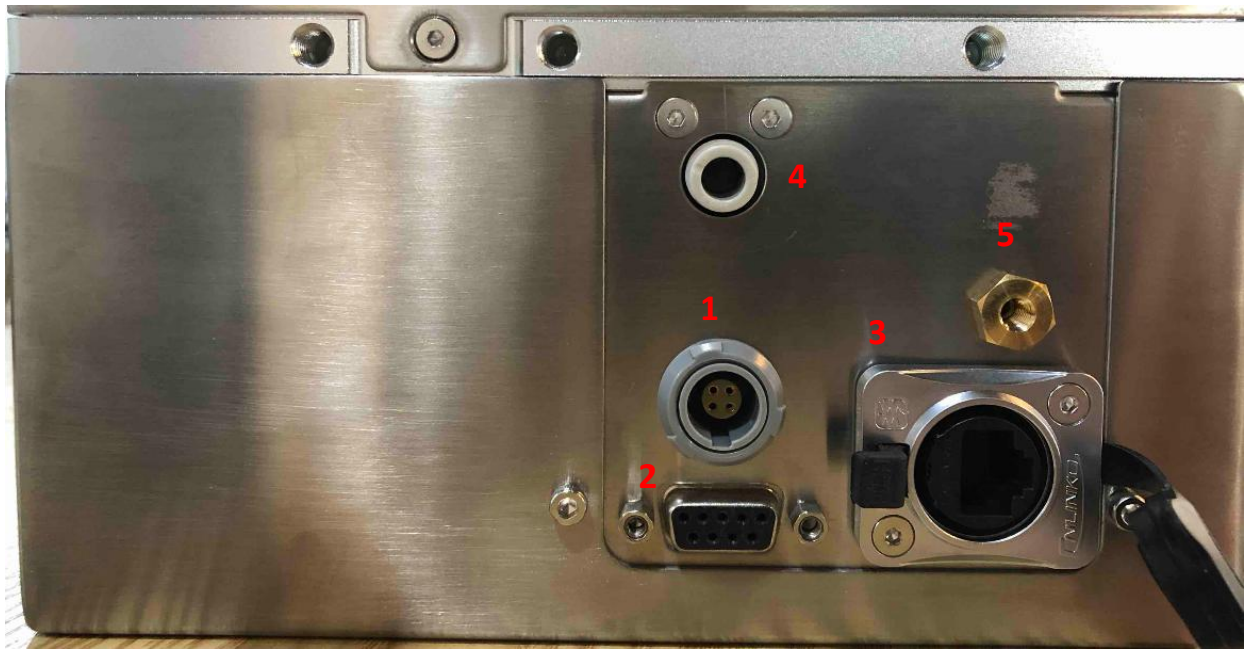
“Start Print” input port:

A. Generate "Start Print" signal with PNP sensor
Please connect as follows:
(1) Connect the detection signal line of the PNP sensor to pin 2 of DB15 "Start printing"
(2) Connect the ground wire of the PNP sensor to pin 3 "GND" of DB15
(3) Connect the power cord of the PNP sensor to pin 1 of DC15 "DC + 24V"
Note: Each time the "Start Print" signal changes from low to high, the TTO printer will execute a print job!

B. Generate "Start Print" signal with + 24V switch
Please connect as follows:
+24V switch is connected to pin 1 and pin 2 of DB15
Note: Every time the +24V switch is closed and the “Start Print” signal changes from low to high, the TTO printer will perform a printing task! That is, the +24 switch completes a pinch cycle, and the printer executes the print job only once.

6. RJ-45 10M/100Mbps （IEEE802.3 10/100BASE-T）
Connect to the RJ-45 network port of the printer, send print data and accept the status information/ version information of the printer.
7. DC +24Vpower connector, 4pin pins (2 pins+24V, 2 pins GND)
8. AC mains input port with ground wire (L,N,PE), power switch, fuse.

6.2 Printer Interfaces



① Port Function

1. DC+24V connection port, connect the controller through power cable
2. Rotary encoder DB9 input port
3. Waterproof RJ-45 10M/100M Ethernet port with 100Mbps transmission bandwidth
4. TTO print air inlet
5. TTO printer air vent

②DB9 Port Signal Definition of Rotary Encoder

Pin	Signal definition	Type
1	+24V power	POWER
2	GND(0V working ground of the system)	POWER
3	Encoder output signal A+	OUTPUT
4	Encoder output signal B+	OUTPUT
5	NC	Reserve
6	NC	Reserve
7	NC	Reserve
8	NC	Reserve
9	NC	Reserve

Note:

When the seat of DB9 is not fixed firmly, the power cannot be connected, and it is forbidden to plug and unplug under power! Power plug 1 must be connected before turning on the power switch on the controller side.

Appendix Platen Roller Technical Index

There are three main technical requirements for platen rollers:

1. Material requirements: aluminum alloy + KE-941 black

2. Technical requirements：
1) Need to be ground
2) End face is flat
3) Without beveling C0.2, deburring
4) The dimension with * must be controlled
5) On-axis hardness: 47° - 50°
6) Unmarked tolerance grade is m (medium grade)

Key points of quality control:
1) The dimension with * should be highlighted to control
2) Control the hardness on the shaft

3. Dimension requirements：

