SOP810

Intelligent Computer Inkjet Printer

Instruction Manual

Preface

The intelligent computer inkjet printer adopts 10.2-inch true color LED touch screen and internationally advanced 32-bit ARM embedded structure, operates built-in linux system and provides limitless document storage, featuring intelligence and convenience equal to that of general computers and achieving great improvements in man-machine communication and intelligent operations. As for electric circuit, key technologies like spray code stability control, data protection are used for multi-aspect innovations and design optimization; as for the ink circuit, four-pump-in-one design of diaphragm pump advanced in the industry is adopted. The inkjet printer has powerful software editing function and high stability, and is an epoch-making product with perfect combination of technology and performance. It is capable of accurately printing production date, expiry date, batch number, model number, specification, trademark, anti-counterfeiting mark, picture and text, etc. on the surfaces of food, beverage, pharmacy, wire and cable and other canned products, plastics packaging and paper packaging products and other objects of different materials and shapes. Please read this manual carefully while using, so as to achieve best use effect.

I. Technical Parameters

1.1 Physical Description

- External dimensions of machine: 550X430X280mm
- Machine weight: 35kg

1.2 Installation Conditions

- Case: Vertical
- Nozzle：In any direction

1.3 Use Conditions

- Environmental temperature： 0-40℃
- Environmental humidity：0-90%RH (No dew condensation)

1.4 Power Supply

- Power supply: 220±10%VAC，50HZ，50W 220±10%VAC，50HZ，50W， good grounding

1.5 Performance Parameters

- Spay Printing:

Spay printing on any place of the surface of any material;

Spay printing information of 1 to 4 lines;

Character height (subject to the distance between nozzle and spray printing object, character dot matrix and voltage), its height range is 1.8-15MM.

- Selection of Character Dot Matrix

Western language: 5×5, 4×7, 5×7v, 5×7d, 5×7h, 5×7i, 5×7L, 5×7w, 7×9, 6×12, 8×16, 12×16, 12×24

Chinese: 8×8, 10×10, 12×12, 16×16, 16×16c,

20×20, 24×24

● Optional Spay Printing Characters

Arabic numerals： 0-9；

English letters： A-Z、a-z；

Special symbols： ='$+-/（）；，？%￥

Various Functions

Count spray printing objects by single or batch, automatic clock;

Automatic control of spray printing speed;

Automatic control of ink viscosity;

With optical synchronizer equipped externally, it is capable of adapting to speed changes of the conveyor belt while printing.

With raster synchronizer equipped externally, it is capable of length-fixed printing on the work-piece and recording (in meter).

II. Principle and Structure of the Machine

2.1 Principle of Inkjet Printing

This computer inkjet printer adopts ink jet deflection amount to jet printing ink dots and form characters.

All characters are composed of a certain dot matrixes, as shown in Figure 1 and Figure 2.

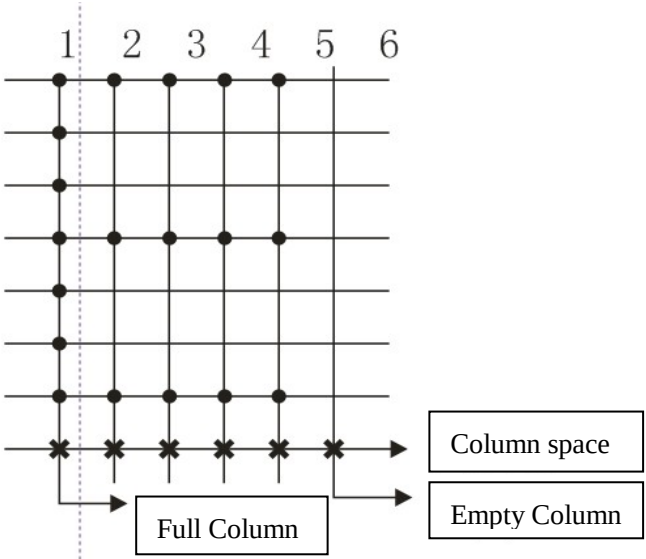


Figure 1: 7*6 matrix

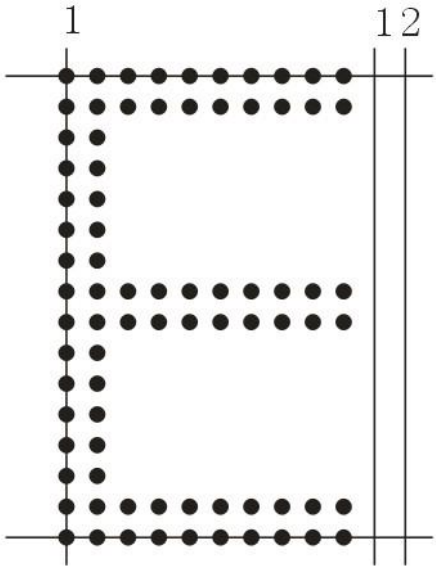


Figure 2: 16*12matrix

Pressurized ink enters into the spray chamber which is equipped with a quartz crystal unit inside. Through vibrating, the ink is jetted from the micro-pore and changes into ink dot from ink line. When the dots are cut off, they fly through the charging pole for charging, charged ink dots deflect after going through high-voltage plate electrode, and the size of deflection is subject to the charging quantity. The ink dots fly off and fall on the surface of the printing object.

Characters are composed of a series of ink dots, which could be full line or empty line or in-between; the object moves in the direction that is perpendicular to the deflection direction of ink dots and is spaced by column, forming into characters. Ink dots not charged will fall into the recovery tube for recycling, as shown in Figure 3

and Figure 4.

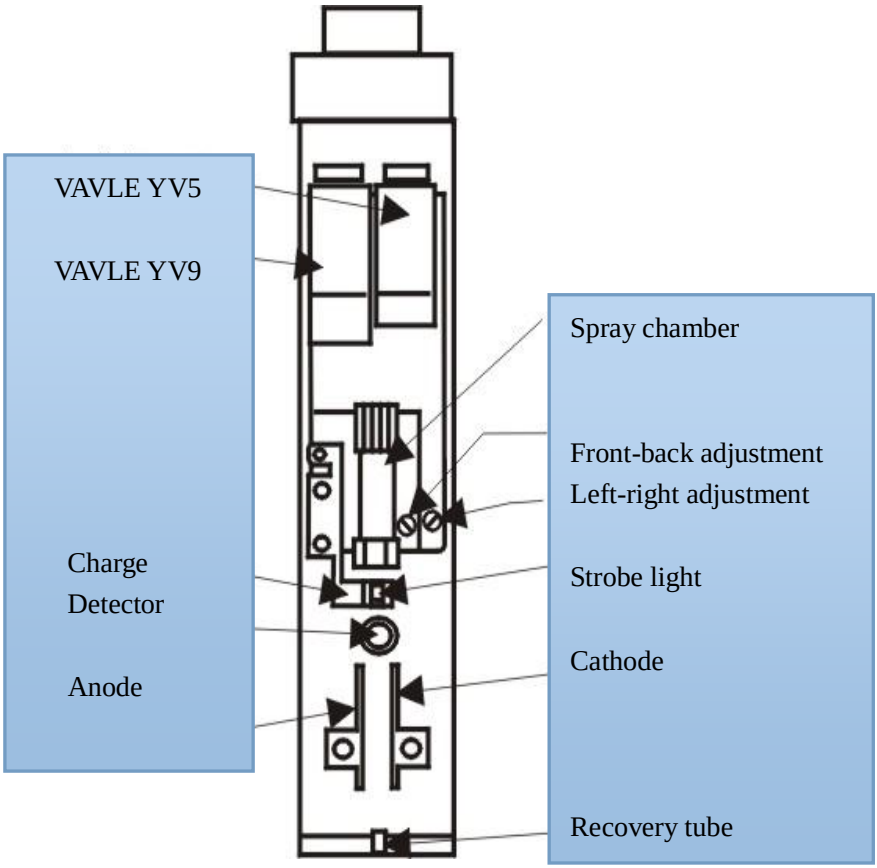


Figure 3: Nozzle structure

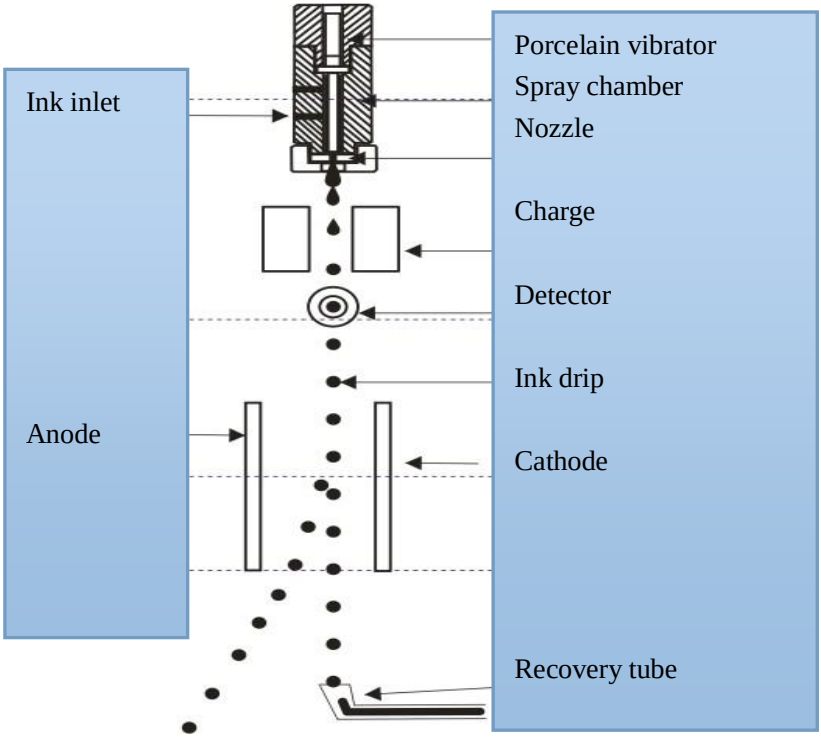
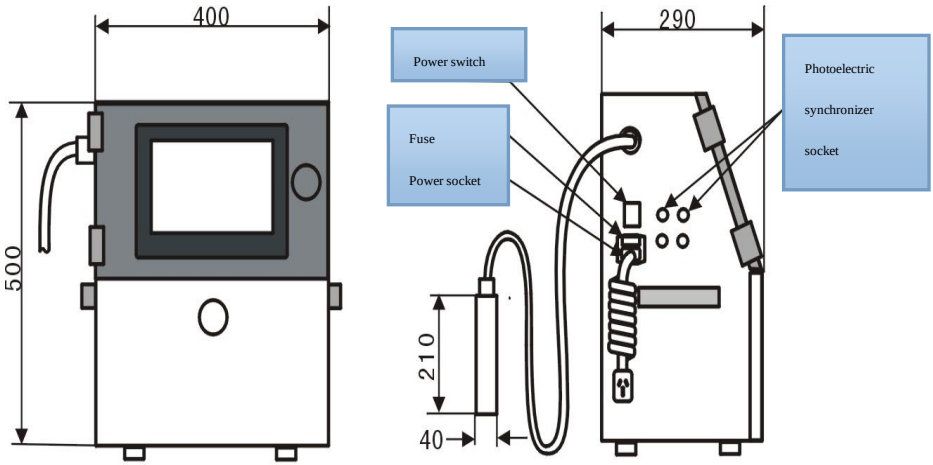


Figure 4: Printing process

2.2 External Structure of the Machine



External structure of SOP-810 Printer

2.3 Structural Diagram of the Host

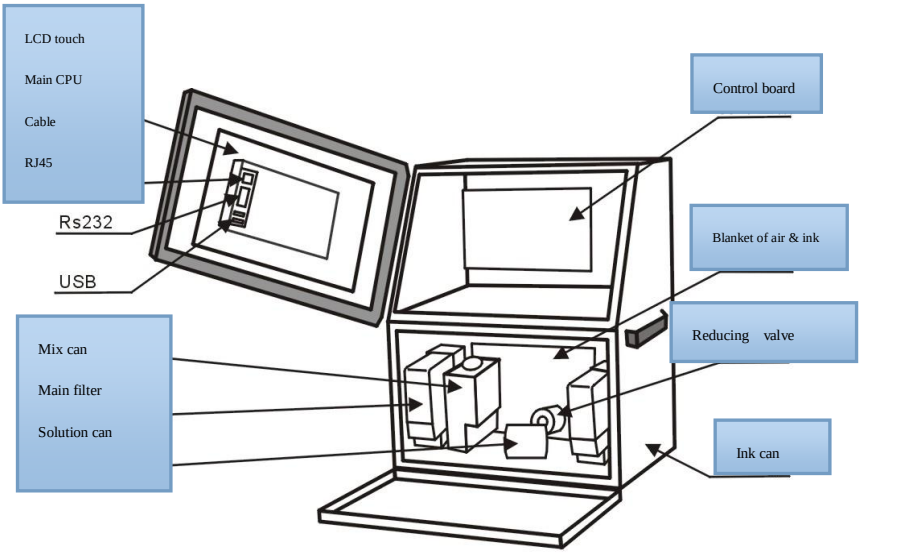
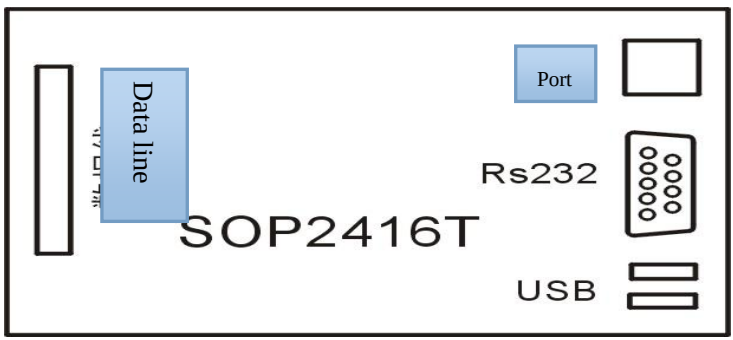
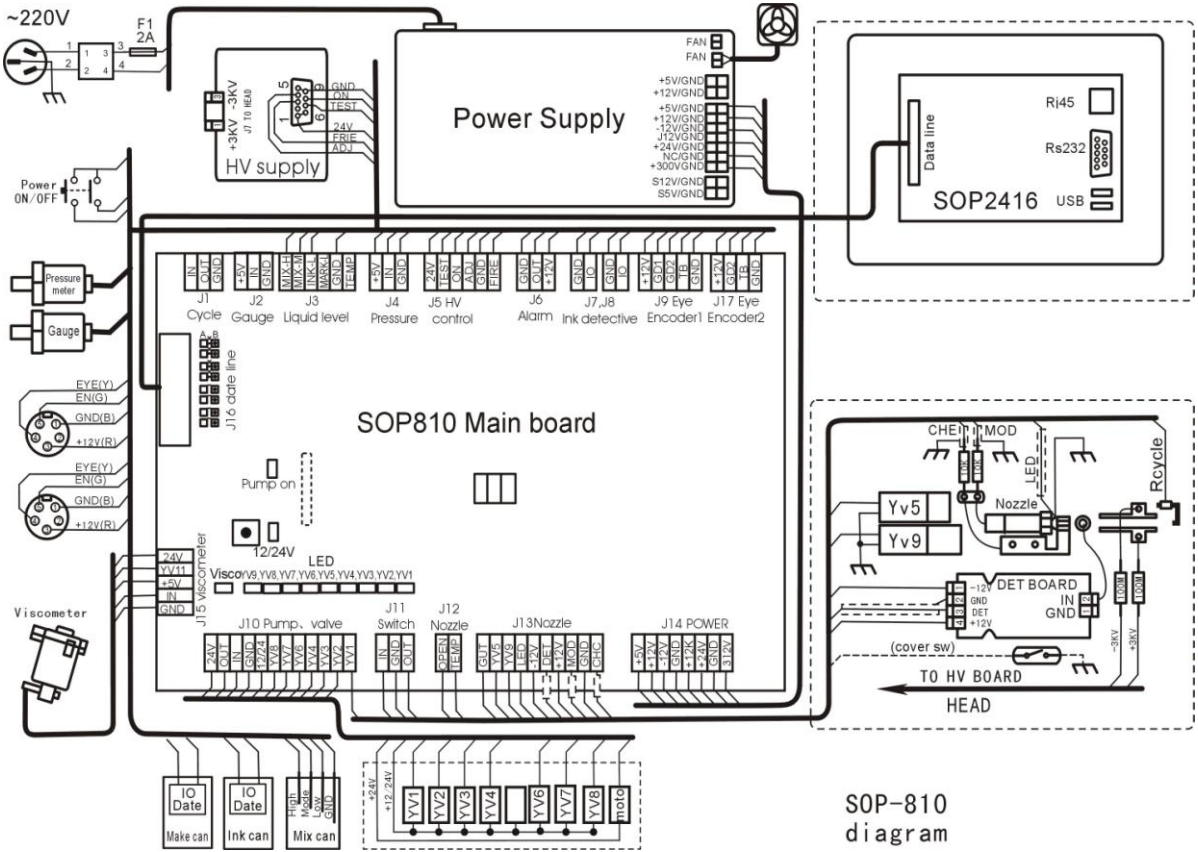


Figure: Structure Figure o f SOP-810





SOP-810
diagram

2.5 Working Process of Air Ink Circuit

Air ink circuit is mainly composed of ink pump, electromagnetic valve, pressure reducing valve, filter, viscometer, ink reclaiming tank, etc. (See Diagram of Air Ink Circuit).

While working, the system provides ink, the electromagnetic valve YV1 is opened, ink is extracted and compressed by the ink pump, and is sent to pressure reducing valve through the main filter. The release valve is able to keep the ink at 0.28mpa and then send to the nozzle for printing. Part of stabilized ink reclaimed from the nozzle flows into the ink pressure gauge to show ink pressure, and adjust pressure regulation screw of the pressure reducing valve to keep pressure of the ink circuit at a required value. In the process of printing, with shapes of the characters change, some ink dots are disused and recovered by the recovery tube. Vacuum produced by the recovery pump makes the ink droplets flow through the recovery filter, the electromagnetic valve YV3 and then back to the recovery tank. In the process of printing, with consumption of the ink, liquid level of ink reclaiming tank is lowered, when it is lower than rated value, electromagnetic valve YV2 will open, and ink in the ink tank is drawn into ink reclaiming tank through recycle pump.

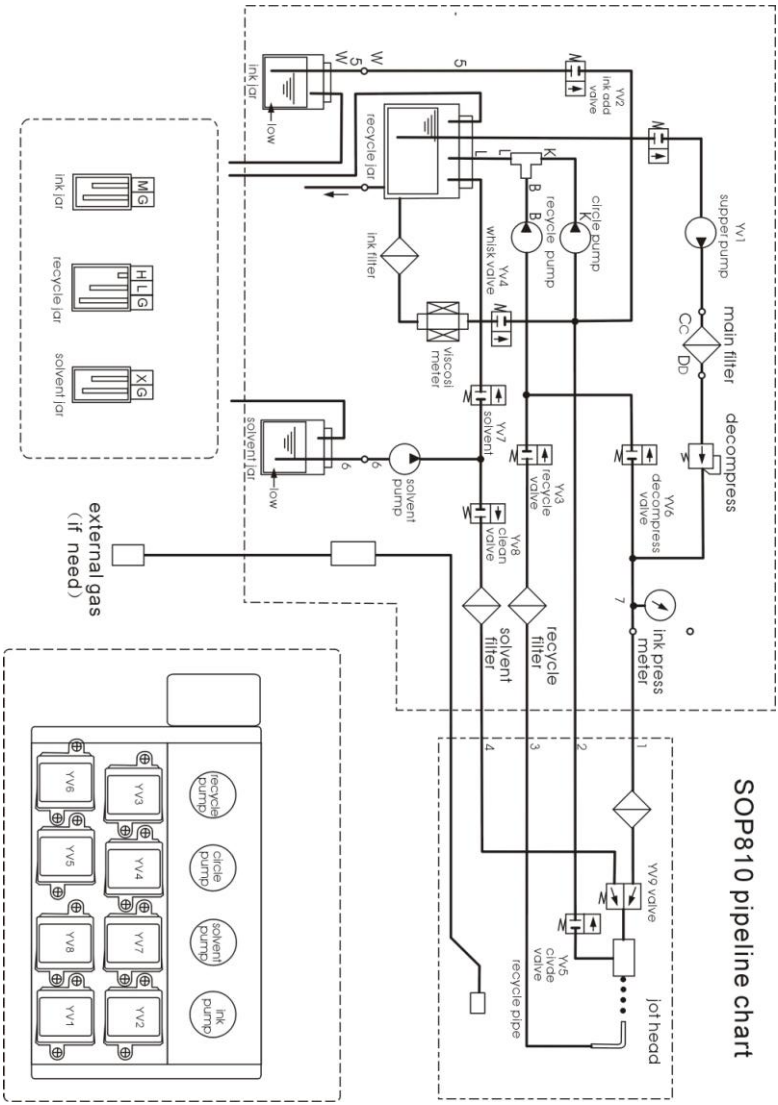
When inkjet printer stops working, the electromagnetic valve YV5 is opened to draw inks in the ink circuit back into the ink reclaiming tank, and clean the nozzle with the coordination of YV8, YV5 and YV6. It must be pointed out that the nozzle will be cleaned automatically during each ink stop, the diluting agent after cleaning

will flow into the ink reclaiming tank and thin the ink, thus frequency ink adding and ink stop should be avoided.

While printing, the electromagnetic valve YV4 is opened, ink in the reclaiming tank flow through the filter, viscometer, YV4 and is stirred by the recycling pump. The viscometer will measure ink viscosity regularly, if the viscosity is over high, the electromagnetic valve Yv7 will be opened, and diluting agent in the solvent tank will be drawn back the ink reclaiming tank through the solvent pump. Stirring the ink within a closed circuit, compared with external pump, has reduced significantly volatile quantity of the diluting agent.

Viscosity of the ink is just its thin consistency, which directly affects breakpoint of ink droplet. In the process of printing, with volatilization of the solvent, the ink will become thicker. Thus, inkjet printer should measure ink viscosity at regular intervals and control viscosity value automatically. The stipulated viscosity value is 150 units, and the displayed value is the actual viscosity measured value. The normal range is from 130 to 170. If the value is lower than 130, the viscosity is too thin which is usually caused by too frequent cleaning. It will recover after a period of operation. Viscosity of the ink should be within 130-170 units.

Ink circuit of the inkjet printer



III. Installation and Debugging

3.1Machine Mounting

3.1.1 Install bracket of the nozzle and then the nozzle. Photoelectric switch is stably fixed on the bracket according to movement direction of the product; the host and duct of bracket of the nozzle should not vibrate.

Requirements: the machine should be placed on flat and solid ground. Around the machine, at least 1m spacing with good ventilation should be left. Words such as “No Fire” and “No Water” should be obviously set around the host and the nozzle. Ink and diluting agent are inflammable substances, therefore, at least one carbon dioxide fire extinguisher should be placed within 3 meters around the host, also do not stack inflammable substances.

3.1.2 Attaching plug of the host is plugged into the outlet of AC voltage regulator whose input plug is plugged into 220V power supply. Make sure the grounding is good. As required, connect the synchronizer or the raster meter-counter, set the corresponding dial switches. If the use environment is dusty or the humidity is over 85%, the nozzle should adopt positive pressure wind to prevent entry of dust or moisture.

3.2.1 After the machine is installed, if no problem is found by visual inspection, debug according to the following steps:

3.2.2 Inject the ink and diluting agent into corresponding bottles.

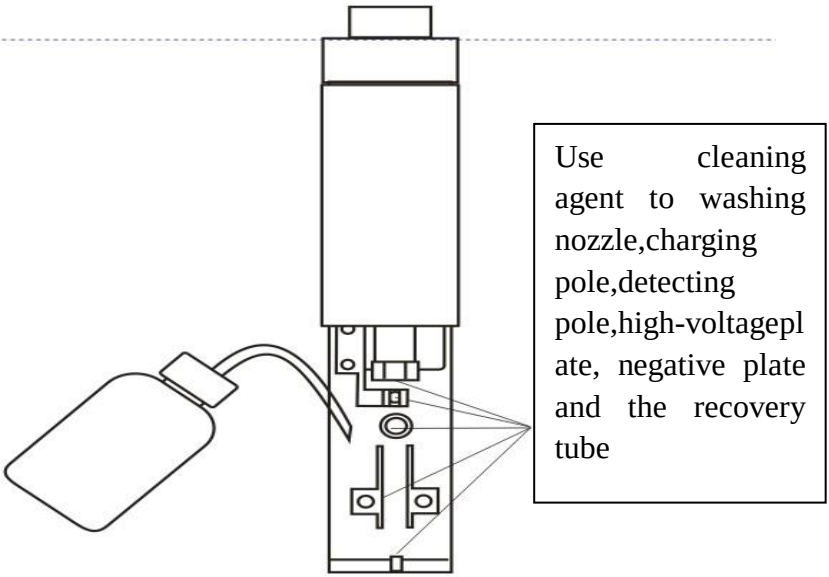
3.2.3 Press power switch of the host, the panel display screen will prompt for a password seconds later.

3.2.4 Set parameter and information as shown in Chapter 4 and offer ink lines. When the display screen goes back to the main interface state, if there is no ink in the ink reclaiming tank, wait for ink adding and observe whether the ink pressure is at 0.28mpa, if not, adjust the pressure reducing valve to reach that value.

3.2.5 Back to the main menu, press “start-up ”, then press “ Voltage on” after the process is completed (if “Smart On-Off” is pressed already, there is no need to press “Voltage on”) and the nozzle will spray ink droplets. Closely move paper or work-piece below the nozzle and observe the printing. Adjust “Height” and “Print speed” to meet requirements.

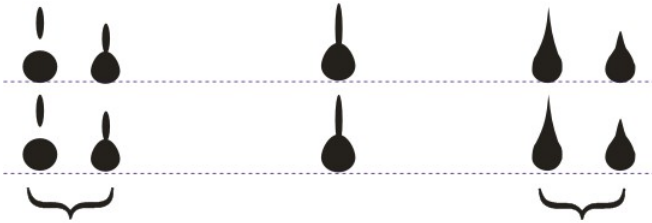
3.3 Cautions of Start-up and Ink-offer:

If the washing nozzle, charging pole, detecting pole, high-voltage plate, negative plate and the recovery tube have too much stains, open the nozzle cover firstly, use cleaning agent to clean them, as shown in the figure below. After the cleaning agent volatilizes, cover the nozzle cover and start up the machine.



After going through the ink-offer progress bar, if nozzle is blocked, or the ink line deviates from the recovery tube, please use the “getting through the nozzle” function of the “ink circuit maintenance”, which could be used repeatedly till the recovery tube could normally receive the ink line.

Wait 10 minutes for the ink line to be stable after ink-offer, and observe the breakpoints with magnifying glasses. Judge breakpoints quality according to the following figure.



Poor ink dot	Ordinary ink dot	Good breakpoint

3.4 Cautions of Shut-down:

1.If the machine is halted for less than 2 hours, please use rapid shut down function.

2.If the machine is halted for more than 2 hours, please use purge and shut down (Do not purge and shut down too frequently, otherwise it may result in excessive thin ink. Generally, do not clean for more than 3 times each day.)

3.If the machine is halted for more than two weeks, please purge before yonks used which is in safeguard. (See below for details.)

4.Turn off the power: note: turn off the power supply while maintain power supply of the plug (white-ink printer).

5.After the machine is halted, use solvent to clean external parts of the charging pole, detecting pole, high-voltage plate, negative plate, nozzle, etc.. (Only use solvent to clean.)

3.5 Ink Line Position and Breakpoint Adjustment

1.Ink line position adjustment: the machine is in ink-offer state (on the basis of no high-voltage);

(1)Ink line is in the midst of the charging pole tank;

(2)The visual distance between the ink line and the detecting pole is 0.5-1mm;

(3)Bottom of the ink line is in the midst of the recovery tube.

Adjusting method (Do not adjust the ink line causally. If adjustment is indeed needed, it is suggested to be conducted by skilled operators.)

(1) Loose the fastening bolt of the spray chamber to enable the spray chamber to move around the fixed pin from side to side;

(2)Or adjust the adjusting bolt of the “before and after” position of the spray chamber;

(3)Or loosen the recovery tube, and adjust the fastening bolt in every direction;

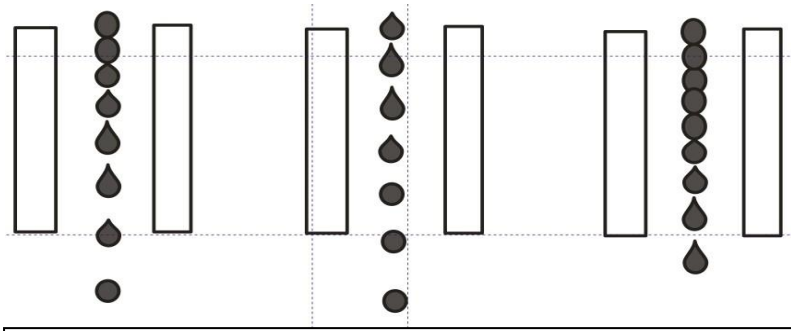
(4) Observe the ink line position with magnifying glasses.

2.Breakpoint adjustment of the ink line

Judgment premises: 1.correct ink viscosity; 2.correct ink pressure; 3.smooth ink circuit; 4.no ink deterioration; 5.no nozzle blockage

(1) Operation for 15 minutes after ink-offer;

(2) Observe the breakpoints with magnifying glasses. Adjust the breakpoint potentiometer in breakpoint value in parameter, and the following ink line can be observed.



A. Regular	B. Too high	C. Too low

IV. Operation Guide and Function Introduction

All operations of the inkjet printer are realized through the touch screen. The 10.2-inch true color touch screen displays more direct operation process and information as shown below:

Enter and selection can be directly performed on the soft keyboard. After the machine is started, there shows a login interface where the user may enter its user name and password to enter the main interface for further operation.

Externally-connected mouse and keyboard of common computers may also be adopted.

4.1Main user interface

After start-up, it enters the first interface.

The interface mainly contains:

1：System version number and time

2：6 options of the main menu

3：Display of the printed content

4：Real-time status and reset of the counter, SN1, SN2

5：Machine state and some printing parameters

5 :2 printing real-time switches and 2 ink circuit operation options

1.High-voltage switch: this function is for effect of high-voltage on the ink dots.

When it is on, ink dots are forced to print characters, otherwise, without voltage, ink dots will not print characters. Click once, the high-voltage function is enabled, click again it is disabled.

2.Printing: this function makes printing signals activated or deactivated. Click this button to switch between the two states.

3.Start-up: After this function is performed, the nozzle will spray ink line (if enable the “start-up and shut-down with one button” function), the system will start working automatically, the counter and serial-number begin counting.

4.Shut down: this function is available when the halt time is less than 2 hours and the nozzle ink line will be stopped after performing, the counter and serial-number will stop counting.

5.Purge&Shut down : this function is available when the halt time is more than 2 hours but no more than three times per day. The nozzle ink line will be stopped after performing and automatically clean the nozzle, recovery tube and other ink circuit components.

When the jet printing is turned off, the counter will automatically stop counting.

6.Serial number: click SN1 could switch into SN2, and vice versa.

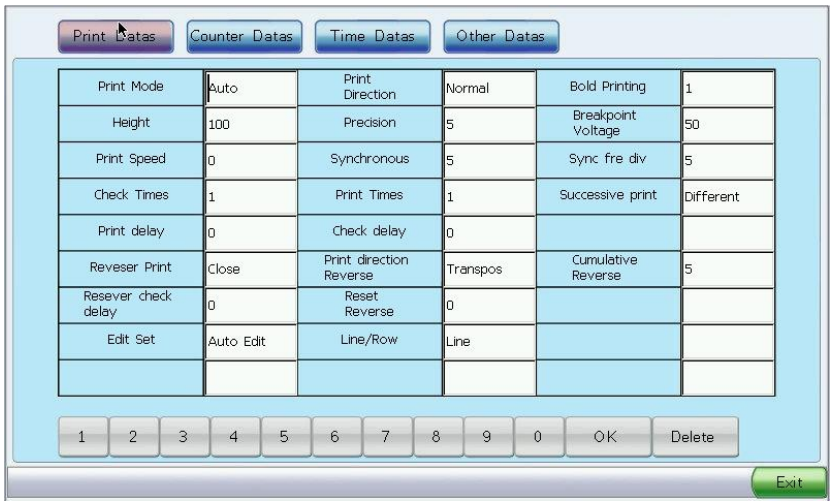
7.Reset: click this button to reset the counter or serial number to its lower limit value.

8.More: click this button to display other printing parameters and machine status.

4.2 Parameter setting

On the main interface, click on the “Parameter ” to enter the interface shown as below:

To facilitate use, parameters of the inkjet printer are divided into four options: print data, counter data, time data and other data.



Each file has its own unique parameter setting; therefore, after each setting, the parameters should be saved. After the “Exit” is pressed, a dialog box will prompt to remind you to save the parameters. To modify the parameter, directly click on it and it will become red, indicating that it can be modified. You may directly enter the desired value on the numeric keyboard below and press “OK” to lock the value entered. Some parameters require no assignment, print mode and speed, for example. Then click on the parameter to change the state and again to switch.

4.2.1Jet printing parameters

1.Print Mode	There are four spray printing methods in total, “Auto ”, “Trigger”, “Encoder” and “Dual T + E”, each is unique and is capable of coordinating with other parameters to realize N times detecting and N time spray printing, the N value set by the user. (Detailed operation will be mentioned later)
2.Print direction	There are four modes for spray printing direction, “UpsideUp”, “UpsideDn ”, “MirrorUp” and “MirrorDn”.
3.Bold printing	It is to make all content in the current printing file bold, varing from 0 to 9, 0 is not bold, and the bigger the number is, the greater the bold effect is.
4.Height	Adjust the spray printing font height, which is the smallest in “0” and the biggest in “100”.
5.Precision	Adjust the spray printing accuracy and speed, the greater the value is, the better the spray printing is and the slower the speed is; otherwise, the worse the effect is, the faster the speed is.

6.Breakpoint voltage	It is the voltage setting for breakpoints. Each inkjet printer has gone through debugging and no user set is required. (but could be changed, please handle cautiously)
7.Print speed	Adjust the speed of printing. “0” is the fastest and “100” is the slowest.
8. Synchronous	Print according to the synchronizer. 1 fre div refers to printing a row of matrix with 1 sync pulse and 10 fre div with 10 sync pulse.
9.Sync fre div	Works only under T+E (Encoder should be connected). The greater the value set by meter frequency division is, the greater the required pulse count is and the longer the distance is (longer meter length). Through adjusting this value, the meter length could be changed, namely, the meter printing.

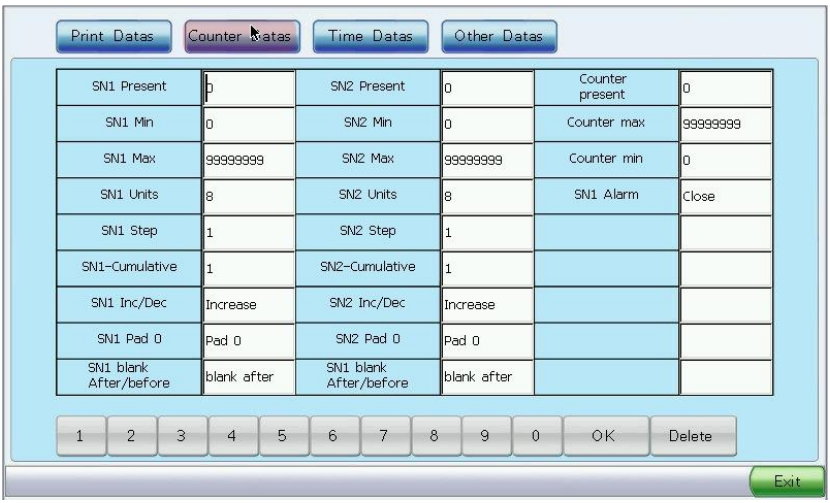
10.Check times	This function is applied in “Trigger ” state, referring to the photoelectric detecting times, coordinating with printing times, the effect of N times detecting and one printing could be achieved.

11.Print times	It is applied in coordination with the detecting times function, namely the effect of N times detecting and one printing. They should not both be N times, when one number is greater than 1 the other number will be automatically set as 1.
12.Successive printing	“Same”: no change to the content of printing. “Different”: different content of each printing.
13.Print delay	Delay after jet printing. Here is a short-time delay in ms.

14. Check delay	This function is for delay of trigger printing, which begins after photo-electricity is detected and then print.
15.Reverse Print	The function is activated only in photoelectric printing to print on objects coming from the reverse direction.
16.Print direction Reverse	Print direction set for reverse print. Same with common print direction, it has four options.
17. Cumulative Reverse	Times detected by the photoelectric sensor in reverse print.

18.Reverse check delay	。In reverse print, the delay from the object detection to print.
19.Reverse reset times	Times of returning to common print after reverse print
20.Edit setting	Auto blank-removing: When having been set, it will automatically isolate unused space if the maximum editing space of a file is not used, which realizes best space utilization. Manual blank-removing: it will not automatically use the space.
21.Line / Row	Row: suitable for single-line long information editing: line not changed after clicking “Yes” after information editing Column: suitable for multi-line information editing: switch to the next line after clicking “Yes” after information editing

4.2.2 Counter


Print Datas
Counter Datas
Time Datas
Other Datas
SN1 Present
0
SN2 Present
0
Counter present
0
SN1 Min
0
SN2 Min
0
Counter max
99999999
SN1 Max
99999999
SN2 Max
99999999
Counter min
0
SN1 Units
8
SN2 Units
8
SN1 Alarm
Close
SN1 Step
1
SN2 Step
1
SN1-Cumulative
1
SN2-Cumulative
1
SN1 Inc/Dec
Increase
SN2 Inc/Dec
Increase
SN1 Pad 0
Pad 0
SN2 Pad 0
Pad 0
SN1 blank After/before
blank after
SN1 blank After/before
blank after
1
2
3
4
5
6
7
8
9
0
OK
Delete
Exit

1.SN1 Cumulative	The inputted numerical values are shown in sn1 and the counter. Numerical value of the sn1 changes 5 times, while that of the counter changes once. Principle of sn2 and the counter is the same to that of 1, no repeat here.
2. SN1 present	Present value of serial number refers to the printing times after machine start-up and inkjet, which is under operation. Principle of sn2 and the counter is the same to that of 1, no repeat here.
3. SN1 units	The digit value could be altered according to your configuration. Principle of sn2 and the counter is the same to that of 1, no repeat here.
4. SN1 step	The value it increases or decreases is the step length value.

5. SN1 Max	It is limited by bit value, whose maximum value is that under the bit value. When the serial number reaches the max, it will recount from the min. Principle of sn2 and the counter is the same to that of 1, no repeat here.
6.SN1 Min	Its configuration is the same to the above. Principle of sn2 and the counter is the same to that of 1, no repeat here.
7. Sn1 Inc/Dec	Progressive increase of this value starts from the min, while progressive decrease of this value starts from the upper limit value. Principle of sn 2 and the counter is the same to that of 1, no repeat here.

8. SN1 Pad 0	Switch between “yes” or “no”. As digit may set in eight-digit number, select “yes”, the serial number starts printing from the lower limit value and is presented as 00000001, while select “no”, the former seven 0 is omitted and 1.2.3.... is printed.
9.SN1 blank after /before	When “0” is not selected for SN1, if 8 digits are selected while the user only use 4 digits, then the first 4 digits will be empties. The front empty refers to that the 4 digits occupies the last 4 points of the 8 digits while back empty refers to that 4 digits occupies the first 4 points of the 8 digits.
10.SN1 Alarm	Warn and stop printing when the SN1 reaches the upper limit set. It can be turned off or activated.

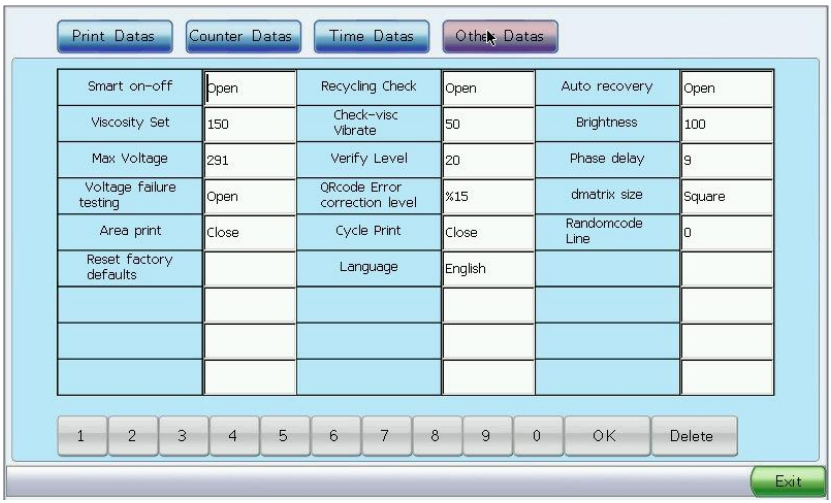
4.2.3Time parameter

1.Year	It is set as the year of the printing date but not the system time. Enter the value you need.
2.Month	It is set as the month of the printing date but not the system time. Enter the value you need.
3.Date	It is set as the date of the printing date but not the system time. Enter the value you need.
4.Hour	It is set as the hour of the printing date but not the system time. Enter the value you need.
5.Minute	It is set as the minute of the printing date but not the system time. Enter the value you need.
6.Second	It is set as the second of the printing date but not the system time. Enter the value you need.
7.Indate	The value is in the unit of day. Current date added with the value of the validity period is the period of validity of the printing.

8.Maintenance time	Time remaining for the next maintenance
9.Screenlock time	Time counting starts from the last click on the touch screen, if it is 5 minutes, then screen protection procedure starts 5 minutes later.
10.Shift A	Function: capable of setting time period to print different team numbers. For example: 0811 means the time period from 8:00 to 11：59, the printing team No. is “A”. 0808 means the time period from 8:00 to 08：59. What should be noted is that if the time periods are crossly set by the team numbers, or incorrectly set, the above screen will display “Incorrect time-set of team number, please reset!”, Moreover, it is impossible to return to the main interface from the parameter configuration interface, exit only after correctly set.

11. Shift B	Configuration principle is the same to that of A.
12. Shift C	Configuration principle is the same to that of A.
13.Vischeck time	The normal time interval for viscosity detecting is about 5 minutes.
14.Dilute time	In case the actual viscosity value is greater than the setting value, diluting agent will be added to reduce the viscosity. The normal diluting time is 5 seconds and has been set up, which is just for display and should not be altered.

4.2.4Other parameters



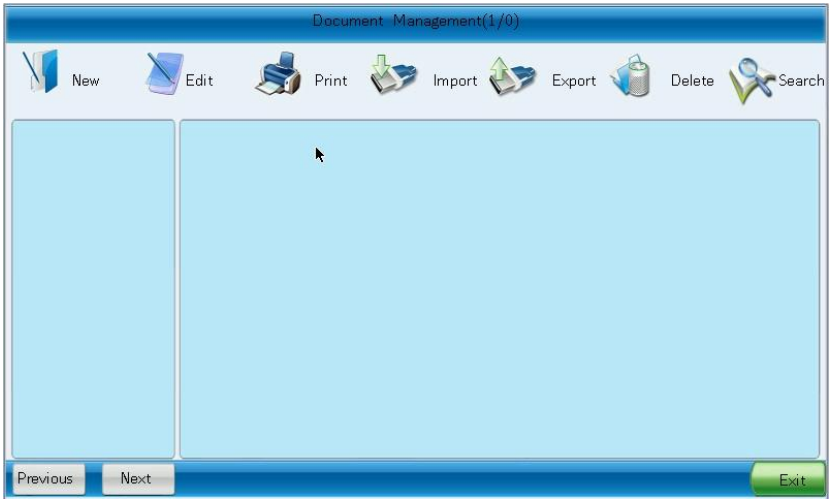
1.Smart On-Off	If the function is activated, after ink offer, the high voltage will be automatically started and the print switch enters into automatic work status. Without this function, the high voltage and the printer will not be automatically started.
2.Recycling check	Check if the ink is recollected. When the function is activated, the machine will be automatically shut down when no ink is recollected, and vice versa. The function prevents incorrect ink spraying and thus waste of ink.
3.Auto-recovery	After wrong collection and ink offer stops, it will automatically turn on the machine and starts ink offer without manual operation until correct collection is recovered and jet printing is restored to the current working status. Customer may choose whether to activate the function or not.
4.Viscosity set	Best viscosity for the machine; usually modification is not allowed.

5.Check-vis vibrate	Frequency for viscosity measurement. The value has been set by the company, and no further change is required.
6.Brightness	Adjust brightness of the screen
7.Voltage faliure testing	Protection against high-voltage fire caused by various accidents. With this function, it will automatically stop the high voltage. It is strongly suggested enabling the function.
8.QR Code error correction level	The higher the grade of error correction is, the more successful of decoding will be, and the more complicated and higher the code. It is divided as below: Level L: 7% character code can be corrected. Level M: 15% character code can be corrected. Level Q: 25% character code can be corrected. Level H: 30% character code can be corrected.

9.Dmatrix size	Rectangle and square
10.Area print	A file to be printed in various regions. The premise is that the photoelectric printing should be activated; one region is 400 units.
11.Cycle print	After printing of random code file has been finished, the printing will automatically stop. With this function, random code will print repeatedly without stop.
12.Random code lines	Line number of random code for printing; can be set.
13.Language	Language for the entire system; can be switched between Chinese and English.

4.3 Document management

On the main interface, click on the “Document Management” as shown below:



On the left, it is the file name, contents of the file on the middle and dot matrix height occupied by the file on the right. On one interface, only 5 print files can be stored. View other files through “Previous ” and “Next ”.

New file is at the topside of page 1.

4.3.1 New file

“New file”: refers to create a new file. Click on the key 

and a new interface will prompt. Input the wanted file name, click “Yes”, and it will return to the interface of file management. New file will be placed at the topside of page 1, same

with the document processing of computers. Files are displayed based on the time of creation, the latest one at the first one, and the earliest one at the last one. For selecting a file, you may click on the file name or directly click on the file content. After selection, the file name and content will become red, indicating successful selection.

4.3.2Edit

Edit the content for printing. Click on 

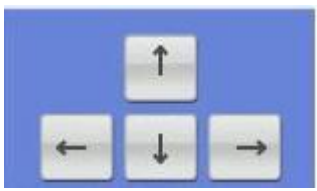
to edit the file as shown below:

The zone where the cursor stays is the input box. You may enter any required characters through the soft keyboard. Lower case is the default setting, and press

 to switch to upper case input, same with the operation on computers.

Click on “#*=”, special figure keyboard will present. Click “Variable” and keyboard of variable will present.

After content has been input in the edit box, corresponding red dot matrix will display on the actual operation zone in the direction based on the coordinate value of X=0，Y=0 at the right. You may preset the direction with four direction keys. After having input the content, click “Enter” to confirm and then the matrix will turn from red to black. If it is still red, then exit. It cannot be saved.

All dot matrix parameters can only be set when it is red. When the content has been fixed, it will not be set. Input one field and then continue. There are four direction keys:  . For editing direction, the dot matrix should also be red. Upward and downward movement can be set. While for leftward and rightward movement, the contents under editing will be right shifted, and the same with the leftward movement.

4.3.2.1 English

English: typeface can be set before or after input. Click on 

and a pull-down menu will present for your selection. Typeface of English includes: 5×5, 4×7, 5×7v, 5×7d, 5×7h, 5×7i, 5×7l, 5×7w, 7×9, 6×12, 8×16, 12×16, 12×24.

4.3.2.2 Left shift

Left shift:  the actual operational zone is 35 in height and 350 in width. Press on the “Left shift” button and shift to the left by 50 units of the entire operational zone, while left direction key refers to the leftward movement of the current dot matrix.

4.3.2.3 Right shift

Right shift:  the actual operational zone is 35 in height and 350 in width. Press on the “Right shift” button and shift to the right by 50 units of the entire operational zone, while right direction key refers to the rightward movement of the current dot matrix.

4.3.2.4 Field selection

Field selection: to edit, delete or alter the previously confirmed filed, you may press on the “Filed Selection” 

to select a field and press again to select next field. When a field has been selected, the content

(characters or icons) in the field will be red. Sequence of the selection is that of the input confirmation.

4.3.2.5 Field confirmation

Field confirmation: in the edit box, after the character input has been completed, to input characters of the next paragraph, you should press on the 

on the keyboard to fix the field, and then the dot matrix will turn from red to black, indicating that the characters have been confirmed and fixed.

4.3.2.6 Field delete

Field deletion: to delete the entire filed inputted, you may select the field and click on  when the field turns to red to delete the entire field.

4.3.2.7 UpsideUp

UpsideUp: the default typeface direction is "UpsideUp" 

. Press on the "UpsideUp" and a pull-down menu will present for selecting from"UpsideUp", "UpsideDn ", "MirrorUp" and "MirrorDn". It is for all characters in one field. If a single character is required, another field should be started and set for the single character.

4.3.2.8 Bold

Bold: click on “Bold: 1” 

and a pull-down menu will present. The default is 1. 1 is the least bold and 8 is the boldest. It is for all characters in one field. If a single character is required, another field should be started and set for the single character.

4.3.2.9 Spacing

Spacing: click on “Spacing: 1” 

and a pull-down menu will present. The minimum value is 1 while 8 is the maximum value. It can be selected from the pull-down menu. It is for all characters in one field. If a single character is required, another field should be started and set for the single character.

4.3.2.10 Clear Edit

Clear edit: 

it can be used to delete all fields input at one time, instead of deleting the fields one by one.

4.3.2.11 Variable input

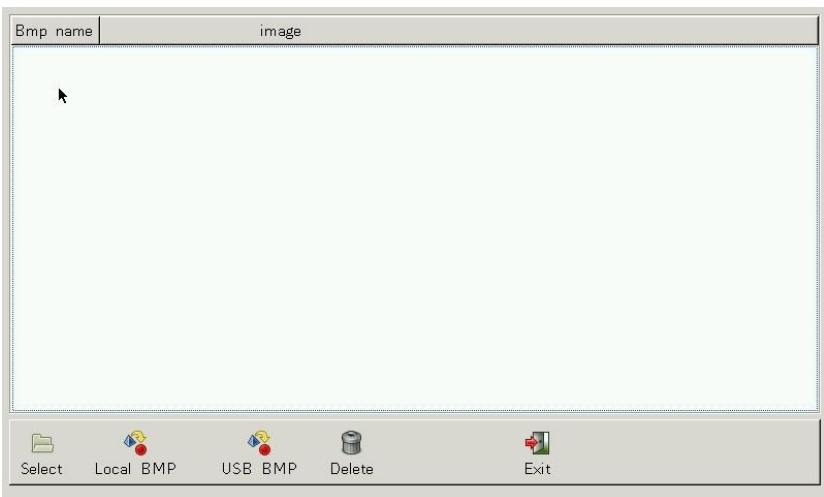
Click on 

and a keyboard of variables will prompt. On the keyboard, you may enter year, month, date, hour, minute, second, SN1, SN2, shift, year, month, and indate, text, bar code, QR, DM and 417 as required. The typeface can be set in advance. The year, month, date, hour, minute, and second have been set in the parameter setting (not the correct current time). SN1 is the value of the current SN1, and SN2 of the current SN2. If the number of shift is not within the set period of time, it will be represented by spacing; if within the time period, it is one of the A, B, and C. Year, month, and date of validity is the time of the sum of the validity period set in the parameter setting and the date.

4.3.2.12 BMP

Click on “Graph Input” 

to enter the interface as shown below:



4.3.2.13.1 Local BMP: Click on “Local BMP” and the BMPs stored in the inkjet printer will be displayed at the upper blank zone; select through direction keys and confirm by clicking on “Enter” to return to the general input interface and exit from the graph input interface.

4.3.2.13.2 USB BMP:**USB BMP** Click on “USB BMP” and the BMPs stored in the USB flash disk will be displayed at the upper blank zone; select through direction keys and confirm by clicking on “Enter” to return to the general input interface and exit from the graph input interface.

If raster graphics input is not required, click on “Exit” and return to the general input interface.

4.3.2.14 Random code input

Random code: click on 

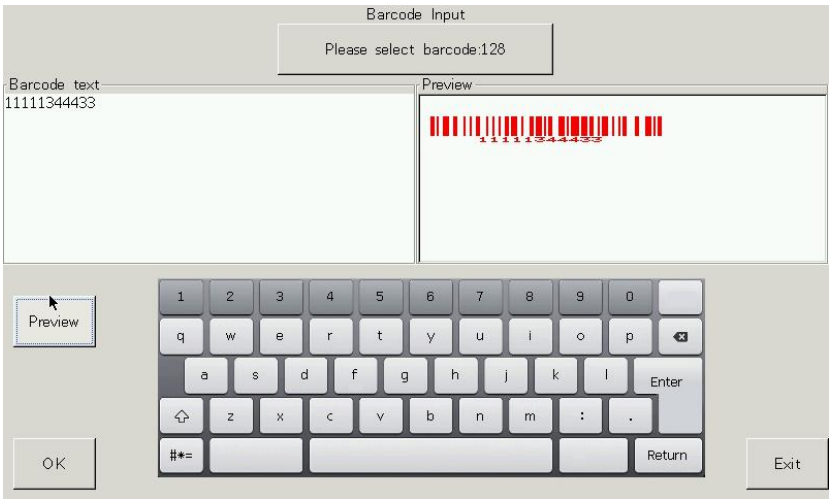
to enter the interface as shown below:

Below there are two buttons of “USB random code” and “Online random code” which are the sources of the random codes. Firstly select the typeface of the random code to be printed. Content of random codes vary. Then select the transformation type. If text type is selected, you may choose the number of lines to be printed through the button of “1 Line of random code”. For random codes of other types, the line option will turn into grey. Random code will transform based on the transformation type. For bar code transformation, for example, it will be printed as bar code. Scan the printing and the contents of the random code show. The situation also goes for QR code, dmatrxi code and PDF417 code. Content of online random code are obtained through network or serial port with a transport protocol. If online random code is required, you should contact the company for getting the protocol for programming.

4.3.2.15 Bar code and QR code input

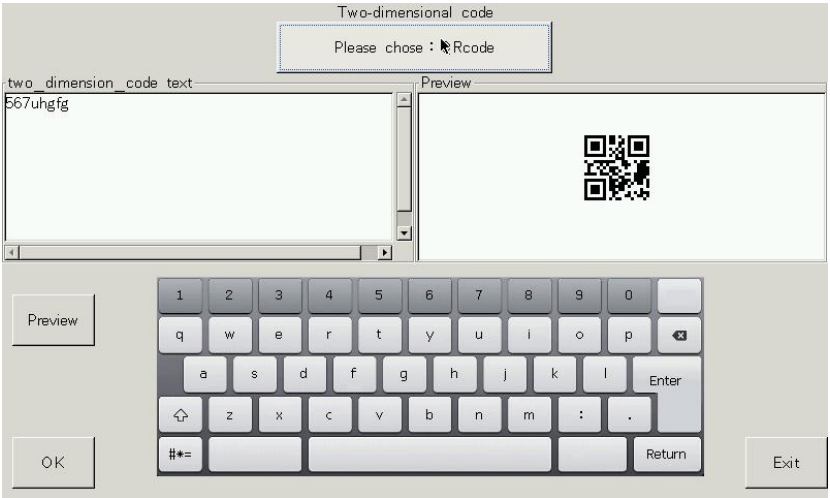
Bar code input: click on 

to enter the interface as shown below:



On the interface, the default is 128 code input. Click on “Select bar code” to change the types among 39code，c-128，b-128，128，i25，Code93，ean，upc and ISBN. After confirming the bar code mechanism, enter the data on the edit box on the left and the bar code will display on the right for preview. Click “Yes” to confirm the bar code and return to the general input interface. If no input is desired, click on “Exit” to return to the general input interface.

Click on QR code  to enter the interface of inputting QR code. Input method of QR code is same to that of bar code.



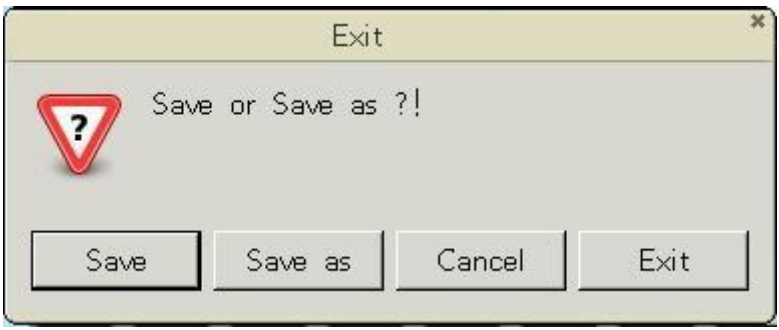
4.3.2.16 Insert and replace

Omission or error may occur during editing. Click on “Insert”  on the keyboard

. The function can only be used when it is under editing. When the field is red, select the position through the left shift or right shift key of the direction keys; then the cursor is blue and the left of the cursor is the position for inserting. Click “Insert” again and it will become “Replace”. The cursor is black. Input and the character on which the cursor stays will become the character you need, namely, replacing the original contents.

4.3.2.17 Save file

After having edited the contents to be printed, direct click on“Exit” and a window will prompt , asking you “save the file or save as?!”



Click on “Save” to save the file and return to the inkjet print file management interface. Click on “Save as” and a window for you to name the file will prompt; name the file, save and return to the file management interface; if “Save as” is not required, click on “Exit” to return to the file management interface. To edit the file, click on “Cancel” to remain on the editing interface. Click on “Exit” and it will not work on the previous operation and directly return to the file management interface.

4.3.3 Print file

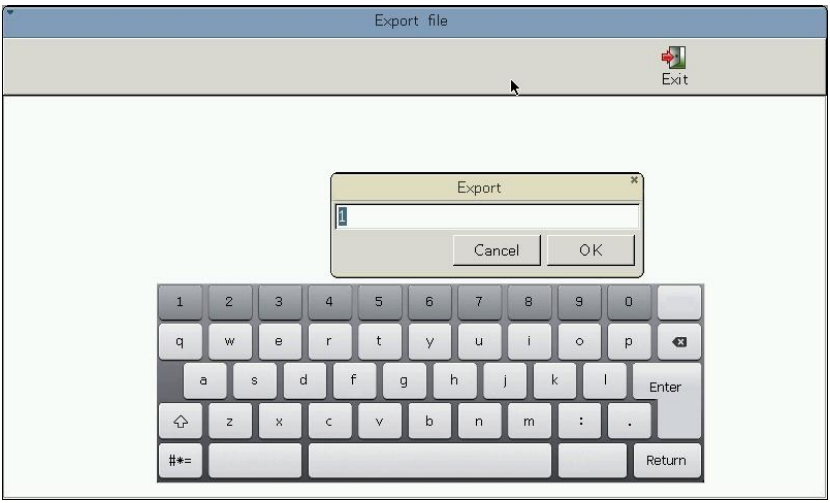
On the file management interface, select file and click on “Jet print”

to jet print the file and return to the main interface.

4.3.4 Import and export

On the file management interface, select a file, click on “Export” 

, and an interface will prompt as shown below:



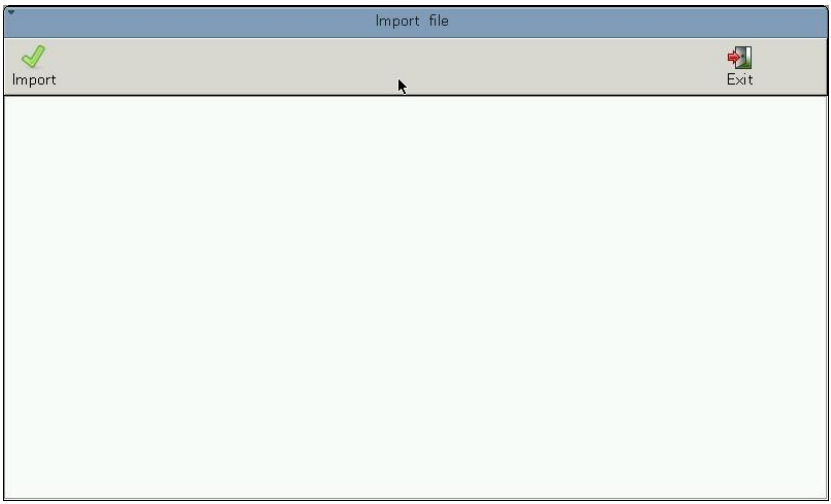
Name the file to be exported, click on “Yes” (The default is that the file will be exported to the USB flash disk, therefore, be sure the disk has been plugged into the inkjet printer) and the file will be stored in the USB flash disk. If duplication of name is encountered, it will prompt to rename the file; otherwise the operation will fail.

“Import” 

. Similarly, it is importing files from the USB flash disk to the inkjet printer; therefore, no other operation is required but ensuring the

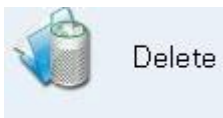
USB flash disk with files to be imported has been plugged into the printer.

Click and the window will prompt as below:



Select the file to be imported and click on the “Import” at the top left corner to import the file to the inkjet printer. If duplication of name is encountered, it will prompt to rename the file; otherwise the operation will fail.

4.3.5 Delete file

On the file management interface, you may delete files that will not be used. Select the file, click on 

and a warning dialog will prompt and ask you “Want to delete the file(s)”, click on “Yes” to delete the file and return to the file management interface. Click on “Cancel” if the deletion is not desired, and return to the file management interface.

4.3.5 Exit

On the file management interface, if no operation is desired, you may directly click on “Exit” to return to the main interface.

4.4 Safeguard

4.4.1 Safeguard

On the main interface, click on “Ink circuit operation” to enter the interface as below:

Enter the Safeguard operation interface and the default is Safeguard. The current status of the machine will be reminded as above: halt mode. On the Safeguard operation interface, it should be noted that: some operations are available only under certain conditions, and operations that are not available are in grey.

1.Press “Start up”: after the execution of this function, ink line will be sprayed out from the nozzle (if the “start-up and shut-down with one button” is pressed already) and the system will start working automatically, and the counter and serial number start counting.

2.Press “shut down”: it is for use when the halt is less than 2 hours. After the execution, the ink line stops and the counter and serial number stop counting.

3.Press “Open up the nozzle”: it keeps the spraying cavity under constant pressurization or vacuum status and slightly blocked nozzle may be got through. When the ink line fails to enter the recovery tube, please repeatedly use this function until the ink line enters the recovery tube successfully. The effect will be better with the combination of “Reverse purge”.

4.Press “Purge and shut down”: it is for use when the halt is over 2 hours, but should not be used for over 3 times a day. After execution, the ink line stops and the nozzle, recovery tube and other ink circuit components will be thoroughly cleaned automatically.

5.Check viscosity : the viscosity may be tested during ink offer, but it will prompt to return to the main interface for waiting for test value.

6.Press “Purge reverse ”: it makes the spraying cavity under vacuum status and detergent can be injected from the nozzle for cleaning. When the ink line fails to enter the recovery tube, please repeatedly use this function until the ink line enters the recovery tube successfully. Repress the button to exit from “reverse cleaning”. (It can only be used when the ink offer stops)

7.Press “Forward Purging”: for this function, detergents are sprayed out from the nozzle to clean the internal spraying cavity. When the nozzle sprays to the recovery tube, the latter can also be cleaned.

8.Ink recycle: to prevent ink drying during long-time halt (turn off the switch but not cut off the power supply, automatically circulate once per 5 days without manual operation; or ink circulation manually operated once per 5 days)

9.Purge before yonks used: if the halt is over 2 weeks, to prevent ink drying, drain the ink and clean the pipelines of the entire machine. Clean the entire machine with “halt protection liquid” step by step based on the prompts.

10.Replace ink: take off the recovery tube, reach into the beaker, and re-install when it is completed, and press “Fill ink”.

11.Fill ink: primary use requires filling ink to the recovery tube; it will automatically return when it is filled.

12. Discharge ink: if the halt is over 2 weeks, to prevent ink drying, discharge the ink and clean. As shown above, take off the recovery tube, reach into the beaker, press “Discharge ink” to start discharging, and re-install when it is completed.

When ink offer starts, the ink circuit operation interface will prompt: the

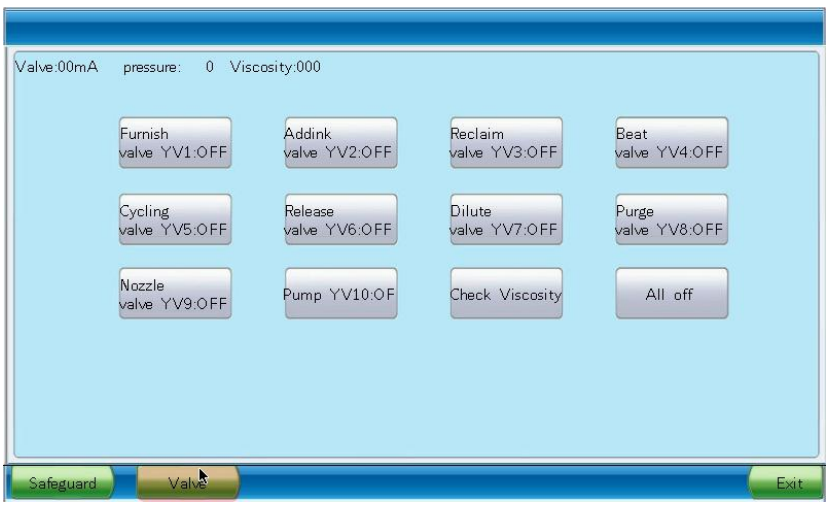
inkjet printer is under operation, and the “Rapid ink offer” and “Reverse cleaning” are grey and unavailable.

On the Safeguard operation interface, press “Valve” to enter the valve test interface which is not available during ink offer. Prompt of “Valve operation is unavailable during ink circuit operation” will present when the “Valve” is pressed.

On the valve test interface, you can press “Magnetic valve operation” to return to the ink circuit operation interface which two can be switched.

4.4.2 Valve

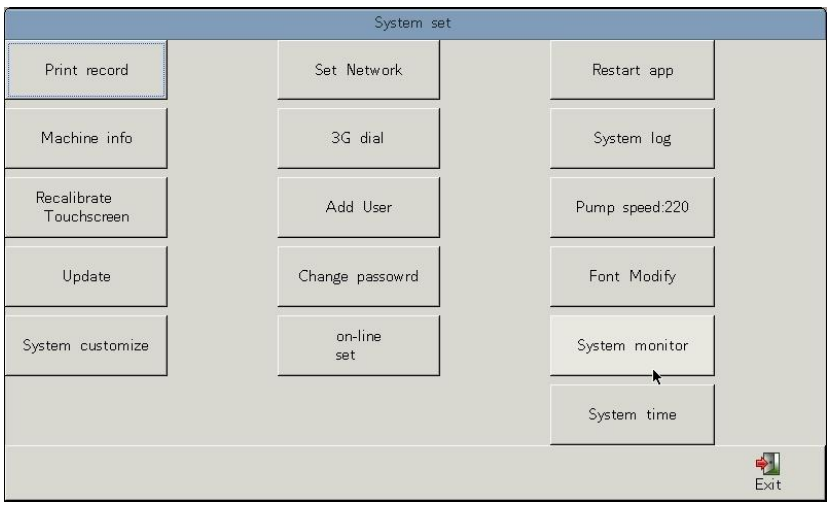
Press magnetic valve and enter the interface as shown below:



It displays 9 valves and one pump. Each valve corresponds to one button. Press to turn on and press again to turn off the valve. It is mainly for testing the controllability of all magnetic valves and the pump.

After operation on the ink circuit operation interface, if no further operation is desired, press “Exit” to return to the main interface.

4.5 System



1.Print record: record printed files and serial number, etc.

2.Set network : set network IP and other network parameters of the machine.

3.Restart app: don’t use this function during ink offer.

4.Machine info: view the version number, capacity and run time of the

machine.

5.3G dial: dial-up with 3G EVDO for upgrade. (Huawei E261 is presently supported) --- PIN code：1234

6.System log: record all ink circuit operation information and work information of the machine.

7.Recalibrate touchscreen : re-calibrate the touch screen.

8.Add user: add new users with new user name and password.

9.Pump speed 220: adjust the pump speed which is usually set at 220.

10. Update: remote upgrade to the system; should be supplied by the company server.

11.Change password: function exclusive for distributors.

12.Font modify: customize typeface for individual users.

13.System customization: customize and select functions of the system.

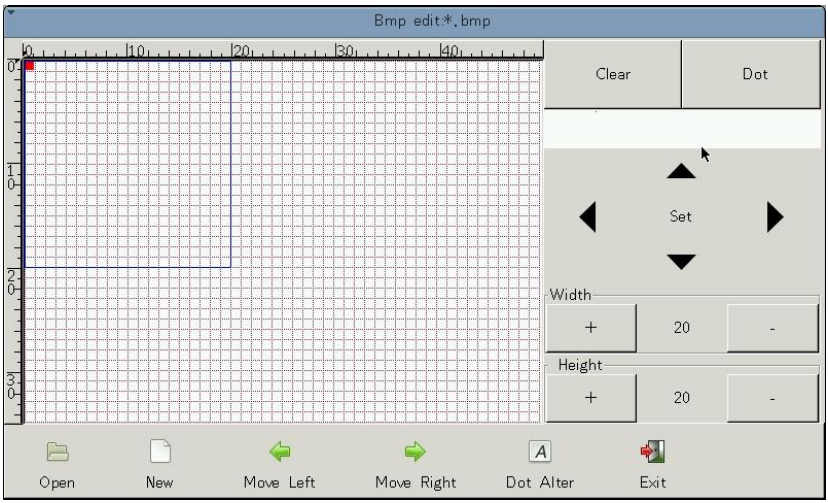
14.Online setting: the function is related to online upgrade; online protocol is supplied by the company.

15.System monitor: fully intelligent monitoring over the system hardware.

16.System time: set the time of the system; time setting in the parameter setting is only the time of printing.

4.6 BMP edit

On the main interface, press “BMP edit” to enter the graphic edit interface where local graphs and graphs imported from USB flash disks can be edited as shown below:



After the interface has been entered, last edited graph file will be opened. On the left, the height and width have been scaled with the scale plate. The BMP graph is displayed with large pixel point. The red pixel can be moved through the direction keys. On the grid, “red” point appears, indicating you are in the zone. Press “Set” and the red point becomes black one and the dot matrix is painted. Re-press “Set” on the corresponding black point and the black dot matrix will disappear. To edit straight line, click on “Dot” to switch to

“Line” to draw straight lines with the direction keys. If unsatisfied with the edit, click “Clear” to erase the content.

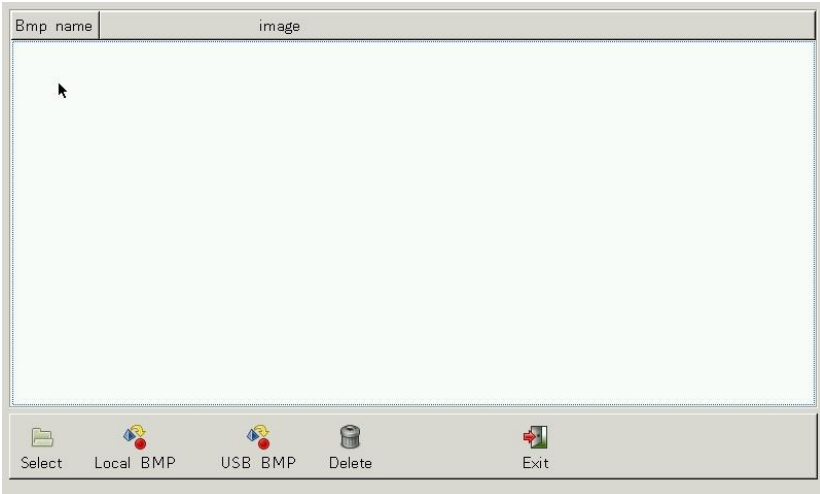
On the upper right, the actual pixel of the graph is displayed. Set the height and width through “+” and “—”. The height is limited; if the inputted value exceeds the maximum, then the latter will be inputted. The blue frame is the maximum height and width of the graph and the editing should be made within the frame.

4.6.1 New file

Press “New” and a dialog box will present. The operation is similar to that of creating new file to be printed. After setting a new file, the width and height of the dot matrix should be reset.

4.6.2 Open file

Enter the edit interface for extracting BMP graphic file from the machine and USB flash disk as shown below:



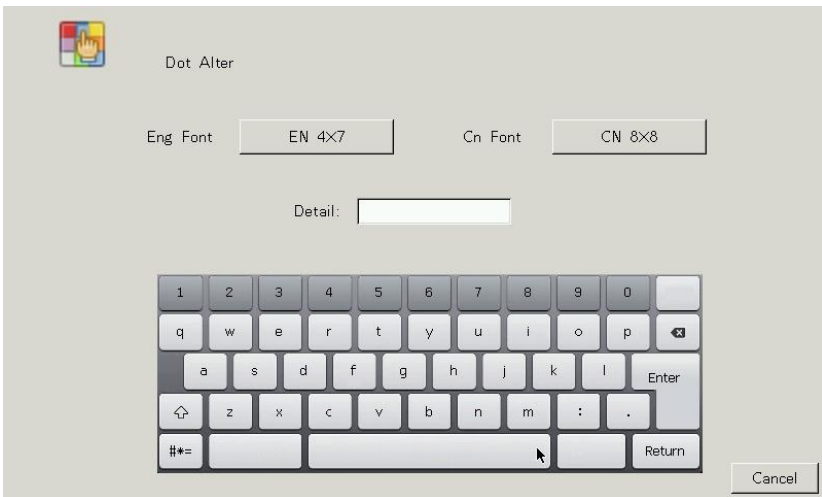
Press “Local BMP” and only local graphic files will be presented on the blank area. If no graphic file presents, it indicates that there are no BMP graphic file stored in the machine, or the file format and content are not in line with the equipment. Choose the file through direction keys and press “Select” to open the file and enter the graphic edit interface for editing. Press “USB BMP”, graphic files in the disk will be displayed. The processing is consistent. If no fire is to be opened, press “Exit” to return to the graphic edit interface.

4.6.3 Left and right shift of graphs

When the graphic file is edited, the height is visible, while the width may exceed the editing interface; thus “Left shift” and “Right shift” are used. The maximum width of the editing area is 50 pixel dots. After editing, press “Right shift” to move the graph rightward by 10 pixel dots and press again to move by another 10 pixel dots. It is same for leftward movement.

4.6.4 Dot Alter

If special requirements are posed for some character, the user may press “Dot Alter” to modify the characters and enter the matrix extraction interface as shown below:



In the edit box of the matrix extraction dialog box, input the matrix to be modified. You may choose typeface first. Both English and Chinese can be inputted. Switch of typefaces has been specified before. After inputting, press “Enter” to extract the characters in the form of dot matrix to the graphic edit for editing. Press “Exit” and no characters are extracted and return to the graphic editing interface.

4.6.5 Exit

After having edited graphic file or matrix, press “Exit” in the way as specified in text editing. It should be noted that graphs exported from USB flash disk are not local graphs and should be saved by “Save as” but not “Save”, otherwise, the modified graphs remain in the USB flash disk. It is same for the graphs of matrix extraction. Extracted matrix will be printed as a graphic file.

Attachment 1:

Use of Soft Keyboard

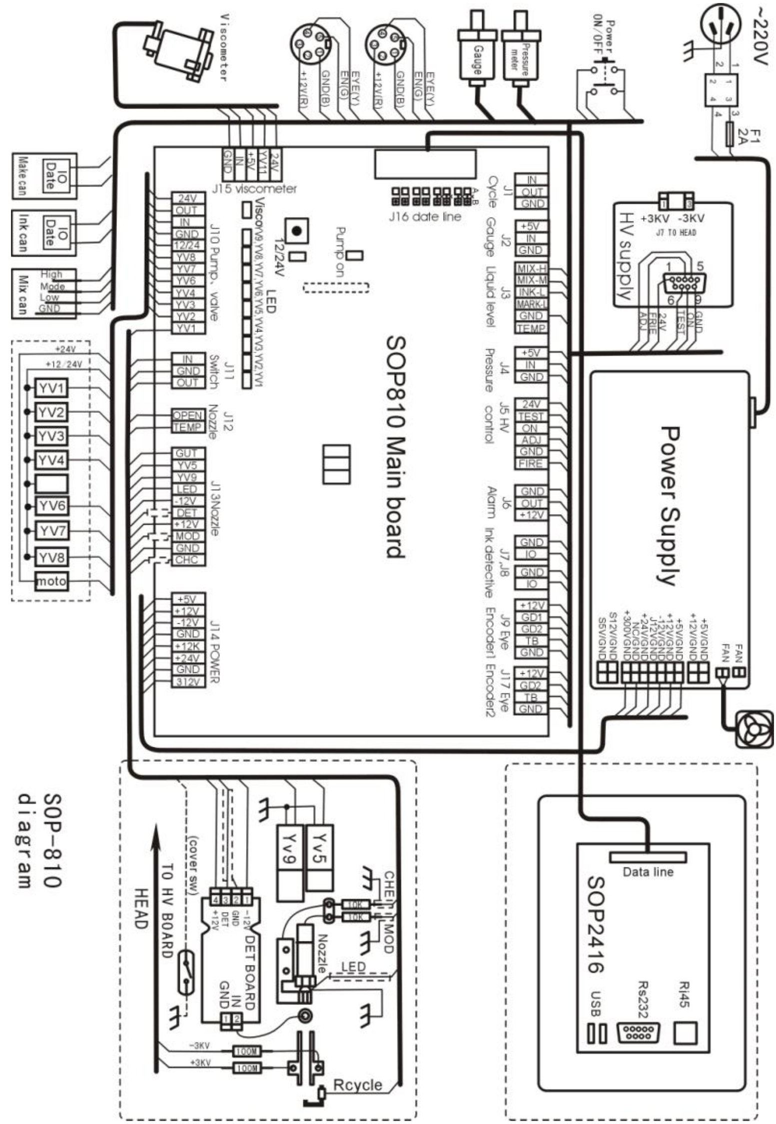
Use of soft keyboard makes information more direct. Hereafter functions of the keys are introduced. On the first row, there are numeric keys and caps lock key  which will transfer all lowercased letters (a-z) to uppercased letters (A-Z). 

, commonly used symbols toggle key. Click and selections can be made from ！ @ # $ % ^ & * ( ) _ + = ’[ ] / \ ; . , : , etc., re-click and other symbols like ~ ｛ ｝ | ？ < > will prompt.To edit multiple lines, after having edited the first line, you may directly press 

to edit the next line. For the inputted content, regardless of text, graph, random code

or bar code, it is red; click 

to confirm and complete the inputting.


~220V
F1 2A
Power ON/OFF
Pressure meter
Gauge
Viscometer
J15 viscometer
J16 date line
SOP810 Main board
Power Supply
HV supply
+3KV -3KV
J7 TO HEAD
J1 Cycle
J2 Gauge
J3 Liquid level
J4 Pressure
J5 HV control
J6 Alarm
J7,J8 Ink defective
J9 Eye Encoder1
J17 Eye Encoder2
J10 Pump, valve
J11 Switch
J12 Nozzle
J13 Nozzle
J14 POWER
Pump on
12/24V
LED
Make can
Ink can
Mix can
SOP2416
Data line
Rs232
RJ45
USB
DET BOARD
Nozzle
Rcycle
TO HV BOARD
HEAD
(cover sw)
SOP-810 diagram