# MXPlus3.0 Online inkjet printer User Manual

**V1.0**

**March 2025**

# Version Log

| Version | Revisions | Revision Date |
|---|---|---|
| V1.0 | First edition of user manual released | March 2025 |
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# Catalog

# Chapter 1 Introduction

## 1.1 Inkjet printer

As shown in Figure 1-1, the MX1 Plus3.0 inkjet printer is an Online automatic inkjet printer that can print fixed and variable information at high line speeds on consumer and industrial products. The printer provides operators with excellent print quality and unmatched ease of use.

Figure 1-1 MX1 Plus3.0 Online inkjet printer

## 1.2 About this manual

This User Manual is written for the daily use of the printer. It can help users understand the various parts and printing operations of the printer.

# 1.3 Printer Parameters

## 1.3.1 Specification parameters

| No. | Description | Specifications |
|---|---|---|
| 1 | Model | MX Plus3.0 Online Inkjet Printer |
| 2 | System Language | Arabic, Simplified Chinese, Traditional Chinese, Czech, English, French, German, Greek, Hungarian, Italian, Japanese, Korean, Mongolian, Persian, Portuguese, Russian, Spanish, Swiss, Thai, Turkish, Vietnamese |
| 3 | External connections | External sensors, external encoders and alarm lights |
| 4 | Power Adapter | Two cores 12V/4A |
| 5 | Resolution | 150-600DPI (adjustable) |
| 6 | Maximum Print Speed | Print fixed information: 150m/min (150DPI)<br>Print variable information: 70m/min (150DPI) |
| 7 | Ink Cartridge type | HP original 42mL ink cartridge (black/white/red/yellow/green/blue/invisible) |
| 8 | Print Height | 12.7mm - 25.4mm |
| 9 | Print Distance | 2mm-5mm (Guarantees optimal print quality) |
| 10 | Machine Size | Controller: 194.5*129.9*32mm<br>Single print head: 100*100*36mm; double print head : 108.7*105.9*94mm |
| 11 | Machine Weight | Controller: 0.9kg; Print head : 0.28kg*2 |
| 12 | Print Content | Text, images, barcodes, counters, shift codes, dates, times, expiration dates, databases, POD |
| 13 | Suitable materials | Paper, stone, pipe, cable, metal, plastic, wood products |
| 14 | Work Environment | Temperature 0-45℃ (20℃-30℃ is best), humidity 40-60%RH. |

## 1.3.2 Print the speed table

Starting with software version 2.3.0, a dual-jet printing function has been added to further increase printing speed. According to tests, when using dual-jet high-definition printing,

printing speed can be increased by 2 times compared to the original speed. At 600 DPI, printing fixed information can reach 75 m/min.

All data in the table below was obtained using HP original ink cartridges. Due to the complexity of the production environment, the data may vary.

| Type of information | Inkjet method | DPI | Printing speed (m/min) | Print interval (mm) |
|---|---|---|---|---|
| Fixed information | Automatic printing | 150 | 150 | 3 |
| | | 200 | 95 | 3 |
| | | 300 | 75 | 3 |
| | | 600 | 36 | 3 |
| | External signal | 150 | 150 | - |

| | | | | |
|---|---|---|---|---|
| | | 200 | 95 | - |
| | | 300 | 75 | - |
| | | 600 | 36 | - |
| Variable information | Automatic printing | 150 | 60 | 5 |
| | | 200 | 50 | 5 |
| | | 300 | 41 | 5 |
| | external signal | 150 | 70 | 20 |
| | | 300 | 55 | 27 |

## 1.4 Content prompt

This manual contains various types of information, such as safety guidelines, additional notes, user interface (UI) terminology, and so on. To help you identify different

types of information, we have used different writing styles. This section introduces these writing styles.

### 1.4.1 The term "jet printer"

The term "inkjet printer" refers to the MX1 Plus inkjet printer and will be used in subsequent sections of this manual.

### 1.4.2 Reference position

Unless otherwise agreed, positions and directions such as left, right, front, back, left and right are specified as directions on the front view of the inkjet printer.

### 1.4.3 Units of measurement

This manual uses metric units of measurement.

# Chapter 2 Safety Information Management Specification

## 2.1 Overview

The purpose of the inkjet printer is to print information on the product. Using this equipment for other purposes may cause product failure. The safety guidelines in this chapter are designed to explain all safety issues to the operator so that they can operate and maintain the inkjet printer and its accessories safely and scientifically.

## 2.2 Safety Guidelines for Operation

- Please use the original power adapter (12V/4A);
- Perform line integrity check (including power line, signal line and grounding line) before starting;
- It is strictly prohibited to plug or unplug components (including ink cartridge, encoder, photoelectric sensor, etc.) when the equipment is powered on;
- Do not expose the equipment to heat source, strong light, fire or similar environment too much;
- Try to use official encoders, photoelectric eyes and other accessories. If you need to prepare your own accessories, please ensure that they meet the relevant electrical requirements;
- Try to avoid storing or using the equipment in a dusty or wet environment;

## 2.3 Usage Guidelines

- Please use an officially certified cartridge;
- Please try to use no more than the nominal voltage and pulse width parameters of the cartridge for printing, otherwise it may shorten the service life of the cartridge;
- When the machine is not working, please turn off the machine in time, take out the ink cartridge and cover it with a plastic card clip to prevent the ink cartridge nozzle from drying and blocking;
- The printing cartridge is a precision object. If it is stuck during installation, do not force it. Adjust the position of the cartridge and insert it accordingly;
- If the ink cartridge is not printed clearly, you can use non-woven cloth to wipe the nozzle of the ink cartridge. Do not shake the ink cartridge violently;
- When installing the nozzle, please ensure that the nozzle plane is parallel to the printing surface, and the nozzle is perpendicular to the movement direction of the sprayed product. And pay attention to adjust the height to prevent the sprayed product from scraping against the nozzle;
- When cleaning the machine, keep away from water and do not use chemical solvents to clean.

### 2.3.1 Emergency Response Plan

**In case of emergency such as smoke from the inkjet printer, uncontrollable continuous printing, fire, explosion sound, etc., please immediately disconnect the power supply and close the equipment!**

### 2.3.2 Product warranty

- Quality assurance: within 12 months from the date of the bill of lading, the whole machine except the ink cartridge is guaranteed. This quality guarantee does not apply to problems caused by misuse, tampering or improper use.

## The following conditions are not covered by the warranty:

- Use any non-original cartridges and unapproved OEM inks.
- Do not disassemble or modify the product without approval.
- Damage to the print head caused by improper installation.
- Accidents caused by natural disasters, storage or transportation conditions, etc., such as (but not limited to) damage caused by dropping, spraying water or other liquids.
- Machine damage caused by using an unapproved, faulty or unstable power supply.

# Chapter 3 Core component functions

## 3.1 Overview

The MX1 Plus3.0 inkjet printer shown in Figure 3-1 is an Online inkjet printer with the same operation interface as the MX Plus2.0 inkjet printer. It can print fixed and variable information at high line speed on consumer and industrial products, and can also operate the inkjet printer while printing.


Figure 3-1 MX1 Plus3.0 Online inkjet printer

## 3.2 Main components

The inkjet printer consists of the following main components shown in Figure 3-2.


Figure 3-2 Main components of MX Plus3.0

### 3.2.1 Touch screen

The printer is equipped with a 7-inch HD (800 by 480) capacitive touch screen (see Figure 3-3). The printer control is performed through the graphical user interface (GUI).


Figure 3-3 Touch screen

### 3.2.2 Power switch

The power switch button is used to turn on or off the power supply of the printer (see Figure 3-4). It is located on the right side of the printer.

Note: Do not immediately press the power switch to start up after shutdown. The system needs a certain time to shut down, please wait about 10s.

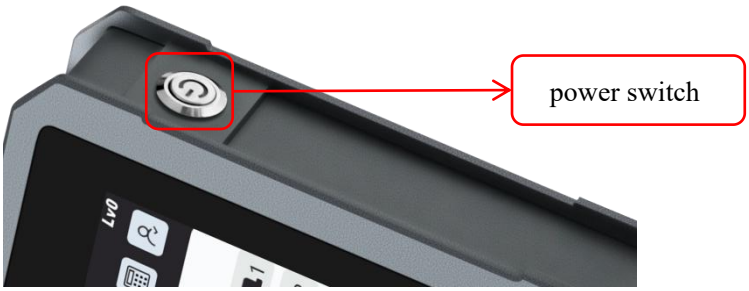



Figure 3-4 Power switch

### 3.2.3 Interface

The inkjet printer is equipped with a variety of interfaces for controlling printing and interacting with the outside, as shown in Figure 3-5. The available standard IO connections are provided in Table 3-1.

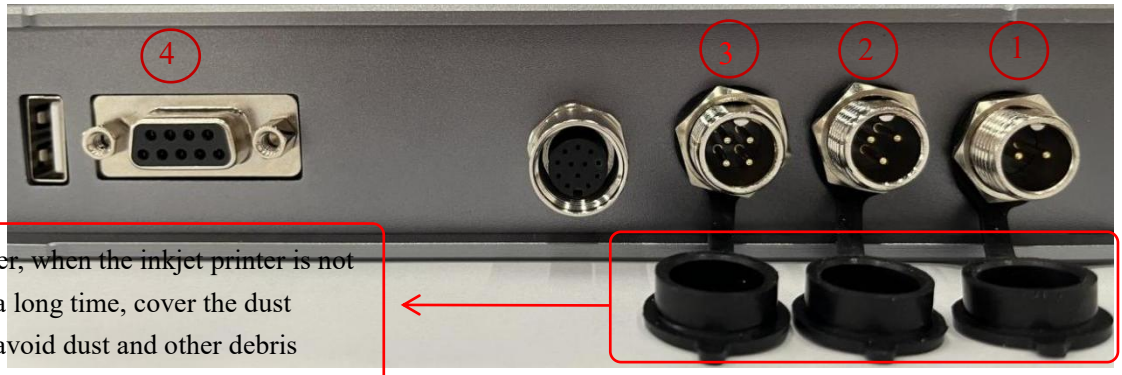



Figure 3-5MX Plus interface diagram

| Interface number | interface type | Interface usage |
|---|---|---|
| 1 | Power connector | Used to connect power adapters |
| 2 | Photoelectric interface | Used to connect external sensors |
| 3 | Encoder interface | Used to connect encoders |
| 4 | Multi-function DB9 serial port | Used to connect alarm light, external serial port and UV lamp |

Table 3-1 MX Plus interface

#### 3.2.3.1 Power interface

The power interface is specially used to connect the certified power adapter to provide the standard working voltage for the inkjet printer. The device is equipped with a standard original adapter of 12V/4A, and non-standard or third-party adapters are strictly prohibited. The power interface is shown in Figure 3-6


Figure 3-6 Power interface

#### 3.2.3.2 Photoelectric eye interface

The photoelectric interface is used to connect external sensors to control the trigger of printing, such as photoelectric sensors, optical fiber sensors, tag sensors, proximity switches, etc. You can also use PLC signals from other devices as trigger signals, in which case you only need to connect the signal line and ground line. The photoelectric eye interface is shown in Figure

3-7.

Note: The inkjet printer uses the falling edge of the detection signal as the trigger signal. Customers should select an NPN normally open (NO) or PNP normally closed (NC) photoelectric sensor as the trigger signal.

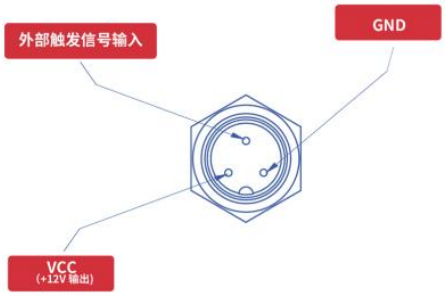



Figure 3-7 Photoelectric interface

### 3.2.3.3 Encoder interface

The encoder interface is used to connect the encoder for print speed control. When you need to print large area through multiple nozzle splicing, it is strongly recommended that you use the encoder mode printing. The encoder interface is shown in Figure 3-8.

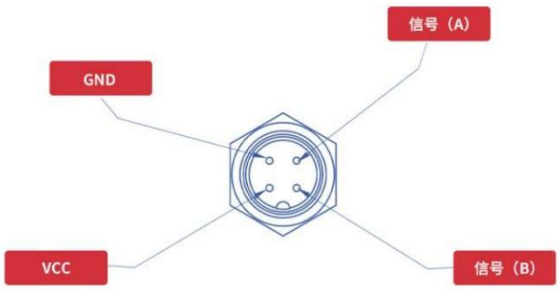



Figure 3-8 Encoder interface

### 3.2.3.4 Multi-function DB9 serial port

The versatile DB9 serial port supports connecting alarm lights, UV lamps, and external serial ports for printing variable data. This feature enables users to monitor the printer's status remotely using the light signals from alarms. The wiring sequence for the alarm light is identical to that of the MX Pro, allowing a single alarm light to be shared. The interface definition is illustrated in Figure 3-9.

Since the alarm light shares a serial port, if you only need to print external variable data, it is recommended to turn off the alarm light function on the machine to avoid the alarm light serial port damaging the serial port line.

If the alarm light and serial port are used at the same time, a conversion interface is required to connect the alarm light and serial port separately.

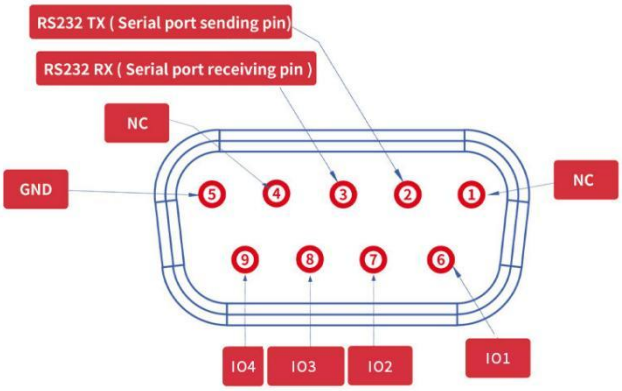


Figure 3-9 Multi-function DB9 serial port

| DB9 serial port pin | Function | Description |
|---|---|---|
| 6-IO1 | state of rest | The inkjet printer will stop printing for the following reasons:<br>1. The cartridge is not installed or invalid.<br>2. The ink cartridge is out of ink.<br>3. Speed limit. Real-time print speed overload (delayed data/lost data). |
| 7-IO2 | Alarm status | When the printer detects that the ink level has reached the set threshold, it warns the operator and continues to print. |
| 8-IO3 | Print status | The user clicks the "Start" button on the screen. The inkjet printer runs normally in print mode. |
| 9-IO4 | UV lamp | After each piece of information is printed, the ink is quickly attached to the object. |

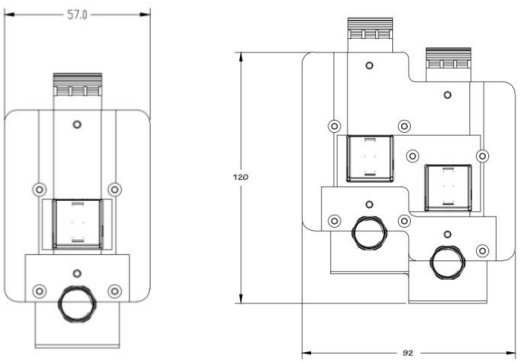
### 3.2.4 Controller -printhead connection cable

The printhead connection cable is the cable that connects the printer to the controller and the printhead. The standard length of the connection cable is 1.5 meters (4.92 feet), and the maximum support is 5 meters (16.4 feet). See Figure 3-10 for the connection cable.

Figure 3-10 MX Plus printhead connection cable

### 3.3.5 Printhead

The printhead controls the ink cartridge to print on the product, with control signals transmitted from the main controller to the nozzles via the nozzle connection line. MX Plus supports the free combination of 1 to 2 nozzles, enabling both large-format printing (up to 25.4mm) and independent printing in specific areas. The nozzles are illustrated in Figure 3-11.




Single head



Dual head

Figure 3-11 MX Plus Printhead

### 3.3.6 S Mounting bracket

The bracket is used to fix the controller and printhead of the inkjet printer. The fixing of the printhead has a vital impact on the printing quality, especially when you need to print in pieces. When installing the bracket, pay attention to the following points:

- The supports in different directions are perpendicular to each other;
- The direction of the printhead is perpendicular to the running direction of the conveyor;
- The distance between the printhead and the object to be sprayed should not exceed 5 mm.

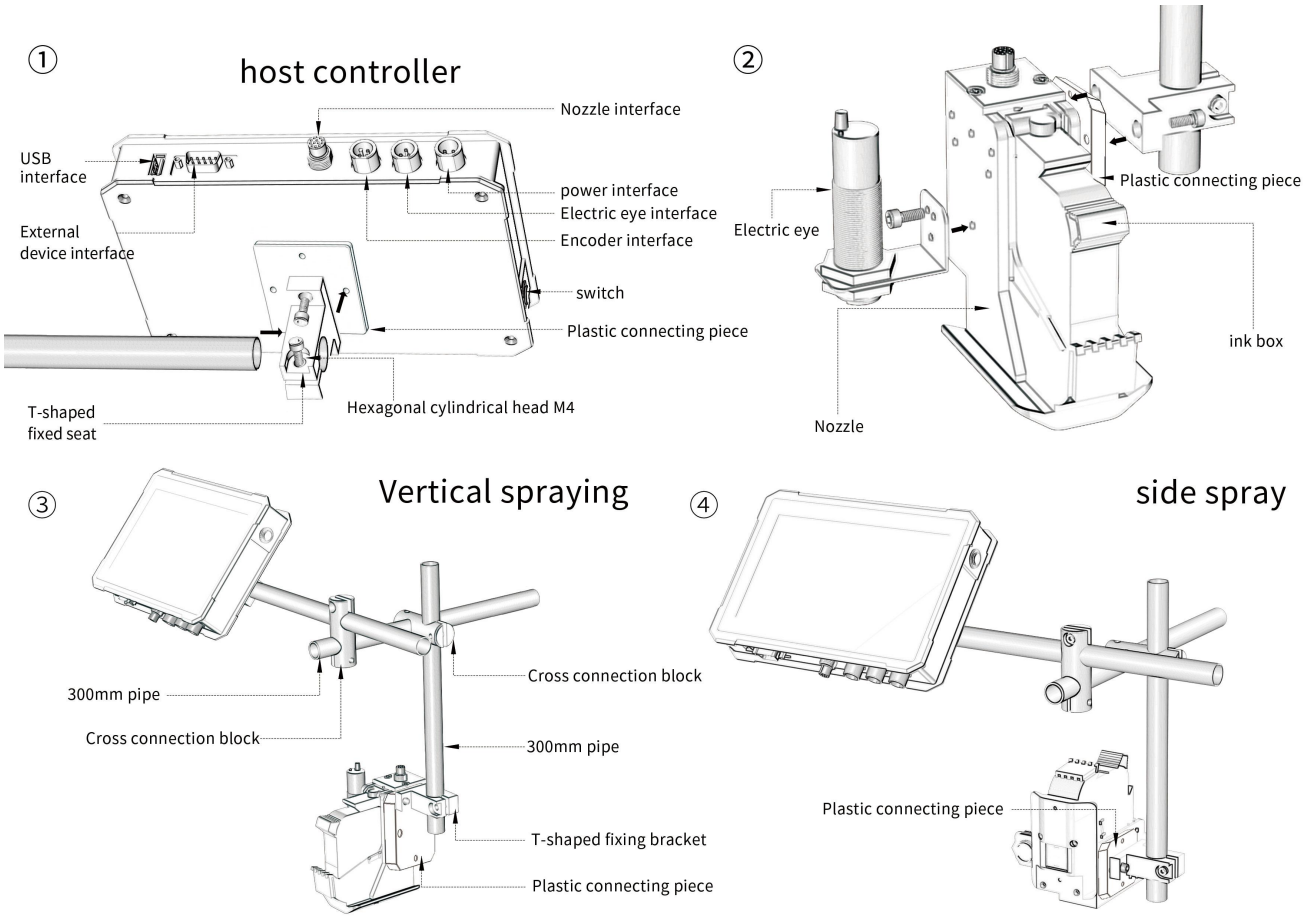



Figure 3-26 Schematic diagram of MX Plus bracket installation

# Chapter 4 Basic Operations

## 4.1 How to open the inkjet printer

- Perform an appearance check to ensure that all connections are safe and that cable connections are correct.
- Ensure that the main power cable is connected.
- Press the power switch on the right side of the inkjet printer.
- After the inkjet printer is successfully started, the screen will display the user interface.

## 4.2 Introduction to user interface

The user interface is a button-based control system with an easy-to-use touch screen, most of the display area is active, and all technical aspects of the inkjet printer Settings and controls are done through tool buttons.

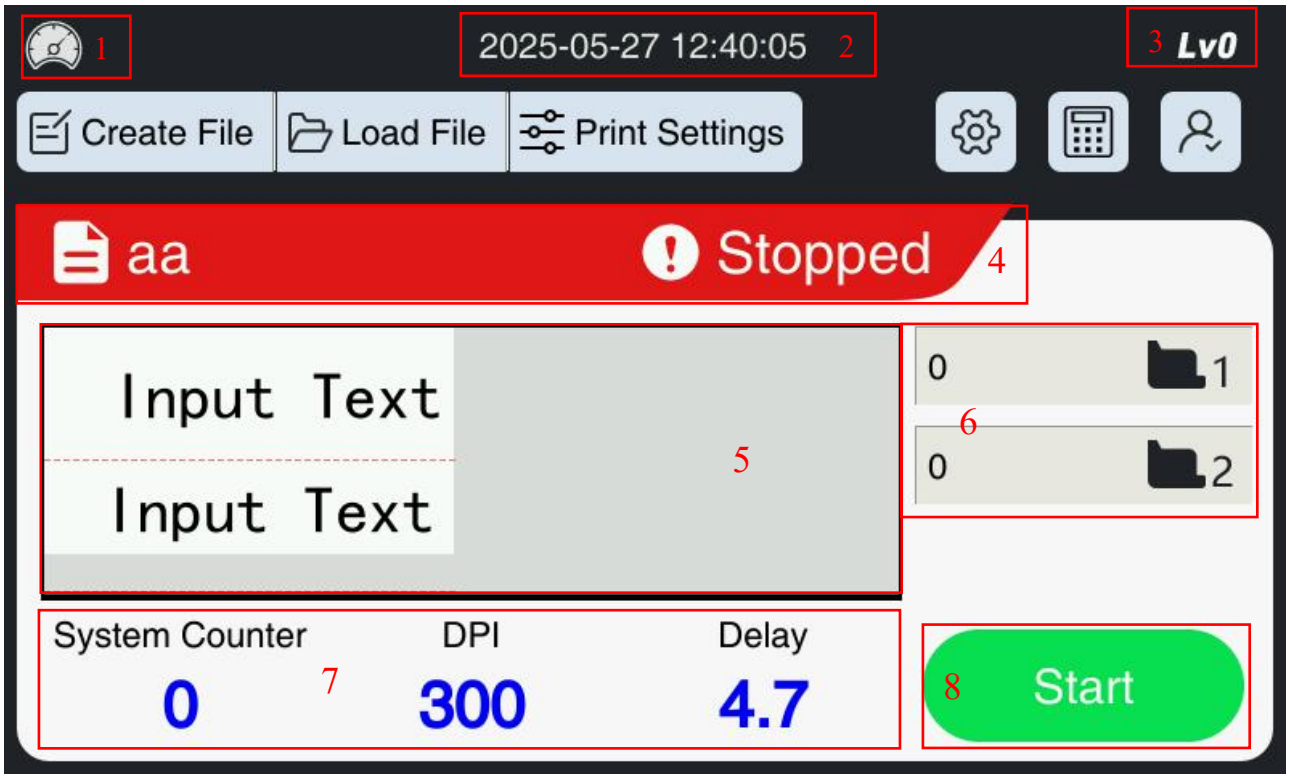



Figure 4-1 Home page interface

| onumber | Name of the region | description |
|---|---|---|
| 1 | Speed indicator | 1．The indicator light is normally white. If it turns red during printing, it indicates that the production line speed is too fast and the current printing parameters cannot meet the requirements.<br>2．If you do not use the encoder at this time, please reduce the "production line speed" in "Printing Settings" - "Printing mode" and reduce the DPI; if you use the encoder, please slow down the production line speed and reduce the DPI. |
| 2 | System time | This area is used to display the current system time and modify the system time. |
| 3 | User level | This area is used to display the user level of the current device. |
| 4 | status bar | This area is used to display the name of the current print file and the working status of the printer.<br>1．Idle state: no work<br>2．Print (working) status: In operation<br>3．Ink quantity reaches alarm value: low ink quantity |
| 5 | Information preview area | This area is used to display the information content of the current print file. Dragging this area left and right can view the information content outside the display area. |
| 6 | Ink level display | This area is used to display the remaining ink volume of each nozzle currently being printed. |
| 7 | Preview of information parameters | 1. This area is used to display the number of times a print is currently being printed, which you can use to calculate the number of items produced by a particular job.<br>2. You can quickly and easily view the current important parameters in this area, namely DPI and delay (the offset of the first nozzle). |
| 8 |  | 1. Click this button when you are idle. The printer will verify the validity of the ink cartridge and enter the printing state. The print key will turn red and display "STOP".<br>2. Click this button during printing, the printer will stop printing, the print key will return to green and display "Start". |

| Push-button | Name | Description |
| --- | --- | --- |
| Create File | Create a new file | Enter the editing interface to quickly create a new print file. |
| Load File | Load the file | Perform operations on saved files, such as editing, deleting, and selecting for printing. |
| Print Settings | print setup | Adjust all print parameters. For example: print mode, nozzle selection, print mode. |
| | System Settings | Set some auxiliary parameters. For example: print voltage, adjust user rights, customize date, system language, etc. |
| | Counter Settings | Set the counter parameters, such as the starting value, step value, and current value, which can reset the number of prints. |
| | authority management | You can log in to different user levels according to the corresponding password. |
| Start | Start printing | The inkjet printer starts the print job. |
| Stopped | Stop printing | The inkjet printer stops printing. |

## 4.3 How to select files for printing

1. Click the button on Load File the main interface to select the target job from the file directory, or enter the required job name in the search box.

2. After selecting the required job from the list, a preview of the job's contents will be displayed on the right side of the screen, as shown in Figure 4-2.

3. Click the To Print button to return to the main interface. (Select the job in the printing state, directly enter the printing state, and update the print content)

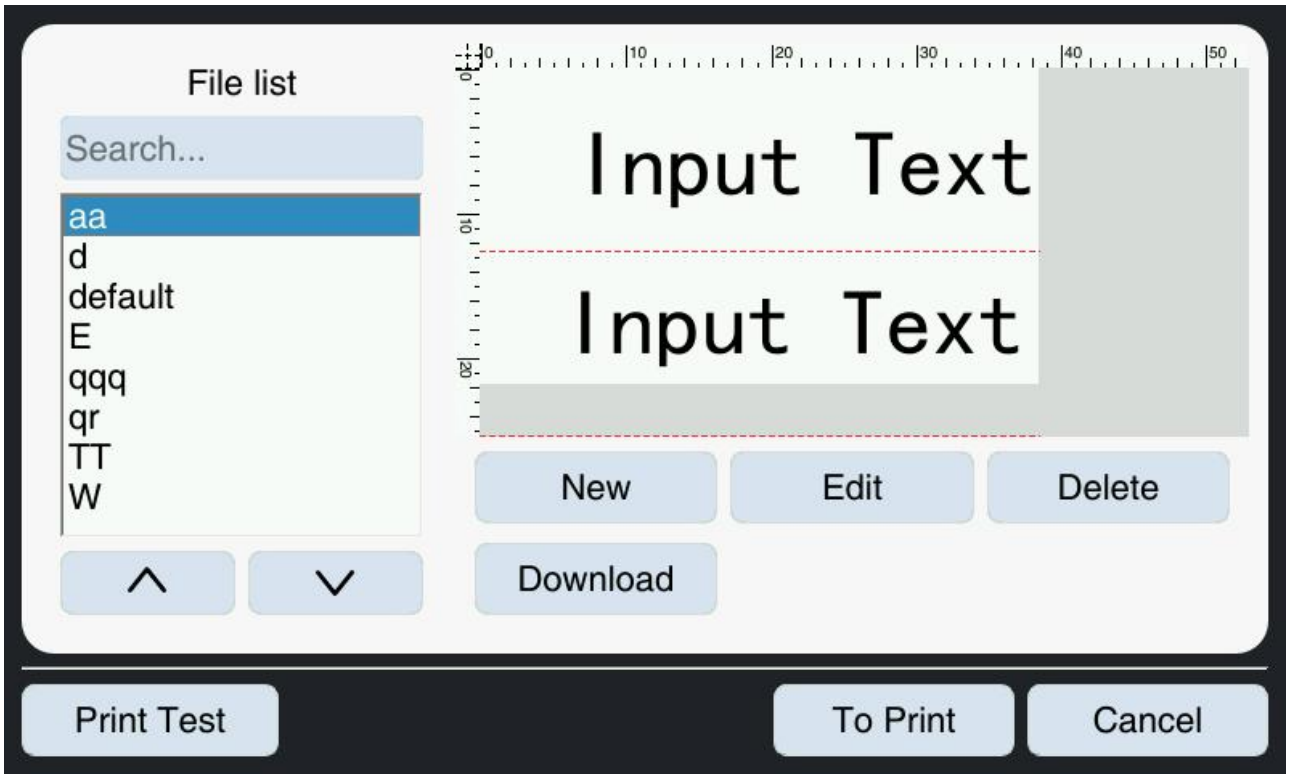



Figure 4-2 Files selection interface

## 4.4 Faults and warnings

When a fault occurs, the printer will pop up a fault message in the middle of the screen.

## 4.5 How to start printing

Click the Start button to start the print operation, Stopped the button will change. Now you can print the homework.

## 4.6 How to stop printing

Click the Stopped button to change the status of the inkjet printer to stop printing.

## 4.7 How to turn off the inkjet printer

Stop printing before turning off the printer.

If the status of the inkjet printer is stopped, press the power switch on the right side of the inkjet printer directly (the inkjet printer has power off protection, and you need to wait about 10S after shutdown before starting the next operation).

# Chapter 5. Files Editorial Guidelines

## 5.1 How to create a new print file

This chapter describes two ways to create a new print file. Here are the steps:

- Use the "New File" function.
- Use the Load File function.

### 5.1.1 Use the "New File" function

Click the button on 

the main interface to enter the file editing interface, as shown in Figure 5-1. In this interface, you can input the required information according to your own requirements.

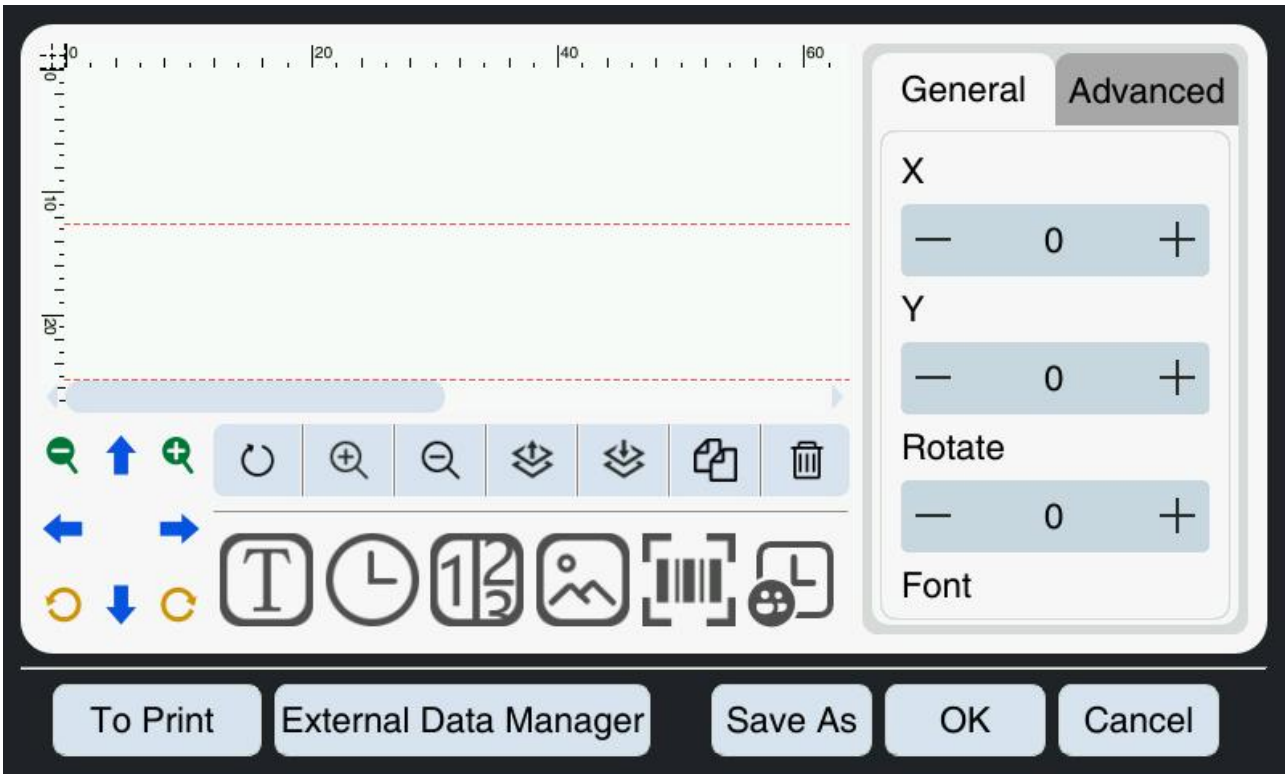
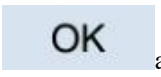
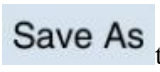



Figure 5-1 Edit file interface

1. After editing the information we need, we can select the 

button 

at 

the bottom of the screen to save the edited information.
2. Enter the file save interface and enter the file name in this interface, as shown in Figure 5-2. Note that only numbers, letters and Chinese characters can be used to name the file, not symbols.

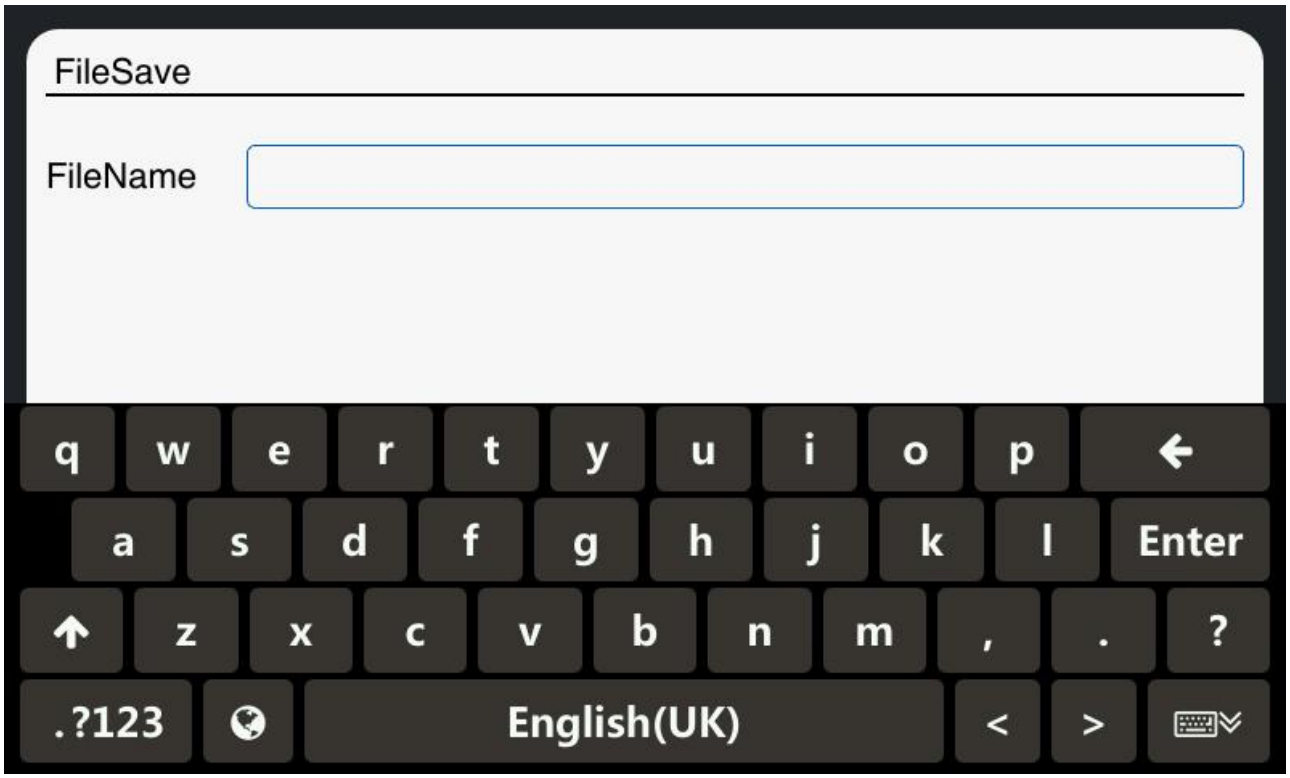



Figure 5-2 File Save interface

1．Click the FileSave button to save successfully, and the system returns to the main interface.

| Button | Description |
|---|---|
| To Print | After the file is saved, return to the main interface. At this time, the edited content has been updated to the main interface. If the device is in the printing state at this time, the new edited content will be updated to the next print.<br>Note that this button is only displayed when you click the "New File" button from the main interface and enter the editing interface. |
| OK | The file is saved only locally and cannot be updated to the main interface for direct use. |
| Save As | Modify the saved print file name. |

### 5.1.2 Use the "Load File" function

1．Click the button on Load File the main interface to enter the loading file interface, as shown in Figure 5-3.

2．Click the Create File button to enter the file editing interface. As shown in Figure 5-1, the content editing and file saving are performed according to the second to fourth steps of section 5.1.1.

3．Click the FileSave button to save successfully, and the system returns to the loading file interface. In this interface, you can select the saved files for printing.

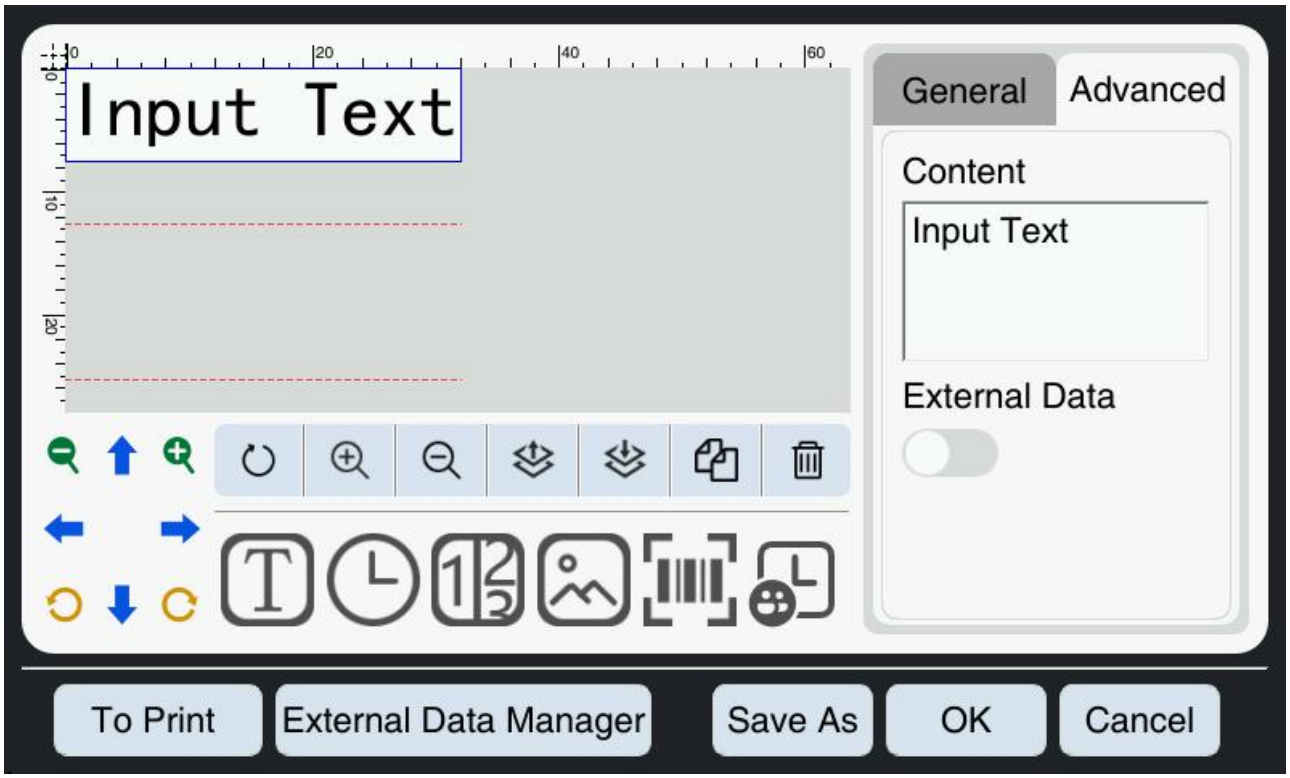



Figure 5-3 Load file interface

## 5.2 How to edit and print

This chapter describes how to edit different print information and enter the file editing interface according to the two ways described in Section 5.1. As shown in Figure 5-4 (figure 5-4 shows the file editing interface entered using the "Load File" function).

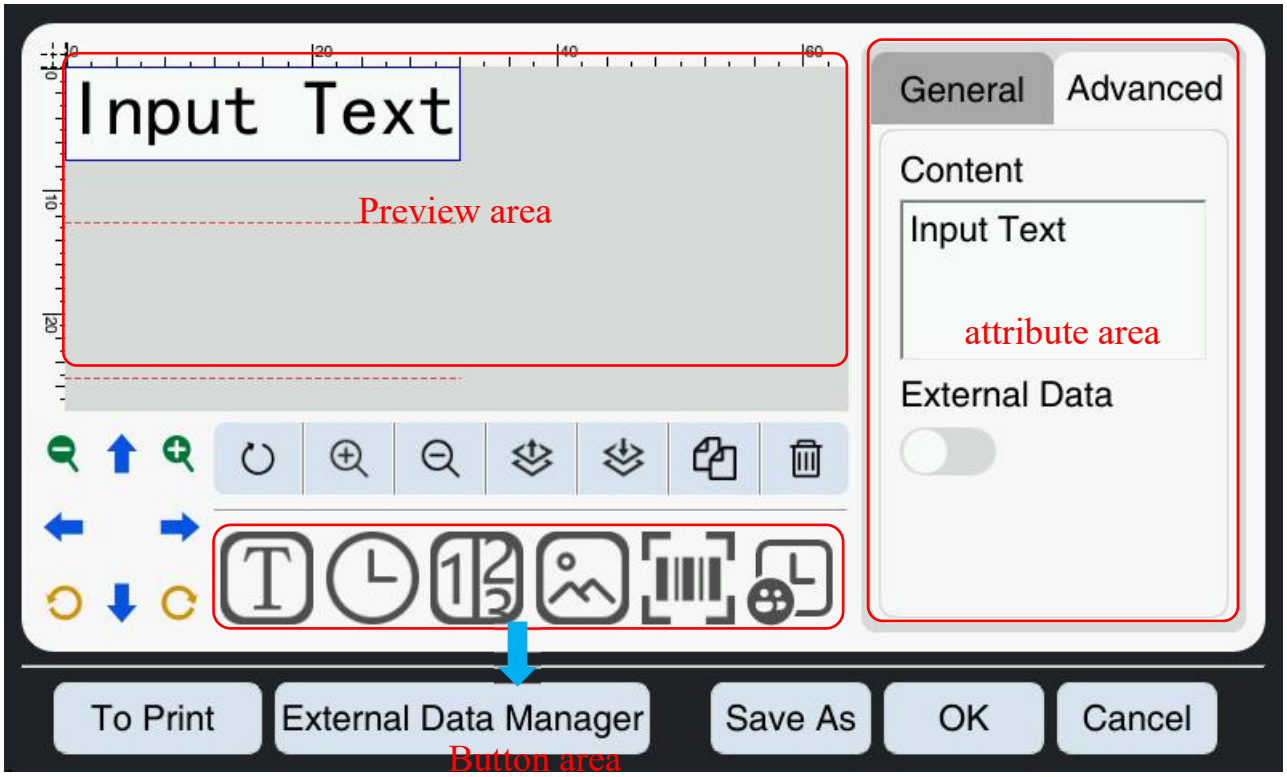


Figure 5-4 Edit file interface

1.In the file editing interface, you can edit the printed content, which can include "text", "time", "serial number", "picture", "barcode", "shift code".

| push-button | description |
|---|---|
| | Restores the zoomed in or out information in the preview area to its original state. |
| | You can zoom in to view the information content in the preview area. |
| | You can zoom in to view the information content within the preview area. |
| | When two pieces of information overlap, the selected information is placed at the top so that the content is visible. |
| | When two pieces of information overlap, the selected information is placed at the bottom and the content is invisible. |
| | Copy an information item with the same content and parameters as the selected one. |
| | You can delete information in the preview area. |
| | The font size used to adjust the information is invalid for images. |
| | Adjust the position of the information according to the direction of the arrow. |
| | Adjust the rotation Angle of the information according to the direction of the arrow. |

2.Properties are divided into general and advanced. General interface Settings font size, rotation, and font style, etc.;

Advanced interface Settings are unique to each object. The following table describes the general properties.

| Attribute | Description |
|---|---|
| X | The "+" or "-" sign can be used to adjust the position of the object on the X axis. |
| Y | The "+" or "-" sign can be used to adjust the position of the object on the Y axis. |
| Rotation | The Angle of rotation of the object can be adjusted by pressing "+" or "-" signs. |
| Fonts | Click the font drop-down box to select and change various font styles. |
| Font size | The font size of the object can be adjusted by pressing "+" or "-" signs. |
| Text spacing | The distance between objects can be adjusted by pressing "+" or "-" signs. |
| B | Click select, and the button background color turns blue and the text is bold. |
| **I** | Click select, and the button background color turns blue and the text tilts. |
| _ | Click select, and the button background color turns blue, and the text is underlined. |
| | Horizontal zoom of the font. By adjusting the value, you can widen the horizontal font. |
| | Font is vertically zoomed. The font can be stretched vertically by adjusting the value. |
| | Restore the scaled font to its default state. |

### 5.2.1 Text Editing

1. If you need to print Chinese characters, English, numbers, symbols and other content, please click the button, a default text object will appear in the preview area. Click the content box of the advanced interface, and enter the required information in the keyboard that pops up. As shown in Figure 5-5.

2. In the universal interface, you can adjust the position, font, size, and other properties of text objects.

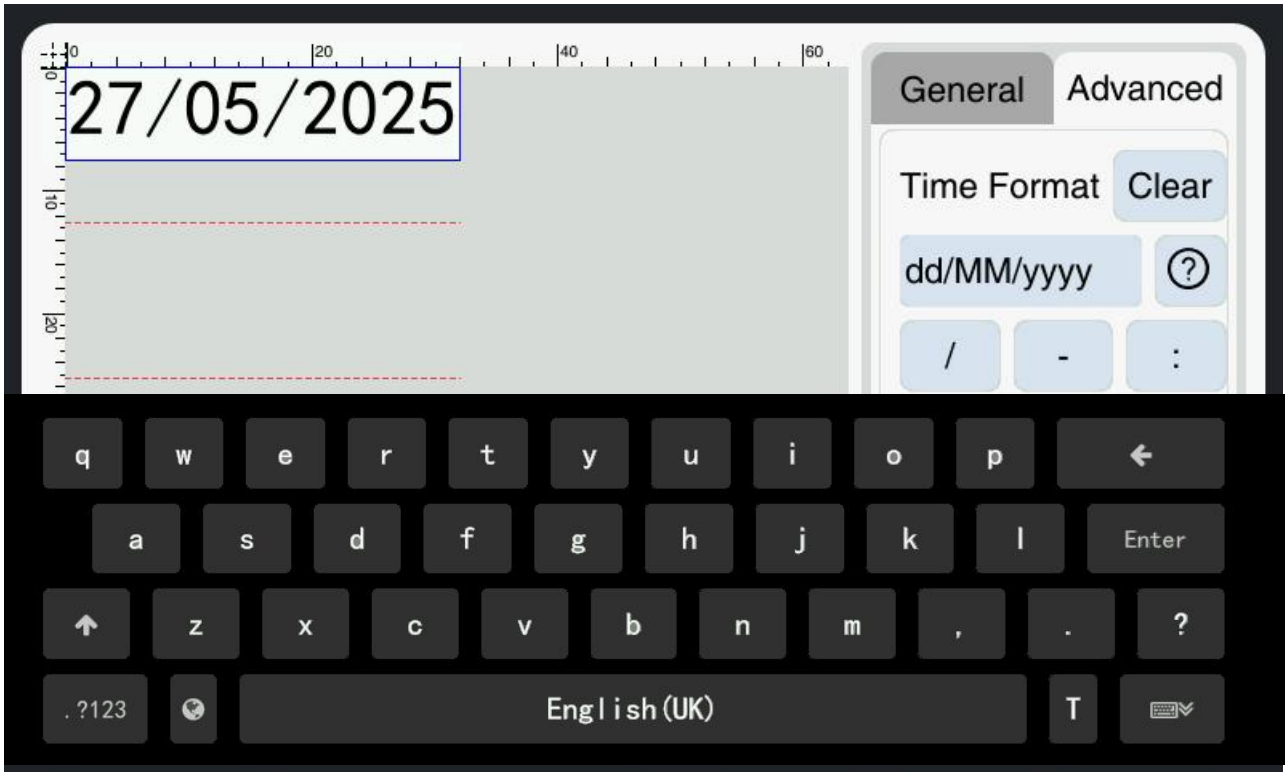



Figure 5-5 Text editing interface

### 5.2.2 Time editing

If you need to print variable time, that is, the time content in the printed information will be automatically updated without human intervention, please click the button. A default time object will appear in the preview area, as shown in Figure 5-6. Variable time information is supported to change in real time, and the time information will be updated in real time when printing.

1.In the advanced interface, you can set the time format, effective days, etc. For customizing the time format, refer to Appendix 1.

2.In the universal interface, you can adjust the position, font, size, and other properties of the time object.

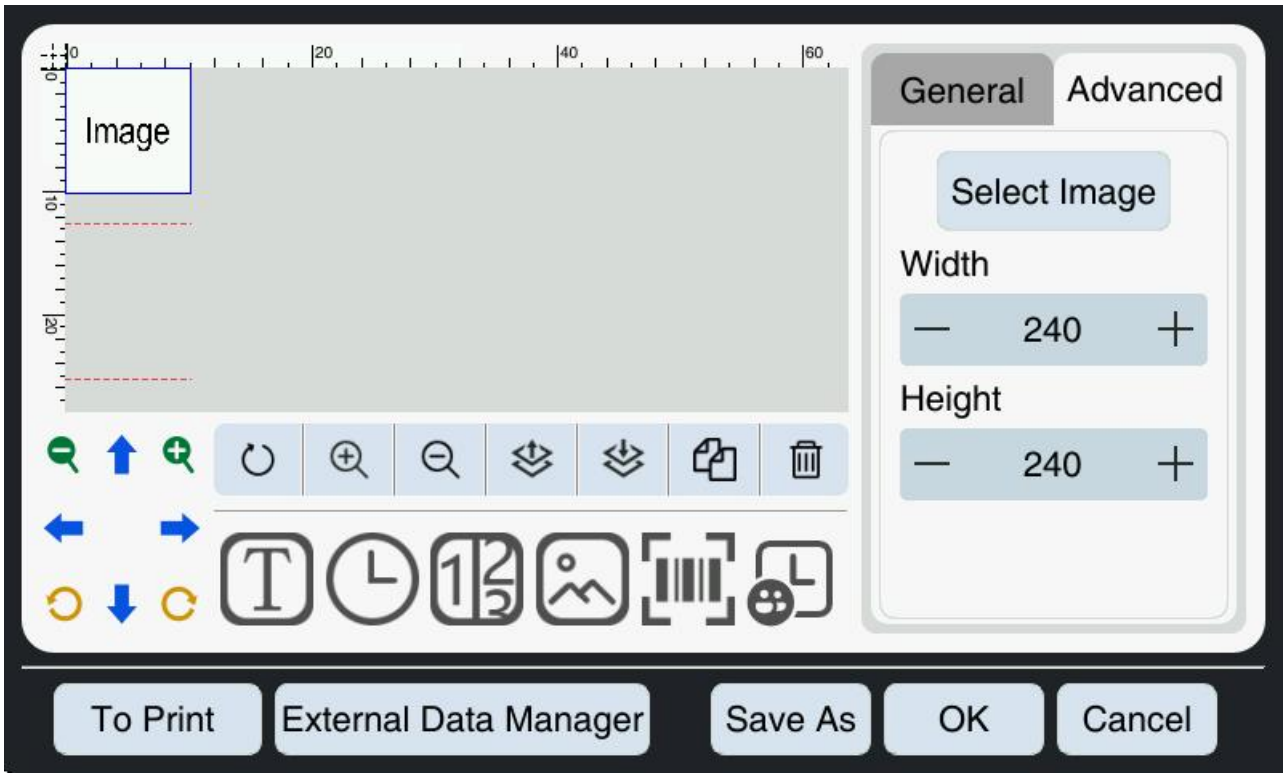



Figure 5-6 Time editing interface

Time format: freely combine the format through the keyboard or the shortcut key below.

Effective days: The number of days that the current system time increases backward.

Effective hours: The number of hours added to the current system time.

Effective minutes: The number of minutes added to the current system time.

### 5.2.3 Serial number editing

1．If you need to print the variable serial number, that is, the counting content in the printed information will be automatically updated without human intervention. Please click the button, and a default serial number object will appear in the preview area. As shown in Figure 5-7.

2．In the advanced interface, you can select different fixed numbers, with a maximum of 8 bits (the high bits are filled with 0), or you can select a custom prefix (if the prefix is blank, it is equivalent to a natural number).

3．The inkjet printer system includes four counters: Counter 1, Counter 2, Counter 3, and Counter 4, which are listed in the "Counter ID" drop-down menu. You can set the initial value, step value, current value, end value, and repeat count for each counter using the "Counter Settings" function.

4．In the general interface, you can adjust the position, font, size, and other properties of the serial number object.

5．In the advanced interface, select the "Separator" button to add a comma to the serial number object.

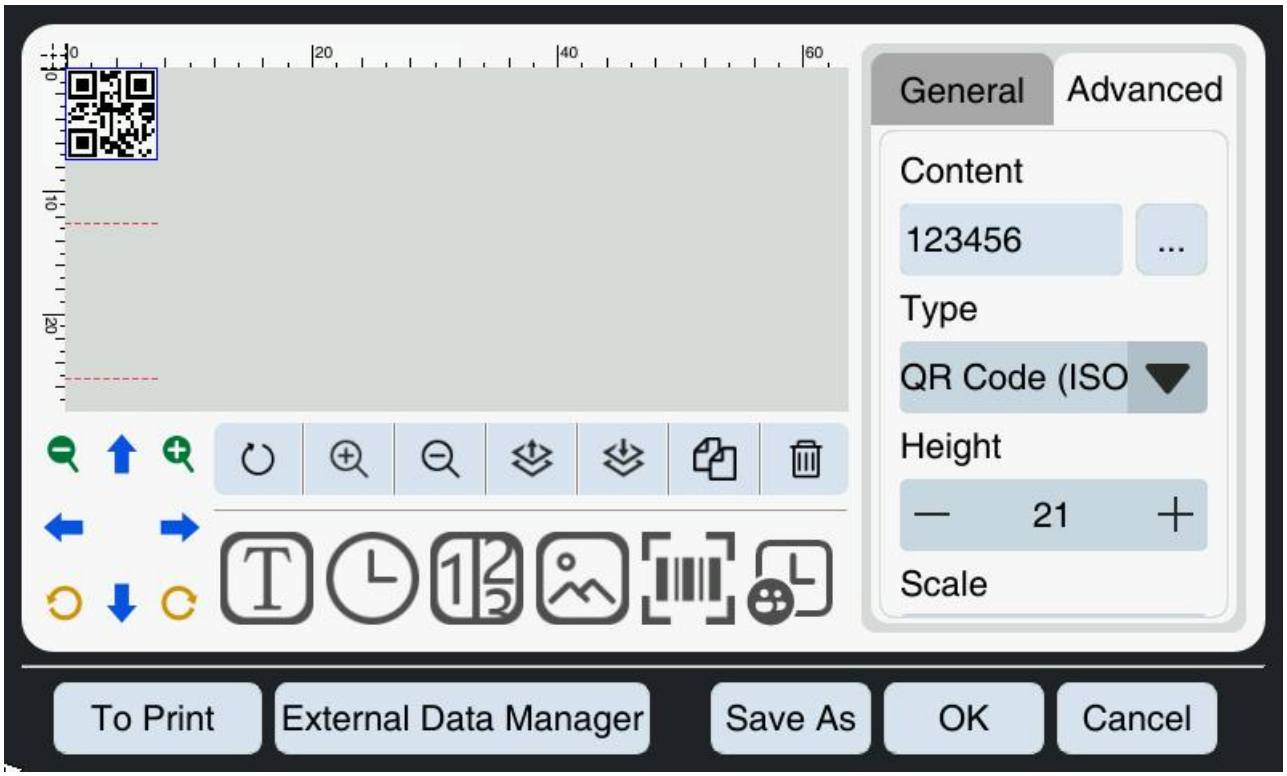



Figure 5-7 Serial number editing interface

### 5.2.4 Image editing

1．If you need to print the image, click the button. A default "image" image object will appear in the preview area. As shown in Figure 5-8.

2．In the advanced interface, you can Select Image click the button to select the image file to print and adjust the height and width.

3．In the universal interface, you can adjust the position, rotation Angle, and other properties of the time object.

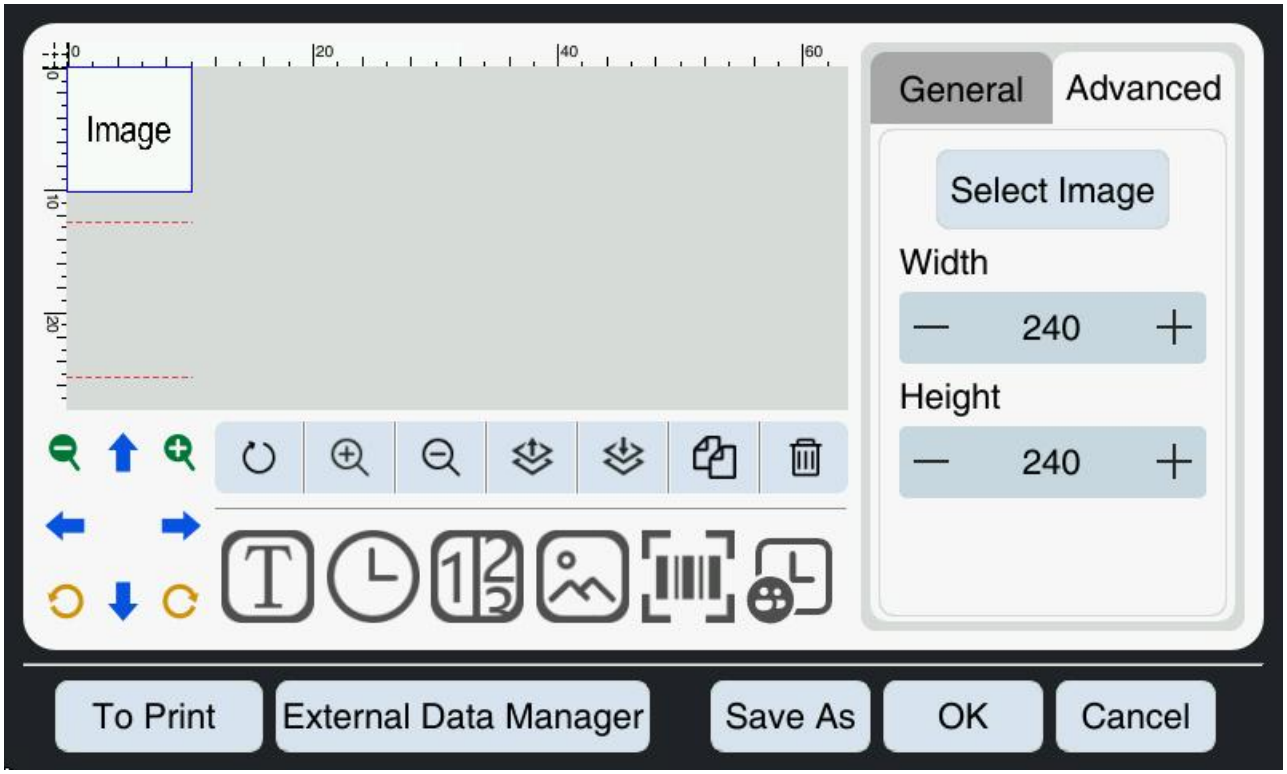


Figure 5-8 Image editing interface

1. The system supports png, jpg and bmp image formats.

2. After editing the print file with pictures on the PC, it can be directly imported into the machine through the U disk without importing the corresponding pictures.

3. When selecting images, you can select images from the U disk and save them directly without importing them into the machine.

### 5.2.5 Barcode editing

1. If you need to print the bar code, click the button, and a default QR code object will appear in the preview area, as shown in Figure 5-9.

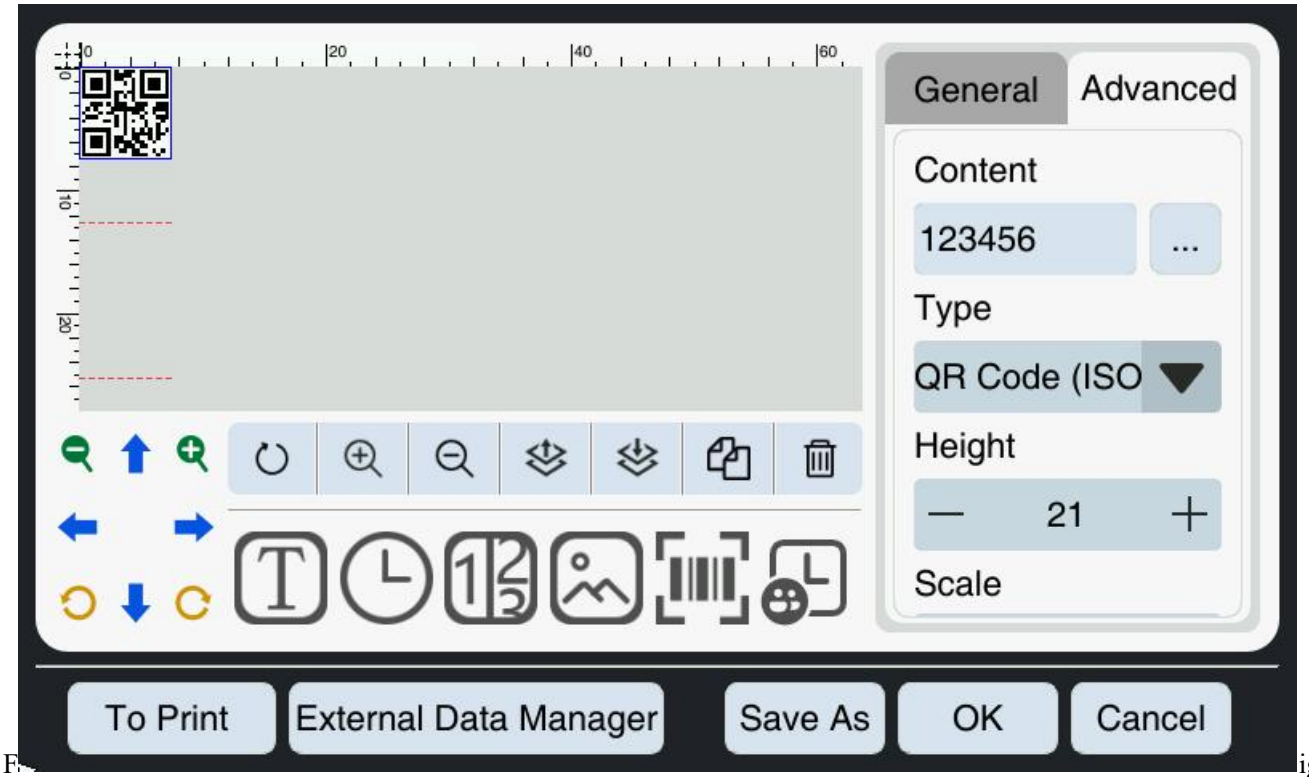



Figure 5-9 Barcode editing interface

2. Click the content box for the advanced interface and enter the required information in the keyboard that appears.

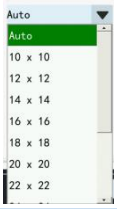
3. In the general options, you can adjust the position, rotation Angle, and other properties of the bar code object.

| Button name | description |
|---|---|
| Type | Click the drop-down menu to select the type of barcode. |
| height | The height of the bar code can be adjusted by pressing "+" or "-" (only when the bar code is in effect). |
| zoom ratio | Use "+" or "-" to scale the size of the bar code. |
| Display text | Click the button below the text to make it blue, which will display the text, or not. |
| data pattern | You can choose between standard mode and GS1 mode. |
| External data | You can connect to external devices to print variable information. For more information on how to use it, see Chapter 5.3. |

| | |
|---|---|
| internal data | You can add text, time, and serial number to implement internal variable information. For details on how to use it, see Chapter 5.4. |

1.It should be noted that different barcodes have their own definition specifications, and if the edited content does not conform to the corresponding bar code specifications, it may lead to incorrect display of the bar code.

2.QR Code, Date Matrix and Code_128 are three types of barcodes that support GS1 mode, which has specific coding rules.

| Barcode type | Specific functions | description |
|---|---|---|
| QR code |  | 1．Adjusts the spacing of text display.<br>2．The text can be adjusted to display on the right or below the QR code.<br>3．Supports displaying 5 lines of text in GS1 (UDI) mode.  |
| DM coder |  | 1．Like QR codes, DM codes can also adjust the spacing and display position of text.<br>2．Size is optional, from 10 x 10 to 40 x 40.<br>3．Supports displaying 5 lines of text in GS1 (UDI) mode. |
| QR Code<br>DM Code<br>Code_93<br>Code_128<br>PDF417 |  | 1. Text, time, and serial numbers can be added.<br>2. For details on how to use it, see Chapter 5.4. |

### 5.2.6 Shift code editing

1.If you need to record the rotation of each shift, that is, you can automatically change to the set content at the set time (time offset function  is supported, please refer to Chapter 6.2.3 for more information), click the button, a default object will appear in the preview area. As shown in Figure 5-10.

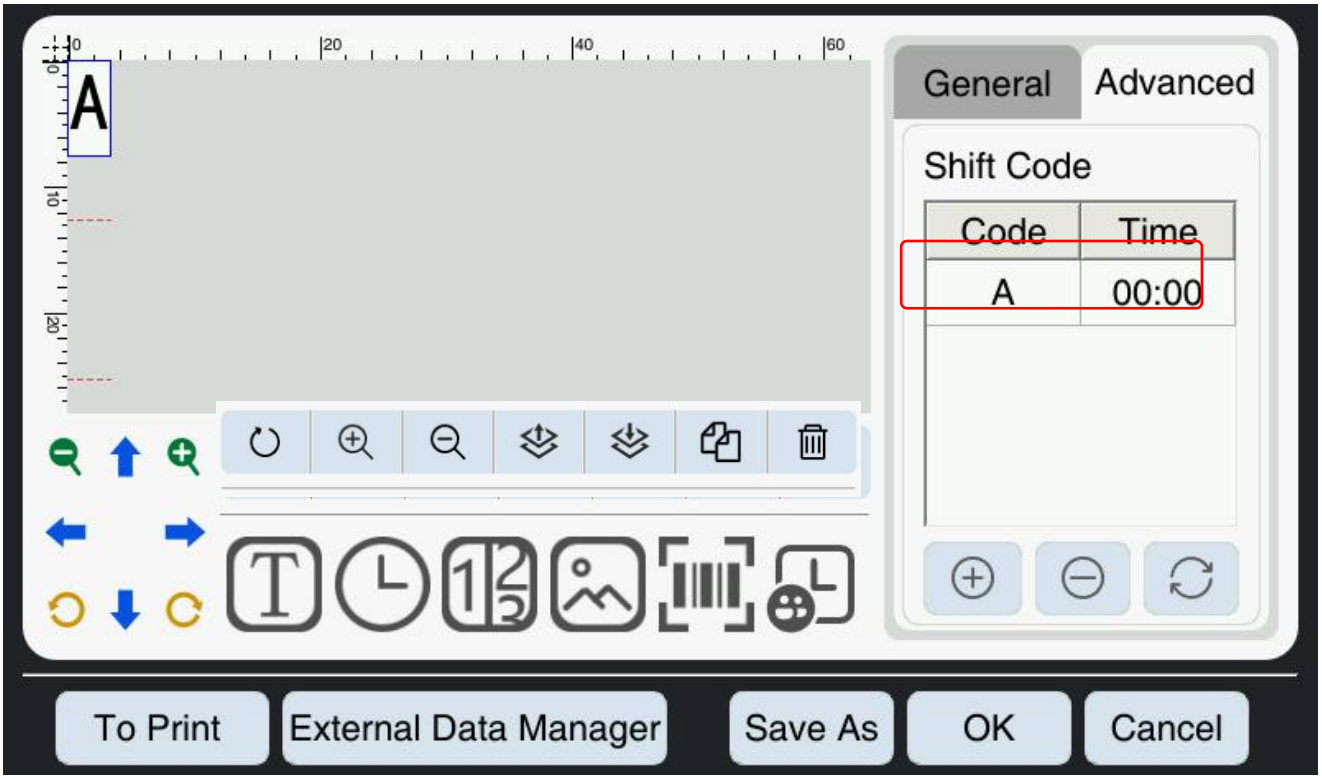



Figure 5-10 Shift code editing interface

2.In the advanced interface, click the red box under the conversion code, enter the required information in the content box, set the time, and then click the blank area. The edited content and time will be updated to the red box just now.

3.In the general interface, you can adjust the position, rotation Angle, and other properties of the shift code object.

| push-button | description | push-button | description |
|---|---|---|---|
| ⊕ | Add a line | ⟳ | Unselect the content |
| ⊖ | Delete one line | time | Set the rotation time |

## 5.3 How to edit external variable data

This chapter describes how to edit external variable data information. In section 5.2, we can see that there is a "External Data" button in the advanced options of the text and bar code property area. Click this button to make it blue and you can start using the external data function.

Click the External Data Manager button, and the right attribute area becomes the external data management interface, as shown in Figure 5-11. The source of variable information can be either TXT text or Excel table imported from a USB drive, or real-time data transmitted through RS232 serial port.

File: Import TXT text or Excel table through U disk.

Serial port: Real-time data transmitted through RS232 serial port.

Move the actual print content forward by one column.

Collapse: Moves the actual print content one column to the back.

### 5.3.1 USB data

1．When you select the USB drive to import File data, click Load File the button and then click the button to enter the preview interface as shown OK in Figure 5-12. Select the file to be printed and click the button.

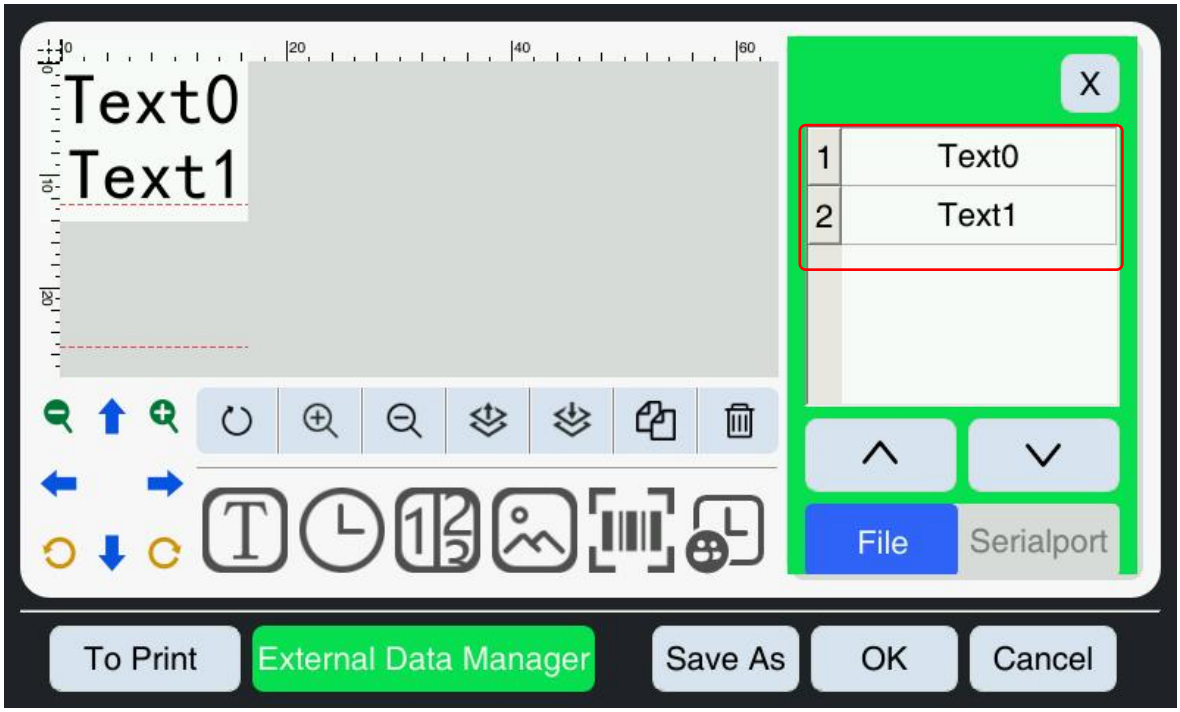



Figure 5-11 External data management interface

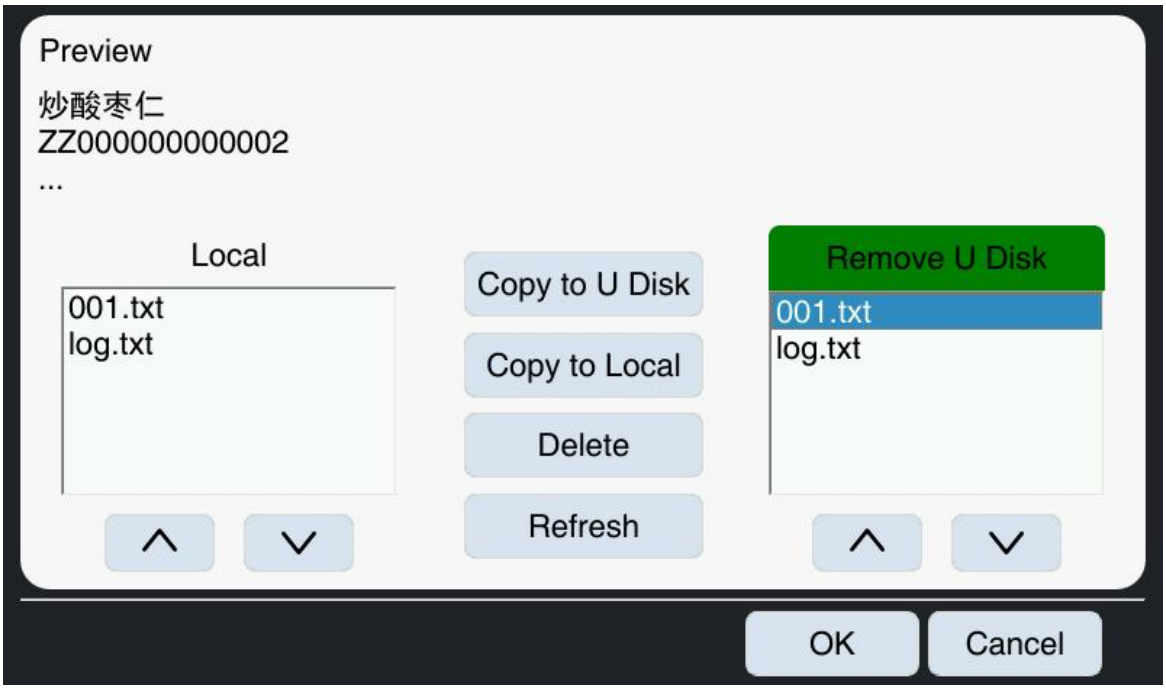



Figure 5-12 File preview interface

2．Each time a line of data is loaded and printed, until the end of the file. Set the "start line", "end line", "current line" to be printed, and select "stop" or "repeat" printing after the job is completed.

**Stop: The printer stops printing when the data is printed to the end line of the setting.**

**Repeat: When data is printed to the end of the set line, it is reprinted from the beginning of the set line.**

3．If you print Excel table, the data can still be loaded effectively when the number of edited information is less than or greater than the number of data columns in Excel table. (This function only supports Excel table in xlsx format)

4．Excel The file takes a longer time to load for the first time on the device (about 17 seconds for 10w lines of testing). The software includes an external database caching feature, which means that during the initial power-up of the inkjet printer, it only needs to be loaded once. There is no need to reload the same external database file (txt) again. If the inkjet printer is restarted or turned off, the external database file will be reloaded when the system is started.

### 5.3.2 Serial port data transmission

1．If you need to transmit data through serial port and Serialport print real-time data, click the button as shown in Figure 5-13 to set the cache quantity (default 1). Save and load the file.

2．To ensure the correct connection between the device and the host computer, you can print single cache and multi-cache variable data through the serial port. For specific operations, please refer to "Online Machine External Communication Protocol (Serial Port) V1.4".

3．Before sending data, you need to set the baud rate (default 115200) and select the "protocol" standard in the "serial interface" interface. If you want to know the specific usage method, you can refer to the relevant content in Chapter 6.2.5.

Cache Quantity:

a. You can set the cache quantity of data on the device. When the cache quantity is set to 1, only one piece of data will be stored in the device, without any accumulation. Data sent from the host computer will be displayed on the screen in real time (whether in print or non-print mode). If the host computer sends more data, the device will update accordingly, and the current print content will be based on the last data sent by the host computer.

b. When the cache quantity is greater than or equal to 2, multiple data will be saved in the device and printed one by one according to the order of data sent by the upper computer until the remaining data in the device reaches the set cache quantity, and the device will feedback the signal of printing completion, indicating that data can be sent to the device again.

c. The device supports a maximum cache of 99 pieces of data. If the cache is fully printed and no new data is sent, the device will print the last piece of data repeatedly until it receives new data, at which time the content will be updated.

Clear cache: If you need to print other data, you must first clear the cache in the device to ensure that the new data sent can be updated and printed in time (only applicable to multiple caches).

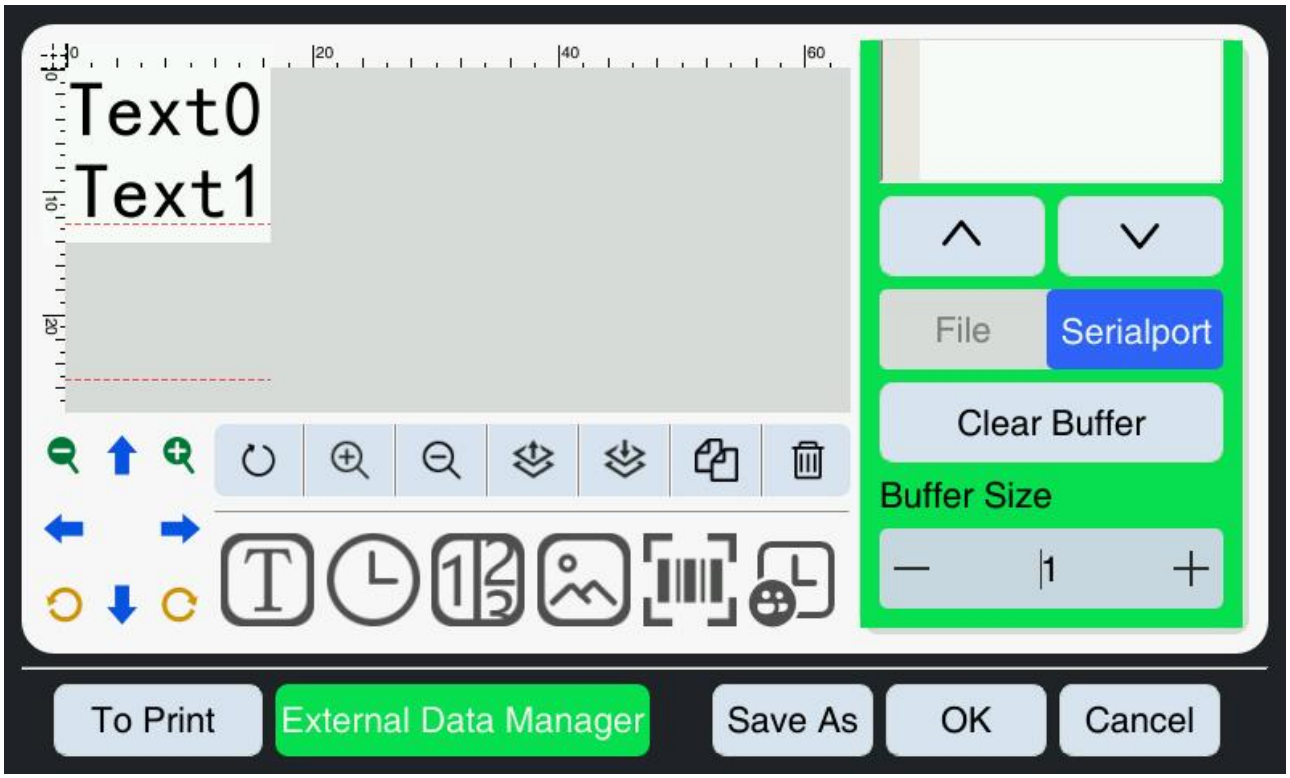



Figure 5-13 Interface for external data management (serial port)

## 5.4 How to edit internal variable data

This chapter describes how to edit internal variable data information. In section 5.2, we can see that in the advanced options of the barcode property area, there is a "internal data" button. Click this button to make it blue and you can start using the internal data function.

1．When using the internal data function, we first need to generate the necessary elements. As shown in Figure 5-14, for example, if we need to print a QR code with the content ABC03/03/2025000000, we first need to create text, time, and serial number objects. The text content is ABC, the time format is dd/MM/yyyy, and the serial number has 6 digits. Next, we create a QR code object, click the internal data button, and select text0, Time0, and SN0 in the drop-down list.

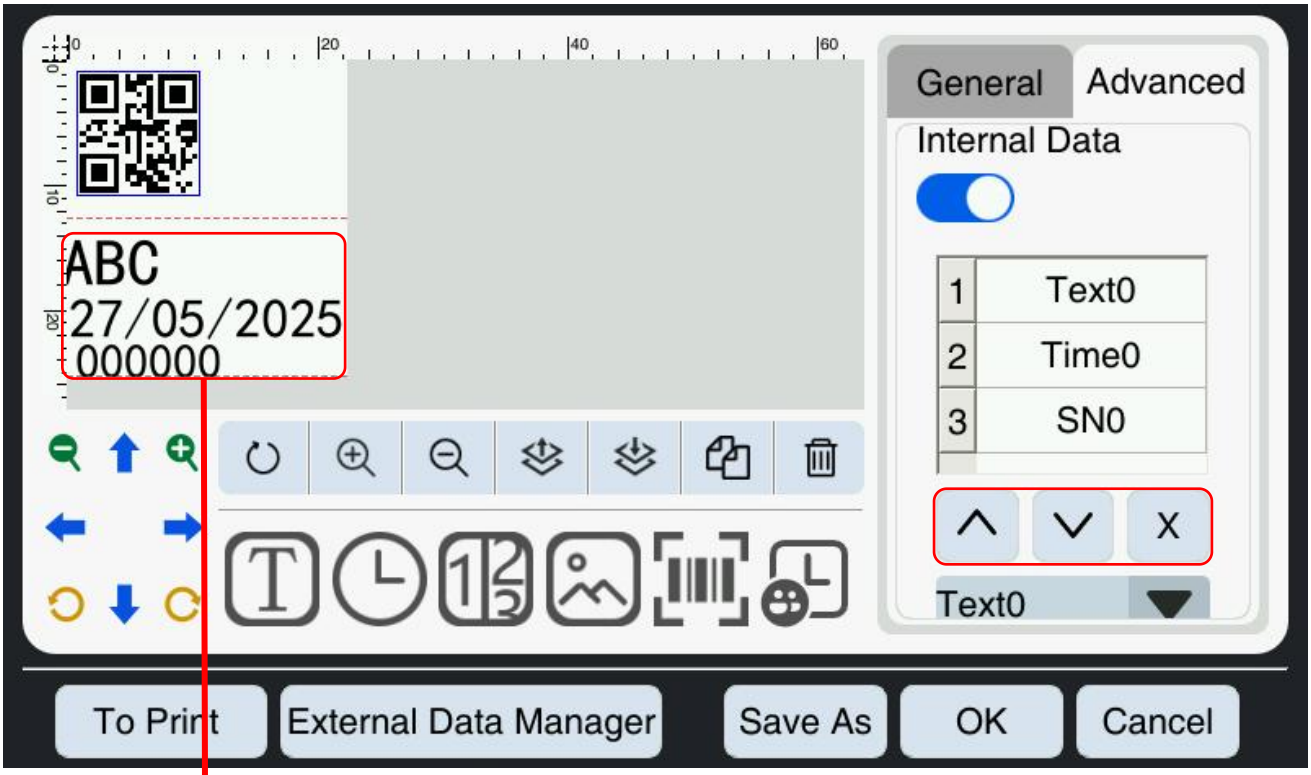



Figure 5-14 Internal data management interface

1．If you do not need to print this part of the content, you can put it in a place where you do not need to print. For example, if it is a double-head machine, the QR code only needs to be printed in one head, we can put the content in the other head. Please pay attention that the content length should not exceed the QR code, so as not to affect the printing speed. When printing, only open the nozzle 1;

2．Alternatively, we can set the font size to 0 to achieve the effect of printing only the QR code. It should be noted that if the font size is set to 0, the printed content cannot be modified later.

Move the actual print content forward.

: Add the selected object from the drop-down list.

X: Delete the selected object.

+: Moves the actual print content to the back.

## 5.5 How to edit a saved file

This chapter describes two ways to edit a saved print file. Here are the steps:

1．Use the Load File function.

2．Long press the "Information Preview Area" on the main screen.

### 5.5.1 Use the "Load File" function

1．Click the button on Load File the main interface to enter the loading file interface, as shown in Figure 5-15.

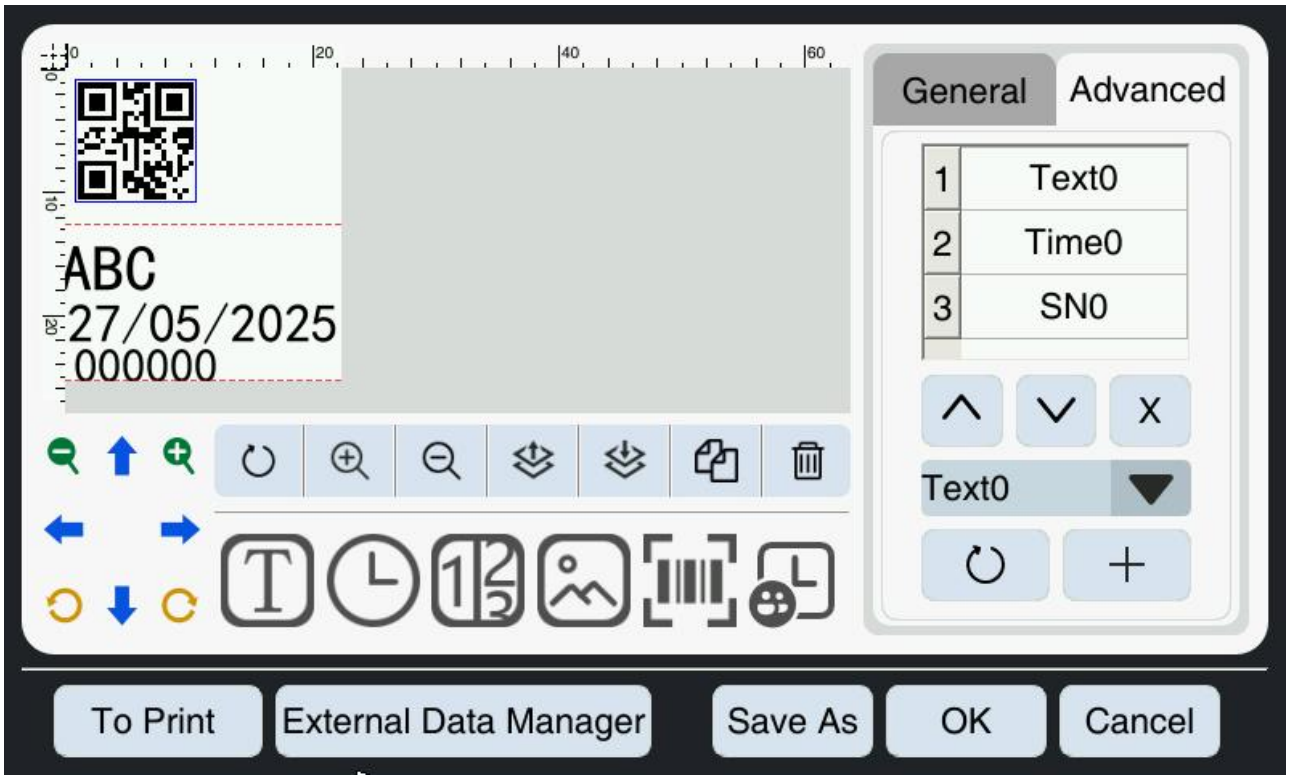



Figure 5-15 Load file interface

2．Select the file to be edited in the file list, click the Edit button to enter the file editing interface, and display the content of the file in the preview area.

3．Select this information and edit it. After the modification OK is completed, click the button to return to the loading file interface, where you can select files for printing jobs.

### 5.5.2 Use the long press "Information Preview Area"

1．Long press the preview area on the main Edit File interface, click the button that pops up to enter the file editing interface. As shown in Figure 5-16.

2．The selected information in the preview area can be edited and OK modified. After modification, click the button to return to the main interface, and the modified information is updated to the preview area in the main interface. You can directly print the job.

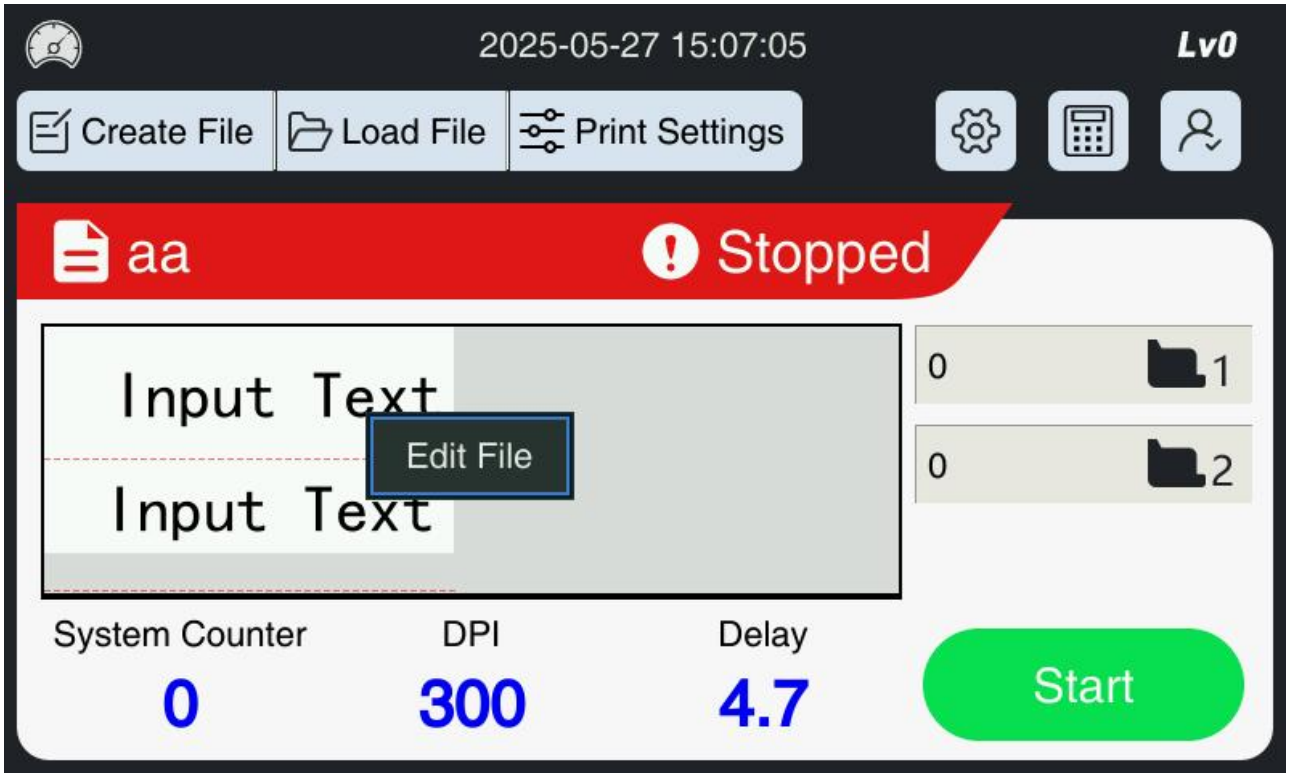



Figure 5-16 Main interface

## 5.6 How to delete/copy files

1.The operation interface for loading files is shown in Figure 5-15. After Delete you select a file, click the button to delete the selected file.

2.Click the Refresh button to copy files. The download file interface is shown in Figure 5-17. First, you need to find the file you want to copy in the file list, Copy to U Disk and then click Copy to Local the button or click the button to complete the copy.

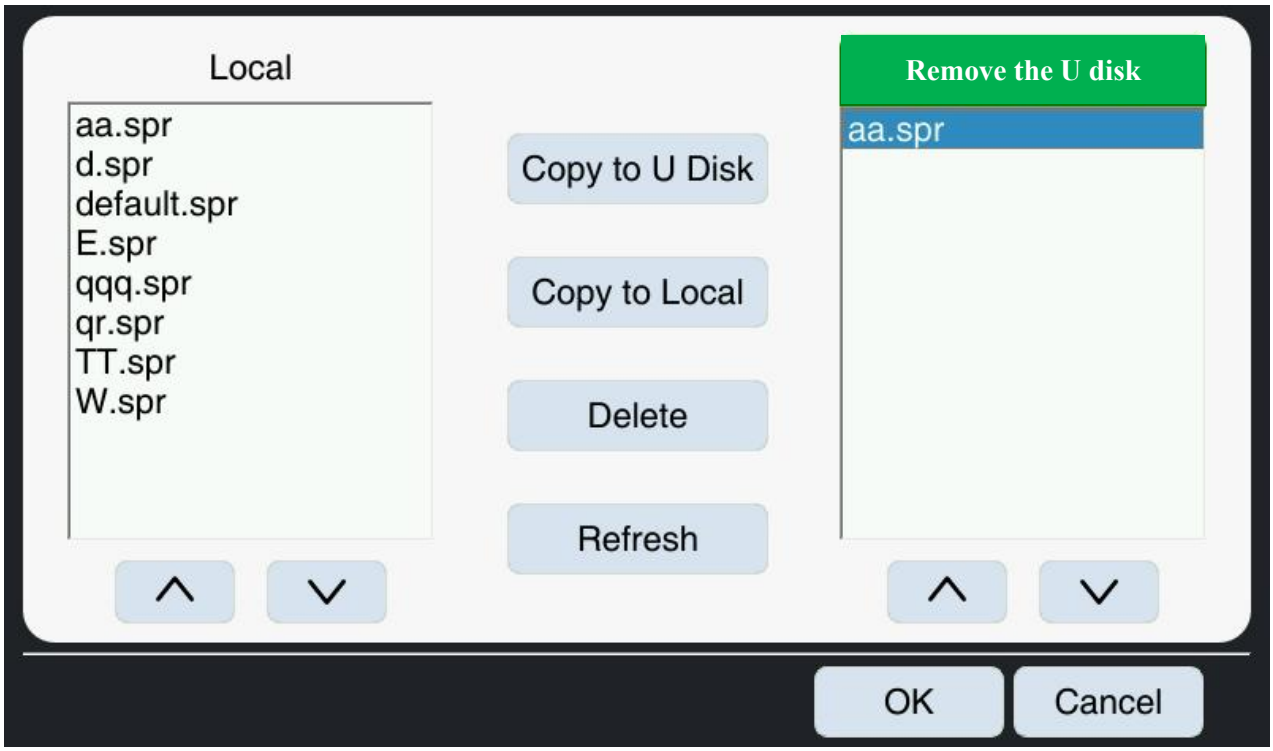



Figure 5-17 Download file interface

# Chapter 6. User Interface

## 6.1 Print Settings

Click the button Print Settings on the main interface to enter the print Settings interface. Print Settings consists of four interfaces: "Print Parameters", "Nozzle Settings", "Print Mode", and "Enhanced Features". Print parameters are saved with the file, and you can set independent print parameters for each print file.

### 6.1.1 Print parameters

The interface of the print parameters is shown in Figure 6-1, which contains the basic print parameters.

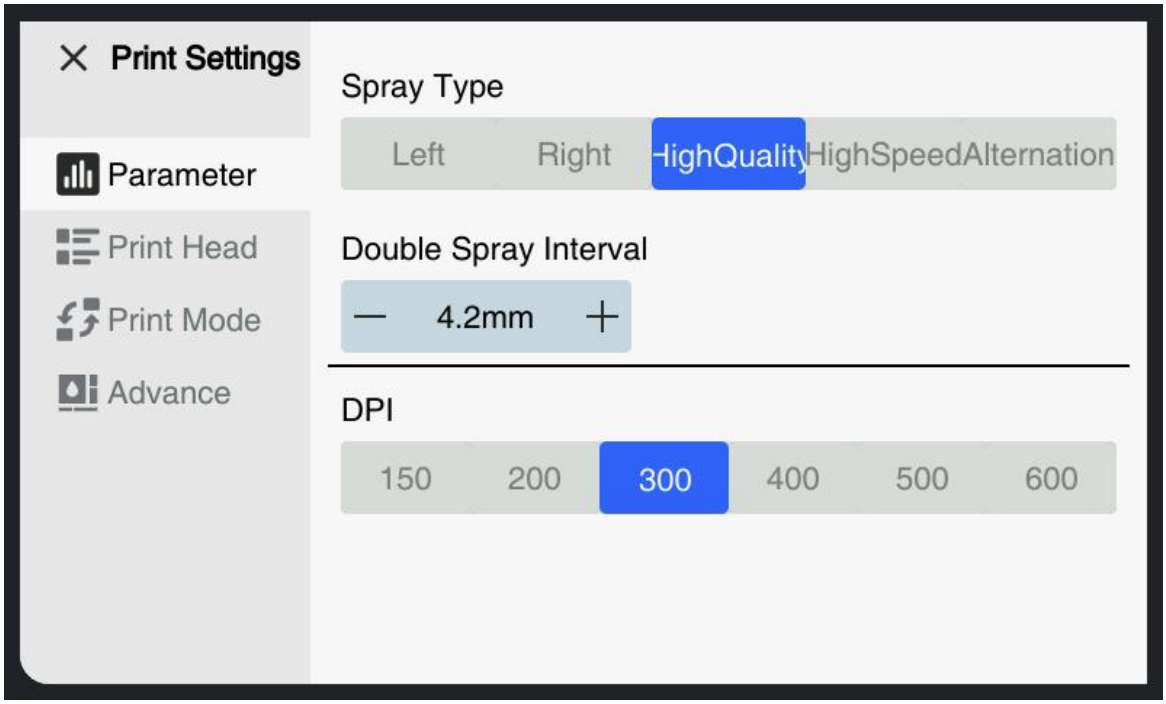



Figure 6-1 Printing parameter interface

| Button | Description |
|---|---|
| Printing method | 1 . The HP ink cartridges used by the printer contain two columns of nozzles, namely left and right. When the nozzle on one side is not clear, you can choose the nozzle on the other side to print. It is recommended that you switch the "printing mode" once after using it for a period of time to better maintain the nozzle.<br>2 . Dual spray HD: the two nozzles spray ink at the same time to improve the printing quality, so that the printed information content is deeper in color, and the overall printing speed will be reduced.<br>3 . Dual high speed: the two nozzles spray ink at the same time to improve the printing speed to meet the needs of high-speed printing. The color (gray scale) of the printed information content will be lighter.<br>4 . Alternating printing: the nozzles on both sides print alternately, which is conducive to nozzle maintenance and prolongs the life of the ink cartridge. |
| Double spray spacing | If double spray printing is used, the value of the distance between the two spray nozzles should be adjusted to make the position of the two spray nozzles coincide and print a complete message. The default distance is 4.2mm. |
| DPI | The higher the DPI, the clearer the printed information, and the slower the printing speed. Add 400 and 500DPI. |

### 6.1.2 Printhead setting

The interface for setting the printhead is shown in Figure 6-2. Since the two printhead are designed to be placed side by side with a gap between them, the 'printhead Offset' parameter is used to set the distance between the printhead. If you encounter misalignment during use, adjust the 'printhead Offset' to fine-tune the printing positions of each printhead.

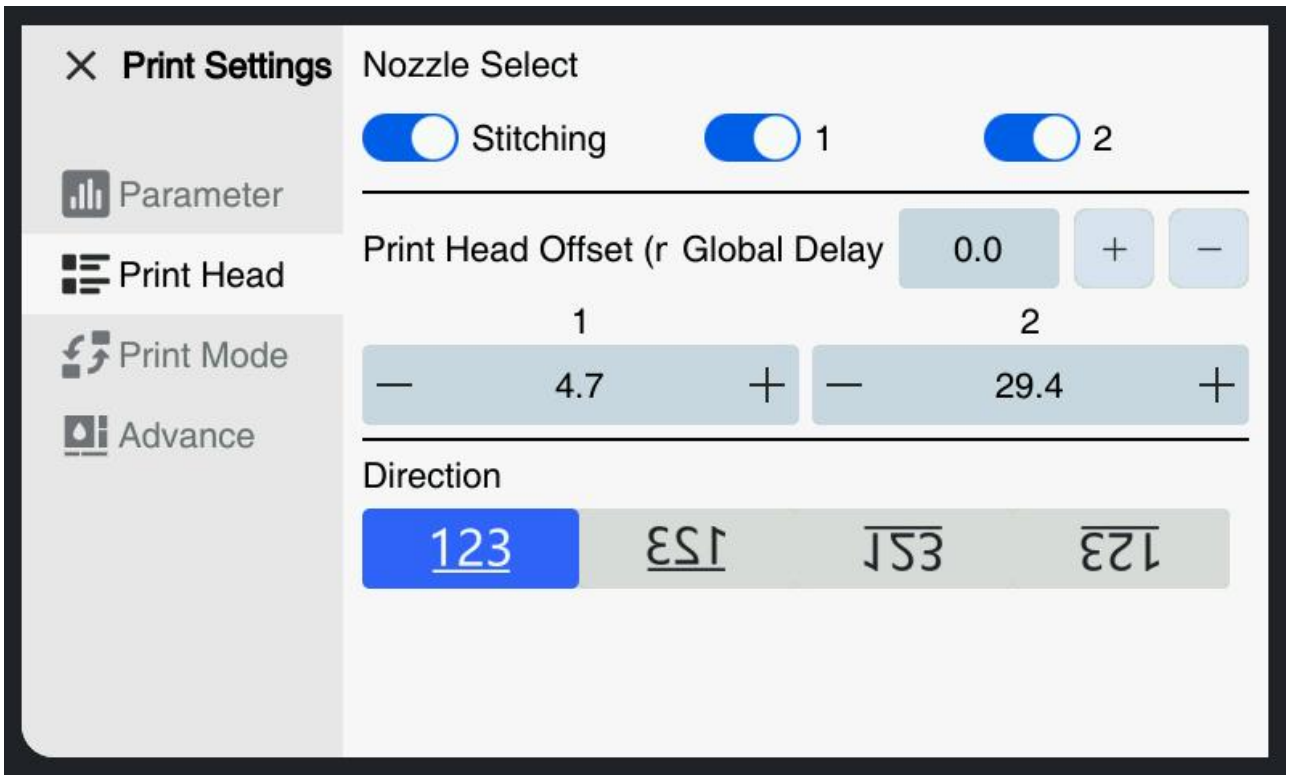



Figure 6-2 Printhead setting interface

| Button | Description |
|---|---|
| Nozzle selection | 1 . When no splicing is selected, the printing direction of a single nozzle can be set. The number of nozzles for the operation can be selected arbitrarily.<br>2 . When selecting the splicing, the nozzle prints from the same direction. The number of nozzles for the operation can be selected arbitrarily. |
| Overall shift | 1 . Set the "overall offset" parameter, and the offset of both nozzles will change accordingly. For example: if the overall offset is added by 10, the offset of both nozzles will be added by 10 on their own values.<br>2 . Each time the "overall offset" parameter is set, it will be added or subtracted from the original nozzle offset. |
| Nozzle offset | You can set the distance between each nozzle and the start of printing from the time it receives the trigger signal. |
| Single nozzle print direction | It only works when no splicing is selected. You can select any nozzle to set the printing direction. |
| Print direction | Select the printing direction of the information, which are forward, reverse, forward and reverse. |

### 6.1.3 Printing mode

The interface of the print mode is shown in Figure 6-3.

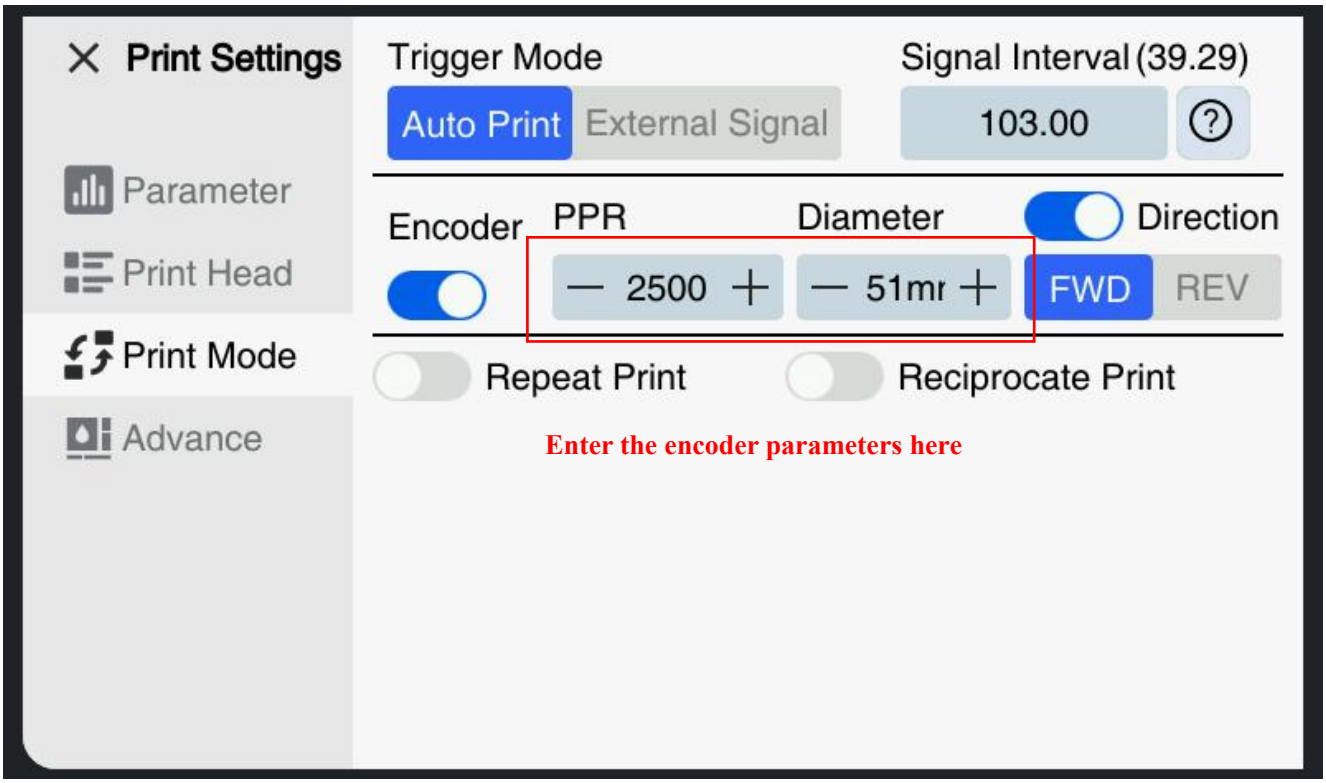



Figure 6-3 Printing mode interface

1．You can choose different triggering methods according to your needs,

If you need continuous printing, do not need to trigger signal, the triggering mode is selected "automatic printing";

If you use an external sensor to trigger, you need to locate the print. Select "External signal" as the triggering method.

2．When the trigger mode is selected as "automatic printing", the "signal interval" determines the spacing between two adjacent information prints; when the trigger mode is selected as "external signal", the "nozzle offset" determines the distance from the time the device receives the trigger signal to the time it starts printing.

3．When the production line speed is uneven, select the 'Encoder' option in the interface and input the encoder parameters. The synchronous wheel, working with the encoder, can detect the production line speed and automatically adjust the inkjet speed to ensure that the print remains flat and the seams align properly. When the 'Encoder' is not used, the 'Production Line Speed' parameter on the device should match the actual production line speed.

| Button name | description |
|---|---|
| **Trigger mode** | Automatic printing: continuous printing without trigger signal.<br>External signal: triggered by an external sensor and requires positioning printing. |
| **Signal interval** | It only takes effect when the trigger mode is automatic printing. It is used to adjust the spacing between two adjacent information prints. There is a default minimum value according to the length of information, and the minimum spacing is 3 (mm). |

| | |
|---|---|
| Production line speed | 1. It works when the encoder is not used. The set value should be consistent with the actual production line speed to ensure that the printed content does not deform.<br>2. The smaller the value of production line speed, the slower the printing speed; the larger the value, the faster the printing speed.<br>Fill in the parameter> actual production line speed, and the printed content will be elongated;<br>If the parameter <actual production line speed is inserted, the printed content will be shortened. |
| encoder | If you use the encoder, fill in the parameters of the encoder truthfully to ensure that the printed content is not deformed and the splicing is neat.<br>PPR should be filled with the number of pulses in the encoder;<br>Diameter (mm) should be filled in the diameter of the synchronous wheel. |
| **Encoder direction** | Positive: the rotation direction of the encoder is consistent with the actual movement direction of the material on the production line, and the output signal of the encoder is a positive pulse.<br>Reverse: the rotation direction of the encoder is opposite to the actual movement direction of the material, and the output signal of the encoder is reverse pulse.<br>When the physical rotation direction of the encoder is consistent with the material movement direction, but the encoder direction of the inkjet printer is set in reverse, the system will trigger synchronization protection due to phase conflict of pulse signals, resulting in no print output. |
| **repeat print** | The reprint function can only be enabled when the trigger mode is external signal. When enabled, the device will print multiple times every time the external eye is triggered.<br>Repeat times: Set the number of times the nozzle repeats printing each time it is triggered.<br>Repeat delay: Set the spacing between two adjacent information prints, with a default minimum value based on the length of the information. |
| **Repeat the print** | The reciprocating print function can only be enabled normally when the single head is triggered by an external signal. It is divided into forward and reverse printing. It is suitable for the scene where the nozzle moves back and forth.<br>Forward (reverse) delay: set the distance from the nozzle receiving the trigger signal to the start of printing (the value of the nozzle offset is not effective at this time, only the set delay value is calculated).<br>Forward (reverse) print times: Set the number of times the nozzle prints each time it is triggered.<br>Forward (reverse) print interval: Set the spacing between two adjacent information prints. There is a default minimum value according to the length of the information. |

### 6.1.4 Enhanced functions

The enhanced function interface is shown in Figure 6-4.

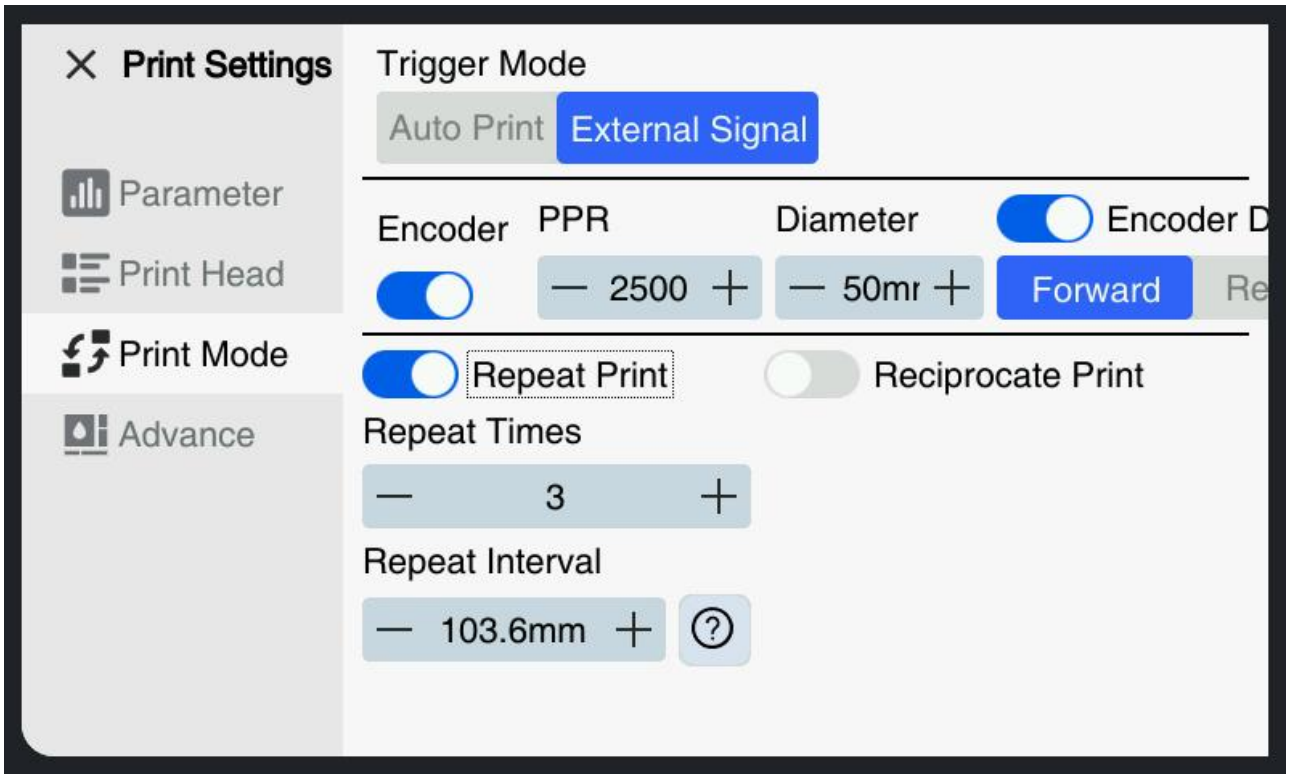



Figure 6-4 Enhanced function interface

| Button name | description |
|---|---|
| **Signal shielding** | 1．Avoid repeated printing signals of complex pattern objects, which will affect the printing effect.<br>2．The print signal is no longer triggered within a certain distance. For example, when the parameter is set to 30.0mm, after triggering a print signal once, the second print signal will not be triggered within 30.0mm. |
| **UV lamp** | When using UV ink, the UV lamp function can be enabled to make the ink adhere quickly to the object.<br>Delay: Set the time from when the information is printed to when the UV lamp is turned on.<br>Duration: The time the UV light is on. |
| **Data updated** | The data update function is only effective when the external serial port communication is enabled, and supports two data update modes.<br>Standard: Continuous output of the latest data: When there is no new data transmission on the serial port, the system will automatically repeat printing the last received valid data.<br>One item one code: Real-time data binding: the printing task is triggered only when new data is transmitted through the serial port, and no printing operation is performed without new data; Anti-repetition mechanism: ensure that each printing task corresponds to a unique data identification, so as to avoid the risk of repeated use of data. |

## 6.2 Settings

Click the button on  the main screen to enter the Settings screen. The Settings screen consists of seven screens: Configuration Management, Password, Custom Date, System Language, Serial Port Settings, Log, and About.

### 6.2.1 Configuration management

The interface of configuration management is shown in Figure 6-5. The print voltage and print pulse width cannot be modified in the print state.

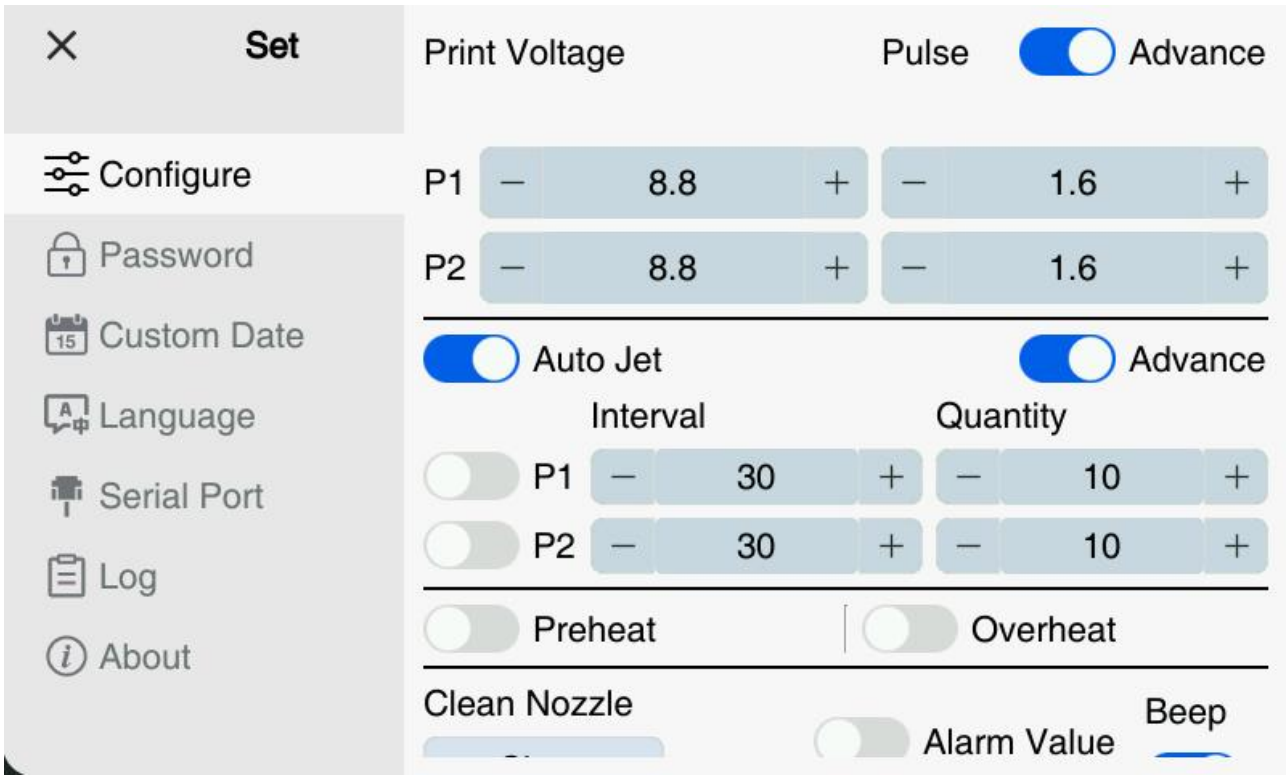


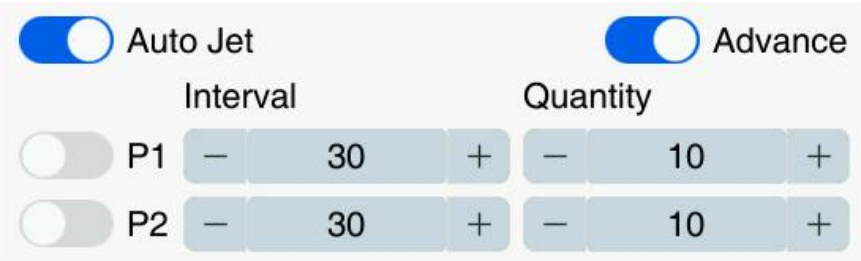

Figure 6-5 Configuration management interface

**1. Print voltage and print pulse width**

If you select "Enhanced Function", you can set separate printing voltage and pulse width for the two nozzles (for example, you can use both quick-dry ink and water-based ink at the same time); if you do not select "Enhanced Function", the two nozzles will use the same printing voltage and pulse width. The specific values are based on the cartridge settings.

2. **Flash spray**

Used to prevent nozzle clogging and maintain ink flow.




**P1 represents nozzle 1**

**P2 represents nozzle 2**

Flash interval: The waiting time interval between two flash actions, unit ms.

Flash spray times: the amount of ink sprayed in a single spray.

If you select "Enhanced function", you can set independent flash spray interval and flash spray times for the two nozzles; if you do not select "Enhanced function", the two nozzles use the same flash spray interval and flash spray times.

3. **Preheating and overheating**

In extremely cold weather, when the printing effect is affected, it is recommended to use the preheating and overheating functions.


Preheating: Let the inkjet nozzle temperature quickly reach the set threshold to ensure clear and stable print quality.

Overheating: When the ink cartridge nozzle temperature exceeds the set threshold, the cooling mechanism is automatically started to effectively extend the service life of the ink cartridge.

4. **Wash the nozzle**

Clear blockage, prevent ink drying, and maintain print quality. When the "clean" button is pressed, the ink cartridge nozzle starts to spray ink, and when the button is released, the ink stops spraying.

5. **Ink level alarm value**

Used to set the alarm value of ink quantity. When used with the alarm light, when the ink quantity reaches the set value, the status bar of the main interface turns yellow and displays low ink quantity, and the alarm light turns yellow.

6. **warning tone**

When triggered by an external signal, the buzzer emits a "beep" sound every time a print is completed.

### 6.2.2 Password

The password interface is shown in Figure 6-6, which is the level 3 user interface. In this interface, you can set the password for level 1, level 2 and level 3, as well as the use rights of each function. (The password will take effect immediately after modification. Please be careful to avoid forgetting the password and affecting the use.)

Level 0 is the default level when you start up, and you do not need to log in with a password. Level 1, Level 2, and Level 3 require password login. Level 3 is the highest level, and you can set the usage rights of level 0, level 1, and level 2 machines. Please refer to Chapter 6.4 for user level login.

For example, when we set the new file 2, when the user level is 0, using the new file will prompt that there is no access permission, and this function cannot be used. When the user level logs in to level 2, this function can be used normally.

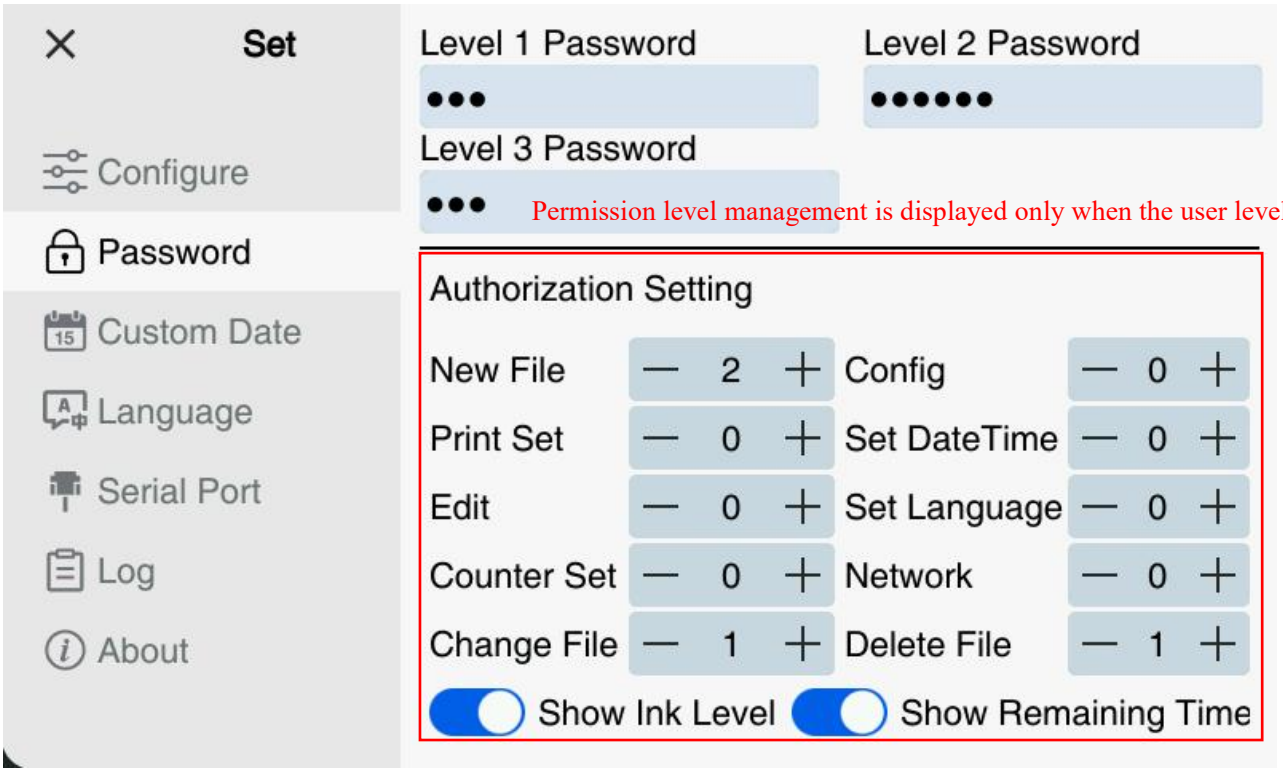
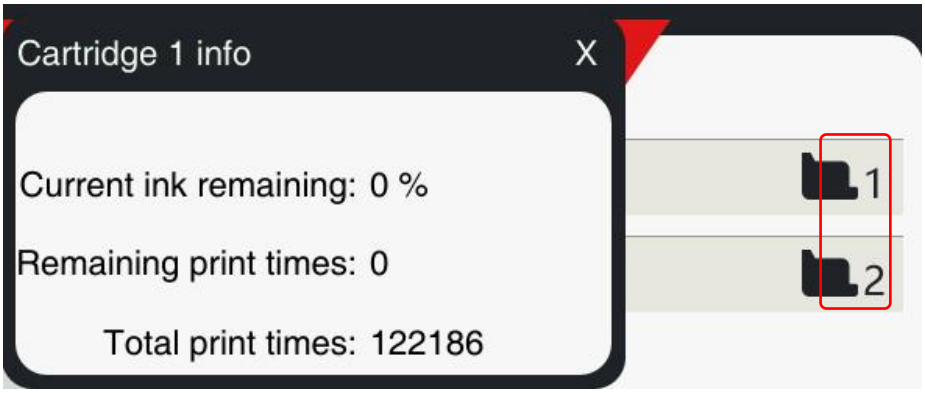



Figure 6-6, password interface

In the password interface, you can set the ink display and the number of remaining prints.




Click the ink cartridge icon to display the ink cartridge information, including the remaining ink quantity, the remaining print times and the total print times.

Total print times: The number of times the current content can be printed on a new cartridge. (For reference only)

### 6.2.3, Custom date

The interface for customizing dates is shown in Figure 6-7. We can define "weeks" and "months" according to our needs and display them according to our needs. See Appendix 1 for the specific operation mode.

Time offset: the maximum can be set +23h, +59min.

For example, if the time offset is set to 6h,30min, the system time will be updated to the date of the new day at 06:30 hours.

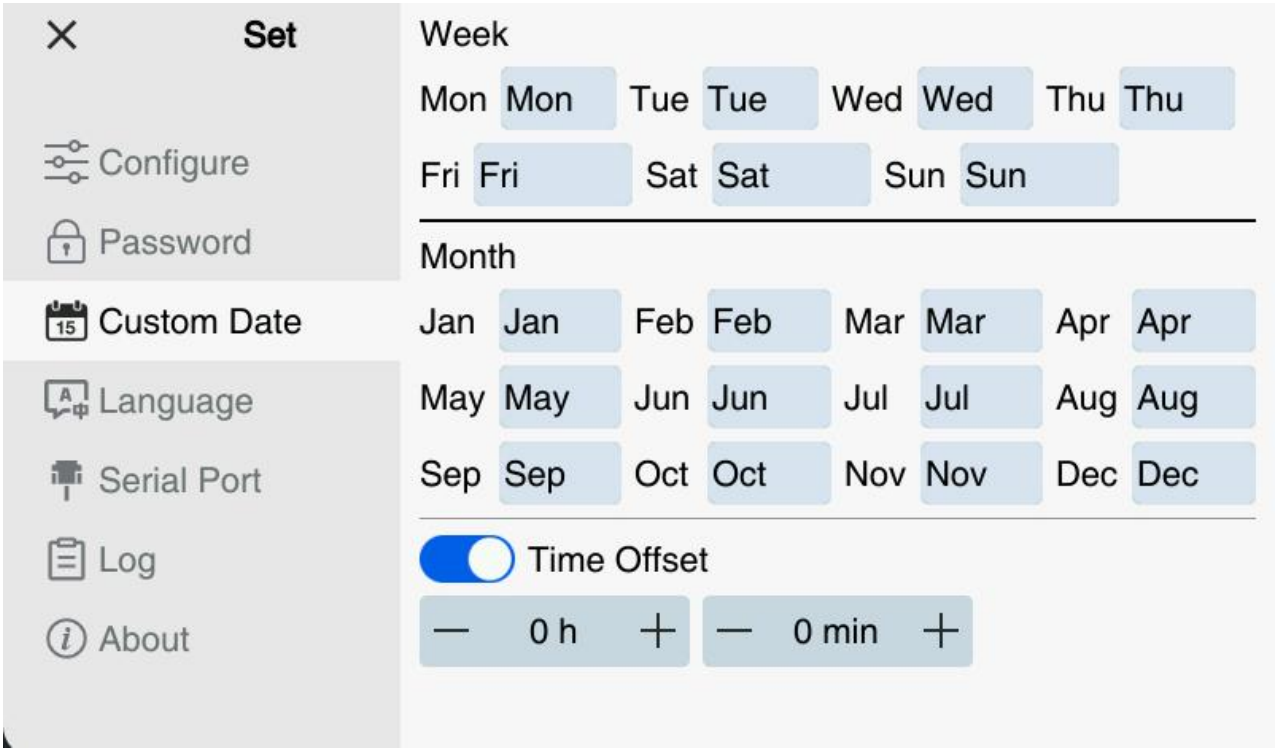



Figure 6-7 Custom date interface

### 6.2.4 System Language

The interface of the system language is shown in Figure 6-8. Currently, it supports Arabic, Simplified Chinese, Traditional Chinese, Czech, English, French, German, Greek, Hungarian, Italian, Japanese, Korean, Mongolian, Persian, Portuguese, Russian, Spanish, Swiss, Thai, Turkish, and Vietnamese.

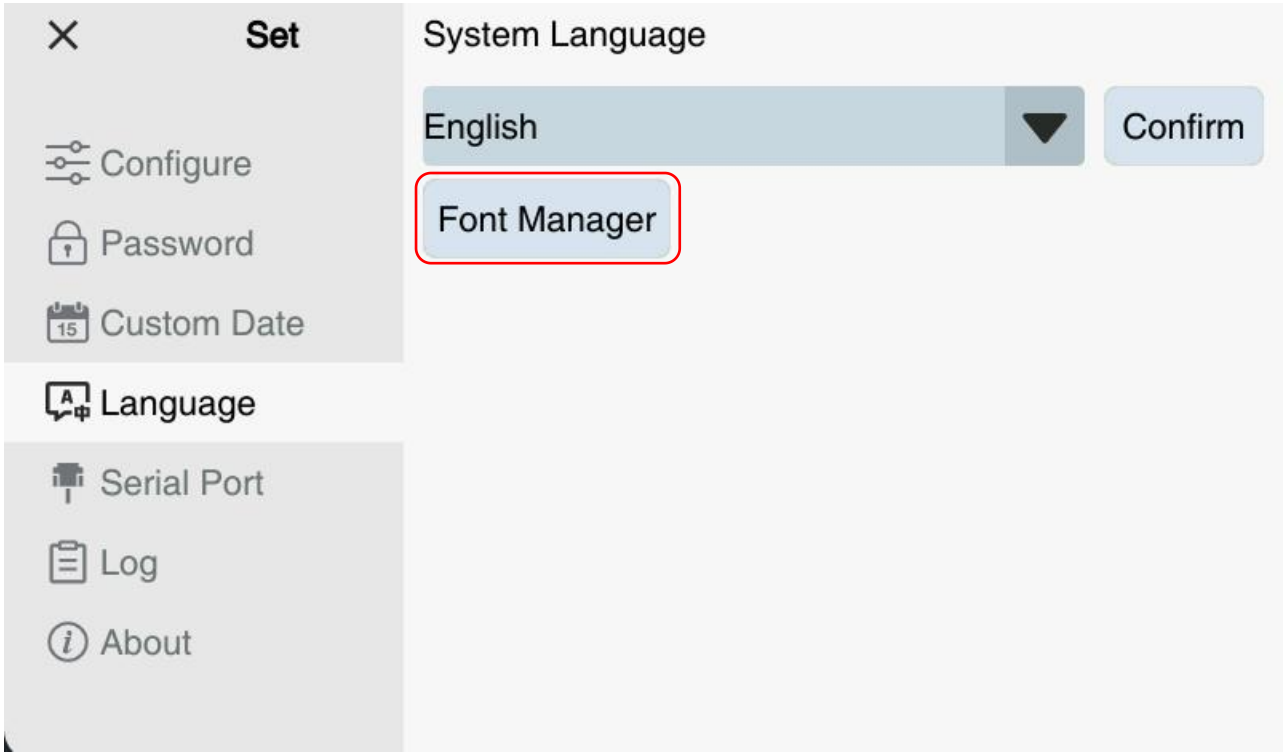
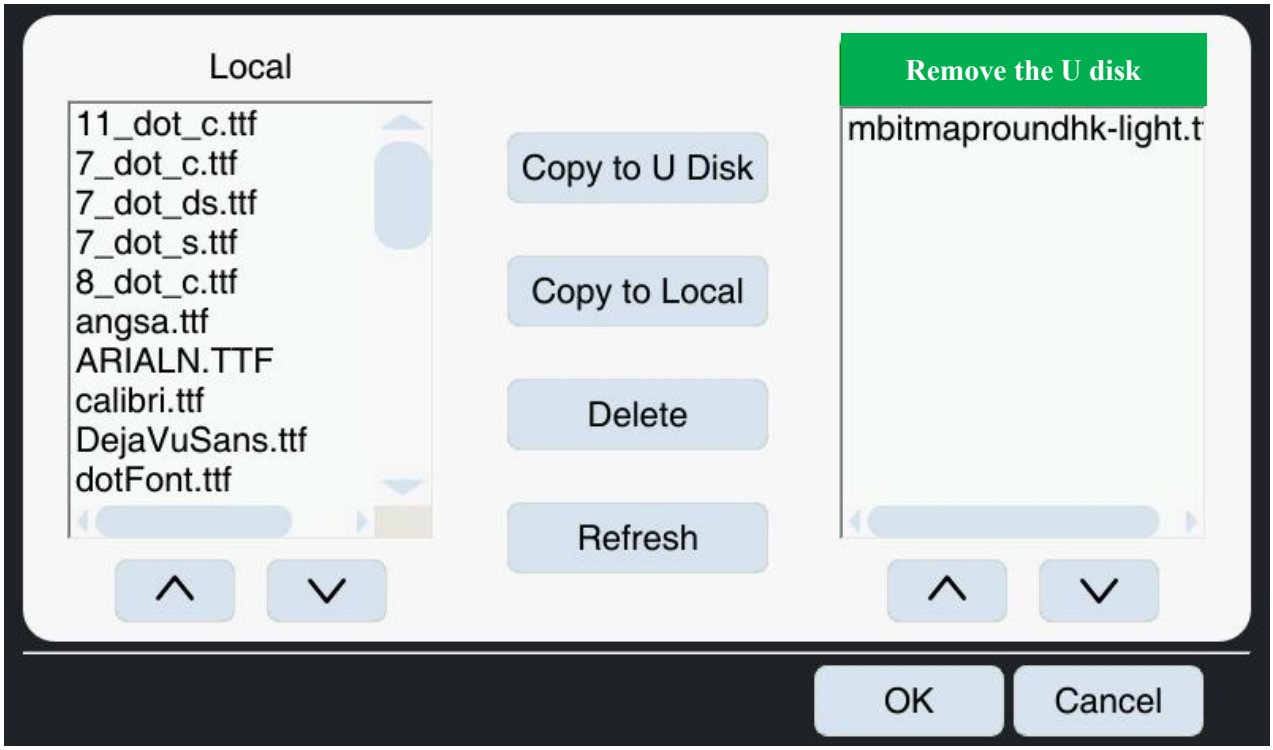



Figure 6-8 System language interface

Font management: You can use a USB drive to copy the required fonts to your device and select them when editing information. Note: The system recognizes.ttc and.ttf formats. A feature to delete removable disks has been added to the file

download interface, enhancing the security of the USB drive when it is removed and ensuring the integrity of the files.




### 6.2.5 Serial port Settings

The interface of serial port setting is shown in Figure 6-9. When we want to use the external serial port to send printing information, we can use the serial port setting function to test whether the local machine and the external device are connected after ensuring that all cables are correctly connected.

During debugging, the baud rate should be consistent with the external device. Send a message from the external device. If the device can receive and display the message normally, it indicates that the device is connected with the external device and can receive the message normally.

If you communicate with the upper computer, select the protocol standard.

If the link is called weighing instrument, the protocol selects weighing, and then selects the end symbol according to the weighing instrument, which can support the common weighing instruments on the market.

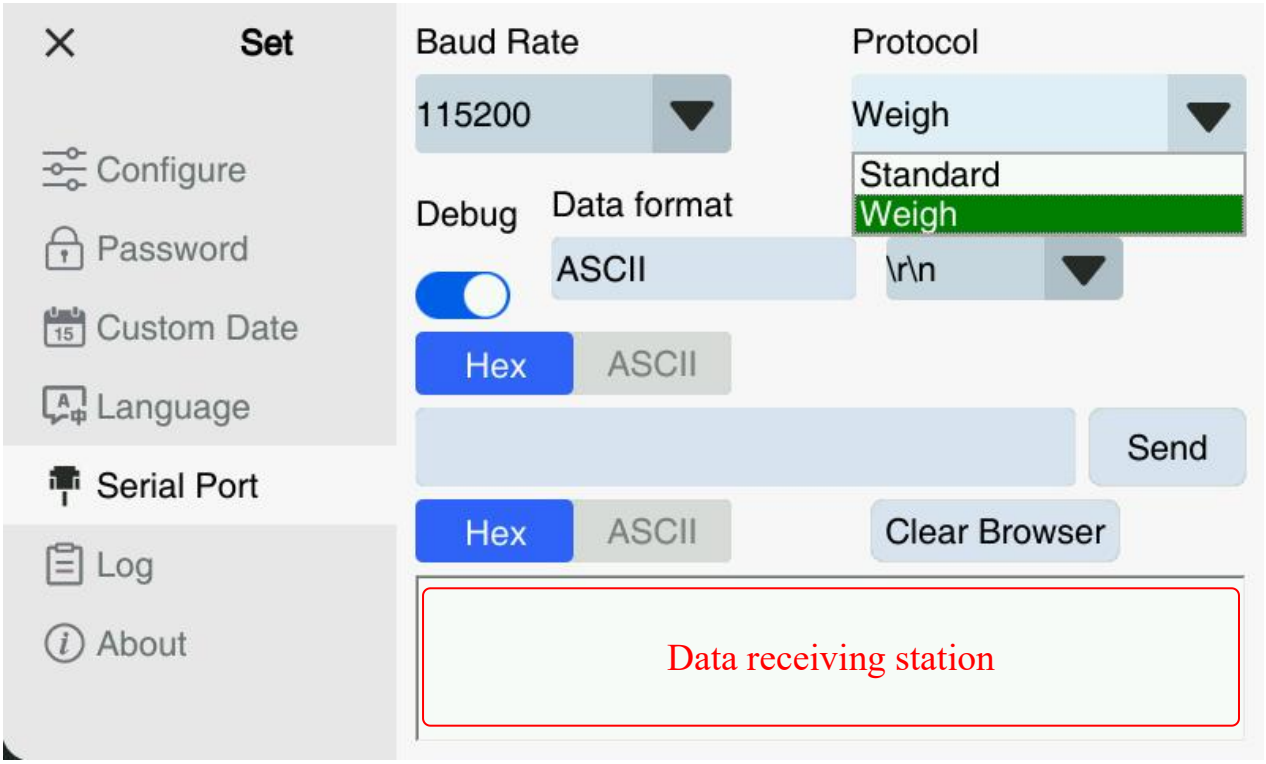



Figure 6-9 Serial port Settings interface

### 6.2.6 Log

The interface of the log is shown in Figure 6-10. If you want to view the operation record during the operation of the inkjet printer, you can enable the "Log" function. Select the object to be recorded in the "Record type".

The logs are saved in the form of a table (log.txt) on this device. If you need to view the records, you can use a USB drive to export the logs (connect the USB drive, click the "Export Logs" button, and then click the "Copy to USB Drive" button in the new interface to export the logs to the USB drive), and use a computer to view them.

If the 'Log' function is turned off, the inkjet printer will stop recording until the 'Log' function is enabled again. All generated records are saved sequentially. To prevent excessive storage and potential slowdown, it is recommended to regularly clear the logs (before clearing, you can export the logs to a USB drive for backup).

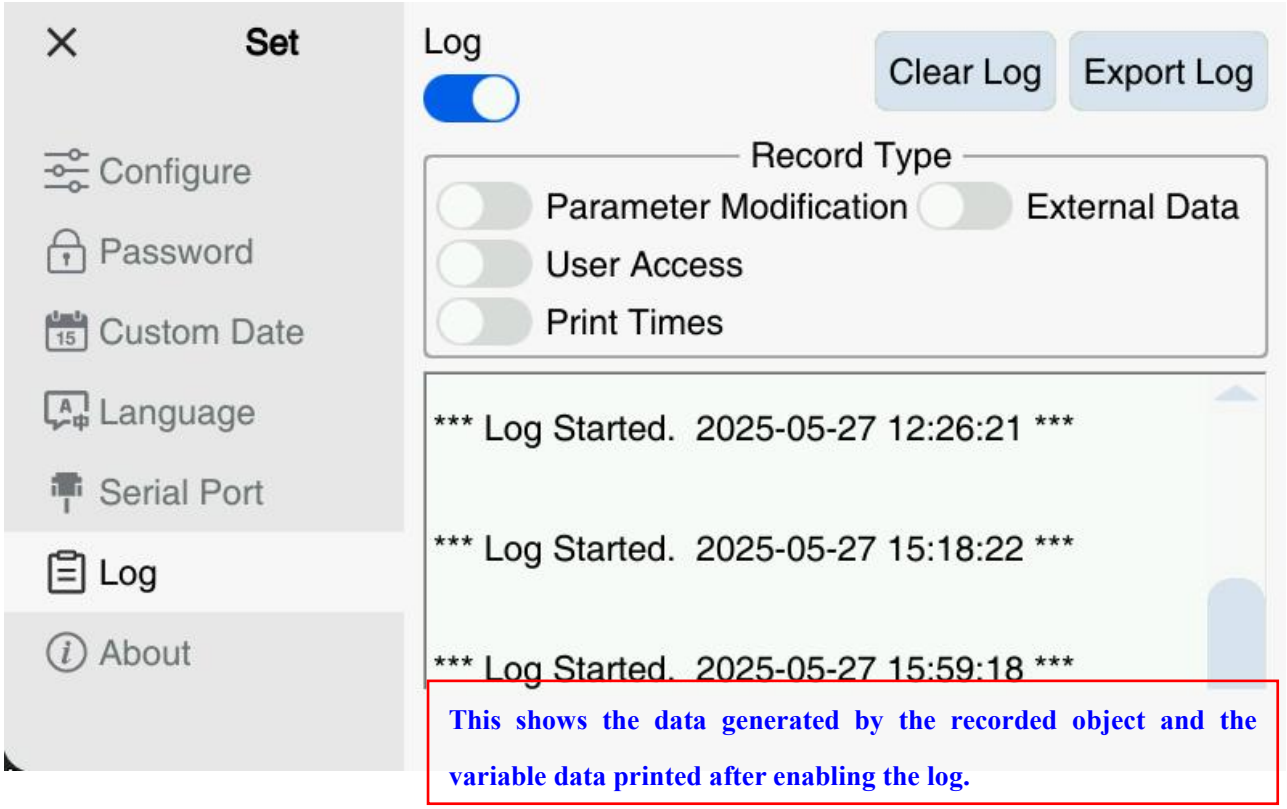



Figure 6-10 Log Settings interface

## 6.3 Counter Settings

Click the button on  the main interface to enter the counter setting interface, which includes "Counter Settings" and "Print times". As shown in Figure 6-11.

| Button name | description |
|---|---|
| starting value<br>End value | The start value and end value define the range of change for the counter.<br>When the counter is incremented to the end value, it automatically returns to the starting value for printing. |
| Step value | The increment value of the counter is increased by one and can be set to a negative number. |
| current value | The value that the counter currently needs to print. |
| number of replication | Set the number of times each data is printed. |
| Number of repetitions | When repeated times> 1, it takes effect and is used to record the number of times the data is printed. |
| Auto reset | Each counter is set independently. The counter currently selected can be automatically restored to the initial value after passing 0 points and entering the next day (time offset is supported). |
| Fully auto-reset | All counters automatically revert to their initial values the next day (supports time offsets). |
| Reset the number of | Used to reset the number of times the main interface is printed, so that the number of times is zero. |

| | |
|---|---|
| printouts | |

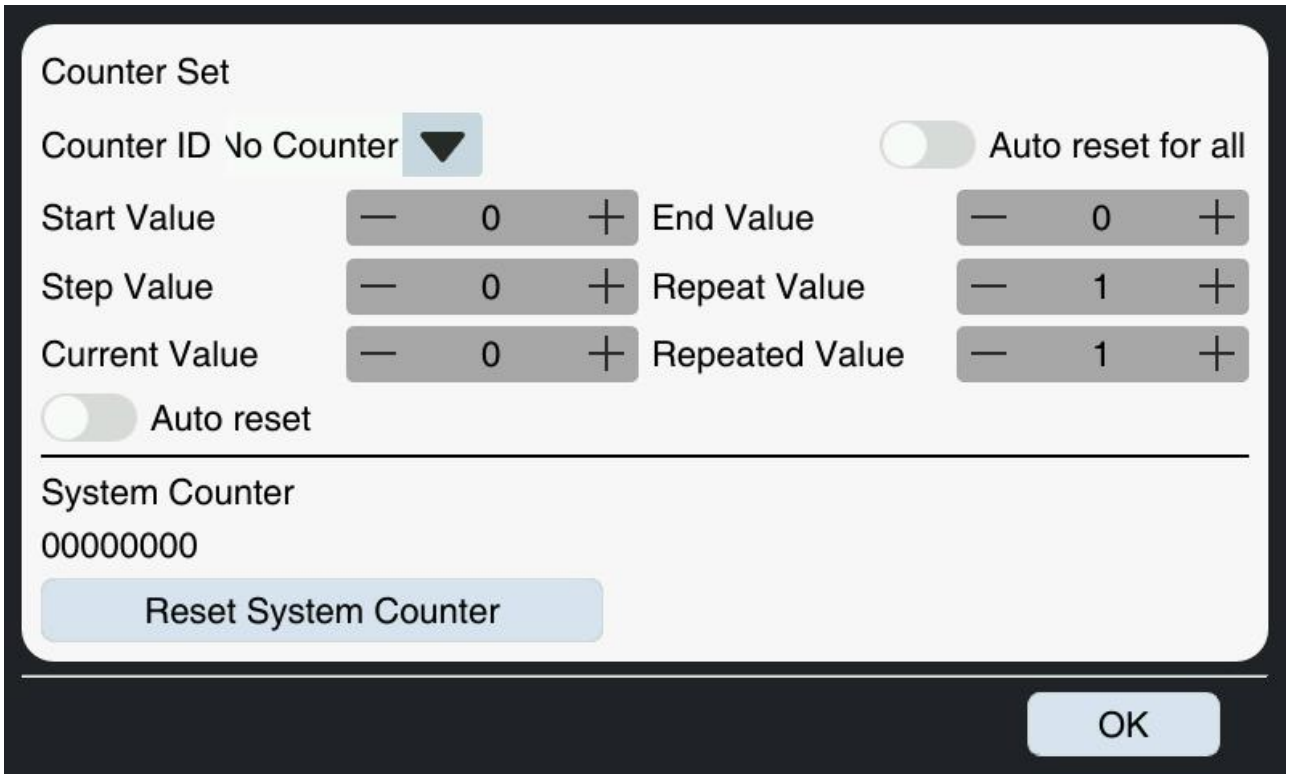



Figure 6-11 Counter Settings

## 6.4 Permission management

Click the button on the main interface to enter the user login interface, as shown in Figure 6-12. Enter the set password to log in to the corresponding user level (initial login password 1 level: 123 2 level: 123456 3 level: 321)

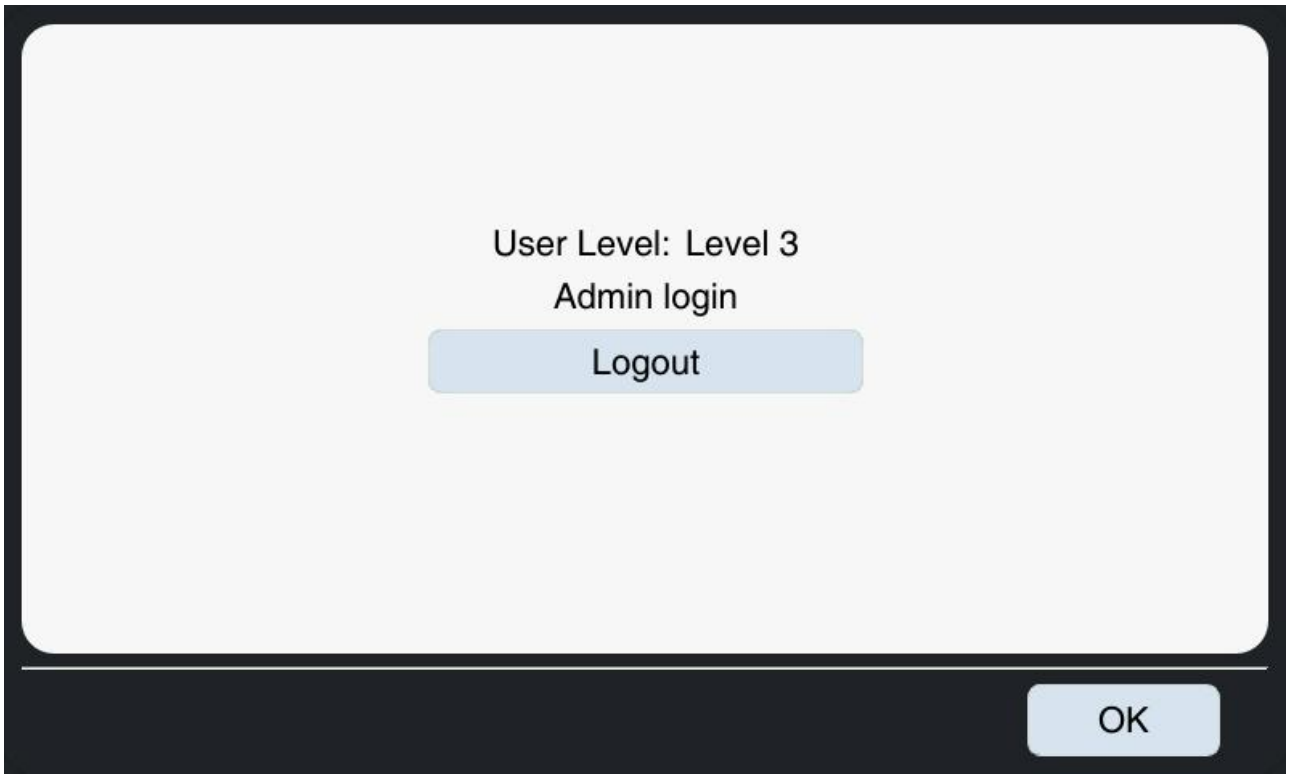



Figure 6-12 User login interface

# Appendix 1

| | |
|---|---|
| **d** | Date numbers without leading zeros (1 to 31) |
| **dd** | Date numbers with leading zeros (01 to 31) |
| **ddd** | Abbreviated week names (e.g. "Mon" to "Sun") |
| **dddd** | Full name of the day of the week (e.g. "Monday" to "Sunday") |
| **M** | Month numbers without leading zeros (1-12) |
| **MM** | Number of months with leading zeros (01-12) |
| **MMM** | Abbreviated month names (e.g., "Jan" to "Dec") |
| **MMMM** | The full name of the month (e.g. "January" to "December") |
| **yy** | Decades (00-99) |
| **yyyy** | Four-digit years |
| **h** | Hours without leading zeros (0 to 23, or 1 to 12 if AM/PM is used) |
| **hh** | Hours with leading zeros (00 to 23, or 01 to 12 if AM/PM is used) |
| **H** | Hours without leading zeros (0 to 23, i.e., using AM/PM display) |
| **HH** | Hours with leading zeros (00 to 23, i.e., when using AM/PM display) |
| **m** | Minutes without leading zeros (0 to 59) |
| **mm** | Minutes with leading zeros (00 to 59) |
| **s** | Whole seconds without leading zeros (0 to 59) |
| **ss** | Each second has a leading zero (00 to 59) if applicable |
| **AP/ap/A/a** | The AM/PM time is interpreted. AP must be "AM" or "PM", regardless of case. |
| **JD** | Indicates the day of the year |
| **JW** | Indicates the week of the year |

About custom dates.

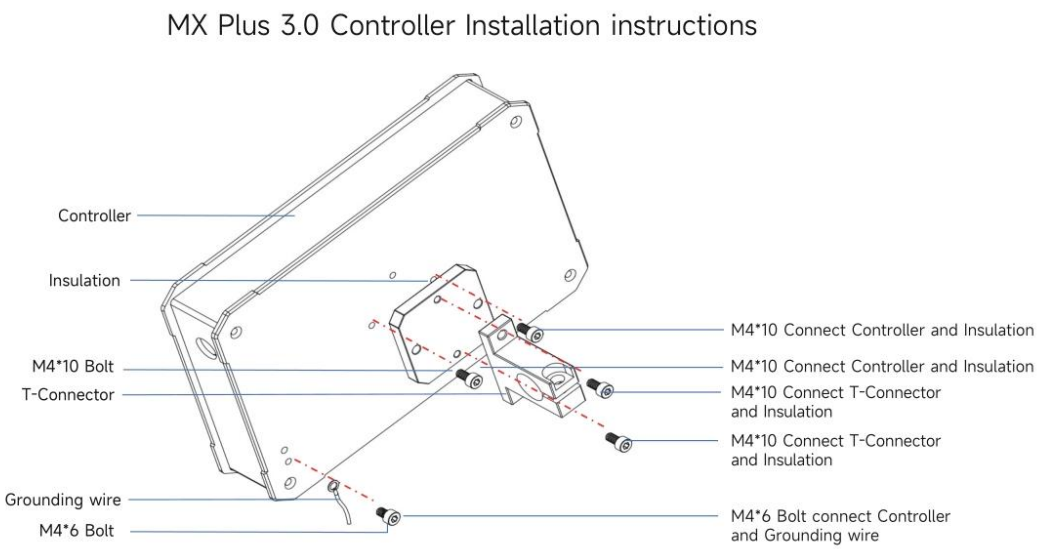
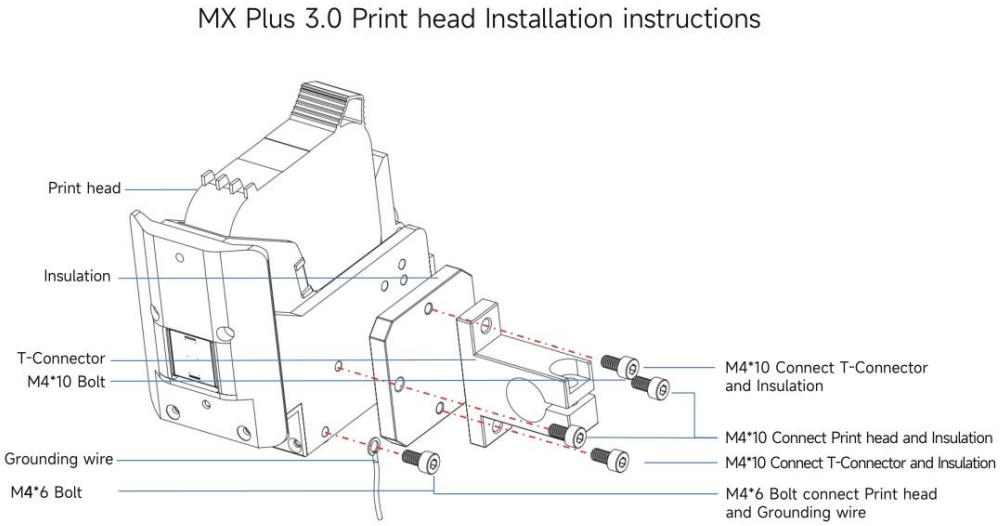
### Custom month: NR

### Customize the date

| ND | NN | NO |
|---|---|---|
| Sun | 01 | A |
| Mon | 02 | B |
| Tue | 03 | C |
| Wed | 04 | D |
| Thu | 05 | E |
| Fri | 06 | F |
| Sat | 07 | G |

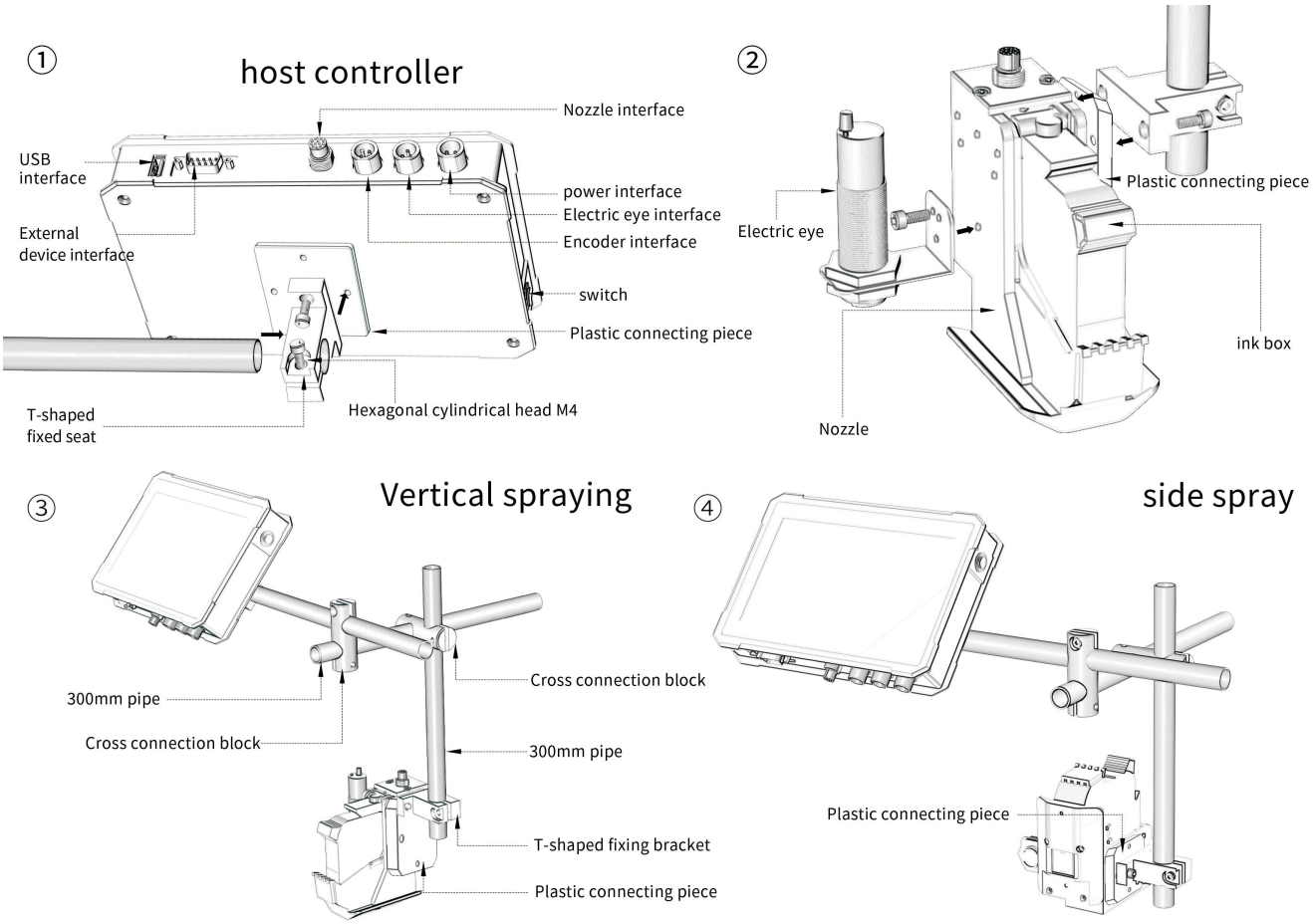
# Appendix 2

Schematic diagram of installation of plastic insulation block

| | |
|---|---|
| **main engine** |  |
| **blow head** |  |

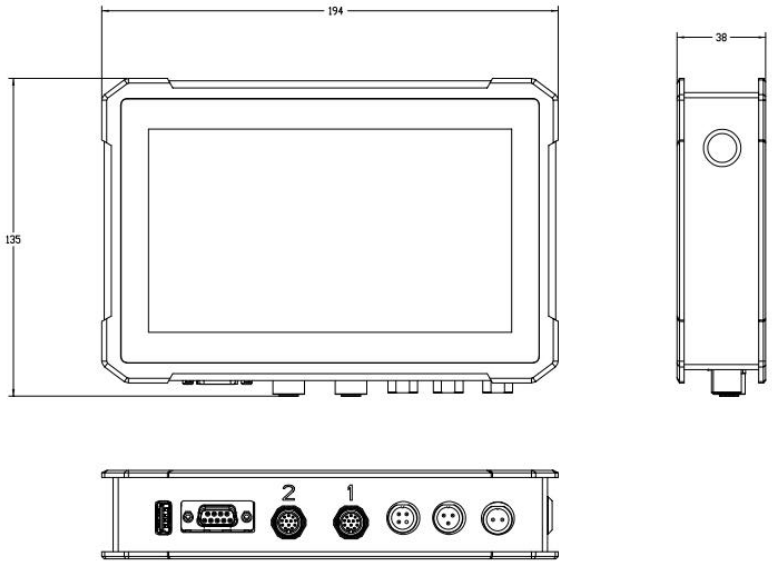
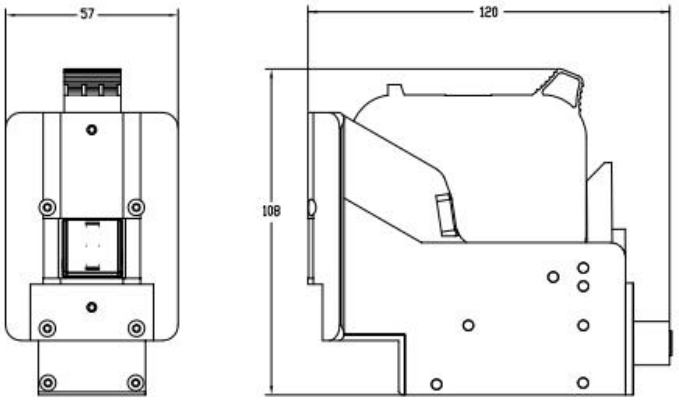
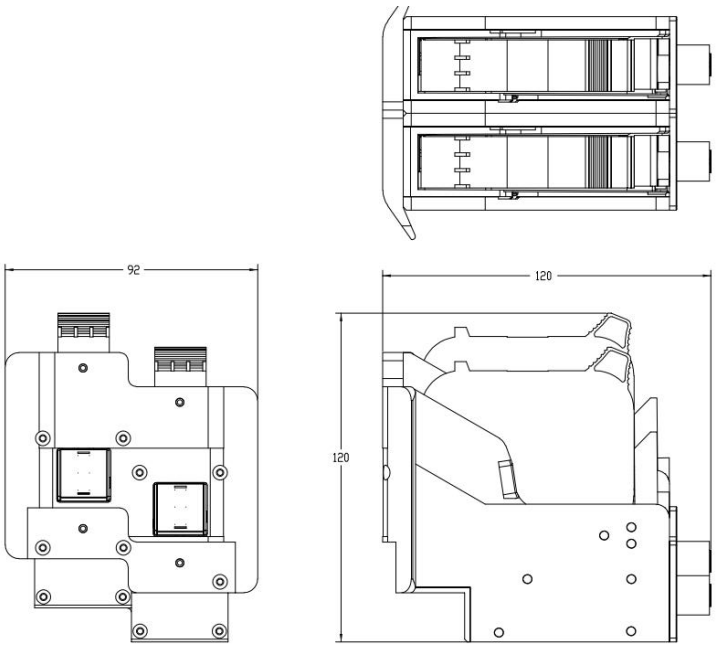
# Appendix 3

Schematic diagram of bracket installation



# Appendix 4

Dimensional drawing of the host and nozzle

| | |
|---|---|
| **main engine** |  |
| **Nozzle-single** |  |
| **Nozzle-double** |  |