

IJ3000 Controller Operations Manual

**5760-121
Revision J**

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Warranty:

IJ3000 Controller

The IJ3000 Controller, including all components unless otherwise specified, carries a limited warranty.

For all warranty terms and conditions, contact Diagraph an ITW Company for a complete copy of the Limited Warranty Statement.

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Section 1: Introduction

This manual describes the operation of the IJ3000 Controller. It includes programming instructions to create and edit print messages for the IJ3000 Controller. The IJ3000 Controller is used in conjunction with high resolution Impulse Jet print heads, large character Valve Jet type print heads, and Thermal Jet print heads based on HP print cartridges. System installation and hardware set-up for each is described in separate system operating manuals. For the IJ3000 Valve Jet systems, refer to manual 5760-107; for the IJ3000 Impulse Jet system, refer to manual 5760-111; and for Thermal Jet refer to manual 5780-320.

IJ3000 Controller

The IJ3000 Controller consists of printer interface electronics, a color display with touch screen, and a QWERTY style elastomeric keypad, in an industrial enclosure. The controller incorporates a Graphical User Interface (GUI) with intuitive, easy to use software. The controller can be used as a stand-alone device or networked through built-in Ethernet connectivity.

The IJ3000 Controller can be configured for multiple print technologies, including large character Valve Jet print heads, high resolution Impulse Jet print heads, and HP print cartridge based Thermal Jet print heads. Each print head type utilizes a common CPU board and resident controller firmware, in conjunction with a Print Head Interface board, unique to the print technology. This allows the IJ3000 Controller to drive multiple print technologies while maintaining a common operating platform.

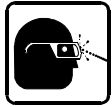
Using print message attachments, the IJ3000 Controller is also able to control Diagraph Automated Label Printers (ALP), Linx small character printers, or any other equipment capable of being controlled via an RS-232 serial port.. This allows the IJ3000 to become a single point control for dual technology product marking applications (Ink jet & labeling, large & small character ink jet, etc.).

The IJ3000 has an Ethernet Controller built into the CPU. The IJ3000 Controller can be remotely controlled via the Ethernet connection. A programming interface document is available (P/N: 5760-113) for the IJ3000 software interface.

IJ3000 PC Networking Software is available to allow multiple IJ3000 Controllers to be controlled from one central PC. The IJ3000 Networking Software is also capable of connecting database stored information to controller-generated print messages.

Section 2: 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.



Wear safety goggles when performing the procedure described!



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



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



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



CAUTION: Turn off the equipment's main power before:

- Performing preventive maintenance.
- Performing any repairs to the unit.
- Servicing the equipment in any manner.

ESD (Electro-Static Discharge) 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.



NOTE: It is extremely important to:

- Refer to your supervisor for complete instructions on personal protective equipment (PPE) required to work safely with this system.
 - Read the MSDS (Material Safety Data Sheet) and follow its instructions for proper storage, handling and disposal of inks and conditioners.
-

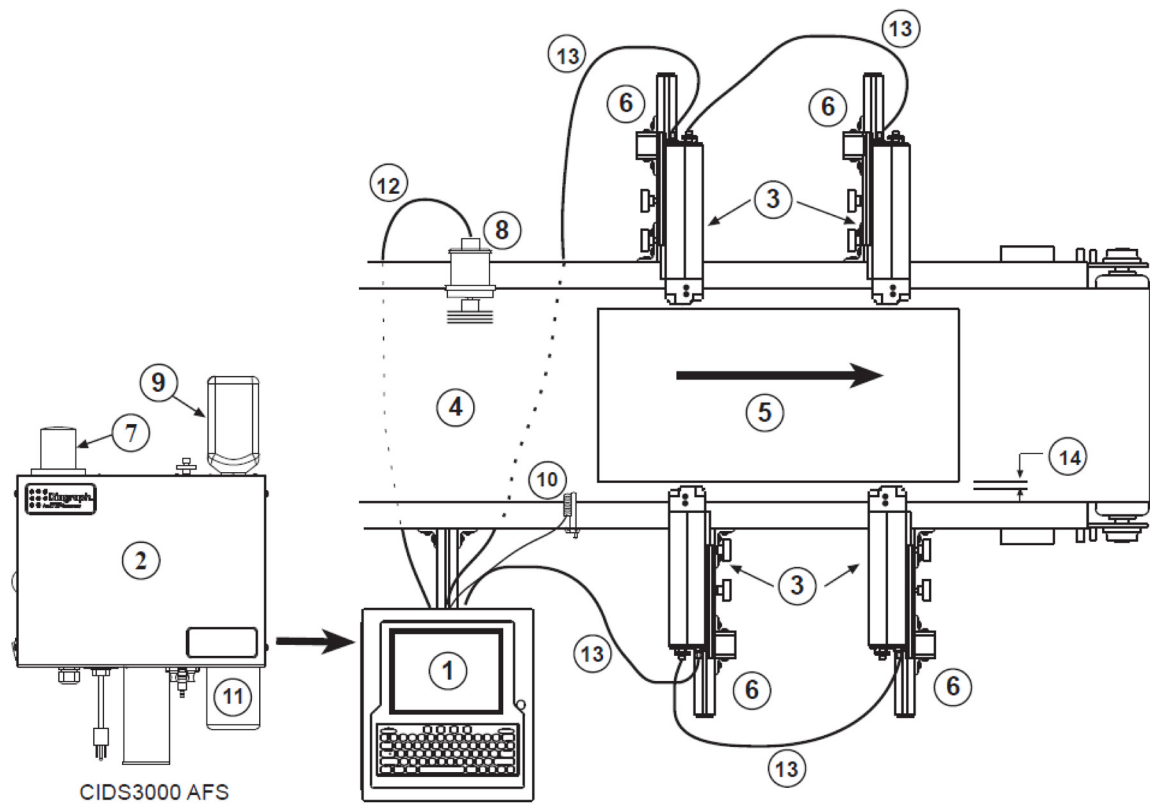


PRODUCT COMPLIANCE DISCLAIMER NOTE:

This product meets the requirements of CAN/CSA-22.2 NO.60950-00 * UL 60950 using Diagraph an ITW Company approved items. Units are only tested and qualified with Diagraph an ITW Company approved inks, parts and accessories. Use of other inks, parts or accessories may introduce potential risks for which Diagraph an ITW Company can assume no liability.

(The following view shows an IJ3000 Impulse Jet System.)

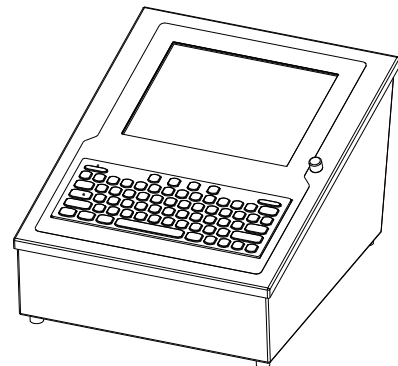
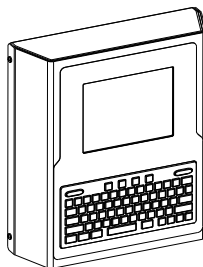
- | | |
|------------------------|--------------------------------------|
| 1 IJ3000 Controller | 8 Encoder |
| 2 CIDS3000 AFS | 9 Ink Supply |
| 3 Print Heads | 10 Photo Sensor |
| 4 Conveyor | 11 Vacuum Waste Collector Bottle |
| 5 Product | 12 Encoder Cable |
| 6 Print Head Bracketry | 13 Controller to Print Head Cable |
| 7 Ink Status Beacon | 14 Throw Distance (1/8" Recommended) |



IJ3000-HH

IJ3000-ES

IJ3000-XLS



The Diagram IJ3000 Controller is available in the following configurations:

<u>Part Number</u>	<u>Description</u>
---------------------------	---------------------------

IJ3000-XLS Controller Assemblies, Impulse Jet Systems, w/10.4" Display

5760-009SJ1D	Stainless Enclosure, Single Impulse Jet Interface, Domestic
5760-009SJ2D	Stainless Enclosure, Dual Impulse Jet Interface, Domestic
5760-009SJ1E	Stainless Enclosure, Single Impulse Jet Interface, European
5760-009SJ2E	Stainless Enclosure, Dual Impulse Jet Interface, European

IJ3000-XLS Controller Assemblies, Dual Technology Systems, w/10.4" Display

5760-009SVJD	Stainless Enclosure, Impulse Jet and Integrated Valve Interface, Domestic
5760-009SVJE	Stainless Enclosure, Impulse Jet and Integrated Valve Interface, European

IJ3000-XLS Controller/IDS 3000 Bracketry

5760-350	Controller/IDS 3000 Conveyor Mounting Kit
5760-351	Controller/IDS 3000 Pedestal Mounting Kit
5760-352	Controller/IDS 3000 T-Base Mounting Kit
5760-362	Controller 90° Pivot Bracket Kit
5760-368	CIDS Mounting Kit

IJ3000-ES Controller Assemblies, Impulse Jet

5765-010DJ1	Stainless Enclosure, Single Impulse Jet Interface, Domestic
5765-010DJ2	Stainless Enclosure, Dual Impulse Jet Interface, Domestic
5765-010EJ1	Stainless Enclosure, Single Impulse Jet Interface, European
5765-010EJ2	Stainless Enclosure, Dual Impulse jet Interface, European

IJ3000-ES Controller Assemblies, Integrated Valve

5765-010DV1	Stainless Enclosure, Single IV Interface, Domestic
5765-010DV2	Stainless Enclosure, Dual IV Interface, Domestic
5765-010EV1	Stainless Enclosure, Single IV Interface, European
5765-010EV2	Stainless Enclosure, Dual IV Interface, European

IJ3000-ES Controller Bracketry

5765-200	IJ3000-ES Conveyor Mount
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IJ3000-HH Controller Assembly

5780-015	Plastic Enclosure, 2 serial ports for driving Thermal Jet print heads
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IJ3000-HH Controller Bracketry

5780-234	IJ3000-HH Conveyor Mount
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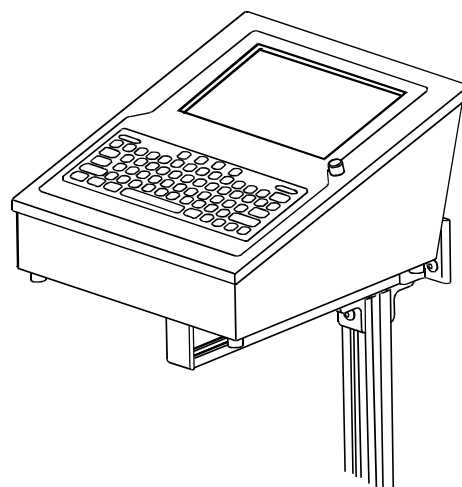
I/O Board (For use with IJ3000-XLS only)

5760-392	Kit, I/O Board
5760-395	Kit, Warning Tower

IJ3000 Controller

The controller gathers and stores all the information required for printing a message. This information can come from the following sources:

1. The user interface, which tells the controller what message to print on the product.
2. The photosensor, which tells the controller when to print.
3. The encoder, which tells the controller how fast to print. There are two types of encoders:
 - A built-in user settable **fixed speed encoder** is used when the conveyor speed does not change.
 - An optional, conveyor-mounted **variable speed encoder** is used when the line speed varies or has frequent starts and stops.



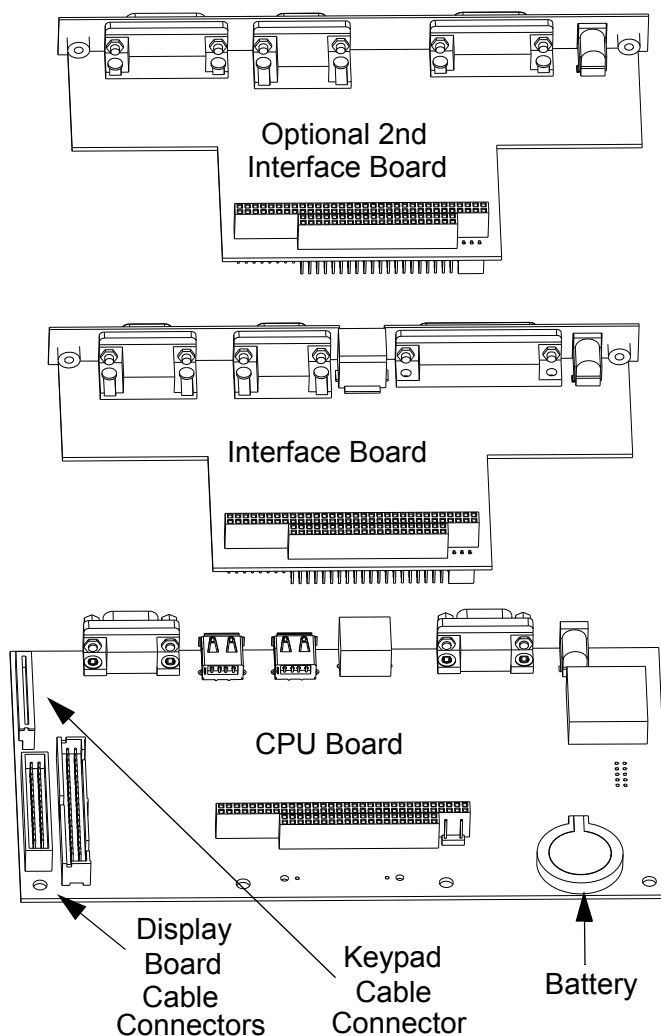
With this information, the controller knows exactly when the leading edge of the product will reach the print head and at what rate of speed.

The IJ3000-XLS controller comes in a stainless steel case that makes it splash-proof and resistant to electromagnetic interference. A hinged cover provides access to replaceable parts.

The IJ3000-ES comes in a compact, Stainless steel enclosure. All print head, encoder, ethernet, etc. connections are readily accessible from the exterior of the enclosure.

The IJ3000-HH controller operates with serial print heads only (TJ500, TJ1000). It has a molded ABS plastic enclosure, and can control up to 8 TJ500 or 4 TJ1000 print heads though each of its two serial ports.

The IJ3000 Impulse Jet Controller can control up to three 32-channel print heads, two 128-channel print heads, or one 256-channel print head per interface board. With the optional second interface board, the system can control up to six 32-channel, four 128-channel, or two 256-channel print heads.

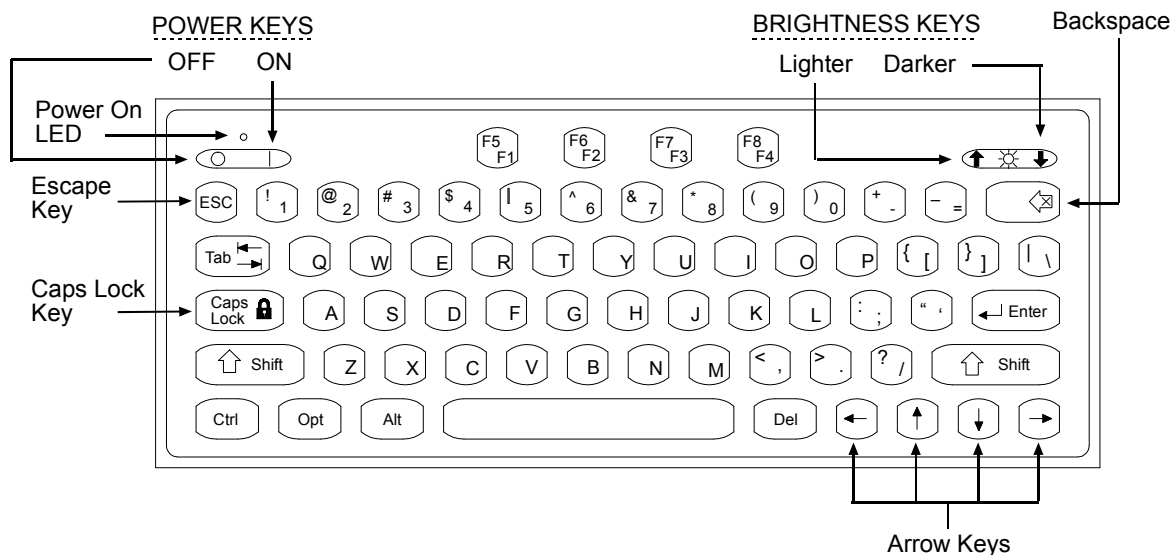




NOTE: If the controller is configured for dual technologies (Integrated Valve and Impulse Jet) the Impulse Jet Interface Board must be the first board plugged into the CPU Board. The Impulse Jet Interface Board requires use of the 24 VDC Power Supply. The Integrated Valve Jet Interface Board requires use of the 15 VDC Power Supply.

Section 4: Getting Started

IJ3000 Keypad



Turning the Controller On

The power keys are located at the top left corner of the keypad. Press the **I** key to turn the controller on. Press the **O** key to turn it off. (To prevent accidental turn-off, the system will prompt for confirmation.)



CAUTION: If the system is in the Print mode when it is turned off, it will resume printing when it is turned back on. Anything that is in front of the print heads when printing resumes may get ink on it.

Adjusting Screen Brightness

The screen brightness control keys are at the top right corner of the keypad. Press the **Up Arrow** key to make the screen lighter; press the **Down Arrow** key to make the screen darker.

Auto Repeat

The IJ3000 keypad has an auto repeat feature that activates when a key is held down for more than one half second.

Commands

There are three main commands given in this manual: **Highlight**, **Press**, and **Touch**.

Highlight

Highlight a display control to select it for further action, or to give it input focus. Different types of display controls are highlighted differently. For example, highlighted text is displayed in inverse video (light characters on a dark background), while highlighted screen buttons and message fields are displayed with a box around them.

Inverse video example: **Pure Bee Pollen**

Press

Press a keypad key to do or complete a particular action. Examples: Press **Enter**, press **ESC**, or press the **Up/Down Arrows** to scroll through the list of items.

Touch

Touch a screen control to do or complete a particular action. Examples: Touch the **Status** button to display the Status Screen or touch a print head to view or change that print head's properties.

Screen Controls

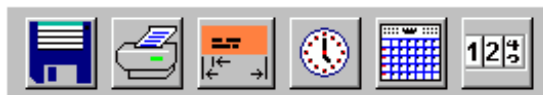
Buttons

There are three types of screen buttons, **Text**, **Bitmap**, and **Decorated**. Touch a button to actuate its function:

- Text button: contains a text description of its function.



- Bitmap button: contains a graphic illustrating its function.

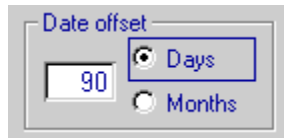


- Decorated button: contains text and graphics.



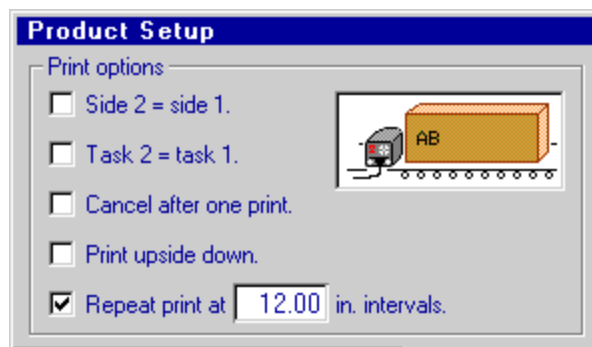
Radio Buttons

Touch a radio button or its text description to make a "one of" selection. A black dot indicates the current selection.



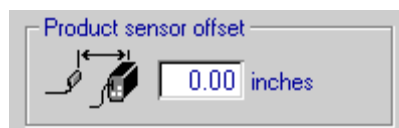
Check Boxes

Touch a check box or its text description to toggle an option or feature on and off. The feature or option is enabled when a checkmark appears in the box.



Value Entry Box

Touch a value entry box to highlight it, type in the desired value, and press **Enter**. Press **ESC** any time prior to pressing **Enter** to restore the original value. Touching another screen control or pressing an arrow key after entering a new value, but before pressing **Enter**, sets the new value just as if **Enter** had been pressed.



All value entry boxes have preprogrammed maximum and minimum allowable values. Enter a value greater than the allowable maximum and it automatically changes to the maximum. Enter a value less than the allowable minimum and it automatically changes to the minimum.

Depending on its usage, a value box may or may not allow decimals. When they are allowed, values are fixed at two decimal places.

Text Entry Box

Touch a text entry box to highlight it, type in the desired text, and press **Enter**. Press **ESC** any time prior to pressing **Enter** to restore the original text. Touching another screen control or pressing the **Up** or **Down Arrow** keys after entering new text, but before pressing **Enter**, sets the new text just as if **Enter** had been pressed.

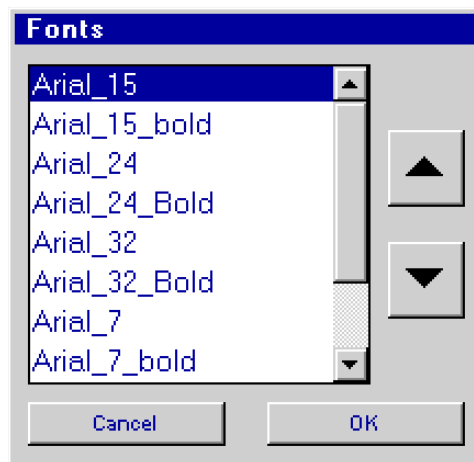


Existing text in a text entry box can be edited. Touch the box to highlight it, use the **Left** or **Right Arrow** keys to move the cursor to where text is to be added or removed, then use the **Backspace** or **Delete** key to remove unwanted text, or type in additional text.

List Box

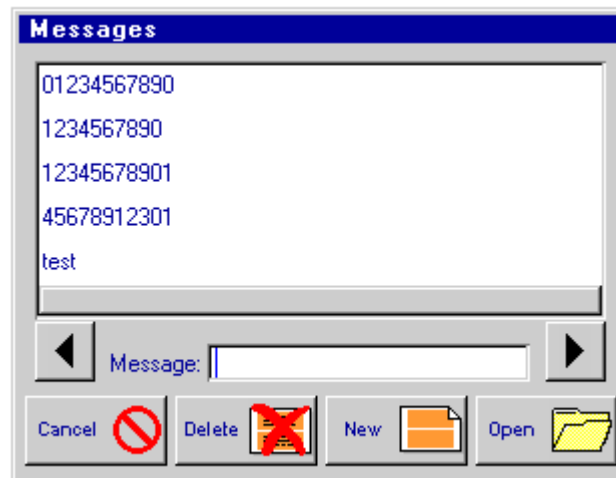
Use a list box to select an item from a number of related items, such as print heads, fonts, or date code formats. A list box is displayed in response to a button or other control being touched. (A vertical scroll bar will appear if the list contains more items than can be displayed in the list box.)

Highlight the selection by touching it, or scroll through the list using the up and down screen buttons or the up and down keys on the keypad. After an item has been selected from the list, touch the **OK** screen button, or press **Enter** on the keypad.



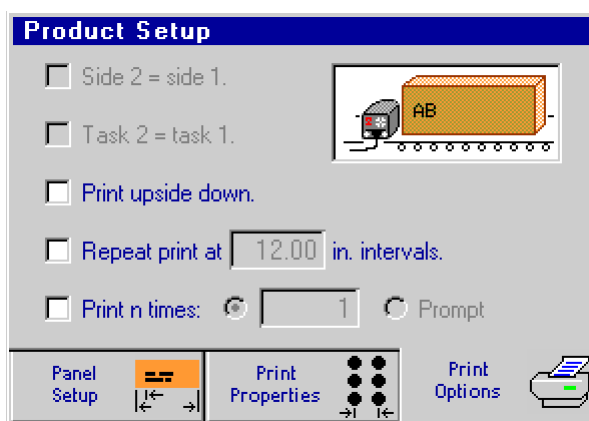
Message Selection Box

Use the message selection box to select a print message for printing, editing, deleting, etc. Select a print message by touching its name, by using the arrow keys on the keypad to move through the message names until the desired one is highlighted, or by typing the name in the box provided. After a message is selected, touch the screen button for the operation to be performed.

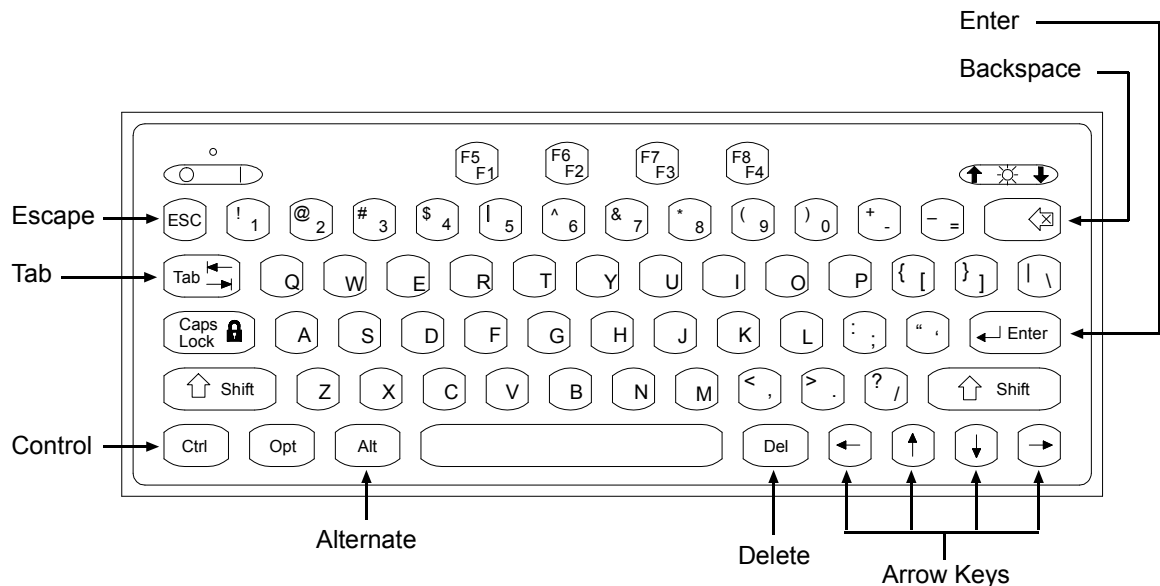


Inactive Controls

When a screen control has no function within the context of the current situation, it is made inactive or "grayed out" (the control is displayed entirely in shades of gray). For example, if the IJ3000 is set up for printing on one side of a product only, the **Side 2 = Side 1** check box on the Print Options screen has no function and is grayed out. Likewise, the repeat intervals value entry box is grayed out if repeat print is not selected.



Keypad Controls



The following keypad keys can be used to navigate through a screen:

ESC (Escape):

Press **ESC** to close the current window, dialog box, or menu. Any changes made in the window or dialog box that have not been saved will be discarded.

If a text entry box or value entry box has input focus and the existing contents of the box have been changed but not set (by pressing Enter), press **ESC** to restore the original contents. Press **ESC** again to close the window or dialog box that contains the text or value entry box.

Arrow Keys:

Press the **Arrow** keys to shift input focus from one screen control to another. Focus will shift to the next control in the general direction of the key pressed. If no control lies in that direction, input focus remains where it is.

When a text-type screen control has input focus, the **Left** and **Right Arrow** keys move the cursor through the text; the **Up** and **Down Arrow** keys will shift focus to the next screen control above or below the box.

Tab:

Press **Tab** to shift input focus from one screen control to another. Input focus shifts from control to control in the order in which they were added to the display.

Tab also frees the input focus when it gets "stuck" in a window. For example, when scrolling through the message list window on the Message Selection Box, the arrow keys cannot be used to leave the confines of the window. To shift input focus out of the window, press **Tab**.

Enter:

Enter key behavior is determined by the screen control that has input focus.

- Press **Enter** to actuate a Text button, Bitmap button, or Decorated button.
- Press **Enter** to choose a Radio button selection.
- Press **Enter** to toggle a Checkbox option on and off.
- Press **Enter** to terminate data entry on Text and Value Entry boxes.

Backspace or Delete:

Press the **Backspace** or **Delete** button to delete individual characters or entire text strings when editing text. **Backspace** removes characters to the left of the cursor, **Delete** removes characters to the right of the cursor.

Ctrl (Control):

The **Ctrl** key is used in the Edit Screen to amplify the action of the arrow keys (see “Moving Around the Edit Screen” on page 24”), and to alter the function of the Enter key.

Alt (Alternate):

The **Alt** key is used in the Edit Screen to alter the action of the arrow and Enter keys. (See “Moving Around the Edit Screen” on page 24”).

F4/F8:

The **F4/F8** key pulls up the extended characters dialog.

Input Focus

A screen control that receives keypad inputs has input focus. A screen control is assigned input focus by touching the control, or by using the Tab or arrow keys on the keypad to shift focus from control to control. A screen control that has input focus is highlighted in some way: text based controls display a cursor that indicates the text insertion point or are displayed in inverse video; buttons and message fields have a box around them.

Examples of screen controls with and without input focus:

With Input Focus:


Message:

Without Input Focus:

Message:


With Input Focus:

Message:



Without Input Focus:

Message:



With Input Focus:

☒ Item count

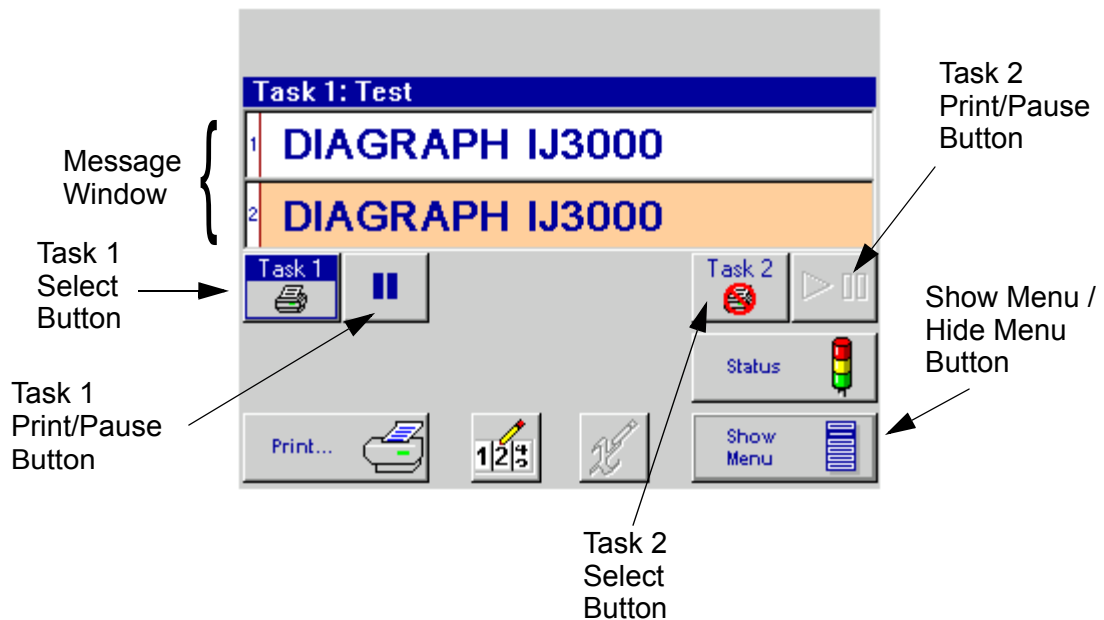
☐ Side 2 = side 1.

Without Input Focus:

☒ Item count

☐ Side 2 = side 1.

Home Screen



The Home Screen is usually the first screen displayed at power on. The major parts of the Home Screen are the **Message Window**, the **Task 1** and **Task 2** control buttons, the **Show Menu / Hide Menu** button, and the system controls and access buttons. (The system controls and access buttons' functions are described later in this manual.)



NOTE: Task 2 buttons appear only if the system is configured for two print tasks.

Message Window



The Message Window displays the current print message as it will look the next time it is printed. If no message is loaded to print, the window is empty. The message window is updated approximately every seven seconds, so it likely will not show each print.

Long print messages that do not fit completely within the Message Window can be viewed by using the **F1** and **F2** keys to scroll the message left and right, respectively.

The appearance of the message window reflects the system setup. Each numbered white or beige bar represents a print head in the daisy chain. The text on a bar is the text printed by that print head. If printing on a single side of the product, only one window is shown. Two windows are displayed when utilizing two-sided printing, with the top window always being side 1, or the side closest to the IJ3000 controller.

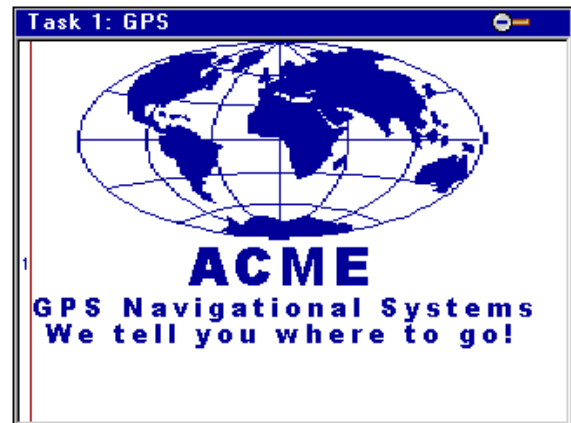
The window's header displays which task the print message is being printed on and the file name of the message being printed. If no message is loaded to print, "**None**" is displayed.

Zoom Buttons

-  On print tasks configured with IJ768 or IJ384 graphics print heads, or with Thermal Jet print heads, a **Zoom** button on the right side of the window header expands the message window to full screen and magnifies the print message so that fine details may be seen (see illustrations below). When zoomed in, use the **F1**, **F2**, **F5** and **F6** keys, or the **Arrow** keys, to scroll the message left, right, up and down. Use the **Zoom** button or the **ESC** key to zoom back out.
- 



Normal Message Window



Message Window Zoomed In

Task 1/Task 2 Buttons

Touch the **Task 1** button to display the Task 1 message in the Message Window, touch **Task 2** to display the Task 2 message. If the system is set up to have only one print head daisy chain, the **Task 2** button is not displayed.

The printer icon on the task buttons indicates the current print status. If the printer is shown covered with a red circle and slash (see the Task 2 Select Button in the illustration on previous page), the task is either paused or no print message is loaded to print. If the red circle and slash is not displayed (see the Task 1 Select Button in the illustration on previous page), the task is printing.

Print/Pause Buttons

Touch a task's **Print/Pause** button to toggle the task between printing and not printing (paused). The icon on the button indicates what action will be taken when the button is touched. That is, if blue double bars are shown, touch the button to **pause** print. If a green arrow is shown, touch the button to **resume** printing. The **Print/Pause** button is always active; a task's message does not have to be displayed in the message window for its **Print/Pause** button to work.

When a task is empty (no message is loaded to print), its **Print/Pause** button displays both an arrow and the double bars, and is grayed out.



The Print/Pause button looks like this when the task is printing. Touch the button to pause printing.



The Print/Pause button looks like this when the task is paused. Touch the button to resume printing.

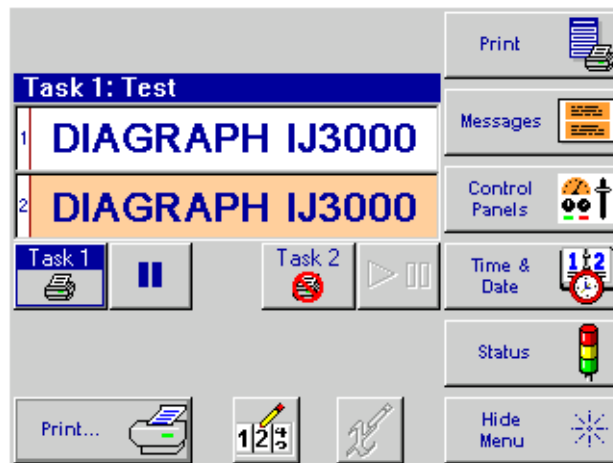


The Print/Pause button looks like this when the task is empty.

The **Task 2 Print/Pause** button is not displayed if the system is set up to have only one daisy chain.

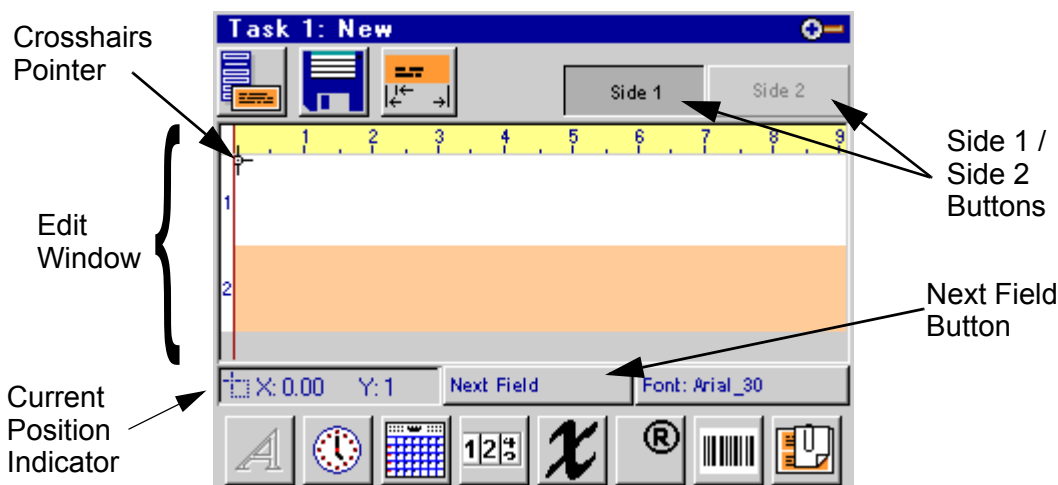
Show Menu/Hide Menu Button

Touch the **Show Menu/Hide Menu** button to show or hide the Home Screen menu. The functions associated with the menu buttons are described later in this manual.



Home Screen with Menu Displayed

Moving Around the Edit Screen



Edit Window:

Print messages are created and edited in the Edit Window. Unlike all other IJ3000 screens and dialog boxes, input focus on the Edit Screen remains in one place - the Edit Window. Buttons outside of the Edit Window do function when touched, but they can't be made to function from the keypad. For information on the layout and appearance of the Edit Window see *"Creating a Print Message"* on page 45.

Crosshairs Pointer:

The crosshairs pointer indicates where a new data field is placed when added to a print message. Use the keypad keys listed below to move the crosshairs pointer around the Edit Window.

Touching the screen inside the Edit Window can also move the crosshairs pointer. The pointer moves to where the screen is touched.

The color of the crosshairs pointer changes from black to red when it moves over a data field.

Impulse Jet, Thermal Jet:

Direction	IJ96, IJ192, IJ224, IJ352, IJ384 & IJ768 Distance	Thermal Jet Distance	Press keypad key
up/down	3 dot rows (IJ384, 768)	3 dot rows	up/down arrow
up/down	Height of current font	Height of current font	Shift + up/down arrow
up/down	1 dot row	1 dot row	Alt + up/down arrow
down	Height of current font	Height of current font	Enter (when no fields are highlighted and the crosshairs pointer is black)
left/right	6 print columns	6 print columns	left/right arrow
left/right	54 print columns	54 print columns	Shift + left/right arrow
left/right	1500 print columns	1500 print columns	Ctrl + left/right arrow
left	6 print columns	6 print columns	Backspace/Delete (when no fields are highlighted)
left	54 print columns	54 print columns	Shift + Backspace/Delete (when no fields are highlighted)
left	1500 print columns	1500 print columns	Ctrl + Backspace/Delete (when no fields are highlighted)
right	6 print columns	6 print columns	Space Bar (when no fields are highlighted)
right	54 print columns	54 print columns	Shift + Space Bar (when no fields are highlighted)
right	1500 print columns	1500 print columns	Ctrl + Space Bar (when no fields are highlighted)

Integrated Valve:

Direction	Distance	Press keypad key
up/down	1 dot row	up/down arrow
up/down	9 dot rows	Shift + up/down arrow
down	9 dot rows	Enter (when no fields are highlighted and the crosshairs pointer is black)
left/right	1 print column	left/right arrow
left/right	9 print columns	Shift + left/right arrow
left/right	250 print columns	Ctrl + left/right arrow
left	1 print column	Backspace/Delete (when no fields are highlighted)
left	9 print columns	Shift + Backspace/Delete (when no fields are highlighted)
left	250 print columns	Ctrl + Backspace/Delete (when no fields are highlighted)
right	1 print column	Space Bar (when no fields are highlighted)
right	9 print columns	Shift + Space Bar (when no fields are highlighted)
right	250 print columns	Ctrl + Space Bar (when no fields are highlighted)

Next Field Button:

Touch the **Next Field** button to highlight or select the data fields in the order in which they were added to the print message. A selected field's color changes from dark blue to red and a box surrounds the field. Once a field is selected, it can be moved around the Edit Window or its contents can be edited. For instructions on editing an existing data field see *"Editing a Message" on page 59*. Use the keypad keys listed below to move a selected field around the Edit Window.

Fields cannot be moved over other fields, they must be moved around them. When a field is positioned appropriately, press **Enter** to de-select it.

A field can also be selected by moving the crosshairs pointer over it (as indicated by the crosshairs pointer turning red) and pressing **Enter**, or by touching the field directly.

Impulse Jet::

Direction	IJ96, IJ192, IJ224, IJ352, IJ384 & IJ768 Distance	Thermal Jet Distance	Press keypad key
up/down	3 dot rows (IJ384, 768) 1 dot row (all others)	3 dot rows	up/down arrow
up/down	9 dot rows	9 dot rows	Shift + up/down arrow
up/down	1 dot row	1 dot row	Alt + up/down arrow
left/right	6 print columns	6 print columns	left/right arrow
left/right	54 print columns	54 print columns	Shift + left/right arrow

Integrated Valve:

Direction	Distance	Press keypad key
up/down	1 dot row	up/down arrow
up/down	9 dot rows	Shift + up/down arrow
left/right	1 print column	left/right arrow
left/right	9 print columns	Shift + left/right arrow

Current Position Indicator:

The Current Position Indicator displays the current location of the crosshairs pointer, selected field, or edit cursor. The X position is given in inches from the left edge of the active print area. The Y position is given in dot rows from the top of the active print area.

Side 1/Side 2 Buttons:

Touch the **Side 1** or **Side 2** button to display side 1 or side 2 of the print message. The button that appears pressed or pushed indicates which side is currently displayed.

Section 5: Setup Functions

Tasks

A task consists of all operations associated with a single print head daisy chain. If the system is configured to have only a single task, the Task 2 **Select** and **Print/Pause** buttons are not displayed.

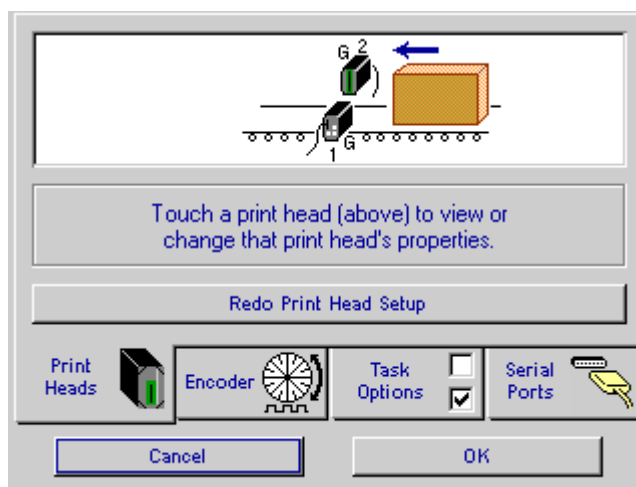
Configuring the Print Station

Print Head Setup Screen

On the **Home Screen**, touch **Show Menu**, **Control Panels**, then **System Setup**.

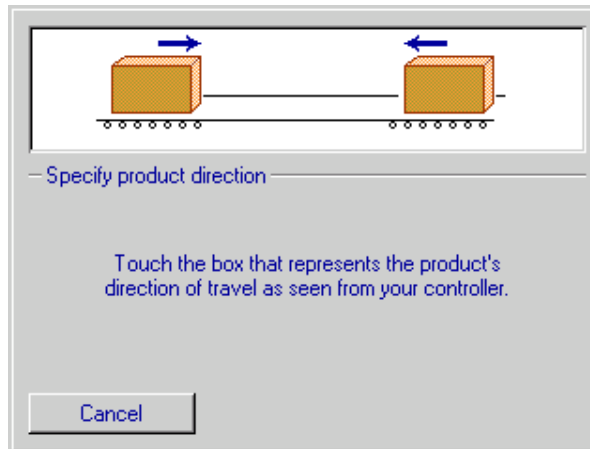
Screen prompts guide the user through the step by step print head setup procedure. Once begun, the procedure may be aborted (by pressing **Cancel** or the **Escape** key) at any time without changing the current print head setup.

To begin the print head setup procedure, touch the **Redo Print Head Setup** button. The next screen prompts the user to specify product direction.



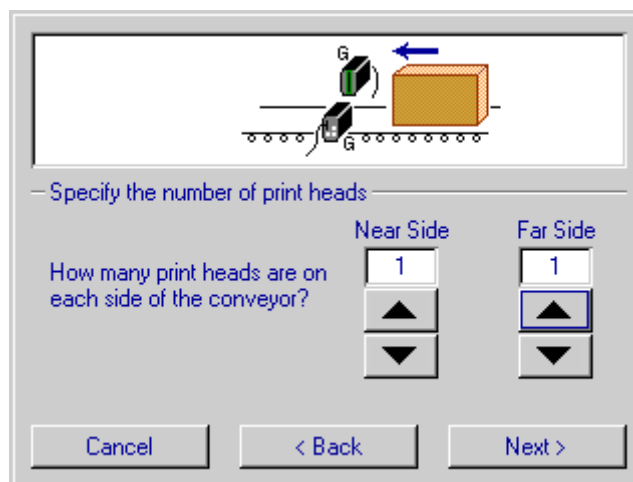
Specifying Product Direction

Touch the box that represents the direction the product will move on the conveyor. The next screen will appear automatically.



Specifying Number of Print Heads

Touch the **Up/Down Arrows** to set the number of print heads on each side of the conveyor. The illustration at the top of the screen will automatically change to reflect the choices. In the example below, one print head has been specified on the near side and one on the far side of the conveyor. Touch the **Next>** button.

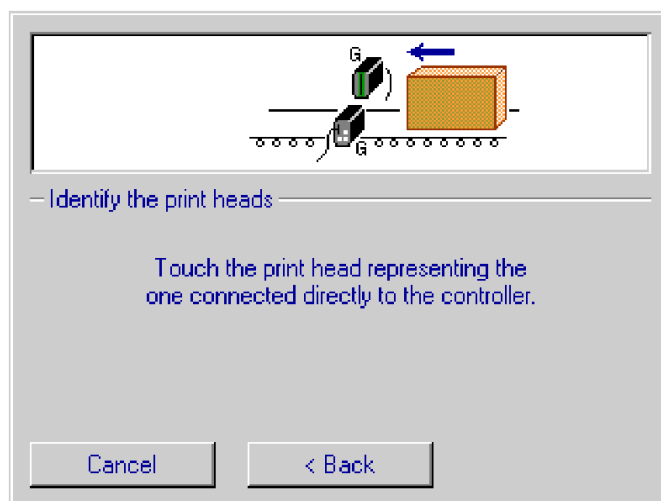


Setting Daisy Chain Order

Both print heads are displayed and the user is prompted to indicate the print head order. (If there is only one print head, this step is bypassed.) Once this is done, the **Print Head Properties** screen appears.

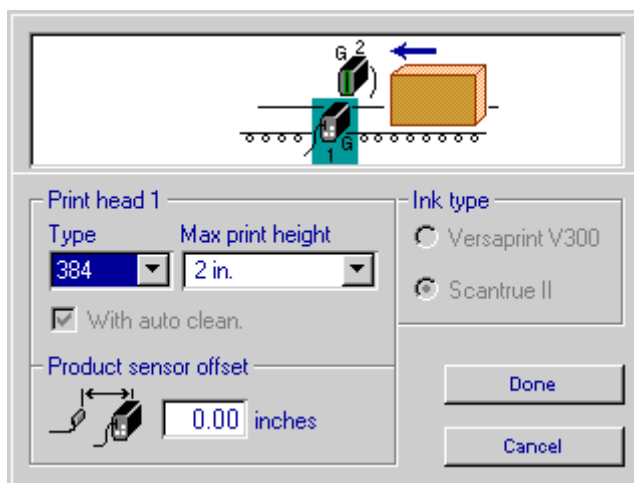


NOTE: The first print head in the daisy chain should be the top print head in the system, as this one will be printing the top line of data and will be the first one prompted to enter data.



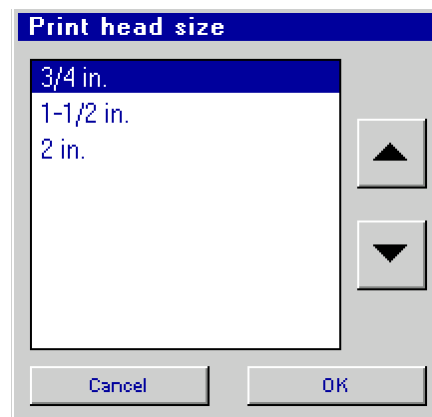
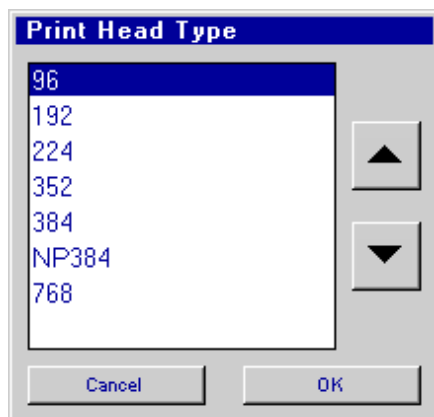
Defining Print Head Properties

The final step in print head configuration is defining the properties of the individual print heads.

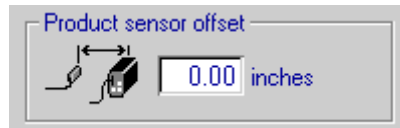


Beginning with print head number one and working in numerical order, the following will need to be defined:

- **Print head type and size:**



- **Product sensor offset:** Enter the distance between the photosensor and the print head, in inches. This may need to be fine-tuned after print setup.



For Impulse Jet: The maximum sensor offset is 52" for 96, 192, 224, 352 and WaxJet Print Heads. The maximum sensor offset for the 384 and 768 Print Heads is 27".

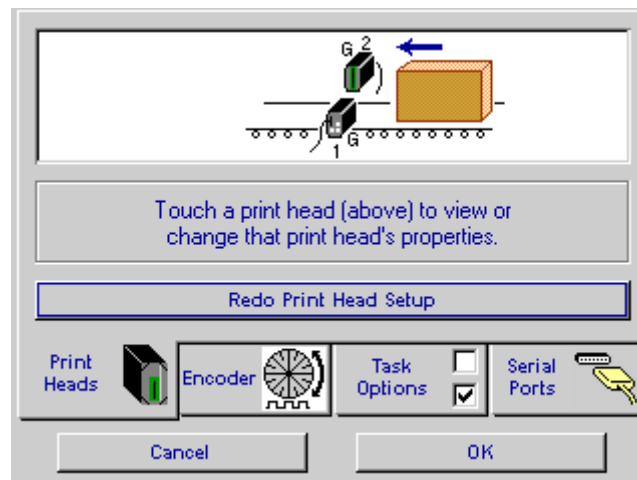
For Integrated Valve: The maximum sensor offset is 81".

For Thermal Jet: The maximum sensor offset if 109".

- **Auto Clean** indicates if the selected print head has the auto clean feature.
- **Ink Type** indicates the type of ink used for the selected print head.

Touch each print head to display and set the properties for that head.

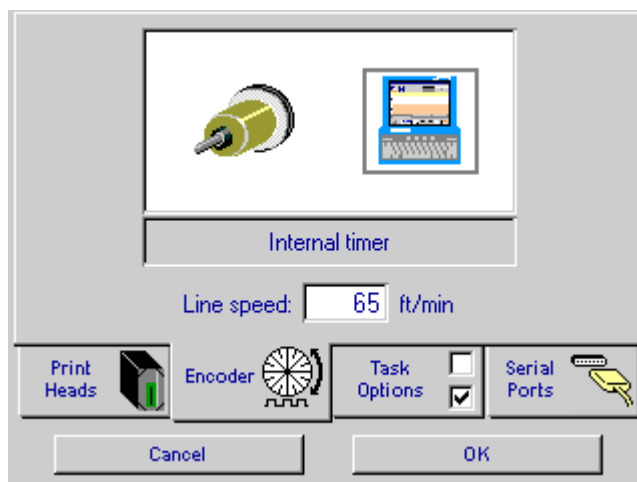
After the last print head is defined, touch the **Done** button to display the following screen. Print Head setup is now complete.



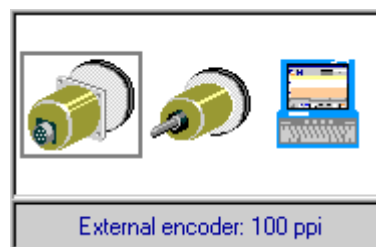
Touch any print head on the display to review or change the properties for that head. Touch the **Redo Print Head Setup** button to repeat the setup procedure using the new setup as the default. Touch **OK** to return to the **Home Screen**.

Encoder Setup

Touch the **Encoder** tab at the bottom of the **System Setup** screen to access encoder options. Image at right shows encoder options for Impulse Jet print heads.



Thermal Jet



Integrated Valve

For Impulse Jet (top): Select either the 300 ppi external encoder at left or the internal IJ3000 timer at right.

For Thermal Jet: Select the 300 ppi external encoder at left, auto speed detect at center, or fixed speed at right.

For Integrated Valve: Select from the 100 ppi external encoder at left, 300 ppi external encoder at center, or internal IJ3000 timer at right.

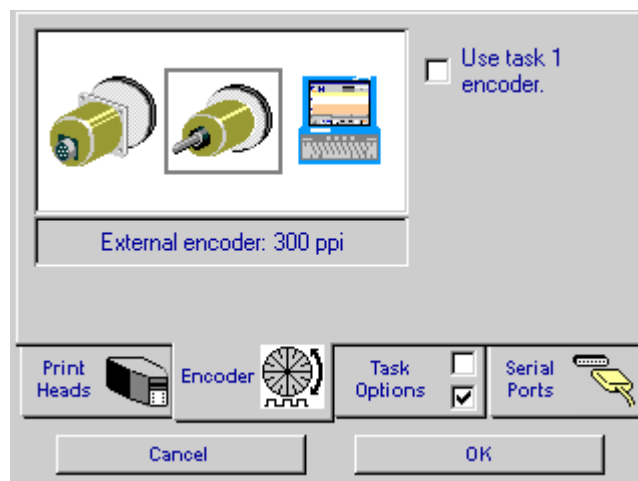
A gray box surrounds the current encoder selection.

Use an external encoder if the line speed varies or the line makes frequent starts and stops. External encoder resolution is fixed at 300 ppi (pulses per inch) for Impulse Jet and 100 or 300 ppi for Integrated Valve.

Use the internal IJ3000 timer if the line speed is constant, with a minimum of starts and stops. When choosing the internal timer, enter the conveyor's speed into the **Line Speed** box. (See "Appendix D: Performance Parameters" on page 107 for maximum line speeds.)



NOTE: The Task 2 encoder setup screen differs slightly from that of Task 1 in that it offers the option of using the Task 1 encoder for Task 2 print timing. (For more on hardware configurations, refer to the system operations manual: P/N 5760-111 for Impulse Jet, 5760-107 for Integrated Valve or 5780-320 for Thermal Jet.)



Task 2 Encoder Setup Screen

Touch **OK** to return to the **Home Screen**.

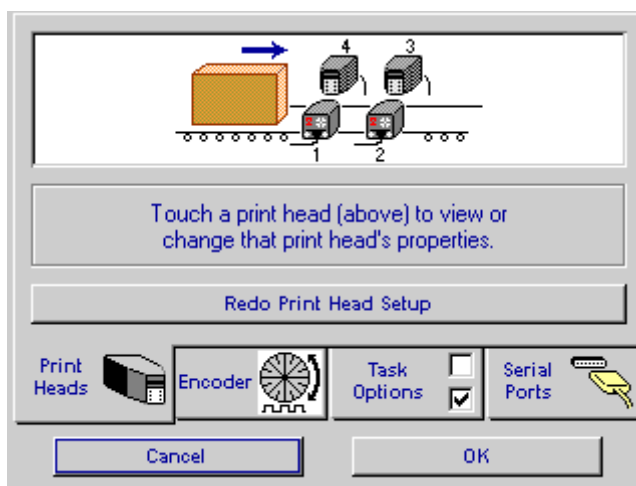
Group Setup

The IJ3000 can be setup to create and manage messages for both Task 1 and Task 2 as a single "group" message. This allows for single message editing for a two task controller with multiple heads on each task. The group function is only utilized for dual task controllers. The system must be in group mode to create, edit, and print a group message.

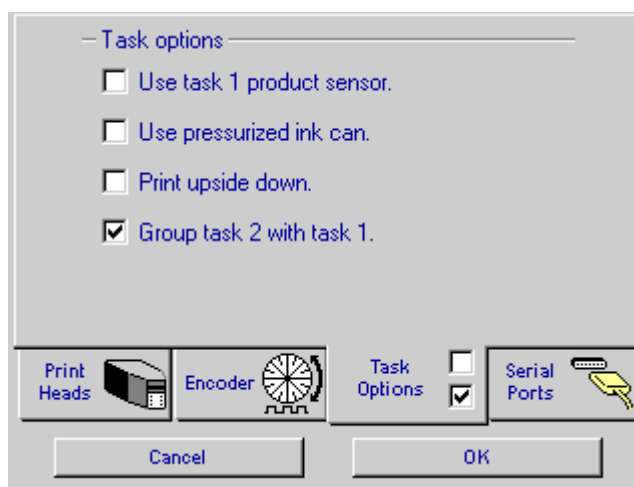


NOTE: Once a message is created or edited as a group, it becomes a group message and cannot be edited or printed unless the controller is in group mode.

Touch the **Task Options** tab in the system setup screen for Task 2.



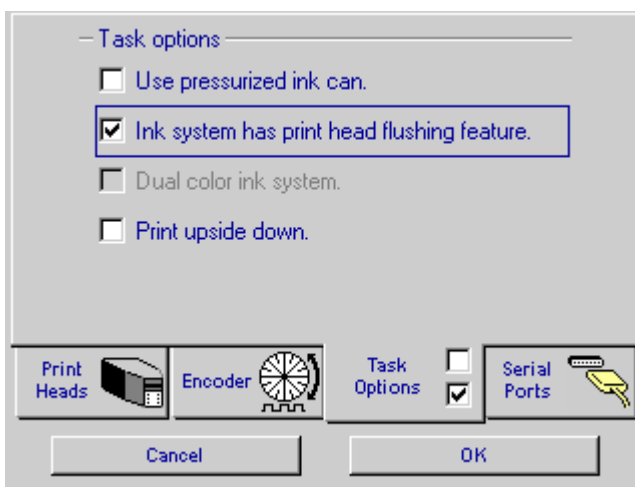
Check the **Group task 2 with task 1** box to set the system to group mode and select **OK**.



Print Head Flushing Feature (for Integrated Valve Only)

To configure an IJ3000 to work with an IDS3000 that has the Print Head Flushing Feature:

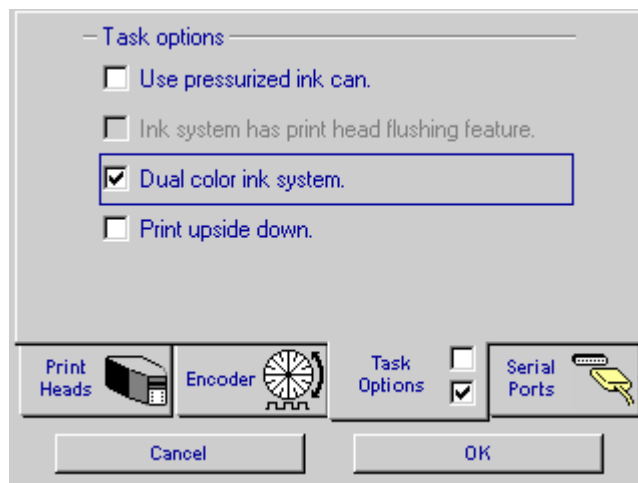
1. On the **Home screen**, select **Task 1** and then touch the **Control Panels** button to open the Control Panels Menu.
2. Touch the **System Setup** button on the Control Panels Menu to open the System Setup screen.
3. Touch the **Task Options** tab.
4. Check the **Ink system has print head flushing feature** box. Checking the box places a **Flush Print Heads** button on the Print menu on the Home screen. For instructions on flushing the print heads see *"Print Head Flushing System (Non-Porous Integrated Valve Systems Only)"* on page 80.



Dual Color Ink System Feature (for Integrated Valve Only)

To configure an IJ3000 to work with a dual color ink system:

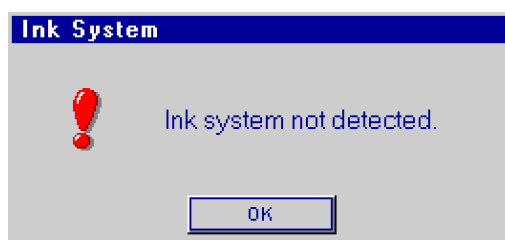
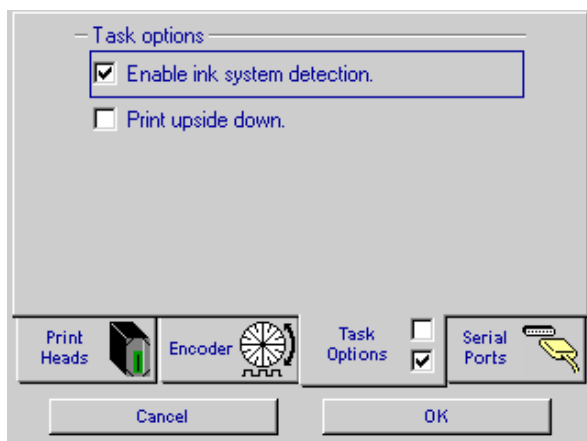
1. On the **Home screen**, select **Task 1** and then touch the **Control Panels** button to open the Control Panels Menu.
2. Touch the **System Setup** button on the Control Panels Menu to open the System Setup screen.
3. Touch the **Task Options** tab.
4. Check the **Dual color ink system** box. Checking the box places a **Change Ink Color** button on the Print menu on the Home screen. For complete instructions on dual color ink system operation see P/N 5760-029, *IJ3000 Dual Color Ink System Installation Instructions*.



Ink System Detection Feature (for Impulse Jet Only)

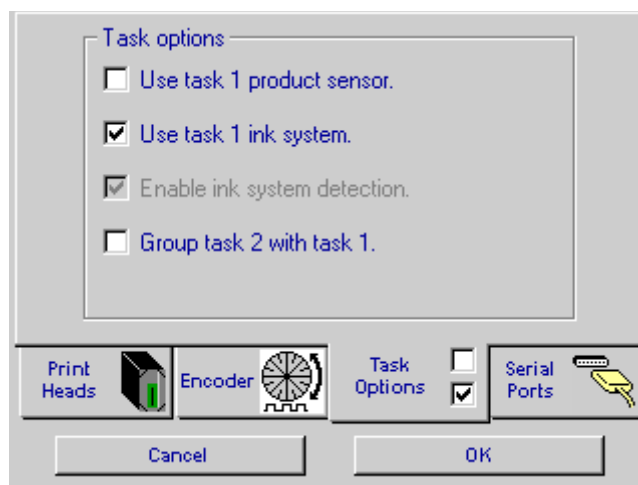
This feature detects when an ink system is disconnected or turned off. To access it, put the Home screen on **Task 1**, and touch **Control Panels**, **System Setup**, and the **Task Options** tab on the System Setup screen.

Ink system detection is enabled as a factory default. A dialog box is displayed on the Home screen when the ink system is not detected.



Setting Up a Second Ink System (for Impulse Jet Only)

By default, Task 2 is configured to use the Task 1 ink system. To use a separate ink system for Task 2 set the **Home Screen** to **Task 2**, and from the **Control Panels** menu select **System Setup**. When the Setup Screen is displayed touch the **Task Options** tab, then touch the **Use Task 1 ink system** check box to uncheck it.



Serial Port Setup

NOTE: The following settings are fixed on the IJ3000 and cannot be changed. Any device connected to an IJ3000 serial port must be configured to match these settings.

Data Bits: 8

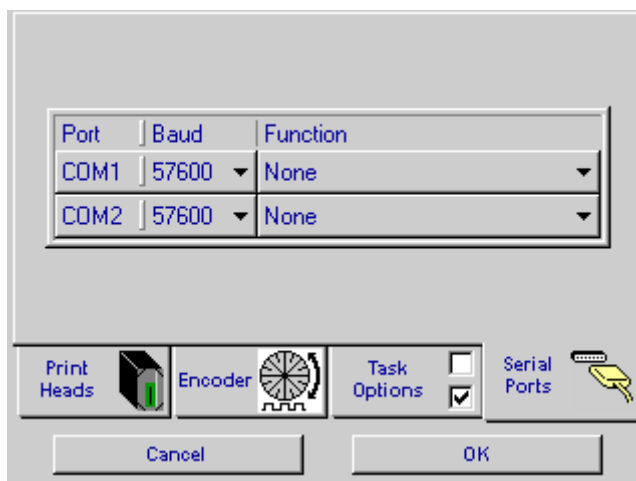
Stop Bits: 1

Parity: None

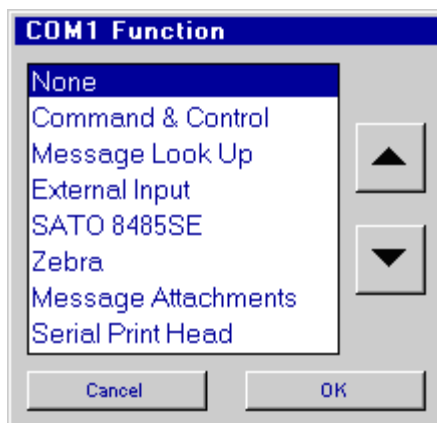
Flow Control: None

To set up the COM1 and COM2 serial ports:

1. On the **Home Screen**, touch the **Control Panels** button to open the Control Panels menu.
2. Touch the **System Setup** button on the Control Panels menu to open the System Setup screen
3. Touch the **Serial Ports** tab on the System Setup screen to display the Serial Ports page.



4. Touch a COM port **Function** button to open a list box showing the functions available for the related port. Select the desired function and touch the **OK** button.



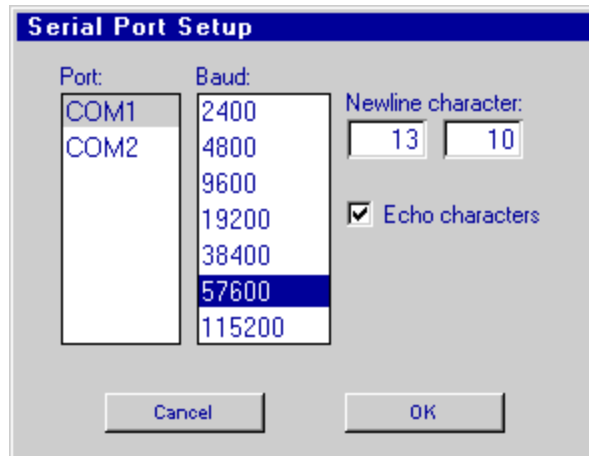
Serial port functions:

- **Command & Control:** This function allows external devices limited control of the IJ3000 controller. Files may be uploaded, messages printed, and various controller settings may be modified. For complete details see the Software Interface Document, P/N 5760-113.
- **Message Look Up:** This function allows external devices to select a message to print from those stored in the IJ3000s memory. Message look up is COM port/task specific. That is, to print a message on Task 1 send the message name to COM1; to print a message on Task 2 send the message name to COM2. A bar code scanner is most commonly used for message look up, but other devices, such as a PC or PLC, may also be used.

NOTE: The message name received at the serial port must exactly match the name of a print message stored in the IJ3000. If no match to the message name received is found the current print message is cancelled and printing stops.

- **External Input:** Use the External Input function to change what is printed in a variable field or bar code field while the message containing the field is printing. The serial port the variable field or bar code accepts data from is specified when the message is created. See *“Adding a Variable Field” on page 52*, and *“Adding a Bar Code” on page 54*.
- **Sato 8485SE & Zebra:** Useful in dual technology applications (coding and labeling), these functions simplify product changeover by allowing the IJ3000 print message and the label printed by a label applicator with Sato 8485SE or Zebra print engines to be changed in a single operation. The label format file is attached to the print message when the message is created. When the message is later selected to print the file is sent to a label applicator attached to the serial port. See *“Section 6: Message Functions” on page 45* for details.
- **Message Attachments:** A message attachment is a file or user defined text string that is appended to a print message when the message is created. The attached file or text string is then sent out one of the IJ3000’s serial ports when that message is selected to print. Message attachments can be used to control devices external to the IJ3000 (the Sato 8485SE and Zebra functions described above use message attachments). See *“Section 6: Message Functions” on page 45* for details.
- **Serial Print Head:** Select the Serial Print Head function to configure the IJ3000 to drive Thermal Jet print heads. Each serial port can drive up to eight TJ500 or four TJ1000 print heads. Serial print heads are automatically assigned to the first available task. For complete details of the Thermal Jet print heads see the *Thermal Jet Ink Jet System Operations Manual*, P/N 5780-320.

5. Touch a COM port **Port|Baud** button to open a Serial Port Setup dialog box for the related port.



Select the port, if applicable, and the port's baud rate. Most users can touch the **OK** button at this point; advanced users may want to change the newline character, or disable the echoing of characters received by the IJ3000.

Newline character: A carriage return/line feed (CRLF) is the default newline character for the IJ3000. If your equipment uses a different newline character enter it in the **Newline character** boxes as decimal numbers (e.g. CR = 13, LF = 10). If your equipment uses a single character instead of a two-character sequence, enter it in the right hand box and clear the left hand box. If both boxes are left blank the newline character will be set to CRLF.

Echo characters: The default setting is "checked". If your equipment does not expect the IJ3000 to echo all received characters uncheck the **Echo characters** check box.

NOTE: If using **Message Attachments** on one IJ3000 to control **Message Look Up** on a second IJ3000, **Echo characters** on the second IJ3000 should be turned off (not checked).



Network Setup

If the IJ3000 system is being used in a network application, the factory programmed network settings may need to be changed. If the network application is not being utilized, this section can be skipped.

To display the Network Setup screen:

1. On the **Home Screen**, touch the **Control Panels** button to open the Control Panels Menu.
2. Touch the **Network** button on the Control Panels Menu to open the Network Setup screen.

The controls on the Map Network Device page of the Network Setup Screen apply only if the IJ3000 is running on a network controlled by a PC using the IJ3000 network software.

Message List Access

The **Message list access** controls determine whether the print messages listed in the Print Message Selection box are local (stored in the IJ3000's internal memory) or on the network. Touch the radio button appropriate to the application.

If **Network** is chosen, the **Message list URL** and **Message attachment URL** text entry boxes become active. Enter the address where the IJ3000 will find the network-stored messages and, if applicable, enter the address where the IJ3000 will find the files used for the message attachments. For more details, see the *Network Software Documentation Manual* (P/N 5760-005N).

Network Notification URL

If this text entry box is filled in, the controller will send out a packet on the network to the host specified. This packet will be sent at controller boot up and at each photocell trigger input. For more details, see the *Software Interface Document* (P/N 5760-113).

Setting IP Addresses

Touch the **IP Addresses** tab to display the IP Addresses page.

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

Controller	10. 1. 2. 3
1st Ink System	10. 1. 2. 2
2nd Ink System	0. 0. 0. 0
Subnet Mask	255. 255. 255. 0
Gateway	0. 0. 0. 0

Map Network Device IP Addresses

Cancel OK

(IJ3000 Default IP Addresses)

An IP address has four segments. The value of each segment may be from 0 to 255. Touch the entry box for the address to be set, use the Left/Right Arrow keys to highlight the desired segment, and then type in its value. After the third digit of each segment is entered, input focus automatically shifts to the next segment to the right. When a segment has less than three digits, move to the next segment by pressing the "." (period) key.



NOTE: The Network IP settings shown for the first and second ink systems apply only to Diagraph's Integrated Valve (IV) systems using the IDS3000 ink delivery system. The Impulse Jet ink delivery (CIDS3000) does not contain ethernet connectivity.

Touch the **OK** button to save the changes and return to the Home Screen. To discard any changes made and return to the Home Screen, touch the **Cancel** button or press **ESC** on the keypad.

Defining User Codes

User Codes are user-defined time and date codes for printing hour, minute, date, month, and week of the year information. Each code may be up to four characters long.



NOTE: User Codes are not applicable to Thermal Jet print heads.

To display the Edit User Codes screen:

1. On the **Home Screen**, touch the **Control Panels** button to open the Control Panels Menu.
2. Touch the **User Codes** button on the Control Panels Menu to open the Edit User Codes screen.

To define or edit codes:

1. Select the desired time component (hour, minute, etc.) from the list.
2. Highlight the code to be defined or edited. If the code is not visible, touch the screen **Up/Down Arrow** buttons to scroll it into view.
3. Type in the new code and press **Enter**.
4. Repeat steps 1 through 3 as desired.
5. Touch the **OK** button to save the code definitions and return to the Home screen.

Component	Hour	Code
Hour	00	A
Minute	01	B
Day	02	C
Date	03	D
Week	04	E
Month	05	F
Year	06	G
	07	H

Touch the **Apply** button to save the code definitions and remain on the Edit User Codes screen.

Touch the **Cancel** button or press **ESC** on the keypad to return to the Home screen without saving any changes.

Touch the **Restore Defaults** button to restore the default codes for the selected component. The default codes are:

- Hours: 24 single letter codes A through Z, except the letters I and O (which may be confused with the numbers 1 and 0).
- Minutes: 60 two-letter codes AA through AZ, then BA through BZ, then CA through CM. The letters I and O are not used.
- Date: 31 two letter codes AA through AZ, then BA through BG. The letters I and O are not used.
- Week: 53 two-letter codes AA through AZ, then BA through BZ, then CA through CE. The letters I and O are not used.
- Month: 12 three-letter abbreviations, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, and DEC.
- Year: 99 two-letter codes AA through AZ, then BA through BZ, then CA through CZ, then DA through DZ, then EA through ED. The letters I and O are not used.

When defining user codes, avoid extremes in the number of characters for different codes within a component. For example, avoid defining hour 00 as 'A' and hour 03 as 'AAAA.' If print codes like 'A' and 'AAAA' must be printed, be sure to reserve enough room in the print messages so that the longest codes don't overlap adjacent fields when they print.

Time & Date Screens

Time and Date screens need to be properly set in order for time- and date-related auto-codes to be used.

Touch the **Time & Date** button on the **Home Screen**. The **Time** screen will appear with tabs along the bottom to set Time, Date, Rollover Time, and Shifts.

The Time Screen

Touch the **hour** or **minute** display to highlight the hour or minute and enable the Up/Down Arrows. Touch the **Up/Down Arrows** to adjust the hour or minute.

Touch the **12 hour** or **24 hour** radio button to select the desired format. The time display changes immediately to reflect the selection. Note that this only sets the format for the time as it is displayed on the screen, and does not affect time-type autocodes.

Touch **Apply** to save the new time, or **OK** to save and return to the **Home Screen**.

The Time screen displays a large digital clock showing 07:56. Below the clock, there are two radio buttons for the time format: "12 hour" and "24 hour", with "24 hour" selected. At the bottom, there are four tabs: "Time" (selected), "Date", "Rollover Time", and "Shifts". Below the tabs are three buttons: "Cancel", "Apply", and "OK".

The Date Screen

The Date Screen displays the IJ3000's current month, date, and year settings in a calendar page format.

To change the date within the current month, touch the desired date.

To change the month, touch the **Left** or **Right Arrow** buttons at the upper left and right to move backward or forward through the calendar, or select the month from the list displayed when the **Month** control at the top left center of the screen is touched (see below left).

The Date screen shows a calendar for November 2011. At the top, there are arrows for navigating between months and years, with "November" and "2011" displayed. Below this is a grid of days from Sunday to Saturday. The current date, 1st, is highlighted. At the bottom, there are four tabs: "Time", "Date" (selected), "Rollover Time", and "Shifts". Below the tabs are three buttons: "Cancel", "Apply", and "OK".

The "Select Month" dialog box shows a list of months from May to December. "October" is currently selected. There are up and down arrow buttons on the right side of the list. At the bottom are "Cancel" and "OK" buttons.

The "Select Year" dialog box shows a list of years from 2005 to 2012. "2011" is currently selected. There are up and down arrow buttons on the right side of the list. At the bottom are "Cancel" and "OK" buttons.

To change the year, touch the **Year** control at the top right center of the screen and select the year from the list displayed (see above right).

Touch the **Apply** button to save any changes made to the date.

Touch the **OK** button to save the new date and return to the Home Screen.

Touch the **Cancel** button to return to the Home Screen without saving any changes.

The Rollover Time Screen

Touch the **hour** or **minute** display to highlight the hour or minute and activate the Up/Down Arrows. Touch the **Up/Down Arrows** to adjust the hour or minute. Touch **Apply** to save the new time, or **OK** to save and return to the Home Screen.



NOTE: Day and date autocodes normally change at midnight. A rollover time setting that is between 12:00 PM and 11:59 PM (noon to one minute before midnight) advances the day/date rollover so that it occurs before midnight, while a setting that is between 12:00 AM and 11:59 AM (midnight to one minute before noon) delays the day/date rollover so that it occurs after midnight.

The default rollover time is 12:00 AM (00:00 on the 24-hour clock.)

Work Shifts

Use this screen to define shift codes. A day may be divided into a maximum of four shifts, with each shift code having a maximum of three characters. For a shift to be valid its code box must be filled in; shifts with empty code boxes are ignored. Shifts may be entered in any order, but will be sorted by the IJ3000 and displayed chronologically the next time this screen is accessed.

Auto Clean Setup (for Impulse Jet Heads w/ACS only)

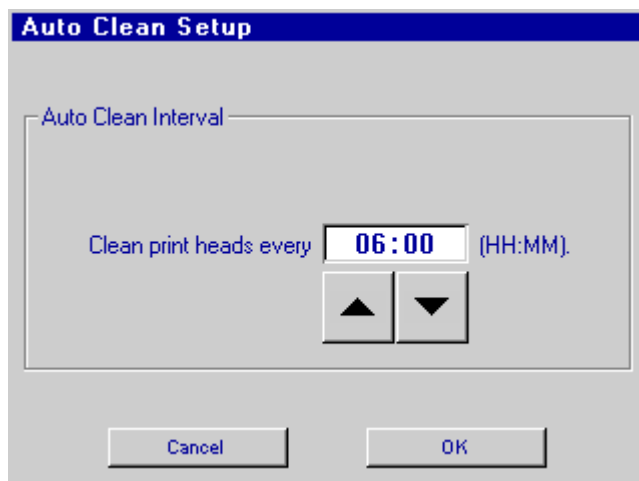
Use the Auto Clean Setup screen to set the print head cleaning interval. The Auto Clean Setup screen is available only on IJ3000 systems configured to have at least one Impulse Jet print head with the auto clean feature.

To display the Auto Clean Setup screen:

1. From the **Home Screen**, touch the **Control Panels** button to open the Control Panels Menu.
2. On the Control Panels menu, touch the **Auto Clean Setup** button.

To set the cleaning interval:

1. Touch the hour or minute portion of the time to highlight it.
2. Touch the **Up/Down Arrow** buttons to increment and decrement the interval time. The interval can be set from 30 minutes to 24 hours, in 30-minute increments.
3. Touch the **OK** button to start the interval timer and return to the Home Screen.



In the illustration above, the print heads will be cleaned every 6 hours starting from the time the OK button is touched or the controller is rebooted. For example, if Auto Clean Setup was programmed at 7:00 a.m., the system would clean the print heads at 1:00 p.m., 7:00 p.m., 1:00 a.m., and 7:00 a.m.



NOTE: Print heads are not cleaned while the IJ3000 is turned off, but the interval timer continues to run. The timer is not reset (does not start over) when the IJ3000 is turned back on. This means that, using the example above, the print heads will be cleaned at 7:00 a.m., 1:00 p.m., 7:00 p.m., and 1:00 a.m. if the IJ3000 is on at those times, regardless of when or how long the IJ3000 might be turned off in between those times.



NOTE: To manually clean the print heads between programmed times go to the **Purge Screen**.



NOTE: The IJ3000 will initiate cleaning for Side 1 print heads; then 20 seconds later will initiate cleaning for Side 2 print heads.

Section 6: Message Functions

Creating a Print Message

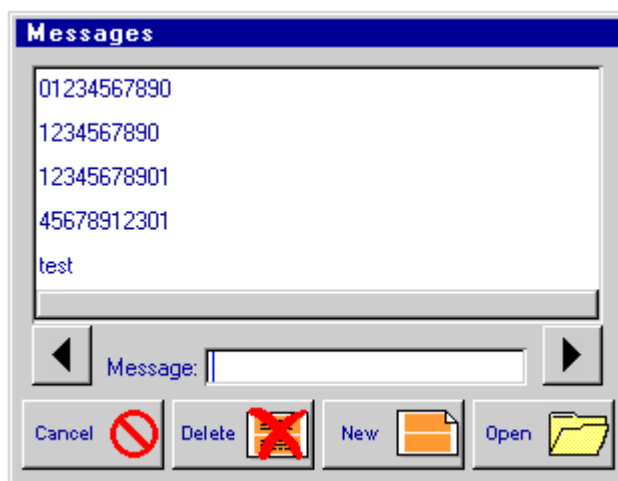
A print message has one or more data fields containing a text or graphic element. Text fields may contain fixed text, variable text, a date code, a time code, or a product count. Graphic fields contain either a logo or a bar code.



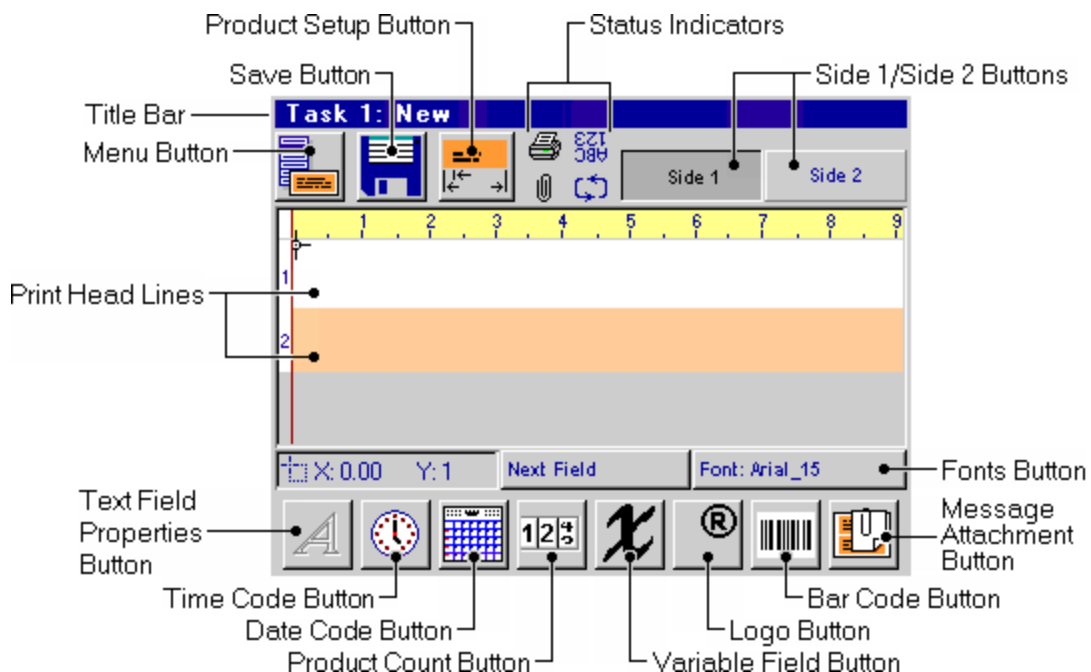
NOTE: Please read “Moving Around the Edit Screen” on page 24 before continuing.

To create a print message:

Step 1: On the **Home Screen**, touch the **Messages** button. The Messages dialog box is displayed.



Step 2: On the Messages dialog box, touch the **New** button. The Edit Screen is displayed.



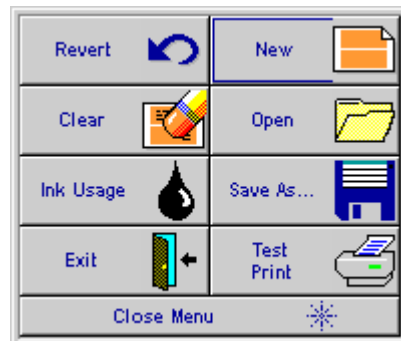
Edit Screen Controls and Features

Title Bar: The Title Bar shows the task for which the message is being created (in this case Task 1) and the name of the message. All new messages have the name "New" until they are saved.



Menu Button: Touch the **Menu** button to display the Message menu. From the Message menu, the user can:

- Create a new message.
- Open an existing message for editing or viewing.
- Save a message.
- Do a test print of a message.
- Undo all changes made to a message (Revert).
- Delete all fields from a message (Clear).
- Compute a message's ink consumption (Ink Usage).
- Return to the Home Screen (Exit).
- Touch **Close Menu** or press the **ESC** key to close the menu without taking any action.



Save Button: Touch the **Save** button to save any changes made to the print message currently in the editor. A dark blue **Save** button indicates changes made to the message have not yet been saved. The button is "grayed out" when no changes have been made or the changes have been saved.



Product Setup Button: Touch the **Product Setup** button to:

- Set the product's length.
- Set the print margins.
- Set the print resolution (dpi).
- Select print options.



Status Indicators:

- Displayed when **Test Print** is selected from the Message menu.
- Displayed when the message in the editor is configured to print upside down.
- Displayed when the message in the editor is configured for repeat print.
- Displayed when the message in the editor has an attachment.

Side 1/Side 2 Buttons: Touch **Side 1** or **Side 2** to switch the editor to the corresponding side of the print message. The button that appears pressed or pushed indicates which side is currently displayed. If the IJ3000 is not configured for two-sided printing the Side button that is not needed is "grayed out" and inactive.



NOTE: When the IJ3000 is properly configured, **Side 1** is always the near side of the conveyor, **Side 2** is always the far side.

Print Head Lines: A print message being created or edited is displayed on the Print Head Lines. One line is shown for every print head in the IJ3000's configuration. All fields or parts of a field on a print head line are printed by the line's corresponding print head.

Fonts Button: Touch the **Fonts** button to select the font for the next field to be added to the print message, or to change the font of an existing field. The name of the current font selection is displayed on the button.

Font: Arial_15



Text Field Properties Button: Touch the **Text Field Properties** button to change the properties of a new or existing fixed text field. This button is active and functional only when a fixed text field is selected.



Time Code Button: Touch the **Time Code** button to add a time code to a print message, or to edit an existing time code.



Date Code Button: Touch the **Date Code** button to add a date or expiration date code to a print message, or to edit an existing date or expiration date code.



Product Count Button: Touch the **Product Count** button to add an incrementing or decrementing product count or pallet count to a print message, or to edit an existing count.



Variable Field Button: Touch the **Variable Field** button to add a variable field to a print message, or to edit an existing variable field.



Logo Button: Touch the **Logo** button to add a logo to a print message, or to exchange an existing logo for another one.

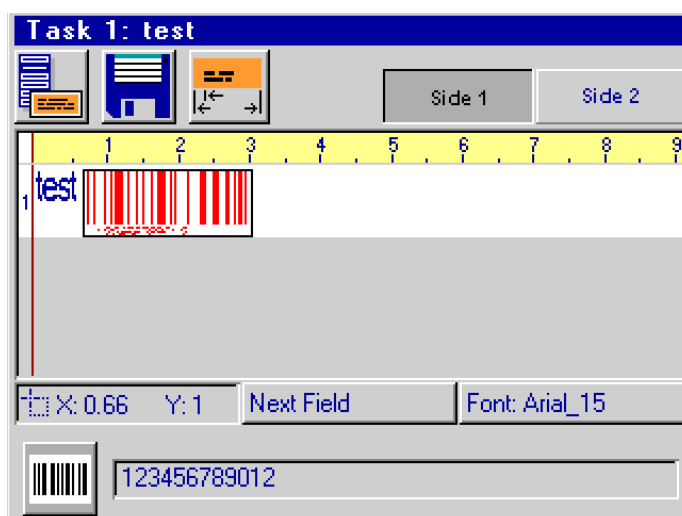


Bar Code Button: Touch the **Bar Code** button to add a bar code to a print message, or to modify an existing bar code.



Message Attachment Button: Touch the **Message Attachment** button to attach a file or text string to a print message. This button is shown only when the COM1 or COM2 function is set to SATO 8485SE, Zebra, or Message Attachments. See *“Serial Port Setup”* on page 36 for instructions on configuring the COM port.

Next Field Button: Touch the **Next Field** button to select a field for review or editing. The fields are selected one after another in the order in which they were added to the print message. As an editing aid when working with small fonts, any text the selected field contains, whether it is fixed text, a date or time code, bar code data, etc., is displayed in a text box at the bottom of the screen. A button to the left of the text box identifies the field type; touch the button to open a **Field Properties** dialog box for viewing or editing the field's properties. For more information see *“Editing Fields”* on page 60



Step 3: Set up your product. Touch the **Product Setup** button to display the Product Setup dialog box:

Enter the product's length, and the left margin for sides one and two, if applicable.

The **Product Setup** dialog box has a blue title bar. It contains three main sections: **Length** with a text field showing '12.00 in.' and a diagram of a product with dimension lines; **Left margin** with two sub-sections, **Side 1** and **Side 2**, each with a text field showing '0.00 in.' and a diagram of a product with a margin line; and a bottom section with **Panel Setup**, **Print Properties**, and **Print Options** tabs, each with a corresponding icon. At the bottom are **Cancel** and **OK** buttons.

Touch the **Print Properties** tab. Use the up/down arrows to select the desired print resolution: 100, 150, 200, or 300 dots per inch (dpi) for Impulse Jet, or 4 to 25 dpi for Integrated Valve. Thermal Jet print heads print at a fixed 300 dpi.



NOTE: Bar codes must use a resolution of 200 dpi.

Character Width is used to change the width of all text fields within the message. Available character widths for Impulse Jet and Integrated Valve print heads are 25, 33, 50, 66, 75, 100, 150, 200, 300, 400, 500, and 600 percent. Thermal Jet print heads can print at character widths of 25, 33, 50, and 100 percent.

The **Product Setup** dialog box shows the **Print Properties** tab selected. It features a **Resolution (dpi)** section with a large 'A' character and a text field set to '200', with up/down arrows. Below it is a **Character width** section with a text field set to '100%' and two icons showing character width adjustments. The bottom section includes **Panel Setup**, **Print Properties**, and **Print Options** tabs, and **Cancel** and **OK** buttons.



NOTE: The Character Width setting should never be less than 100% when printing with Integrated Valve print heads. If the overall message length needs to be reduced increase the Resolution (dpi) instead. The character width determines the number of printed columns in a character. With the low horizontal print resolution of Integrated Valve heads, reducing character width to less than 100% results in missing columns and distorted characters.

Touch the **Print Options** tab to select the desired print options.

Select **Side 2 = side 1** to automatically copy to side 2 all fields entered on side 1. The **Side 2 = side 1** option is available only when both sides have the same number of vertical print dots.

Select **Task 2 = task 1** to automatically copy the message from Task 1 to Task 2. This option is only available when grouping is turned on.

Select **Print upside down** to print the entire message upside down.

Select **Repeat print at...** when printing on continuous material, and specify the print

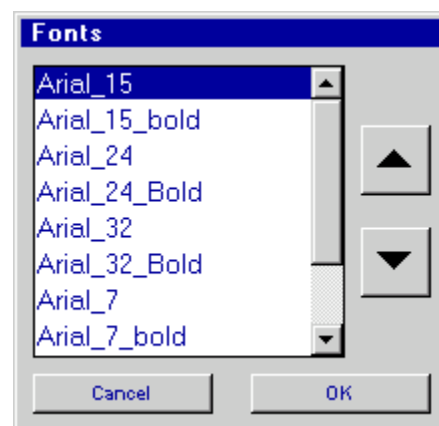
The **Product Setup** dialog box shows the **Print Options** tab selected. It contains several checkboxes: **Side 2 = side 1.**, **Task 2 = task 1.**, **Print upside down.**, **Repeat print at** (with a text field set to '12.00 in. intervals.'), and **Print n times:** (with a radio button selected for '1' and a 'Prompt' option). A diagram of a product with 'AB' is shown. The bottom section includes **Panel Setup**, **Print Properties**, and **Print Options** tabs, and **Cancel** and **OK** buttons.

interval (the interval box becomes active when **Repeat print** is selected). The print interval is defined as the distance from the start of one print to the start of the next.

Select **Print n times** to automatically cancel printing after the message has printed a specified number of times. The radio buttons become active when **Print n times** is selected. Select the value entry box and enter the number of times the message is to print (from 1-9999), or select **Prompt** to have the IJ3000 ask for the number of prints when the message is selected to print. This option is often used with Message Lookup when a message is to print just once. See “*Serial Port Setup*” on page 36 for an explanation of Message Lookup.

Touch the **OK** button to save the settings and close the Product Setup dialog box.

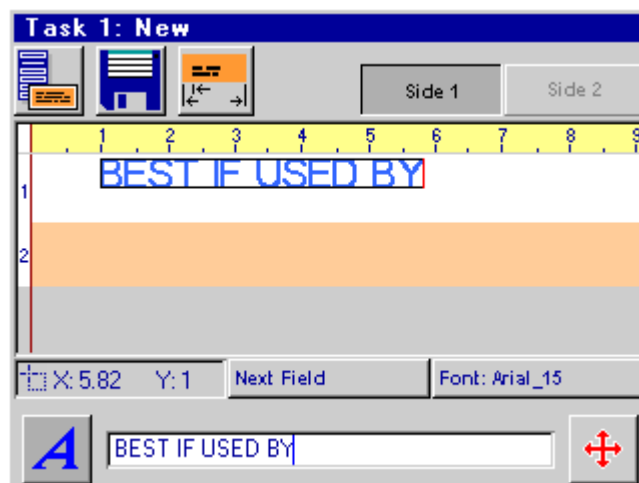
Step 4: Select the desired font for the first field. Touch the **Font** button to display the list of available fonts, highlight the selection, and touch the **OK** button.



Step 5 Add data fields to the print message, changing the font (as needed) before the addition of each new field.

Adding a Text Field

To add a text field to the print message, move the crosshairs pointer to the desired field location and begin typing. The text is displayed (in light blue) on the Edit Screen as it is typed. It is also displayed in a box that appears at the bottom of the screen. To start a new line (a text field may have up to ten lines of text), press and hold the **Ctrl** key and press **Enter**. When finished, press **Enter**. (The field's color changes to red.) If the field is not exactly where it should be, use the arrow keys to reposition it. Press **Enter** again when the field is at the desired location. (The field's color is now dark blue.)

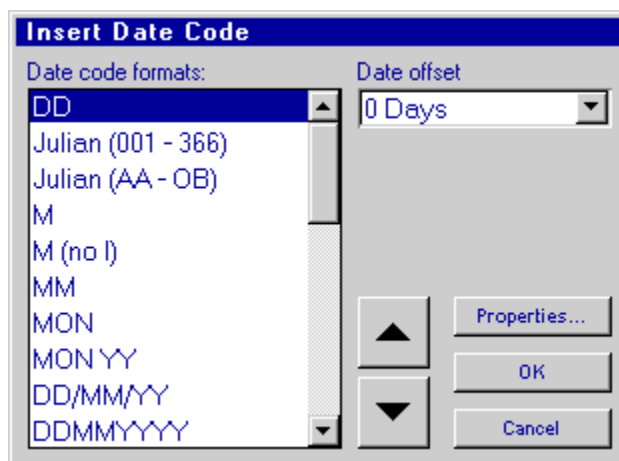


Message with text field

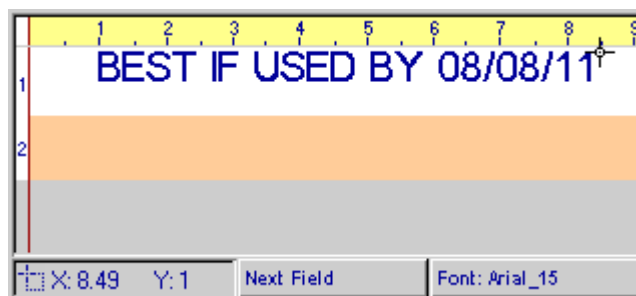
Adding a Date Code

To add a date code to the print message, move the crosshairs pointer to the desired location and touch the **Date Code** button; the Insert Date Code dialog box is displayed. Select a format for the date code from the list and, if the date code is for a future date, enter the number of days or months until that date in the **Date offset** box.

Touch the **OK** button to close the dialog box and insert the date code into the print message.



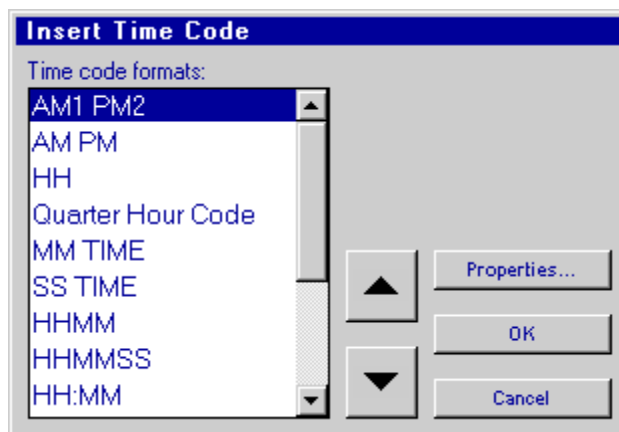
If the date code is not exactly where it should be, use the arrow keys to reposition it. Press **Enter** when the date code is at the desired location.



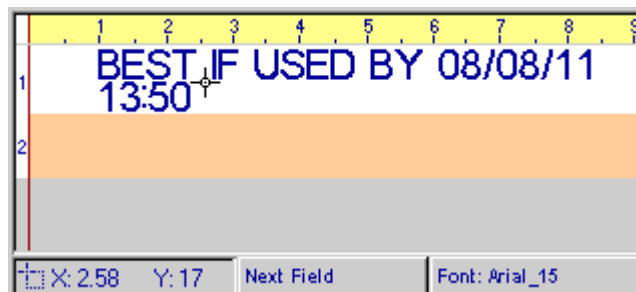
Message with date code

Adding a Time Code

To add a time code to the print message, move the crosshairs pointer to the desired location and touch the **Time Code** button; the Insert Time Code dialog box is displayed. Select a format for the time code from the list, then touch the **OK** button to close the dialog box and insert the time code into the print message.



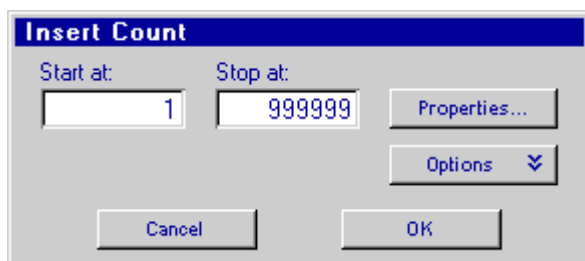
If the time code is not exactly where it should be, use the arrow keys to reposition it. Press **Enter** when the time code is at the desired location.



Message with time code

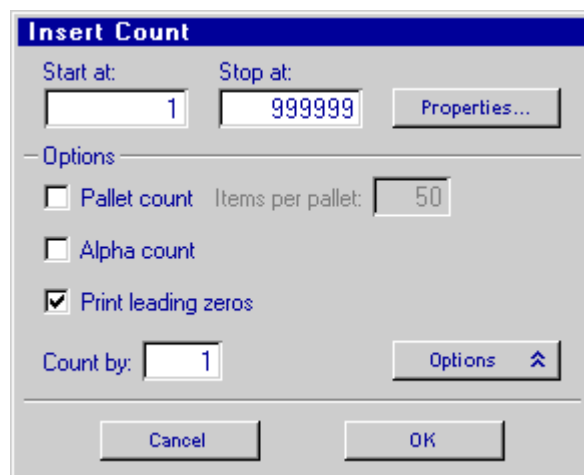
Adding a Product or Pallet Count

The IJ3000 can print increasing or decreasing item and pallet counts, with or without leading zeros, in numeric or alpha format. A numeric count may be up to nine digits long; an alpha count may be up to seven characters long.



The 'Insert Count' dialog box in its basic state. It features a title bar 'Insert Count'. Below it are two input fields: 'Start at:' with the value '1' and 'Stop at:' with the value '999999'. To the right of these fields is a 'Properties...' button. Below the 'Stop at:' field is an 'Options' button with a downward arrow. At the bottom are 'Cancel' and 'OK' buttons.

Basic counts dialog for inserting simple incrementing or decrementing counts.



The 'Insert Count' dialog box with the 'Options' section expanded. The 'Options' section contains three checkboxes: 'Pallet count' (unchecked), 'Alpha count' (unchecked), and 'Print leading zeros' (checked). To the right of the 'Pallet count' checkbox is an 'Items per pallet:' input field with the value '50'. Below the checkboxes is a 'Count by:' input field with the value '1' and an 'Options' button with an upward arrow. The 'Cancel' and 'OK' buttons remain at the bottom.

Expand the dialog box to select count options.

Product count: To add a product count to the print message, move the crosshairs pointer to the desired location and touch the **Product Count** button; the Insert Count dialog box is displayed (see above left).

Increasing count: Enter a **Stop at** value that is greater than the **Start at** value.

Decreasing count: Enter a **Start at** value that is greater than the **Stop at** value.

Default count properties are to print leading zeros and to increment or decrement the count by 1. To print other than a basic incrementing or decrementing count touch the **Options** button to expand the dialog box (see above right).

Pallet count: To make the count a pallet count touch the **Pallet count** check box. When **Pallet count** is checked the **Items per pallet** value entry box becomes active; enter the number of items per pallet. A pallet count is incremented or decremented every n items, where n is the number of items per pallet.

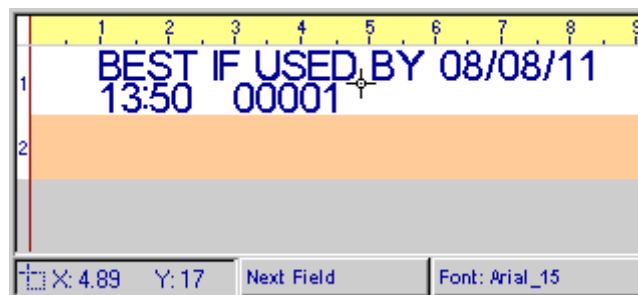
Alpha count: To count with letters instead of numbers touch the **Alpha count** check box. When **Alpha count** is checked, the contents of the **Start at** and **Stop at** boxes change from numbers to their equivalent alpha values.

There are two alpha count formats. Use the **Print leading zeros** check box to select the format desired.

1. **Print leading zeros** checked. When printing leading zeros, A = 0 by definition, so B = 1, C = 2, etc. The counting sequence is AB, AC, AD, ... AY, AZ, BA, BB, BC, ...
2. **Print leading zeros** not checked. Without leading zeros, A = 1, B = 2, C = 3, etc. The counting sequence is A, B, C, ... Y, Z, AA, AB, AC, ...

Count by: A product count is normally increased or decreased by 1 after every print cycle. To increase or decrease the count by a value other than 1, enter that value in the **Count by** value entry box.

Touch the **OK** button to close the dialog box and insert the product count into the print message. If the count is not exactly where it should be, use the arrow keys to reposition it. Press **Enter** when the count is at the desired location.

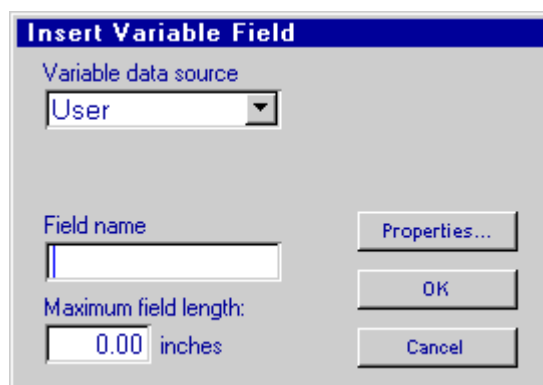


Message with product count

Adding a Variable Field

A variable field is a text field whose contents may change from use to use or print to print. The data printed may be specified by the user, or come through the COM1, COM2, or Ethernet ports.

To add a variable field to the print message, move the crosshairs pointer to the desired location and touch the **Variable Field** button; the Insert Variable Field dialog box is displayed.



- Select the data source:

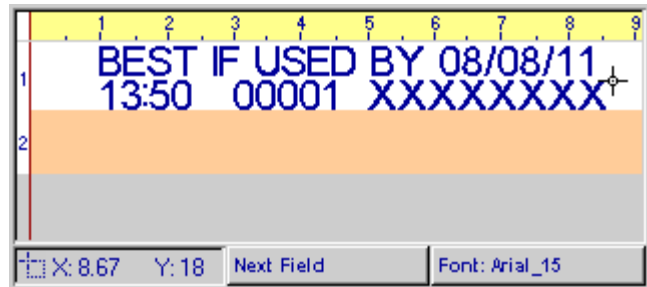
User: Select **User** if the variable field data is to be entered by the operator when the message is selected to print.

Data 1 - Data 10: Select **Data 1** through **Data 10** to print the same data in multiple locations within a message, as on opposite sides of a box. Each variable field given the same Data 1-10 source, Data 1 for example, will print the same thing. When the variable field using Data 1-10 is given a field name the user is prompted to enter or change the data when the message is selected to print. If the field is not given a field name whatever is in the selected data source will print as is. The maximum field length must be set for each location as each field may use a different font. Up to ten different data fields can be placed in multiple message locations.

COM1, COM2: Select **COM1** or **COM2** when the data to be printed is from an external device, such as a scale or bar code scanner, hooked up to one of the IJ3000's serial ports. Multiple variable fields can use COM1 or COM2, but all will print the same information.

- Enter a field name. The field name identifies which variable field gets what data when **User** or **Data** is selected as the data source. Named variable fields may have their data changed "on the fly" by the user while a message is printing (See *"Changing Variable Field Data" on page 68*). However, "on-the-fly" changes are not available when printing with Thermal Jet print heads.
- Enter a maximum field length to reserve space within the print message for the variable field.

- Touch the **OK** button to close the dialog box and insert the variable field into the print message. Variable fields are represented on the Edit Screen by a string of Xs. If the field is not exactly where it should be, use the arrow keys to adjust its position. Press Enter when the field is at the desired location.



Message with variable field

Adding a Logo

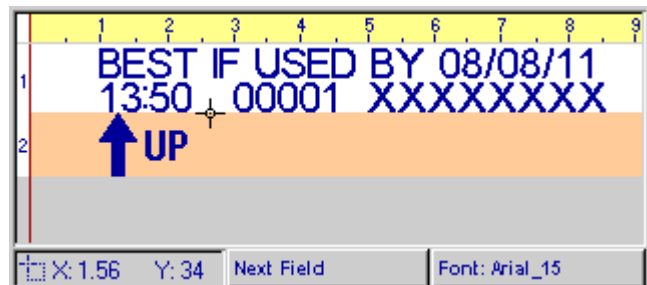
To add a logo to the print message, move the crosshairs pointer to the desired location and touch the **Logo** button; the Insert Logo dialog box is displayed.

To select a logo, use the up/down arrows to scroll through images of the logos available. Alternately, touch the **Select Logo...** button to select a logo from a list of logo names. Touch the **OK** button to close the dialog box and insert the logo in the print message.



If the logo is not exactly where it should be, use the arrow keys to reposition it. Press **Enter** when the logo is at the desired location.

NOTE: To select, display, and print a logo properly using Thermal Jet print heads, the logo file must reside on both the IJ3000 controller and the print head(s). For step-by-step instructions on uploading a file to a print head, see *Appendix H: Uploading Files to the Print Head and File Management* in document No. 5780-320, "Operations Manual, Thermal Jet Ink Jet System", which is shipped with Thermal Jet print heads.



Message with logo

Adding a Bar Code

To add a bar code to the print message (Impulse Jet & Thermal Jet only), move the crosshairs pointer to the desired location and touch the **Bar Code** button; the Insert Bar Code dialog box is displayed.

- Touch the **Bar Code Type** control to display a list of available bar code types and make a selection.
- Choose the source of the bar code data:
Fixed (default selection): Select **Fixed** if the bar code data never changes.

User: Select **User** if the bar code data is to be entered when the message is selected to print. When **User** is selected a **User prompt** text box is added to the Bar Code dialog box (see below, left). Text entered in the box is prefixed with "Enter the", terminated with a ':' (colon), and used to prompt the user for the bar code data when the message is selected to print. For example, if "bar code number" is entered into the **User prompt** box, when the message is selected to print the system will prompt, "Enter the bar code number:" (see below, right).

The 'Insert Bar Code' dialog box is shown with the 'Bar code data' field empty. The 'Bar code type' is set to 'GTIN-12 (UPC-A)' and the 'Data source' is set to 'Fixed'. At the bottom are 'Cancel', 'OK', and 'Properties...' buttons.

The 'Insert Bar Code' dialog box is shown with the 'Bar code type' set to 'GTIN-14 (ITF-14)' and the 'Data source' set to 'User'. Below these is a 'Magnification' section with radio buttons for 100%, 70%, and 62.5%. At the bottom is a 'User prompt' text box containing 'bar code number'. At the bottom are 'Cancel', 'OK', and 'Properties...' buttons.

A prompt box titled 'Task 1: Enter Bar Code Data' is shown. It features a large red question mark icon and the text 'Enter the bar code number:'. Below the text is an empty text input field. At the bottom are 'Cancel' and 'OK' buttons.

COM1, COM2: Select **COM1** or **COM2** when the bar code data comes from an external device, such as a scale or scanner, attached to the IJ3000's COM1 or COM2 serial port. To use COM1 or COM2 the serial port has to be configured as External Input (see "Serial Port Setup" on page 36). Multiple bar codes in the same print message can use COM1 or COM2, but all will print the same data.




NOTE: The bar code data printed is that which was last received at the specified serial port at the time the message is selected to print, and the data cannot be changed "on the fly." To change the bar code data without changing the print message first send the new data, then reselect the message to print.


Data 1 - Data 10: Select **Data 1** through **Data 10** to print the same bar code in multiple locations within a message, such as on opposite sides of a box. The bar code data is supplied from the Data 1 - 10 source selected.



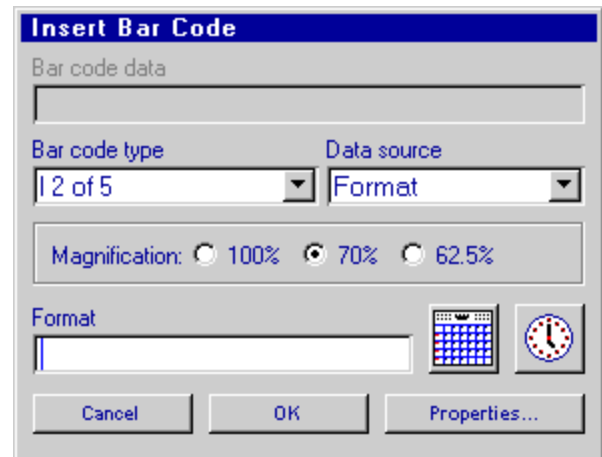
Note: These Data 1 - 10 sources are the same ones described in "Adding a Variable Field" on page 52. If a bar code and variable field are both set to use the same Data 1 - 10 source they will print the same information; once in bar code form and once as text.

Format: Select **Format** if the bar code is to contain time or date information. When **Format** is selected a **Format** box and **Date** and **Time** buttons are added to the Bar Code dialog (see illustration, right). The **Format** box accepts regular text inputs entered from the keyboard, as well as date and time codes selected from the lists of predefined date and

time formats. Touch the  (**Date**) button for the list of date code formats;

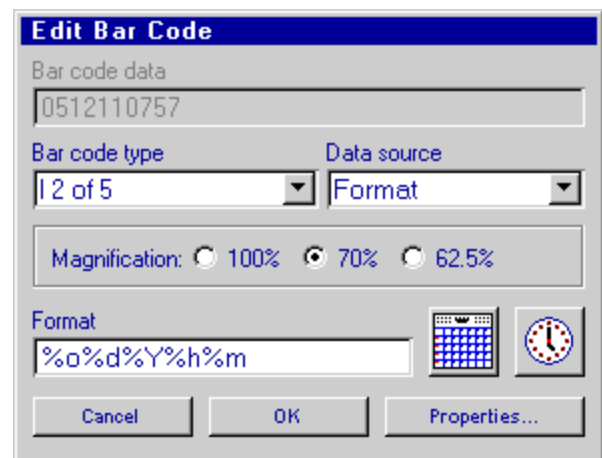
touch the  (**Time**) button for the list of time code formats. Data and time formats not on the lists can be created by mixing keyboard text inputs with selections from the time and date format lists.

Format data is interpreted as it is entered, and the results are shown in the **Bar code data** box at the top of the dialog box. The bar code data, as it is after the format is interpreted, must meet the requirements of the selected bar code type with regard to the type and number of characters or digits. Examples: a GTIN-12 (UPC-A) bar code must be 11 digits with numbers only; a GTIN-14 (ITF-14) code must be 13 digits, also with numbers only. To the right is the date (MMDDYY) and time (HHMM) in an I 2 of 5 bar code. The date and time in the example is May 12, 2011, at 7:57 a.m.



The **Insert Bar Code** dialog box contains the following fields and controls:

- Bar code data:** An empty text input field at the top.
- Bar code type:** A dropdown menu showing "I 2 of 5".
- Data source:** A dropdown menu showing "Format".
- Magnification:** Three radio buttons for 100%, 70% (selected), and 62.5%.
- Format:** An empty text input field.
- Date/Time Buttons:** Two buttons with icons: a calendar grid (Date) and a clock face (Time).
- Buttons:** "Cancel", "OK", and "Properties..." at the bottom.



The **Edit Bar Code** dialog box contains the following fields and controls:

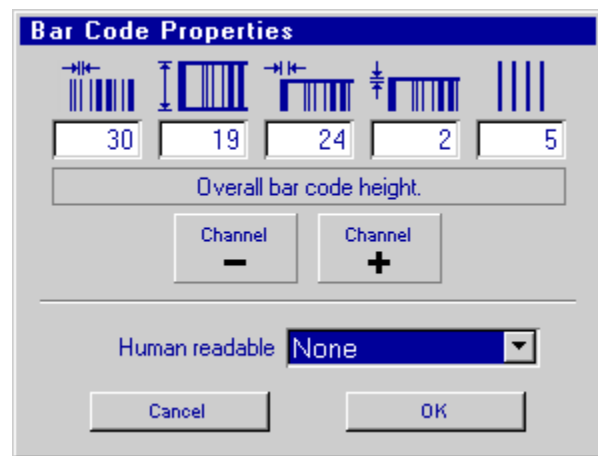
- Bar code data:** A text input field containing "0512110757".
- Bar code type:** A dropdown menu showing "I 2 of 5".
- Data source:** A dropdown menu showing "Format".
- Magnification:** Three radio buttons for 100%, 70% (selected), and 62.5%.
- Format:** A text input field containing "%o%d%Y%h%m".
- Date/Time Buttons:** Two buttons with icons: a calendar grid (Date) and a clock face (Time).
- Buttons:** "Cancel", "OK", and "Properties..." at the bottom.

- Select the bar code **Magnification** factor. (Not applicable to all bar code types.)
- Enter the **Bar code data**. Except for Code 39, the IJ3000 automatically calculates the checksum digit and adds it to the end of the bar code data.

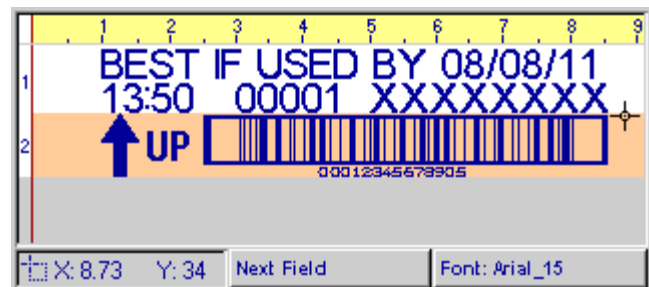


NOTE: With the exception of the **Format** data source, bar code data must be entered for all bar codes regardless of the data source selected. With the **Format** data source the bar code data is generated automatically as the format is entered. With **Fixed** data the data entered is the actual data printed. For all other data sources the data entered is not actually printed, but is used to create a sample bar code which serves as a place holder for the actual bar code while the message is being created or edited. The data that actually prints is substituted for the place-holder data when the message is selected to print.

- A human readable element is printed with the bar code by default. If your bar code is not to include human readable touch the **Properties** button, open the **Human readable** fonts list, and select **None**. Touch **OK** to close the Bar Code Properties dialog box.
- Touch the **OK** button to close the bar code dialog box and insert the bar code into the print message. If the bar code is not exactly where it should be, use the arrow keys to reposition it. Press **Enter** when the bar code is at the desired location.

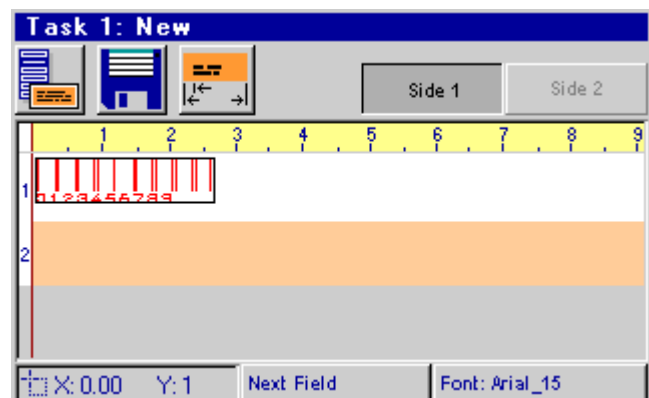
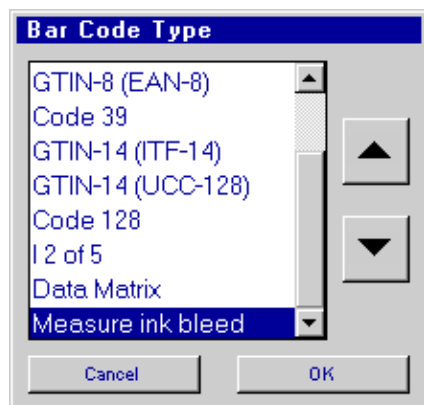


The following section describes how to adjust barcodes to accommodate variations in ink bleed on different substrates.



Message with bar code

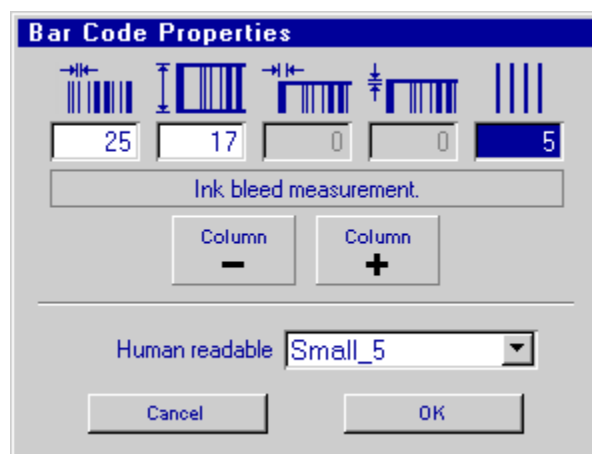
Measuring Ink Bleed: Ink bleed can be easily measured for various substrates by printing a message that contains a "Measure ink bleed" bar code field. Insert the bar code field by touching the bar code field button at the bottom of the Edit Screen, then selecting the **Measure ink bleed** bar code type from the drop-down list. Print the message on a sample of the substrate to be used in the application and allow it to bleed for at least 24 hours before reading the measurement.



The measurement is determined by inspecting the printed bar code. The numbers below the bar code represent the number of printed columns separating each set of bars. The correct amount of bleed is determined by identifying the first set of bars that have not bled together. The number below the set of bars determined to have the correct ink bleed is the "Ink bleed measurement". In the example, the bleed measurement is 5 (columns).



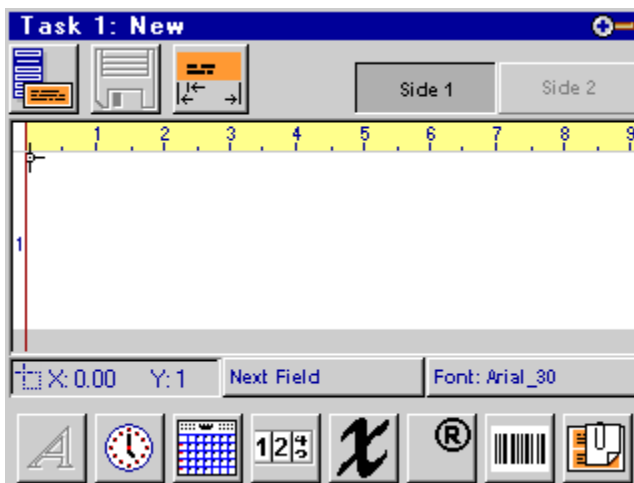
When the measurement has been determined it can be set in all bar codes printed on the substrate. The measurement is set in the **Bar Code Properties** dialog box. From the Bar Code dialog touch the **Properties...** button; the **Ink bleed measurement** setting is the right most property (see illustration, right). The factory default settings are based on the ink type selected.



Adding a Message Attachment

A message attachment is a file or text string that is appended to a print message when the message is created or edited. The attached file or text string is then sent out one of the IJ3000's serial ports when the message is selected to print. Message attachments can be used to signal or control devices external to the IJ3000 such as PLCs, PCs, label applicators, Linx printers; even another IJ3000.

Message attachments are possible only when **SATE 8485SE**, **Zebra**, or **Message Attachments** is selected as the function for at least one of the IJ3000's two serial ports (see "Serial Port Setup" on page 36 for instructions on configuring the serial ports), which causes the **Message Attachment** button to appear on the Edit Screen.



Message Attachment Button

To add an attachment to the print message touch the **Message Attachment** button; the Message Attachments dialog is displayed.

- Select the attachment type: **File** or **Text**.

- If **File** is selected, touch the **Select file** combo box to display a list of available files. Select a file from the list.

For a file to appear on the list it must be located in the **alps** folder on the controller, and it must have a **.alp** extension. It may be a text or binary file, but it must have a .alp extension or it won't appear on the list. Files can be uploaded to the controller via Ethernet or from a USB memory device. Files with a .alp extension are automatically placed in the alp folder when uploaded via Ethernet, but must be manually placed in the folder when uploaded from a USB memory device. See "Appendix G: Transferring Logo Files" for details.

- If **Text** is selected the dialog box changes slightly: a text entry box and a **Clear** button replaces the **Select file** combo box.

The screenshot shows the 'Message Attachments' dialog box. At the top, there's a title bar. Below it, a 'Type:' section has two radio buttons: 'File' (which is selected) and 'Text'. Underneath, there's a 'Select file' label followed by a dropdown menu currently showing 'None'. Below that is a 'Send attachment to' label followed by a dropdown menu showing 'Task Default'. At the bottom are 'Cancel' and 'OK' buttons.

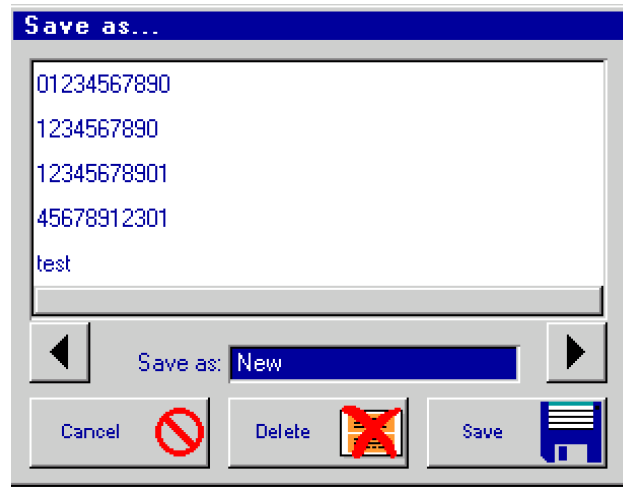
This screenshot shows the 'Message Attachments' dialog box with the 'Text' radio button selected. The 'Type:' section now shows 'Text' as the selected option. The 'Select file' dropdown has been replaced by a text entry box with a 'Clear' button to its right. The 'Send attachment to' dropdown remains set to 'Task Default'. 'Cancel' and 'OK' buttons are at the bottom.

The text entered in the box is sent out the selected serial port when the message is selected to print. If the text needs to be terminated with a carriage return/line feed enter "**\r\n**". A text attachment can have a maximum of 255 characters, including line terminating characters.

- Select the attachment's destination: touch the **Send attachment to** combo box to select one of three possible choices:
 - **Task Default**: the attachment is sent out the serial port that corresponds to the task used to print the message. That is, if the message is printing on Task 1 the attachment is sent out COM1, if the message is printing on Task 2 the attachment is sent out COM2. The Task Default selection is useful in dual task applications where a print message may be printed on either task.
 - **<selection> @ COM1**: **<selection>** is the COM1 function selected during system set up: **SATO 8485SE**, **Zebra**, or **Message Attachments**. When a COM1 destination is selected the attachment is sent out COM1 regardless of which task is used to print the message.
 - **<selection> @ COM2**: **<selection>** is the COM2 function selected during system set up: **SATO 8485SE**, **Zebra**, or **Message Attachments**. When a COM2 destination is selected the attachment is sent out COM2 regardless of which task is used to print the message.
- Touch the **OK** button to close the dialog box and add the attachment to the print message.

Step 6 Save the print message. Touch the **Save** button to display the Save dialog box.

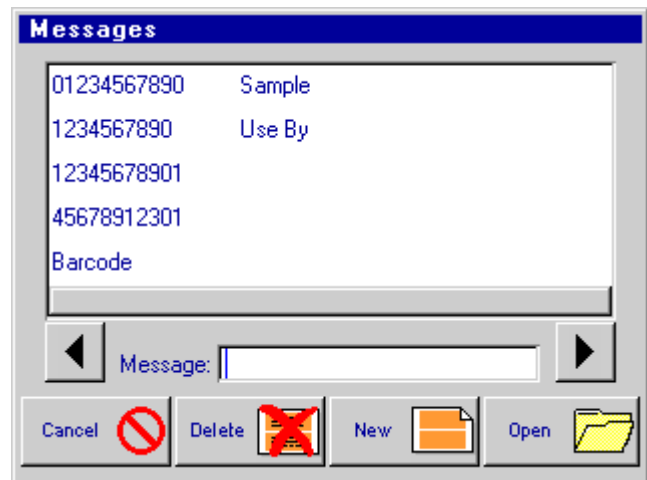
Enter a unique name for the message and touch the **Save** button.



Editing a Message

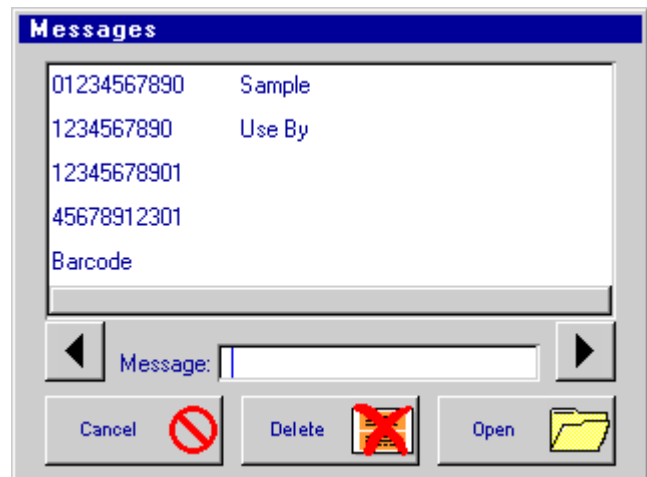
From the Home Screen:

1. Touch the **Messages** button. The Messages dialog box is displayed.
2. Select the message you wish to edit from the list, or type the message name in the **Message** box.
3. Touch the **Open** button. The Messages dialog box closes and the Edit Screen is displayed with the selected message in the edit window.



From the Edit Screen:

1. Touch the **Menu** button.
2. On the menu, touch the **Open** button. The Messages dialog box is displayed.
3. Select the message you wish to edit from the list, or type the message name in the **Message** box.
4. Touch the **Open** button. The Messages dialog box closes and the message selected is displayed in the edit window.



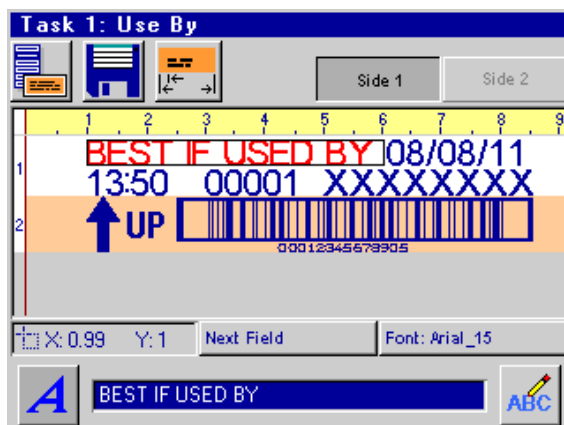
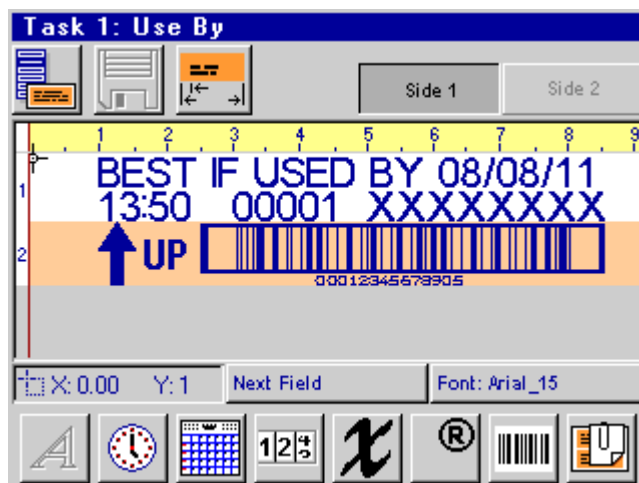
Editing Fields

A field must be selected before it can be edited. When selected, all field types, except text fields, are displayed in red and outlined by a black box. When a text field is selected, it is first displayed in light blue. The light blue color indicates the text in the field can be edited. Press **Enter** and the field color changes to red, indicating the field can be moved.

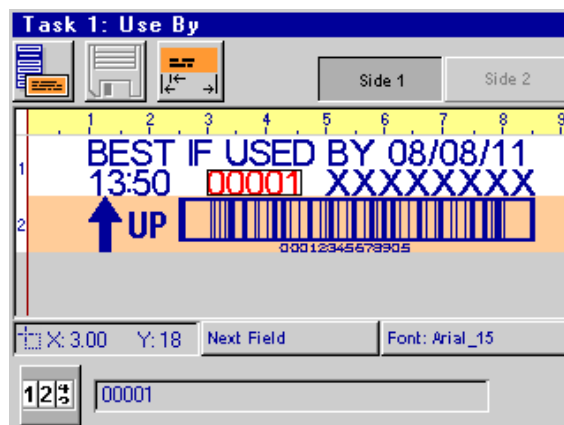
A field can be selected by touching the **Next Field** button, by pressing the **Tab** key, or by touching the field directly. When using the **Next Field** button or **Tab** key, the fields are selected one after another in the order in which they were added to the print message.

When a field is selected, the background of its corresponding field type button becomes dark gray to identify the field type. If the field contains text, the field type button moves to the left side of the display and a text box containing the field's text is displayed at the bottom of the screen. (See the following examples.)

Release a selected field by pressing the **Enter** key, or by selecting another field.



Text field selected



Count field selected

Editing a Text Field:

1. Select the field; its color changes from dark blue to light blue.
2. To edit the existing text:
 - Use the **Left** and **Right Arrow** keys to move the cursor to the edit point.
 - Press the **Backspace** key to delete characters to the left of the cursor.
 - Press the **Delete** key to delete characters to the right of the cursor.
 - Insert new text at the cursor point by typing.
3. To completely replace the existing text:
 - Press the **Enter** key or touch the **Move** button at the lower right corner of the screen; the field's color changes from light blue to red.
 - Type the new text. The new text replaces the old text.
4. To change a text field's color from red to light blue so that its text may be edited, touch the **Edit** button at the lower right corner of the screen.
5. To release the field, press the **Enter** key once if its color is red; press it twice if its color is light blue.



MOVE



EDIT

Editing All Other Field Types:

1. Select the field; its color changes from dark blue to red.
2. Touch the corresponding field type button (the button with the dark gray background); the field's Edit dialog box is displayed.
3. Make all desired changes.
4. Touch the **OK** button to close the dialog box and view the changes. Touch the **Cancel** button to discard all changes and close the dialog box.
5. Press **Enter** to release the field; its color changes from red to dark blue.

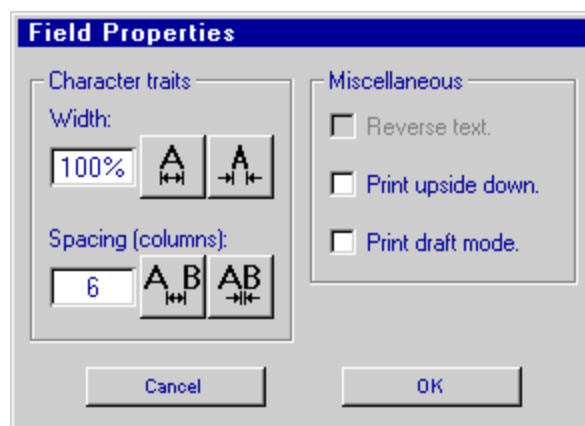
Deleting a Field:

1. Select the field; for a Text field, press **Enter** after it's selected. The field color will change from dark blue to red.
2. Press the **Backspace** or the **Delete** key.

Changing Field Properties:

Text Field:

1. Select the field; its color changes from dark blue to light blue.
2. Touch the **Text Field Properties** button; the Field Properties dialog box is displayed.
3. Change the field's properties as desired.
4. Touch the **OK** button to close the dialog box and view the changes. Touch the **Cancel** button to discard all changes and close the dialog box.
5. Press **Enter** twice to release the field; its color changes from light blue to red to dark blue.



All Other Field Types:

1. Select the field; its color changes from dark blue to red.
2. Touch the corresponding field type button (the button with the dark gray background); the field's Edit dialog box is displayed.
3. Touch the **Properties...** button; the Field Properties dialog box is displayed.
4. Change the field's properties as desired.
5. Touch the **OK** button to close the Field Properties dialog box. Touch the **Cancel** button to close the dialog box while discarding all changes.
6. Touch the **OK** button to close the Edit dialog box and view the changes. Touch the **Cancel** button to discard all changes and close the Edit dialog box.
7. Press **Enter** to release the field; its color changes from red to dark blue.

Character Width Trait will adjust the width of all characters in the selected text field. The factory default character width settings will produce characters and logos that are proportional to each print head type:

Default Character Width		
Print Head Type	Fonts	Logos (.bmp)
I.V.	100%	100%
96, 192, 224, 352	100%	600%
384, 768	200%	300%
Thermal Jet	N/A	N/A

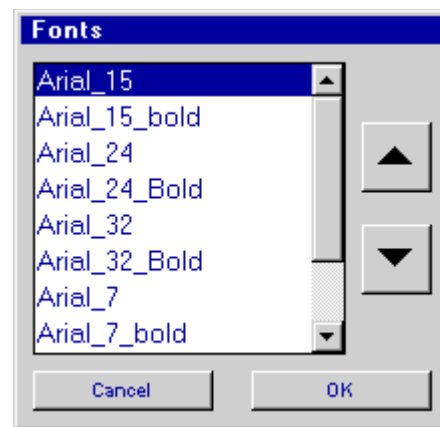


NOTE: The Character Width setting should never be less than 100% when printing with Integrated Valve print heads. If the overall message length needs to be reduced increase the Resolution (dpi) instead. The character width determines the number of printed columns in a character. With the low horizontal print resolution of Integrated Valve heads, reducing character width to less than 100% results in missing columns and distorted characters.

Print Draft Mode: In draft mode, only every other column prints.

Changing a Field's Font:

1. Select the field.
2. Touch the **Fonts** button; the Fonts dialog box is displayed with the current font selection highlighted.
3. Select the new font.
4. Touch the **OK** button to close the Fonts dialog and view the change. Touch the **Cancel** button to discard the change and close the dialog box.
5. Press **Enter** to release the field.



IJ3000-HH Edit Screen

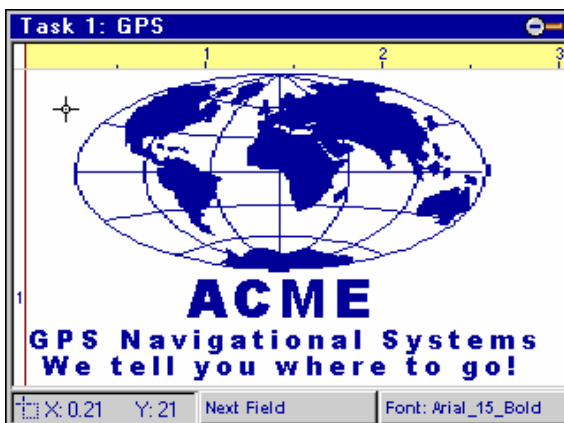
Message Zoom



On tasks configured with IJ768 or IJ384 graphics print heads, or Thermal Jet print heads, a **Zoom** button on the right end of the Edit Screen's title bar expands the edit window to full screen, and magnifies the print message so that fine details may be seen. On the IJ3000-HH controller the **Zoom** button is located just below the lower right corner of the edit window. See illustrations below.



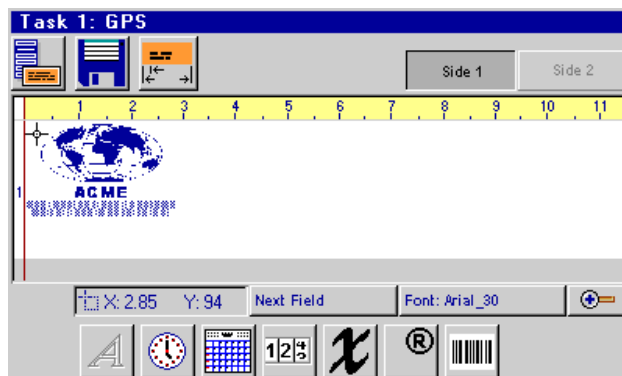
Normal Edit Screen



Edit Screen Zoomed In



When zoomed in, fields may be selected, moved and deleted; and text fields may be added or edited. Time and date codes, product counts, variable fields, logos, bar codes and message attachments cannot be added to the message when zoomed in. Use the **Zoom** button or the **ESC** key to return to the normal Edit Screen.

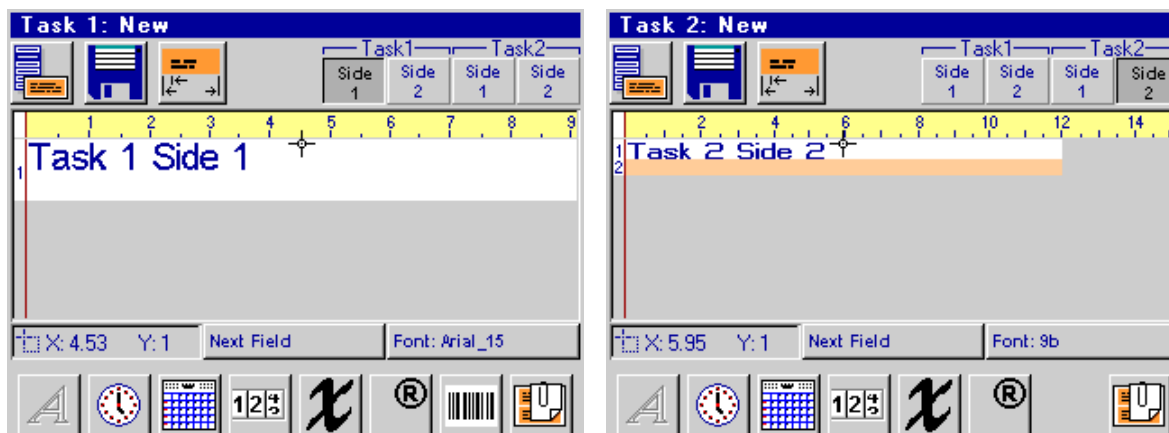


Edit Screen Keyboard Shortcuts

- Ctrl X** Cut the selected field from the print message.
- Ctrl C** Copy the selected field.
- Ctrl V** Paste (insert) the last field cut or copied at the current pointer position.
- Ctrl S** Save all changes made to the print message.
- Ctrl O** Open a message for editing or viewing.
- Ctrl N** Create a new print message.
- Tab** Move from field to field, or to the first field if no field is currently selected.
- F1** Scroll the edit window left.
- F2** Scroll the edit window right.
- F5** Scroll the edit window up (only when zoomed in).
- F6** Scroll the edit window down (only when zoomed in).
- F4** Show the extended lowercase character dialog.
- F8** Show the extended uppercase character dialog.

Creating and Editing a Group Message

When the system has been set up in group mode, group messages can be created. The edit screen can be entered from either Task 1 or Task 2. Touch **Side 1**, under **Task 1**, and create the desired message. Repeat for **Side 2** under **Task 1**, and for **Side 1 and 2** under **Task 2**. When this message is saved it will be saved as one group message. This message can no longer be opened without the system being set up for groups.

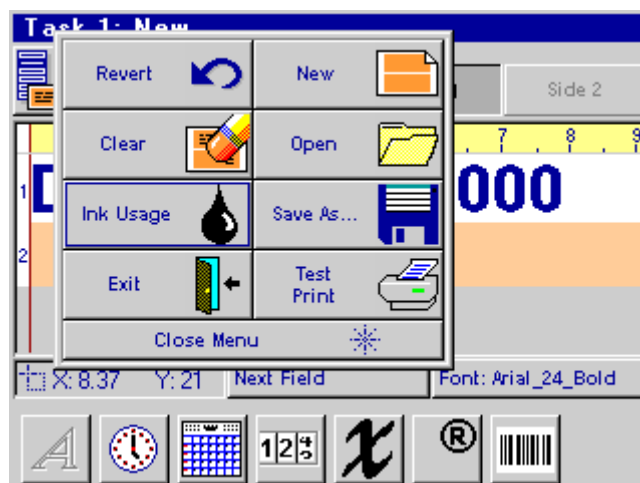


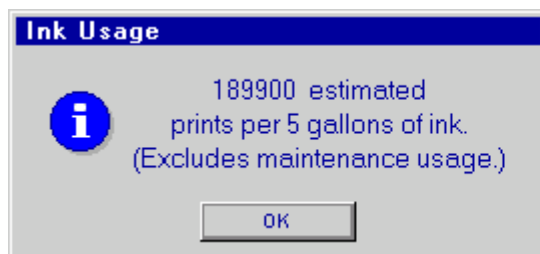
Group messages cannot be opened in the editor if the system is not set up for groups.

Estimating Ink Consumption

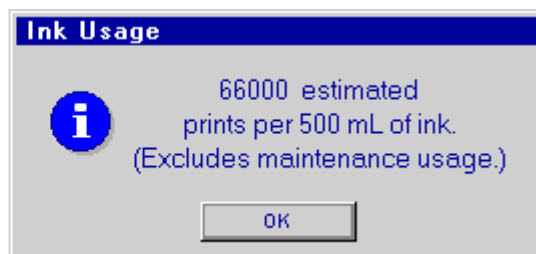
A utility available on the Edit Screen estimates a print message's ink consumption. To display the estimated ink consumption for the message being created or edited, select **Ink Usage** from the Messages Menu.

Ink consumption is reported as the estimated number of times the *entire* message will print per five gallons of ink for an Integrated Valve task, 500 mL of ink for an Impulse Jet task, or 40 & 350 mL of ink for a Thermal Jet task. All fields on all sides of a print message are included in the calculation. Ink consumption is calculated by multiplying the average drop volume by the total number of dots in the printed message.

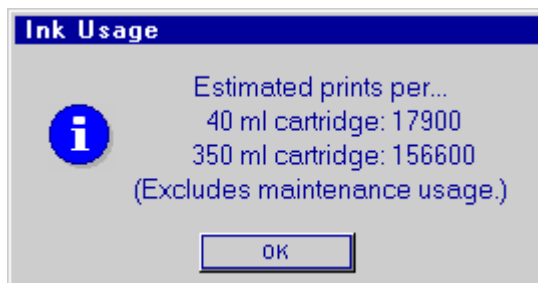




Ink consumption for an Integrated Valve task.



Ink consumption for an Impulse Jet task.



Ink consumption for a Thermal Jet task.

Side 2 = Side 1: When the **Side 2 = Side 1** option is selected, the total number of dots is determined by counting the number of dots on Side 1 of the message, then doubling it.

Groups: When the **Group task 2 with task 1** option on a dual task system is selected, and both tasks are of the same print technology (both are Impulse Jet, for example), the dots in both tasks are counted and used in the ink consumption calculation. For mixed technology groups (task 1 is Impulse Jet and task 2 is Thermal Jet, for example) ink consumption is calculated for the currently displayed task only.

Printing a Message

1. Touch the **Print** button at the top of the **Home Screen** to access print options, then touch the **Print ...** button. Or, touch the **Print ...** button at the bottom left of the screen.
2. Type in a message name, or touch a message name on the list, and touch the **Print It** button.

When a message with one or more count codes is loaded for printing, a dialog box is displayed showing the current value of the count and allowing the operator to preset

the count to any value within its defined limits. For messages with two or more counts, separate boxes are displayed, one after another, for each count.

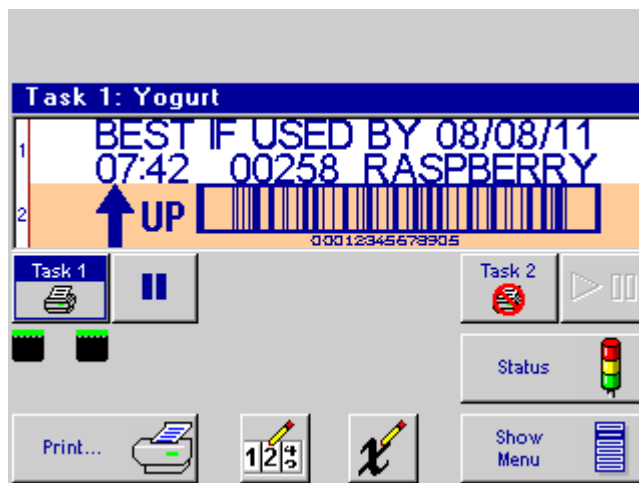
3. To stop printing at any time, open the print options list and touch **Cancel Print**. The system will prompt the user to confirm.

Deleting a Message

1. Touch the **Messages** button on the **Home Screen**.
2. On the **Messages** screen, type in a message name or touch a message name on the list.
3. Touch the **Delete** button. When prompted to confirm, touch **Yes**.

Making Adjustments During Printing

Two buttons on the Home Screen allow for quickly adjusting product counts and changing variable field data in the current print message.



Edit Counts Button ———— Edit Variable Fields Button



NOTE: Product counts and variable fields cannot be directly changed in messages printed on Thermal Jet print heads. Instead, re-select the message to print, and enter the new count value or variable field data when prompted.

Adjusting Product Counts

To adjust product counts for the current print message, touch the **Edit Counts** button on the Home Screen. The Product Counts dialog box is displayed:

The dialog box titled "Task 1 Product Counts" has a blue header. Below the header, it says "Total Count of All Products Printed". There is a text field containing "12345679" and a "Reset" button to its right. Below this, there is an "Adjust Print Counts..." button, and at the bottom, an "OK" button.

The "Total Count of All Products Printed" is a non-printing count that is incremented every print cycle. Touch the **Reset** button to reset this count to zero.

Touch the **Adjust Print Counts...** button to change the value of any printable count the current print message may have. If the current message has no counts, the **Adjust Print Counts...** button is grayed out.

Touch the **OK** button to close the dialog box and return to the Home Screen.

When the **Adjust Print Counts...** button is touched, and the current print message contains one or more counts, the Product Count Input dialog box is displayed:

The dialog box titled "Task 1: Product Count Input" has a blue header. It contains a section for "Item count" with a "Last Printed" field showing "00257" and a "Next" field showing "258". There is a "Reset" button to the right of the "Next" field. At the bottom, there are "Cancel" and "OK" buttons.

Product Count Input dialog for item count.

The dialog box titled "Task 1: Product Count Input" has a blue header. It contains a section for "Pallet count" with a "Last Printed" field showing "00258" and a "Next" field showing "259". There is a "Reset" button to the right of the "Next" field. Below this, there is an "Item count" field showing "5". At the bottom, there are "Cancel" and "OK" buttons.

Product Count Input dialog for pallet count.

To change the product count, touch the **Next** box, type in the new count, and press **Enter**. Enter a value lower than the count's defined minimum and it changes to the minimum. Enter a value greater than the defined maximum and it changes to the maximum.

To reset a count to its starting value, touch the **Next** box, then touch the **Reset** button. Touch the **OK** button to confirm the change and return to the Home Screen, or if the message has more than one count, to go to the next count.

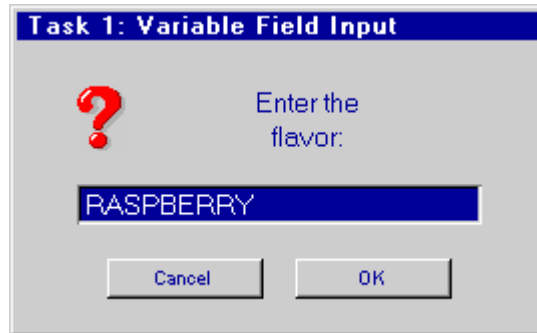
Touch the **Cancel** button to close the dialog box and return to the Home Screen without making any changes.



NOTE: The **Item Count** on the Pallet Count dialog is a count internal to the pallet count. It tracks the current number of items on the pallet. When this count reaches the defined items per pallet, the pallet count is incremented. This Item Count does not print. It is provided for those who want to print a pallet count only. If both a pallet count and an item count (for example, BOX 5 OF PALLET 259) are being printed, a separate Product Count Input dialog box will be shown for each count. To keep the item-pallet counts properly synchronized, the printable Item Count ('4' in the left illustration above) must match the Pallet Count item count ('4' in the right illustration above).

Changing Variable Field Data

To change the data printed in a User Variable Field or Data1-10 Variable Field, touch the **Edit Variable Fields** button. The Variable Field Input dialog box is displayed:

A dialog box titled "Task 1: Variable Field Input" with a blue header bar. Inside, there is a red question mark icon on the left and the text "Enter the flavor:" on the right. Below the text is a text input field containing the word "RASPBERRY". At the bottom of the dialog box are two buttons: "Cancel" and "OK".

Type in the new data. Touch the **OK** button to confirm the change and return to the Home Screen, or if the message has more than one variable field, to go to the next field.

Touch the **Cancel** button to close the dialog box and return to the Home Screen without making any changes.

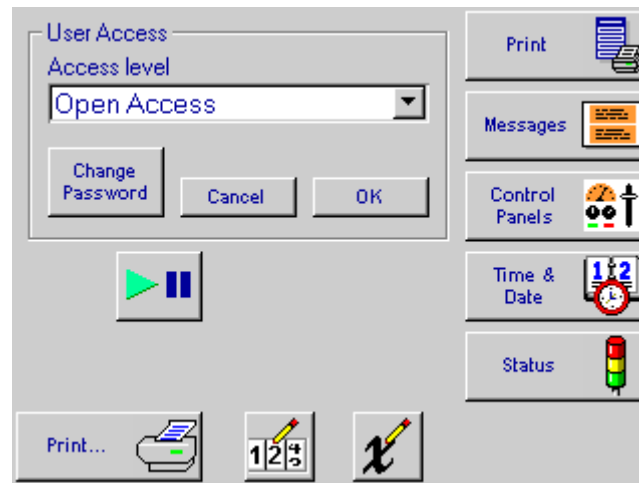


NOTE: This feature is not available when printing with Thermal Jet print heads.

Section 7: Utility Functions

User Access Control

Access to any or all of the various IJ3000 functions may be controlled by means of a user password. Which functions are made accessible to everyone and which are password protected is set on the User Access Screen. The password is also set or changed from the User Access Screen. To display the User Access Screen touch the **Control Panels** button on the Home Screen, then the **User Access** button.

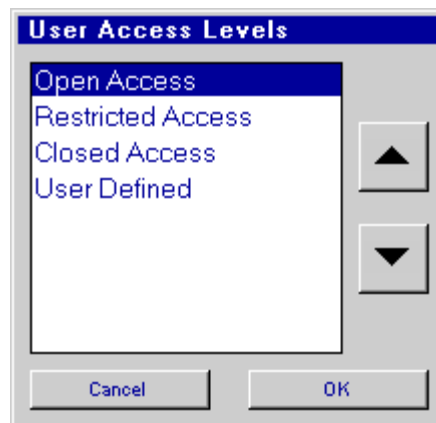


User Access Screen showing Open Access

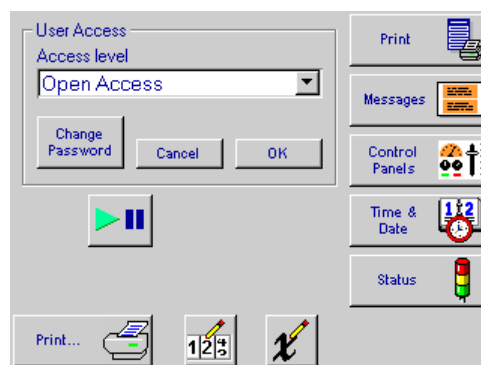
The controls for setting the access level, and setting or changing the password, are in the **User Access** box at the screen's upper left. The rest of the screen mimics the Home Screen, and shows which functions are accessible and which are locked out under the different access levels.

Setting the Access Level

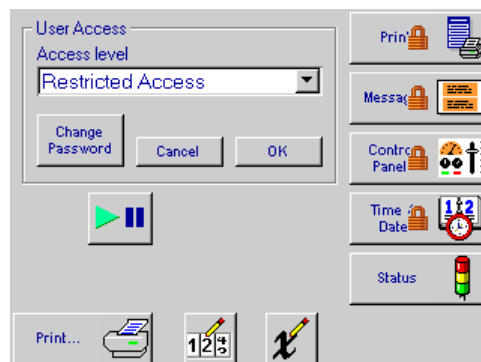
Touch the Access Level combo box to select the access level:



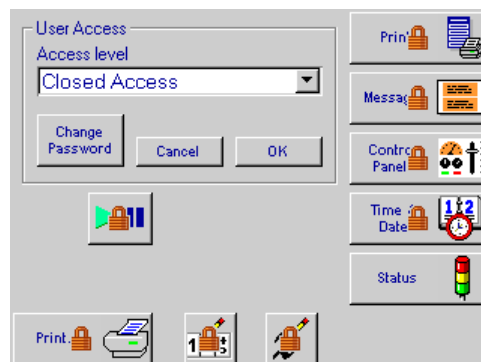
Open Access: Password protections is turned off, and all IJ3000 functions are available to everyone.



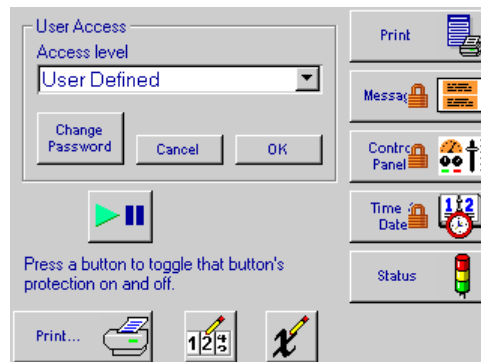
Restricted Access: The Print, Messages, Control Panels, and Time & Date buttons are locked. The operator can still pause and resume print, change the print message (but not cancel it), edit print counts and variable fields in the current print message, and check system status.



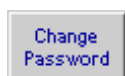
Closed Access: All buttons except the Status button are locked. The operator can only check system status.



User Defined: The user determines which buttons on the Home Screen are locked. Touch an unlocked button to lock it, touch a locked button to unlock it. The illustration shows the Messages, Control Panels, and Time & Date buttons are locked, denying access to all system setup functions, but allows the operator to pause and resume print, change or cancel the print message, edit print counts and variable fields for the current print message, and check system status.



Changing the Password

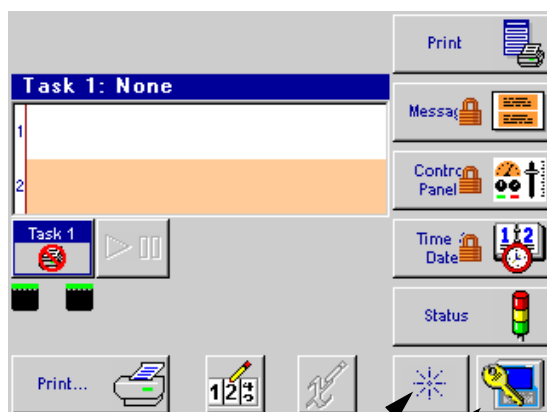


The factory-set password is **Manager**. To change the password touch the **Change Password** button; the Change Password dialog is displayed:

The dialog box titled "Change Password" contains three input fields: "Old password:", "New password:", and "Confirm new password:". Below the fields are two buttons: "Cancel" and "OK".

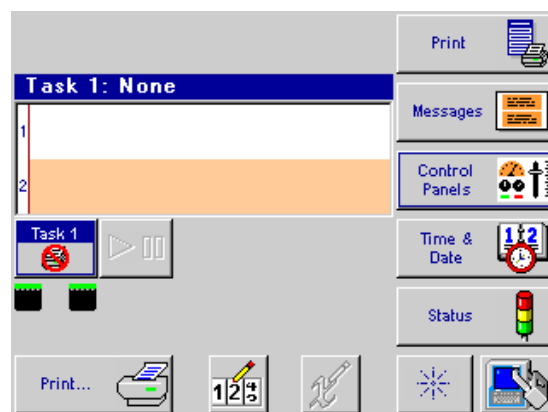
Enter the old password ("Manager" if changing the password for the first time), the new password, and then the new password again. Passwords are case sensitive, can be up to 16 characters long, and may contain any alphanumeric character, symbol, or punctuation mark.

When any IJ3000 controller functions are password protected, the **Show/Hide Menu** button on the Home Screen is replaced by a smaller **Show/Hide Menu** button, and a **Lock/Unlock** button. The Home Screen also indicates which functions are password protected by displaying a small lock symbol on the locked buttons.



Show/Hide Menu button
Unlock button

Controller Locked



Lock button

Controller Unlocked



Touch the **Unlock** button to unlock the protected functions. The controller responds by requesting the password. Enter the password and touch the **OK** button, or press the **Enter** key on the keyboard.

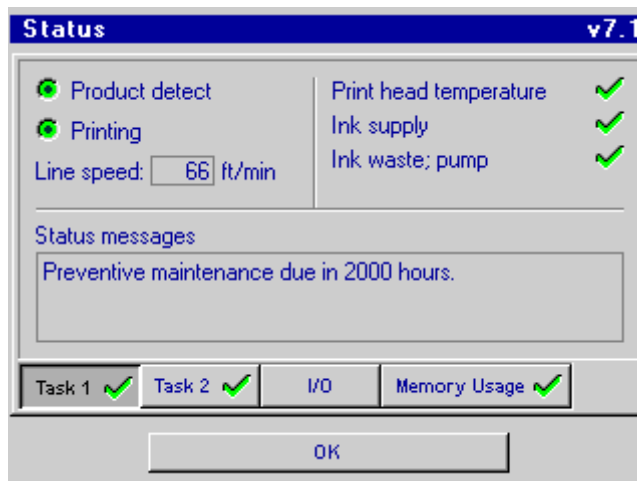
The dialog box titled "Enter Password" contains a single input field labeled "Password:" and an "OK" button.



Touch the **Lock** button to lock the controller against unauthorized access.

Status Screen

To display the Status Screen, touch the **Status** button on the **Home Screen**.



Touch the buttons along the bottom of the status window to display the current status of Print **Task 1**, Print **Task 2** (on two-task systems), the optional **I/O** card (if one is installed) and system **Memory Usage**. Indicators on the buttons give an “at a glance” indication of print task status and memory usage.

✓ A green check mark indicates normal print task operation or memory usage.

— A yellow dash indicates an item needs attention, touch that button to see the details.

✗ A red 'X' indicates a non-operational print task or maximum memory usage; touch the button to view the details.

The illustration above shows the status display for an Impulse Jet task. Status displays for other task types (Integrated Valve or Thermal Jet) are similar, showing status information common to all task types, plus task-specific information. Illustrations and descriptions of the Integrated Valve and Thermal Jet status displays appear later.

All print task status indicators are updated once every two seconds. Indicators common to all print task types are:

Indicates the task photocell is not blocked.



Indicates the task photocell is blocked.



Indicates the task is not ready to print. The print buffer is empty or print is paused.

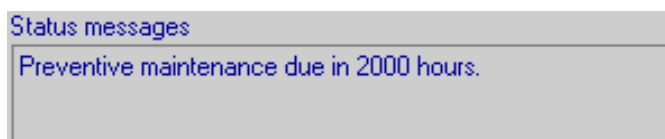


Indicates the task is ready to print. A print message is in the print buffer and print is enabled (not paused).



Line speed: 150 ft/min

When using an external encoder, displays the line speed as measured by the encoder. When using an internal encoder, displays the internal encoder line speed setting.



Displays status information not otherwise represented by other on-screen indicators.

Print Task Status - Impulse Jet

Impulse Jet specific indicators give ink delivery system status:

Print head temperature 

Indicates all print heads in the task's daisy chain are at operating temperature.

Print head temperature 

Indicates one or more print heads in the task's daisy chain are not at operating temperature. Look at the "At Temperature" LED on the back of the individual print heads to see which print head is not "at temp."

Ink supply 

Indicates the ink supply is OK.

Ink supply 

Indicates an **Ink Low** condition: The CIDS3000 Ink Delivery System's reservoir is out of ink.

Ink supply 

Indicates an **Ink Out** condition: One or more print heads in the task's daisy chain have an empty ink reservoir. Printing stops.

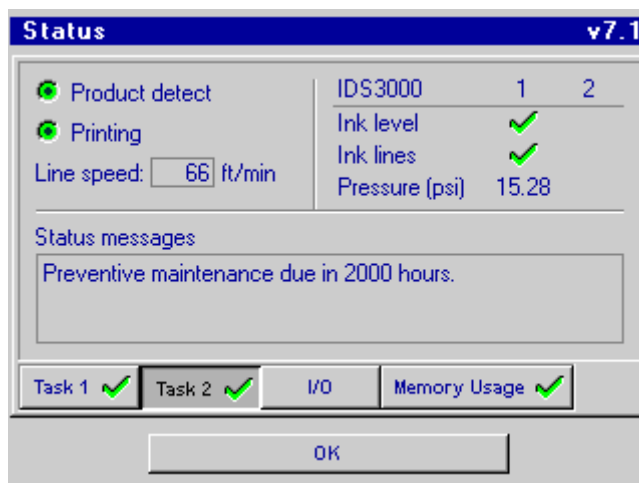
Ink waste; pump 

Indicates the waste bottle on the CIDS3000 is not full, and the ink pump is supplying sufficient ink to the print heads.

Ink waste; pump 

Indicates the waste bottle on the CIDS3000 is full and needs to be changed, or the ink pump has run continuously for more than ten seconds (indicating a possible ink line break) and has shut down. A look at the waste bottle should determine which fault occurred. The print head Auto Cleaning System is disabled in either case.

Print Task Status - Integrated Valve (I.V.)



The I.V. print task status indicators for product detect, printing and line speed are the same as those for Impulse Jet and WaxJet print tasks. Additional indicators show the status for up to two IDS3000 Ink Delivery Systems:

Ink level

Indicates the ink supply is OK.

Ink level

Indicates an **Ink Low** condition.

Ink level

Indicates an **Ink Out** condition.

Ink lines

Indicates the ink lines are OK.

Ink lines

Indicates a broken ink line.

Pressure (psi) 15.28

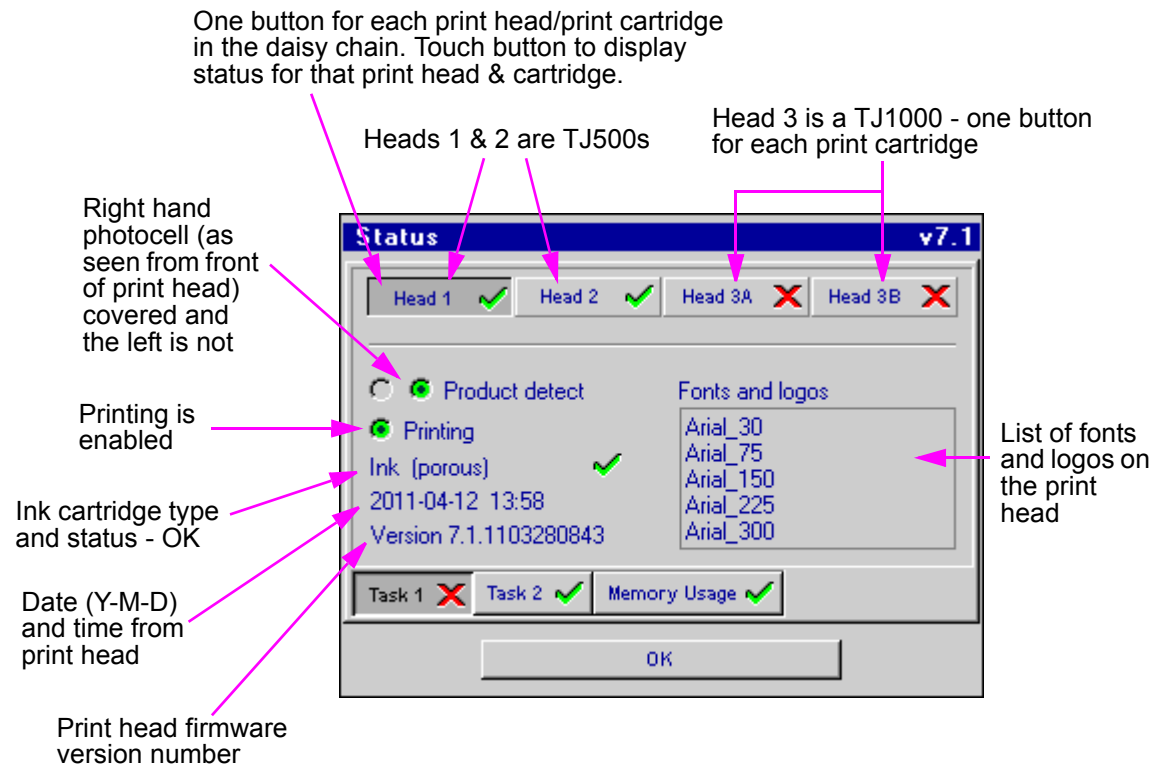
Indicates normal ink pressure (greater than 10 psi).

Pressure (psi) 5.28

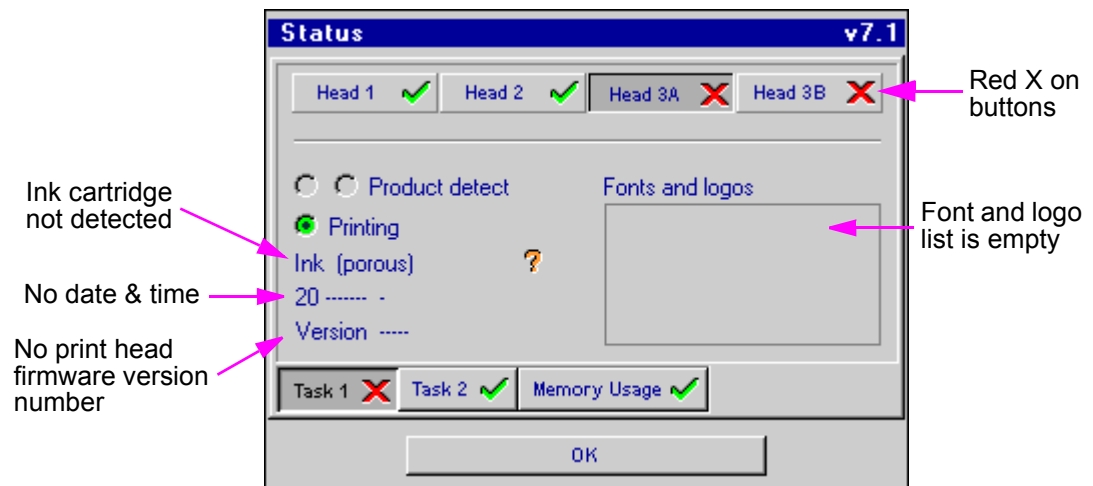
Indicates low ink pressure (less than 10 psi; white characters on a red field).

Print Task Status - Thermal Jet

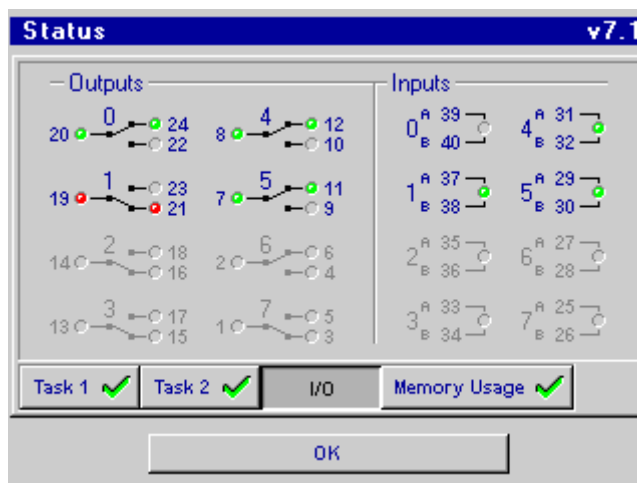
The Status Screens below show a three print head daisy chain, two TJ500s and one TJ1000. The first two print heads (Head 1 & 2) are connected properly and communicating with the IJ3000. The third print head has not been properly connected.



Indications that head 3 is improperly connected or not communicating with the controller

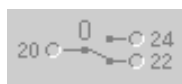
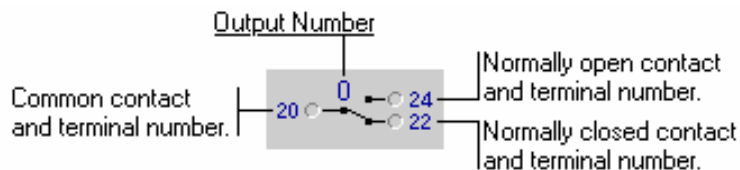


I/O Status



The I/O Status Screen becomes available when a function is assigned to one or more of the I/O channels. (See the **IJ3000 Board Kit Installation Instructions**, p/n 5760-392N, included in the I/O Board Kit, for directions on setting up the I/O card.) Indicators on the I/O Status Screen show the current state of the I/O card's relay outputs and isolated inputs, and are updated every two seconds.

Relay Output Indicators:



Indicates the output function is undefined, or "None".

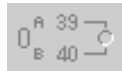
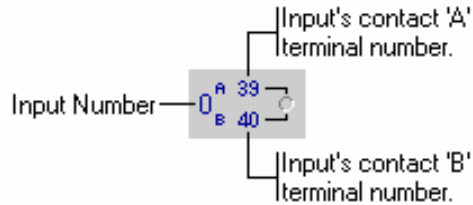


Indicates the relay is de-energized (common contact and normally closed contact are red).

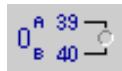


Indicates the relay is energized (common contact and normally open contact are green).

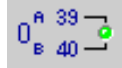
Input Indicators:



Indicates the input function is undefined, or "None".



Indicator is off (gray); the input signal is inactive.



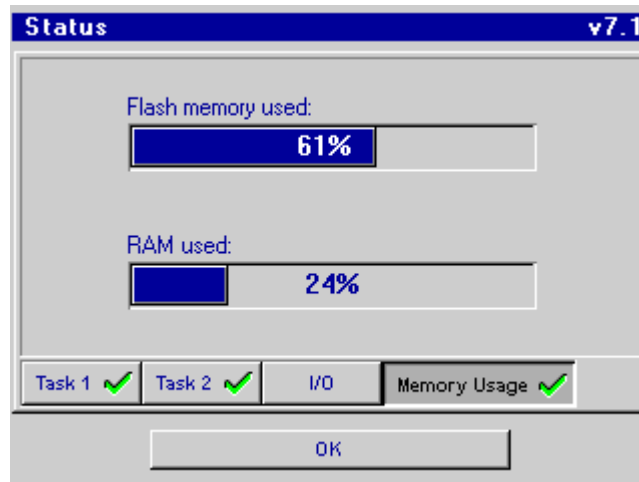
Indicator is on (green); the input signal is active.

Manual Control of Relay Outputs

An output relay assigned the **Manual On/Off** function may be manually energized and de-energized from the I/O Status screen by touching the relay's on-screen indicator. Touch it once to energize the relay; touch it again to de-energize it.

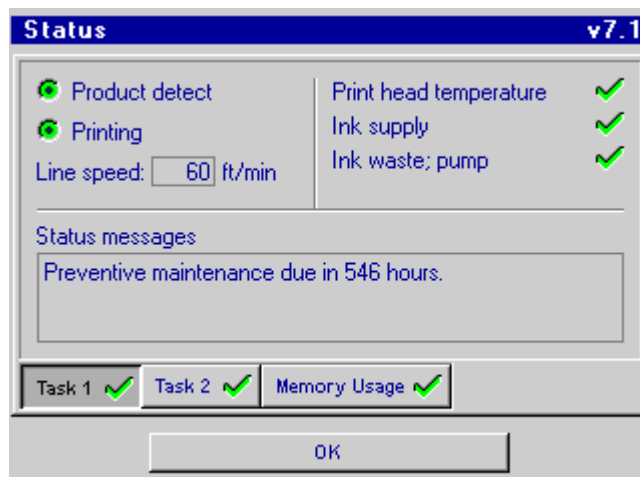
Memory Usage

Memory Usage displays the percentage of available flash memory and RAM that is currently being used.



Preventive Maintenance Timer

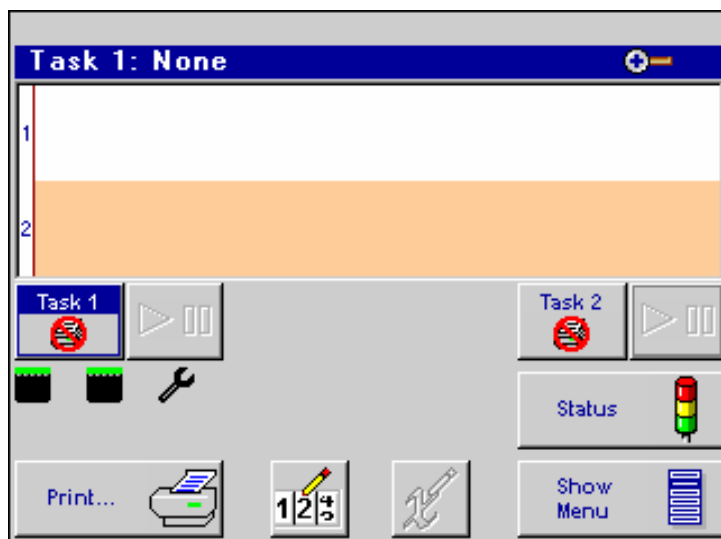
A 2000 Hour Preventative Maintenance Timer tracks elapsed print time. The timer's progress can be seen in the **Status messages** box on the Status Screen.



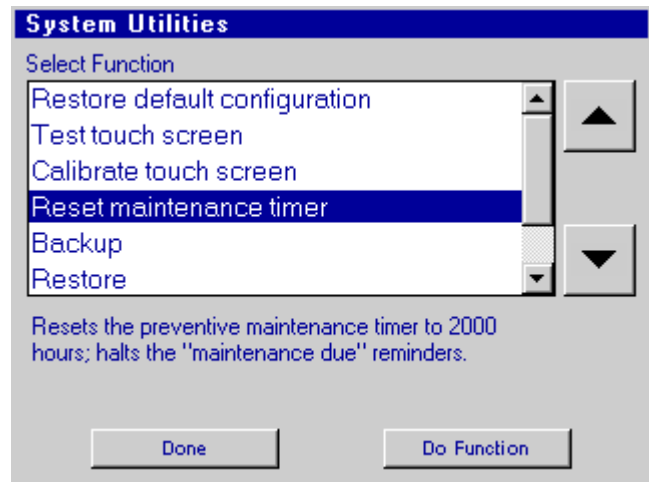
When the timer reaches zero, a dialog box is displayed, reminding the user that preventive maintenance is due.



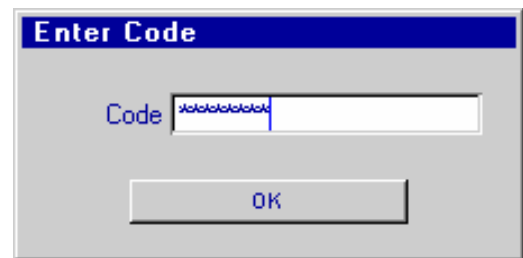
Also displayed on the Home Screen, to the right of the ink level indicators, is a small image of a wrench. The wrench remains as a reminder that maintenance is due; it disappears when the maintenance timer is reset.



To reset the timer, open the System Utilities Screen, choose the **Reset maintenance timer** and touch **Do Function**.



When prompted, enter the reset code and touch **OK**, or press **Enter** on the keyboard. (The reset code is "reset it!")



When the correct code is entered, a dialog box confirms that the timer has been reset.



Print Head Flushing System (Non-Porous Integrated Valve Systems Only)

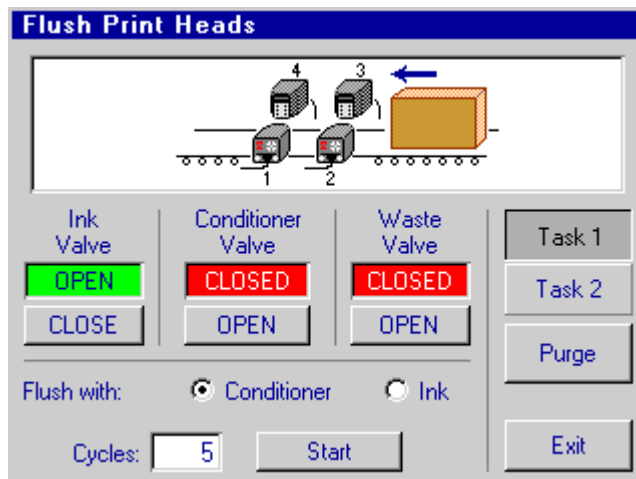


NOTE: This feature requires installation of the Flushing System to operate.

Flushing the ink from the print heads on a non-porous IJ3000 Integrated Valve system prior to a long-term system shut down prevents the print head orifices from becoming clogged with dry ink, and makes restarting the system much easier.

To access the Print Head Flushing Screen:

1. On the **Home screen** touch the **Print** button at upper right to open the Print Menu.
2. Touch the **Flush Print Heads** button on the Print Menu to open the Print Head Flushing Screen.

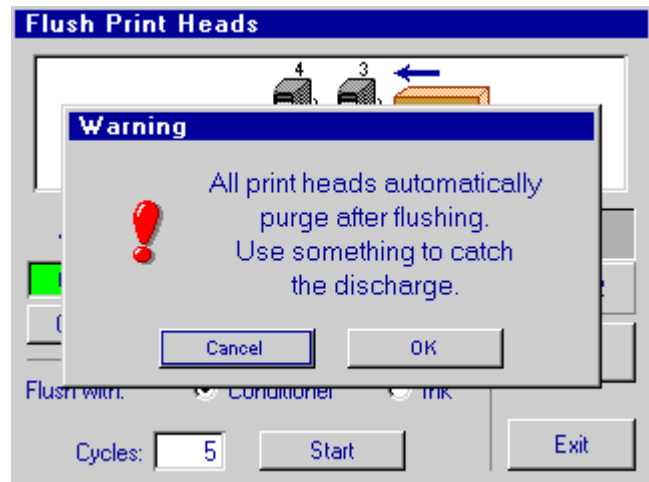


Flushing With Conditioner

Flush with conditioner prior to a long-term system shut down.

1. All print heads on both tasks, if applicable, automatically purge at the end of the flushing sequence. Place an absorbent cloth, or some other means of capturing the discharge, in front of each print head.
2. Go to the Print Head Flushing Screen and select the **Flush with: Conditioner** radio button.
3. Select the **Cycles** box and enter the number of cycles required. The number of cycles needed depends on the number and types of print heads in the system's daisy chains. The default is 5, which should be sufficient to flush four IV18 Dot print heads. Enter a larger number if the system has more than four IV18 Dot heads on both tasks combined; enter a smaller number if less. Some experimentation may be needed to find the correct number. Any change made to the number of conditioner flush cycles is saved when the Print Head Flushing screen is exited.

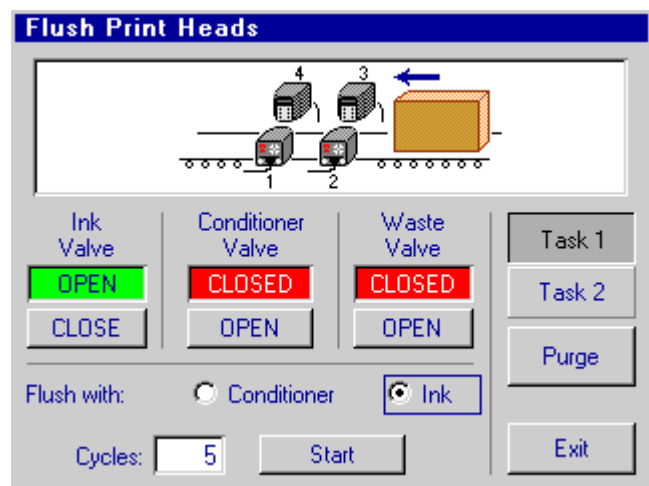
4. Touch the **Start** button. A dialog box appears warning that all print heads automatically purge at the end of the flushing operation. Touch **OK** to begin the flushing operation, or **Cancel** to abort it. Once begun, the flushing operation proceeds automatically. After flushing, the conditioner valve remains open for any additional manual print head purging that may be needed.
5. During the flushing operation, the **Start** button becomes a **Stop** button and all other buttons, except the **Exit** button, become inactive. The flushing operation may be stopped at any time by touching the **Stop** button. The flushing operation also stops if the Print Head Flushing screen is exited, or an **Ink Out**, **Conditioner Out**, or **Waste Container Full** condition occurs.
6. Touch the **Exit** button on the screen or the **ESC** key on the keyboard to return to the Home screen. Exiting the Print Head Flushing screen opens the ink valve and closes the conditioner and waste valves.



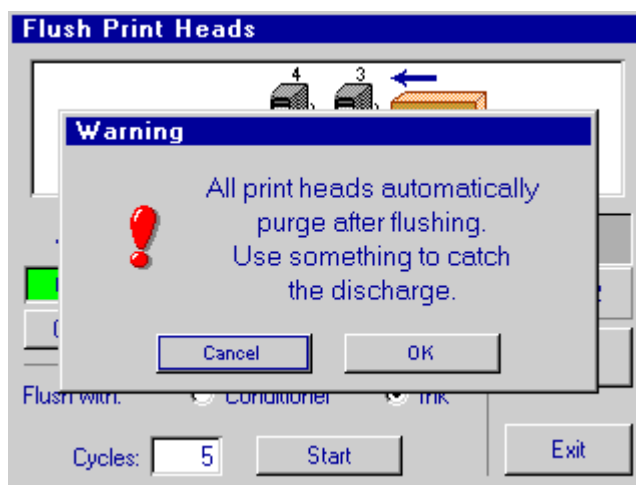
Flushing With Ink

Flush with ink when restarting the system after a long-term shut down.

1. All print heads on both tasks, if applicable, automatically purge at the end of the flushing sequence. Place an absorbent cloth, or some other means of capturing the discharge, in front of each print head.
2. Go to the Print Head Flushing Screen and select the **Flush with: Ink** radio button.
3. Select the **Cycles** box and enter the number of cycles required. The number of cycles needed depends on the number and types of print heads in the system's daisy chains. The default is 2, which should be sufficient to flush four IV18 Dot print heads. Enter a larger number if the system has more than four IV18 Dot heads on both tasks combined; enter a smaller number if less. Some experimentation may be needed to find the correct number. Any change made to the number of ink flush cycles is saved when the Print Head Flushing screen is exited.



4. Touch the **Start** button. A dialog box appears warning that all print heads automatically purge at the end of the flushing operation. Touch **OK** to begin the flushing operation, or **Cancel** to abort it. Once begun, the flushing operation proceeds automatically. After flushing, the ink valve remains open for any additional manual print head purging that may be needed.



5. During the flushing operation, the **Start** button becomes a **Stop** button and all other buttons, except the **Exit** button, become inactive. The flushing operation may be stopped at any time by touching the **Stop** button. The flushing operation also stops if the Print Head Flushing screen is exited, or an **Ink Out**, **Conditioner Out**, or **Waste Container Full** condition occurs.
6. Touch the **Exit** button on the screen or the **ESC** key on the keyboard to return to the Home screen. Exiting the Print Head Flushing screen opens the ink valve and closes the conditioner and waste valves.

Manual Control

The ink, conditioner, and waste valves may be manually opened and closed using their respective **OPEN/CLOSE** buttons. The valve status window above the button shows the valve's current state. It may take a couple of seconds for the status to update after an **OPEN/CLOSE** button is touched.

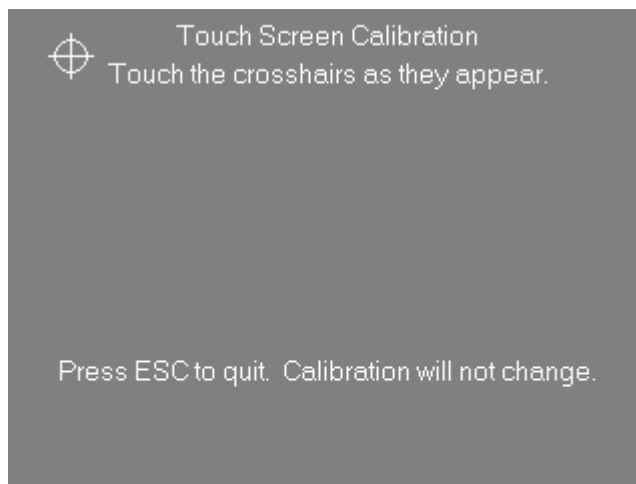
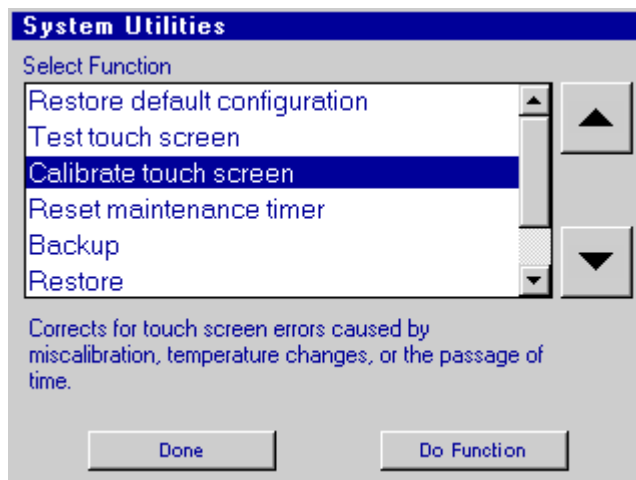
Individual print heads on either task may be purged from the Print Head Flushing screen:

1. Select the task by touching the **Task 1** or **Task 2** button.
2. Touch the print head that needs to be purged. The selected head is highlighted.
3. Touch the **Purge** button.

System Test

Touch Screen Calibration is completed at the factory. Re-calibration can be performed any time there are problems with the touch screen. From the **Home Screen**, select **Show Menu, Control Panels**, then **Utilities**. Choose **Calibrate Touch Screen** and touch **Do Function**.

If the touch screen is so far out of calibration that it is inoperable, you will have to call up the calibration utility using the keyboard; rebooting the controller may be required first. From the **Home Screen**, press the space bar to display the Home Screen menu (the space bar alternately hides and displays the menu), then press the "T" key. Follow the instructions on the display.

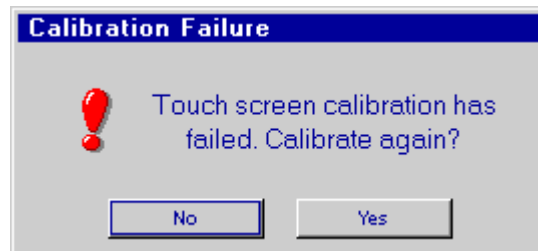


If calibration is successful, the **Success** screen appears.

Press **OK** to confirm.



If calibration is not successful, the **Calibration Failure** screen appears. Touch **Yes**, and attempt calibration again. If it continues to fail after several tries, call the Diagram Support Line.

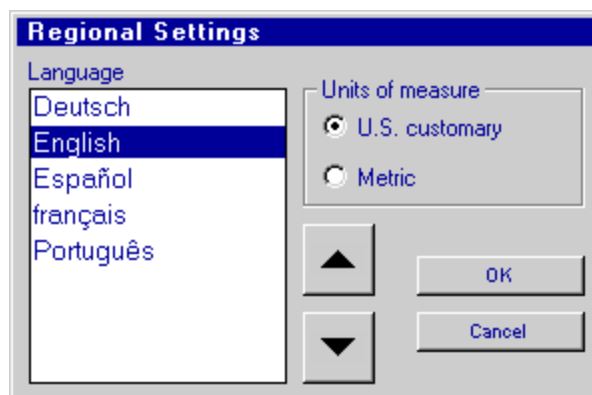


Regional Settings

On the **Home Screen**, touch **Control Panels**, then **Regional Settings**.

Choose the **Language** to be used for the system from the list of available languages.

Touch either the **U.S. customary** or **Metric** radio button to select the desired units to be shown for the items in the following table:



Units of Measure	Line Speed	Print Head Size	Margins, X Coordinate, Product Length
U.S. customary	ft/min	inches	inches
Metric	m/min	mm	cm

Touch the **OK** button to close the dialog box and save changes.

Extended characters that are not on the standard keyboard may be used in file names, shift codes, user codes, variable field names, and text fields. To use extended characters, select the message or field to be changed. Press the **F4** key to bring up lowercase characters, or **F8** (Shift + F4) to bring up uppercase characters, then select the appropriate character.



NOTE: Extended characters are available with all fonts except the Small_5 and Arial_126 fonts used on Impulse Jet print heads, or the 5s font used on I.V. print heads.

System Reboot

Should the system ever become unresponsive it can be rebooted by pressing and holding **Ctrl** and **Alt**, and then pressing the **Del** button. If it remains unresponsive after rebooting cycle power.



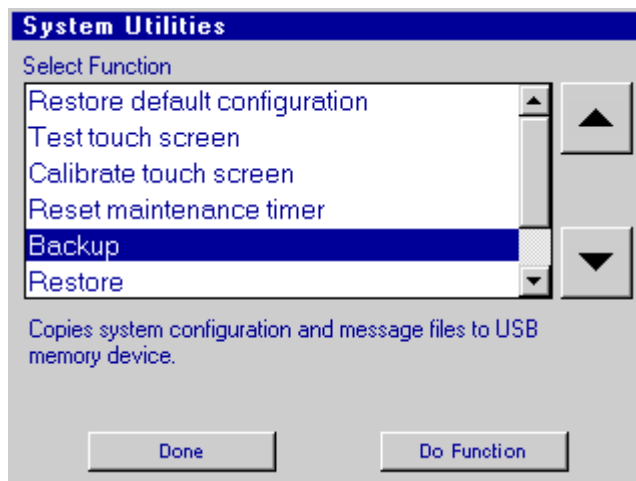
CAUTION: Any message that was printing when the system locked up will automatically resume printing after the system reboots.

File Operations

Backup

To backup the system files to a USB memory device, open the System Utilities Screen, select **Backup**, and touch **Do Function**.

The backup saves system configuration files, print message files, logos, and message attachment files. It **does not** save font files or language files. If you have custom fonts they must be manually copied to the USB memory using the File Manager utility.

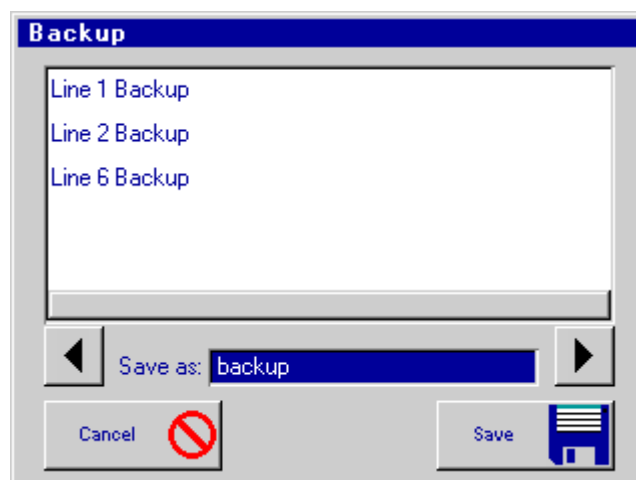


The system prompts for a filename to save the backup file under; the default filename is **backup.tgz**. (The .tgz file extension is not displayed.)



NOTE: If the backup file is given the same name as an already existing backup file, the new file will overwrite the existing file. No warning is given.

While the backup file is being created and saved an hourglass is displayed. When the backup is complete the hourglass and Backup Dialog disappear.



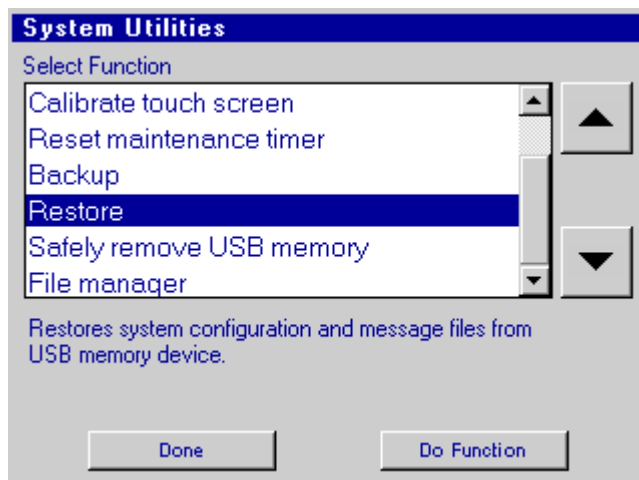
If the system is unable to locate a suitable USB device to store the backup file an error message is displayed.



NOTE: The backup files created with this process are compatible with the backups created on a PC when connected to a controller via a web browser. See "Appendix E: File Backup and Restore" on page 110.

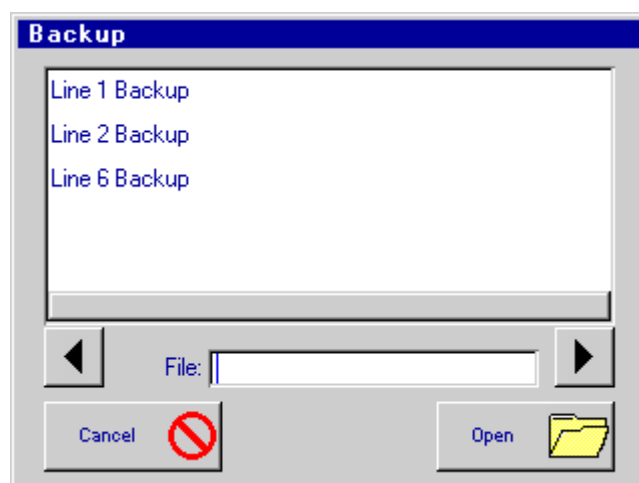
Restore

To restore a system from a backup file on a USB memory device open the System Utilities Screen, select **Restore**, and touch **Do Function**.



The system prompts for a backup file; select the desired file and touch **Open**.

While the backup file is being restored an hourglass is displayed. When the restoration is complete the hourglass and Backup Dialog disappear.



If the system is unable to locate a USB memory device an error message is displayed.

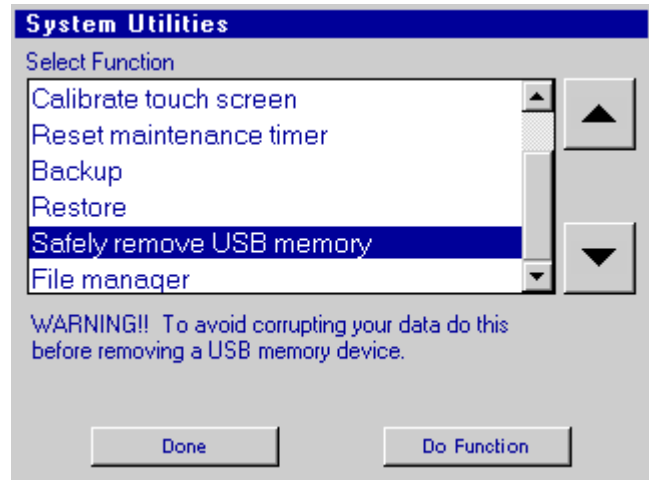


Safely Remove USB Memory

To perform a safe removal of your USB media, open the System Utilities Screen, select **Safely remove USB memory**, and touch **Do Function**.



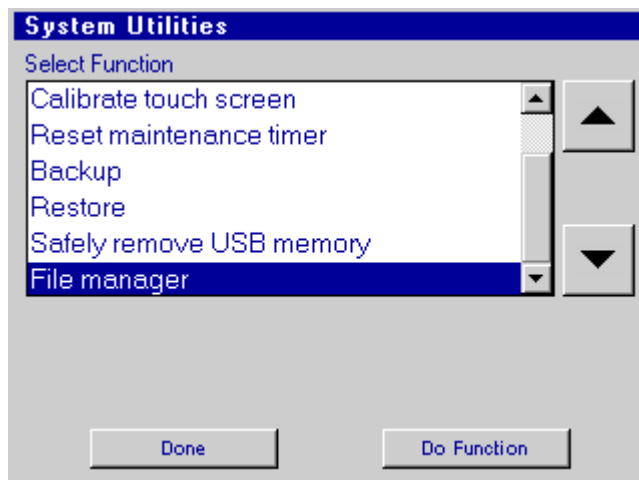
CAUTION: Files stored on the USB memory device may be corrupted if this step is not performed.



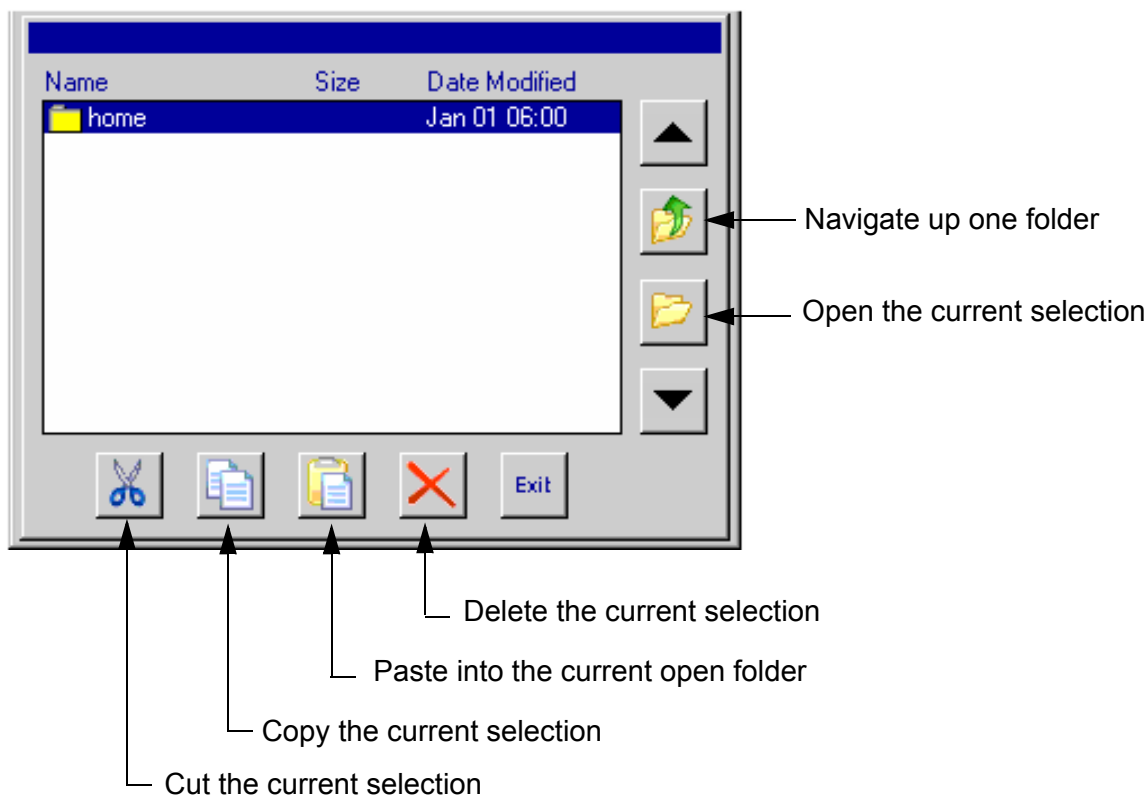
File Manager

The File manager utility can be used to copy files from a USB memory device to the IJ3000 controller and vice versa, from a USB memory device to Thermal Jet print heads, or from the controller to Thermal Jet print heads. It can also be used to remove files from the controller or Thermal Jet print heads.

To access the file manager utility, open the System Utilities Screen, choose **File Manager**, and touch **Do Function**.



The following screen will appear. Navigation is performed by clicking the buttons on the right side of the screen. Edit functions are performed by clicking the buttons at the bottom of the screen.



Section 8: Troubleshooting

The IJ3000 Ink Jet System incorporates advanced designs, both in hardware and in software. However, if the system ever fails to perform properly, some built-in indicators will help in troubleshooting. This section will help minimize system downtime and explain some of the diagnostic features built into the system.

Troubleshooting Notes

Controller

Most controller problems will be the result of improperly connected cables. Check all connections, including power interface, print heads, encoder, and photosensor. (See “Appendix B: Theory of Operation” on page 96 for detailed test points.)

IJ/3000 Impulse Jet System Trouble-Shooting

Top Level Problem	Possible Component Failure	Replacement Kit Part Number
IJ3000 Controller	24VDC Power Supply	5760-333
	Touch Screen/Display Assembly, 5.7"	5760-817
	Touch Screen/Display assembly, 7"	5765-215
	Touch Screen/Display Assembly, 10.4"	5760-836
	Keypad Assembly, IJ3000-XLS	5760-301
	Keypad Assembly, IJ3000-ES	5765-201
	Impulse Jet Interface Board	5760-332
	CPU Board, IJ3000-XLS	5760-303
	CPU Board, IJ3000-ES	5765-214
	CPU Board, IJ3000-HH	5780-233
	CPU to Display PCB Cable, 30 Conductor	5760-713
	CPU to Display PCB Cable, 40 Conductor	5760-746

IJ/3000-XLS Controller:

System Symptom	Possible Cause	Operational Test Method
No Controller power, no Green LED indicator light on CPU, no voltage on CPU TP3 (5VDC normal)	Power Supply	Check Power Supply light indicator. Check for 24V output for Impulse Jet, or 15V output for Integrated Valve. Check connector between CPU & first Interface Board (CPU JP1 and Interface JR1).
Touch Screen not responding, difficult to select/pick boxes	Touch Screen/Display Assembly	Run system test and re-calibrate Touch Screen.
Display will not turn on	Touch Screen/Display Assembly	Check brightness level control. Test for 12V on Inverter Board (GND to Vin).
No response from keypad entry	Keypad Assembly	Inspect flex cable for damage, particularly at end going into CPU connector.
System not printing	Interface Board	Test Interface Board Test Points (See <i>“Appendix B: Theory of Operation”</i> on page 96 for Test Points).
System not responding	CPU Board	Check for Green LED to indicate power. Check for Yellow LED. Flashing indicates CPU is operating. If CPU is not responding, reset by completing: Cntrl/Alt/Del . If system does not restart, complete hard reset by removing power for 10 seconds. Test power at following points: TP1 = Backlight Voltage Supply is 12V when controller is on, 0V when controller is off. TP2 = 5VDC TP3 = 3.3VDC TP4 = 1.8VDC
Touch Screen not responding	CPU to Display PCB Cable	Inspect CPU to Display Cable for nicks or abrasions.

Appendix A: System Specifications

IJ3000-XLS Controller

Size

Height: 8.75" [222.3mm]

Width: 13.0" [330.2mm]

Depth: 15.5" [393.7mm]

Weight: 16.4 lbs (7.5kg)

Cable Clearance: 3" from the rear of the controller

User Interface

Type: Graphical User Interface

Keyboard: 70-key, QWERTY style, elastomeric keyboard

10.4" Display: 640 x 480 color LCD with touch screen, 10.4" diagonal

5.7" Display: 320 x 240 color LCD with touch screen, 5.7" diagonal

Fonts

Impulse Jet - Arial style: 5, 7, 9, 15, 24 and 32 dot, standard and bold for 96, 192, 224, and 352 Heads. Arial style: 9, 15, 24, 30, 48, 63, 96, and 126 standard and bold for 384 and 768 Heads.

Integrated Valve - 5-dot, 7-dot, 9-dot, 18-dot

Storage

16 MB flash memory

Print Speed

IV - Up to 650 fpm

IJ - Up to 200 fpm

Maximum Field Length

Up to 256 characters long (81 inches for variable field)

Maximum Product Length

200 inches

Maximum Repeat Print Distance

200 inches

Print Heads per Integrated Valve Interface Board

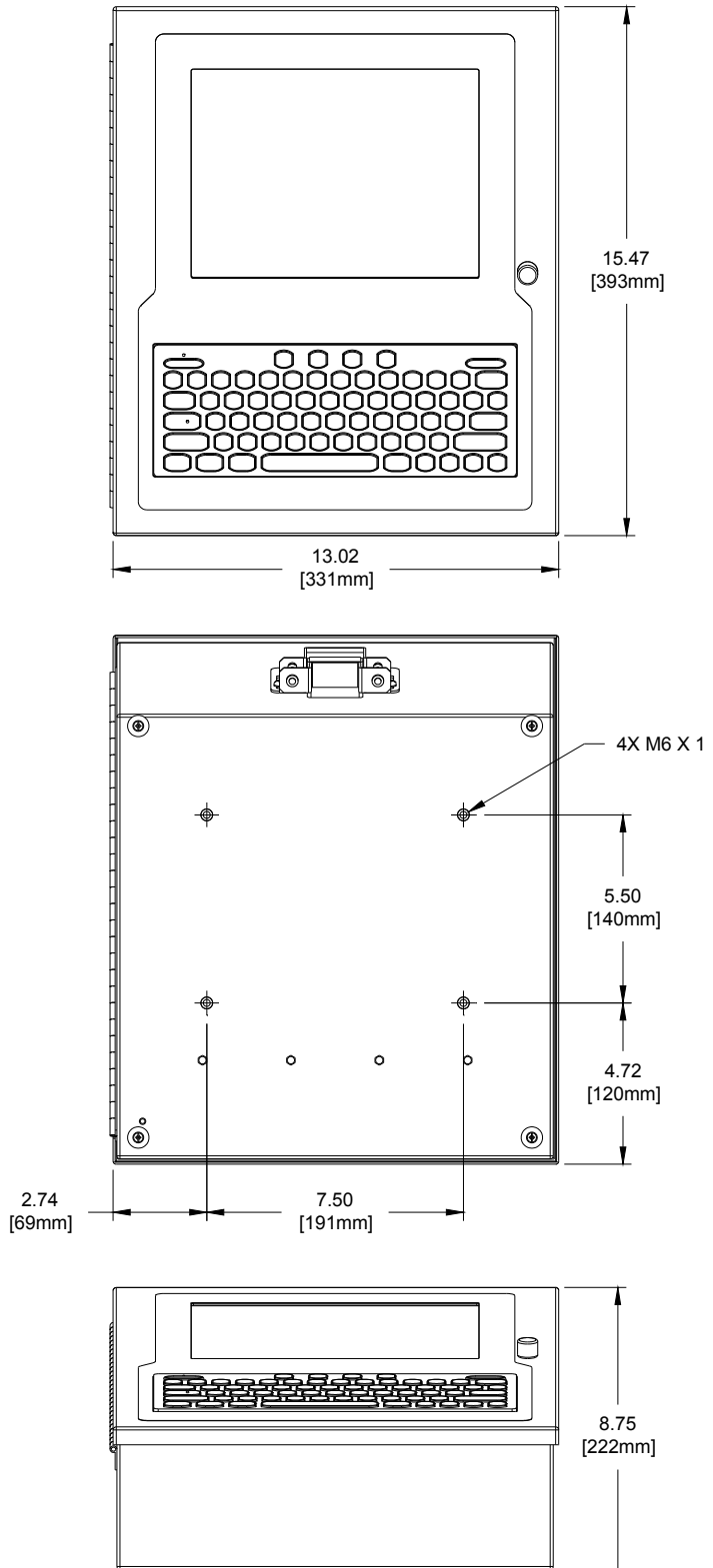
Eight (8) 9-Dot Heads

Four (4) 18-Dot Heads

Print Heads per Impulse Jet Interface Board

One (1) 768 Head

Dimensions for IJ3000-XLS



Two (2) 384 Heads

Two (3) 96, 192, 224, and 352 Heads

Thermal Jet Print Heads per Serial Port

Eight (8) TJ500 Heads

Four (4) TJ1000 Heads

Encoder

2400 ppr/300 ppi, TTL level, 5-26 VDC

Product Sensor

Impulse Jet - 24 VDC, current sinking, active low

Integrated Valve - 15 VDC, current sinking, active low

Ports

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

Enclosure

Stainless steel sealed industrial enclosure

Print Performance

Impulse Jet - Up to 10 lines of print at 200 fpm (See “Appendix D: Performance Parameters” on page 107.)

Integrated Valve - Up to 28 lines of print at 650 fpm (See “Appendix D: Performance Parameters” on page 107.)

Electrical

90-260 VAC, 50/60 Hz, 3.0A max. (power supply input)

Impulse Jet - 24 VDC, 5.0A per interface card (controller input)

Integrated Valve - 15VDC, 4.6A per interface card (controller input)

Environment

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

Operating humidity: 10 - 90%, non-condensing

Maximum Distance Between Last Print Head and Controller

100 feet for an Impulse Jet System

35 feet for an Integrated Valve System using a P.I.C. IDS

100 feet for an Integrated Valve System using an IDS3000

Maximum Distance Between CIDS and Controller

100 feet

Bar Codes Supported (Impulse Jet and Thermal Jet)

I 2 of 5

GTIN-14 (ITF-14)

GTIN-8 (EAN-8), GTIN-13 (EAN-13)

Code 39

GTIN-14 (UCC-128)

Code 128

GTIN-12 (UPC-A), UPC-E

Data Matrix

IJ3000-ES Controller

Size

Height: 11" [279.4mm]
 Width: 10.39" [263.9mm]
 Depth: 3.14" [79.8mm]
 Weight: 7.4lbs (3.4kg)

User Interface

Type: Graphical User Interface
 Keyboard: 70-key, QWERTY style, elastomeric keyboard
 7" Display: 800x 480 color LCD with touch screen, 7" diagonal

Fonts

Impulse Jet - Arial style: 5, 7, 9, 15, 24 and 32 dot, standard and bold for 96, 192, 224, and 352 Heads. Arial style: 9, 15, 24, 30, 48, 63, 96, and 126 standard and bold for 384 and 768 Heads.

Integrated Valve - 5-dot, 7-dot, 9-dot, 18-dot

Storage

512 MB flash memory

Print Speed

IV - Up to 650 fpm
 IJ - Up to 200 fpm
 TJ - Up to 200 fpm

Maximum Field Length

Up to 256 characters long (81 inches for variable field)

Maximum Product Length

200 inches

Maximum Repeat Print Distance

200 inches

Print Heads per Integrated Valve Interface Board

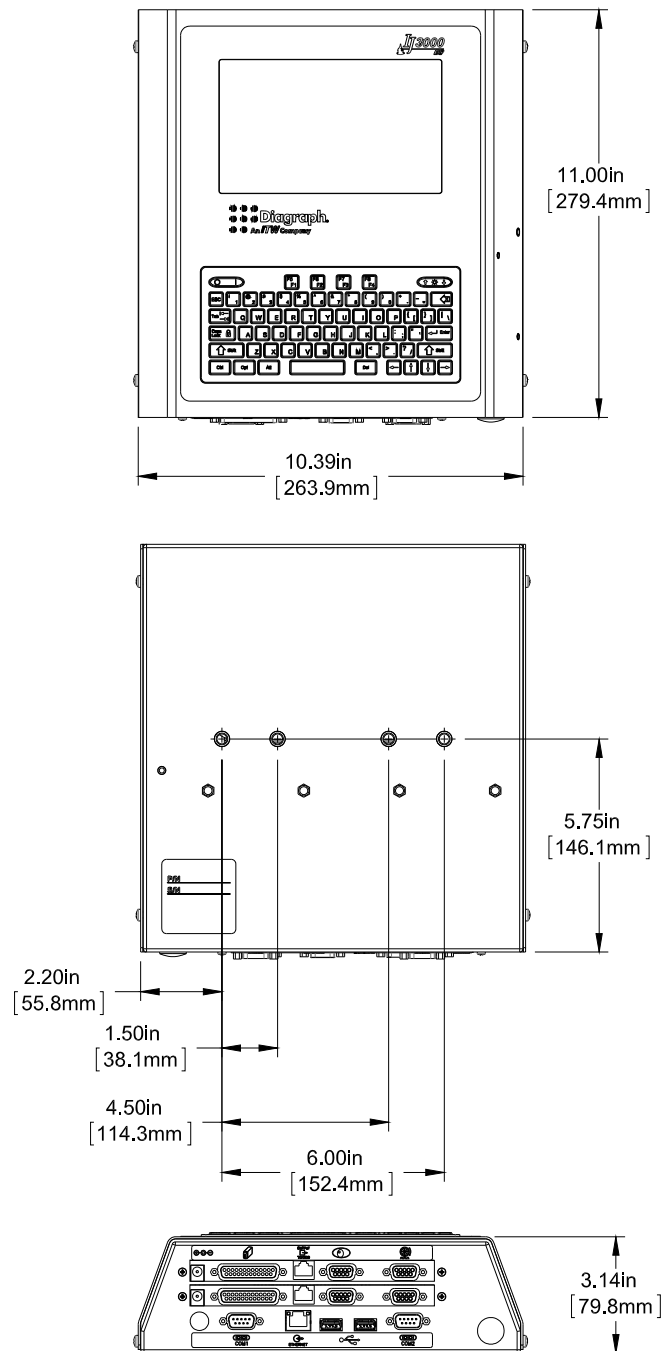
Eight (8) 9-Dot Heads
 Four (4) 18-Dot Heads

Print Heads per Impulse Jet Interface Board

One (1) 768 Head
 Two (2) 384 Heads
 Two (2) 96, 192, 224, and 352 Heads

Thermal Jet Heads per Serial Port

Eight (8) TJ500 Heads
 Four (4) TJ1000 Heads



Encoder

2400 ppr/300 ppi, TTL level, 5-26 VDC

Product Sensor

Impulse Jet - 24 VDC, current sinking, active low

Integrated Valve - 15 VDC, current sinking, active low

Ports

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

Enclosure

Powder-coat painted industrial enclosure

Print Performance

Impulse Jet - Up to 10 lines of print at 200 fpm (See “Appendix D: Performance Parameters” on page 107.)

Integrated Valve - Up to 28 lines of print at 650 fpm (See “Appendix D: Performance Parameters” on page 107.)

Electrical

90-260 VAC, 50/60 Hz, 3.0A max. (power supply input)

Impulse Jet - 24 VDC, 5.0A (controller input)

Integrated Valve - 15VDC, 4.6A (controller input)

Environment

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

Operating humidity: 10 - 90%, non-condensing

Maximum Distance Between Last Print Head and Controller

100 feet for an Impulse Jet System

35 feet for an Integrated Valve System using a P.I.C. IDS

100 feet for an Integrated Valve System using an IDS3000

Bar Codes Supported (Impulse Jet and Thermal Jet)

I 2 of 5

GTIN-14 (ITF-14)

GTIN-8 (EAN-8), GTIN-13 (EAN-13)

Code 39

GTIN-14 (UCC-128)

Code 128

GTIN-12 (UPC-A), UPC-E

Data Matrix

IJ3000-HH Controller



NOTE: The IJ3000-HH operates with TJ500 and TJ1000 Thermal Jet print heads.

Weight

1.8 lbs (0.82 kg)

User Interface

Type: Graphical User Interface

Keyboard: 70-key, QWERTY style, elastomeric keyboard

800 X 480 color LCD with touch screen, 7.0" (177.8 mm) diagonal

Fonts

Arial 30, 75, 150, 225, and 300 (0.1in / 2.5 mm, 0.25 in / 6.3 mm, 0.5 in / 12.7 mm, 0.75 in / 19.05 mm, and 1 in / 25.4mm).

Storage

128 MB flash memory

Print Speed

Up to 200 fpm

Maximum Lines of Print

5 per print cartridge through any given vertical line.

Print Fields per Line

At least 3 52-character fields per print line; more when fields have less than 52 characters.

Maximum Product Length

108 inches (2743 mm)

Maximum Repeat Print Distance

108 inches (2743 mm)

Maximum Number of Print Heads Per Controller

Up to 8 print cartridges per COM port in any combination (eg: 4 TJ500s and 2 TJ1000s; 8 TJ500s; 4 TJ1000s)

2 COM ports allow for a total of 16 print cartridges per controller

Ports

(2) RS-232 ports, (1) 10/100Base-T Ethernet port, (1) USB port

Electrical

15 VDC from power supply to controller

Power Supply: 90-260 VAC, 50/60 Hz, 1.5A max. (per power supply)

Environment

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

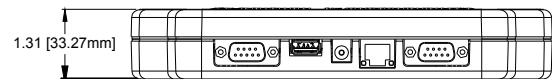
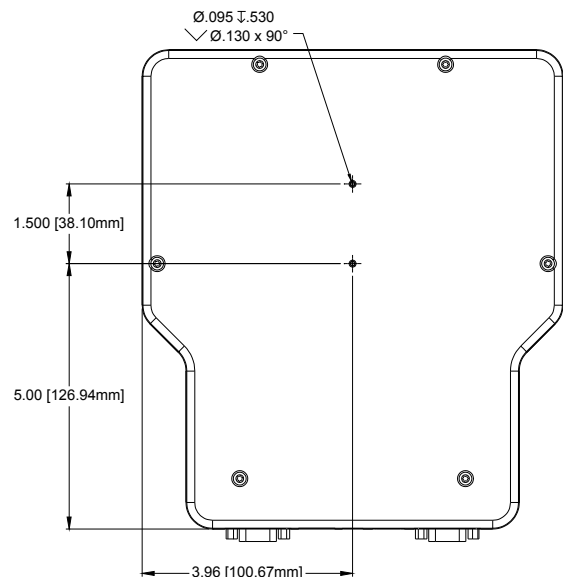
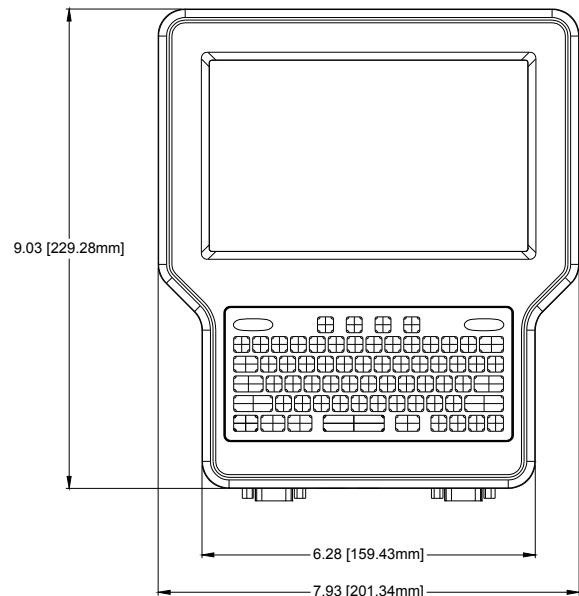
Operating humidity: 10% - 90%, non-condensing

Maximum Distance Between Controller and Farthest Print Head in Daisy Chain

100 feet (30.5 m)

Bar Codes Supported

12 or 5, GTIN-14 (ITF-14), GTIN-8 (EAN-8), GTIN-13 (EAN-13), Code 39, GTIN-14 (UCC-128), Code 128, GTIN-12 (UPC-A), UPC-E, Data Matrix



Appendix B: Theory of Operation

Functional Description

The IJ3000 Ink Jet System prints text, autocodes (such as product counts or time and date stamps), bar codes, and/or graphics onto products as they travel by conveyor past stationary print heads. Print can be on any one of, or a combination of, the product's sides. The conveyor speed is monitored using a variable speed encoder or a built-in fixed speed encoder. Products are detected using a photosensor. The information to be printed is defined as a message and is programmed into the controller via a user interface.

Controller Features

The IJ3000 Controller has a graphical user interface consisting of a color LCD, touch screen, and 70-key QWERTY keypad. Also housed in the controller are a CPU Board, one or two Print Head Interface Boards and a Display Interface Board.

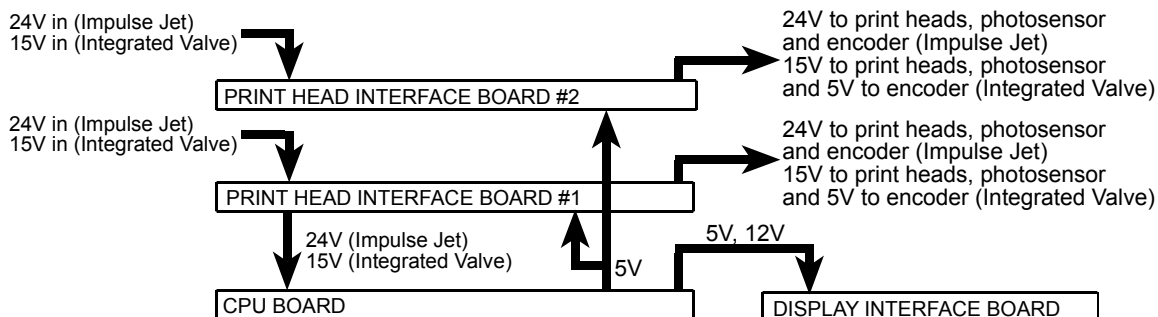
Power

One or two 24VDC (Impulse Jet) or 15VDC (Integrated Valve) desktop power supplies provide power to the IJ3000 and all of its attachments. Power enters the IJ3000 through J5 (IJ) or J3 (IV) on the Print Head Interface Board(s). A system with a single interface board has one power supply; two interface boards require two power supplies.

On each Print Head Interface Board, 24V (IJ) or 15V (IV) is routed to the photosensor connector (P2) and the print head connector (P1) through normally energized relay K1. On Impulse Jet systems, an under voltage detection circuit de-energizes K1 and removes power from the print heads and photosensor if the voltage is less than 18V. On Integrated Valve systems, an over voltage circuit de-energizes K1 and removes power from the print heads and photosensor if the voltage exceeds 18V.

Battery Backup - A 3V battery on the CPU Board (BT1) maintains the contents of system SRAM and keeps the real time clock running during power outages or when the IJ3000 is not plugged into a power outlet.

Power Distribution - Refer to the illustration below. 24V (IJ) or 15V (IV) from the first Print Head Interface Board only (the one immediately above the CPU Board) is routed to the CPU Board, where it is stepped down to the 12VDC and 5VDC used to power the rest of the system. 12V goes to the Display Interface Board where it powers the backlight inverter, and 5V is distributed throughout the CPU Board, to the Display Interface Board, and to the Print Head Interface Board(s).



IJ3000 POWER DISTRIBUTION

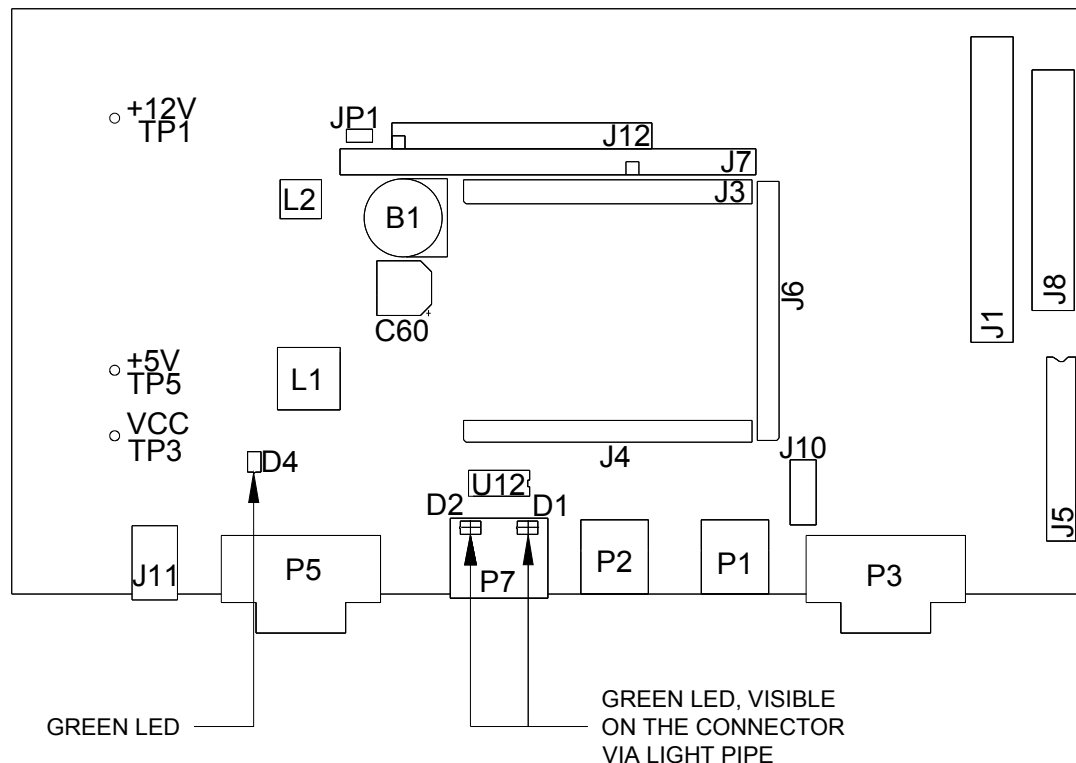


Please note that power is applied to the IJ3000 even when it is "turned off." When turned off using the OFF button on the keyboard, the IJ3000 enters a sleep mode where it responds to nothing but the ON button. All voltages are present while sleeping. The only way to completely remove power is to unplug the unit.

The CPU Board has a microcontroller, flash, SDRAM and SRAM memory, a touch screen controller, a real time clock/calendar, an Ethernet port, two USB 2.0 ports, two serial ports, 12V, 5V, 3.3V and 1.8V regulators, a 3V battery, PC/104 connectors and connectors for attaching the system display and keyboard assemblies.

The touch screen controller (U27) senses when the screen is touched, and sends screen coordinate data to the CPU for processing.

The 3V battery (BT1) preserves system data and keeps the clock running during power outages or when the IJ3000 is not plugged into a power outlet.

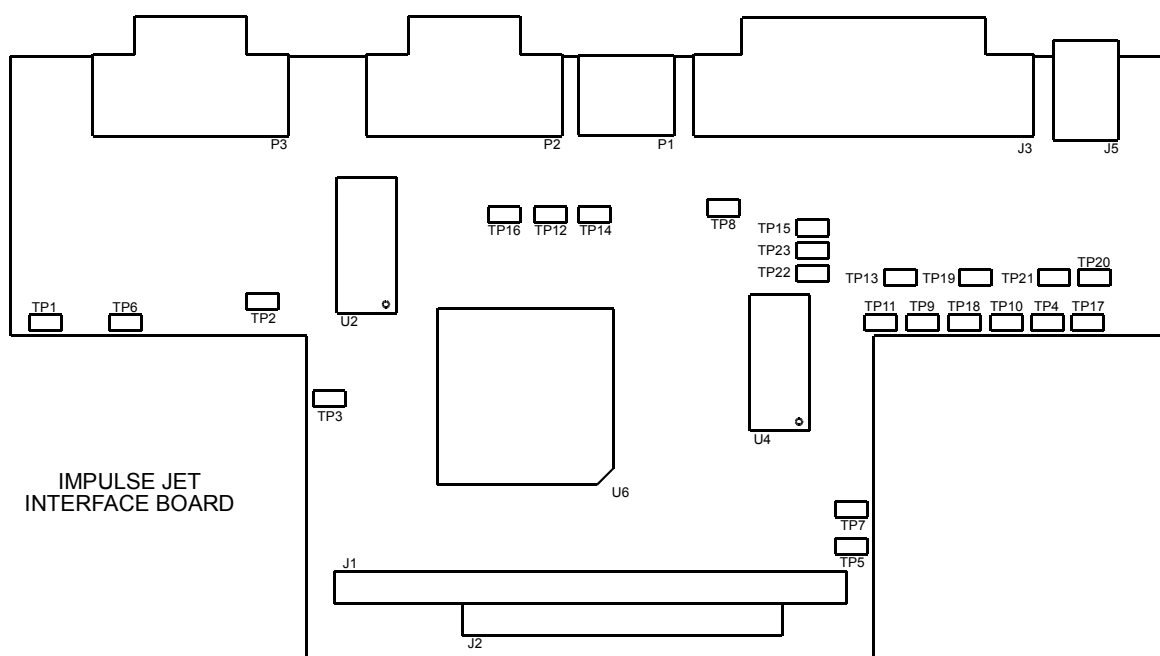


- | | | |
|--------------|------|--|
| Test Points: | TP1: | 12VDC, power for display backlight. Turns on/off with soft power switch. |
| | TP2: | 5VDC, power for 5V logic. Also supplies the input voltage to the 3.3V regulator. |
| | TP3: | 3.3VDC, power for 3.3V logic. Also supplies the input voltage to the 1.8V regulator. |
| | TP4: | 1.8VDC, power for the CPU core. |
| LEDs: | D1: | Ethernet connector, Green. Flashes to indicate network traffic. |
| | D2: | Ethernet connector, Green. Indicates valid network connection. |
| | D1: | Yellow, flashes when the CPU is running.(On CPU module) |
| | D4: | Green, indicates 3.3V is present. |
| | D2: | Green, indicates 3.3V is present. (On CPU module) |

Impulse Jet Print Head Interface Board

The Impulse Jet Print Head Interface Board controls the print head daisy chain, and it is the power entry point for the print heads and the rest of the system (See the previous section: "Power" on page 96.) The Print Head Interface Board also contains the photosensor, external encoder, and CIDS connections.

The daisy chain controller is made up of an FPGA (U6) and print image RAM (U4). The print image is written to image RAM by the CPU board, and circuitry on the FPGA reads the print image and shifts it out to the print heads. The generation and timing of all daisy chain signals - DATA, CLOCK and LATCH - take place in the FPGA in response to signals from the photosensor and encoder.



Test Points:	TP1:	5VDC.
	TP2:	3.3VDC.
	TP3:	2.5VDC.
	TP4:	GND.
	TP5:	(FPGA) PROGRAM; pulses low to initiate FPGA programming.
	TP6:	(FPGA) INIT; goes LOW to indicate an FPGA programming error.
	TP7:	(FPGA) DONE. LOW when the FPGA is being programmed. High when FPGA programming is complete.
	TP8:	CIDS error signal, active low.
	TP9:	Print head vacuum signal, active high.
	TP10:	CIDS ink low signal, active low.
	TP11:	Print head pump signal, active high.
	TP12:	CIDS ink out signal, active low.
	TP13:	Print head at temperature signal, active low.
	TP14:	CIDS vacuum signal, active low.
	TP15:	Print head ink out signal, active high.
	TP16:	CIDS pump signal, active low.
	TP17:	DC power in (24V).
	TP18:	Print head CLOCK signal.
	TP19:	Print head DATA2 signal.
	TP20:	Print head DATA signal.
	TP21:	Print head LATCH signal.
	TP22:	PHOTOSENSOR signal, active high.
	TP23:	External ENCODER signal.

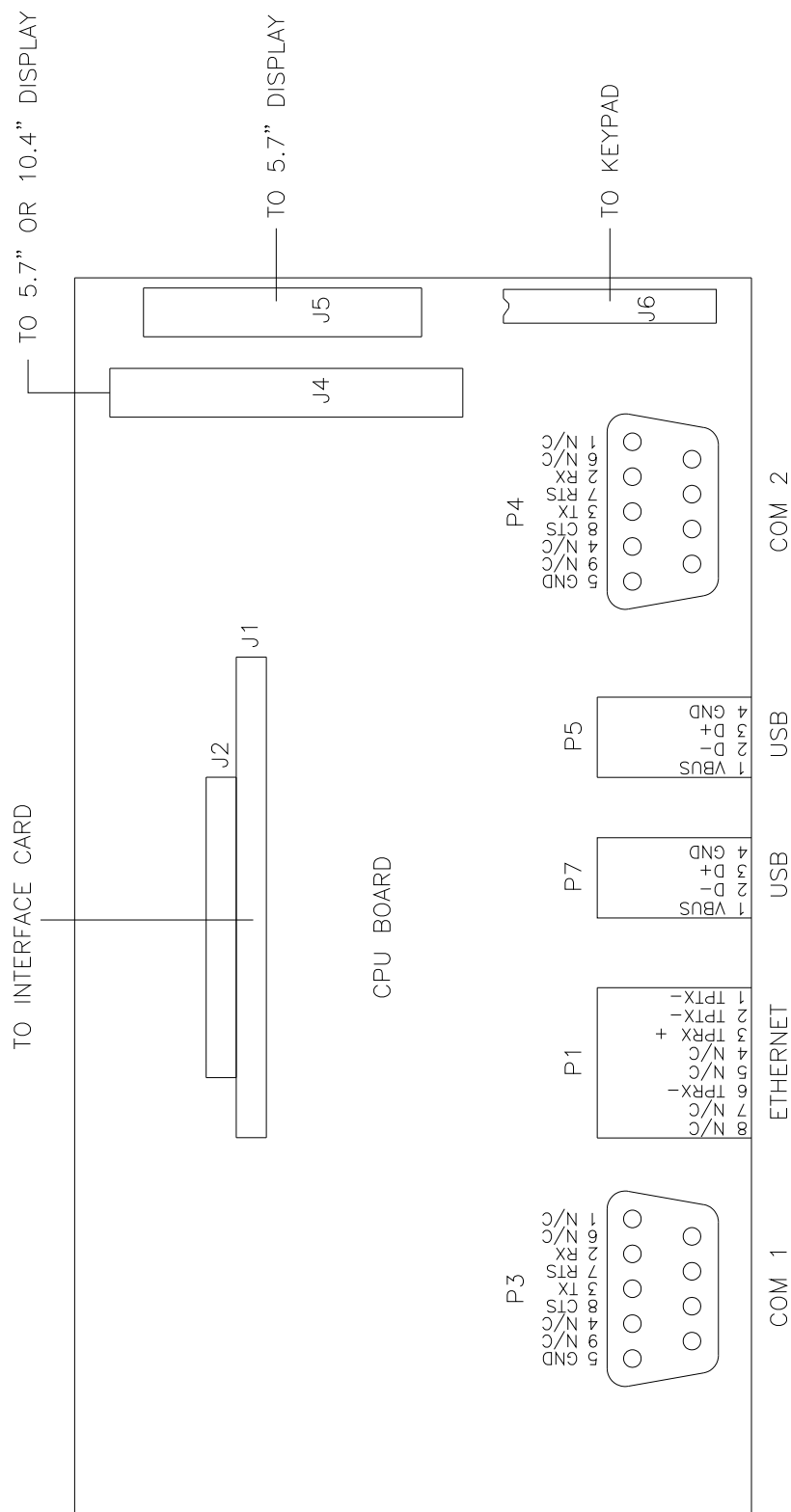
The IV Print Head Interface Board controls the print head daisy chain, and it is the power entry point for the print heads and the rest of the system (See the previous section: “Power” on page 96.) The Print Head Interface Board also contains the photosensor and external encoder connectors.

Test Points:

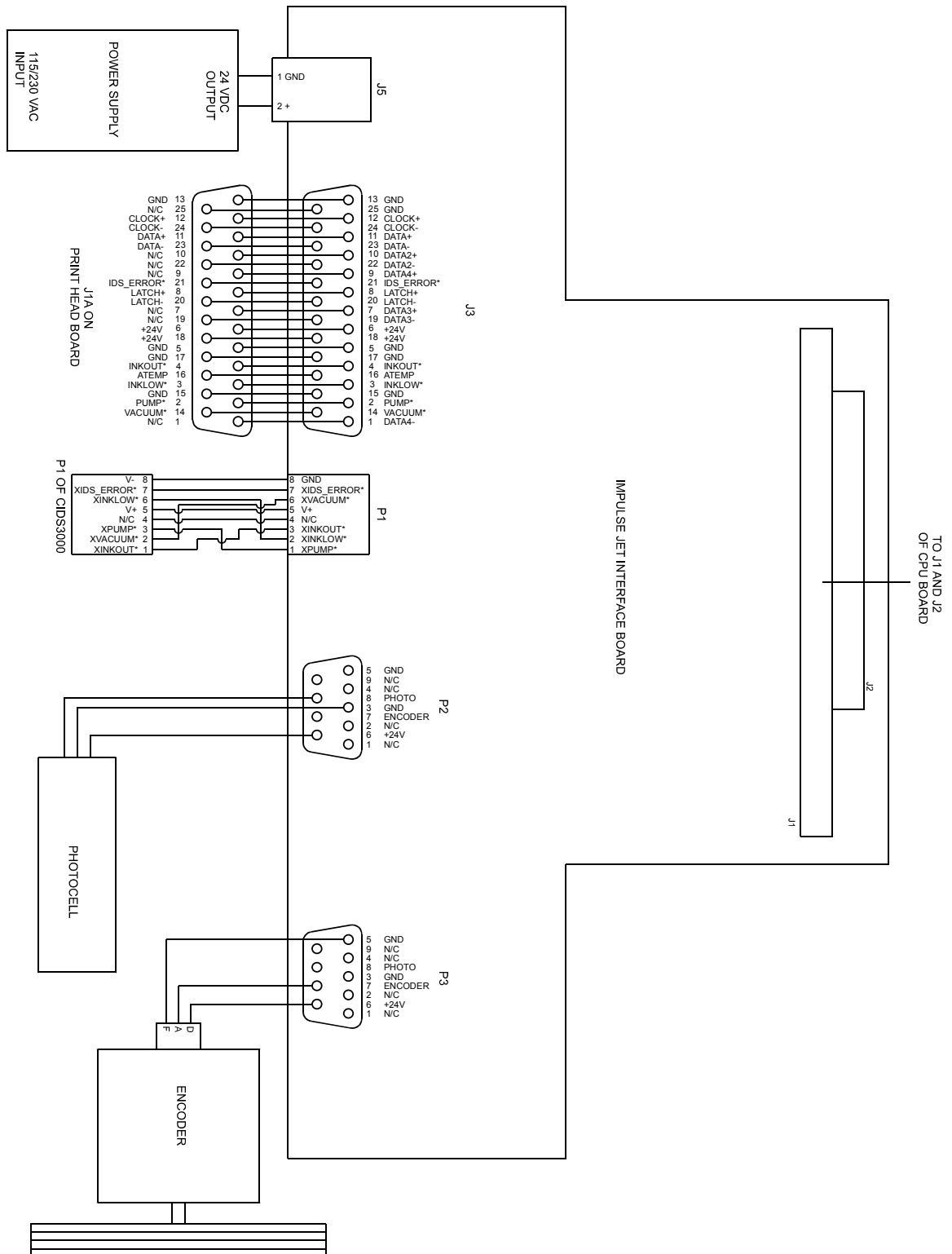
TP1:	5VDC
TP2:	3.3VDC
TP3:	(FPGA) DONE. LOW when the FPGA is being programmed. High when FPGA programming is complete.
TP4:	Print head CLOCK signal
TP5:	Print head DATA signal
TP6:	Print head LATCH signal
TP8:	PHOTOSENSOR signal
TP9:	DC power in (15V)
TP10:	External ENCODER signal
TP11:	GND
TP12:	(FPGA) INIT; goes LOW to indicate an FPGA programming error.
TP13:	(FPGA) PROGRAM; pulses low to initiate FPGA programming.

Interconnect Diagrams

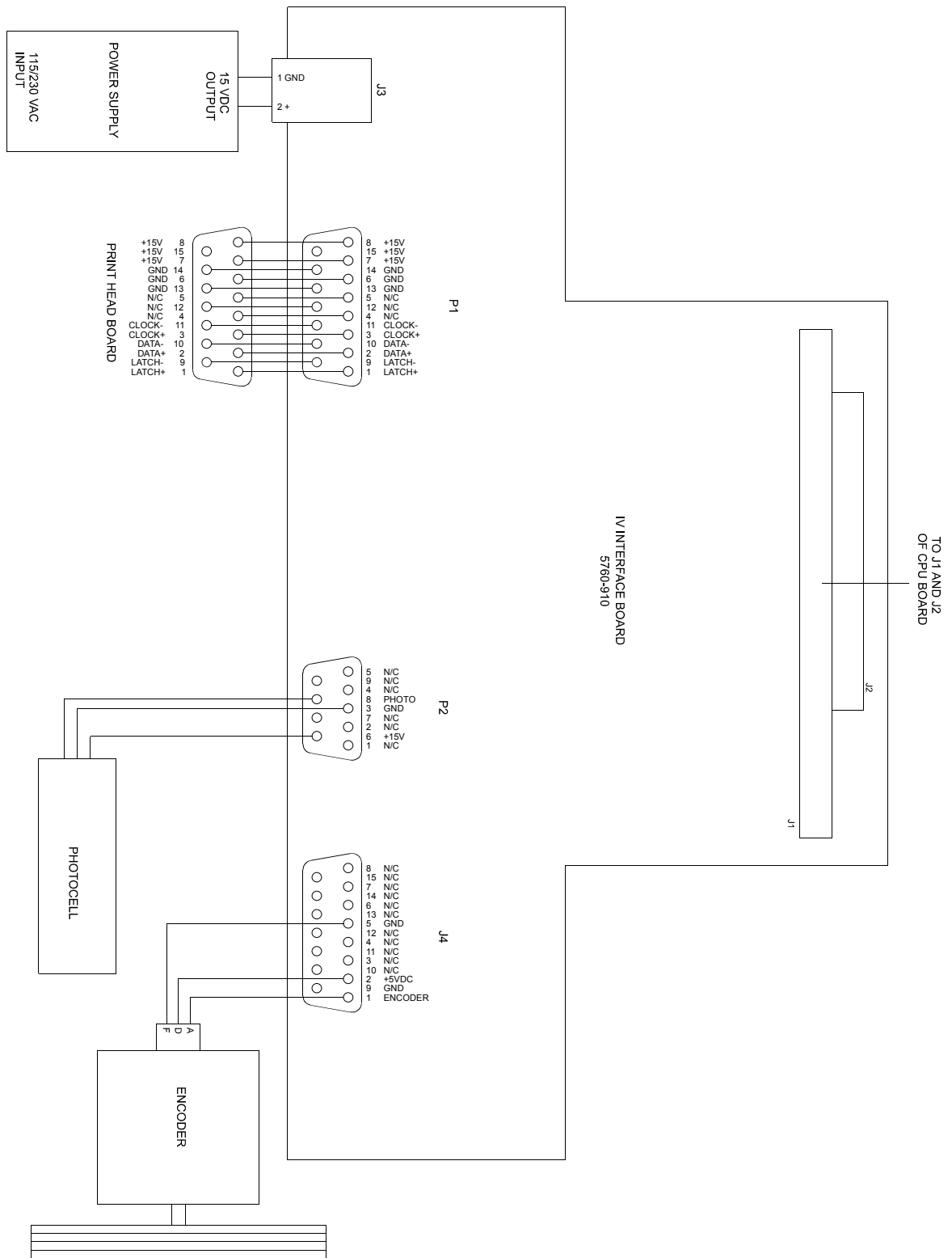
IJ3000 Controller CPU Diagram



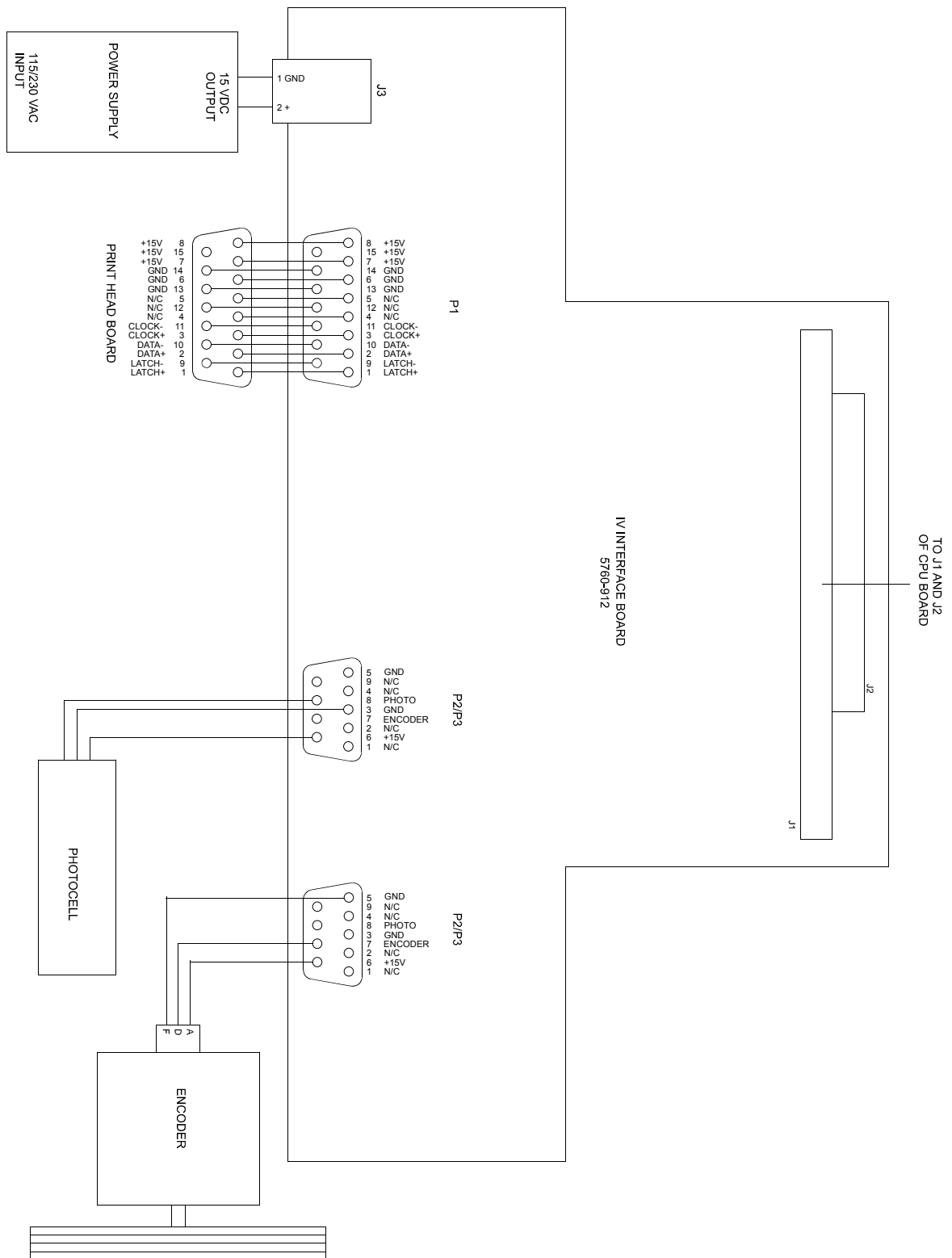
Impulse Jet Controller Interface Board Diagram



Integrated Valve Controller Interface Board Diagram (5760-910)



Integrated Valve Controller Interface Board Diagram (5760-912)



Appendix C: Parts and Supplies

Controller Battery

Type: CR1220, 3V for IJ3000-HH.



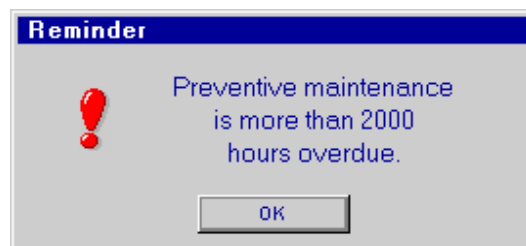
CAUTION: There is the danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.



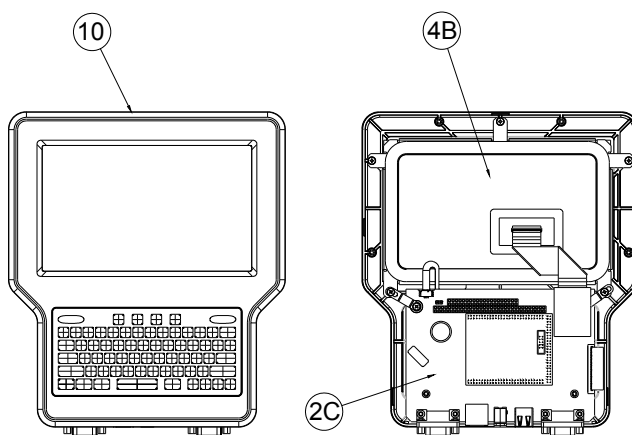
ATTENTION: Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Replacing the Battery

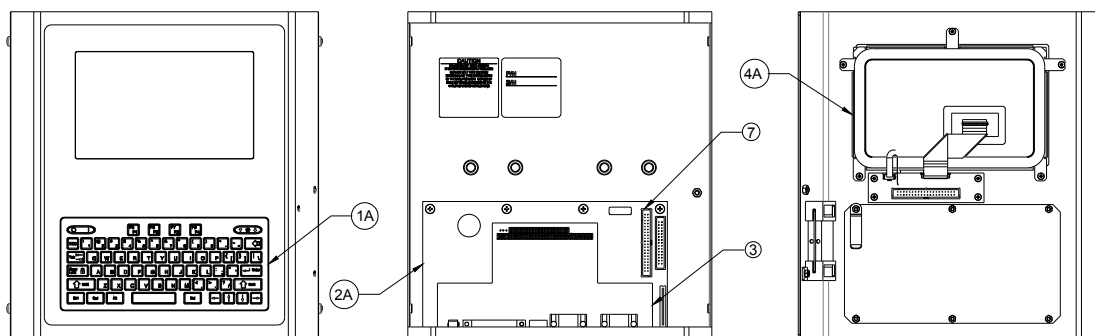
1. Go to the **Home Screen**.
2. Cancel any currently printing messages; save the product counts, if applicable.
3. Remove power from the controller by unplugging the power supply from all print head interface boards.
4. Remove and replace the battery on the CPU board.
5. Reapply power to the print head interface boards and wait for the Home Screen to become visible. If the Home Screen does not appear after a few minutes, press the **ON** button on the keyboard.
6. Recalibrate the touch screen.
 - a. If, after the Home Screen is displayed, a dialog box appears that says preventive maintenance is overdue, press the **Enter** key on the keyboard. DO NOT touch the **OK** button on the dialog box.
 - b. Press the spacebar on the keyboard to display the Home Screen buttons.
 - c. Press the 'T' key on the keyboard to display the Touch Screen Calibration Screen.
7. Set the time and date.
8. Restore system defaults.
9. Repeat Step 6.
10. Reset the total product counts.
11. Reset the Preventive Maintenance Timer.
12. Reload the message, if any, that was printing before the battery was replaced.



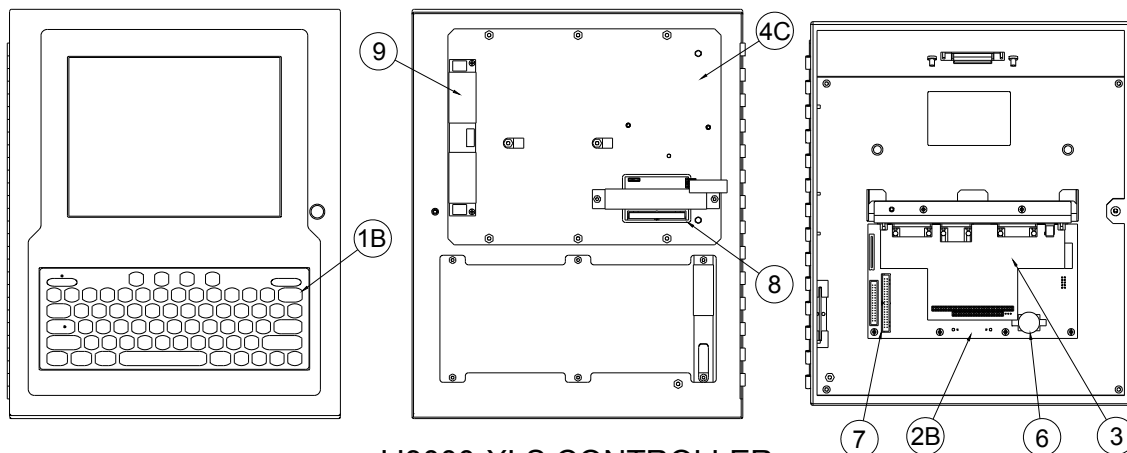
Controller Assembly Kits



IJ3000-HH CONTROLLER



IJ300-ES CONTROLLER



IJ3000-XLS CONTROLLER

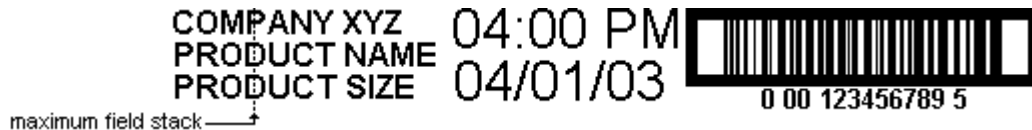
ITEM	PART NO.	DESCRIPTION
1A	5765-201	Keypad Replacement Kit, IJ3000-ES
1B	5760-301	Keypad Replacement Kit, IJ3000-XLS
2A	5765-214	CPU PCB Replacement Kit, IJ3000-ES
2B	5760-303	CPU PCB Replacement Kit, IJ3000-XLS
2C	5780-233	CPU PCB Replacement Kit, IJ3000-HH
3	5760-332	Impulse Jet Interface Board Replacement Kit
	5760-304	Integrated Valve Interface Board Replacement Kit
4A	5765-215	Display Replacement Kit, 7", IJ3000-ES
4B	5780-232	Display Replacement Kit, IJ3000-HH
4C	5760-836	Display Replacement Kit, 10.4", IJ3000-XLS
5	5760-713	Cable, Display to CPU PCB, 30 Conductor
7	5760-746	Cable, Display to CPU PCB, 40 Conductor
8	5760-903	IJ3000 XLS Display Connector Board
9	2465-127	Back Light Inverter, 10.4" Display
10	5780-015	IJ3000-HH Controller Replacement Kit
(not shown)	5760-302	15 VDC Power Supply Kit, Integrated Valve
(not shown)	5760-333	24 VDC Power Supply Kit, Impulse Jet
(not shown)	5760-745	Cable, Connector Board to Back Light Inverter, XLS

Appendix D: Performance Parameters

Performance Parameters: Impulse Jet Controller

The performance of an Impulse Jet Controller is limited by the DPI setting and the sum of the maximum field stacks on each side of a message. The maximum field stack for a side is defined as the maximum number of vertically aligned fields. In the following example, Task1:Side1 has a maximum field stack of three fields and Task1:Side2 has a maximum field stack of two fields. Thus, the sum of the maximum field stacks for Task1 is five fields.

$(\text{Task1:Side1}) + (\text{Task1:Side2}) = 3 + 2 = 5$ fields



Task1:Side1



Task1:Side2

If Task1 and Task2 are printing this same message, the sum of the maximum field stacks of Task1 and Task2 is ten fields. Thus, the maximum field stack the controller has to process is ten fields.

$(\text{Task1}) + (\text{Task2}) = 5 + 5 = 10$ fields

The following table can be used to determine the maximum line speed of a controller given a maximum field stack and dpi.

Maximum Field Stack of Controller	Max. Line Speed (ft/min) @			
	100 dpi	150 dpi	200 dpi	300 dpi
10 or less	400	267	200	133
11	363	242	181	121
12	333	222	166	111
13	307	205	153	102
14	285	190	142	95
15	266	177	133	88
16	250	166	125	83
17	235	156	117	78
18	222	148	111	74
19	210	140	105	70
20	200	133	100	66

The **absolute** maximum line speed for an IJ768 print head on a Task is 200 ft/min.

The **absolute** maximum line speed for one, two, or three Impulse Jet print heads on a Task is 400 ft/min, 300 ft/min, and 200 ft/min, respectively.

The Impulse Jet Print Head operational through-put (the maximum print speed) is determined by the density and resolution of the printed message. The print density is defined as the amount of printed dots in a given area, with a solid black image having a density of 100%. The higher the density, the higher the ink flow demand is in the print head. A typical alpha-numeric message has a print density of about 20%, while a 100% magnification I-2 of 5 bar code, has a print density of about 40%. A full-scale logo with a heavy background can have a density of up to 70%. The following tables identify the image rate versus print speed for various densities. The data shown is based on a 6" message printing at 200 dpi horizontal resolution.

Line Speed (fpm)	20% - 40% Density # of Images per Sec.	Above 70% Density # of Images per Sec.
50	2	2
100	2	2
150	2	1
200	2	1

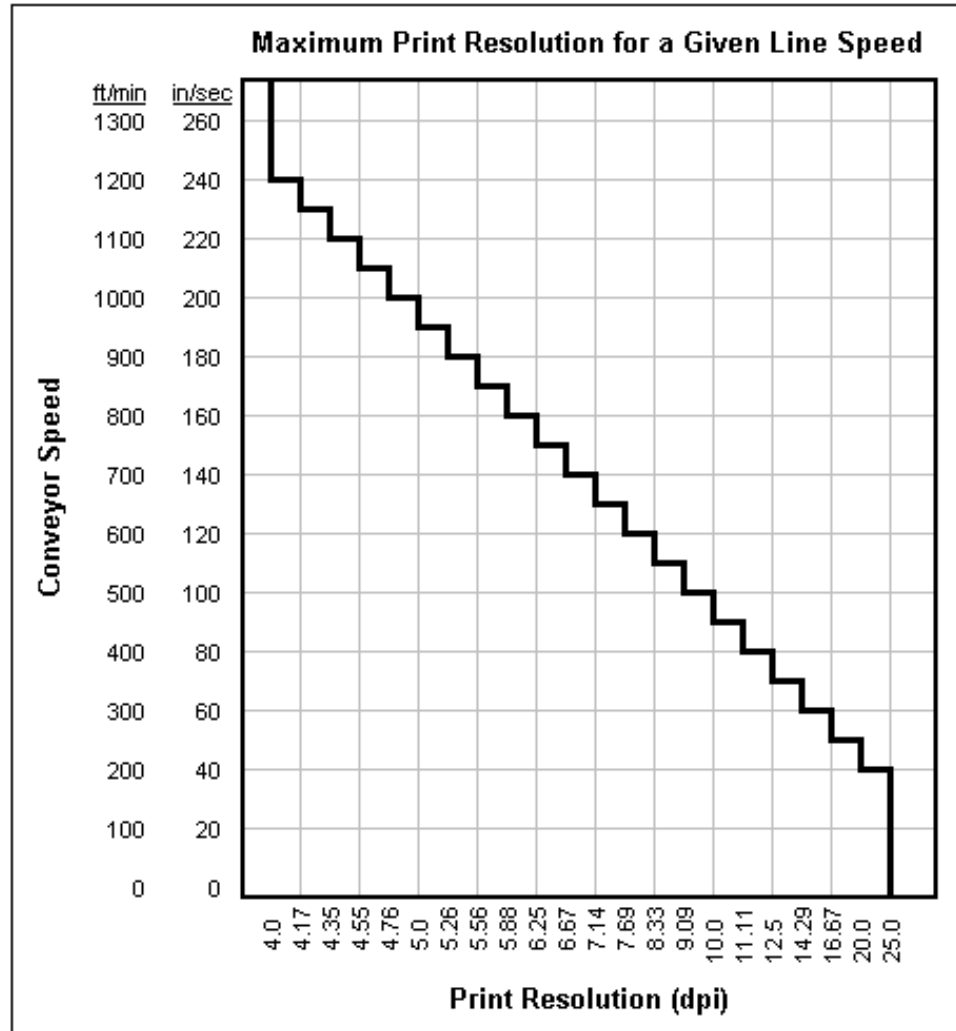
Performance Parameters: Integrated Valve Controller

The maximum line speed of an Integrated Valve Print Head is limited by the maximum frequency of the solenoid, which is 1000 Hz. The following steps will determine the operating frequency of the solenoids in the application. The graph on the following page can also be used to determine the maximum print resolution for a given line speed.

- Determine the values for:
 - Line speed in feet per minute: If a tachometer is not available, the line speed can be estimated by measuring the conveyor belt and using a stop watch to time one complete revolution of the belt. For example, a 20-foot, 7-inch conveyor belt takes 34 seconds to make a complete revolution. Divide 60 seconds by the number of seconds per revolution (34 in this case). Multiply the resulting number by the length of the belt (21 feet in this example; always round up to the next foot for this calculation). The answer is 37 feet per minute ($60/34 \times 21 = 37$).
 - Print resolution in dots per inch (dpi): Print resolution is selected through the software. This setting is measured in dots per inch; a setting of 4 denotes 4 dots, or print columns, per inch. Resolution can be set from 4 to 25 dpi.
- The operating frequency of the solenoids can be determined with these two parameters by following the next two steps:
 - Determine the line speed in inches per second. Divide the line speed in feet per minute by 5 to get inches per second. A line speed of 200 feet per minute is equal to 40 inches per second ($200/5 = 40$).
 - Multiply the number of inches per second by the dpi setting to determine the solenoid operating frequency in Hz (cycles per second). Printing at 25 dpi, at a line speed of 40 inches per second, would result in a frequency of 1000 Hz ($40 \times 25 = 1000$).

The operating frequency of an Integrated Valve Print Head must be less than or equal to 1000 Hz. If it exceeds 1000 Hz, the print head will have reliability and print quality problems. In such a case, the best solution is to decrease the print resolution, which will decrease the operating frequency.

To determine the maximum print resolution for a given conveyor, divide 1000 by the conveyor speed in inches per second. Using the previous example, 1000 divided by 40 inches per second equals 25 dpi maximum print resolution. Even if a higher resolution is desired, the Integrated Valve Print Head is not capable of it without encountering performance and reliability problems.

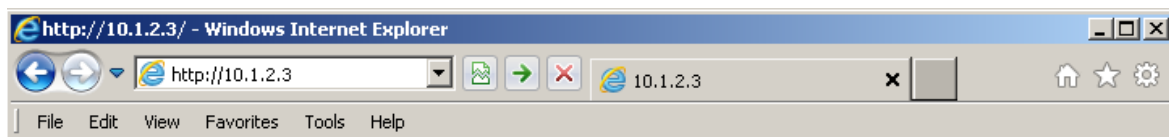


Appendix E: File Backup and Restore

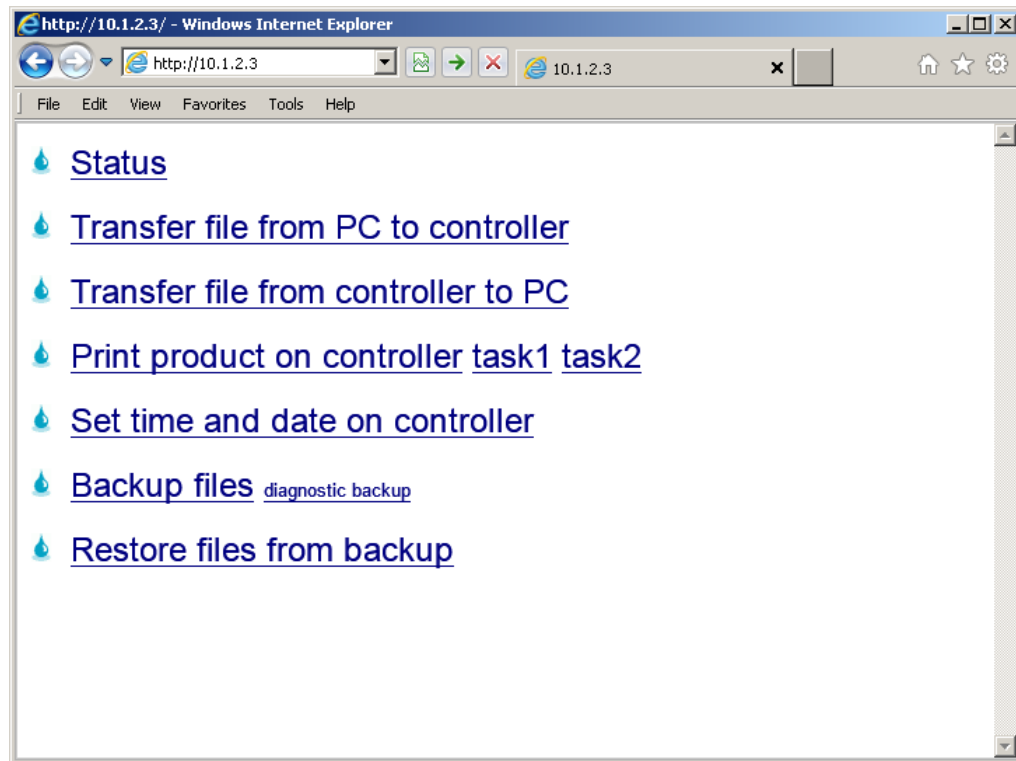
Use these procedures for making archival copies of the system configuration and print message files, and for preserving the system's configuration and print messages during firmware upgrades. File types saved during a backup are .cfg, .prd, .bmp and .alp. These are the system configuration files, message files, logo files and message attachment files, respectively.

These instructions describe backing up and restoring files to and from a PC, and assume the IJ3000 Controller is already connected to the PC via Ethernet. If not, please refer to *"Appendix I: Configuring a PC to Communicate with the IJ3000"* on page 123. To backup and restore to and from a USB memory device see the **Backup** and **Restore** utility functions described in *"File Operations"* on page 85.

1. Obtain the IJ3000 Controller's IP address. Most IJ3000 controllers have an IP address of **10.1.2.3**. It may be different if the controller is networked with other IJ3000s or other devices. If the IP address is unknown, go to the controller, and from the **Home Screen**:
 - Touch the **Control Panels** button to open the Control Panels Menu.
 - Touch the **Network** button on the Control Panels Menu to open the Network Setup Screen.
 - Touch the **IP Addresses** tab to display the system's IP addresses.
 - Record the IJ3000's IP address (it's the top one).
2. On the PC, start Microsoft Internet Explorer (must be version 3.2 or higher) or another web browser.
3. In the browser's address box type in "http://", followed by the controller's IP address. See the illustration below:



4. Press **Enter**. The web page shown below should appear.



File Backup

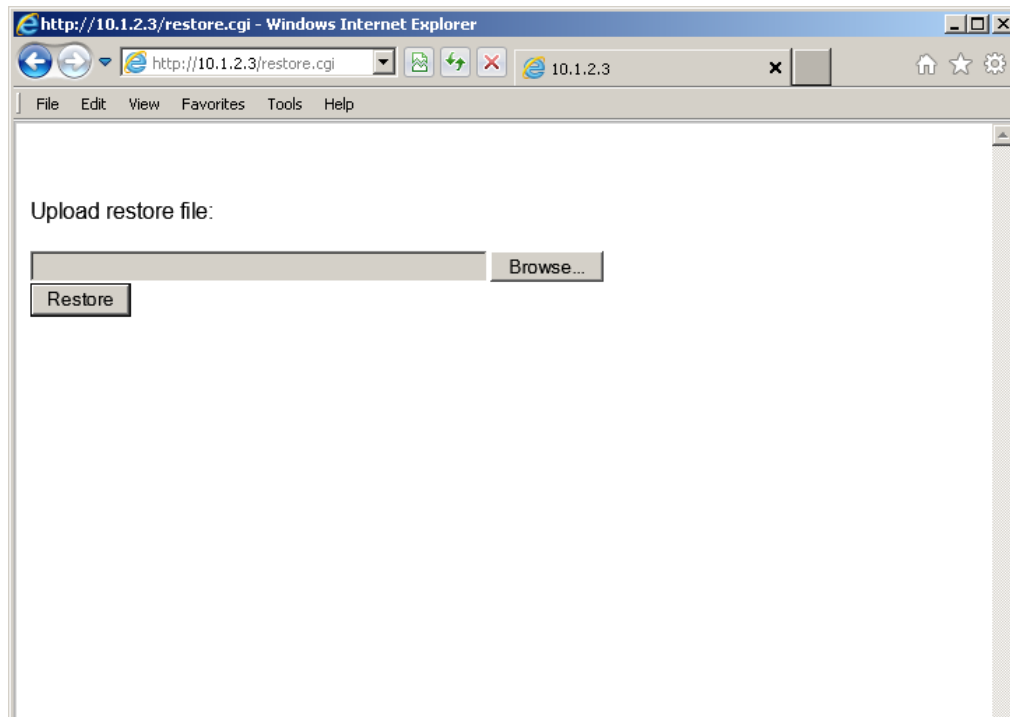
To backup the system files, click the **Backup files** link. The dialog box shown below (or a similar dialog box) will appear.



When backed up, IJ3000 files are compressed and put into a single file and given the default name and file extension **backup.tgz**. Following normal Windows® conventions, the backup file may be renamed and given any extension, and saved in any folder desired.

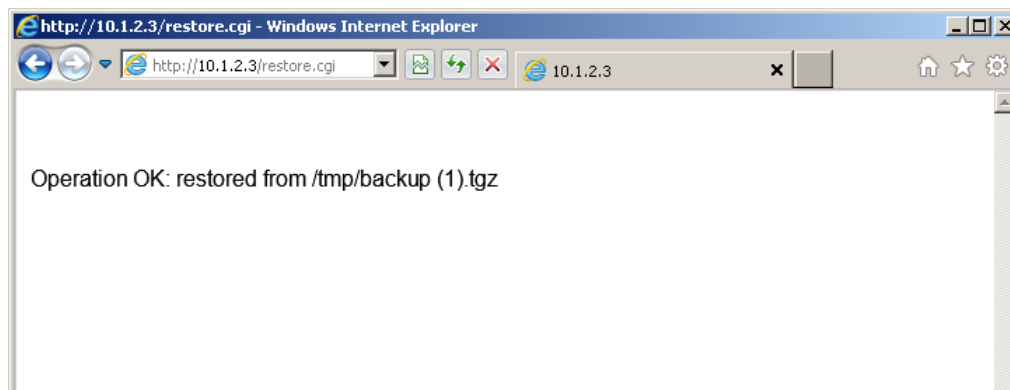
Restoring Backed-Up Files

To restore the controller's backed up system files, click the **Restore files from backup** link. The web page shown below appears.



Click the **Browse...** button to locate and select the backup file to be sent to the controller.

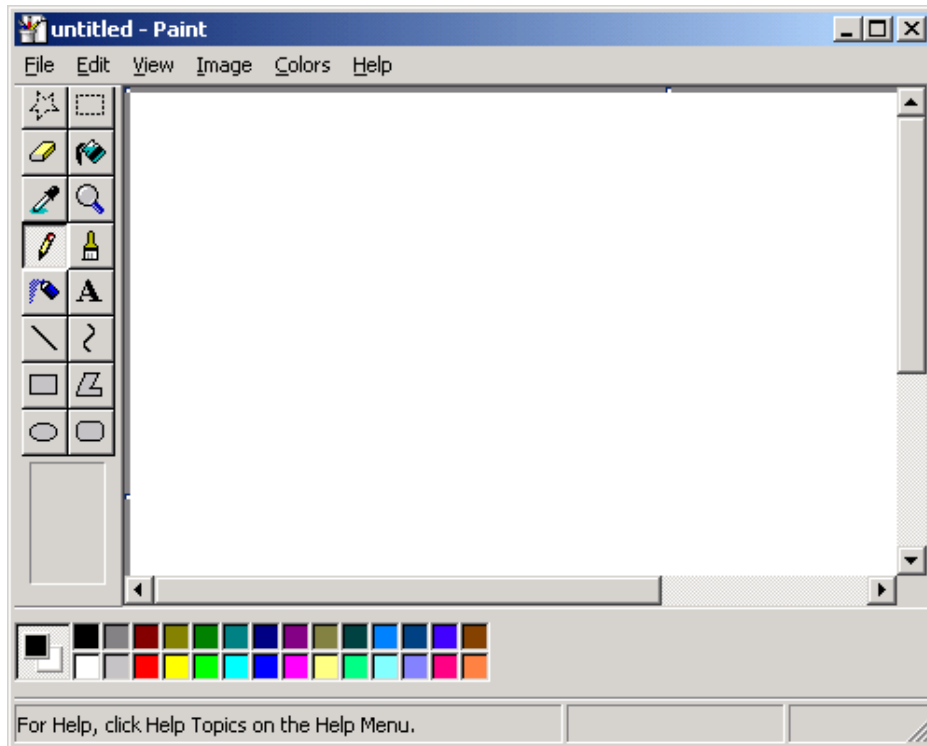
Click the **Restore** button to send the file to the controller. If the file transfer is successful, the message shown below is displayed. Click the browser's 'Back' button to return to the index page.



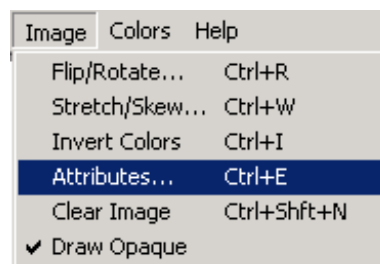
Appendix F: Creating Logo Files

Creating a Logo

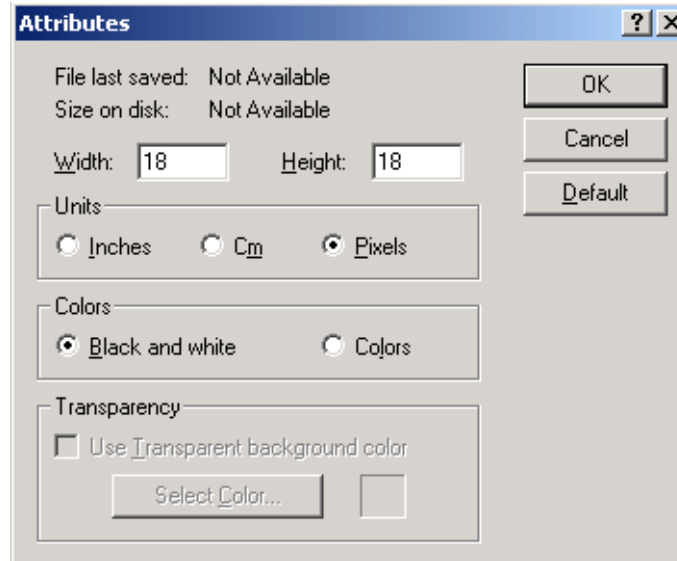
Open **Paint** from a PC by selecting **Start, Programs, Accessories**, and then **Paint**.



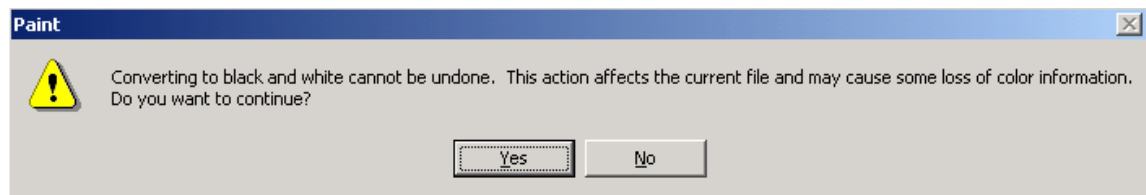
Bring up the **Attributes** dialog box by selecting **Image** and then **Attributes**.



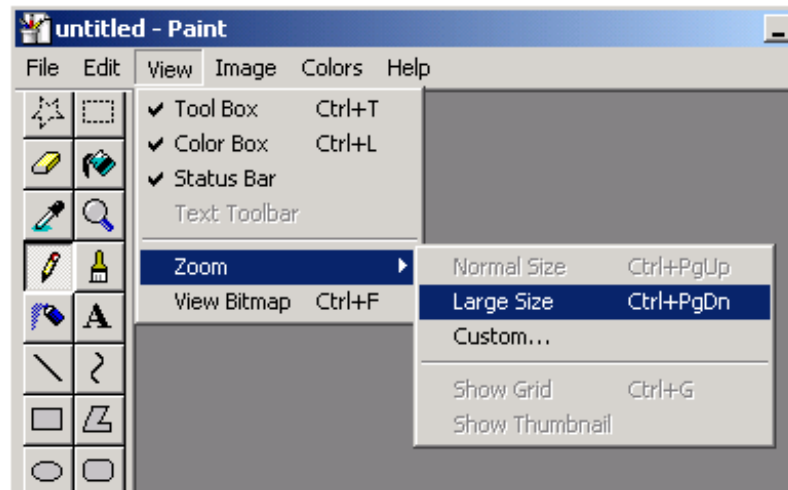
Enter the **Width** and **Height** of the logo in **Pixels**, then select **Black and white**.



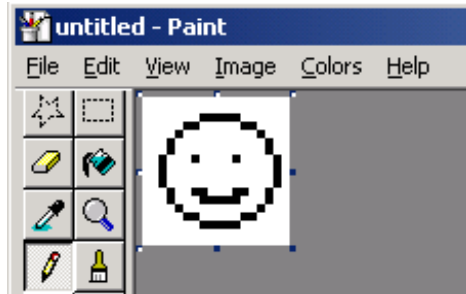
Choose **Yes** at the screen prompt to convert to black and white.



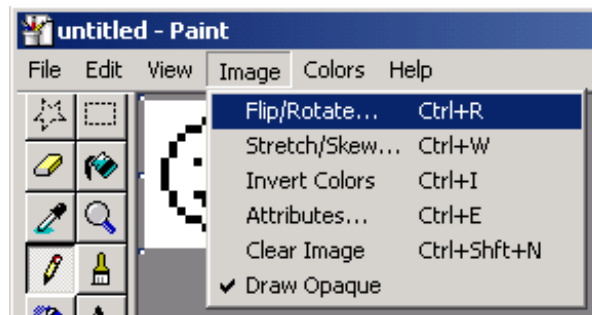
Zoom in by selecting **View, Zoom**, then **Large Size**. This will make defining the pixels easier.



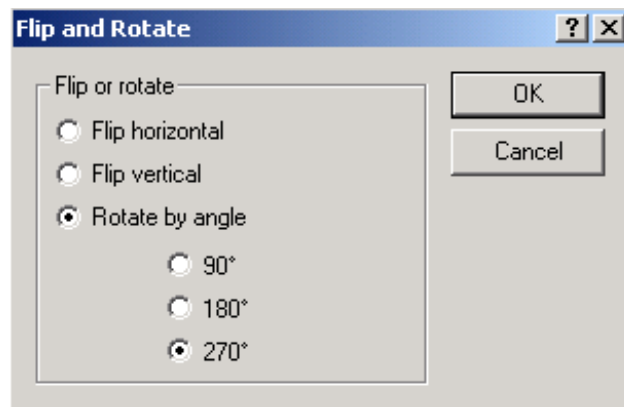
Define the pixels of the logo by using the pencil tool.



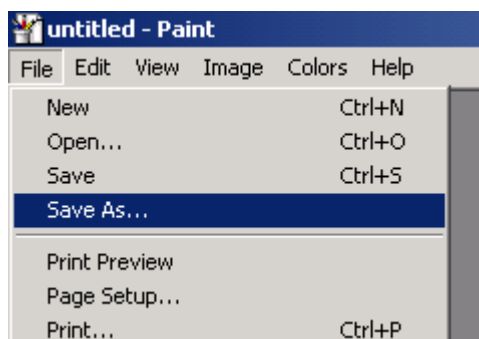
Bring up the **Flip and Rotate** dialog by selecting **Image, Flip/Rotate**.



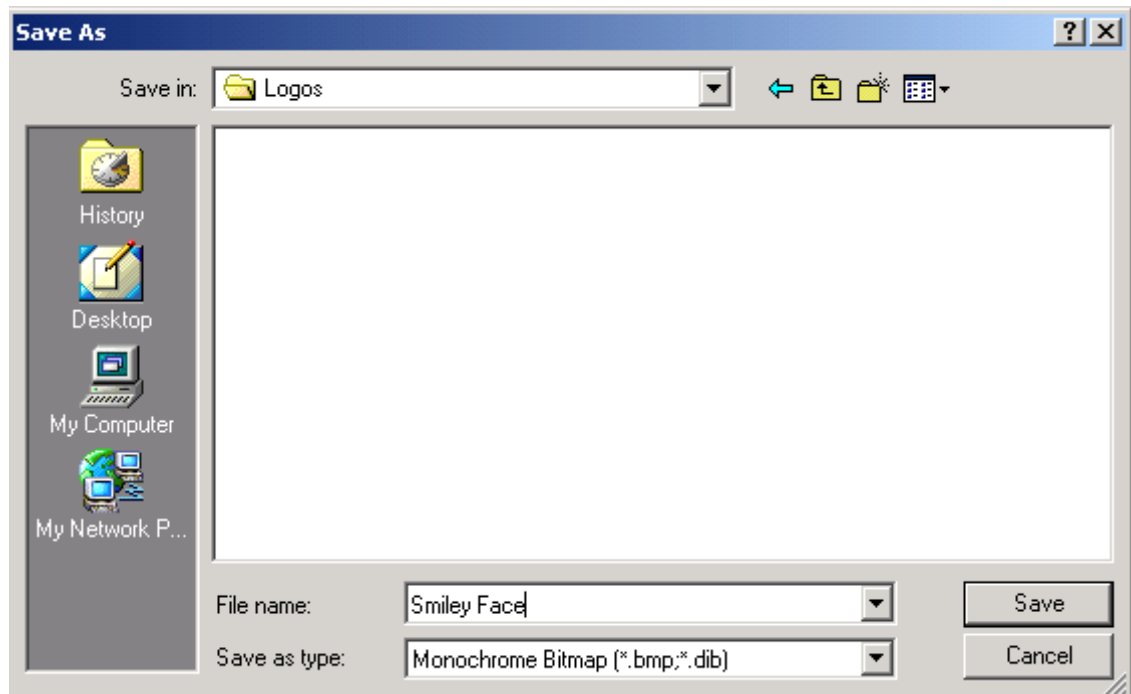
Select **Rotate by angle**, then **270°**.



From the **File Menu**, select **Save As...**



Name the logo and save it as a **Monochrome Bitmap** file in the desired folder.



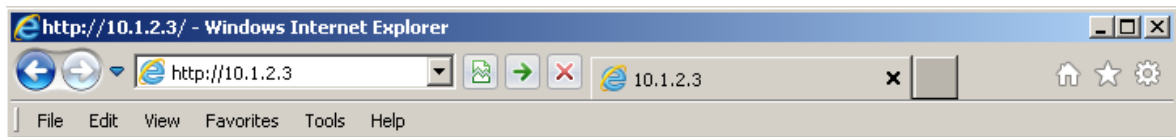
Appendix G: Transferring Logo Files

Transferring a File from a PC to an IJ3000

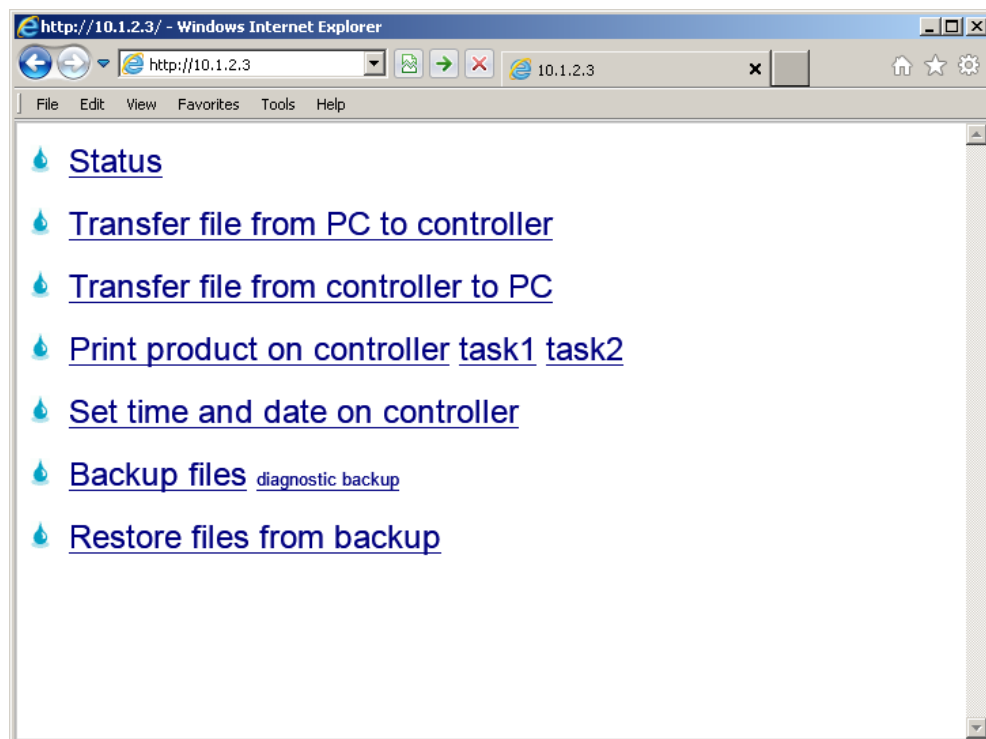
Use this procedure to transfer a font file, logo file, message file, or any other IJ3000-type file from a PC to a controller. If the controller already has a file with the same name as the one being transferred, the existing file will be replaced with the new file.

These instructions assume the IJ3000 Controller is already connected, via Ethernet, to a PC. If not, please contact your IT department or someone who knows how to set it up; or refer to "Appendix I: Configuring a PC to Communicate with the IJ3000" on page 123.

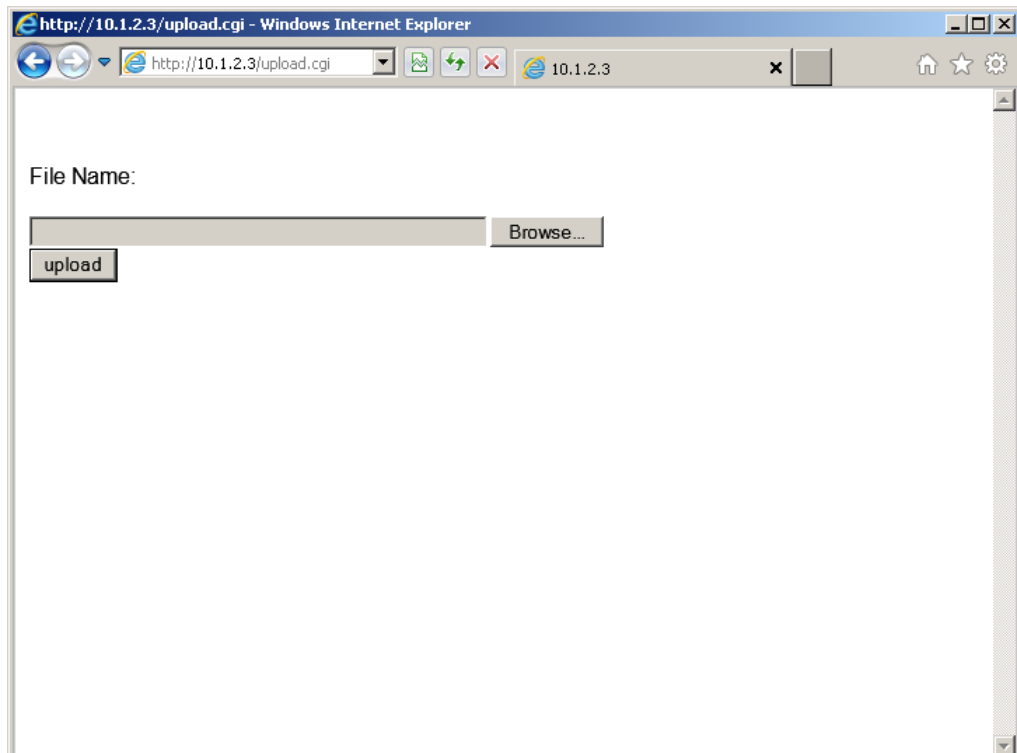
1. Obtain the IJ3000 controller's IP address. Most IJ3000 controllers have an IP address of **10.1.2.3**. It may be different if the controller is networked with other IJ3000s or other devices. If the IP address is unknown, go to the controller, and from the **Home Screen**:
 - Touch the **Control Panels** button to open the Control Panels Menu.
 - Touch the **Network** button on the Control Panels Menu to open the Network Setup screen.
 - Touch the **IP Addresses** tab to display the system's IP addresses.
 - Record the IJ3000's IP address (it's the top one).
2. On the PC, start Microsoft Internet Explorer (must be version 3.02 or higher) or another web browser.
3. In the browser's address box type in "http://", followed by the controller's IP address. See the illustration below:



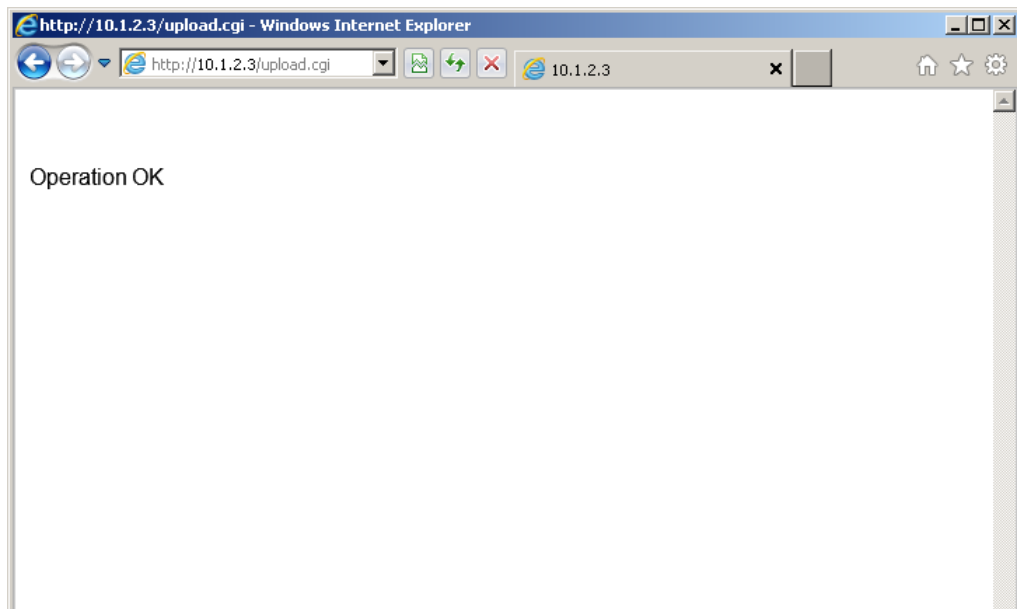
4. Press **Enter**. The web page shown below should appear.



5. Click the **Transfer file from PC to controller** link. The web page shown below is displayed.



6. Click the **Browse...** button to locate and select the file to be sent to the controller.
7. Click **upload** to send the file to the controller. If the file transfer is successful, the web page shown below will be displayed. If there is a problem, the page will state why the transfer failed.



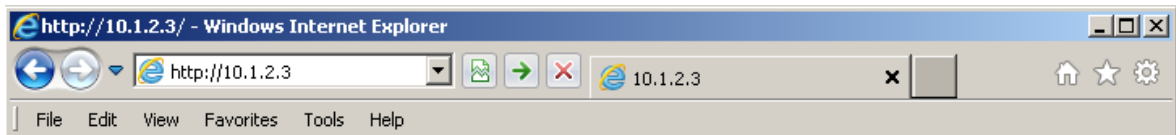
8. Click the **Back** button on the browser to repeat the procedure.

Transferring a File from an IJ3000 to a PC

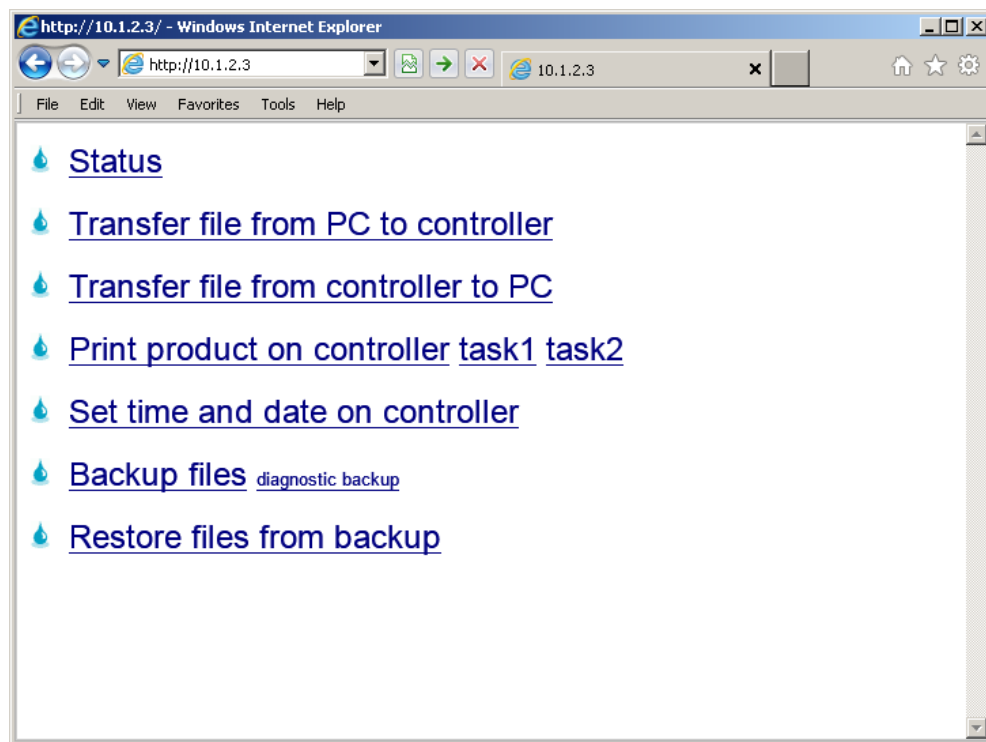
Use this procedure to transfer a font file, logo file, message file, or any other IJ3000 type file from an IJ3000 Controller to a PC.

These instructions assume the IJ3000 is already connected, via Ethernet, to a PC. If not, please contact your IT department or someone who knows how to set it up; or refer to "Appendix I: Configuring a PC to Communicate with the IJ3000" on page 123.

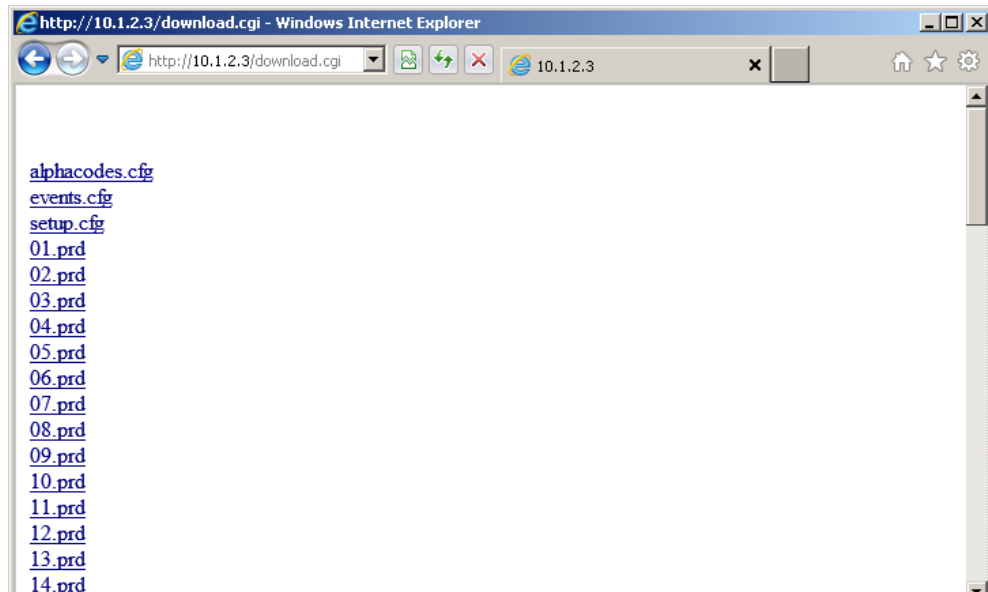
1. Obtain the IJ3000 controller's IP address. Most IJ3000 controllers have an IP address of **10.1.2.3**. It may be different if the controller is networked with other IJ3000s or other devices. If the IP address is unknown, go to the controller, and from the **Home Screen**:
 - Touch the **Control Panels** button to open the Control Panels Menu.
 - Touch the **Network** button on the Control Panels Menu to open the Network Setup screen.
 - Touch the **IP Addresses** tab to display the system's IP addresses.
 - Record the IJ3000's IP address (it's the top one).
2. On the PC, start Microsoft Internet Explorer (must be version 3.02 or higher) or another web browser.
3. In the browser's address box type in "http://", followed by the controller's IP address. See the illustration below.



4. Press Enter. The web page shown below should appear.



5. Click the **Transfer file from controller to PC** link. A web page lists all of the files on the IJ3000.



6. Scroll through the list to locate the file to be transferred from the IJ3000. Click on the file name to display the Windows® "Open/Save" dialog box.



7. Following normal Windows® conventions save the file in the desired folder.
8. Repeat steps 6 and 7 to save additional files.

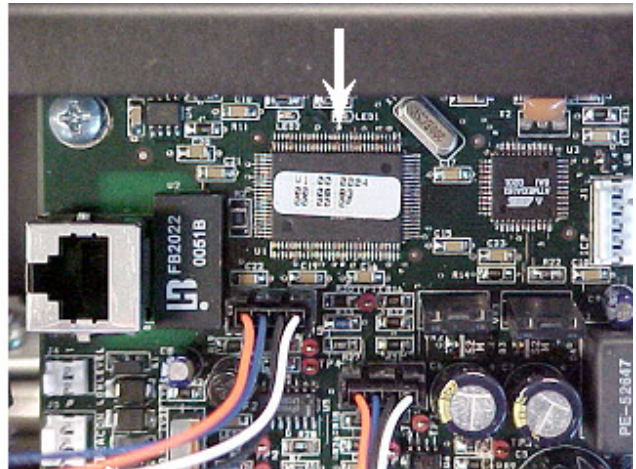
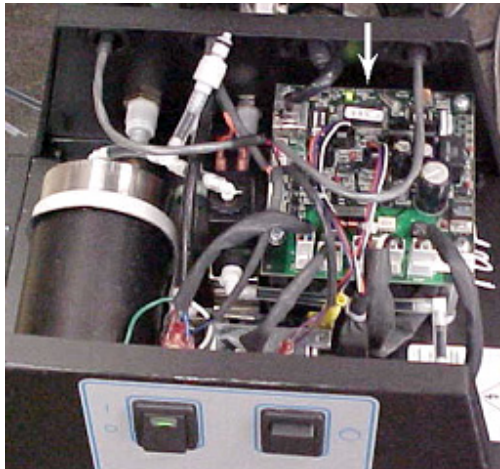
Appendix H: Setting the IP Address of an IDS3000

Equipment Needed

- IDS3000.
- PC with an Ethernet port.
- Ethernet crossover cable. (Diagraph part number 5760-240, shipped with the IDS3000.)
- The **setip.exe** program. (Available from Diagraph Customer Service.)
- Phillips head screwdriver.

Procedure

1. Install the **setip.exe** program on your PC.
2. Unplug the IDS3000.
3. Remove the IDS3000 cover.
4. Locate the integrated circuit with the label at the center back of the circuit board. (See photos below.)



The label will look similar to this:

```
V1.00.0024
00:06:08
00:00:13
```

Record the bottom two lines of numbers. This is the IDS3000 MAC address.

5. Plug one end of the Ethernet crossover cable into P1 on the circuit board. Plug the other end into the Ethernet connector on your PC.
6. Plug in the IDS3000 and turn it on.
7. Open a Command Prompt (DOS window) on your PC; go to the folder where you installed **setip.exe**.
8. Type **setip**, followed by a space, followed by the IDS3000 MAC address recorded in step 4, followed by a space, followed by the IP address for the IDS3000, then press Enter. For example, type **setip 00:06:0B:00:00:13 10.1.2.2**.
9. To verify that the IDS3000 was set to the desired address, type **ping**, followed by a space, followed by the address. For example, **ping 10.1.2.2**. If successful, the response will look something like this:

```
C:\>ping 10.1.2.2
Pinging 10.1.2.2 with 32 bytes of data:
Reply from 10.1.2.2: bytes=32 time=15ms TTL=30
Reply from 10.1.2.2: bytes=32 time<10ms TTL=30
Reply from 10.1.2.2: bytes=32 time<10ms TTL=30
Reply from 10.1.2.2: bytes=32 time<10ms TTL=30

Ping statistics for 10.1.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 15ms, Average = 3ms

C:\>_
```

An unsuccessful attempt will look like this:

```
C:\>ping 10.1.2.2
Pinging 10.1.2.2 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.1.2.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>_
```

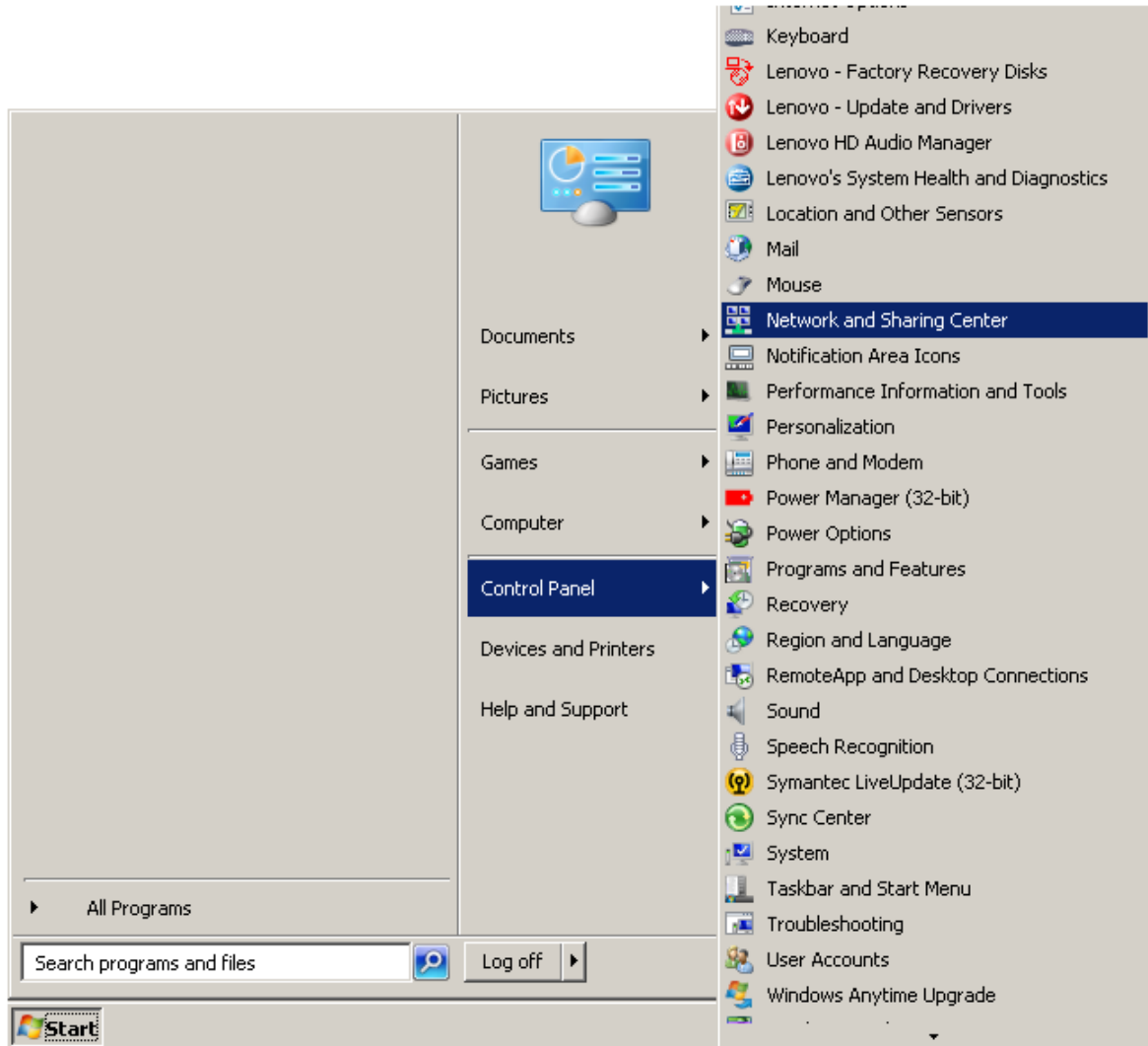
10. Turn off the IDS3000 and unplug it. Remove the Ethernet cable and put the cover back on.

Appendix I: Configuring a PC to Communicate with the IJ3000

This appendix has instructions for setting the IP address and subnet mask of the PC so it can communicate with the IJ3000 Controller. Included are instructions for Windows 7®, Windows XP®, and Windows 2000®.

Windows 7®

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



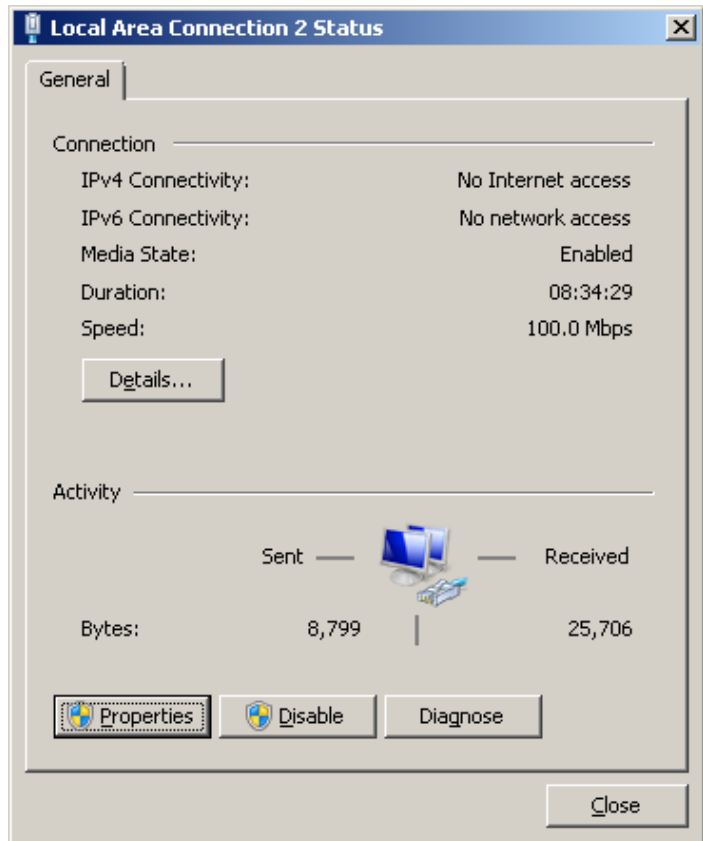
2. In the Network and Sharing Center window click on the **Local Area Connection** link for the desired network.



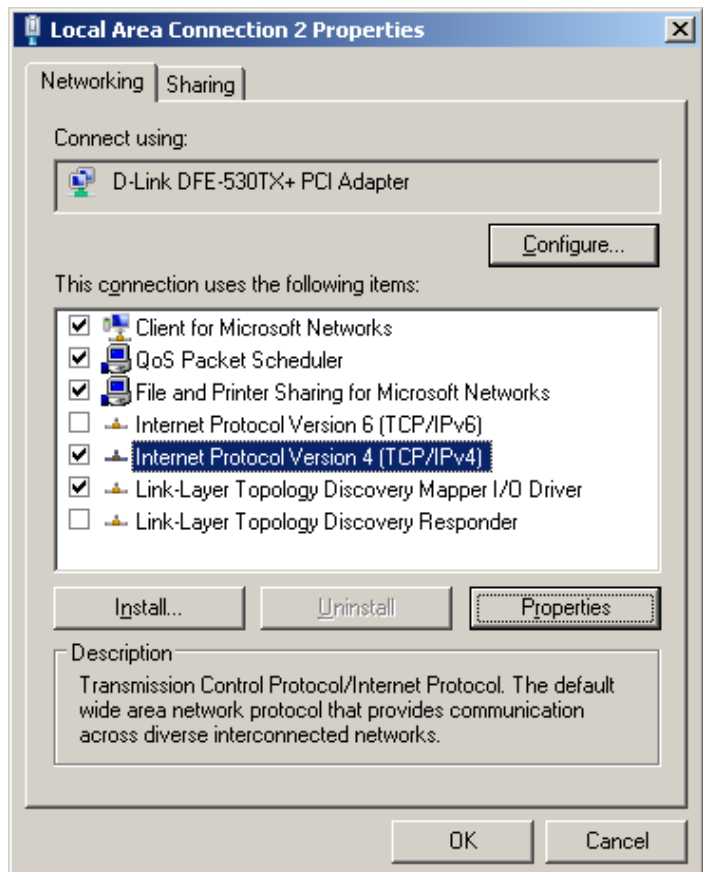
Unidentified network
Public network

Access type: No Internet access
Connections: [Local Area Connection 2](#)

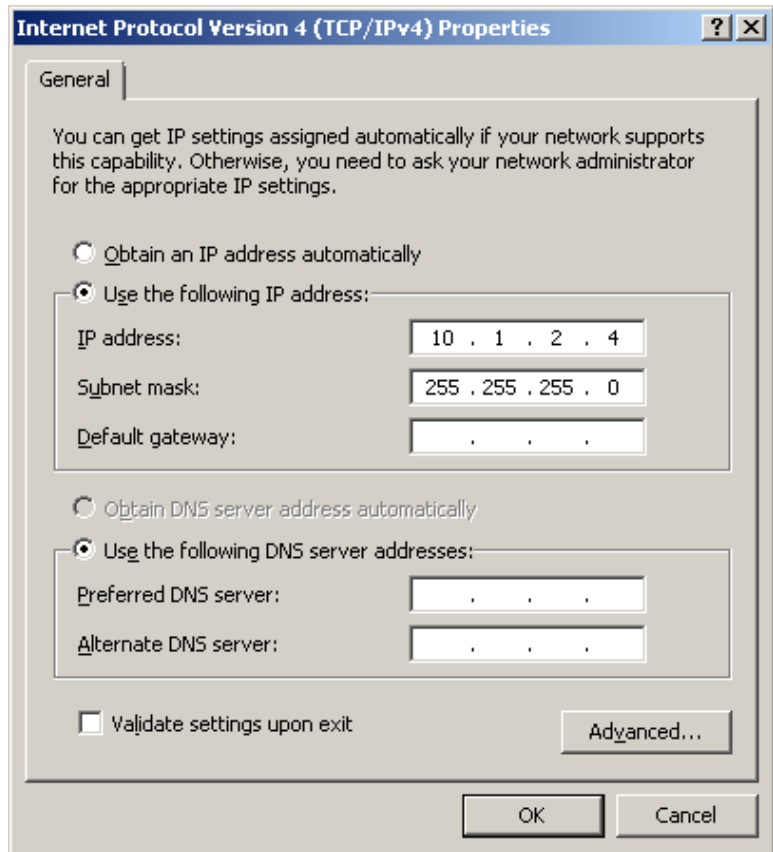
3. On the **Local Area Connection Status** dialog box click the **Properties** button.



4. On the **Local Area Connection Properties** dialog box select **Internet Protocol Version 4 (TCP/IPv4)**, and then click the **Properties** button.

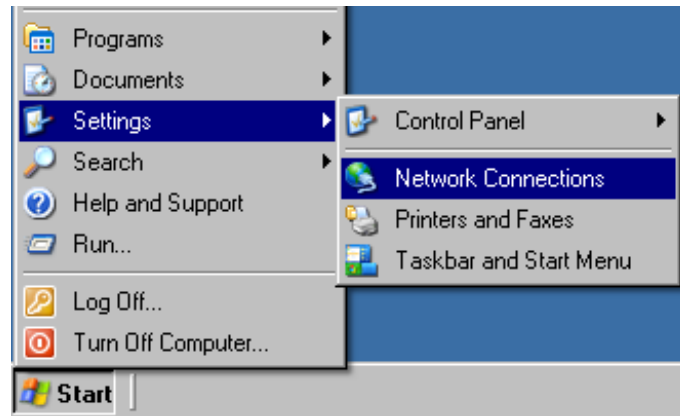


5. On the **Internet Protocol Version 4 Properties** dialog box select the **Use the following IP address** radio button, and then enter an IP address of 10.1.2.4, and a subnet mask of 255.255.255.0 and click the **OK** button.
6. Close all open dialog boxes by clicking their **CLOSE** buttons.

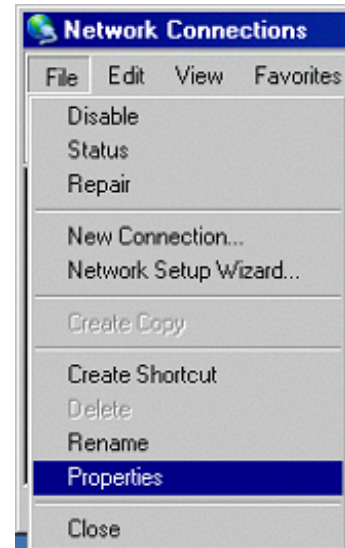
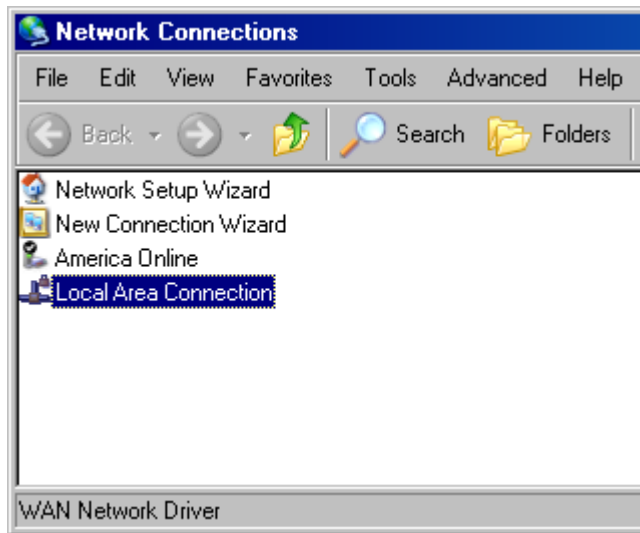


Windows XP®

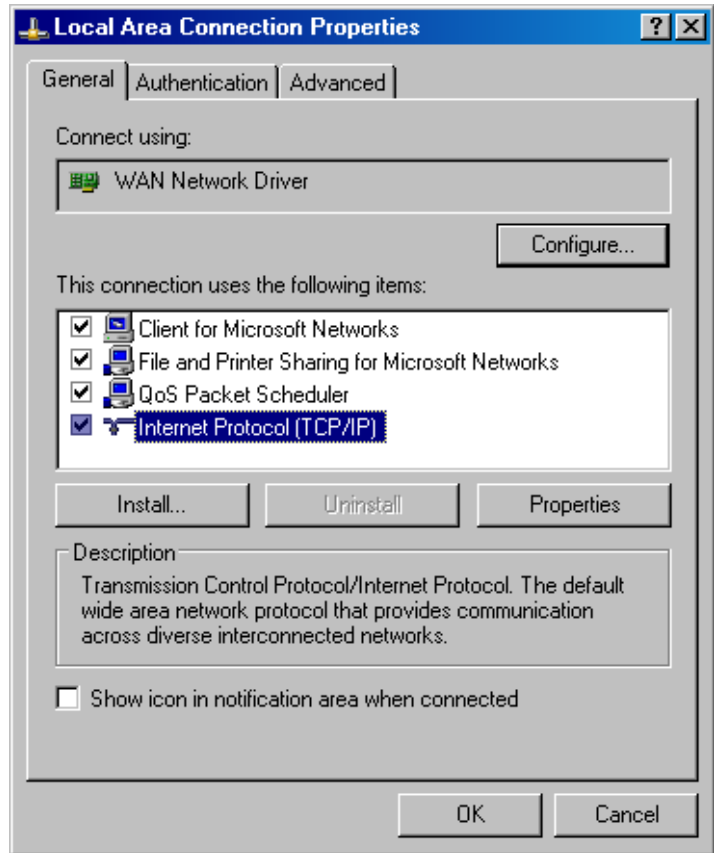
1. Open the **Start** menu; select **Settings**, then **Network Connections**.



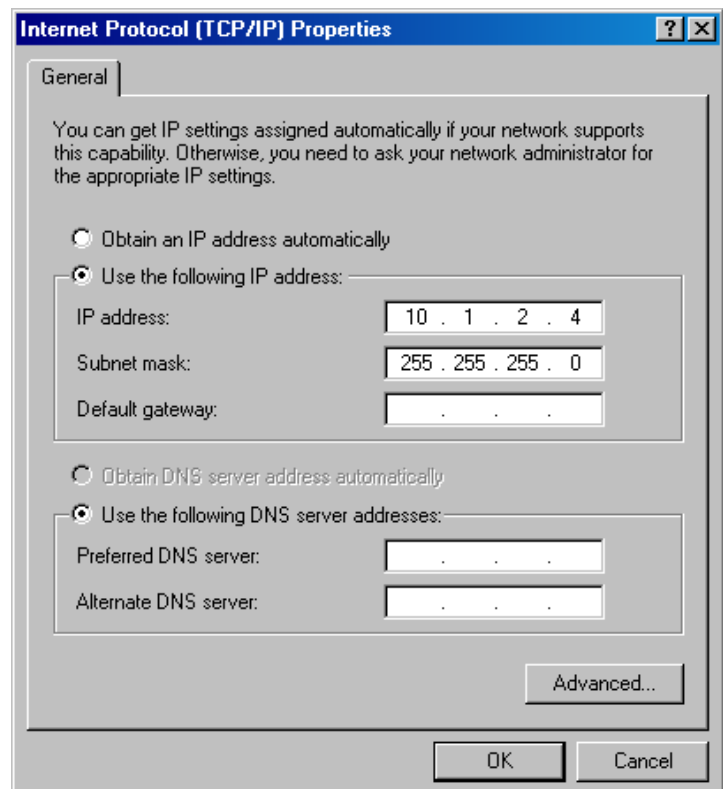
2. Click **Local Area Connection**, then open the **File** menu and select **Properties**.



3. Select **Internet Protocol (TCP/IP)** then click the **Properties** button.

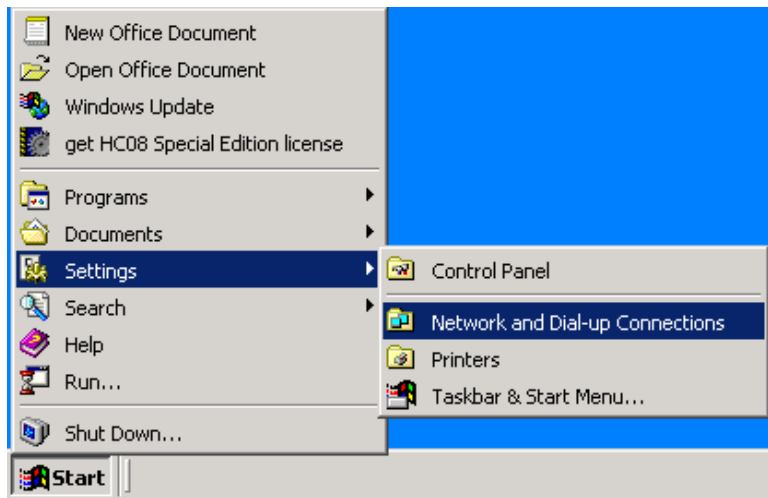


4. Click the **Use the following IP address** radio button. Enter an IP address of **10.1.2.4**, a subnet mask of **255.255.255.0**, and click the **OK** button.
5. Close the **Local Area Connection Properties** dialog box by clicking its **CLOSE** button.

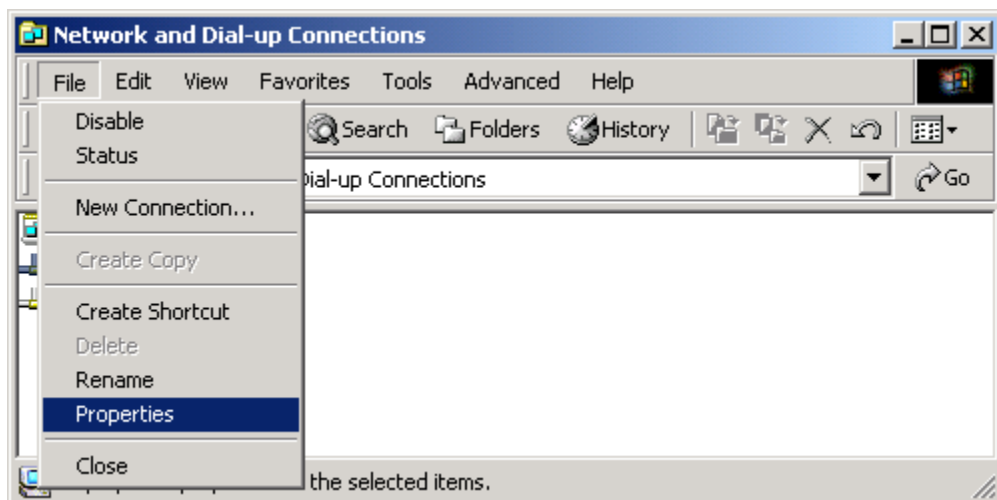
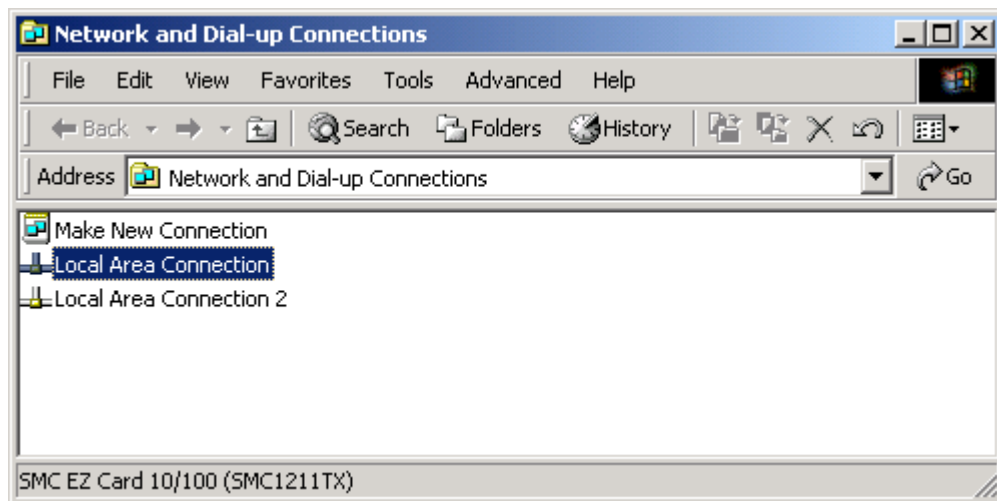


Windows 2000®

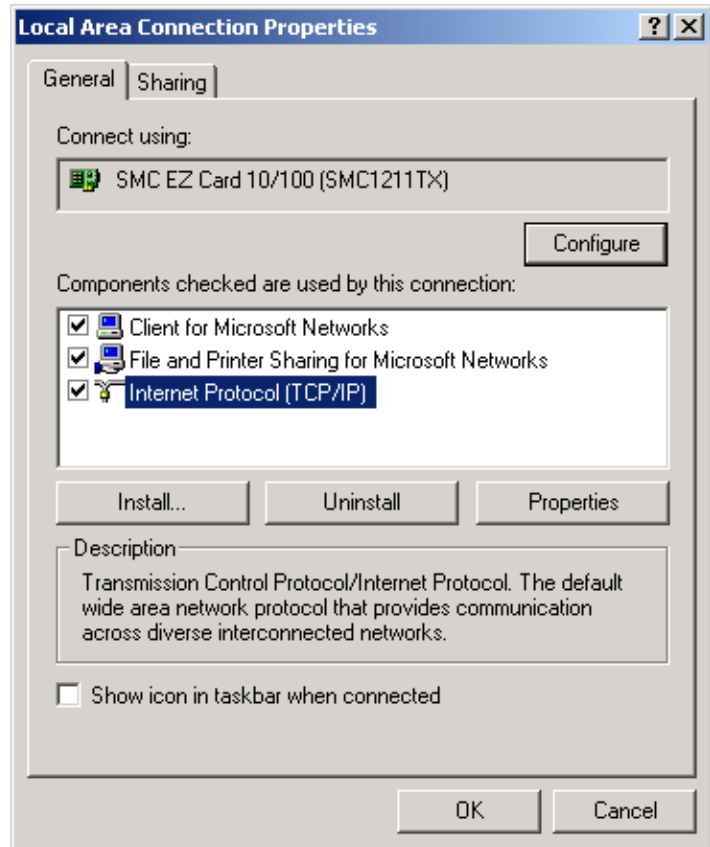
1. Open the **Start** menu; select **Settings**, then **Network and Dial-up Connections**.



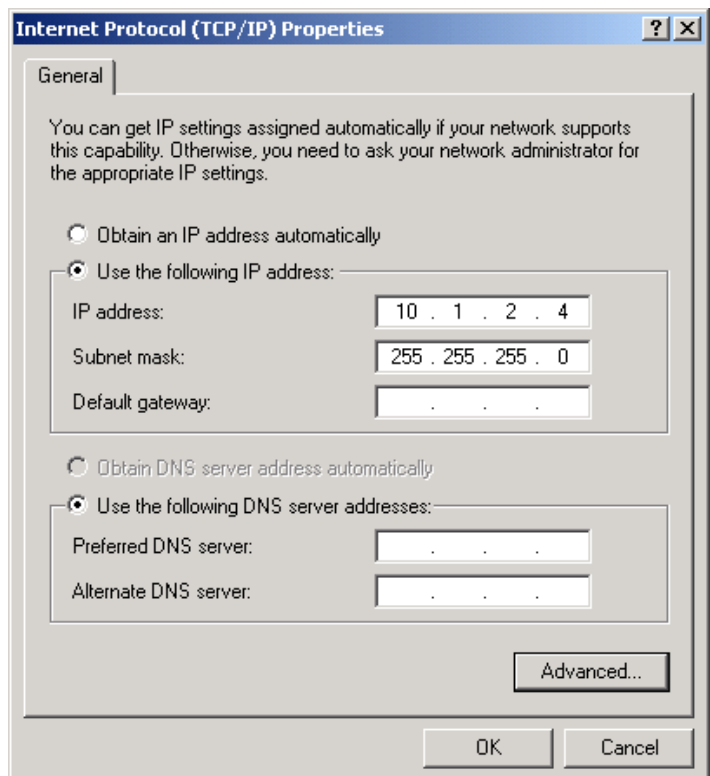
2. Click the desired connection, then open the **File** menu and select **Properties**.



3. Select **Internet Protocol (TCP/IP)** then click the **Properties** button.

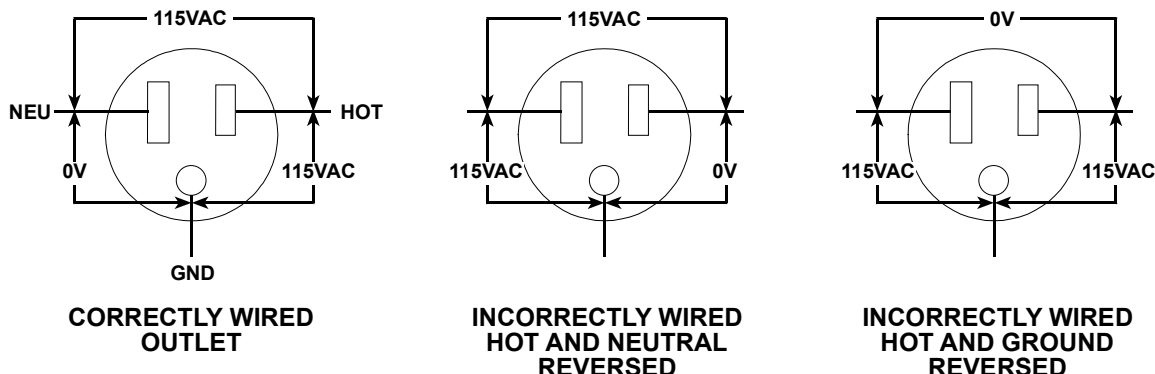


4. Click the **Use the following IP address** radio button. Enter an IP address of **10.1.2.4**, a subnet mask of **255.255.255.0**, and click the **OK** button.



Appendix J: Testing an Electrical Outlet

An outlet tester is the preferred method of checking an electrical outlet, although a voltmeter can also be used.



BACKGROUND INFORMATION ABOUT AC WIRING

Equipment running at 115VAC must have one hot wire and one neutral wire. Additionally, a separate ground wire runs to non-current carrying parts of most loads.

THE WIRES IN AN AC OUTLET (115VAC)

WIRE	DESCRIPTION	FUNCTION
LINE	Usually black. Cannot be white or green.	Carries the live voltage and current to the equipment.
NEUTRAL	White or natural gray.	Grounded at the service equipment* only. Serves as the return for 115 volts.
GROUND	Bare, green, or green with yellow stripes. May be metal armor or metal conduit.	Grounded at the service equipment* and every metal box or cabinet. Runs to non-current, carrying parts of most loads.

*The service equipment is defined as "the equipment used to disconnect the entire building and overcurrent device to protect the entire installation, but not the branch circuits individually."

At the service equipment, a single ground wire connects both the neutral and ground to earth. The NEC calls this wire the "ground electrode conductor."

Appendix K: Electrostatic Discharge (ESD)

What is ESD?

Electrostatic Discharge (ESD) is a triboelectric charge generated by separating or rubbing together two non-conductive materials.

What causes ESD?

Friction can cause ESD. Friction can be generated by walking across a floor, removing tape from a tape dispenser, pulling a work order from a plastic work order holder, rolling the wheels of a push-cart across the floor, sitting on a foam cushion such as a stool or blowing air across a nonconductive surface.

Source	70-90% Relative Humidity Volts	10-20% Relative Humidity Volts
Walking across a carpet	1,500	35,000
Working at a bench	100	12,000
Sitting on a foam cushion	600	20,000
Removing plastic bag from bench	12,000	20,000
Removing work-order from plastic pouch	600	7,000

ESD at the print station can be caused by the product rubbing against ungrounded guide rails, conveyor belt static voltage build-up, or a residual static charge on the product from earlier processing.

Generally, ESD problems are more prevalent in the winter months. Heated air has a much lower relative humidity than the cold air had prior to heating. In many instances ESD problems appear in the fall when the outside temperature drops, and go away in the spring when the outside temperature begins to rise.

What are the effects of ESD?

Unexplainable system resets, controller lockups, and multiple prints on the product can be signs of static discharge to the system. When static electricity is discharged to an electronic circuit (components or printed circuit boards), permanent damage may also occur. This damage may be in the form of reduced functionality, reduced life, or complete non-functionality.

The static charge does not have to be noticeable to the human touch in order to cause problems in an electronic system. A human being does not start to feel the effects of static electricity until the voltage reaches or exceeds 4,000 volts. Voltage as small as 100 volts can cause problems with some sensitive electronic components.

What prevents ESD?

Prevention begins with training and knowledge. The use of wrist straps, heel straps, work-bench mats, floor mats, and monitoring systems for electronic devices will drastically reduce the ill effects of ESD when handling circuit boards. ESD wrist straps should be used when handling electronic components or printed circuit boards.

If static discharge is suspected of causing controller problems at the print station, check the grounding of the conveyor and print station components. Nonconductive or ungrounded guide rails are the most common cause of static discharge. Ionized air blowers and static dissipating material have proven effective in eliminating many static problems.

Appendix L: Glossary of Terms

Autocode - A field entered into a message to print a variable such as date, time, pallet count, or plant location.

COM - Abbreviation for a serial communications port on a computer. Usually expressed as "COM port" or associated with a number, "COM 1" or "COM 2."

Input Focus - A screen control that receives input by information entered through the keypad.

Inverse Video - Information on the computer screen in which the typeface is light and the background is dark. (As opposed to standard video where the typeface is dark and the background is light.)

RS-232 - Serial communication standard employed by personal computers. It defines three types of connection (electrical, functional and mechanical) usually used with 25-pin D-shaped connectors.

RS-422 - Serial communication standard which allows transmissions over long distances at high speeds.