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SAFETY INFORMATION

- Have to STOP Print Mode before inserting/removing cartridge.
- Avoid using with the high voltage, strong impact to the coder.
- Limit usage of the coder in a highly dusty working environment.
- The working temperature of the coder is 5°C – 50°C.

PRODUCT WARRANTY

The Product warranty for machine is effective for 12 months from delivery date. Brackets, keyboard, power supply and anti-shock mechanism are excluded from the warranty.

**The warranty is VOID if:**

- Any non-original parts and unapproved OEM inks are used.
- The product has been altered or modified without approval.
- Print head damage as a result of improper installation.
- Damage occurs from an accident, such as but not limited to, being dropped, being sprayed with water or other liquids, caused by a natural disaster, caused by stocking or shipping conditions.
- Unapproved, wrong, or unstable power supply is used.

ABOUT MACHINE

Thank you for purchasing the **Smart-Jet Plus Thermal Inkjet Coder**, a product of **MSSC LLC, US**. This printer is designed for packaging printing applications powered by HP Thermal Inkjet Technology.

Machine boasts to be able to control via PC connection to print variable data and barcodes, Wi-Fi connection via mobile devices running on Android operating systems, and wireless keyboard. Each option provides a full set of applications.

Machine produces crisp text, logos, variable data and barcodes on porous and non-porous media by automatically recognizes aqueous and solvent inks and applies the appropriate printing parameters.

The complete system includes one machine, power supply with On/Off switch, wireless keyboard and mounting brackets.
# TECHNICAL SPECIFICATIONS

## Machine details

<table>
<thead>
<tr>
<th>NO</th>
<th>DESCRIPTION</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Model</td>
<td><strong>Smart-Jet Plus</strong></td>
</tr>
<tr>
<td>2</td>
<td>Display</td>
<td>LCD 2.8” automatic rotation</td>
</tr>
<tr>
<td>3</td>
<td>Dimensions (LxWxH)</td>
<td>107.5 x 74.5 x 83 mm / 4.23 x 2.93 x 3.27 inches</td>
</tr>
<tr>
<td>4</td>
<td>Weight</td>
<td>450g</td>
</tr>
<tr>
<td>5</td>
<td>Power supply</td>
<td>AC 100V – 240V, 50/60Hz, 1.4A</td>
</tr>
<tr>
<td>6</td>
<td>Maximum power consumption</td>
<td>48W</td>
</tr>
<tr>
<td>7</td>
<td>Maximum printing resolution</td>
<td>600x600dpi</td>
</tr>
<tr>
<td>8</td>
<td>Print speed</td>
<td>76m/min @ 300x300dpi</td>
</tr>
<tr>
<td>9</td>
<td>Optical density</td>
<td>5 levels</td>
</tr>
<tr>
<td>10</td>
<td>Operation selection</td>
<td>PC, Wireless keyboard and Wi-Fi</td>
</tr>
<tr>
<td>11</td>
<td>Message memory</td>
<td>100 messages</td>
</tr>
<tr>
<td>12</td>
<td>Ink solution</td>
<td>Aqueous and Solvent</td>
</tr>
<tr>
<td>13</td>
<td>Menu language</td>
<td>Multiple / selectable</td>
</tr>
<tr>
<td>14</td>
<td>Printable characters</td>
<td>Windows true fonts with PC connection</td>
</tr>
<tr>
<td>15</td>
<td>No. of lines</td>
<td>Maximum 6 lines</td>
</tr>
<tr>
<td>16</td>
<td>Character height</td>
<td>Maximum 12.7mm / 0.5 inches</td>
</tr>
<tr>
<td>17</td>
<td>Printability</td>
<td>Alphanumeric, logos, date, time, expiry date, Julian date, shift code, database and barcodes</td>
</tr>
<tr>
<td>18</td>
<td>Operating temperature</td>
<td>5°C – 50°C</td>
</tr>
<tr>
<td>19</td>
<td>External connections</td>
<td>External sensor, encoder, alarm kit, etc…</td>
</tr>
</tbody>
</table>

## Keyboard

The Machine is currently compatible with all wireless 2.0 keyboards available in the market.

## Android devices

Control machine via Wi-Fi connection by using Android devices from 4.0 and up.

## Personal computer

- CPU: Core 2 Duo 2x2.0 GHz.
- Ram: 2GB.
- Hard disk space: 50 MB.
MACHINE OVERVIEW

Indicator LED

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>DETAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) SENSORS</td>
<td>Default setting is don’t recognize black conveyor</td>
</tr>
<tr>
<td></td>
<td>Internal sensor: Red light</td>
</tr>
<tr>
<td></td>
<td>External sensor: Green light</td>
</tr>
<tr>
<td></td>
<td>Sensor is activated when receives signals</td>
</tr>
<tr>
<td>(2) ALARM</td>
<td>Remains ON to indicate error</td>
</tr>
<tr>
<td>(3) WIFI/PC</td>
<td>Remains ON when connected</td>
</tr>
<tr>
<td>(4) PRINT</td>
<td>Remains ON when in printing mode</td>
</tr>
</tbody>
</table>

Connecting Port
<table>
<thead>
<tr>
<th>ITEMS</th>
<th>DETAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) USB FLASH</td>
<td>USB 2.0 flash for updating firmware, fonts and logo</td>
</tr>
<tr>
<td>(2) USB KEYBOARD</td>
<td>For USB 2.0 wireless keyboard receiver</td>
</tr>
<tr>
<td>(3) USB PC</td>
<td>For PC connection with USB 2.0 cable A-B</td>
</tr>
<tr>
<td>(4) DB15 EXTENDED</td>
<td>Extend port for external sensor, encoder, alarm, etc…</td>
</tr>
<tr>
<td>(5) 12VDC</td>
<td>Power supply</td>
</tr>
</tbody>
</table>

**Keyboard**

<table>
<thead>
<tr>
<th>NO</th>
<th>KEY</th>
<th>USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Enter</td>
<td>Confirm, save or apply</td>
</tr>
<tr>
<td>2</td>
<td>ESC</td>
<td>Go to previous session</td>
</tr>
<tr>
<td>3</td>
<td>⇧/⇨</td>
<td>Move your cursor to left/right</td>
</tr>
<tr>
<td>4</td>
<td>⇧/⇨</td>
<td>Move your cursor up/down</td>
</tr>
<tr>
<td>5</td>
<td>Shift</td>
<td>Press and hold “Shift” to input capitalized characters</td>
</tr>
<tr>
<td>6</td>
<td>Insert</td>
<td>Press ”Insert” to insert Symbol, Logo, Counter, Date, Expired, Time, String, Barcode and Shiftcode into the message</td>
</tr>
<tr>
<td>7</td>
<td>Backspace</td>
<td>Delete your message from the left</td>
</tr>
<tr>
<td>8</td>
<td>Tab</td>
<td>Move your cursor faster</td>
</tr>
<tr>
<td>9</td>
<td>Home/End</td>
<td>Move your cursor to Home/End</td>
</tr>
<tr>
<td>10</td>
<td>Caps lock</td>
<td>Uppercase font</td>
</tr>
<tr>
<td>11</td>
<td>F4</td>
<td>Insert suomi symbol</td>
</tr>
</tbody>
</table>

**Operation menu on machine**

<table>
<thead>
<tr>
<th>Message</th>
<th>Operation</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>Create new Information</td>
<td>Speed</td>
</tr>
<tr>
<td>Use</td>
<td>Select font Select size</td>
<td>Resolution</td>
</tr>
<tr>
<td>Edit</td>
<td>Insert Menu (Popup menu when press Insert)</td>
<td>Density</td>
</tr>
<tr>
<td>Delete</td>
<td>Symbol Logo</td>
<td>Delay</td>
</tr>
<tr>
<td></td>
<td>Counter Date</td>
<td>Cartridge</td>
</tr>
<tr>
<td></td>
<td>Expired Time</td>
<td>Update Logo</td>
</tr>
<tr>
<td></td>
<td>String Barcode</td>
<td>String</td>
</tr>
<tr>
<td></td>
<td>Shiftcode Custom string</td>
<td>Random Jet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Print Side</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Direction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Print Mode</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WiFi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Update Font</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rollover</td>
</tr>
<tr>
<td></td>
<td></td>
<td>System clock</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rotate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Password</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Default</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Language</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IO signals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Custom string</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coder name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RS485</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LCD BackLight</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reset</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bi-directional</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Set up backup</td>
</tr>
<tr>
<td></td>
<td></td>
<td>About</td>
</tr>
</tbody>
</table>
From the main screen of machine, use ← → ↑ ↓ arrow keys to move the cursor to the desired object. Press Enter to save and apply settings. Otherwise, press ESC.

### Message

<table>
<thead>
<tr>
<th>MENU</th>
<th>SUB MENU</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create new</td>
<td>Select font</td>
<td>Select kind of font you need to use on messages. Support two kind of font: Uppercase font and Normal font.</td>
</tr>
<tr>
<td></td>
<td>Select size</td>
<td>Select size of messages: support up to 5 sizes.</td>
</tr>
<tr>
<td></td>
<td>Insert menu (Symbol, Logo, Counter, Date, Expired, Time, String, Barcode and Shiftcode)</td>
<td>Insert additional information into your messages.</td>
</tr>
<tr>
<td>Open</td>
<td>Use</td>
<td>Use the existing messages on the machine memory for printing.</td>
</tr>
<tr>
<td></td>
<td>Edit</td>
<td>Edit the existing message.</td>
</tr>
<tr>
<td></td>
<td>Delete</td>
<td>Delete existing messages.</td>
</tr>
<tr>
<td>Information</td>
<td></td>
<td>Show all information needed to monitor your printing process.</td>
</tr>
</tbody>
</table>

### Operation

<table>
<thead>
<tr>
<th>MENU</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start / Stop</td>
<td>Start or Stop printing job. Combine and press <strong>CTRL + SHIFT + ENTER</strong> on keyboard to fast Start / Stop print.</td>
</tr>
<tr>
<td>Purge</td>
<td>All of nozzle on cartridge will push out ink. After purged you will see 2 lines of ink on substrate.</td>
</tr>
<tr>
<td>Connect PC / Disconnect PC</td>
<td>Connect or Disconnect machine from PC. Please stop print first, before go to Connect PC menu.</td>
</tr>
</tbody>
</table>

### Settings

<table>
<thead>
<tr>
<th>MENU</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>Set print speed for the machine or select to enable encoder</td>
</tr>
<tr>
<td>Resolution</td>
<td>Set your desired resolution</td>
</tr>
<tr>
<td>Density</td>
<td>Set optical density of the print</td>
</tr>
<tr>
<td>Delay</td>
<td>Set the distance from when the sensor receives signal to the start of printing or the delay distance after printer accepts a print command</td>
</tr>
<tr>
<td>Cartridge</td>
<td>Display the current level of ink in the cartridge or what kind of current cartridge is plugged to machine</td>
</tr>
<tr>
<td>Update Logo</td>
<td>Update logo from USB to the machine memory</td>
</tr>
<tr>
<td>String</td>
<td>Set the chain of data to insert into the print</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Random Jet</td>
<td>Prevents the print head from clogging due to the extended down time between prints. This will be useful when you print using Solvent base ink with a short decap time.</td>
</tr>
<tr>
<td>Print Side</td>
<td>Select nozzle side on the cartridge: Odd, Even or Auto switch</td>
</tr>
<tr>
<td>Sensor</td>
<td>Select External or Internal sensor</td>
</tr>
<tr>
<td>Direction</td>
<td>Set print direction: <strong>ABC</strong>: left to right, <strong>CBA</strong>: right to left, <strong>AVC</strong>: reverse left to right and <strong>CBA</strong>: reverse right to left</td>
</tr>
<tr>
<td>Print Mode</td>
<td>Select printing mode: Sensor mode or Continuous mode</td>
</tr>
<tr>
<td>Unit</td>
<td>Select desired measurement <strong>inches</strong>/<strong>mm</strong></td>
</tr>
<tr>
<td>WiFi</td>
<td>Turn on WiFi connection to control machine by Android devices</td>
</tr>
<tr>
<td>Update Font</td>
<td>Update different font sizes for machine via USB flash containing a full version of firmware</td>
</tr>
<tr>
<td>Rollover</td>
<td>Set different date depending on specific production hour</td>
</tr>
<tr>
<td>System clock</td>
<td>Set time and date for your system clock</td>
</tr>
<tr>
<td>Rotate</td>
<td>Select your screen modes: Auto-rotate or Lock rotate</td>
</tr>
<tr>
<td>Password</td>
<td>Set to authorize different level of users or to protect the machine from unauthorized users. Default is 1234567890</td>
</tr>
<tr>
<td>Default</td>
<td>Reset machine to factory default</td>
</tr>
<tr>
<td>Language</td>
<td>Select your interface language. Or add more interface language from USB flash</td>
</tr>
<tr>
<td>IO signals</td>
<td>The extend button to re-start machine. This will help in some special case</td>
</tr>
<tr>
<td>Custom string</td>
<td>Update the custom strings via USB flash that are created from application on PC. This useful to printing with any language without connecting to PC</td>
</tr>
<tr>
<td>Coder name</td>
<td>This name will be showed once you use the Android app to search or connect</td>
</tr>
<tr>
<td>RS485</td>
<td>Enable the RS485 protocol on machine. To enable you to control multiple printer by one Controller (PLC, PC, Laptop…) on RS485 network</td>
</tr>
<tr>
<td>LCD Backlight</td>
<td>Adjust the LCD backlight timer. Your screen will become black but all activity still working. Turn on screen by press any key on keyboard</td>
</tr>
<tr>
<td>Reset</td>
<td>Reset the memory of Counter variable on message. The memory of Counter will help you save the current value of Counter event you stop print or machine is turned off</td>
</tr>
<tr>
<td>Bi-directional</td>
<td>When you enable this function, printer will automatic change direction with the number of signals defined</td>
</tr>
<tr>
<td>Set up backup</td>
<td>Backup and restore: Font, logo, languages and settings to a usb flash</td>
</tr>
<tr>
<td></td>
<td><strong>Noted:</strong> only use backup file and restore it on the same firmware version</td>
</tr>
<tr>
<td>About</td>
<td>Display current firmware version on printer and allow you to update new firmware to machine</td>
</tr>
</tbody>
</table>
Operation menu on computer

<table>
<thead>
<tr>
<th>Printer Control</th>
<th>Designing</th>
<th>Tool</th>
<th>About Us</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printing-Head</td>
<td>New Template</td>
<td>Purge</td>
<td></td>
</tr>
<tr>
<td>Switch Nozzle</td>
<td>Open</td>
<td>Ink Cost</td>
<td></td>
</tr>
<tr>
<td>Random Jet</td>
<td>Save Template</td>
<td>Even Log</td>
<td></td>
</tr>
<tr>
<td>Encoder</td>
<td>Export to .tiff files</td>
<td>Convert Logo</td>
<td></td>
</tr>
<tr>
<td>Printer</td>
<td>Delete</td>
<td>Language</td>
<td></td>
</tr>
<tr>
<td>Unit</td>
<td>Cut</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direction</td>
<td>Copy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>Paste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>Select Tool</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printing mode</td>
<td>Hand Pan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotate view</td>
<td>Shapes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printing Status</td>
<td>Static Text</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printer Controller</td>
<td>Barcode</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data Fields</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Serial Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shift Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Image</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>POD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Undo</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Redo</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PRINTER CONTROL**

Set all printing parameters for the message before start printing.

Be sure to stop the printing mode before changing the parameters.

**Printing - Head**

**Switch Nozzle**

Select nozzle sides, ODD or EVEN.

Turn on **ODD** to print on the odd side (with 300x300dpi).

Turn on **EVEN** to print on the even side (with 300x300dpi).

**Auto Switch Nozzle**

Select ON for automatically changing nozzles between ODD and EVEN. And then select the number of changing. Otherwise, select OFF.

**Random Jet**

Periodically purge to clean the print head.

Turn ON **Status** and set the time for purging in the **Time** by click up or down at or input the desired value. This value is adjustable from 10s to 9,000s.
**Encoder**

Encoder is recommended to optimize maximum print quality. Turn ON Encoder to operate Machine with encoder. Print speed of Machine will be automatically synchronized with conveyor speed. You have 3 mode: Real, Fast and Slow. Turn OFF Encoder to disable encoder. Input your desired speed at Speed to synchronize with the speed of the conveyor.

**Max Speed:** shows the maximum speed you can achieve with the current resolution and density.

**NOTES:**
- Ensure your encoder is working, if it is ON, and can detect the objects.
- To make a test print without conveyor, turn OFF encoder.

**Printer**

**Unit**
Select your measurement Inches or Millimeters.

**Direction**
Select your print direction Left to Right or Right to Left.
Select Rotate View to print upside down.

**Rotate View**
Upside down the current design of your message.

**Density**
Select your desired optical density. There are 5 levels to select.

**Resolution DPI**
Select your desired resolution. There are 7 levels to select with PC mode.

**Printing Mode**
Select your printing mode: Continuous Mode or Sensor Mode.

**Sensor Mode**
Machine prints when sensor is triggered.
- Select Internal to print with a built-in sensor on Machine.
- Set Delay before and Delay after print to have your message printed at the desired position.
- Select External to print with external sensor.
- Input distance from external sensor to the print head, set Delay before and Delay after print to have your message printed at the desired position.
- Go to Repeat Sensor times to input how many prints to be repeated.
- Go to Sensor Fixed Length to input the value or select the value by click up or down at  

**Continuous Mode**
You have 2 mode: Level and Immediate.

**Level:** Machine will print continuously when sensor ON and stop when sensor OFF.
**Immediate** : Machine will print continuously when a sensor is triggered for the first time. When **Continue** mode is applied, distance between the messages on the same object should to be set. Go to **Continue Fixed Length** to input the value or select the value by click up or down at 

**Printing Status**

- **Power Off**: Machine is disconnected from PC.
  - Displays the current speed of conveyor synchronized by encoder.
  - Displays the number of pages printed (left) per the total pages to print (right).

Select page to Start/End printing, apply for counter, barcode, data field. The data will continue to be printed from the start page. Ink level will show ink-volume when we insert cartridge into printer.
**Printer Controller**

- **Print**: Select to print
- **Pause**: Select to temporary stop printing
- **Stop**: Stop printing. This must be applied before adjusting parameters or editing the message.
- **No repeat data**: Please tick check here if you don’t want to repeat data.

**Settings POD.**

**DESIGNING MESSAGES**

- **New template**: Create new message with free template design.
- **Open**: Open message from PC.
- **Save template**: Save message to PC.
- **Export to .tiff files**: Export message in Tiff format.
Delete: Delete object.

Cut: Cut object.

Copy: Copy object.

Paste: Paste object.

Select Tool: Select to function and edit each object on the message.

Hand Pan: Move designing area to right/left to function on the hidden area in case your message is not fully displayed on the screen.

Shapes: Select shape to insert into message: Line, Rectangle, Square, Circle and Oval.

Static Text: Insert characters and barcodes.

Data Fields: Insert data.

Serial Number: Insert counter.

Shift Code: Insert shift code.

Image: Insert image or logo.

POD: Insert POD fields.

TOOLS

Purge: all of nozzle on the cartridge will push out some ink. This will help clean all of the cartridge.

Ink Cost: calculate number of prints, ink price, price for each print.

Event Log: view all of action that user did on application.

Convert logo: using export image to .hex file and update into printer.

Languages: Change interface languages on PC app.
INSTALLATION PROCEDURES

See at QUICK GUIDE.

GETTING STARTED

Install the machine on your conveyor according to the installation instructions. See the Quick Guide for more information.

- Set print direction and appropriate throw distance to obtain best print quality (1-3 mm).
- Insert ink cartridge.
- Plug the power cord into an appropriate power source to start up the machine.
- Insert keyboard receiver to keyboard port, turn on wireless keyboard.

EXTERNAL DEVICES CONNECTIONS

NOTES:

- Machine is able to operate with External Sensor, Encoder, Alarm at a time. Consult your supplier for further supports on the settings and connections.
- To connect machine with External Sensor, Encoder, Alarm, etc..., additional connector DB15 (male) will be required.

EXTERNAL SENSOR

Machine supports NPN, PNP and Push-pull sensor types.

- Connect sensor using power supply on machine.

- Connect sensor to machine using external power supply. Below demonstration is for external power supply of 5V.
ENCODER

An encoder is recommended to ensure the best print quality regardless the inconsistent speed of conveyor.

Encoder Technical Specifications

To calculate wheel diameter ($D$) depend on resolution ($R$) is:

\[ D = \frac{R}{(\pi \times 600)} \text{ (inches).} \]

**Example:** Encoder has $R = 3600$ (PPR).

\[ D = 1.90985 \text{ inches} \approx 48.5 \text{ mm.} \]
COMBINE EXTERNAL SENSOR AND ENCODER

In some cases, you need to use external sensors and encoders to achieve perfect printing quality. However, the machine has only one extended port. Please follow instructions to make an external sensor and encoder work together with the machine.

See the picture for this situation.

---

**NOTES:**

PIN12 (12V) use for both of Encoder and External sensor.
**ALARM**

Allow users to monitor operation of Machine from distance via the light signals from the Alarm.

This table below will show detail of each pin on DB15 port that alarm beacon will be used for:

<table>
<thead>
<tr>
<th>PIN ON DB15 PORT</th>
<th>VALUE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>GND</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>GND</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>STOP_LED_OUT (0V)</td>
<td><strong>STOP STATUS (RED LED)</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The printer will Stop print because some of reasons below:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Printer on but don’t enable printing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. No cartridge error.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Invalid cartridge error.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Out of ink.</td>
</tr>
<tr>
<td>9</td>
<td>PRINT_LED_OUT (0V)</td>
<td><strong>PRINT STATUS (GREEN LED)</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>User select on Start print menu. The printer in printing status</td>
</tr>
<tr>
<td></td>
<td></td>
<td>without any issue.</td>
</tr>
<tr>
<td>12</td>
<td>12V</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>GND</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>ALARM_LED_OUTPUT (0V)</td>
<td><strong>ALARM STATUS (YELLOW LED)</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The printer get some issue and need to warning to operator but it still</td>
</tr>
<tr>
<td></td>
<td></td>
<td>able to print.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Ink low</td>
</tr>
</tbody>
</table>

**Error Description**

<table>
<thead>
<tr>
<th>ERROR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop print (Normal event)</td>
<td>User select Stop print from menu. Printing will be stopped. Red light will turn on.</td>
</tr>
<tr>
<td>Invalid Cartridge</td>
<td>Cartridge is connected to printer that is not provided by your supplier whose selling this printer.</td>
</tr>
<tr>
<td>No Cartridge</td>
<td>No cartridge is connected to printer.</td>
</tr>
</tbody>
</table>
**Ink Low**

The value of Ink Level (Setting → Cartridge → Ink Level) on machine is lower 5.0 ml. The HP Smart Card has been implemented into each cartridge. This allows the printer and software to automatically recognize the real volume of ink inside each cartridge.

**Ink Out**

If the value of Ink Level on the machine is lower 0.4 ml.

**INPUT AND OUTPUT**

Input: To trigger some functions (reset counter …). Can accept NPN or dry contact. Output: NPN signal. Active when some even occur (each print …).

**QUICK STARTUP**

**REQUIRED COMPONENTS**

<table>
<thead>
<tr>
<th>No</th>
<th>Basic Components</th>
<th>With keyboard</th>
<th>With smartphone</th>
<th>With PC</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Machine</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2</td>
<td>Wireless keyboard</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3</td>
<td>Power supply</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4</td>
<td>Mounting brackets</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5</td>
<td>USB flash</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>6</td>
<td>Ink cartridge</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>7</td>
<td>Wi-Fi connection</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Smartphone Android</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Android application</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>PC desktop/laptop</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>PC connection Cable</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>PC software controller</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>PC driver for machine</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Encoder</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Alarm</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>External Sensor</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
Setup machine

See Getting Started.

NOTES:
The machine will function with Water and Solvent base ink series from us only. Trying to use unapproved cartridges may damage the machine and void the warranty.

Keyboard setup

- Insert the receiver of wireless keyboard to USB port (port 2) on machine, remove the protected stamp in the battery slot and turn on the button at the back of the keyboard to begin operating machine with wireless keyboard.
- From the main screen of machine, use ← → ↑ ↓ arrow keys to move the cursor to Settings and begin implementing initial setups for the machine. Press Enter to save and apply settings. Otherwise, press ESC.

Wi-Fi setup

See at QUICK GUIDE.

PC connection setup

- Be sure you have a PC plugged in connected with machine via a USB A-B cable.
- Install Controller Application and Driver of machine to your PC.
- From the main screen of machine, go to Operation and select Connect to PC to connect machine with PC.
- Open Controller Application on your PC to begin design your desired message with free template designing tool.

Setup external devices (Optional)

See again at External device connection.

- Install external sensor.
- Install encoder.
- Install alarm kit.

Create first messages

On machine with keyboard (Standalone mode)

Select Create new

Select Normal / Uppercase font
Select font size

Input "Hello!"

Press "ESC" to exit. Select "Save" and input name to save your messages.

Press "Insert" to insert more data, variable, barcode, logo, ...

On smartphone

On the wireless device, the user will first have to install the "MSSC Printer" app, available on the App Store. (Quick Access QR Codes)

ANDROID:

APPLE:

Download the MSSC Printer app from the Play Store or the App Store.

Select Normal/ Uppercase font
Select font size

Input “Hello!”

send button

**On PC with application (PC mode)**

See **PC application introduction**.

**FIRMWARE INTRODUCTION**

From the main screen, use ↑ and ↓ arrow keys to select the desired menu: **Message**, **Operation** or **Settings**. Press Enter to select. Press ESC to go back to the main screen.

**Message**

Create new or open existing messages on the machine memory.

**NOTES:**

*While doing this, please be sure you stop printing.*

**Create new messages**

Go to **Create new** to select your desired font, **Normal** or **Uppercase**.

Select **Normal font** to create your message with lower and uppercase fonts. Then select your desired font size, number of line and insert fields into message. Otherwise, go to **Uppercase font** to create your message with uppercase fonts only.

Available fonts and sizes include:

<table>
<thead>
<tr>
<th>Lines</th>
<th>Arial</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12.7 mm</td>
</tr>
<tr>
<td>2</td>
<td>5.92 mm</td>
</tr>
<tr>
<td>3</td>
<td>3.89 mm</td>
</tr>
<tr>
<td>4</td>
<td>2.54 mm</td>
</tr>
<tr>
<td>6</td>
<td>1.69 mm</td>
</tr>
</tbody>
</table>

Input message by using the following keys:

- Arrow keys ← → ↑ ↓ : move the cursor.
• Enter : go to the next line.
• Backspace : delete characters.
• ESC : escape and save / unsaved messages.

While creating message, press **Insert** on the keyboard to insert your desired fields.

**Symbol**

Insert the following symbols into the message (extended ASCII).

<table>
<thead>
<tr>
<th>€</th>
<th>,</th>
<th>§</th>
<th>…</th>
<th>†</th>
<th>‡</th>
<th>†</th>
<th>‡</th>
<th>†</th>
<th>‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>!</td>
<td>‰</td>
<td>‡</td>
<td>‡</td>
<td>†</td>
<td>†</td>
<td>†</td>
<td>†</td>
<td>†</td>
<td>†</td>
</tr>
<tr>
<td>&quot;</td>
<td>‡</td>
<td>‡</td>
<td>‡</td>
<td>†</td>
<td>†</td>
<td>†</td>
<td>†</td>
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<td>†</td>
<td>†</td>
<td>†</td>
</tr>
<tr>
<td>á</td>
<td>é</td>
<td>í</td>
<td>ó</td>
<td>ú</td>
<td>ü</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>à</td>
<td>À</td>
<td>Á</td>
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<td>ã</td>
<td>ã</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ã</td>
<td>æ</td>
<td>ë</td>
<td>ò</td>
<td>ô</td>
<td>û</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>å</td>
<td>è</td>
<td>ê</td>
<td>ë</td>
<td>œ</td>
<td>û</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>à</td>
<td>è</td>
<td>í</td>
<td>ò</td>
<td>ò</td>
<td>ò</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the message editing window, press **Insert** and use ↑ or ↓ arrow keys to move the cursor to **Symbol** and press Enter. Use the arrow keys to move your cursor to the desired object and press Enter to insert the symbols into message.

Below symbols are available to be inserted from your wireless keyboard:

| ! | ` | ( | ) | * | + | , | - | . | / | : | ; | < | = | > | ? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| @ | \ | ^ | _ | `{ | | } | ~ |

**Logo**

Insert logo or image from Machine into message.
Your logo should be updated or setup in the **Settings** menu.

In the message editing window, press Insert and use ↑ or ↓ arrow keys to move your cursor to **Logo** and press Enter. Move your cursor to the desired Logo and press Enter.

**NOTES:**

• **Insert logo first**, then **input message if you need to print a logo at the beginning of the message.**
• **Input message, then insert logo** if you need to print a logo at the end of the message.
• **Logo should be inserted in the last line of your message if you are printing multiple lines to ensure it is fully printed.**

**Counter**

Insert product counter into the message. There are **Single** and **Box/Lot**.

In the input section, press Insert and use ↑ or ↓ arrow keys to move the cursor to **Counter** and press Enter. Select your desired object and press Enter.

**Single**

Is an independent counter. This is used to count the products printed, can be a product or a box.
Move the cursor to the each object and input the value. After all values are set, move the cursor to Add counter here and press Enter to insert the counter into the message.

- **Start**: start number of counter.
- **Current**: current number that you would like to print immediately.
- **Reset**: end number of counter.
- **Step**: count step of counter.
- **Up/Down**: direction of counter. Up for increase number, down for decrease number.
- **Fill zero**: add 0 before each number like 09, 009, 0009…
- **Add counter here**: insert counter into the message.

**Example**

To print the following counter on each object:
001, 003, 005….101, 001, 003, 005 …

- **Start**: 1
- **Current**: 1
- **Reset**: 101
- **Step**: 2
- **Up/Down**: Up
- **Fill zero**: Enable

**NOTES:**

User can insert up to 6 independent counters in one message.

**Box/Lot**

Is a dual counter. This is used to count the box and the products in the box.

Move the cursor to the each object and input value. After complete setting for all objects, move to Add counter here and press Enter to insert the counter into the message.

<table>
<thead>
<tr>
<th>COUNTER 1</th>
<th>COUNTER 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>- <strong>Start</strong>: start number</td>
<td>- <strong>Start</strong>: start number</td>
</tr>
<tr>
<td>- <strong>Current</strong>: current number</td>
<td>- <strong>Current</strong>: current number</td>
</tr>
<tr>
<td>- <strong>Reset</strong>: end number</td>
<td>- <strong>Reset</strong>: end number</td>
</tr>
<tr>
<td>- <strong>Step</strong>: count step</td>
<td>- <strong>Step</strong>: count step</td>
</tr>
<tr>
<td>- <strong>Up/Down</strong>: increase or decrease</td>
<td>- <strong>Up/Down</strong>: increase or decrease</td>
</tr>
<tr>
<td>- <strong>Fill zero</strong>: add 0 before each number</td>
<td>- <strong>Fill zero</strong>: add 0 before each number</td>
</tr>
<tr>
<td>- <strong>Add counter here</strong>: insert counter</td>
<td>- <strong>Add counter here</strong>: insert counter</td>
</tr>
</tbody>
</table>

**Example**

Printing on certain package with a chain of digits, the first 3 digits are the number of the box containing the package; the last 3 digits are the order of the package within the box. Let’s say there are 20 packages in the box.

Follow below steps to set counter:
Step 1 Set up Counter 1 first and insert into the message

**Counter 1**

- **Start:** 0
- **Current:** 0
- **Reset:** 200
- **Step:** 1
- **Up/Down:** Up
- **Fill zero:** Enable

Step 2 Then set up Counter 2 and insert into the same message

**Counter 2**

- **Start:** 0
- **Current:** 0
- **Reset:** 100
- **Step:** 1
- **Up/Down:** Up
- **Fill zero:** Enable

The two counters will be printed as below:

```
   Packages in the box (Counter 1)  019 099
                             ←→  Box number (Counter 2)
```

**NOTES:**
- Press Enter to apply each setting.
- Set up Counter 1, then Counter 2.
- Maximum value of Reset is up to 2,000,000,000.
- Maximum value of Step is 250.
- Counter will be backup and continue in case of power failure.

**Date**

Insert current date into message.

In the input section of Edit Messages, press **Insert**, then use ↑ or ↓ arrow keys to move the cursor to **Date** and press Enter.

- Input date format in **Format**.
- Press Enter to insert into message.

**Format**

Select your desired format below to input into the **Format** section. Otherwise, date will not be displayed in the message.

- **Day:** d or dd.
- **Month:** M, MM or MMM.
- **Year:** yy or yyyy.
- **Julian date:** JJJ.
Example: **01/07/2018**
- 01/07/2018 : *dd/MM/yyyy*
- 1/7/18 : *d/M/yy*
- 1/JUL/18 : *d/MMM/yy*

To insert the current date within a year (365 days), input Format JJJ. In this case, if your current date is 01/07/2018, date displayed on your message will be 182 for perpetual year and will be 183 for leap year (leap year the February have 29 days).

**NOTES:**
- Lower case or Upper case is acceptable.
- Available separators include *Slash (/), Dash (-), Dot (.), Space ( ) and No separator.*

**Expired**
Insert expired date into the message
In the input section of Edit Messages, press Insert and use † or ‡ arrow keys to move the cursor to **Expired** and press Enter.
- Input format of expired date at **Format** (similar format with the current date).
- Move the cursor to **Expired** and input the date that your product will be expired.
- Press Enter to confirm settings and insert into the message.

**Example**
If your manufacture date is 01/07/2018 and your product will be expired in 1 year, you are required to input 365 at **Expired**. Machine will automatically calculate the expired date and insert into the message.

**Time**
Insert current time into the messages.
Current time must be setup in **System clock under Settings.**
In the input section, press Insert, then use † or ‡ arrow keys to move the cursor to **Time** and press Enter. Select and input your desired format and press Enter to insert into message.
- **Second**: s, ss.
- **Minute**: m, mm.
- **Hour**: h, hh (format 12h). H, HH (format 24h).
- **AM or PM**: tt.

**String**
Insert a string of data as setup in the **Settings.**
From the input section of new message, move the cursor to the position where a string will be inserted and press **Insert.**
Then use † or ‡ arrow keys to move the cursor to **String** and press Enter. Select your desired string and press Enter to insert into the message.
Define these Strings at **Settings ↠ String**. This is the shortcut will help you not repeat similar data entry such as: company name, company address, email, phone number…
**Barcode 1D**

Insert barcodes into message.

From the input section, use the arrow keys to move the cursor to the **end of the final line** of your message. Press Insert, then use ↑ or ↓ arrow keys to move the cursor to **Barcode** and press Enter. Select **Static** or **dynamic** and press Enter.

**Static barcode**

Insert static 1D barcodes into your messages. We support 8 types of barcodes

- **Width**: Input width for barcode (value varies from 1 to 4).
- **Height**: Input height for barcode (value varies from 1 to 3).
- **Text**: Select **Enable** to display barcode value, otherwise select **Disable**.
- **Value**: Input value for your barcode.

Use ↑ or ↓ arrow keys to move to the cursor to your desired object and change the value. Press Enter after each value change to save and apply settings.

Example after printed will be like this:

```
First print  Second print  Third print  N-print, …
```

**NOTES:**

If you would like to print static 2D barcode. Please use with update logo support. Create 2D barcode as image, use smartphone or application on PC to load it to machine.

- **Use smartphone**: see **Update Logo**.
- **Use PC**: see **Use Convert Logo**.

**Create 2D static barcode with smartphone**

The application on smartphone will support 2D barcode **generation** then you can send it directly to the machine, USB flash or PC application is **not required**.

These step below will show you how to created a 2D barcode:
Tap on “barcode” button. Select “Code QR (2D)” and input barcode value. Adjust Width, Height...

Tap on “Generate barcode” button. Select “Yes” to open Logo Sender.

Tap on “Use this image.”

Select logo number on machine.
**Dynamic barcode**

Insert dynamic barcode into your messages.

- **Width**: Input width for Barcode (value varies from 1 to 4).
- **Height**: Input height for Barcode (value varies from 1 to 3).
- **Text**: Select Enable to display barcode value, otherwise select Disable.
- **Prefix**: Input repeat value before barcode.
- **Counter**: setup values for your counter or dynamic data (like the Single counter).
- **Suffix**: Input repeat data after barcode.

Use ↑ or ↓ arrow keys to move to the cursor to your desired object and change the value. Press Enter after each value change to save and apply settings.

**NOTES:**

Counter can be placed in the following positions of the barcode

- **At the beginning**: Prefix = 0 (not enter here).
- **In the middle**: Input both Prefix and Suffix.
- **At the end**: Suffix = 0 (not enter here).

Example after printed will be like this:

```
First print  Second print  Third print  Four print
00001  00002  00003  00004
```

**Shiftcode**

Insert Shiftcode into the message

From the designing section, use the arrow keys to move the cursor to your desired position in the message and press Insert. Then use ↑ or ↓ arrow keys to move to Shiftcode and press Enter.

- **Code**: input name of Shiftcode. Maximum 2 characters (letter or number or both).
- **Time**: input start time of each shift in hour: minute.

Code of each specific shift will be displayed according to each period of time of the shift. Press Enter to save settings and press ESC to go back to the main menu.

**Open storage messages**

Open existing messages to Use / Edit / Delete.

From the main screen of machine, select Message, go to Open and press Enter to go to message storage. Select your desired message and press Enter. Use ↑ or ↓ arrow keys to Use / Edit / Delete.

- **Use**: select existing message to print.
- **Edit**: select existing message to edit (see Create New).
- **Delete**: select message to delete.
Press ESC to go back to the main screen. Confirm “Yes” and input name for message, after complete press Enter.

**Status machine**

Display settings and status of the machine. From the main screen of machine, select **Message** and use down arrow keys to go to **Information** and press Enter.

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>DETAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ink level</td>
<td>Current ink in the cartridge (ml)</td>
</tr>
<tr>
<td>Speed</td>
<td>Current print speed (m/min or ft./min)</td>
</tr>
<tr>
<td>Density</td>
<td>Current density</td>
</tr>
<tr>
<td>Resolution</td>
<td>Current resolution</td>
</tr>
<tr>
<td>Delay</td>
<td>Current delay time</td>
</tr>
<tr>
<td>Print mode</td>
<td>Current print mode</td>
</tr>
<tr>
<td>Repeat</td>
<td>Number of prints repeated on the same object</td>
</tr>
<tr>
<td>Delay</td>
<td>Distance between 2 prints</td>
</tr>
<tr>
<td>Maximum</td>
<td>Number of prints left based on the current ink level, density and resolution</td>
</tr>
</tbody>
</table>

**Operation**

**Start**

Change status of machine from stopped to start print.

Select **Operation → Start** to begin to print. Your message content along with other setting parameters will be displayed while printing.

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>DETAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prints</td>
<td>Number of prints have been printed</td>
</tr>
<tr>
<td>Ink levels</td>
<td>Current amount of ink in the cartridge (ml)</td>
</tr>
<tr>
<td>Speed</td>
<td>Current speed (m/min)</td>
</tr>
<tr>
<td>Resolution</td>
<td>Current speed (m/min)</td>
</tr>
</tbody>
</table>

**Stop**

Change status of machine from start printing to stop.

To stop print, press ESC to go back to the main screen. Use ↑ or ↓ arrow keys to go to **Operation**, select Stop to stop printing.

**NOTES:**
- Machine should be stopped before doing other settings.
- Shortcut key to Start / Stop: **CTRL + SHIFT + ENTER**.

**Purge**

Select **Operation → Purge** to jet the ink out from all of nozzle this will help clean the print head.

**Connect / Disconnect PC**

Select to connect or disconnect Machine with PC.
**Settings**

From main menu select **Settings** to access settings menu. From the Settings menu, use the arrow keys to move the cursor to your desired setting, press Enter to select and begin editing.

**NOTES:**
Press Enter to save. Press ESC to go to main menu and apply new settings.

**Speed**

Set print speed with 2 print modes: **None Enc.** and **Encoder**

**None Enc (No encoder)**

Operating Machine without encoder. Under this mode, print speed must be set to synchronize with conveyor speed to print good quality message (input value at **Value**).

**Encoder**

Encoder is recommended where speed of the conveyor is varied. Under this mode, print speed of Machine will be synchronized with conveyor speed to ensure the best print quality. Ensure you have an encoder installed with machine via the DB15 connector.

**NOTES:**

- Minimum speed: 1m/min
- Maximum speed: 228m/min

From the **Settings** menu, use ↑ or ↓ arrow keys to move the cursor to **Speed**, press Enter. Press Enter again at **Select** to choose **None Enc.** or **Encoder** mode. Press Enter to apply settings.

**Resolution**

Set the amount of ink drops on an inch. From the **Settings** menu, use ↑ or ↓ arrow keys to go to **Resolution**, press Enter. Select your desired resolution and press Enter.

Optional resolutions with standalone mode:

- 300x300 dpi.
- 300x150 dpi.
- 300x100 dpi.

Optional resolutions with PC mode:

- 600x600 dpi.
- 600x300 dpi.
- 600x150 dpi.
- 600x100 dpi.
- 300x300 dpi.
- 300x150 dpi.
- 300x100 dpi.

**Density**

Set the optical density of the print.

There are 5 levels of **Density** to apply.
From the Settings menu, use ↑ or ↓ arrow keys to move the cursor to Density, press Enter. Move the cursor to your desired density and press Enter to apply.

**NOTES:**

Print speed will be varied according to the resolution and the optical density.

Table below is used to explain about relationship between: Speed, Resolution and Density.

<table>
<thead>
<tr>
<th>Density</th>
<th>Resolution</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600x600 (With PC)</td>
<td>38</td>
<td>19</td>
<td>12</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>600x300 (With PC)</td>
<td>76</td>
<td>38</td>
<td>25</td>
<td>19</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>600x150 (With PC)</td>
<td>152</td>
<td>76</td>
<td>50</td>
<td>38</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>600x100 (With PC)</td>
<td>228</td>
<td>114</td>
<td>76</td>
<td>57</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>300x300</td>
<td>76</td>
<td>38</td>
<td>25</td>
<td>19</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>300x150</td>
<td>152</td>
<td>76</td>
<td>50</td>
<td>38</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>300x100</td>
<td>228</td>
<td>114</td>
<td>76</td>
<td>57</td>
<td>45</td>
</tr>
</tbody>
</table>

**Delay**

Delay before print and Delay after print (mm).

- **Delay before print:** set the distance since the sensor receives signal to the start of printing. Input value at Value, press Enter to apply settings.

- **Delay after print:** set the distance that the print head will delay after it finished the previous print and before it begins the next print. Input value at Value, press Enter to apply settings.

**NOTES:**

- Delay before print varies from 1 to 10,000 mm.
- Delay after print varies from 1 to 10,000 mm.

**Cartridge**

Display the current level of ink in the cartridge (using smartcard).

From the Settings menu, use the arrow keys to go to Cartridge and press Enter.

**NOTES:**

- Alarm is triggered when there is 5ml left in the cartridge.
- Printer will stop print when show warning out of ink.

**Update Logo**

Update logos or images from USB flash to the machine memory. Be sure your new logos are available on your USB flash.

Logos stored on your USB flash must be processed by our application See Convert logo.

Machine accepts logo with .hex format only. All logos must be named in order as LOGO1, LOGO2, LOGO3 and LOGO4 as showed below.
Update logo via USB flash

To update or change new logos on your machine memory, do the following steps:

- Insert USB flash into Machine (USB port 1)
- From the Settings menu, go to Update Logo and press Enter.
- Select your desired logo (1, 2, 3 or 4) and press Enter to begin updating. Be sure you name them correctly. LOGO1 on your USB will replace LOGO1 on the machine memory and the same for other logos.

Update logo via smart phone

Perform the following steps to update the logo via your smartphone.

1. Taps on “settings”
2. Taps on “logo”
3. Taps “Choose image”
Select image on your phone

Tap "Use this image"

Select convert mode

Select logo number on machine

Waiting for sending process

Open Messages Designer.
Tap "logo" button

Select "Logo exist"

Select number logo on machine

Tap send button. Select "Send"
String
Insert a string of data into messages.
From the Settings menu, use the arrow keys to go to String and press Enter. Input your strings into the input section. Press ESC to apply and go back to the main menu.

NOTES:
• Maximum length of each string is 50 characters.
• Machine allows maximum 5 strings on the machine memory.

Random Jet
Schedule automatic jetting to clean the print head.
From the Settings menu, use arrow keys to select Random Jet and press Enter. Select Status and press Enter.
• Select Enable and input time for jetting (second (s)) at Time.
• Select Disable to disable random jetting.

NOTES:
• Time for jetting varies from 10 to 60,000 seconds.
• This function is useful for Solvent base ink. So we recommend that, any user need enable this function with time around 15-30 seconds to help printing quality.

Print Side
Set nozzles on 2 modes Manual and Auto.
From the Settings menu, use the arrow keys to go to Print Side and press Enter. Select Manual or Auto by pressing Enter at Select.
• Manual: Press Enter at Value to select Odd or Even. This is applied in case one of your nozzle side is not working. Press Enter to apply.
• Auto: Input the number that the nozzles will switch after certain prints. To automatically switch nozzles after every print, input 1. To switch nozzles after every 25 prints, input 25.

NOTES:
• Value input varies from 1 to 50,000 times.
• Operation with PC: Odd and Even to achieve max 600x600dpi.
• Operation with wireless keyboard: Odd or Even (max 300x300dpi).
• Operation with smart devices: Odd or Even (max 300x300dpi).

Sensor
Select External or Internal sensor.
From the Settings menu, use the arrow keys to go to Sensor and press Enter. Move to your desired mode and press Enter to confirm.

Direction
Set print direction correlating the direction of the conveyor. Machine supports 4 directions: ABC: left right, CBA: right left, ABC: reverse left right, CBA: reverse right left.
From the Settings menu, use the arrow keys to go to Direction and press Enter. Move to your desired direction and press Enter to confirm.
**Print Mode**

**Sensor** mode and **Continue** mode.

From the **Settings** menu, use the arrow keys to go to **Print Mode** and press Enter. Select **Mode** and press Enter to select **Sensor** or **Continue** mode.

**Sensor mode**

Machine is triggered by sensor to print.

Go to Mode and press Enter to select **Sensor** mode and use arrow keys to move to other settings.

Input value at **Repeat** to set the number of prints to be repeated on the same object. Press Enter to confirm and go to the next setting. Valid values vary from 0 to 99.999.

Input value at **Delay** to set distance between the prints. Valid values vary from 10 to 10,000. Invalid values results in error.

**Continue mode**

Go to Mode and press Enter to select **Continue** mode and use arrow keys to move to other settings.

Input value at **Delay** to set distance between the prints. Valid values vary from 5 to 10,000mm. Invalid values results in error.

**Immediate:** print continue without sensor signal.

**Level:** print continue with sensor signal.

**Unit**

Select your desired measurement units **inches** or **mm**.

From the **Settings** menu, use the arrow keys to go to **Unit** and press Enter. Move to your desired measurement, press Enter to select.

**Wi-Fi**

Connect machine to Wi-Fi network.

From the **Settings** menu, use the arrow keys to go to **Wi-Fi**, press Enter. Use ✅ and ❌ arrow keys to turn ON or turn OFF Wi-Fi (see at **Quick Guide**).

**Update Font**

Update different fonts and character sizes for Machine. There is one font at a time on Machine.

Machine supports the following fonts while working with wireless keyboard.

<table>
<thead>
<tr>
<th>Lines</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12.7 mm</td>
</tr>
<tr>
<td>2</td>
<td>5.92 mm</td>
</tr>
<tr>
<td>3</td>
<td>3.89 mm</td>
</tr>
<tr>
<td>4</td>
<td>2.54 mm</td>
</tr>
<tr>
<td>6</td>
<td>1.69 mm</td>
</tr>
</tbody>
</table>
Steps to update different font/size:

- Insert USB flash into USB port 1 on Machine.
- From the Settings menu, go to Update Font and press Enter.
- Select your desired font/sizes (1 to 5) and press Enter to begin updating. FONT1 on your USB will replace FONT1 on the machine memory and the same with other fonts.

Machine accepts font/sizes with .hex format only. All font/sizes must be named as showed below.

<table>
<thead>
<tr>
<th>Name</th>
<th>Date modified</th>
<th>Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>FONT1</td>
<td>17/08/2016 01:41</td>
<td>HEX File</td>
<td>306 KB</td>
</tr>
<tr>
<td>FONT2</td>
<td>17/08/2016 01:42</td>
<td>HEX File</td>
<td>69 KB</td>
</tr>
<tr>
<td>FONT3</td>
<td>17/08/2016 01:51</td>
<td>HEX File</td>
<td>31 KB</td>
</tr>
<tr>
<td>FONT4</td>
<td>17/08/2016 01:52</td>
<td>HEX File</td>
<td>14 KB</td>
</tr>
<tr>
<td>FONT5</td>
<td>17/08/2016 01:52</td>
<td>HEX File</td>
<td>9 KB</td>
</tr>
<tr>
<td>FONT6</td>
<td>17/08/2016 01:53</td>
<td>HEX File</td>
<td>655 KB</td>
</tr>
<tr>
<td>FONT7</td>
<td>17/08/2016 01:50</td>
<td>HEX File</td>
<td>261 KB</td>
</tr>
<tr>
<td>FONT8</td>
<td>17/08/2016 01:51</td>
<td>HEX File</td>
<td>44 KB</td>
</tr>
<tr>
<td>FONT9</td>
<td>17/08/2016 01:52</td>
<td>HEX File</td>
<td>20 KB</td>
</tr>
<tr>
<td>FONT10</td>
<td>17/08/2016 01:52</td>
<td>HEX File</td>
<td>32 KB</td>
</tr>
<tr>
<td>FONT11</td>
<td>19/12/2017 10:31</td>
<td>HEX File</td>
<td>260 KB</td>
</tr>
<tr>
<td>FONT16</td>
<td>10/12/2017 10:22</td>
<td>HEX File</td>
<td>207 KB</td>
</tr>
</tbody>
</table>

NOTES:

- Fonts being updated will replace the existing ones on the machine memory.
- Machine prints true fonts while working with PC.
- Font 1 to 5 is Normal font.
- Font 6 to 10 is Uppercase font.

Rollover

Set different date depending on the shift schedules of your production.

From the Settings menu, use the arrow keys to move to Rollover and press Enter.

Go to Set and press Enter. Enable this function and input value at Time. Press Enter to apply (default value is 00h: 00). Otherwise select Disable and press Enter to apply.

NOTES:

Value input varies from 0 to 23.

System Clock

Set time and date for your system clock.

From the Settings menu, use arrow keys to go to System clock and press Enter.

Go to Date, use ← and → arrow keys to change date value and press Enter to apply.

Go to Time, use ← and → arrow keys to change time value and press Enter to apply.

Rotate

This function will allow you to control the direction of menu interface and help the user to see the screen and operate. An internal rotate sensor allows automatic adjustments to the interface to match the current direction of machine.

From the Settings menu, use the arrow keys to go to Rotate and press Enter.

Select Auto or Lock rotate or others, press Enter to apply.

Screen will rotate according to the direction of the machine when Auto is selected.
Screen will be locked at the direction when Lock rotate is selected. Otherwise select others.

**Password**

Set to authorize users, or to protect the machine from unauthorized users. Machine is defaulted as no password.

To activate password protection, from the Settings menu use arrow keys to go to Password and press Enter. Then go to Active and select Enable to set password. Enter old password (1234567890), then enter your new password and retype to confirm. Maximum characters allowed for password is 10 including letters and numbers.

**Default - Important setting**

Reset your machine settings to the factory defaults. This can be used after updating firmware or reset machine in case errors occur during operation.

From the Settings menu, select Default and press Enter. A confirmation box will appear. Select Yes to continue. Otherwise, select No.

**Language**

Select your interface language. We currently support these languages:

- **English** (Default), Finnish, Spanish, German, French, Russian, Vietnamese, Chinese, Korean, Portuguese, Polish and Czech.

From the Settings menu, select Language and press Enter. Use the arrow keys to move to your desired language and press Enter to apply. Otherwise, select ESC.

**NOTES:**

At default setting, machine just shows 6 languages at Setting → Language. If you don’t see your desired language in the menu but it is inside our support languages, please do the following: Add optional language interface

For example user needs to change the machine interface to Korean. They will need the information below.

**Step 1**

Copy all file of machine’s firmware to ROOT FOLDER of USB flash. See table below for more information.

<table>
<thead>
<tr>
<th>Languages</th>
<th>File name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Update</td>
<td>00SC.txt</td>
</tr>
<tr>
<td>Finnish</td>
<td>01SC.txt</td>
</tr>
<tr>
<td>Spanish</td>
<td>02SC.txt</td>
</tr>
<tr>
<td>German</td>
<td>03SC.txt</td>
</tr>
<tr>
<td>French</td>
<td>04SC.txt</td>
</tr>
<tr>
<td>Russian</td>
<td>05SC.txt</td>
</tr>
<tr>
<td>Vietnamese</td>
<td>06SC.txt</td>
</tr>
<tr>
<td>Chinese</td>
<td>07SC.txt</td>
</tr>
<tr>
<td>Korean</td>
<td>08SC.txt</td>
</tr>
<tr>
<td>Portuguese</td>
<td>09SC.txt</td>
</tr>
</tbody>
</table>
**Step 2**

After copying all files to USB, open file **00SC.txt (Index update)**. Open and edit this file content to **08** (this means Index update will become **Korean – 08SC.txt**). Save and closed this file.

**Step 3**

Insert USB flash to machine. Go to **Settings** menu. **Press F12**. Please wait a moment for machine update new index of language.

**Step 4**

- Go to **Settings → Language → Enter**. You will see **“Korean”** will appear at the bottom of menu language.
- Select **“Korean”**, press Enter.
- **Press F12** to complete operation. Please wait a moment, the machine will read file **08SC.txt** and update to memory.

The machine will exit Settings menu and return Main menu with new Korean language interface.

**NOTES:**

*You need do 4 steps above and also press F12 - 2 times.*

**IO signals**

Select start/stop the coder from the button.

From the **Settings** menu, select **IO signals** and press Enter. Then select input to active **Start/Stop**.

**Custom string**

Update and select the Custom string.

To update the Custom string by USB flash, from the **Settings** menu, select **Custom string** and press Enter. Then select the desired Custom string number or select all to update and then press Enter, wait until returning to the **Settings** menu.

**Coder name**

Change machine name. This name will be show when you use smartphone and application to search machine. It will help you recognize machine when you have many Wi-Fi devices around or in case you have more than 1 machine.

From the **Settings** menu, select **Coder name**. Input new name for machine. Default will set it to **“Coder 1”**.

**RS485**

Enable the RS485 protocol on machine. To help you control multiple printers by one Controller (PLC, PC, Laptop...) on RS485 network.

From the **Settings** menu, select **RS485** and input desired setting.
**LCD Backlight**
Adjust the time for the screen backlight. Your screen will become black but all activity still working. Turn on screen by press any key on keyboard.
From the **Settings** menu, select **LCD Backlight**. Then select the desired time to turn off screen and then press Enter.

**Reset**
Reset the memory of Counter variable on message. The memory of Counter will help you save the current value of Counter even if you stop print or machine is turned off.
From the **Settings** menu, select **Reset**. Press Enter to erase memory of counter (printer will print from start value).

**Bi-directional**
When we enable this function, printer will automatic change direction after some times print. The 1st in direction: left to right, 2nd will be printed right to left.
From the **Settings** menu, select **Bi-directional**. Then press Enter and select Enable to used this function.

**Adjust:** Setup Delay for 2^{nd} print (auto change direction) same setup Delay before.

**Trigger:** the times that the printer auto change direction.

**Set up backup**
Backup is save some information as: message, logo, language and settings to usb flash and Restore it on another printer. It will help you save a lot of time.
From the **Settings** menu, select **Set up backup**. Please insert usb flash before choose Backup and restore.

**NOTES:**
Backup file will only restore on another printer with same **Model** and **firmware version**.

**About**
- See information of the current firmware.
- Update to a different firmware (see [UPDATE FIRMWARE INSTRUCTIONS](#)).

**PC APPLICATION INTRODUCTION**

**Hardware setup**
Do as below on machine.
- **Step 1**: connect USB cable from machine to PC.
- **Step 2**: open Operation menu, select “Connect PC”. If you cannot select, please stop print first, then select again.

**Software setup**

**Install application**

**NOTES:**
• If you are using Windows 8, the Microsoft .NET Framework has been integrated to

Extract setup RAR file

Right click select Open on Setup file

Click Next

Click Install or select other path. Wait for it to complete and Click Finish.

Install driver

When plugging your machine to computer, your Window will search the driver for machine, but it will not able to success install driver. You need install manually.

Searching driver software...
Cannot successfully installed driver. Please do as following:

Extract driver. Get it from us.

Open **Manage** function.

Look at **Other devices**. "Thermal Inkjet Coder" is the correct machine.
Right click. Select **Update Driver Software**.

Select **Browse my computer for driver software**.
Select **Browse** to locate to driver folder.

Locate to folder driver.
Click Next to continue.

There is a security issue with Windows. No problem, “Install this driver software anyway”!
Wait a moment and see your driver has installed successfully.

Look at Device Manager, you will see **Thermal InkJet Coder** device appear here.

**Install driver on Windows 8, 10**

If your PC uses Windows 8 or Windows 10, please perform the next step to **Disable signature enforcement** before you install the driver. Please see the instructions in the link: [How to Disable Driver Signing Check in Windows 10]

**Software Using**

Make sure Hardware Setup has been completed.
After installed, open Controller application.
Setting all printing parameters for the message before starting print. Be sure to stop the printing mode before setting the parameters.

Create new message

Click DESIGNING to open design template. From the designing section, select New Template. A new window pops up.

- Name your message in Name field.

- Input Width and Height of your message. Height of the message is default at 12.7mm.

- Select measurement: Centimeters, Millimeters, Inches, Pixel.

- Select OK to save settings and begin designing message.
NOTES:
Be sure the objects are completely located in the template. Any parts projected out of this section will be missed print.

Static text object

- From the Designing section, select Static Text and click on the designing section. Static Text window will pop up.
- Input content from your keyboard. You can select any font type (Window True Font), any font size and input in any language.

- Format your content just like functioning on Microsoft Word, including font, size, bold, italic, underline, left, center and right align.
Position of the text can be aligned in 2 directions: **Vertical Alignment** and **Horizontal Alignment**.

- **Vertical Alignment**: Top, Center, and Bottom.
- **Horizontal Alignment**: Left, Center, Right.
- Select **Barcode** to create if barcode is needed.
- **Barcode** tab will pop up.
- Press ✅ button to finish your input.

Your static text will appear on the template. Right now you can adjust position and size of this text. Use the roll button to zoom in or zoom out the template.

If you would like to convert above string to barcode format. Please check at “**Barcode**” check box. The window input will open new barcode tabs.

- Click on **Barcode** tab. A new window will pop up to set the parameters for the barcode.
- Select your desired type of barcode at **Barcode Type**.
- Look at below **Barcode type and Linear** to set parameters according to your specific requirements for each barcode.

- Place your barcode within the **Margin**.

- **Left Margin**: align barcode from the left.

- **Right Margin**: align barcode from the right.

- **Top Margin**: align barcode from top.

- **Bottom Margin**: align barcode from bottom.

- **Unit of Measure**: choose unit of for margin: Centimeter, Inch and Pixel.

- **Text Margin**: set distance from the text (barcode data) to the bottom edge of barcode.
• **Barcode module width**: adjust width of barcode.
• **Barcode module height**: adjust height of barcode.
• **Display Barcode data**: show/hide barcode data.

When all parameters are set, go back to Static Barcode, select ✓ to confirm and apply settings.

No barcode will be generated if the data input is incorrect.

Set the position of the object.

- **X**: Align object from the left.
- **Y**: Align object from the top.
- **Angle**: rotate the object.

<table>
<thead>
<tr>
<th>X (cm):</th>
<th>Y (cm):</th>
<th>Width (cm)</th>
<th>Height (cm)</th>
<th>Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>0.00</td>
<td>1.98</td>
<td>1.27</td>
<td>0</td>
</tr>
</tbody>
</table>

**Data field object**

From the Designing section, select **Data Fields** and click on the designing section. Data Fields window will pop up.
Click **Load Data**, Connect database window will pop up. There are two options for loading data: **Database Information** and **File Information**.

- **Database Information**: load database from your server.
  Input server’s name, Database’s name, Username and Password of your server.
- **File Information**: load database from your local file.
  Click **Select** to choose the desired file (Text, Excel, CSV or Access file).

Click **Connect** to connect the file to the message after loading successfully.
Choose the column of data which is need to be printed (by click on name of column), then click add button to add column to data field compose box. You can add more column, add some static text, format font, size, type…

- **Select Barcode** to create if barcode is needed. See setting barcode from **Static text object**.
NOTES:

For type of Data Matrix barcode, select GS1 Compatible, and input the Application identity number for the data before each data field.
**Shift code object**

From the Designing section, select **Shift Code** and click on the designing section. Shift Code window will pop up.

- The firmware supports up to 5 shift codes. Create each shift code with any two digits: number, letter or symbol. Select font, size and then select time to display shift code.

**Image object**

From the Designing section, select **Image** and click on the designing section. Image window will pop up.
Select your desired image at **File**.

Set **Threshold Convert Properties** as your requirement.

Select **Variable Image** if you need to print multiple images. Select images at **Image Folder**.
Choose data field at **Field**.

Select Ok to finish.

**Convert logo**

This function is to help you create logo under `.hex` format use to update logo on machine via USB flash.

**Step 1**

Open Controller application. Go to **Tool → Convert Logo**.
Step 2
Go to **Browse** to select your desired logo.

Step 3
Adjust the Threshold, background color (Normal, Inverse).

Step 4
Select to name your logo (**LOGO1, LOGO2, LOGO3** and **LOGO4**) and save it to USB flash.
On machine. Insert the USB flash to machine. Go to Settings → Logo → Select the name of logo that you just created. Wait a moment, the machine will update logo from USB flash to itself memory.

**UPDATE FIRMWARE INSTRUCTIONS**

**NOTES:**
- Be sure there is no power failure while firmware is being updated.
- All data and settings will be lost while updating new firmware.
- Cartridge should be removed from the machine to avoid failure.
- Everything connected to the machine (exclude keyboard) should be removed from the machine.

**Prepare USB flash**

- Prepare USB flash disk less than 32GB.
- Format USB flash disk with file system **FAT / FAT32** and allocation unit size **64 kilobytes**. See photo below:

- Extract firmware folder (**.RAR file**) to **ROOT folder** of USB flash disk.
• Insert USB flash disk into **USB port 1** on machine.

**Update firmware**

• From the main menu, use the arrow keys to go to **Settings → About → Update Firmware → Yes.**
• This process will take **3 minutes.**
• When update is complete, use the arrow keys to go to **Settings → Default → Yes.**
• After default complete, at **Main Menu** and press **F12.**
• Press combine **Ctrl + Shift + Alt + K** to update booting logo.

**Update logo**

When update is complete, go to **Settings → Update logo** and do the following updates:

• Update Logo → Logo 1.
• Update Logo → Logo 2.
• Update Logo → Logo 3.
• Update Logo → Logo 4.
• Select **All** to update all logo.

You can skip this step if it not applicable to you.

**Update font**

This process will take **7 - 10 minutes.**

• Update Font → Font 12.7 mm.
• Update Font → Font 5.92 mm.
• Update Font → Font 3.89 mm.
• Update Font → Font 2.54 mm.
• Update Font → Font 1.69 mm.

**NOTES:**

This step must be updated to make sure your **Edit Messages** on machine work well.
**Update Custom string**

Go to **Settings → Custom string** and do the following updates:

- Update Custom string → Custom string 1.
- Update Custom string → Custom string 2.
- ...
- Update Custom string → Custom string 19.
- Update Custom string → Custom string 20.
- Select All to update all Custom string.

You can skip this step if it not need to you.

**Machine default**

Set your machine to factory defaults. Go to **Settings → Default → Yes**.

**NOTES:**

This step must be execute to make sure all new function on machine work well and no more error happened.

**THANKS FOR YOUR READING!**