

DTF 2402T WHITE INK HEAT TRANSFER PRINTER OPERATION MANUAL



Rricoma

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understanding of its performance, please be sure to read this manual thoroughly and

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Chapter 1 Safety Instructions

Please carefully read the following instructions before using DTF printer series, and please follow the warnings and instructions marked on the printer.

1.1 Important safety instructions

- Do not block the opening on printer enclosure.
- Do not insert any item into the slot of the printer, and pay attention not to splash liquid into the printer.
- The power supply type indicated on the printer label is allowed only. 110V or 220V AC power supply may
 be selected in different countries or regions.
- Be sure to connect all devices to a suitable grounded socket, so that the socket used will not be in the same circuit as a copier or air conditioning system that regularly switches between on and off.
- Be sure not to use the socket controlled by wall switches or auto-timers.
- Be sure to keep your computer system away from potential electromagnetic interference sources, such as loudspeakers or cordless phone stands.
- Do not use damaged or worn power cords.
- If an additional power cord is used, mind that the total amperage of the device into which the additional power cord is inserted shall not exceed the rated amperage of the power supply. In addition, mind that the total amperage of all devices inserted into the wall shall not exceed the rated amperage of the wall socket.
- Do not attempt to repair the printer by yourself.
- In any of the following cases, please cut off the power supply and ask an experienced professional for maintenance help:
 - a. When the power cord or plug is damaged;
 - b. When liquid is splashed into the printer;
 - c. When the printer falls or the enclosure is damaged;
 - d. When the printer is unable to run normally or has significant changes in performance.

1.2 Precautions when using the printer

- Do not move the printer head by hand, This may damage the printer.
- Always turn off the printer by pressing the power switch. When pressing the power switch, the power supply will be cut off. Before cutting off the power supply, please do not unplug the printer or USB cable.



Prior to moving the printer, please make sure that the printer head is in the initial position and secure it.

1.3 Precautions when using the ink bottle

- Keep the ink bottle out of the reach of children.
- In case of contact with the skin, please wash with soap and water. In case of contact with eyes, please rinse with clean water immediately.
- Do not shake the ink bottle, this may lead to ink leakage.
- After each ink bottle has been used for a period of time (usually three months), remove it immediately for thorough cleaning and air drying. Note that the new ink bottle shall be kept clean for high printing quality.

1.4 Printer installation requirements

• Site preparation

Users are liable for observing all installation requirements and implementing these requirements during operation. If not, the printer may not run smoothly.

Work area ink bottle

Work area refers to the area close to the DTF printer (hereinafter referred to as the Device), as shown in the figure below. It should be pointed out that users shall guarantee the safety of operators within the area, and the printer dimensions are 1336mm*658mm*1400mm.

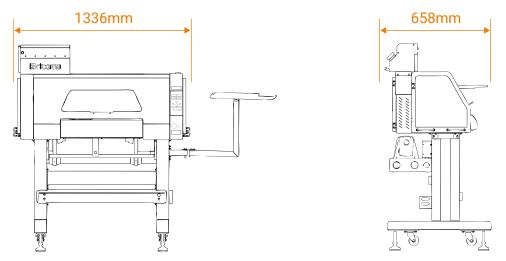


Figure 1: Schematic Diagram for Work Area Around DTF Printer (Unit: mm)



Environmental requirements

The Device shall be kept away from jointing equipment (fabric feederliner) or other RF sources. The floor shall be easy to clean without dust or static electricity. In order to help the operator and user determine accurate colors, neutral grey decoration and pure white (daylight lamp) lighting shall be used as much as possible. The Device shall be installed in a clean, dust-free atmosphere with relative humidity controlled within the following range:

Altitude: below 1000m Temperature: 15 - 25°C Relative humidity: 45 - 65%.

Space reserve requirements

Space shall be reserved by 2.0m in the front, 1.0m in the back, and 1.0m each on the left and on the right for the Device. In addition, the reserved space shall also include 3m above the ground.

Moreover, space in the front and back of the Device shall also be reserved to facilitate the loading and unloading of screen and consumables.

Safety requirements

a. Fire prevention

and must be clearly identified to meet the requirements of professional safety regulations.

Inks shall be stored strictly in accordance with relevant local fire prevention regulations on the use and storage of combustible items. Carbon dioxide and powder fire extinguishers shall be placed in a visible, accessible place of all channels. They shall be placed near the Device and the storage cabinet (storeroom) of non-flammable liquids

Inks and solvents must be stored in a special storage cabinet for non-flammable liquids or a separate storeroom,

b. Ventilation

In order to prevent the accumulation of volatile gases from causing risks, there must be adequate ventilation to ensure that the air in the work area is changed about 6 to 8 times per hour, and the vents shall be low enough that volatile gases cannot accumulate near the floor. When fabric passes through the dryer, an exhaust gas system is required to remove solvents evaporating from the inks.

Note: Solvent gases will accumulate near the floor if the specific gravity is greater than the air.

The electrical equipment installed near the work area must meet the GB/T standard and the provisions of the national electrical regulations on Class I and Class II venues, and shall be installed by professional electrical contractors with corresponding qualifications. Also, the handling of hazardous wastes shall be in line with the special storage and handling requirements stipulated by relevant departments.

or in accordance with the local fire prevention regulations.



• Electrical requirements (UPS and power regulator are highly recommended)

As a DTF printer uses a single-phase power supply, the printer must be well grounded. (The voltage of ground wire and zero wire shall not be greater than 0.3V, and the grounding resistance shall be lower than 3Ω .) The supply voltage shall be $220V(\pm10\%)$ AC 50Hz or 60Hz. In addition, users must have professional electrical engineers or contractors install the power output. The rated values of the circuit breaker are as follows:

Power supply / Volatage	AC 220 V	AC 110 V
Single - Phase	10 A / Phase	20 A / Phase

The maximum power consumption shall be lower than 2kW, and the average power consumption shall be 1kW. UPS may be 2KVA and can be connected to the power for purposes other than heating.

The distance of the main power socket from the power inlet of the Device shall not be greater than 2m.

DTF printer power

About 1000W, so that regulated power supply is recommended. Installation of ground wire: Install the ground wire to the common ground plate within the Device, then dial the multimeter to the range of AC 200V, connect one meter hand to the ground wire and another hand to the zero wire of AC input. In addition, make sure that all the measured values are smaller than 1.

1.5 Important safety notice

Warning

These instructions must be strictly observed to avoid bodily harm.

Caution

These instructions must be strictly observed to avoid equipment damage.

Notice

This manual contains important information and useful tips for printer operation.



Chapter 2 Machine Diagrams

2.1 Introduction to machine function

· Automatic paper feeding

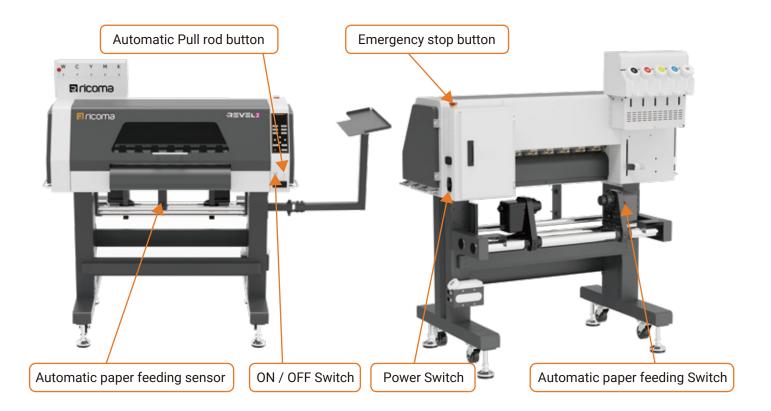
Switch on printer before feeding paper. Automatic paper feeding stabilizes the materials to prevent any dislocation.

• 24-hour white ink cycle

Keep machine running at all times to prevent white ink from drying out. In case of emergency, press the emergency stop button to power off.

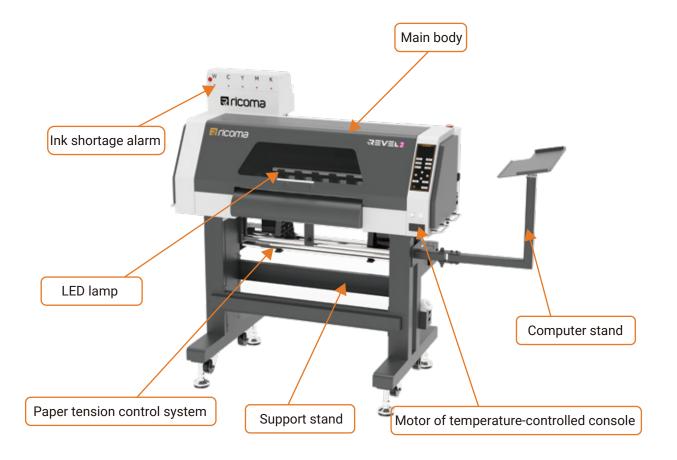
• The following diagram shows how the machine its parts function:

Keep machine running at all times to prevent ,white ink from drying out. In case of emergency,press the emergency stop button to power off.





2.2 Machine Structure

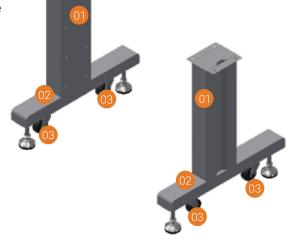


· Stand installation

a. Install the left foot and the right one under bottom of the left iron stand and the right one and fix with hexagon socket screws. Install the castors with brakes onto the left foot and the right one and fix them with hexagon socket screws.

b. Note: Lock along the arrow directions as in the figure below.

- 01 Left / Right iron stand
- Left / Right foot
- Castors with brakes

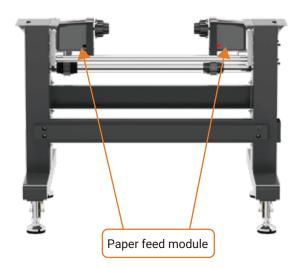




c. Have the pull rods and the cross beams installed between them and fixed with hexagon socket screws as shown in the figure below.

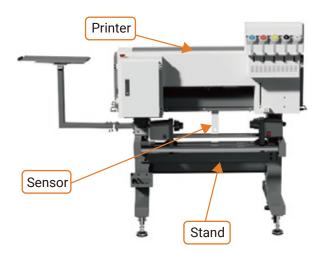


d. Use hexagon socket screws to fix the support retaining plate with the left iron stand, the right iron stand, the left foot and the right foot, and then fix its left and right ends. Put the assembled paper feed module onto the aluminum pipe and then mount them onto the left support and the right support. Refer to the figure below.



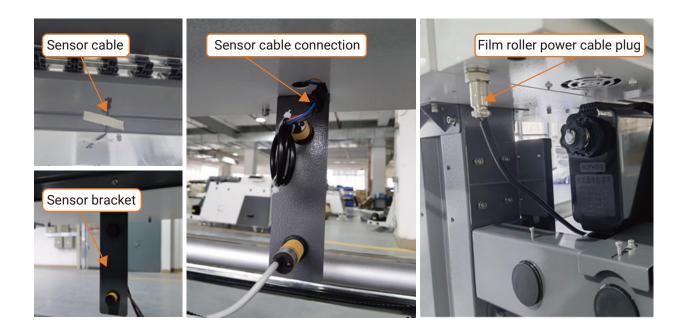


- · Printer and stand installation:
 - a. Put printer on stand evenly, with hexagon socket screw to fasten printer on stand, see the photos below:



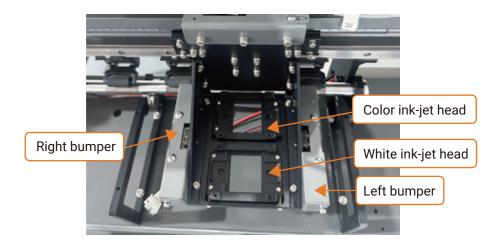


b . Remove the masking tape from printer sensor cable, then install sensor bracket beneath printer with round head screw, end with sensor cable plug in. Film roller power cable should connect to proper socket in power box, now installation completed. See the photos below:





2.3 Structural drawing of printer head view



2.4 Left view of printer box



2.5 Right view of printer box





Chapter 3 Basic Printer Parameters

3.1 Basic parameters

Model	DTF-2402T
Print head	13200
Number of print-heads	2
Printing width	≤600mm
Print color Configuration	Color + white (KMYC + WWWW)
Applicable media	PETHot stamping printing film
Printing Speed Resolution	4 Pass 720 x 1200 15 M² / H; 6 Pass 720 x 1800 9.5 M² / H; 8 Pass 720 x 2400 7.5 M² / H
Ink type	Paint ink
RIP software	SAI Flexi (PP)
Color Management	ICC or density curve
operating system	Win7、Win10
Heating and drying functio	Printing front and rear arc plate heating and front guide plate heating
Trolley anti-collision functio	Both ends of the trolley are equipped with touch anti-collision alarm emergency stop devices
Automatic feeding function	Automatic tension discharging with probe induction
Paper shortage alarm function	Paper shortage alarm during printing, automatic stop printing
Circulating stirring function	The white ink is independently powered, and it can be stirred regularly and indefinitely in the off state
Ink shortage alarm function	Automatic alarm for low ink volume of ink bottle
Print platform lighting function	Print platform LED illumination



Automatic lever lifting and paper pressing function	One key automatic lifting pressure bar for platform feeding
PC assembly function	Built in computer and monitor combined bracket, saving space
Platform suction	Adjustable suction size
Print interface	Gigabit network port
temperature	15°C-25°C
humidity	45%-65%
Feeding function	Automatic induction discharging
Rated power	800W
Power input	50HZ/220V 15A
Net weight	154KG
Gross weight	Machine + wooden case 205kg
Machine dimensions	Length x width x height 1336mm x 658mm x 1400mm
Package size	Length x width x height 1515mm x 1145mm x 1040mm

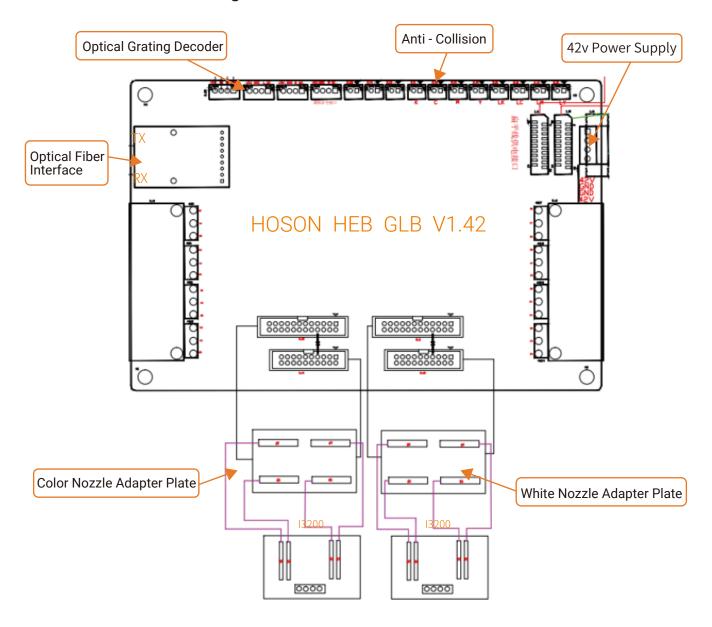


Chapter 4 Hardware Installation

4.1 Print system introduction

DTF print control system consists of three parts, separately are main board, nozzle control panel and control software, which use USB 2.0 ports and PC connections.

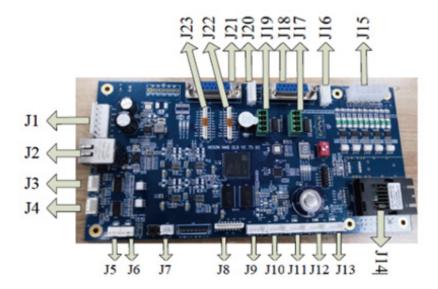
4.2 The nozzle control panel and nozzle arrangement are shown in below figure:





4.3 Main board interface is shown in below figure

The DTF printing control system is composed of three parts: the motherboard, the print head control board, and the control software, which are connected to the PC through the USB2.0 port.



4.4 Main board interfaces and definitions

Main board interfaces: Power interface, high-speed communication interface, low-speed communication interface, control interface.

NO.	Interface definition	NO.	Interface definition	
J1	Power (24V/42V) input interface	J 9	RS 485 expansion interface	
J 2	Gigabit Ethernet interface	J 10	Optical grating signal input interface	
J3	Ink stack lifting motor interface	J 11	Left limit interface	
J 4	Ink stack scraper motor interface	J 12	Right limit interface	
J 5	Ink stack scraper motor limit interface	J 13	Paper out signal detection interface	
J 6	Ink stack lifting motor limit interface	J 14	Optical Fiber interface	
J 7	Ink supply reset interface	J 15	15 24V control signal output interface	
J 8	Control panel interface	J 16	Y-axis stepper motor single-ended signal output interface	

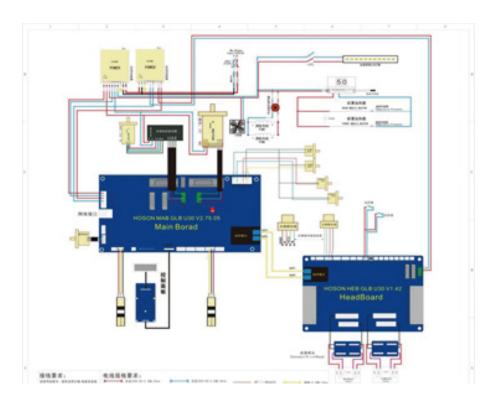


NO.	Interface definition	NO.	Interface definition
J 17	Y-axis motor single-ended signal output interface	J 21	X-axis motor differential signal output interface
J 18	Y-axis motor differential signal output interface	J 22	24V flat cable power supply interface;
J 19	X-axis motor single-ended signal output interface	J 23	24V flat cable power supply interface
J 20	X-axis motor limit interface		

Note: Main board design requires two lines of 24V power supply, so as to ensure stability in main board during operation. Meanwhile, it is required to fix set screws to printer enclosure.

4.5 The installation and wiring diagrams of printer plate card are shown in below figure

The printer control system consists of three parts: main board, head board and control software, which are connected to computer by cable ports.





Chapter 5 Software

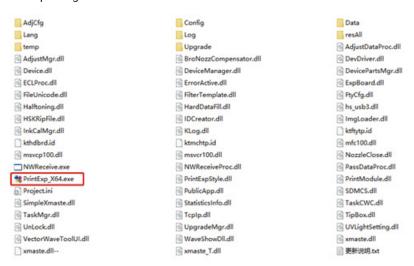
5.1 Software installation

Print Exp_X64 software is a kind of printer management software, which is mainly used to set various printer parameters, calibrate and adjust printer nozzles, maintenance, nozzle cleaning and printing operation, etc.

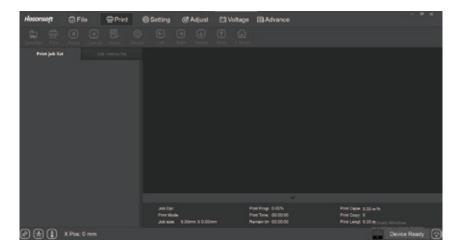
All operation are performed using Print Exp_X64.

The printing management software shall be installed according to the following steps:

a. As the existing computer systems include Win7, Win10, etc, the installation steps are as follows: First, unpack the software package.



b. Open the unpacked folder, double click Print Exp_X64.e x e to enter the main interface of the software, as shown in below figure:

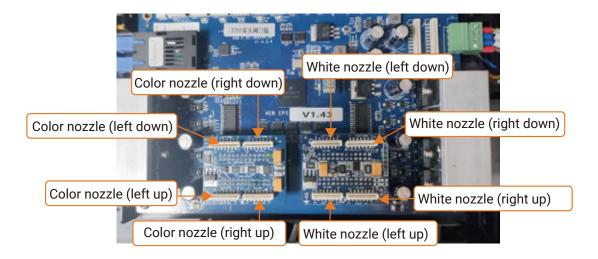




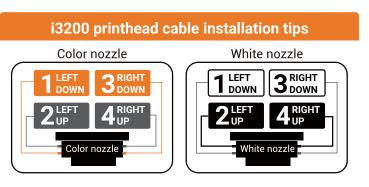
Chapter 6 Nozzle Installation

6.1 The arrangement of plate nozzles is shown in below figure:

Follow these steps to install the print management software.



6.2 Nozzle USB cable connection is shown in below figure:

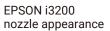




Note: Regardless of the installation method of the nozzle plate, the connection is unique. In case of a wrong connection, it may probably burn the nozzles or head board.

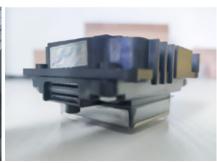








Arrangement of nozzle ink inlet: K C M Y W W W W



Nozzle USB cable interface



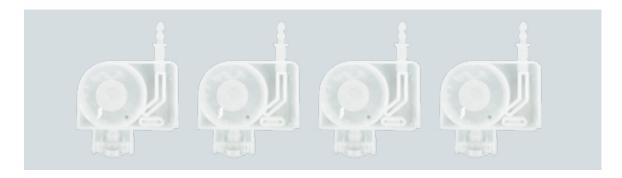
Arrangement of ink bottle KMYCW



Nozzle plate USB cable interface



Gigabit network cable



Ink sac (one nozzle requires 4 ink sacs)



USB cable: 14 - core flat cable of nozzle and head board (one nozzle requires 4 cables)



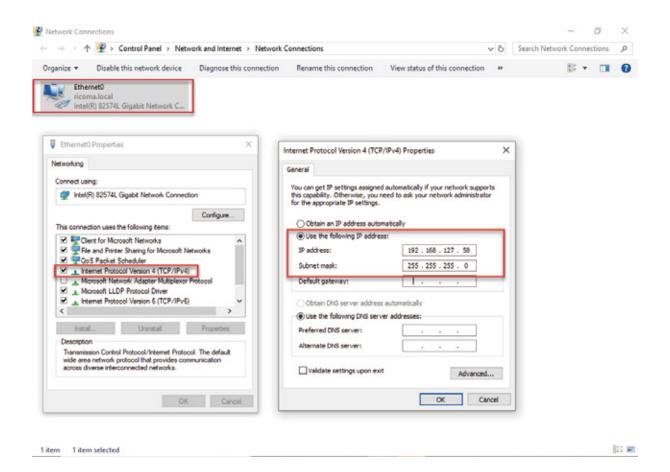
Chapter 7 Computer Connection Settings of Printing Software

7.1 Set an IP address for the computer network

Put the cursor on the "Network Neighborhood" icon, right click the mouse, choose "Local Connection" and right click the mouse while the cursor is on the "Attribute" option.

On the computer

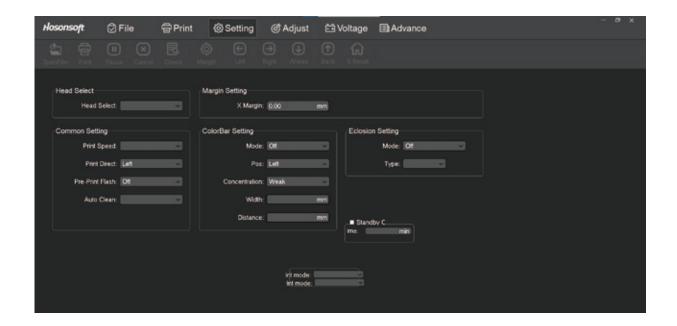
do networking setting with user-defined IP address 192.168.127.58; and default subnet mask 255.255.255.0.





7.2 Software general Settings

• Click "Setting" to enter the interface with conventional printing settings.

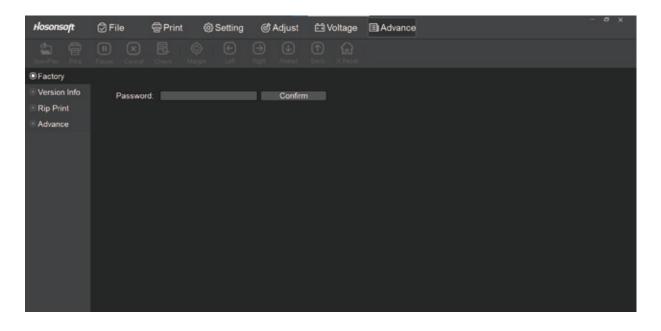


S.N.		Name	Functional description
1	1 Nozzle selection		Nozzle selection settings are available only for specific models.
2	White odge	X-axis white edge	Set the initial position for printing
2	White edge	Y-axis white edge	Set the initial position for printing
		Print speed	Set print speed to low, medium and high speed
	3 Conventional settings	Print direction	Set print direction to left, right and two-way print
3		Flash injection before printing	Set whether flash injection or not before printing
ostunge	e e e e e e e e e e e e e e e e e e e	Automatic cleaning	Set ON or OFF before printing
	Paper feeding direction	Select paper feeding direction	
4	Color stripe settings	Color stripe position	Separately set color stripe position to left stripe, right stripe, left and right stripe and stripe off.



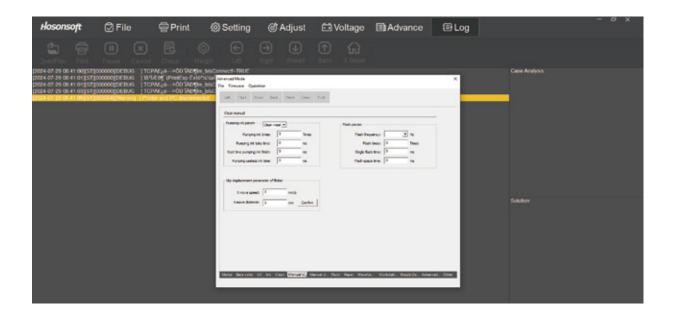
S.N.	Name		Functional description
	Color stripe pattern	Select stripe pattern during printing	
4		Color stripe concentration	Select stripe concentration during printing, i.e. low, medium and high.
4	Color stripe settings	Color stripe width	Select stripe width during printing
		Color stripe spacing	Select stripe spacing during printing
_	5 Feather settings	Feather pattern	Select feather pattern
5		Feather type	Select feather type
6	Advanced	Channel control	Control nozzle data
6	functions	Mirror print	Control whether the pictures are horizontally flip printed
7	Light		Ink drying and curing
0	Automatic white skipping	White skipping mode	Select white skipping mode, i.e. white skipping off, stepping white skipping and continuous white skipping
8		Automatic reset	Select whether to automatically reset

• Click "Advanced" and "Factory Settings" in sequence and enter password "111111" to enter the internal function setting.

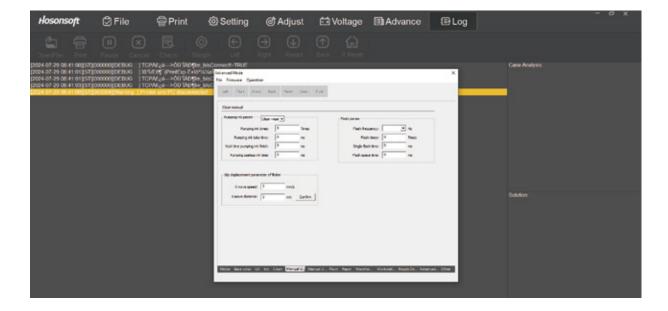




• For the main ink station position, the ink station height and the scraper height can be set.

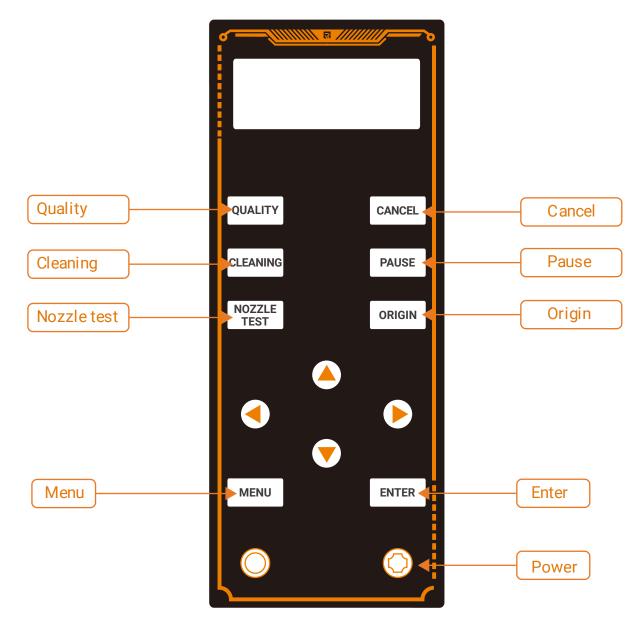


 In the "Manual cleaning parameters" zone, the cleaning parameters can be adjusted. For other functions, choose their defaults.





7.3 Control panel



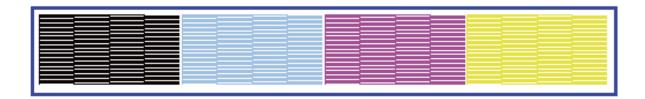
- Left/right moving button: For moving the printer head leftward or rightward in the standby status, or browsing in the menu status;
- Paper feed/unwinding direction button: For feeding and discharging the printing carrier in the standby status, or decreasing or increasing the item quantity in the menu status;
- Exit button: For backing to the previous menu in the menu status;
- Enter button: for entering the main menu page.



Chapter 8 Printing Calibration and Adjustment Steps

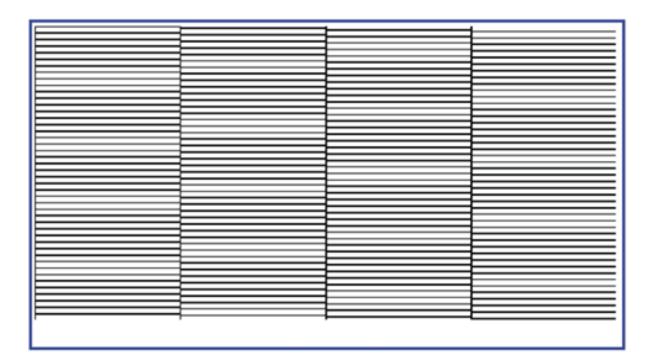
8.1 Nozzle test function introduction

• Click "Nozzle test" to print nozzle pattern. The sample pattern is shown below:



• Nozzle calibration diagram

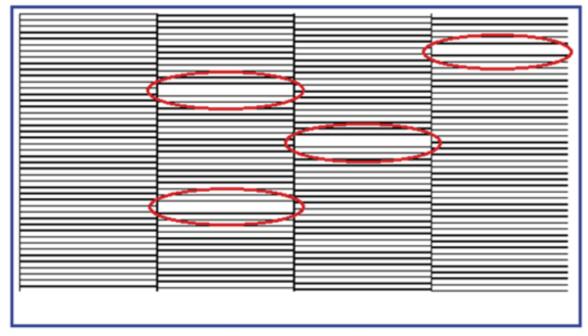
Locally enlarge the black state pattern in normal and abnormal cases, as shown below:



Nozzle State Pattern in Normal Case



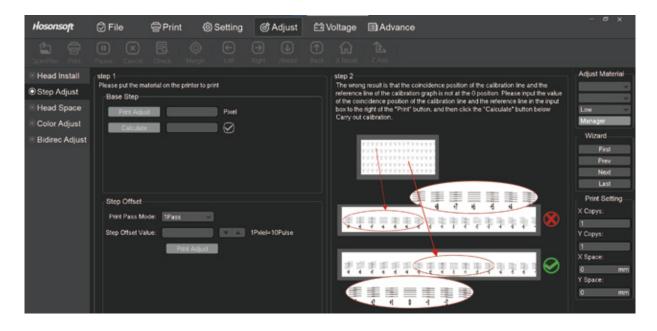
The below state pattern shows there may be blockage, which requires cleaning until nozzle ink injection reaches the best effect.



Nozzle State Pattern in Abnormal Case

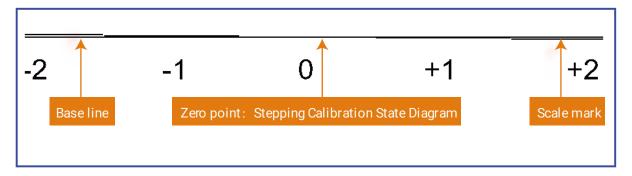
8.2 Stepping calibration function

• Click "Stepping calibration" for printing.



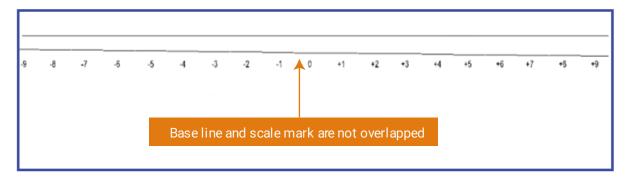


• If stepping adjustment is normal, base line and scale mark will be completely overlapped at zero point, as shown in Stepping Adjustment State Diagram 1.



Stepping Adjustment State Diagram 1

• If stepping adjustment is abnormal, base line and scale mark will not be overlapped, as shown in Stepping Adjustment State Diagram 2.



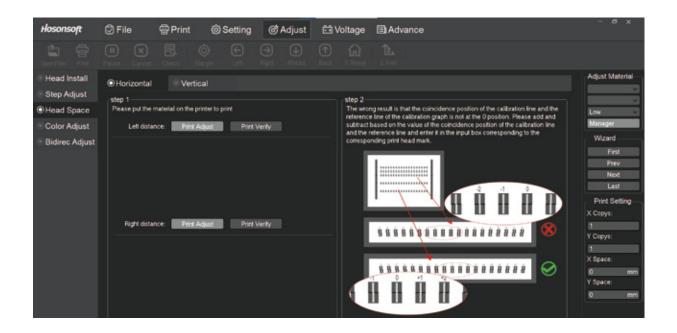
Stepping Adjustment State Diagram 2

In this case, adjustment is required. First, enter the adjustment value, click to calculate and reprint the print pattern until the baseline and scale marks are completely overlapped at the zero point.

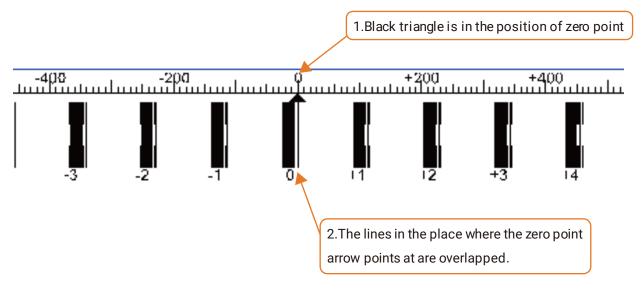


8.3 Calibration of horizontal spacing between nozzles

• Click "Nozzle spacing" for printing.



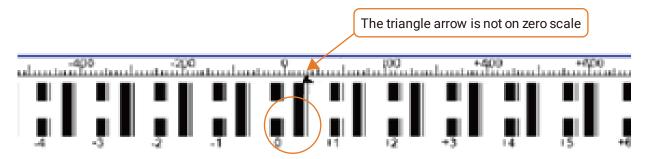
• If the print head spacing is aligned normally, the print pattern will be shown as follows.



Horizontal Nozzle Spacing Alignment State Diagram 1



• If the print head spacing is aligned abnormally, the print pattern will be shown as follows.



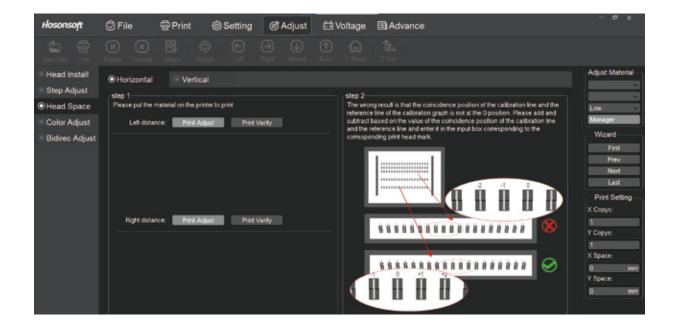
The left and right black lines are not overlapped

Horizontal Nozzle Spacing Alignment State Diagram 2

In this case, alignment is required. First, enter adjustment value in H2, click to calculate and re-print the print pattern until the zero point on the scale is on zero scale.

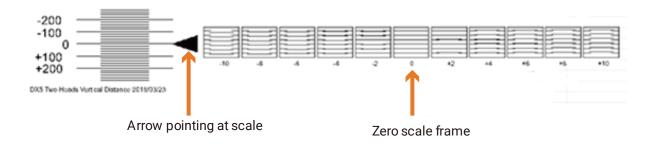
8.4 Calibration of vertical spacing between nozzles

• Click "Nozzle calibration" for printing.



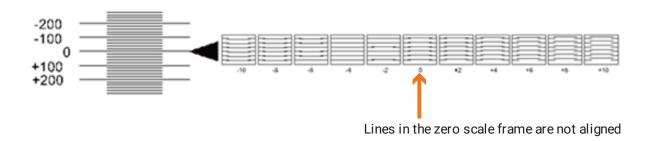


• If the alignment of vertical spacing between nozzles is normal, all lines in the zero scale frame are parallel, and the left arrow points at zero position, as shown in Vertical Nozzle Spacing Alignment State Diagram 1.



Alignment status diagram of nozzle longitudinal spacing 1

• If the adjustment of vertical nozzle spacing is abnormal, all lines in the zero scale frame are parallel to -4 position, indicating the alignment state of vertical nozzle spacing.



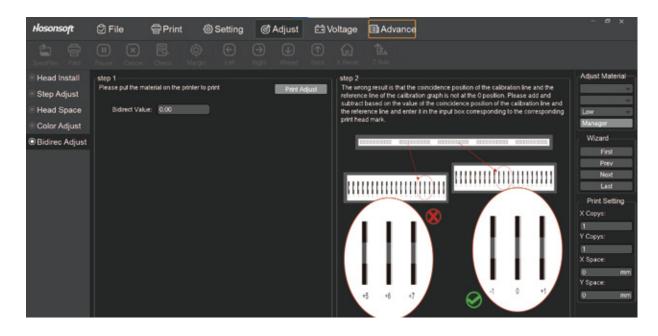
Alignment status diagram of nozzle longitudinal spacing 2

In this case, it is required to make adjustments based on the original reference adjustment until all lines in the zero scale frame are parallel at zero point, i.e. left arrow points at zero position.

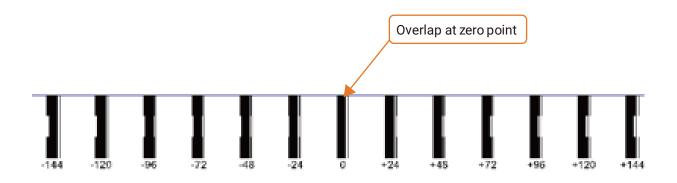


8.5 Bidirectional calibration

• Click "Print calibration diagram" in bidirectional calibration for printing.



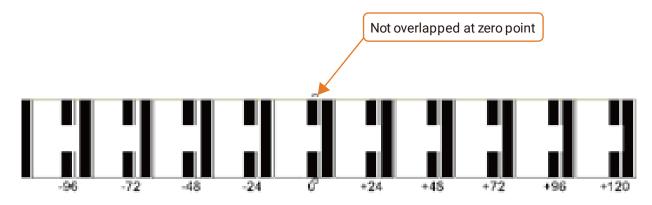
• If bidirectional calibration is normal, the liens will be overlapped at zero position, as shown below.



Bidirectional Calibration State Diagram 1

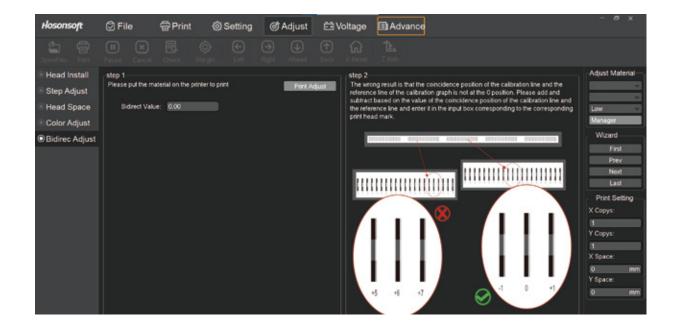


 If bidirectional calibration is abnormal, the lines will not be overlapped at zero position, as shown below.



Bidirectional Calibration State Diagram 2

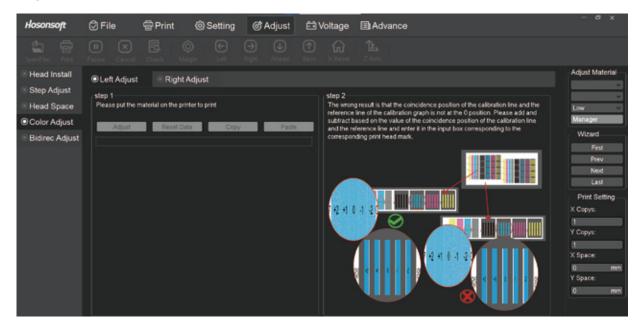
• In this case, it is required to enter adjustment value for re-adjustment.





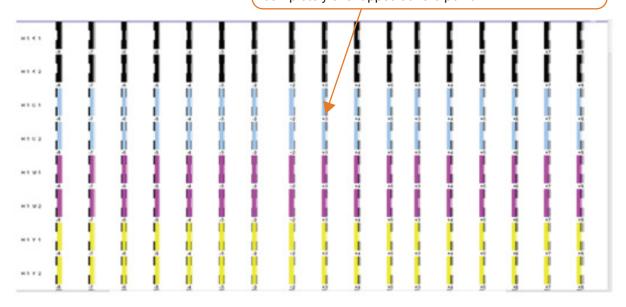
8.6 Polychrome calibration

 Click "Print left/right calibration diagram" under polychrome calibration interface to print calibration diagram.



• If color adjustment is normal, the lines will be overlapped at the zero position, as shown below.

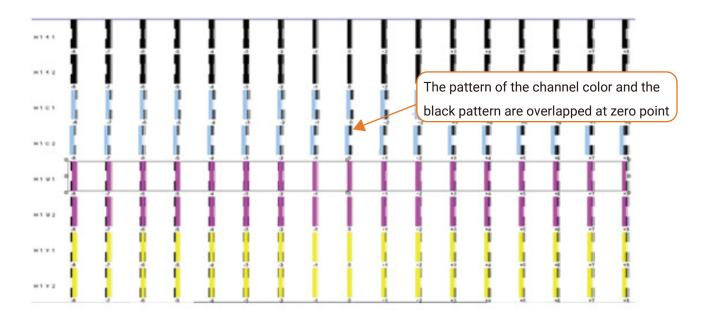
The pattern of the channel color and the black pattern are completely overlapped at zero point.



Polychrome Calibration Diagram 1

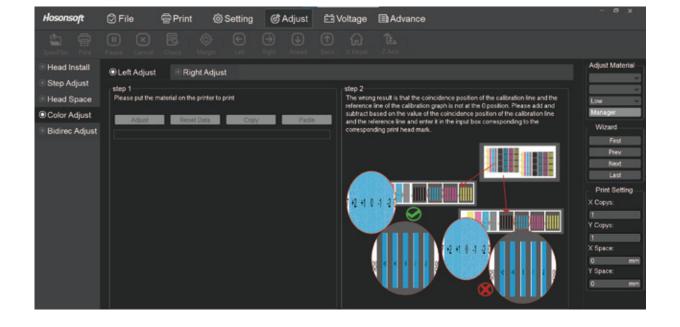


• If color adjustment is abnormal, the lines will not be overlapped at zero position, as shown below.



Polychrome Calibration Diagram 2

• In this case, it is required to enter adjustment value for re-adjustment, as shown in below figure.





Chapter 9 Installation and Use of Flex PRINT



FlexiPRINT 19 Edition

Software Installation, Activation, and Usage

- I. Software License Activation and Download
- II. FlexiPRINT Software Installation



III. Introduction and Usage of FlexiPRINT Interface

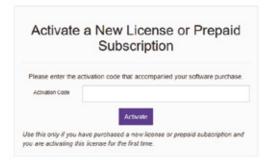


I. Software License Activation and Download

Click to visit SAi Cloud at https://www.saicloud.com

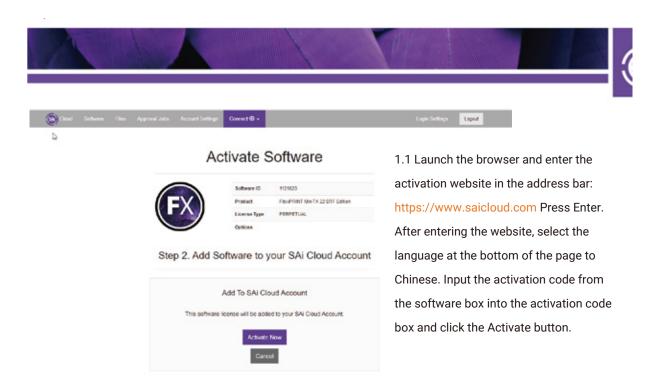


Welcome to the SAi Cloud.



Lo	gin to SAi Cloud Account
Email	
Fessivors	
	Login
	Forgot Password?
an overview of y	ave already activated your license and are checking back in for our licenses, managing your subscriptions, editing your tion or reviewing approval jobs.



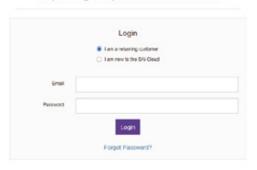




Activate Software

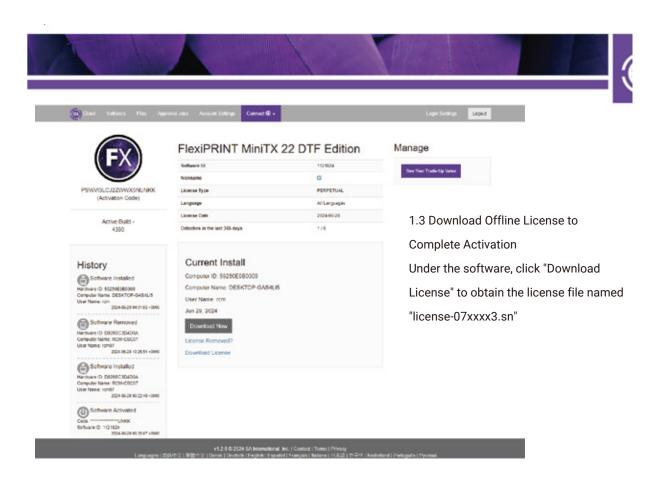


Step 1. Login to your SAi Cloud Account



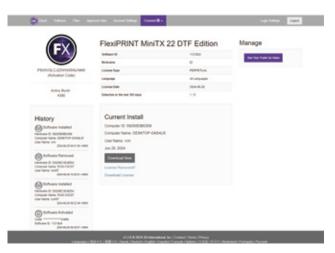
1.2 Select "I am a returning customer", enter your email address, and create an account. A confirmation email will be sent to your mailbox. Go to your email, click the link in the email, and input your account details and other registration information to complete the account registration.



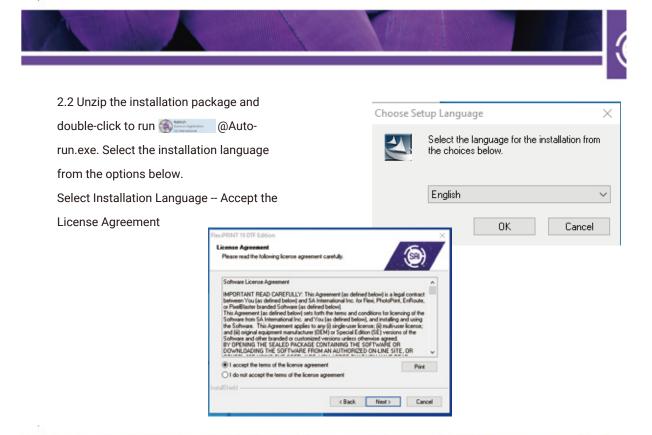


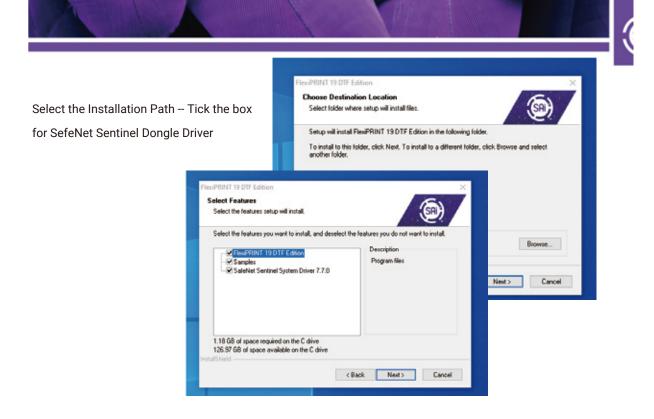


2.1 Obtain the FlexiPRINT installation package from the USB flash drive in the package or click Download Now (https://www.saicloud.com) to download the software installation package.



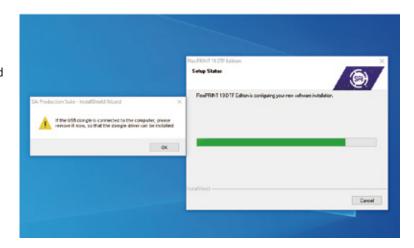








When installing the SafeNet Sentinel dongle driver, you need to unplug the dongle.



When connected to the internet, you can directly enter the activation code to complete the installation authorization. After the installation is complete, plug in the dongle and open the software.









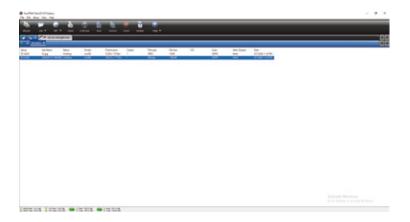
In offline mode, you can authorize the software by importing the license file (license-07xxxx3.Isn license file). After the installation is complete, plug in the dongle and open the software.







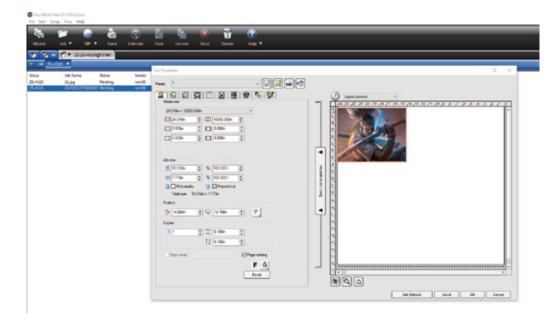
III. Introduction and Usage of FlexiPRINT Interface







Menu Bar and Toolbar - Set properties, add jobs, material-saving layout, etc.





Job Properties - Edit layout, color management, print marks, spot color processing, etc.





Chapter 10 Maintenance Instructions

- Before powering on the product each day, check whether the nozzles are blocked and clean them if ink discontinuity is detected.
- The operating temperature is 15°C-25°C-; the operating relative humidity is 45% to 65%.
- Before powering off the product each day, check the nozzles and clean them if ink discontinuity is detected.
- Before powering off the product each day, make sure the nozzles and the ink station are aligned and contact each other.
- Do use color bars in printing to avoid nozzle blockage due to long-time discharge failure of the ink of certain color.
- In printing, keep the printing film from scrapping the nozzles.
- Make sure the gratings are not dusty. Wipe them with dust-free cloth every one to two weeks.
- Wipe the guide rail with sewing machine oil every two to three weeks.
- Wipe the scraper with dust-free cloth at regular intervals.
- Clean up the ink on paper in time to avoid nozzle scrapping by it after accumulation.
- Clean up the ink on the printer head baseplate at regular intervals.
- Clean the ink close to the ink stack cap at regular intervals to keep the ink stack cap clean.
- If the product is not going to be used for a long time, pour distilled water or special coating ink cleaning solution onto the
 ink stack cap till the nozzles are immersed and clamp the ink pipes and the ink suction pump.
- When the printing film is not used, wrap it with fresh-keeping film to keep it from moisture.
- When the hot melt adhesive powder is not used, seal it with a bag to keep it from moisture.