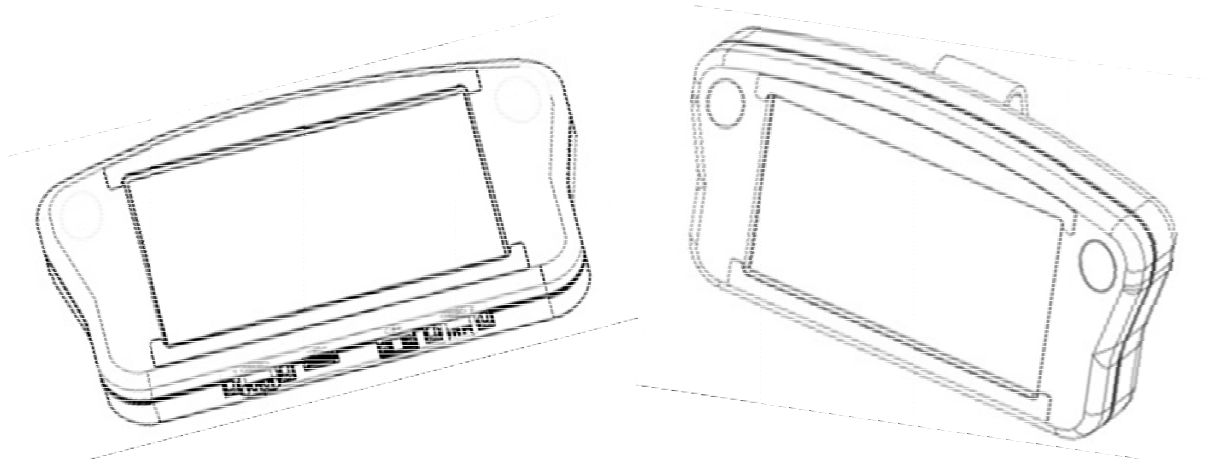


# Operations Manual

***LITTLE DAVID***<sup>TM</sup>  
**MicroJet HRP**  
**Serial Controller**



Manual Part  
Number:  
**MJHRP-CTRL-OM**  
Revision A

**LOVESHAW**

2206 Easton Turnpike, South Canaan, PA 18459 USA  
1-800-572-3434 • 570 937-4921

**LITTLE DAVID™**  
**MicroJet HRP**  
**Serial Controller**  
**Operations**  
**Manual**

**PN: MJHRP-CTRL-OM**  
**Revision A**

The information contained in this manual is correct and accurate at the time of its publication. Loveshaw reserves the right to change or alter any information or technical specification at any time and without notice. The information contained in this manual is correct and accurate at the time of its publication. "The manufacture" refers to LOVESHAW throughout the body of this document.

Copyright © LOVESHAW. All rights reserved.

Copyright © 2015 LOVESHAW  
All rights reserved. Printed in the United States of America  
LOVESHAW  
2206 Easton Turnpike, PO. Box 83  
South Canaan, PA 18459 USA  
Tel: 1-800-962-2633 • 570-937-4921  
Fax: 570-937-4016

[www.loveshaw.com](http://www.loveshaw.com)

LOVESHAW EUROPE, LTD  
Unit 1 Newton Park  
West Portway Industrial Estate  
Andover, Hampshire SP10 3SH  
ENGLAND

Tel: +44 (0)1264 357 511  
Fax: +44 (0)1264 355 964  
[sales@loveshaw-europe.co.uk](mailto:sales@loveshaw-europe.co.uk)

Tuesday, May 10, 2016

## ***Serial Controller***

### **Warranty:**

The MicroJet HRP Serial Controller, (henceforth “Serial Controller”) including all components unless otherwise specified, carries a limited warranty.

For all warranty terms and conditions, contact LOVESHAW for a complete copy of the Limited Warranty Statement. A copy of this can be found at [www.loveshaw.com](http://www.loveshaw.com).

# Serial Controller

<b>Section 1: Safety .....</b>	<b>5</b>
<b>Section 2: Quick Start.....</b>	<b>6</b>
Step 1: Assemble Bracketry.....	7
Step 2: Assemble Bracketry to Conveyor.....	8
Step 3: Connect controller to Print Head .....	9
Step 4: Setup Print Head Via Controller.....	11
Step 5: Creating a Message.....	16
Step 6: Print a Message.....	18
<b>Section 3: Controller Functions.....</b>	<b>19</b>
Home Screen .....	19
Message Editor.....	21
Time, Date, and Count Codes .....	22
User Defined Time Codes.....	23
User Defined Date Codes.....	24
Product Counts, Variable Fields, Logos .....	25
Barcodes, Product setup, & Menu .....	26
Message Info Box .....	27
The Apps Screen .....	28
<b>Appendix A: Specifications .....</b>	<b>30</b>
Stainless Steel Serial Controller.....	30
Handheld Serial Controller .....	31
System Interconnect Diagram.....	32
<b>Appendix B: File System Backup and Restore.....</b>	<b>33</b>
Backup .....	33
Restore .....	33
<b>Appendix C: Configuring a PC to Serial Controller. ....</b>	<b>34</b>
<b>Appendix D: Creating Logo Files.....</b>	<b>35</b>
<b>Appendix E: Controller and Print Head File Management.....</b>	<b>36</b>
File Manager .....	36
Transferring Logo and Font Files .....	37
<b>Appendix F: Part Numbers.....</b>	<b>38</b>
System.....	38
Service Parts.....	38
Replacement Kits .....	39
Optional Equipment.....	40

### Section 1: Safety

Following is a list of safety symbols and their meanings, which are found throughout this manual. Pay attention to these symbols where they appear in the manual.



Caution or Warning! Denotes possible personal injury and/or damage to the equipment.



Caution or Warning! Denotes possible personal injury and/or equipment damage due to electrical hazard.



**NOTE: (Will be followed by a brief comment or explanation.)**



ESD protection should be worn when servicing internal printed circuit boards. After service to the equipment is completed, replace all protective devices such as grounding cables and covers before operating the equipment.

### Section 2: Quick Start

The Serial Controller may be integrated into a variety of printing applications. This manual will show applications involving the (Thermal Jet “TJ” / MicroJet HRP) serial print heads.

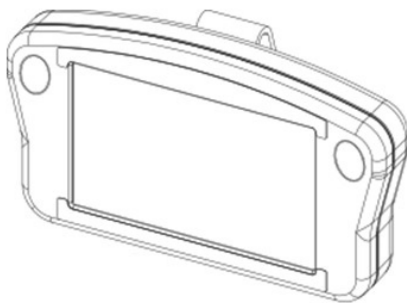
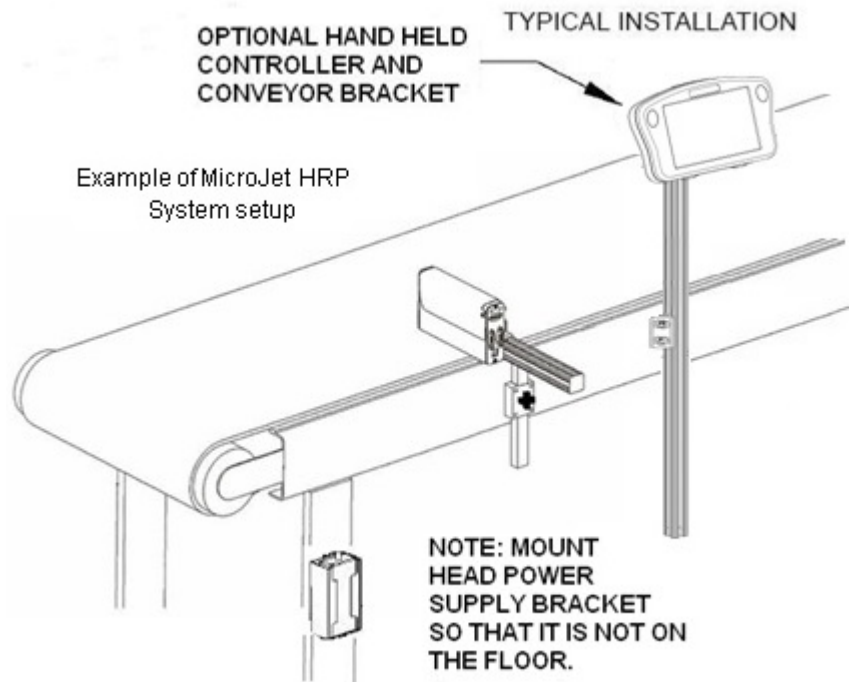
#### Contents:

##### Print Head Components:

- Print Head with Power Supply, 15V, includes power cord and power supply bracket.
- Software (PC Version)
- Print Head “L” Bracket & Mounting Block Kit

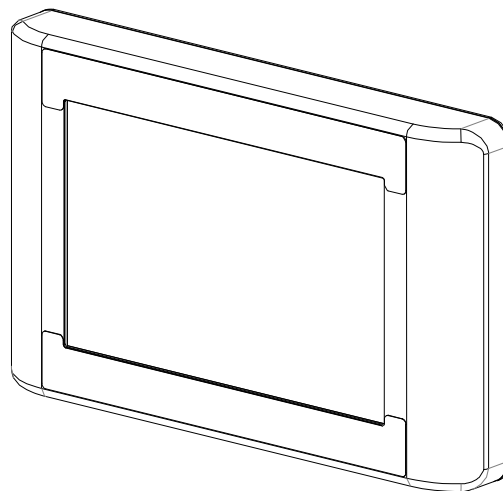
##### Controller Components:

- Controller (*Hand Held or Optional Stainless Steel version*)
- Power Supply, 15V, includes power cord and power supply bracket (*Provided with Stainless Steel version only*)
- Controller Mounting Bracket Kit (Optional)



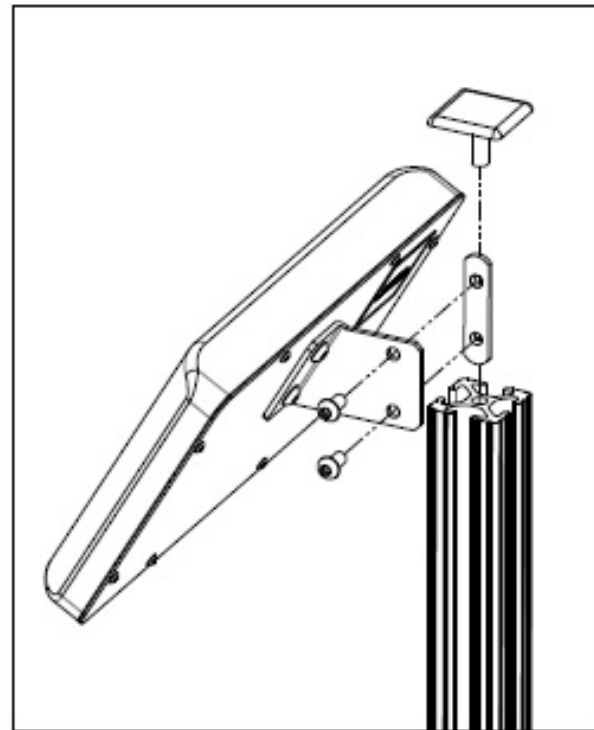
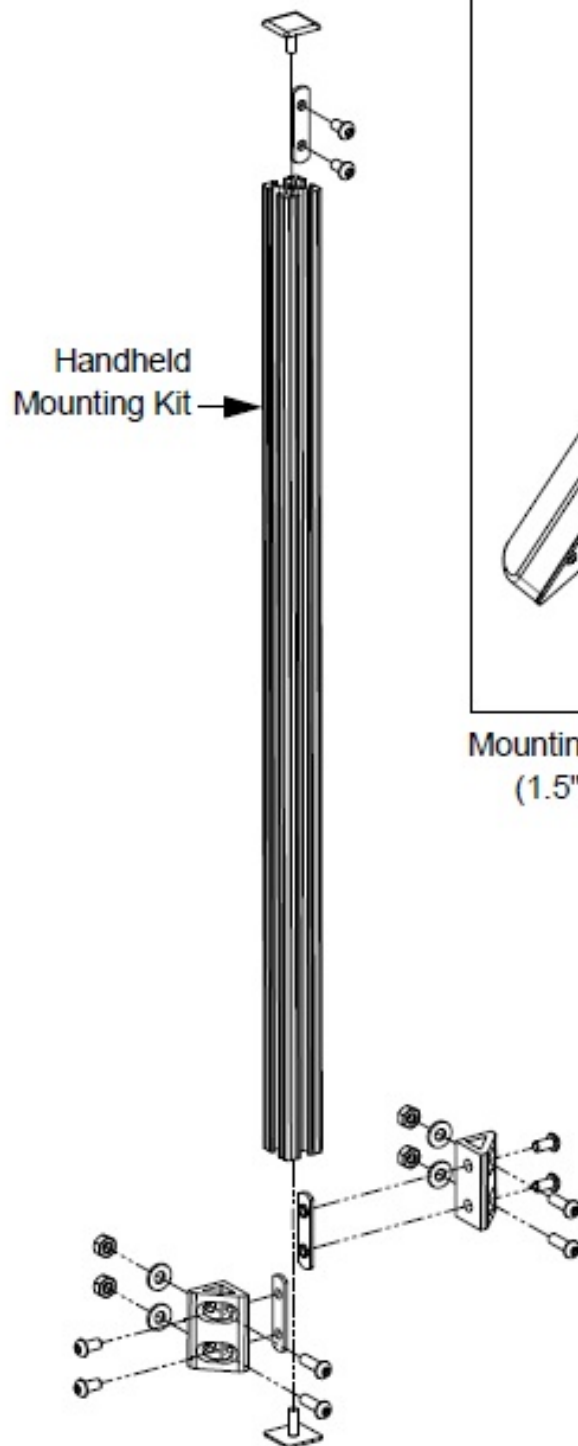
**Serial Controller - Hand Held**

OR

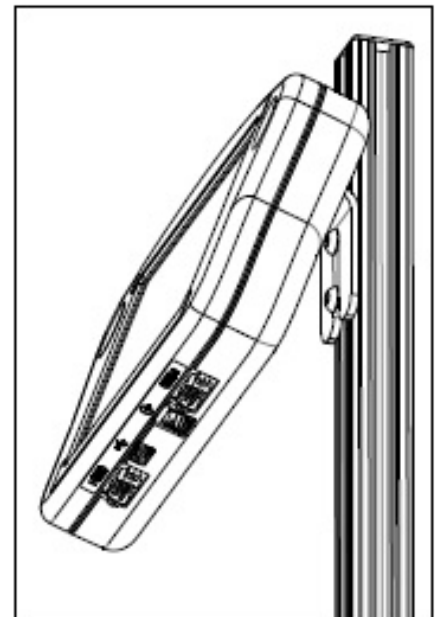


**Optional Serial Controller - Stainless Steel**

## Step 1: Assemble Bracketry

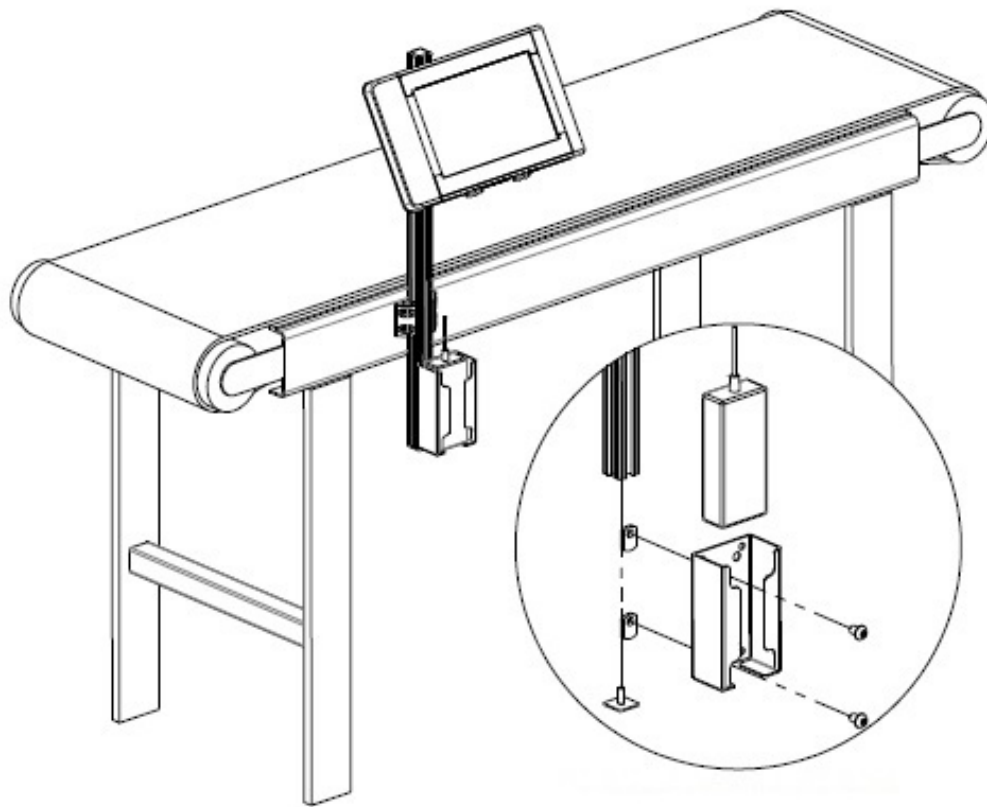


Mounting Stainless Steel Serial Controller  
(1.5" x 1.5" series 80/20 mounting)



Mounting Handheld Serial Controller  
(1" x 1" series 80/20 mounting)

## Step 2: Assemble Bracketry to Conveyor

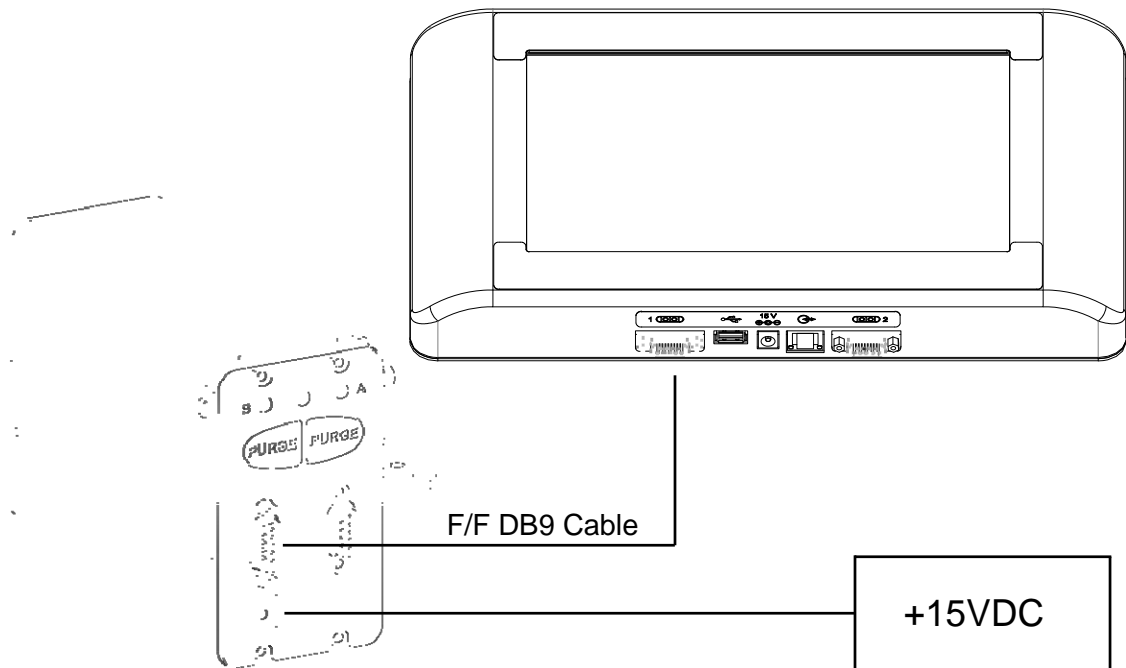


Power Supply and Power  
Supply Bracket  
Mounting (To  
Power Stainless  
Steel Controller)



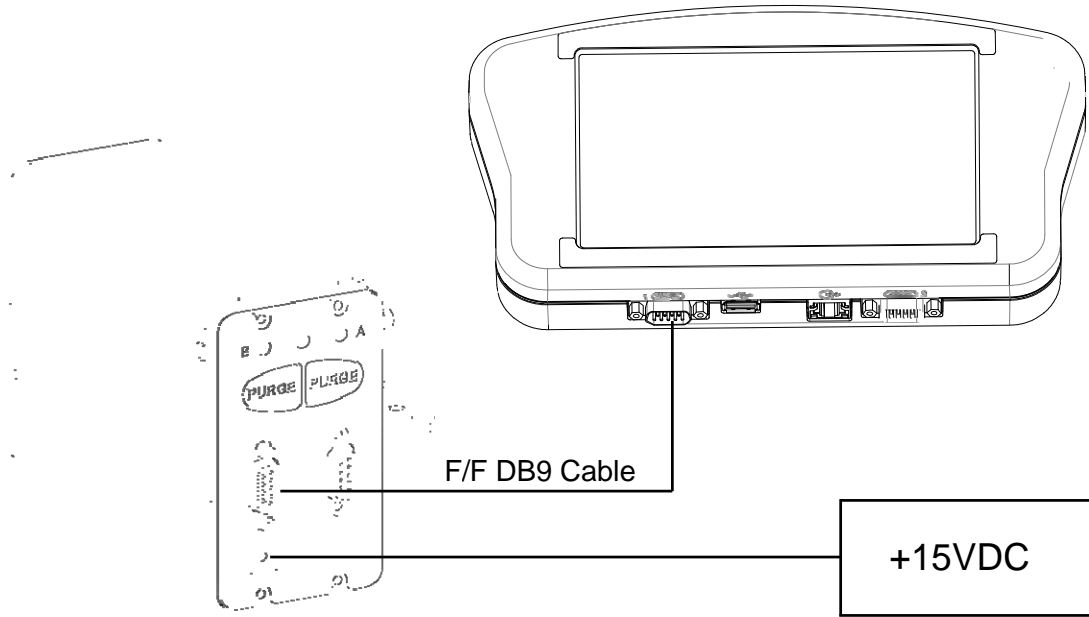
## Step 3: Connect controller to Print Head

### Optional Stainless Steel Serial Controller to HRP Print Heads



See HRP Print Head Manual for detailed HRP Print Head setup.

## Hand Held Serial Controller to MicroJet HRP Print Heads

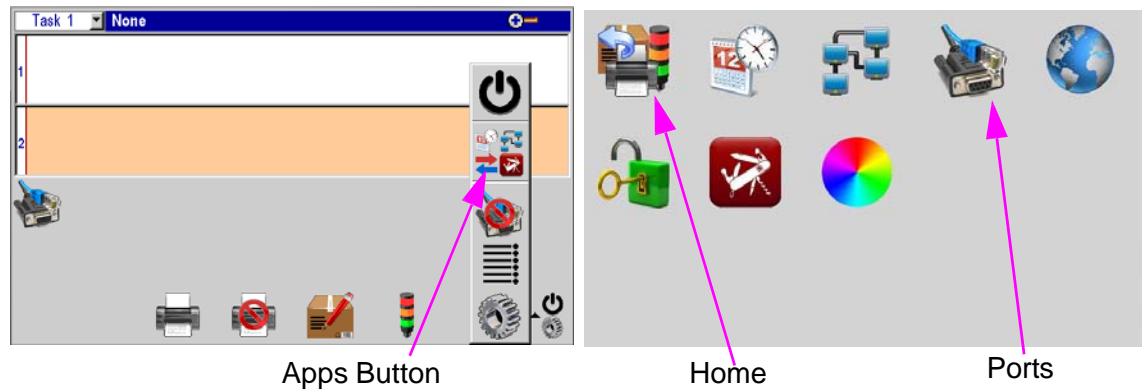


See HRP Print Head Manual for detailed HRP Print Head setup.

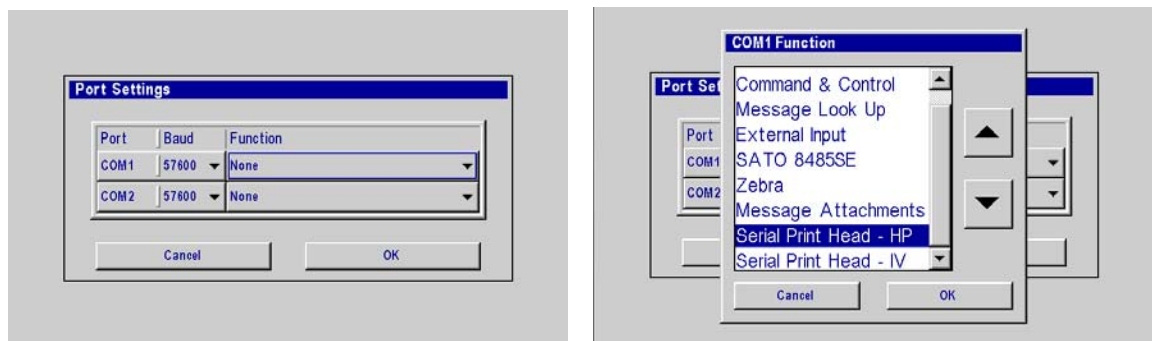
### Step 4: Setup Print Head Via Controller

#### MicroJet HRP

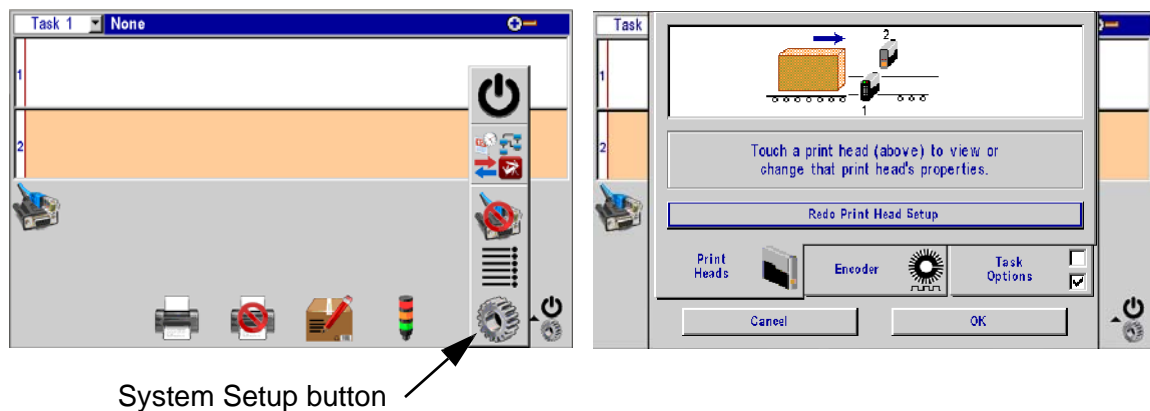
On the Home Screen, press the Menu Button, then the Apps Button. On the Apps Screen press the Ports Button.



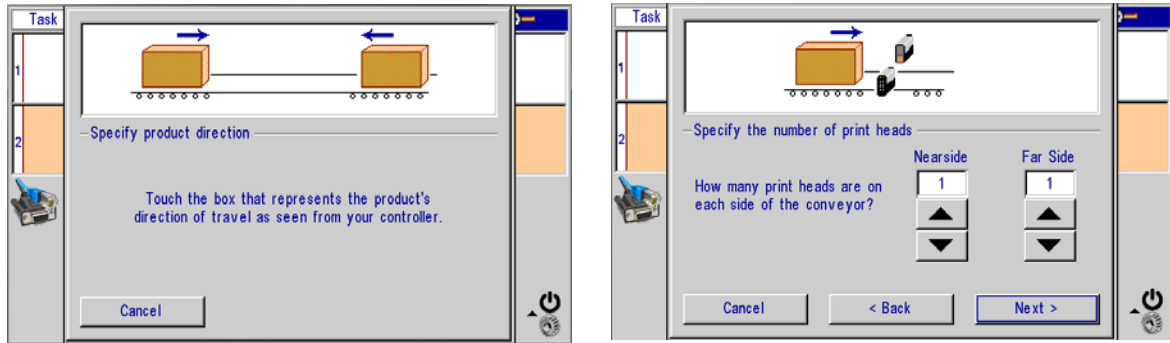
On the Ports Setting Screen press the **COM1** Function Button, **select Serial Print Head - HP** and press **OK**. Press **OK** again to exit the Ports Setting Screen. Press the **Home Button** to return to the Home Screen.



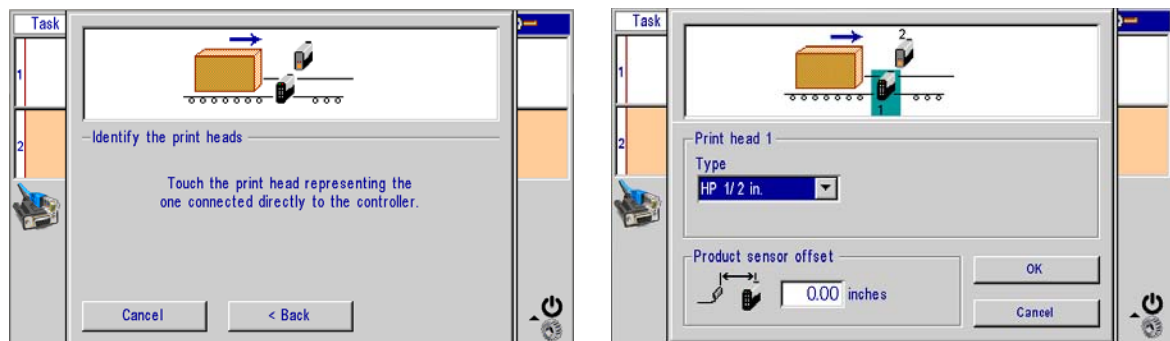
On the home screen press the **Menu Button**, then press the **System Setup Button**. On the **Print Head** page select **Redo Print Head Setup**.



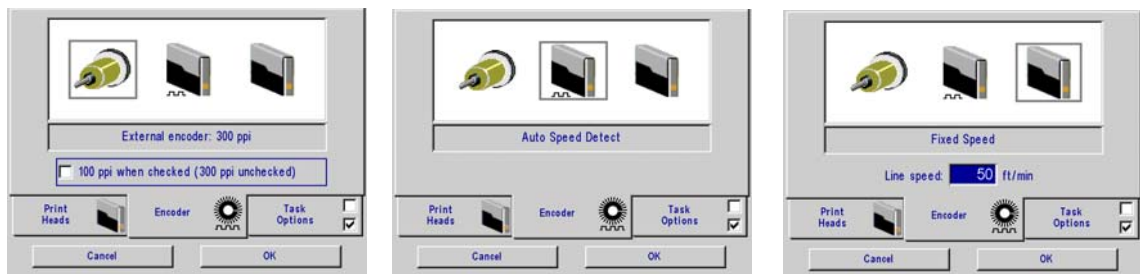
Select print direction, then specify number of print heads and their placement on the conveyor. Select **Next**.



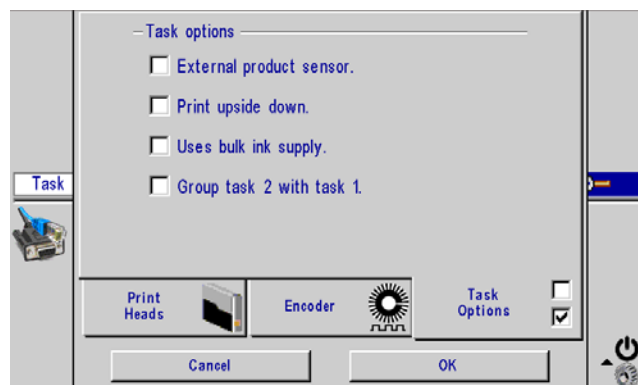
Select the Print head connected to controller, then define print head type and set the product sensor offset for each print head. Select **Ok**.



Select the **Encoder** page and select External encoder, Auto Speed Detect, or Fixed Line Speed. Auto Speed Detect is not available with the external product sensor option (see below).

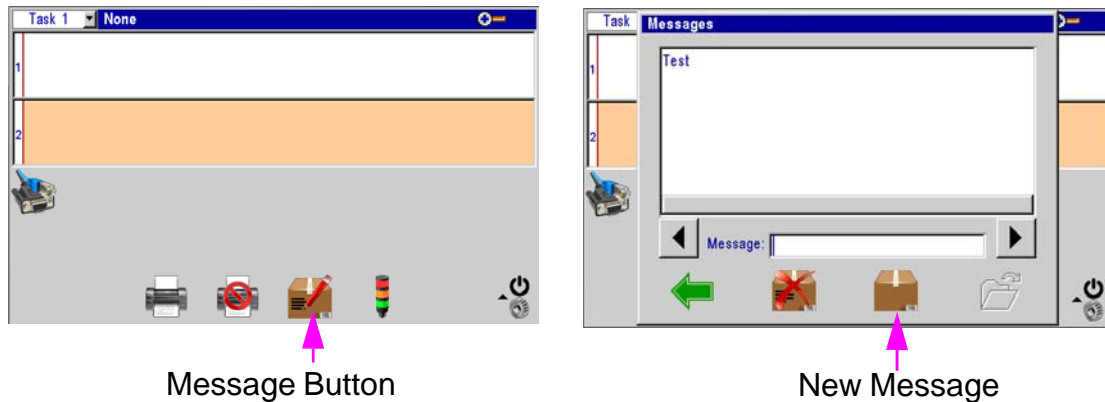


Select **Task Options** page to define print and then select **Ok**.

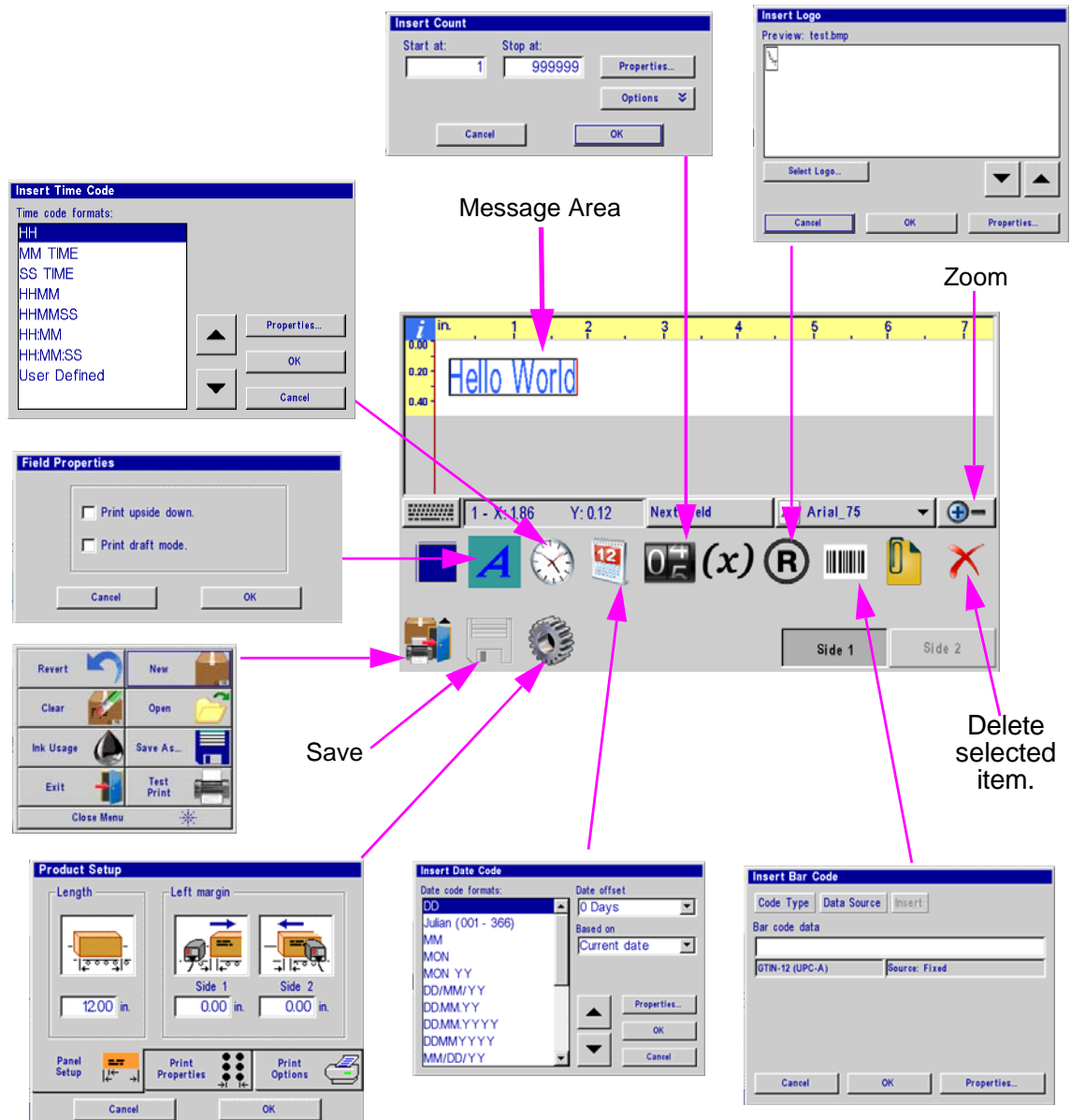


### Step 5: Creating a Message

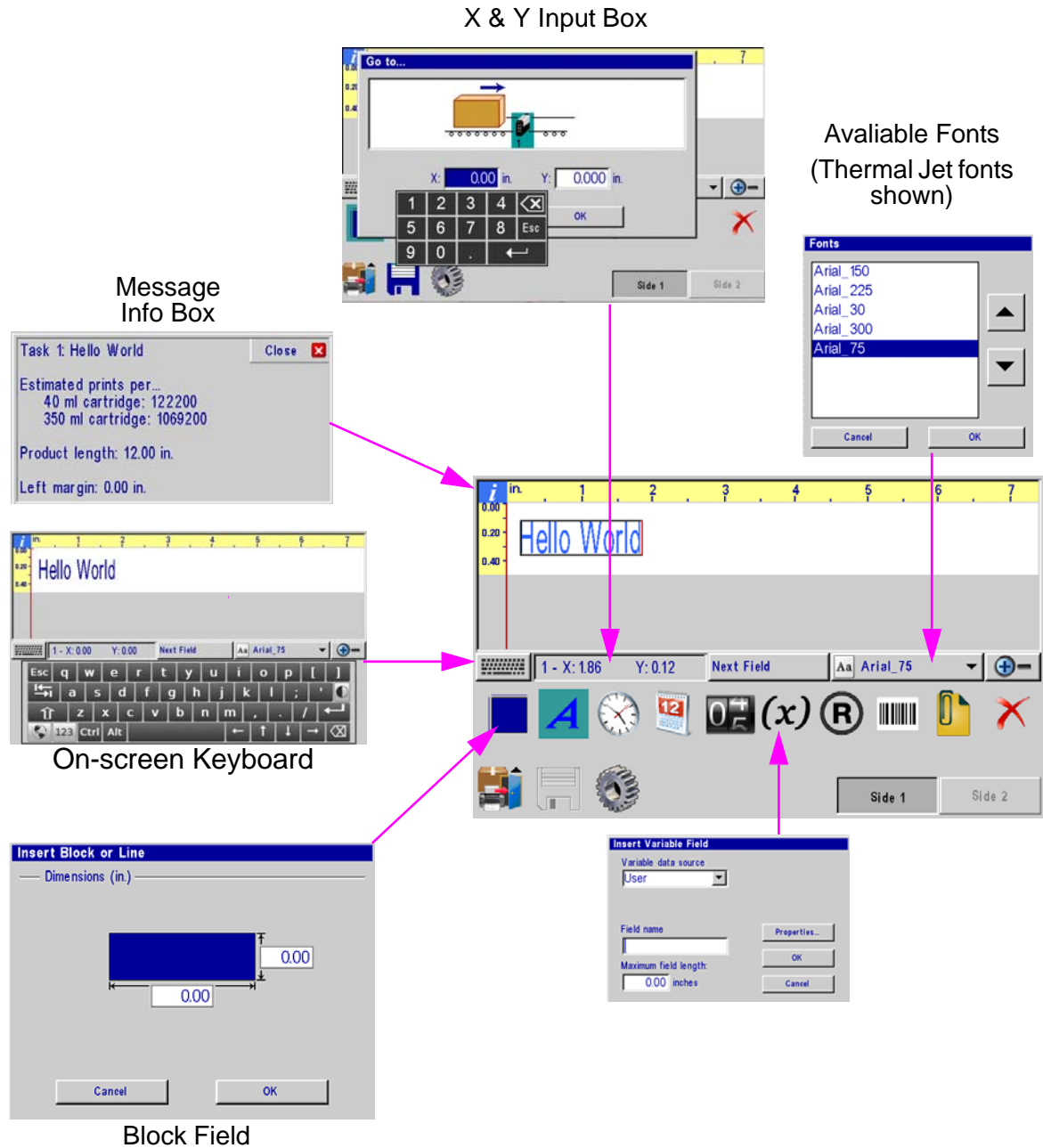
From the **Home** screen press the **Message Button**, then select the **New Message Button**.



Create and Save the message, and then exit the message editor.



### Creating a message cont...

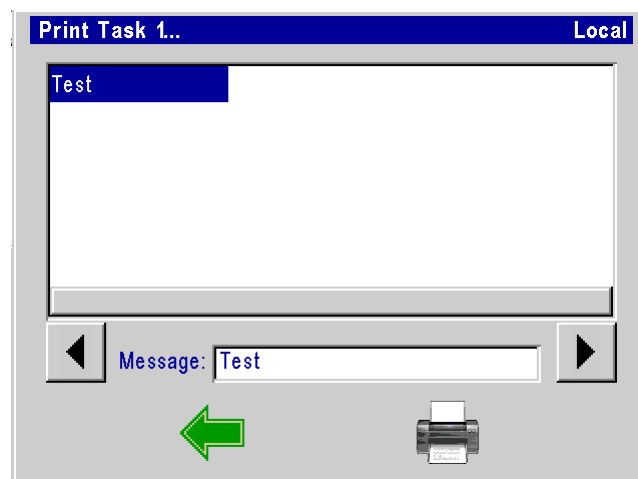


### Step 6: Print a Message

From the Home screen, press the **Print** Button.



Select the desired message to print, and press the **Print** button.

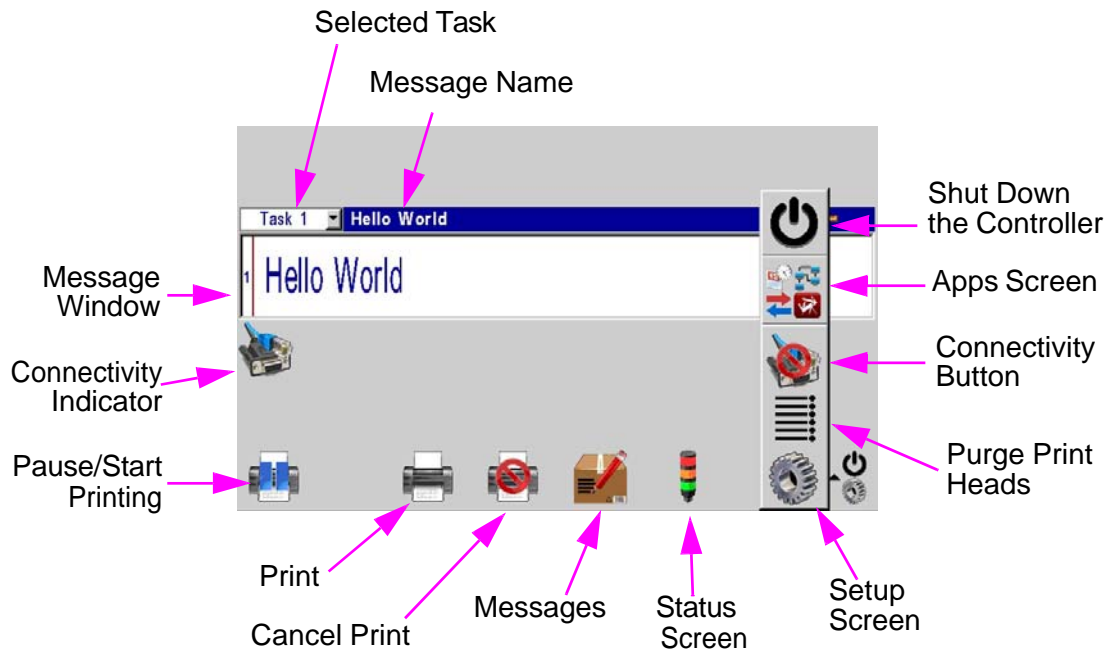


The message will print on the next Photo cell trigger.



### Section 3: Controller Functions

#### Home Screen



#### Message Window:

- Displays the current print message
- Updated approximately every seven seconds, so it likely will not show each print.
- White or Beige bars represent the print heads in the daisy chain and are identified by their respective numbering.
- The Header displays the task number and file name of the message being printed, if no message is loaded to print, 'None' is displayed.

#### Task Select Button:

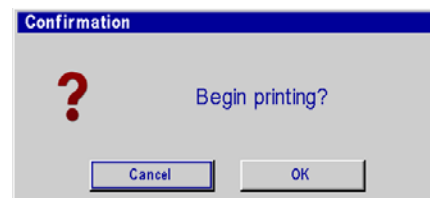
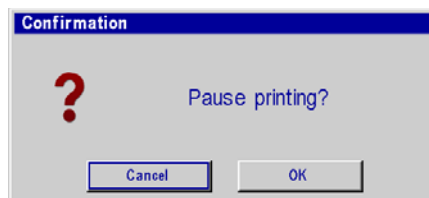


- Places focus on the selected task. This allows one to view what is being printed on either task in the home screen. Additional menu items will vary from one task to the other, depending on print technology.

#### Task Print / Pause Button:



- Start and Stops print after an operator response to a confirmation dialog popup box.
- If a message is currently printing, pressing the pause button will discontinue printing after the message finishes printing.
- if the Play button is pushed, print will resume on the next product detected.





# Serial Controller

## Section 3: Controller Functions



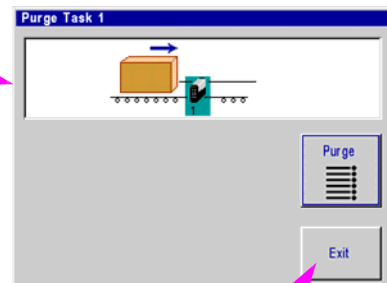
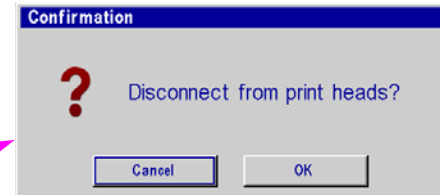
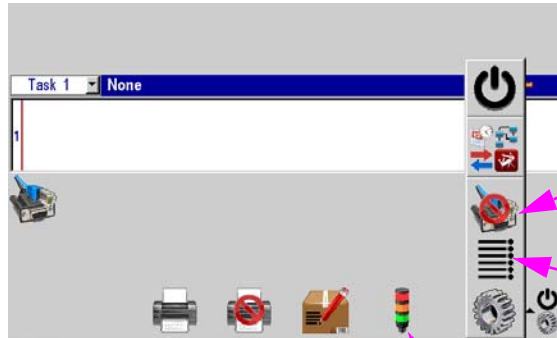
### Quick Print Button:

- Allows access to the **Print** dialog box.
- Simply select the desired message and press the Printer button. The message will print at the next photocell trigger.



### Purge Button:

- Fires all jets for a short period of time on the selected print head.



Current Print Head selected

Product Detect

Print Status

Ink Type

Date & Time

Selected Task

Print Head Firmware Version

Returns to home screen

Controller Firmware Version. Press version number to display detailed version information.

Fonts and Logos that have been loaded onto a Thermal Jet Print Head

Return to Home Screen



### Connectivity Button:

- Connect or disconnect from the Print Head. When disconnected, the controller halts all communications with the print head(s).



### Status Button:

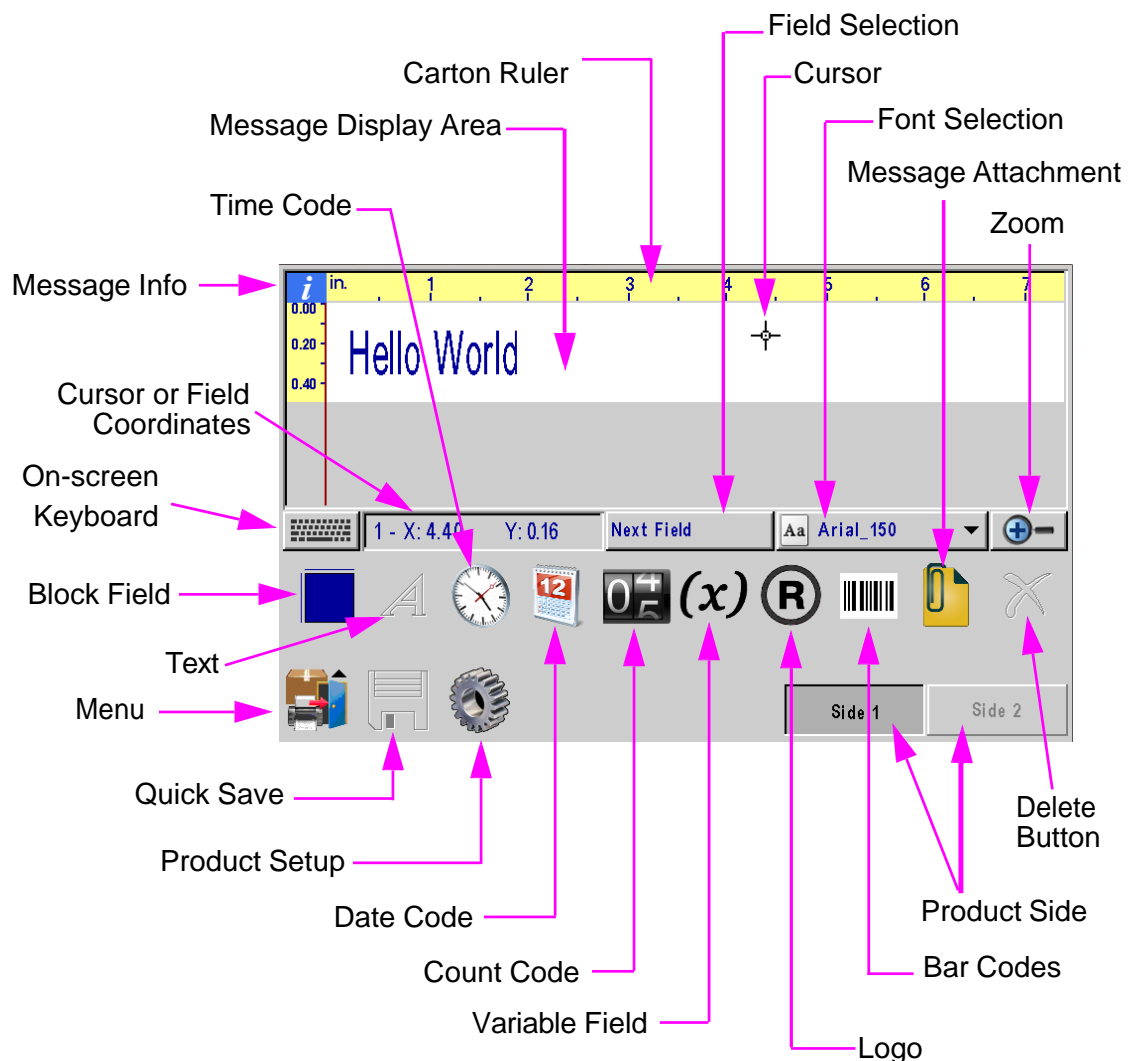
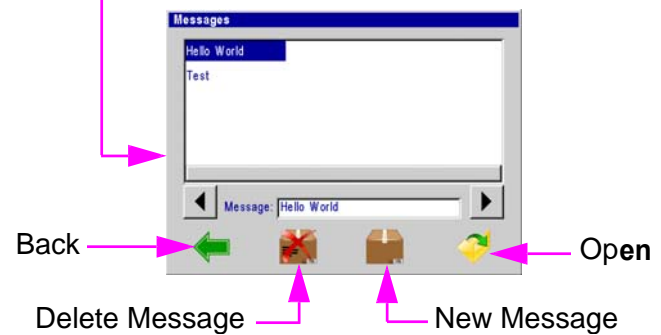
- Version of controller firmware is located in the upper right corner.
- Fonts and Logos loaded onto Print Heads.
- Displays Product detect.
- Displays Printing or Paused status.
- Ink Type if applicable
- Current Date and Time, as reported by the print head's clock.
- Version of print head firmware.

### Message Editor

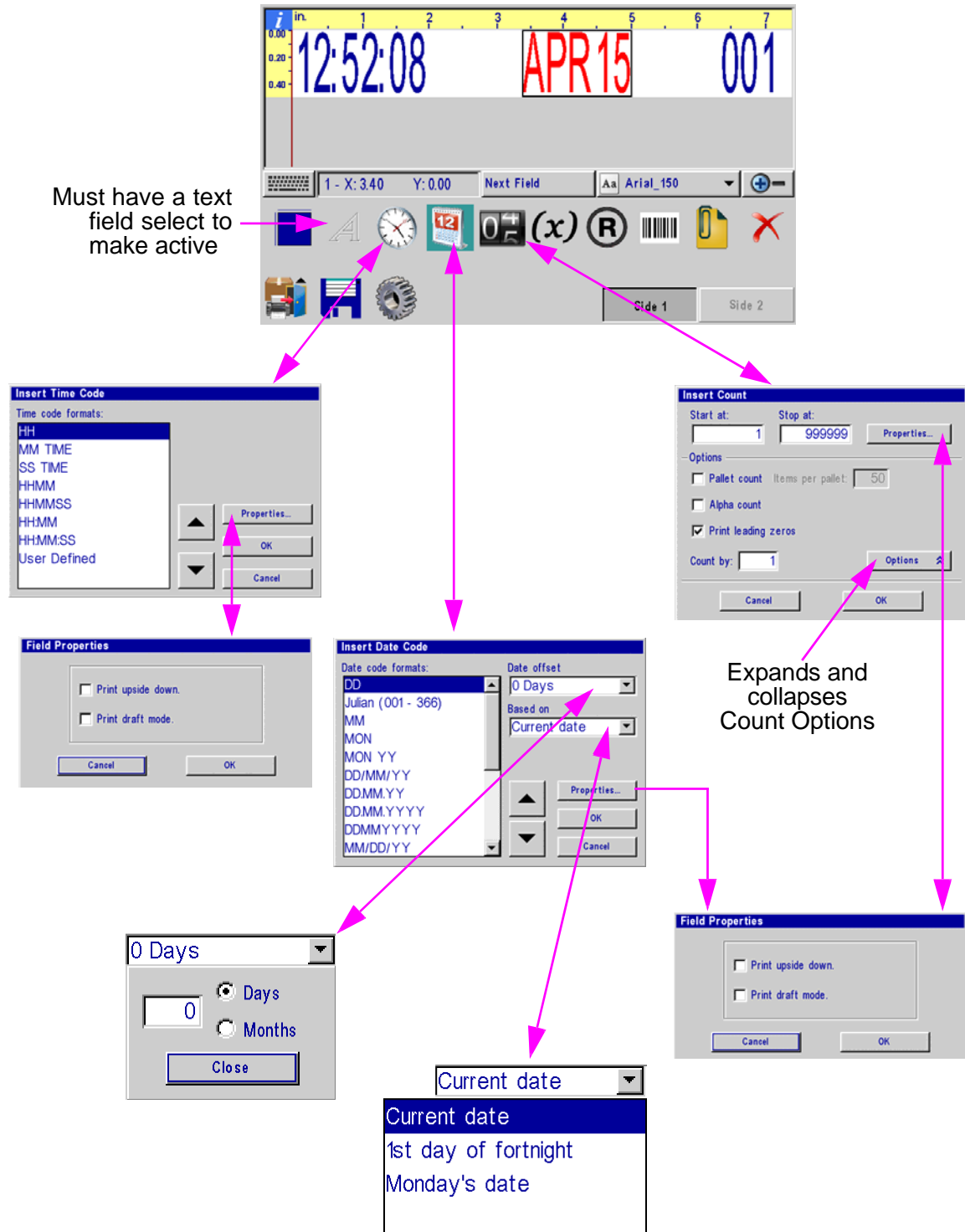


#### Message Button:

- Press the **Message Button** on the Home Screen to bring up the message screen.
- To create a new message press the **New Message** button.
- To edit an existing message, select the message and then press the **Open** button.
- Both editing a message or creating a new message will bring up the message editor.

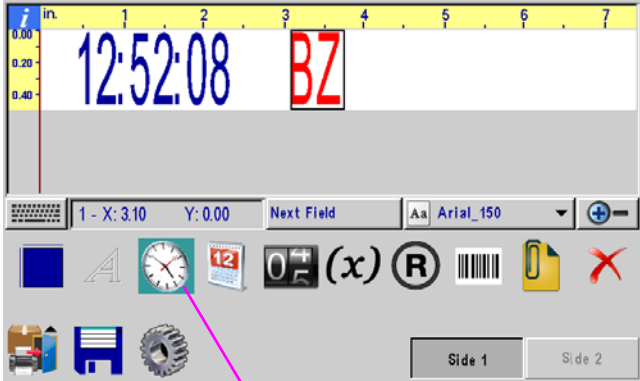


### Time, Date, and Count Codes



### User Defined Time Codes

When **User Defined** is selected, **Define Time Code** button appears.



Sequential format: minute code shown. Minute 00 = AA, 01 = AB, 02 = AC, etc.

**Insert Time Code**

Time code formats:

- HH
- MM TIME
- SS TIME
- HHMM
- HHMMSS
- HH:MM
- HH:MM:SS
- User Defined**

Buttons: Define Time Code..., Properties..., OK, Cancel

**User Codes**

Code type: Minute

Format: Sequential

Sequence type: ☒ Alpha ☐ Numeric

Number of digits in code: 2

First code in sequence: AA

Buttons: OK, Cancel

Minute

Minute

Qtr Hour

Hour

Sequential

Sequential

Tabular

Periodic

**User Codes**

Code type: Hour

Format: Tabular

Hour	Code
00	A
01	B
02	C
03	D
04	E
05	F

Buttons: OK, Cancel

**User Codes**

Code type: Qtr Hour

Format: Periodic

Period	Begins	Code
1	07:00	B
2	15:30	C
3	23:30	A
4		
5		
6		

Buttons: OK, Cancel

Tabular format: codes printed taken from table. Use default codes (default Hour codes shown) or edit table to suit your requirements.

Periodic format: example above illustrates a shift code implemented by using a periodic quarter hour code. 'A' prints from 23:30 - 06:59, 'B' from 07:00 - 15:29, and 'C' from 15:30 - 23:29.

### User Defined Date Codes

When **User Defined** is selected, **Define Time Code** button appears.

**Insert Date Code**

Date code formats:

- MM/DD/YY
- MM DD YY
- MMDDYY
- MM/YYYY
- YYYY.MM.DD
- YY.MM.DD
- YYYY
- YY
- Y
- User Defined**

Date offset: 0 Days

Based on: Current date

Define Date Code...

Properties...

OK

Cancel

15/04/15 AP

1 - X: 3.12 Y: 0.00

Next Field

Aa Arial\_150

Side 1 Side 2

Sequential format: minute code shown. Day 1 = A, Day 2 = B, Day 3 = C, etc.

**User Codes**

Code type: Day

Format: Sequential

Sequence type: ☒ Alpha ☐ Numeric

Number of digits in code: 1

First code in sequence: A

OK

Cancel

Day

Day

Date

Week

Fortnight

Month

Year

The Fortnight code type is available for the Tabular format only.

Sequential

Sequential

Tabular

Periodic

**User Codes**

Code type: Day

Format: Tabular

Day	Code
Monday	MON
Tuesday	TUE
Wednesday	WED
Thursday	THU
Friday	FRI
Saturday	SAT

OK

Cancel

Tabular format: codes printed taken from table. Use default codes (default Day codes shown) or edit table to suit your requirements.

**User Codes**

Code type: Month

Format: Periodic

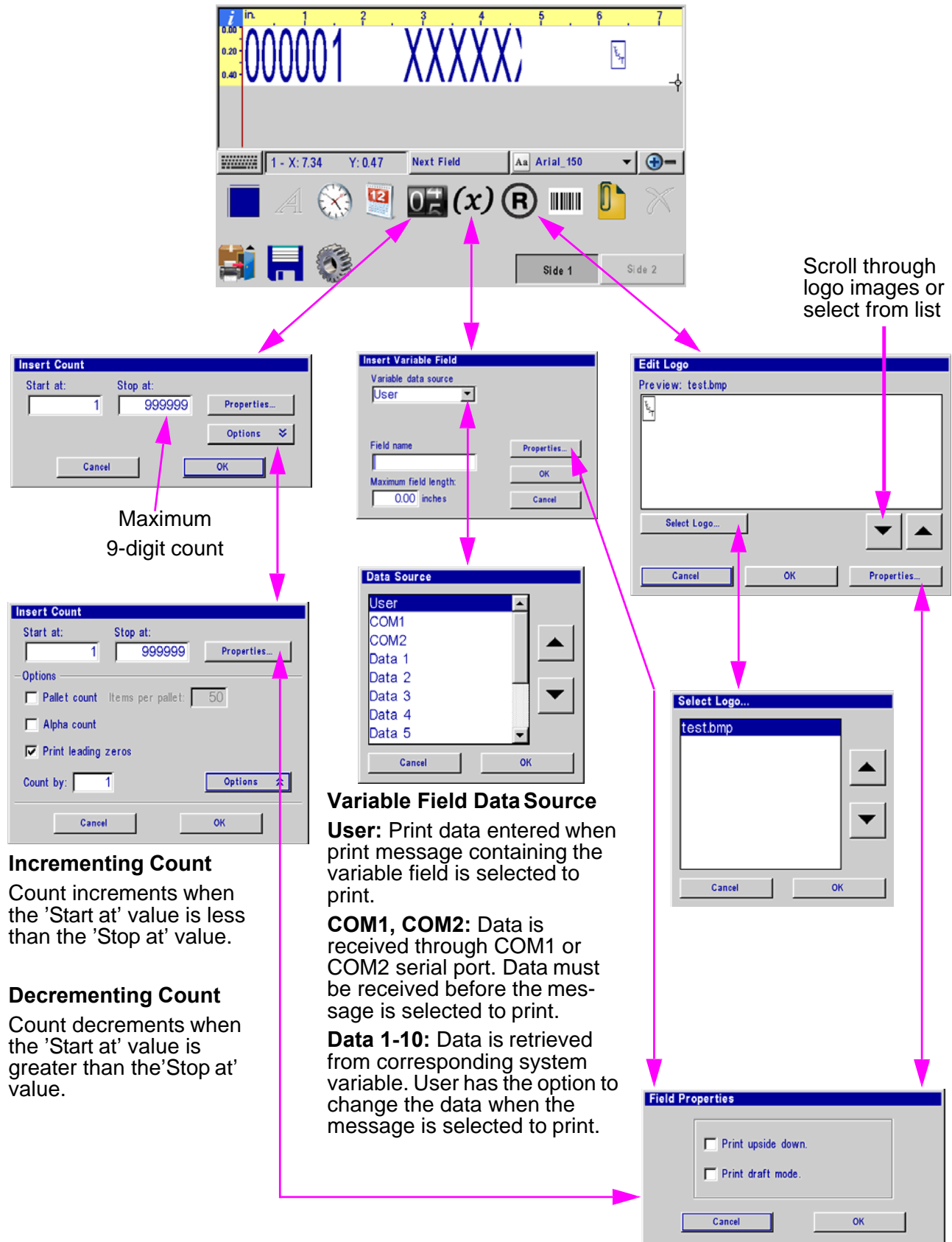
Period	Begins	Code
1	January	Q1
2	April	Q2
3	July	Q3
4	October	Q4
5		
6		

OK

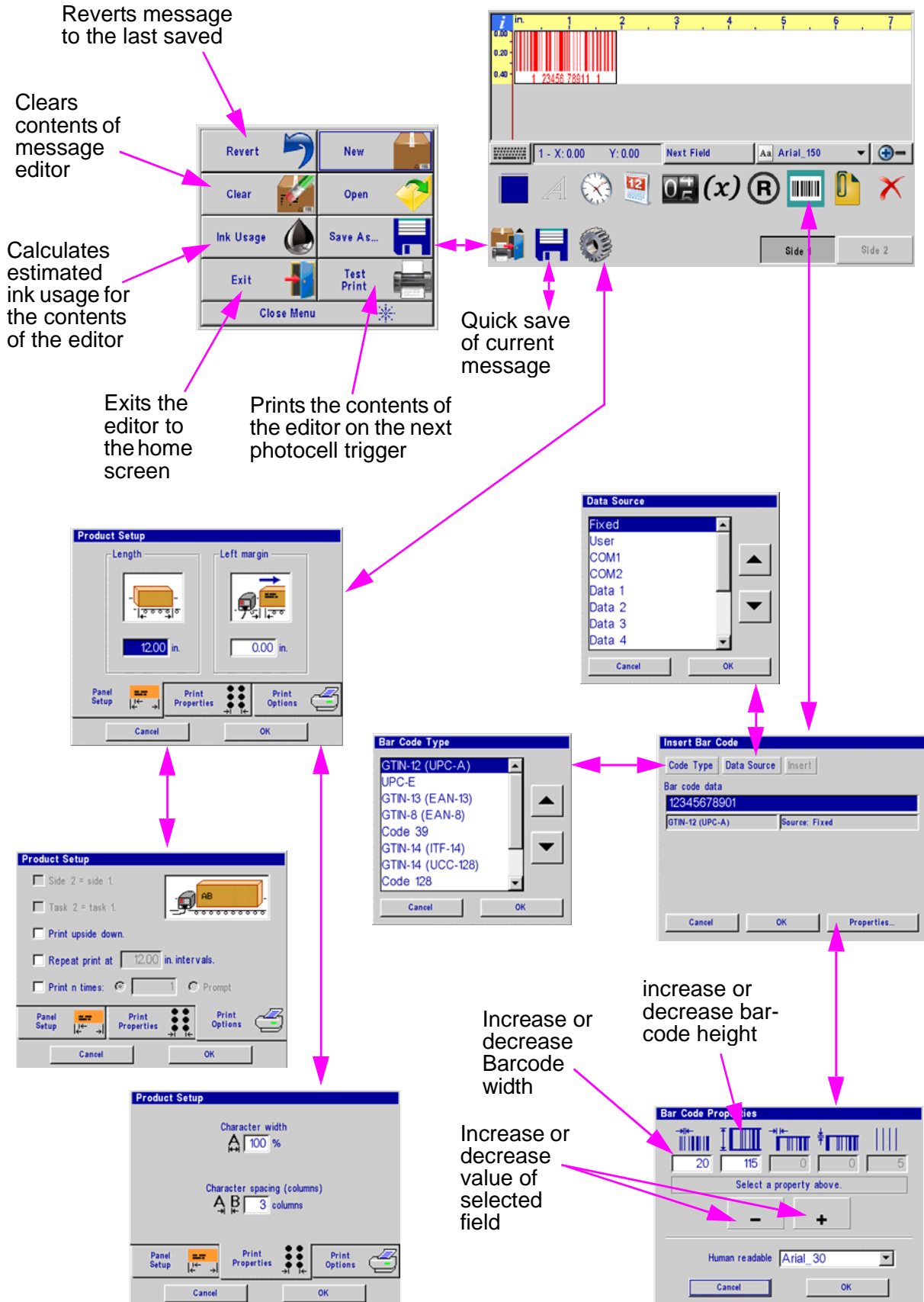
Cancel

Periodic format: example above illustrates a quarter year code implemented by using a periodic month code. 'Q1' prints from Jan 1 - Mar 31, 'Q2' from Apr 1 - Jun 30, etc.

### Product Counts, Variable Fields, Logos

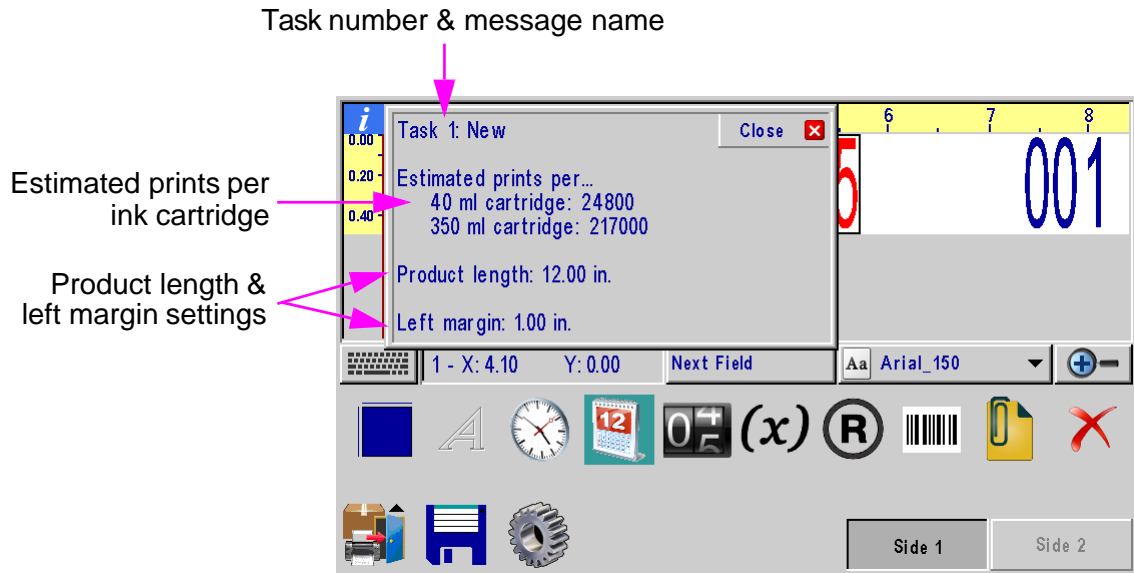


### Barcodes, Product setup, & Menu





### Message Info Box

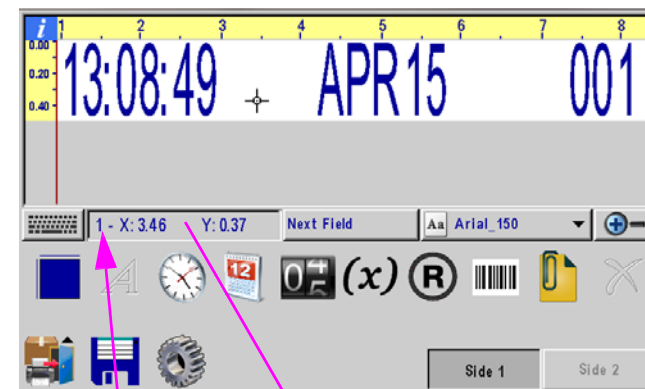


### Direct Entry of Cursor or Field Position

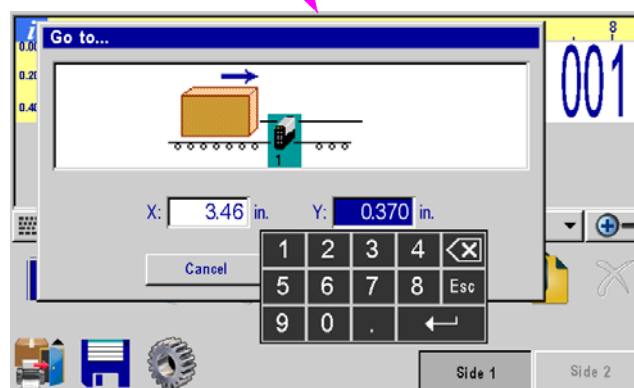
#### Direct Entry Box

**Field:** selecting the Direct Entry Box while having a field selected will allow the user to manually input the X & Y location of the selected field

**Cursor:** When no fields are selected the Direct Entry Box will allow the user to manually input the X & Y location of the cursor



Print Head Number





### The Apps Screen



Apps Button

Time

**04:07**

Format: ☐ 12 hour ☒ 24 hour

Time Date Rollover Time

Cancel Apply OK

Message list access

☒ Local ☐ Network

Message list URL:

Message attachment URL:

Network notification URL:

Map Network Device IP Addresses

Cancel OK

Ask your network administrator for appropriate IP settings and enter them below.

Controller

1st Ink System

2nd Ink System

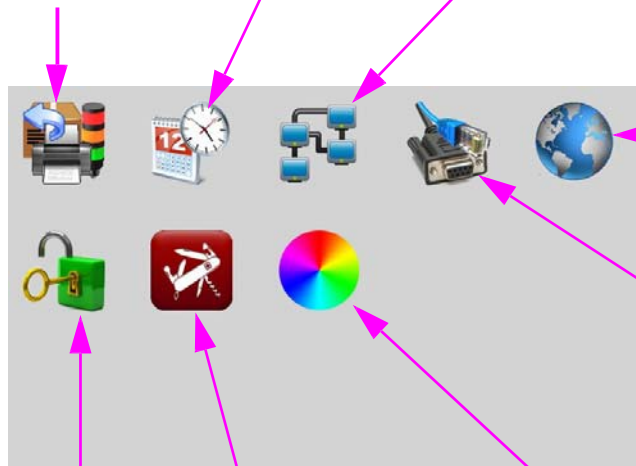
Subnet Mask

Gateway

Map Network Device IP Addresses

Cancel OK

Return to the Home Screen



Regional Settings

Language  
Deutsch  
English  
Español  
français  
Nederlands  
Português  
Русский

Units of measure  
☒ U.S. customary  
☐ Metric

OK Cancel

Port Settings

IP Address  
Laser: Task 1   
Laser: Task 2

Port	Baud	Function
COM1	57600	Serial Print Head - HP: Task 1
	57600	Serial Print Head - HP: Task 2

Cancel OK

System Utilities

Select Function

- Restore default configuration
- Calibrate touch screen
- Backup
- Restore
- Safely remove USB memory
- File manager

Restarts the system and restores it to its default configuration.

Exit Do Function

Color calibration screen showing a color bar and a grid of color patches.

OK Cancel

User Access

Access level

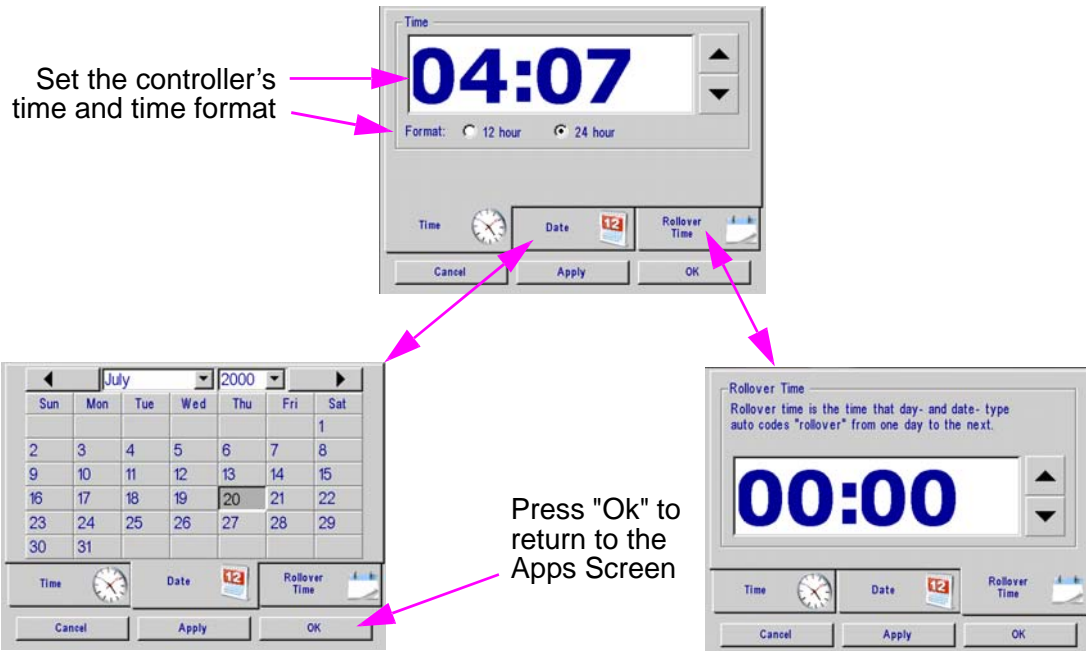
Change Password Cancel OK

User Access Levels

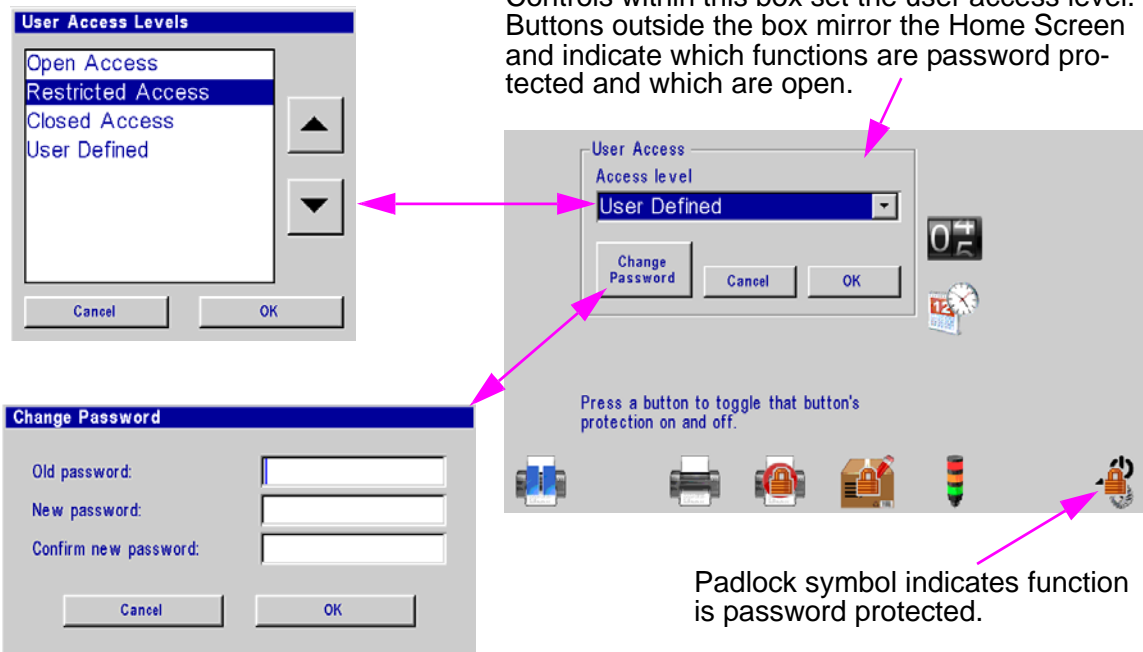
- Open Access
- Restricted Access
- Closed Access
- User Defined

Cancel OK

### Time, Date, and Rollover Time Screen



### User Access



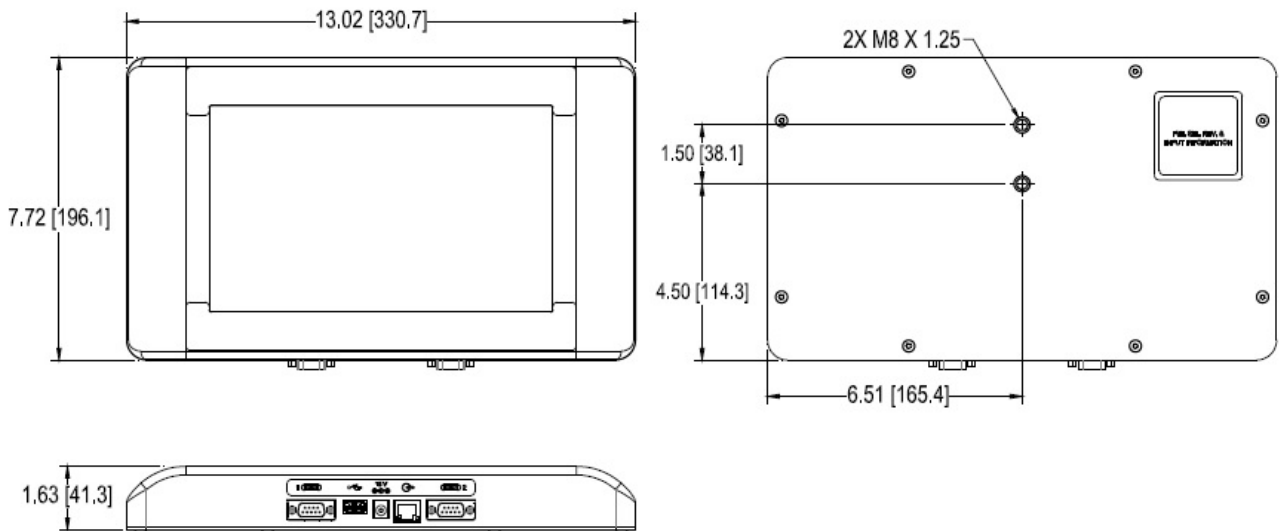
The factory set password is **Manager**.  
Passwords are case sensitive.



**Note:** Users can either select a pre-defined access level from the list or they can select "User Defined" and customize their Access settings by selecting icons on the User Access screen.

### Appendix A: Specifications

#### Stainless Steel Serial Controller (Optional)



#### **Size**

Weight: 2.18kg [4.6lb]  
Height: 196.1mm [7.72in]  
Width: 330.7mm [13.02in]  
Depth: 41.3mm [1.62in]

#### **Enclosure**

Stainless Steel

#### **User Interface**

Graphical User Interface  
with on screen keyboard

#### **Fonts**

Unicode

#### **Display**

10.2in [259.08mm] LCD with touch  
screen, 800 x 480 pixels

#### **Storage**

512 MB flash memory

#### **Ports**

(2) RS-232 ports, 1 USB port,  
(1) 100 Base-T Ethernet port

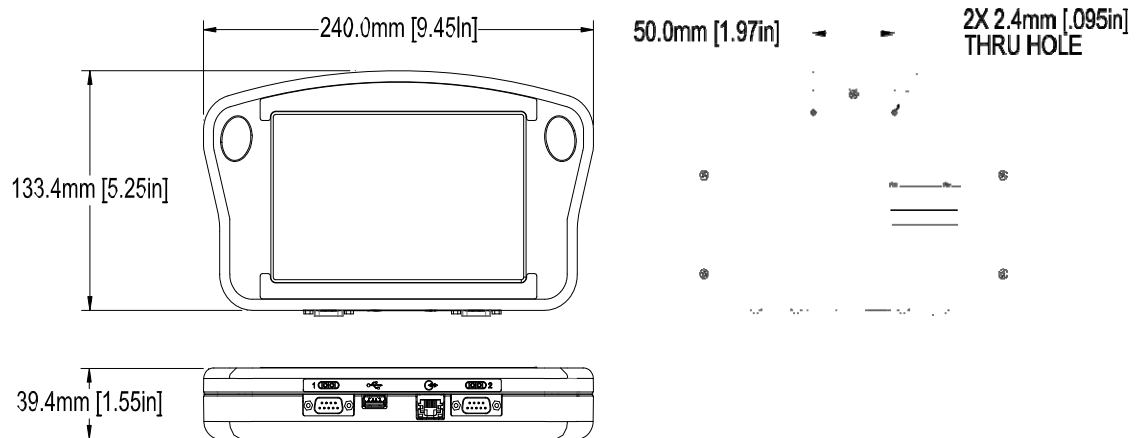
#### **Electrical**

15 VDC from power supply to controller.  
power supply: 90-260 VAC, 50/0 Hz, 1.5A  
max.

#### **Environment**

Ambient operating temperature: 40°F to  
104°F (5°C to 40°C)  
Operating humidity: 10% - 90%, non con-  
densing

### Handheld Serial Controller



#### **Size**

Weight: .50kg [1.1lb]  
Height: 133.4mm [5.25in]  
Width: 240.0mm [9.45in]  
Depth: 39.4mm [1.55in]

#### **Enclosure**

Black ABS Plastic

#### **User Interface**

Type: Graphical User Interface  
keyboard: on screen QWERTY

#### **Display**

7in [178mm] LCD with touch screen,  
800 X 480 pixels

#### **Fonts**

Unicode

#### **Storage**

512 MB flash memory

#### **Ports**

(2) RS-232 Ports, (1) USB Port  
(1) 100 base-T Ethernet Port

#### **Electrical**

15 VDC Supplied from print head power supply: 90-260 VAC, 50/0 Hz, 1.5A max.

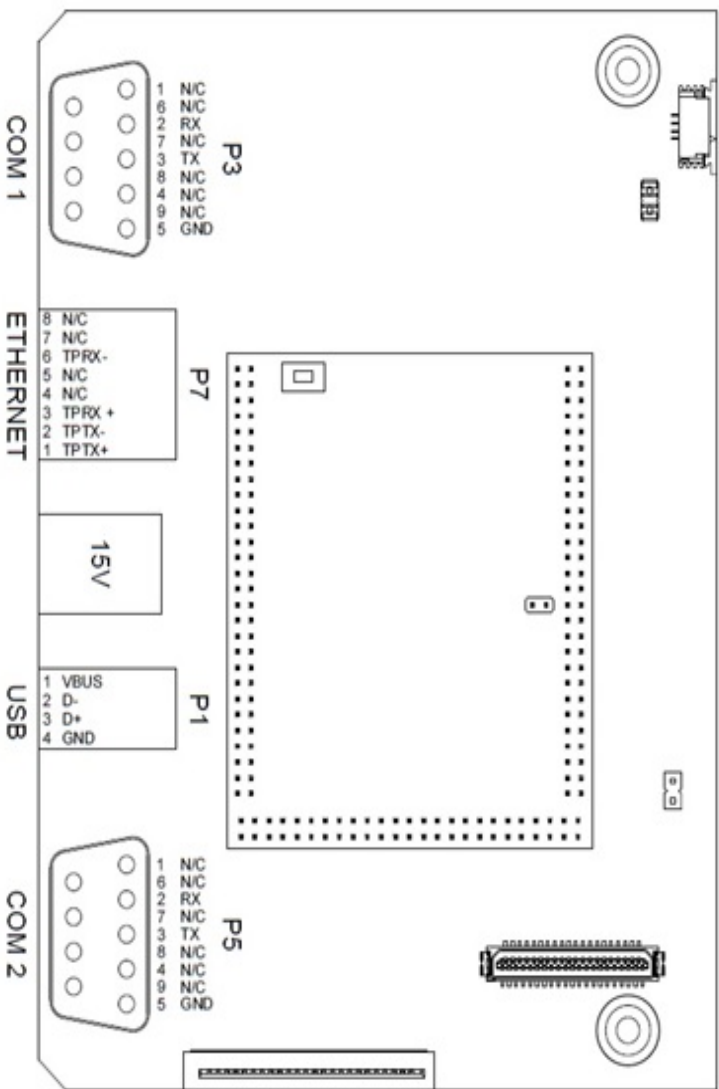
#### **Environment**

Ambient operating temperature: 40°F to 104°F (5°C to 40°C)

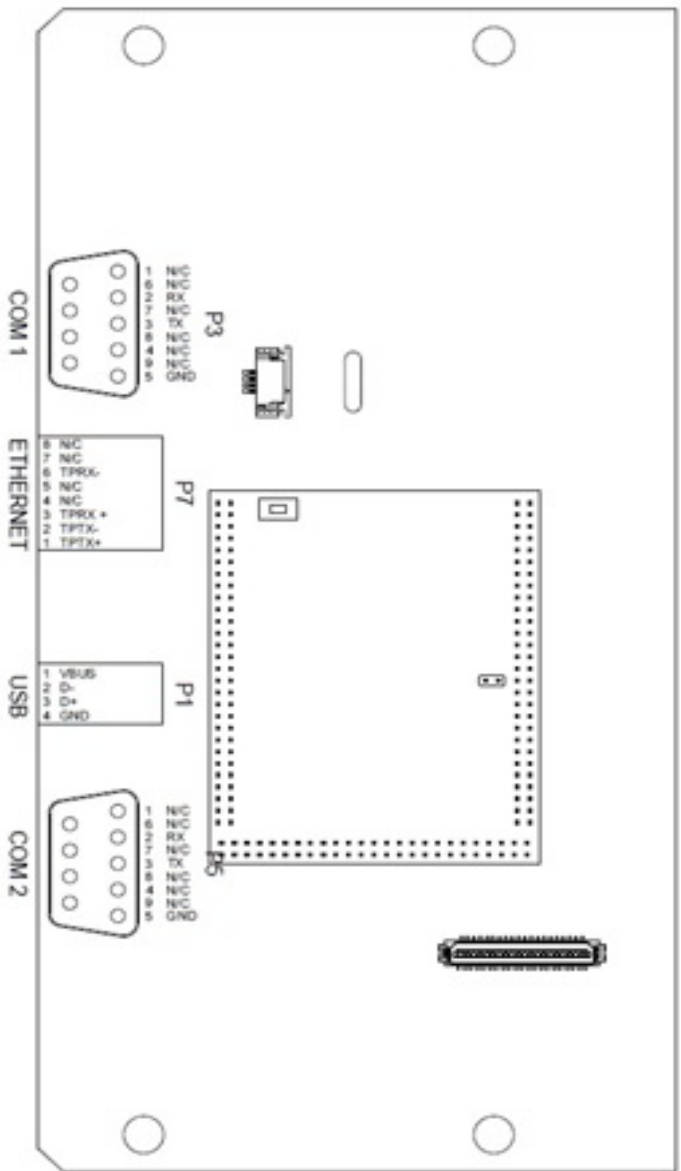
Operating humidity: 10% - 90%, non condensing

**System Interconnect Diagram**

**Stainless Steel Controller CPU Board**



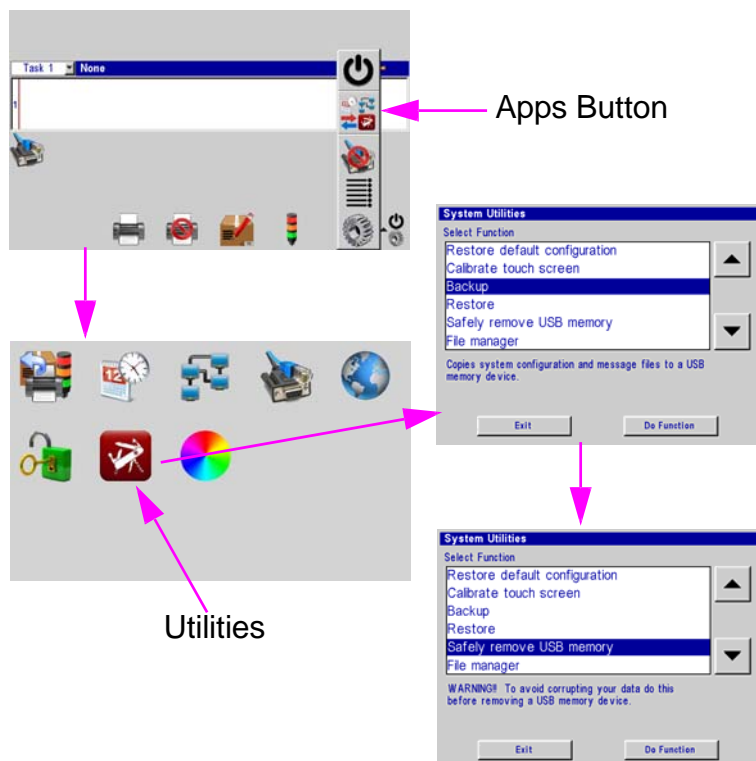
**Handheld Controller CPU Board**



### Appendix B: File System Backup and Restore

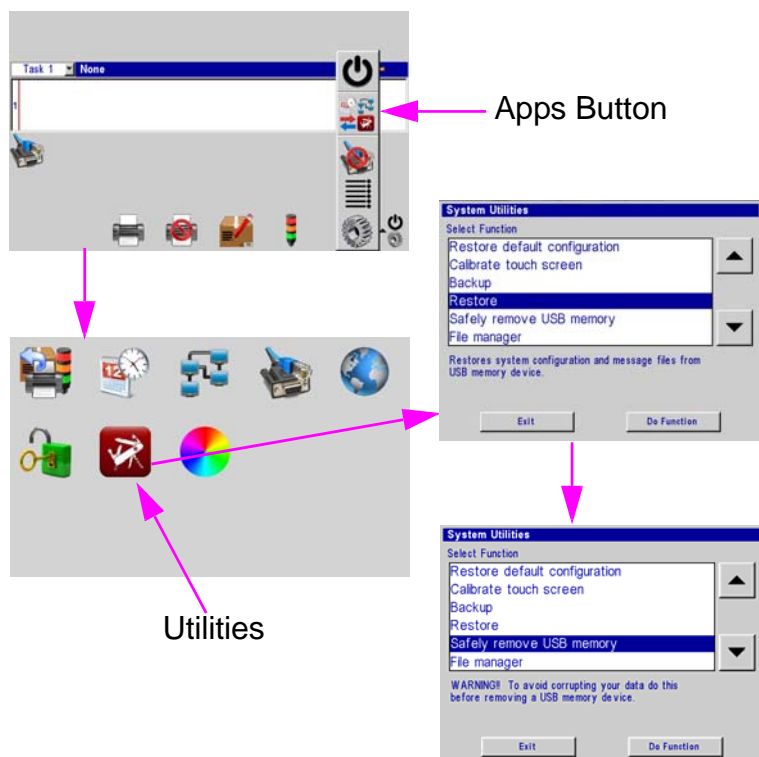
#### Backup

1. Insert a USB jump drive into the USB port on the controller.
2. From the home screen touch **Apps Button** then **Utilities**.
3. From the **Utilities** screen select **Backup**.
4. Enter a file name at the **Backup** dialog popup. "backup" is the default name.
5. From the **System Utilities** screen select **Safely remove USB memory**.



#### Restore

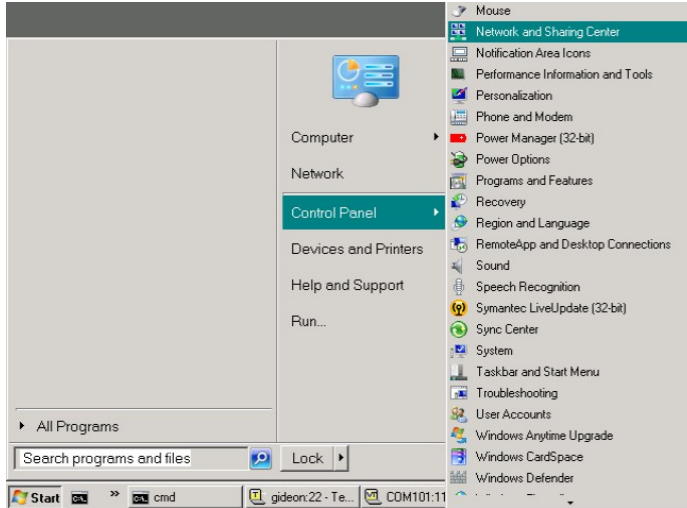
6. Insert a USB jump drive into the USB port on the controller.
7. From the home screen touch **Apps Panel** then **Utilities**.
8. From the **Utilities** screen select **Restore**.
9. Select the appropriate backup file from the **Restore** dialog popup.
10. From the **System Utilities** screen select **Safely remove USB memory**.



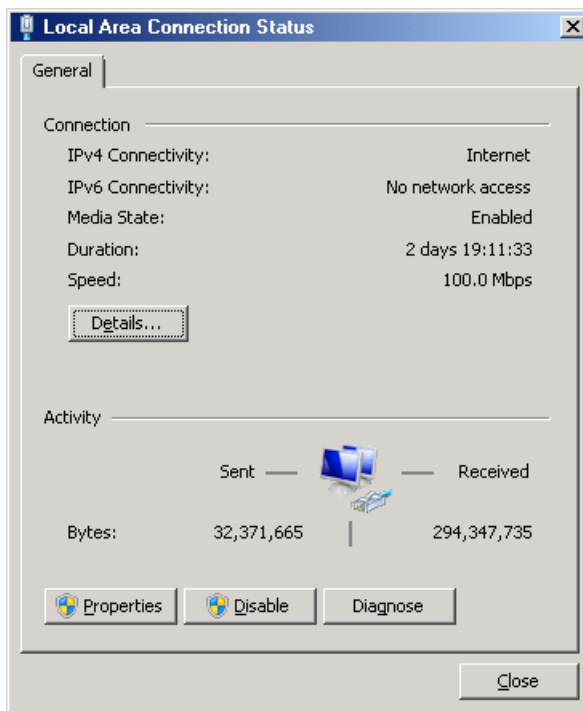
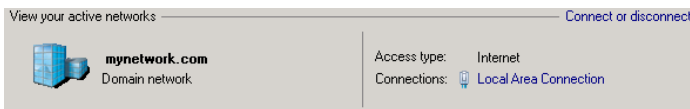
### Appendix C: Configuring a PC to Serial Controller.

#### Window 7®

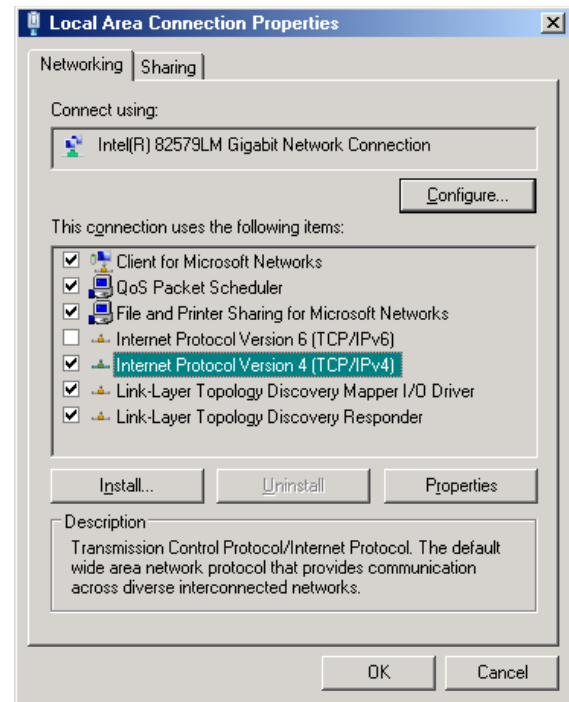
1. Open the Start menu; select Control Panel; then Network and Sharing Center.



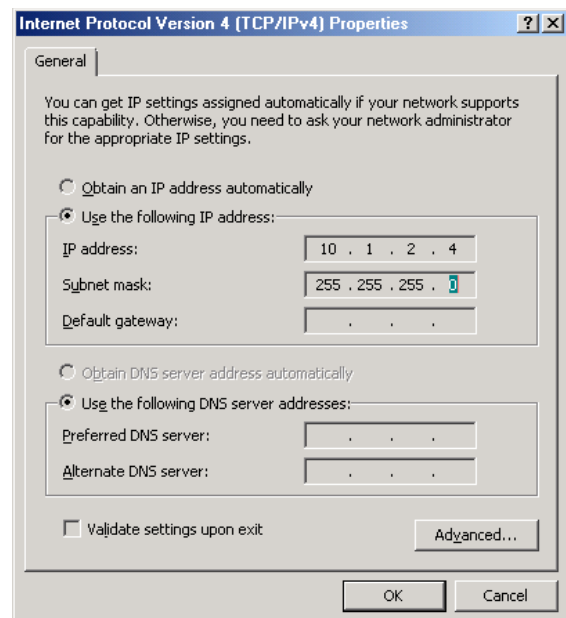
2. Click Local Area Connection, then click Properties button.



3. Select Internet Protocol Version 4 (TCP/IPv4). Then click the Properties button.



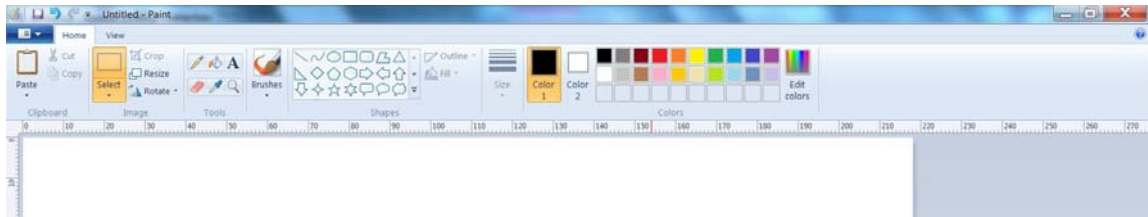
4. Click Use the following IP address radio button. Enter an IP address of 10.1.2.4, a subnet mask of 255.255.255.0, and click the OK button.



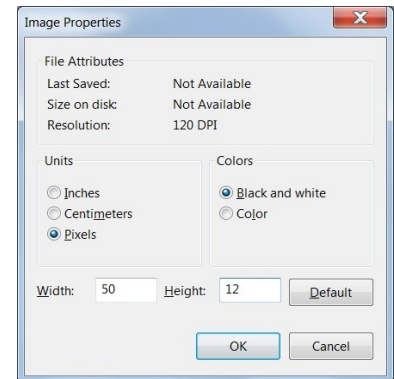


## Appendix D: Creating Logo Files

Open **Paint** from a PC by selecting **Start, All Programs, Accessories**, and then **Paint**.

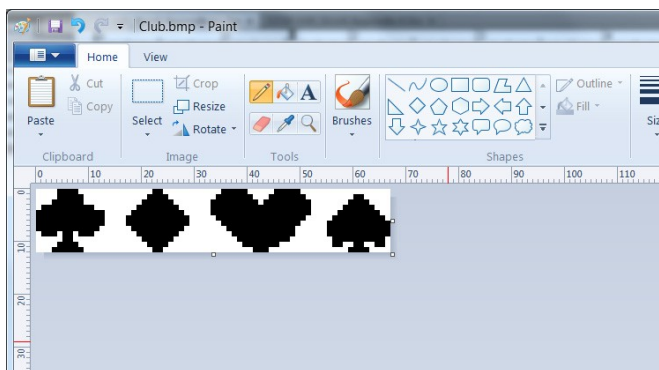


Navigate to the **Image Properties** dialog box via the drop down menu.

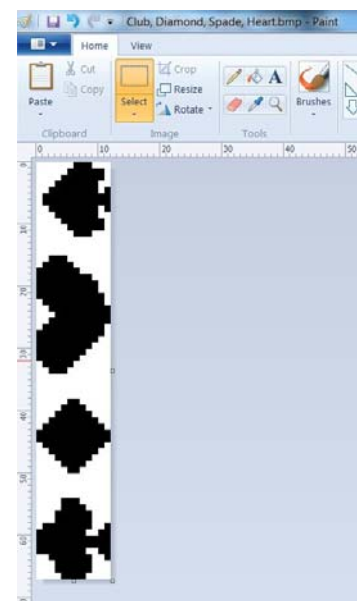


**HRP Head:** Enter the Width and Height of the logo in Pixels. For practical purposes the maximum height of a logo is 150 pixels if the logo is printed with a 1/2" print head, and 300 pixels if printed with a 1" print head. The absolute maximum logo height is 1200 pixels, but logos that cross print head boundaries will likely exhibit registration problems when printed. Maximum logo width is 32,767 pixels, or print columns (109.22 in / 2.77 in when printed at 300 dpi.)

Select **Black and White** for the Colors.



Next, click the **Rotate** button;  
**Rotate Left 90° (CCW 90°)**.



From the **File Menu**, select **Save As** and save the logo with a convenient name and directory location.



**NOTE:** If this logo is imported from another document or software, make sure that the first step taken is to Save As a Monochrome Bitmap (bmp), and then Resize to the appropriate height.



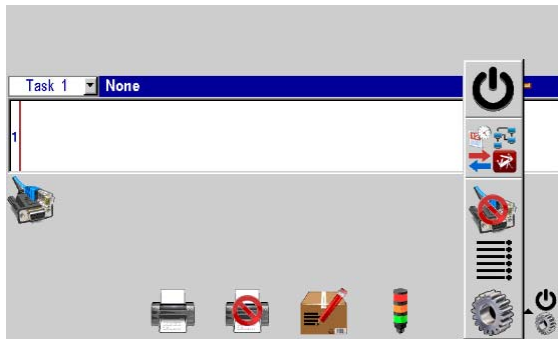
## Appendix E: Controller and Print Head File Management

### File Manager



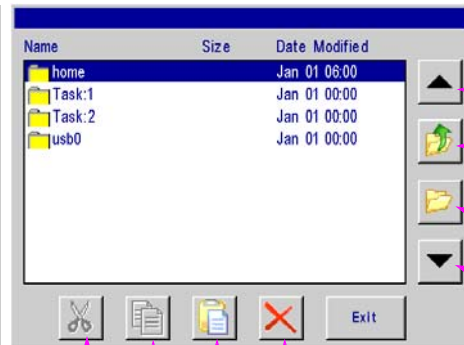
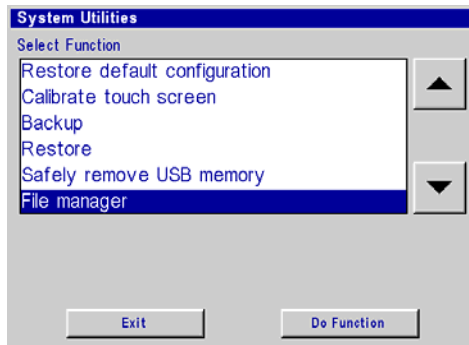
**NOTE:** A .bmp (logo) or .fnt (font) file must reside on both the controller and print head(s) to be correctly selected, displayed, and printed. Ensure the file names are less than 15 characters long.

1. If logo or font files are to be transferred, place them on a portable USB storage device in a convenient location and insert it into the controller USB port.
2. Touch the **Apps** button on the **Home** screen menu, and then select the **Utilities** button.



Utilities Button

3. Scroll to the bottom of the **Select Function** list and select **File manager**. Press the **Do Function** button; the **File manager** screen is displayed.



Scroll Up

Close Folder,  
Go Up One  
Level

Open Folder

Scroll down

Cut

Copy

Delete

Paste

The **home** folder contains all folders and files related to controller operation.

The **Task:1** and / or **Task:2** folders contain all font and logo files resident on the print head(s) in that daisy chain.

The **usb0** folder contains all folders and files resident on the USB storage device.



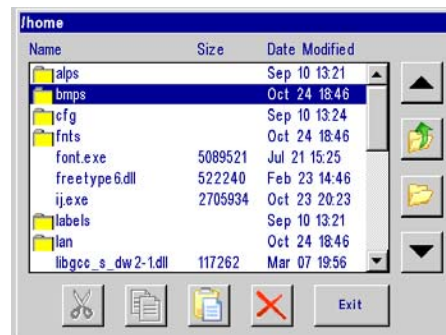
**NOTE:** Cut, Copy, Paste, and Delete function the same way as any software. Navigate to any file in any of the folders and perform the desired function. In addition, however, files are not allowed to be copied from any task (the print heads).

## Transferring Logo and Font Files

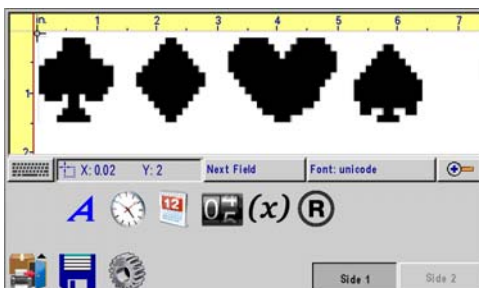
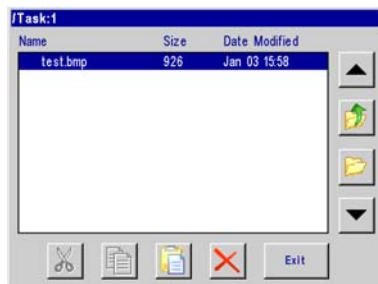
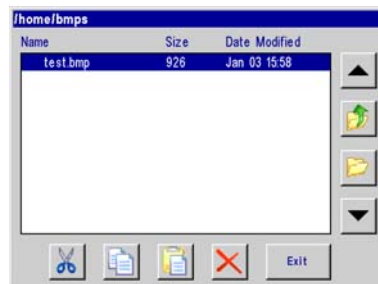


**NOTE:** Files cannot be transferred to the print head while printing. Pause print first.

1. As shown in the “File Manager” section, make sure USB storage device is installed and the **File manager** selection screen is present on the controller.
2. Select the **usb0** folder and press the **Open Folder** icon button.
3. Navigate to a previously saved file, highlight the file and press the **Copy** button. The file is now stored in temporary memory. In this example, a logo file will be transferred.
4. Press the **Close Folder**, then the **Go Up One Level** button until the **File manager** selection screen is present.
5. Select the **home** folder, press the **Open Folder** button, and select the **bmps** folder. Store logos in the **bmps** folder.



6. Press the **Paste** button. The logo (bmp) file will appear in the **bmps** folder.
7. Because the file is still resident in memory, it can be easily transferred to the print head(s). Navigate back to the file manager home screen. Highlight the **Task:1** or **Task:2** folder and press the **Open Folder** button.
8. Finally, press the **Paste** button, and the file appears on **Task:1** or **Task:2**. If the file is desired on the opposite task (daisy chain), navigate back and repeat the process. Note that the available fonts are listed in the Task folder too.
9. When all desired file transfers are complete, press the **Exit** button.
10. From the **System Utilities** menu, press the **Safely remove USB memory** button, and the **Done**.
11. The file is now available for message creation in the message editor.

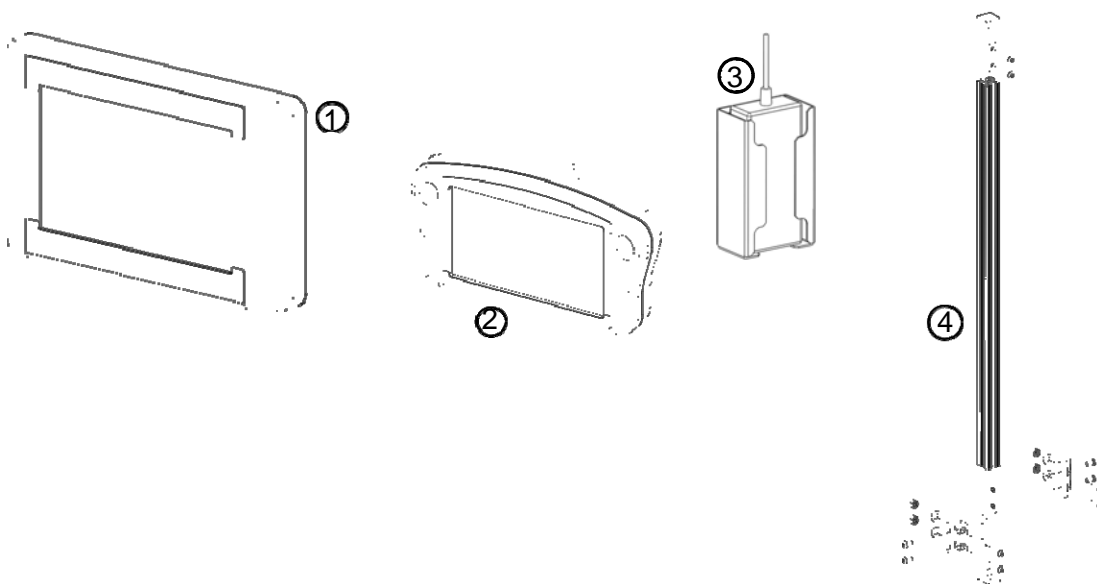


## Appendix F: Part Numbers

### System

#### Major Components

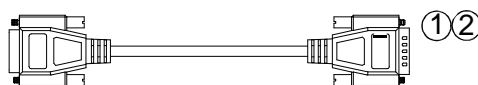
Item	Kit No.	Description
1	.MJHRP-035/SS	Stainless Steel Controller
2	.MJHRP-035	Hand Held Controller Assembly Kit Complete
3	MJHRP-005	Power Supply and Bracketry
4	MJHRP-013/HH	Bracket, Mounting, Controller



### Service Parts

#### Print Head Cables

Item	Kit No.	Description
1	MJHRP-007/F	Cable, Controller to Serial HRP Print Head, 6', F-F
2	MJHRP-007	Cable, Print Head to Print Head, (Daisy Chain Cable) 10', M-F

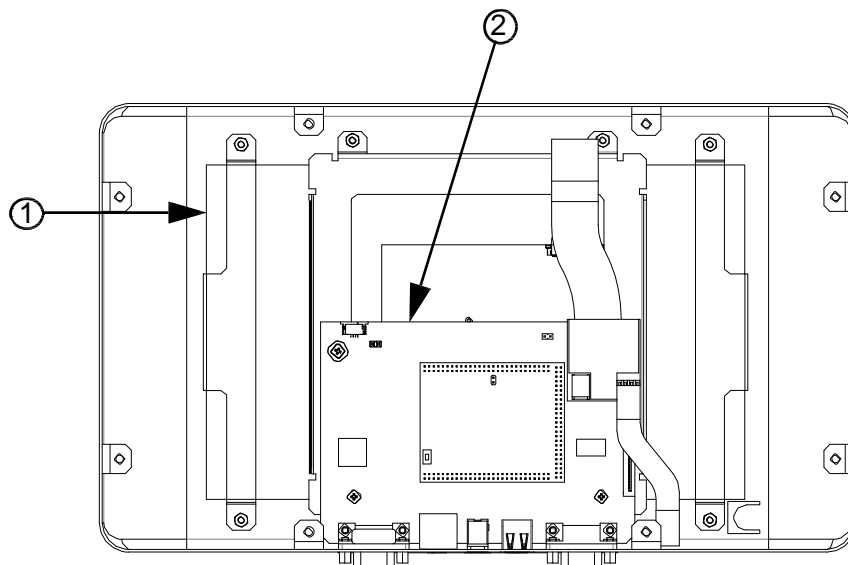


## Replacement Kits

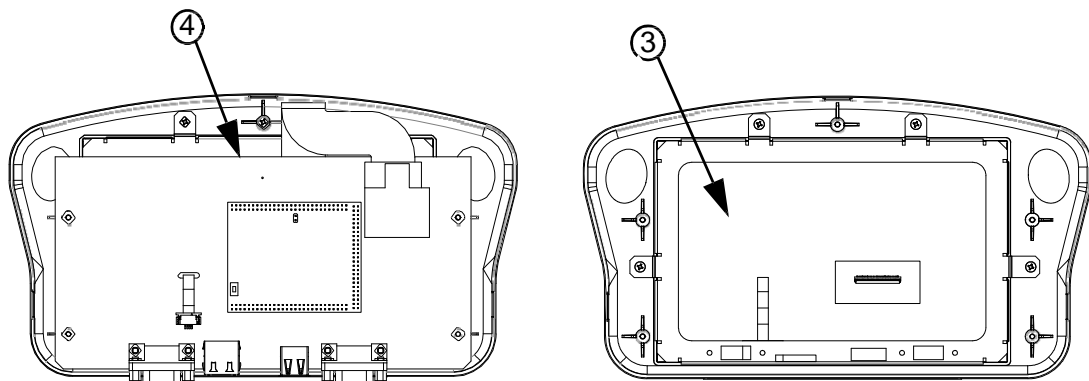
### \*Display and PCB

Item	Kit No.	Description
1	*Consult Factory	Kit, Replacement Display, Stainless Steel, 10.2"
2	*Consult Factory	Kit, Replacement, CPU, HRP Serial Stainless Steel Controller
3	*Consult Factory	Kit, Replacement Display, HRP Hand Held, 7"
4	*Consult Factory	Kit, Replacement, CPU, HRP Serial Hand Held Controller

**\* Note: LOVESHAW strongly recommends returning the Handset / Controller for a Service Evaluation on the Handset Display and or Board Replacements as to avoid any unnecessary additional damage to the case standoffs, the sensitive electronics and the electronic board assemblies.**



Stainless Steel Controller (MicroJet HRP)



MicroJet HRP Serial Hand Held

## Optional Equipment

### Encoder & Photocell

Item	Kit No.	Description
1	MJHRP-001	Encoder Assembly with Mounting Bracket & 25' Cable
2	5765206	Encoder O-Ring Replacement
3	MJHRP-003	Photocell

