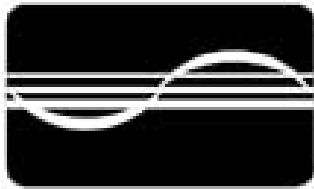


ITK-24i Printer User Manual



PRACTICAL AUTOMATION INC

VERSION NOTES

<i><u>Version</u></i>	<i><u>Date</u></i>	<i><u>Description</u></i>
V1.00:	09/21/07	First Release

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1 ADMINISTRATIVE INFORMATION

1.1 How To Contact Us.

PRACTICAL AUTOMATION INC.
The Alinabal Group of Companies
45 Woodmont Road
P.O. Box 3028
Milford, CT 06460
VOICE: (203) 882-5640
FAX: (203) 882-5648
EMAIL: pa@practicalautomation.com
INTERNET: <http://www.practicalautomation.com>

1.2 Limited Product Warranty

1.2.1 *Warranty Terms*

Practical Automation, Inc. warrants each new ITK-24i series printer to be free from defects in materials and workmanship to the original purchaser. Our responsibility is limited to repair or replacement of the printer and/or accessory or part thereof at our option for a period of one year from the date of shipment.

This limited warranty does not extend to any defect, malfunction or failure caused by or resulting from improper service, packing, maintenance or repair, abuse, neglect, accident, or any other cause beyond the control of Practical Automation, Inc. or to any product whose serial number has been removed, altered, replaced or rendered illegible.

Except and to extent provided herein, Practical Automation, Inc. makes no warranty, either express or implied, including any warranty of merchantability or fitness for a particular purpose.

Practical Automation, Inc. shall not be liable to the purchaser or to any other person or firm for any specified or consequential damages of any kind which result from the use or misuse by any person or loss of profits or product resulting from any defect or malfunction or failure of this product.

No person, agent, distributor, service facility or company is authorized to change, modify or amend the terms of this limited warranty in any manner or fashion whatsoever.

1.2.2 *Warranty Procedure*

If you cannot resolve your equipment problem, notify Practical Automation, giving the model and serial number of your equipment. Visit the website for further details.

Upon receipt of this information, Practical Automation will send you service information if the trouble is easily corrected. If the trouble requires factory service, we will so advise and provide written return authorization. Customers are required to pay all inbound shipping charges.

Refer also to the Warranty Terms and Packaging and Shipping instructions before returning any equipment.

1.3 FCC Notification

FOR USERS IN THE UNITED STATES

WARNING:

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designated to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Shielded cables must be used with this unit to insure compliance with the Class A FCC limits.

FOR USERS IN CANADA

This Class [A] digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numerique de la classe [A] respecte toutes les exigences du Reglement sur le material brouilleur du Canada.

1.3.1 Regulatory Compliance

CE Mark:	Compliant
Safety:	UL 60950-1 CSA C22.2 No. 60950-1-03 CENELEC EN 60950-1
EMI/EMC:	FCC Part 15 Class A CENELEC EN 55024 and EN 55022 Class B

1.3.1.1 Regulatory Compliance Caution

In order to insure EMI/EMC compliance, the USB cable should be USB 2.0 compliant and shielded.

1.4 Trademarks

All references to Windows™ products are trademarks of Microsoft. All other trademarks are property of the manufacturers, and used for reference only.

2 ITK-24i OVERVIEW

2.1 Introduction

This instruction manual provides information for the ITK-24i printer and its associated support options. It provides installation, operational, programming, systems applications notes and maintenance information.

2.2 Product Description

The ITK-24i printer is designed for use in self-service kiosks, where stand-alone operation requires the utmost in reliability. The standard USB 2.0 port is complemented by a double-buffered memory to create a fast and efficient system for printing single and multi-page documents.

The standard Loop Presenter provides excellent jam protection by keeping the document inside the kiosk until the printing and cutting is complete. The document is then quickly presented to the customer. The loop is formed above the printer, where there should be space available.

A Cutter Only version is available for kiosks where a drop chute or tray is provided.

The printer driver and DLL tools allow for the host and application to determine the printer's status at all times. The status provides the OEM host system with information such as: low paper, out of paper, ticket taken, error conditions, etc.

An external 24V desktop power supply module is used for ITK-24i. This single voltage operation (24V) makes for easier integration into an OEM system power distribution scheme. Please contact the factory before using your own power supply.

The ITK-24i operates under the Windows operating system utilizing a WYSIWYG driver supplied by Practical Automation. Visit our website, <http://www.practicalautomation.com> for the latest Drivers. Combined with a raster organized printer controller, this flexible driver will print any text or graphic image, at 203 DPI resolution, from any Windows application.

The printer, control electronics, cutter, and loop-presenter, are integrated into a self-contained module. The power supply is a separate module connected to the printer through a 6' shielded cable and circular DIN connector. This modular packaging scheme is extremely convenient and suitable for mounting into the application OEM system.

2.3 MODEL NUMBER INFORMATION

2.3.1 ITK-24i System Model Number

ITK 24i - - - - **USB**
 | | | | |
 MN PO FC PI DI

MN	Printer Series Model Number:	ITK 24i	=	ITK-24i 203 DPI (8 Dots/mm) Printer
PO	Paper Output Options:	P	=	Standard Loop Transport-Presenter with Cutter
		K	=	Cutter without Output Sensor
FC	Forms Control	(Blank)	=	Enabled for Continuous form roll stock paper
		R	=	Enabled for Registration marked roll stock paper
PI	Paper Input Options	00	=	No paper roll holder included.
		6L	=	Attached paper roll holder for a 6" (152 mm) diameter roll with low paper sensor
DI	Data Interface	USB	=	USB Serial Interface

2.3.2 ITK-24i Power Supply Model Number

PS60-14
 | |
 MN LC

MN	Power Supply Model Number	PS60-14	=	External 60 watt Desktop Power supply for the ITK-24i Series Printer
LC	Line Cord Option	(Blank)	=	supplied with a US approved line cord
		E	=	no line cord supplied for Export applications

Note: Standard models are shown shaded

2.3.3 *ITK 24iPrinter Model Number Example*

ITK24i – P 6 L - USB with P S 6 0 – 1 4

The above two model numbers specify a complete ITK 24iprinter configured with:

ITK-24i Series 203 DPI Printer	-	-	-	-	-	-	-	ITK24i
a transport-presenter and cutter as the paper output handling option	-	-	-	-	-	-	-	P
the forms control jumper is set to have the printer expect continuous form paper	-	-	-	-	-	-	-	(blank)
a 6” roll holder with low paper sensor is included	-	-	-	-	-	-	-	6L
no customer specific configuration modifications	-	-	-	-	-	-	-	(blank)
								-
a USB data interface	-	-	-	-	-	-	-	USB
								<u>with</u>
60 watt external desktop power supply with a line cord for the North American market	-	-	-	-	-	-	-	PS60-14

2.3.4 *ITK-24i Separate Component Model Numbers*

<u>Model Number</u>	<u>Description</u>
	<i>Power Supply</i>
PS60-14	Universal input (90-264 VAC, 47-63 Hz) Power Supply 24VDC @ 60W supplied with US 115V line cord.
PS60-14E	Universal input (90-264 VAC, 47-63 Hz) Power Supply 24VDC @ 60W supplied without a line cord.

3 PREPARATION FOR USE

3.1 Unpacking and Inspection

- a- Inspect the shipping container for any signs of damage. If any damage is noted, contact freight carrier and file a claim with them.
- b- Carefully unpack and inspect the printer system.
- c- Check the received items to the packing list. If any discrepancies are noted, contact our Customer Service Department.
- d- Save the packing material for reuse in shipment of the printer system.

3.2 Installation Location

The ITK-24i printer system is designed for OEM applications. It is the responsibility of the OEM system designer to install the printer in a manner to insure reliable operation. The printer's environment should be clean and ventilated appropriately. Refer to the dimensioned drawings in the appendix.

3.3 Power Connection

Refer to section 4.1 for a drawing of the printer's rear panel.

- a- Connect the DC power output cable from the power supply to the power input connector on the rear panel of the printer.
- b- Connect the AC line cord to the IEC entrance connector on the power supply.
- c- Connect the AC line cord to the wall power outlet.

3.4 Data I/O Interface Connection

The ITK printer requires a USB 2.0 compliant data cable to connect to the host computer. Refer to section 4.1 for a drawing of the printer's rear panel.

3.5 Low Paper Sensor

Connect the low paper sensor from the roll holder to the rear of the printer chassis, using the telephone-style RJ-11 cable.

3.6 Paper Supply

The paper supply roll holder, for the ITK-24i, can be mounted on the printer's chassis or externally.

The thermally active side of the paper is the outer surface of the roll. It needs to be facing up and have the curl downward as it passes through the printer. Registration marks, when employed, must be pre-printed onto non-thermally active side of the paper (the opposite side). For an external paper supply, the roll holder **must** be positioned to provide a smooth, well aligned, binding free paper path to the printer's paper entry guides.

3.7 Paper Loading

The printer will automatically load the paper into the printer. The printhead's pressure release lever, located on front right side of the printer mechanism, must be in the closed position (the fully downward position). Feed the paper into the rear paper guide until the paper sensor detects it. This will trigger the paper loading operation and pull the paper into the loaded position.

3.8 Test Print

Once the paper has been loaded successfully a test ticket should be printed to insure that everything is operating properly. Pressing the SELECT/F0 switch will place the printer offline (the READY LED will go out). Then by pressing the TEST/F1 switch a test page will be printed. Refer to section 4.5.1 for detailed information on these panel switch operations.

3.9 Printer Set-up Confirmation

It is recommended that the System Status Report be printed immediately after installation. This can be done by holding the F0 switch during the printer's reset initialization sequence. This occurs after applying power to the printer or by forcing a reset (refer to section 4.5.2.1 Forcing Printer Reset). Review this printed report and confirm that the settings match your requirements. Refer to section 4.5.2.3 System Status Report.

If any settings on the Systems Status Report are not set in accordance with the intended operation of the printer, (Refer to section 8.2) and follow the procedure to change these settings in the EEPROM.

3.10 Printer Driver Installation

The ITK-24i printer driver installs with the standard Windows™ Install Printer wizard. Download the ITK-24i driver from the website, and save it in a new folder. UnZip the driver into that folder.

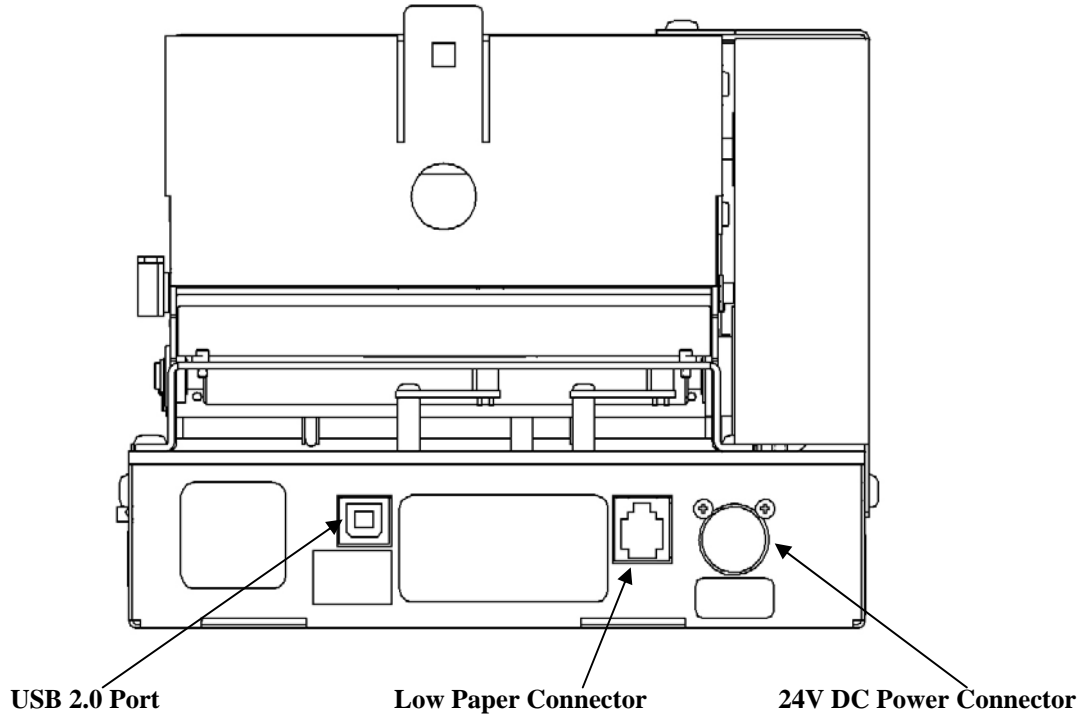
Connect the USB cable from the printer to the computer. The Installation Wizard will start automatically. Browse to find the driver files. Select OK or Yes to the remaining questions. The ITK-24i driver is now installed and any Windows™ application can now print using the ITK-24i printer.

Note that the ITK-24i driver is compatible with Windows 2000, XP, and Vista. Contact the factory for our Linux driver.

4 OPERATOR CONTROLS and INDICATORS

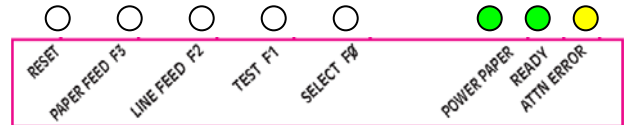
4.1 Rear I/O Panel

Located on the rear I/O panel (from left to right) are: the USB connector, Low paper connector, and Power Supply connector. There is no Power Switch on the ITK-24i printer.



4.2 Switch and Display Panel

The Switch and Display panel provides the operator with an interface to the printer. The display LEDs and beeper are used to output relevant printer operational status and warnings. The switches provide a means to control the various printed output menus and test functions.



4.3 User Display Panel Switches

There are four momentary push button switches on the User Display Panel. These are used for a variety of user interactions with the printer. Some of these are: printing a test ticket, entering data into the printer's parameter memory (EEPROM), and selecting diagnostic operations.

The switches are labeled:

SELECT/F0	On/Off line Select /F0 (Function 0)
TEST/F1	Test print /F1 (Function 1)
LINE FEED/F2	Line feed /F2 (Function 2)
FORM FEED/F3	Form feed /F3 (Function 3)
RESET (recessed)	Reset the printer.

4.4 Panel LED Indicators

4.4.1 Power/Paper

This green LED indicator provides the following printer status information:

- 1- Sanity indication/Normal display = ON with *very short* OFF blinks (approx. every 15 sec.).
- 2- Out of Paper = *rapid (0.5 sec cycle)* ON/OFF 50% duty cycle flashing when out of paper.
- 3- Low Paper = *slow (5 sec cycle)* ON/OFF 50% duty cycle flashing when paper is low.
- 4- Diagnostic testing modes = 10% ON / 90% OFF duty cycle (1 sec cycle) when in diagnostic mode.

4.4.2 Ready

This green LED indicator provides the following printer status information:

- 1- System readiness for operation = ON system is ready to accept data ; OFF not ready.
- 2- Data flow = During the receipt of data, the LED will blink,
- 3- Status Communication = While not printing, when the host PC requests Status information, this LED will blink.

4.4.3 Attn/Err

This amber LED indicator, in combination with the beeper, is a general-purpose enunciator for the operator. It provides the following printer status information:

- 1- Switch press annunciation = short flash/beep for each switch pressed
- 2- Out of Paper = One-time flash/beep when out of paper is detected.
- 3- System error codes = a repeating sequential series of coded flash/beep signals.
- 4- Normal display = OFF

4.5 Panel Switch Operations

The switches are used for offline operations and printer reset.

4.5.1 Offline Switch Operations

When the printer is operating normally (on-line) manually pressing the [SELECT/F0] switch takes the printer to an offline state. When the printer is offline the switches operate in accordance with the Offline Switch Operations Table shown below.

NOTE: When the printer is offline, the Attn/Err LED and beeper will produce a single flash/beep approximately every 15 seconds.

4.5.1.1 Offline Switch Operations Table

<u>Switch</u>	<u>Operation/Function</u>	<u>Notes</u>
SELECT / F0	Offline / Online toggle	Offline enables functions below.
TEST / F1	Prints a test document.	This document exercises all the dot positions.
LINE FEED / F2	Advances the paper approximately 0.1”	Simple paper movement.
FORM FEED / F3	Advances the paper one form length.	Default 6”, or uses registration marks.
F0 and F1	Causes the cutter to actuate.	The switches must be released together.

4.5.2 *Printer Reset Operations*

These functions provide an additional level of diagnostic support tools. They are provided for service or technical support personnel. Diagnostic entry is gained by pressing (and holding) one or more of the Front Panel switches, while the printer is in the process of completing its reset initialization sequence.

4.5.2.1 Forcing Reset Initialization

The ITK-24i does not have a power switch. Press the recessed Reset switch to re-initialize the printer if needed. You will need to do this to enter any of the Diagnostic Modes.

4.5.2.2 Reset Operations Table

For these modes one or more switches are pressed, and held, while the printer is undergoing its reset initialization sequence. Hold until a flash/beep (Attn/Err LED/ beeper) occurs, then release. The lists of reset operations are detailed below. Refer to section 4.5.2.4 for System Information Help Report, which outlines each menu, listed below.

<u>Switch</u>	<u>Operation/Function</u>	<u>Notes</u>
SELECT / F0	Print system status report.	If held longer, prints help menus. Refer to sec. 4.5.2.4 "System Info Help Report"
TEST / F1	Enter diagnostics menu entry.	Refer to section 10.1
LINE FEED / F2	Change the TOF configuration (Hold 5 Sec)	Refer to section 4.5.2.6
FORM FEED / F3	Enter EEPROM change menu	Refer to section 8.2.1

4.5.2.3 System Status Report

This is a printed report, which contains much of the operational or stored parameter information for the system. It includes: firmware version numbers, diagnostic pass/fail results, interface configuration status, print intensity control levels, miscellaneous system control parameters and operational data. This report is printed by continuously holding the [F0] switch while the printer is performing its reset initialization process. If the F0 switch is held after this is printed a second help report will be printed refer to section 4.5.2.4 below. The ticket on the left is for continuous paper, and the one on the right is for registration marked paper.

```

*****
*          SYSTEM STATUS REPORT          *
*****
Model:                ITK-24i
Firmware:             V1.00 (07/09/07)
Interface
Configuration:
  FORM TYPE           CONTINUOUS
  OUTPUT TYPE         CUTTER & TRANSPORT

EEPROM Data:
Print Control
 *INTENSITY           6
System Control
 *LOW PAPER           STATUS Only
 *LP CABLE DETECT     ACTIVE
 *MIN FORM LENGTH     3 Inches
 *END OF DOC LENGTH   PER FORM LENGTH
 *BEEPER              ON
 *PAPER BACKUP        ENABLED
 *PURGE SPOOLER CNTL ENABLED
 *SJO CONFIG          STANDARD

*Operational Data
 PHTEMP               22C
 PAPERSEN             3.3
 REG MARK             4.5
 TP LOAD              3.4
 TP EXIT              0.0
 PHVOLTAGE            23.6
 SYSVOLTAGE           23.8

Sensor Calibration:
Threshold = 100

S/N: 8000001048736501
Build = 011

To print help menu, continue to hold F0
    
```

```

*****
*          SYSTEM STATUS REPORT          *
*****
Model:                ITK-24i
Firmware:             V1.00 (07/09/07)
Interface
Configuration:
  FORM TYPE           REG MARK
  MEASURED LENGTH     6.01 Inches
  OUTPUT TYPE         CUTTER & TRANSPORT

EEPROM Data:
Print Control
 *INTENSITY           6
System Control
 *LOW PAPER           STATUS Only
 *LP CABLE DETECT     ACTIVE
 *AUTOSIZE CONTROL    AUTOSIZE WITH BACKUP
 *TRUNCATION CONTROL  PRINT ALL
 *BEEPER              ON
 *PAPER BACKUP        ENABLED
 *PURGE SPOOLER CNTL ENABLED
 *SJO CONFIG          STANDARD

*Operational Data
 PHTEMP               24C
 PAPERSEN             3.3
 REG MARK             4.5
 TP LOAD              3.4
 TP EXIT              0.0
 PHVOLTAGE            23.6
 SYSVOLTAGE           23.8

Sensor Calibration:
Threshold = 100

S/N: 8000001048736501
Build = 011

To print help menu, continue to hold F0
    
```


4.5.2.4 System Information Help Report

This system status report has two parts. If the [F0] switch is held after the first part (shown above) has completed printing this system information help report will also be printed. This report is a collection of menus (which are printed during the associated operating modes) and general help for other printer information such as error codes, etc.

```

*****
*                               OFFLINE SW. HELP                               *
*****
F0/SEL  = ON/OFFLINE Toggle
F1/TST  = Print TEST ticket
F2/LF   = Line FEED Paper
F3/FF   = FORM FEED Paper
F0 & F1 = CUT PAPER
NOTE: A warning BEEP/FLASH will occur every
      15 sec when in the off-line condition.

*****
*                               POR Reset Initialization SWITCH HELP          *
*****
Reset Initialization occurs after power is
applied to the printer
or by pressing the Reset Switch.

During Reset Initialization, hold switch(es)
To enter diagnostic functions.
F0      = SYSTEM STATUS
F1      = DIAGNOSTICS
F2      = CHANGE TOF CONFIGURATION (Hold 5 sec)
F3      = EEPROM MENU

*****
*                               DIAGNOSTIC HELP                               *
*****
After reaching this DIAGNOSTIC menu, from a POR
Reset Initialization entry, press and release:
F0 = SPECIAL Functions
F1 = BURN-IN test
F2 = CUT test
F3 = Not used

*****
*                               SPECIAL FUNCTION/SETUP MENU                    *
*****
Press switch for special function
F0 = Autosize value & fixed ==> EEPROM (hold 5 sec)
F1 = Reset EEPROM to Factory defaults (hold 5 sec)
F2 = Adjust Printhead Energy Level
    F0 = Increase Energy
    F1 = Decrease Energy
    F2 = Print Current level
    F3 = Print All Levels
F3 = Not used

*****
*                               EEPROM ENTRY HELP                             *
*****
The EEPROM menu is entered during POR Reset
Initialization. To enter, apply power or force
A reset by pressing the Reset Switch.
Then, during the initialization process:
Hold F3 until a beep is heard (and flash of the A/E LED).
Release F3 and wait for a second beep/flash.
Press F3 twice quickly, holding it on the
second press until printing starts.
    
```

```

*****
*                               EEPROM HELP                                   *
*****
F0      = MOVE cursor (>) UP
F1      = MOVE cursor (>) DOWN
F2      = CHANGE selection at cursor
F3      = ENTER Next MENU level
RESET = EXIT EEPROM Change MENU

PRINTOUT of the parameter menu occurs
approximately 1 second after pressing any switch.
By pressing F0 or F1 several times quickly and counting
the beeps the cursor can be moved several positions before
the next printout. Pressing F2 at the counted target will
cause a change of the selection. This technique permits
changes to be entered quickly without printing after each
switch press.

*****
*                               ERRORS HELP                                   *
*****
L = Long flash/beep
S = Short flash/beep

Error Codes:
5 Beeps
L-S-S-S-S      MPU/System Error
S-L-S-S-S      RAM Fault Error
L-L-S-S-S      EEPROM Checksum Error
S-S-L-S-S      FLASH Memory Error
L-S-L-S-S      Not Used
S-L-L-S-S      IMAGE Memory Error
L-L-L-S-S      Analog to Digital Converter Error
S-S-S-L-S      FPGA/ASIC Error
L-S-S-L-S      Voltage Error
S-L-S-L-S      Printhead Thermistor Error
L-L-S-L-S      Printhead Print Resistor Error
S-S-L-L-S      Printhead Data Error
L-S-L-L-S      Cutter Initialization Error
S-L-L-L-S      Configuration Strap Error
L-L-L-L-S      Miscellaneous Error

4 Beeps
L-S-S-S        Paper Path Jam / Error
S-L-S-S        Cutter Operational Error
L-L-S-S        Transport Presenter Error
S-S-L-S        Paper Output Error
L-S-L-S        Registration Mark Detection Error
S-L-L-S        Printhead Pressure Release Lever Error
L-L-L-S        Out of Paper Error

3 Blinks (beep disabled)
L-S-S          Ticket Not Taken Condition
S-L-S          Ticket Not Presented
L-L-S          Printhead Too Hot/Cold
S-S-L          Power Supply Wait
L-S-L          Data Communication Warning
    
```

4.5.2.5 Diagnostic Menu

These functions are used by the factory during the manufacture or servicing of the printer. This menu is entered by continuously holding the [F1] switch while the printer is performing its reset initialization process. (refer to section 10.2 for diagnostic sub menu).

4.5.2.6 Change TOF Configuration

The [F2] switch is used to force a change to the printer configuration, which is normally determined by one of the printer's configuration jumpers (refer to 5.1.1.). By pressing the [F2] switch during the reset initialization process and additionally holding it for 5 seconds the TOF configuration will be set opposite to the one currently in force. For example, if the printer had the configuration jumper set for continuous forms (no registration marks) printer it would be forced to a registration mark configuration (pre-printed, fixed size forms with registration marks).

4.5.2.7 EEPROM Change Menu

This menu is used to provide a method for modifying the stored printer operating parameters that are saved in nonvolatile EEPROM memory. Holding the [F3] switch, while the printer is performing its reset initialization process, enters this menu. To protect against an inadvertent changing of stored parameter data, a special sequence using [F3] is needed following the initial [F3] entry. Refer to the "EEPROM ENTRY HELP MENU" portion of the system help report displayed in section 4.5.2.4 for this switch sequence. The EEPROM change menu, once entered, has instructions for changing stored values. The EEPROM parameter change menu has three levels (an additional F3 switch press accesses the next menu). Note: Some of the parameters cannot be changed. They are reserved for future firmware updates. (Refer to section 8 for additional information on the EEPROM stored parameter data).

5 PRINTER PROGRAMABLE CONFIGURATION SETTINGS

5.1 Overview

The ITK-24i printer has programmable or configuration features permitting it to be customized to almost any printing task. This programmability resides in three areas: the configuration jumpers, the nonvolatile EEPROM parameter storage memory, and special factory customizations.

5.1.1 Registration Mode

The printer will be configured for Continuous or Registration mode at the factory. If you need to change this mode, press and hold F2 for 5 seconds after Reset.

5.1.2 Special Customization

If the order volume is sufficiently large, special customizations to the printer firmware, EEPROM settings, mechanical options, etc. can be accommodated, for customers with special application needs. Please contact the factory's customer service department.

5.1.3 EEPROM Parameter Storage Memory

This memory device holds the parameters, which customize the printer's operation to specific application requirements. (Refer to section 8.2 for details making changes to the data stored in this device).

5.1.3.1 EEPROM Factory Defaults

The EEPROM is typically shipped with the following default settings. These setting handle most printer applications.

<u>Parameter Name</u>	<u>Default Setting</u>	<u>Section Reference(s)</u>
Print Intensity:	6	7.1.4
Beeper:	ON	8.3.4
Low Paper:	STATUS Only	6.2.2;
Paper Backup:	ENABLED	8.4.1
Form Stored (or Measured) Size:	6.00	8.5.1;
Form TOF:	CONTINUOUS	7.1.6
Autosize:	USE STORED FIXED SIZE	7.2.3
Purge_ Spooler:	ENABLED	8.4.4

6 PAPER HANDLING OPTIONS

6.1 Paper Output Delivery Options

To address the needs of any application, the ITK-24i printers have two paper delivery output options, the Transport-Presenter or Cutter Only Output.

6.1.1 *Transport-Presenter*

This option provides the maximum isolation of the user from the document during the print and cut cycle. It can store any reasonable size document, in its loop storage chamber, while maintaining a small printer mechanical length footprint. The transport-presenter prevents user disturbance, of the document, while printing. It also, has a unique slip paper drive which protects against paper wrinkling (and jamming) if the output slot is blocked the during document delivery cycle.

6.1.1.1 Loop Storage Chamber

The printer's loop transport presenter can store any reasonable size document during the print and cut cycle. The loop formation space must be allocated above the printer, to store the maximum expected document without interference. For a large Loop Chamber, some chamber to loop interference can be tolerated, however, this must be evaluated carefully, by the system application engineer. Loop formation interference can cause severe jams, in the worst case, or unreliable document presentation/delivery

6.1.1.2 Ticket Taken Status

Once delivered, the transport-presenter holds the document, for removal, by the user. The state of the document, taken or not taken, is sensed. The Windows Spooler will show "Output Bin Full", and can also be read programmatically. In the event the document is not removed, it will be ejected before the printing of the next document.

6.1.1.3 Programmable Transport Presenter Controls

The presenter can be configured to hold the paper in the "presented" state, or it can be set to eject immediately. Refer to section for programming these controls.

6.1.2 *Cutter Only Output*

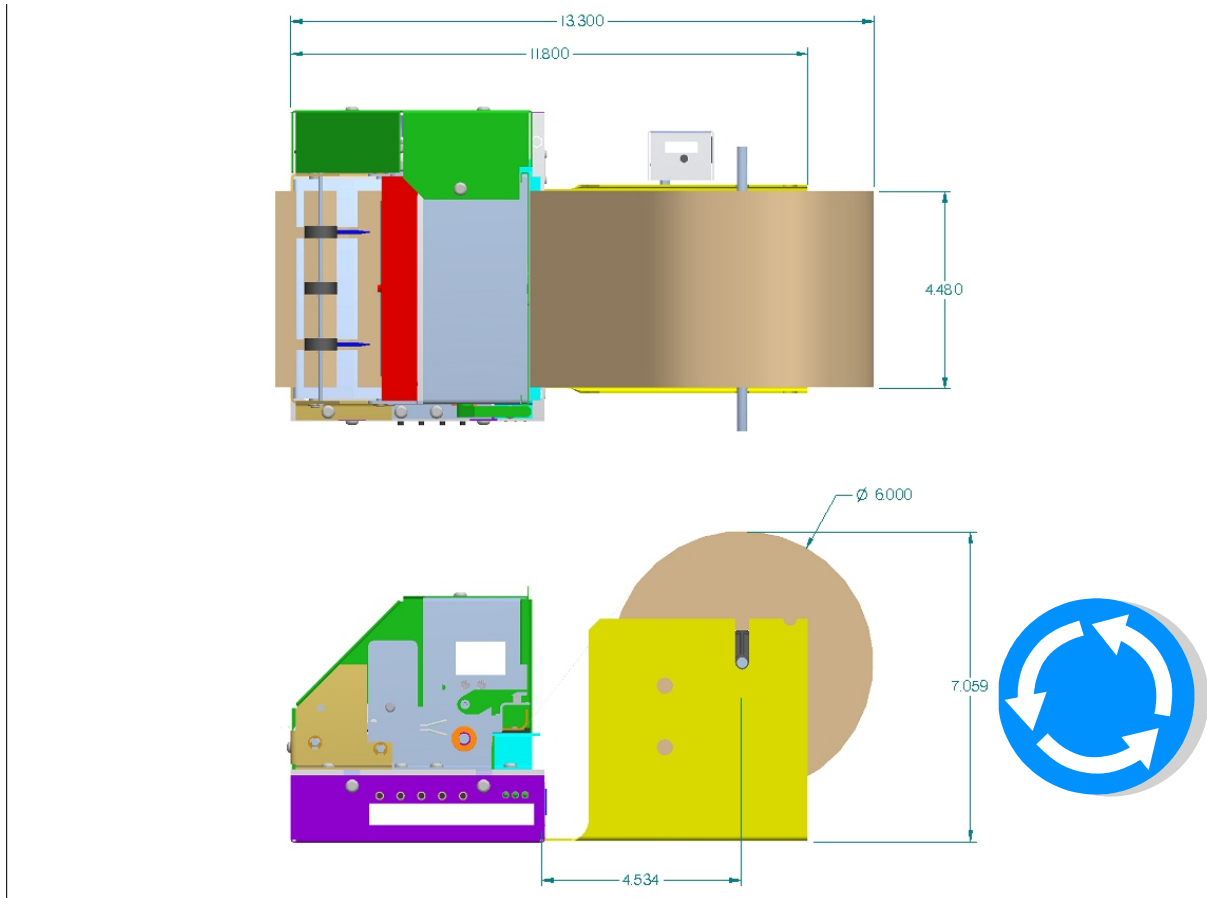
This option removes the transport-presenter, discussed above. An anti-static brush is added to the output paper path to help insure that the cut document drops freely. A sensor is provided to see if the document did not exit the cutter properly. This acts in the same fashion as the ticket-not-taken status flag.

6.2 Paper Input Delivery Options

6.2.1 Roll Holder

The roll holder is mounted on the chassis of the printer, or it may be detached and mounted externally. The roll holder will accommodate a 6" roll. The low paper sensor is shown.

6.2.1.1 ITK-24i with 6.00 Paper Holder



Note: All dimensions are in inches.

6.2.2 *Low Paper Monitoring.*

When the low paper sensor is used there are several options for how the printer will react to this low paper information. The programmable options are: “STATUS Only”; “WARNING ONLY”; “BUSY after document printed”; “DISABLED.” (refer to section 8.3.5)

6.2.2.1 Low Paper Host Status Information

The low paper status information is always available, for reading by the host system, unless the “DISABLED” option is selected. It is the responsibility of the connected host system to detect and react to this condition by dispatching service personnel to attend to the paper condition.

6.2.2.2 Printer Reactions to the Low Paper Condition

There are several programmable printer responses to the low paper condition. If the “STATUS Only” (default mode) is selected, the printer will only display the condition on the switch and display panel, by a slow flashing of the P/P (Power/Paper) LED. If the “WARNING ONLY” is selected, the printer will sound a warning beep each time a document is printed. If the “BUSY after document printed” option is selected the printer will complete the document in process and go offline. This reaction is distinguished from out of paper, in that the low paper warning provides enough paper in the path to complete the document in process. If the “DISABLED” option is selected the printer ignores the low paper signal. In all cases except “DISABLED”, status is reported to the Windows Spooler as “Paper Problem”.

6.2.2.3 Active Cable Detection

The low paper sensor provides an active signal which can be used to indicate that the cable has been disconnected. If you are not using a low paper sensor, you will need to confirm this control is set to PASSIVE mode. Refer to section [8.3.6](#).

7 PAPER INFORMATION

7.1 Paper Specifications

7.1.1 Paper Roll Size

Width:	4.48 +0/-0.04"
Diameter:	6" maximum, 1.5" core diameter minimum
Thickness:	0.004" max (caliper)

7.1.2 Formula for Calculating Paper Roll Capacity

The following formula is useful for calculating the length of paper (stock) supplied on a roll.

$$L = \frac{(OD^2 - ID^2) \cdot \pi}{48 \cdot T}$$

WHERE:

L	=	Length of Paper in Feet.
OD	=	Outside Diameter of the Paper Roll.
ID	=	Inside Diameter of the Paper Roll.
T	=	Thickness (Caliper) of the Paper.

OD; ID; T are in Inches.

For example, a 6" roll of .0034" caliper paper, with a 1.5" core, will be

$$L = \frac{((6)^2 - (1.5)^2) \cdot \pi}{48 \cdot (0.0034)}$$

$$L = \frac{(36 - 2.25) \cdot 3.14}{0.163}$$

$$L = 650 \text{ feet}$$

7.1.3 Recommended Papers

<u>Manufacturer</u>	<u>Number</u>	<u>Type</u>
Appleton	Optima Superior	Non top coated paper (.0034 caliper)
Appleton	Optima T1030	Non top coated paper (.0023 caliper)
Kanzaki	TO-282	Top coated paper (.0024 caliper)
Kanzaki	P-310	Non top coated paper (.0024 caliper)

7.1.4 Print Activation Energy

The ITK-24i has programmable print energy level settings. These are provided to accommodate thermal paper with a broad range of thermal response characteristics. The default factory energy level setting (level 6) has been optimized for most paper types. If, however, the paper used requires more or less print energy, the setting can be changed to achieve the best results. Refer to section 8.3.1 for instructions for setting the print energy level.

7.1.5 Roll Paper Curl Considerations

The thermally active surface of roll paper must be the outside surface of the roll. This arrangement produces a smooth, direct route of the paper into the printer, when the roll is mounted on the integral roll holder. Further, the downward curl aids in the formation of the loop for the transport-presenter.

7.1.6 Paper Form Type

The ITK-24i supports continuous or registration marked paper roll stock.

7.1.6.1 Continuous Forms

Continuous paper does not have a defined form size. It is typically blank, however, it may have top or limited bottom side background pre-printing. This background printing is used to enhance the appearance of the finished document.

7.1.6.2 Registration Mark Forms

Registration marked forms have a form size defined by the distance between the marks printed on the back. This marking is usually used to align pre-printed images.

7.1.6.3 Perforated Paper Stock

This use of perforated paper stock is not recommended for use with ITK-24i printers.

7.1.7 Paper Stock Pre-Printing Information

7.1.7.1 Pre-Printed Paper: Top Side

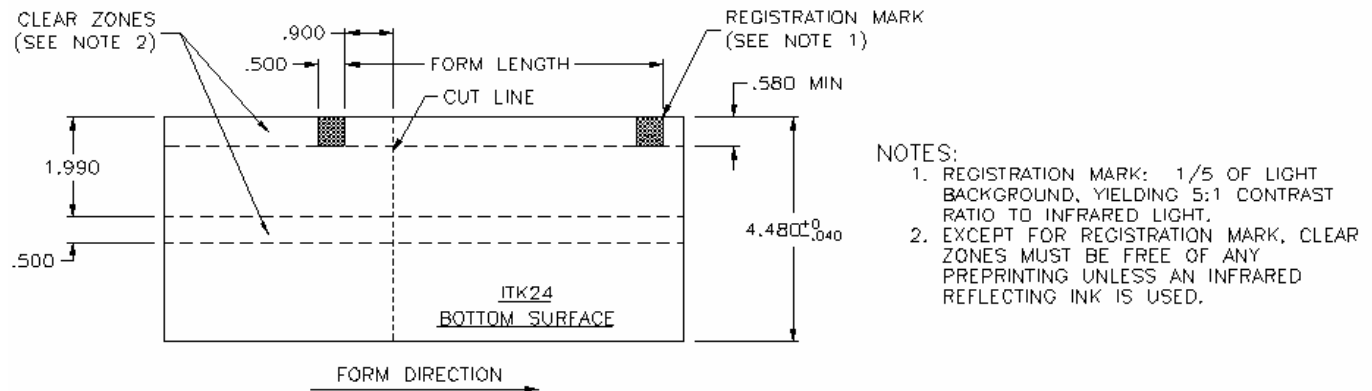
Preprinting on the thermally active side (top side) of the paper should only be done using inks compatible with direct thermal printing.

7.1.7.2 Pre-Printed Paper: Bottom Side Restrictions

All versions of the ITK-24i utilize optical sensors to monitor the progress of paper through the system. Pre-printing of the paper in the area of these sensors should be avoided unless an infrared reflecting ink is used. High contrast ratio printing, in these areas, can interfere with this monitoring. See section 7.1.7.3 for the location of these restricted areas. These restrictions apply to continuous or registration marked paper.

7.1.7.3 Registration Mark Location: Bottom Side

Refer to the following diagram when specifying registration-marked paper stock. Pay close attention to the inside/outside surfaces of the roll. The registration marks should be visible on the inside of the roll.



7.2 Paper Form Type Recognition

The printer and the host PC can determine if the paper in the printer is continuous or registration marked.

7.2.1 Printer Recognition of Paper Form Type

The printer will be configured at the Factory to recognize Continuous or Registration Marked paper. If you need to change this, press and hold F2 for 5 seconds after Reset. When in Registration Mode, the printer will switch to Continuous, and vice versa.

7.2.2 Host PC Recognition of Paper Form Type and Size

The measured form length can be read via Status. If this form length status data is returned as a zero length, the paper form type is continuous. A non-zero number indicates that the form type is registration marked.

7.2.3 Measuring Registration Marked Paper

There are 3 options for measuring registration marked paper: Autosize with Backup (default), Autosize without Backup, and Use Stored Size.

7.2.3.1 Autosize with Backup

With this selection, the printer will measure the distance between the registration marks. This distance is saved in memory, and can be read by the Host PC. If the first mark is at the expected alignment location, the printer will back-up and not waste the first page. If the first mark is not at the expected location, the printer will advance to the next mark, and cut off the leading paper, which may be a partial page.

7.2.3.2 Autosize without Backup

With this selection, the same process described above is followed, except that when the measurement is complete, the printer will not backup, and the first page will always be wasted. This may be required if the paper path or other factors prevent the paper from being backed up a long distance.

7.2.3.3 Use Stored Form Length

With this selection, the printer will only look for the first mark, and align to it. It will not measure the distance between the marks. The printer will use the Stored Form Length for reference. Refer to 8.5.2 for instructions on changing the Stored Size.

7.2.3.3.1 *Default Form Size*

The default Stored Form Size is 6.00”.

7.2.3.3.2 *Autosize Measurement and Save to EEPROM*

Alternately, you can save the measured size into the Stored Size by using the following sequence:

- Power up while holding F1 (Enter Diagnostics). The printer will go through the Autosize process.
- Press F0 to enter Special Functions
- Press and hold F0 for 5 seconds to load the Measured Size into the Stored Size. The printer will automatically switch to “Use Stored Size” mode.

8 EEPROM PARAMETER STORAGE MEMORY

8.1 EEPROM Parameter Memory Overview

The EEPROM parameter memory is used to store a variety of printer configuration parameters. These stored parameters provide the data, which customizes the operation of the printer to the particular application. The details of each parameter are listed below.

8.2 EEPROM Change Menu Entry

To enter the EEPROM Menu, press F3 on power up. After the beep, press F3 two more times, approximately one second apart. The first menu page will then print.

8.2.1 EEPROM Change Menu Operation

The EEPROM change menu is a collection of printed menus, which permit the selection, and change of stored parameters. The EEPROM menu is entered via a printer reset operation (refer to section 4.5.2). Upon entry into the menu, a help report is printed, which details the menu operations, followed by the first EEPROM parameter menu. Refer to the help menu below for parameter change and secondary menu access procedures.

```

*****
*                               *
*           EEPROM HELP         *
*****
F0    = MOVE cursor (>) UP
F1    = MOVE cursor (>) DOWN
F2    = CHANGE selection at cursor
F3    = ENTER Next MENU level
RESET = EXIT EEPROM Change MENU

PRINTOUT of the parameter menu occurs
approximately 1 second after pressing any switch.
By pressing F0 or F1 several times quickly and counting
the beeps the cursor can be moved several positions before
the next printout. Pressing F2 at the counted target will
cause a change of the selection. This technique permits
changes to be entered quickly without printing after each
switch press.

```

8.2.2 *Active and Inactive Menu Line*

Some parameters on the menu are not be changeable. They are only for display or reference while others may become active on future firmware versions. The cursor will skip menu lines that are not active. Active parameters, or the associated menu lines, are shown with an asterisk (*). For example: *INC PRINT INTENSITY and *DEC PRINT INTENSITY are active parameter menus lines. These lines affect the PRINT INTENSITY line, which displays the result, but is inactive.

8.3 **EEPROM Menu #1**

Factory defaults shown here:

```

*****
*   Setup Menu Page 1 of 3                       *
*****
INTENSITY                6
> *INC INTENSITY
  *DEC INTENSITY
  *BEEPER                 ON
  *LOW PAPER              STATUS Only
  *LP CABLE DETECT        PASSIVE
  *USB ID Select          A

```

8.3.1 *Print Intensity*

(Display) The amount of print energy applied to each printed dot is displayed. The lowest (lighter print) selection is “1” and the highest (darker print) is “16”. A setting in the range of 4 to 8 is typical.

8.3.2 *Increase Print Intensity*

This parameter increases the applied energy level by one.

8.3.3 *Decrease Print Intensity*

This parameter decreases the applied energy level by one.

8.3.4 *Beeper*

The selections for this parameter are: "ON" or "OFF." Used to turn off the beeper. Refer to section 4.2 for additional information.

8.3.5 *Low Paper*

This determines how the printer will respond when a low paper condition exists.

- STATUS Only: The Host PC can see the Low Paper status, but the printer does not beep.
- BUSY after document printed: The printer will complete the document in process and then stop.

8.3.6 *Low Paper Cable Detect*

The printer can detect whether the Low Paper cable is connected. In the “Active” mode, a disconnected low paper cable will be reported as a Low Paper condition. In the “Passive” mode, this condition is ignored.

8.3.7 *USB ID*

If more than one identical printers are connected to the same PC by USB, Windows can not tell them apart. To manage this, you need to set the printer’s USB ID code to “A”, “B”, “C”, or “D”, or use the printer’s unique serial number. If you need to replace the printer, it must have the same USB ID, or it will be considered a new printer and a new copy of the driver will be installed.

8.4 EEPROM Menu #2

Factory Defaults shown:

```

*****
*   Setup Menu Page 2 of 3                       *
*****
*PAPER BACKUP           ENABLED
*MIN FORM LENGTH       3 Inches
*EJECT CTRL            EJECT AT NEXT DOC
*PURGE SPOOLER        ENABLED
*CONFIG MISC           STANDARD

```

8.4.1 Paper Backup

Normally, the paper will back up to recover the margin at the top of the page. In certain cases, this back up may not be desired. Selections for this parameter are “ENABLED” or “DISABLED.”

8.4.2 Minimum Form Length

The ITK-24i requires that the page length be at least 3”. If a document is sent with less data, the printer will print blank paper to that distance. In certain cases, the design of a kiosk may require a longer minimum length. Adjust this setting to select a longer minimum length.

8.4.3 Eject Control

Normally, the printer will hold the previous document until the next document is sent from the host (EJECT AT NEXT DOC). In certain cases, it may be preferable to eject the document immediately (EJECT ALWAYS).

8.4.4 Purge Spooler Control

Usually, if the printer encounters an error, it will purge any data remaining in the host PC, which allows the host to process the error. In certain cases. This may not be desired. The selections for this parameter are: “ENABLED” or “DISABLED.”

8.4.5 Config Misc

This setting controls special options for specific customers.

8.5 EEPROM Menu #3

Factory Defaults shown:

* Setup Menu Page 3 of 3	*

STORED SIZE	06.00
[FORMS LEN 10s]	0
[FORMS LEN 1s]	6
CHANGE STORED SIZE	.
[FORMS LEN 0.1s]	0
[FORMS LEN 0.01s]	0
*AUTOSIZE CONTROL	AUTOSIZE WITH BACKUP
*TRUNCATION CONTROL	PRINT ALL
*END OF DOC LENGTH	PER FORM LENGTH

8.5.1 Stored Size

(Display) This data is changed by the above menu lines or can be automatically loaded using the document's measured size.

8.5.2 Change Stored Size: Forms Len 10's, 1's, 0.1's; 0.01's

Each one of these menu lines causes an incremental change to one of the four digits of the Form Stored Size. Incrementing past 9 returns the digit to 0. Refer to section 7.2.3.3 for additional information

8.5.3 Autosize Control

Normally, in registration mode, the printer will measure the paper length and back up to the first usable mark (AUTOSIZE WITH BACKUP). In certain cases, this long back-up may not be desired (AUTOSIZE NO BACKUP). This mode will always "waste" the first ticket on power up. Conversely, if the Stored Size is correct, select USE STORED SIZE to prevent the Autosize operation. The printer will only confirm proper alignment to the first usable mark.

8.5.4 Truncation Control

If the host PC sets a Form Length that is longer than the measured size of the form length, either all of the data will be printed, and the printer will search for the next usable mark (PRINT ALL), or the printer can only print one page worth of data (TRUNCATE).

8.5.5 End of Document Length

Normally, in Continuous Mode, the printer will create a document that is the same length as requested by the host application (PER FORM LENGTH). In certain cases, it is desirable to select a very long form length, and have the printer only print the data sent (AFTER LAST DATA). This allows for variable length documents without complicated operations in the application to set the page length.

8.6 Restoring Factory Default Settings

Press the following key sequence to reset the EEPROM settings to their original factory defaults. During the printer's reset initialization sequence, press <F1> to enter Diagnostics. Press <F0> for Special Functions. Press and hold <F1> for 5 seconds until you hear 5 rapid beeps. The printer will restore the factory defaults and then automatically reset. Reference section 5.1.3.1 for additional information.

9 ERROR CODES

9.1 Annunciation

The ITK-24i printer uses the switch and display panel to output operational conditions or errors, to the user, by a series of sequential beeper tones (beeps) which coincide with the flash of the ATTN/ERR LED. The flash/beep signal is of a long (1) or short duration (0). The flash/beep signals are arranged as a coded sequence, followed by a long quite pause, before repeating.

9.1.1 Sequence Length

These flash/beep signal sequences are arranged into three groups. These are: three, four or five flash/beep signal length sequences.

9.2 Error Code Table

L = Long Beep

S = Short beep

<u>Sequence</u>	<u>Error Code</u>	<u>Error Code Description</u>
L-S-S-S-S	1	MPU/System Error
S-L-S-S-S	2	RAM Fault Error
L-L-S-S-S	3	EEPROM Checksum Error
S-S-L-S-S	4	FLASH Memory Error
L-S-L-S-S	5	Not Used
S-L-L-S-S	6	IMAGE Memory Error
L-L-L-S-S	7	Analog to Digital Converter Error
S-S-S-L-S	8	FPGA/ASIC Error
L-S-S-L-S	9	Voltage Error
S-L-S-L-S	10	Printhead Thermistor Error
L-L-S-L-S	11	Printhead Print Resistor Error
S-S-L-L-S	12	Printhead Data Error
L-S-L-L-S	13	Cutter Initialization Error
S-L-L-L-S	14	Configuration Strap Error
L-L-L-L-S	15	Miscellaneous Error
L-S-S-S	1	Paper Path Jam / Error
S-L-S-S	2	Cutter Operational Error
L-L-S-S	3	Transport Presenter Error
S-S-L-S	4	Paper Output Error
L-S-L-S	5	Registration Mark Detection Error
S-L-L-S	6	Printhead Pressure Release Lever Error
L-L-L-S	7	Out of Paper Error
L-S-S	1	Ticket Not Taken Condition (does not beep)
S-L-S	2	Ticket Not Presented (does not beep)
L-L-S	3	Printhead Too Hot/Cold (does not beep)
S-S-L	4	Power Supply Wait (does not beep)
L-S-L	5	Data Communication Warning (does not beep)

9.3 Host Error Codes

This is the table of error codes recorded by the printer. These codes can be read via the Status methods. Also, the last 12 errors can be printed by holding all 4 user buttons after a Reset.

/* System temporary conditions */	
MANUALLY DESELECT CONDITION	1
TICKET NOT TAKEN CONDITION	2
THERMISTOR TOO COLD WAIT CONDITION	3
THERMISTOR TOO HOT WAIT CONDITION	4
AVERAGE POWER WAIT CONDITION	5
/*Miscellaneous print time errors */	
PRINthead LEVER OPENED	10
PRINthead LEVER OPENED WHILE PRINTING	11
PAPER OUT WHILE PRINTING	12
/* POR errors */	
THERMISTOR_POR_ERROR	30
/* Cutter errors */	
CUTTER INITIALIZATION SEEK EDGE TIMEOUT ERROR	40
CUTTER START NOT AT HOME ERROR	41
CUTTER NOT EXIT HOME TIMEOUT ERROR	42
CUTTER NOT ENTER HOME TIMEOUT ERROR	43
/* Paper Load Errors */	
PAPER LOAD JAM	48
PAPER LOAD FAILURE	49
/* Registration mark detection errors */	
POR REGISTRATION ERROR	50
POR AUTO SIZE ERROR	51
POR AUTO SIZE BACK UP ERROR	52
END OF PRINT DID NOT FIND MARK REGISTRATION ERROR	53
END OF PRINT WHITE SEEK REGISTRATION ERROR	54
/* Paper output delivery errors */	
POR OUTPUT JAM ERROR	60
PRINT OUTPUT JAM ERROR	61
STEPPER PAPER MOVEMENT OUTPUT JAM ERROR	62
/* Transport Errors */	
TRANSPORT PRESENTER LOADING FAILURE	63
TRANSPORT PRESENTER INITIAL PRESENT JAM	64
TRANSPORT PRESENTER DELIVERY/DISPOSE JAM	65
TRANSPORT PRESENTER EJECT JAM	66
TRANSPORT PRESENTER TICKET NOT HELD ERROR	67
/* Stepper seek errors */	
SEEK MOVE ENDED WITHOUT TARGET FOUND	68
SEEK MOVE ENDED AT PAPER OUT	69

/* System power errors */

SYSTEM POWER ERROR LOW SUPPLY VOLTAGE	70
SYSTEM POWER ERROR UNSTABLE SUPPLY VOLTAGE	71
SYSTEM POWER ERROR PH LEAKAGE VOLTAGE INCORRECT	72
SYSTEM POWER ERROR PH SUPPLY INCORRECT	73

/* Parameter EEPROM Errors */

EEPROM ERROR PROGRAMMING DID NOT START	80
EEPROM ERROR PROGRAMMING TIMEOUT	81
VOLTAGE TOO LOW TO START A STORE OPERATION	82
EEPROM PARAMETER DATA CHECKSUM ERROR	83
EEPROM ALTERNATE DATA SECTOR 0 CHECKSUM ERROR	84
EEPROM ALTERNATE DATA SECTOR 1 CHECKSUM ERROR	85
EEPROM WRITE ERROR	86

/* Flash Errors */

FLASH TIMEOUT ERROR	90
FLASH MANUFACTURER CODE ERROR	91
FLASH DEVICE ID CODE ERROR	93
FLASH PROTECTED SECTOR ERROR	94
FLASH CALLER ERROR	95
FLASH CHECKSUM ERROR	96

Notes:

- a) Not all error codes apply to every printer or configuration
- b) New error codes may be added

10 DIAGNOSTICS and MAINTENANCE

Wide ranges of diagnostic functions have been designed into the printer. These functions assist in the manufacturing, installing, and maintaining of the printer.

10.1 Diagnostic Entry

Entry into the diagnostic sub menu and other diagnostic support functions begins with a Printer Reset Switch Panel Operation, refer to section 4.5.2. The access switch sequence is detailed below on the help menu. This menu is part of the System Information Help Report (refer to section 4.5.2.3).

```
*****
*                POR Reset Initialization SWITCH HELP                *
*                *
*****
Reset Initialization occurs after power is
applied to the printer
or by pressing the Reset Switch..
F0      = SYSTEM STATUS
F1      = DIAGNOSTICS
F2      = CHANGE TOF CONFIGURATION (Hold 5 sec)
F3      = EEPROM MENU
```

10.2 Diagnostic Sub Menu

This diagnostics sub menu provides access to three selections: Special Functions, Burn-In and Cut test factory tests.

```
*****
*                DIAGNOSTIC HELP                *
*                *
*****
After reaching this DIAGNOSTIC menu, from a POR
Reset Initialization entry, press and release:
F0 = SPECIAL Functions
F1 = BURN-IN test
F2 = CUT test
F3 = Not used
```

10.2.1 Special Functions

With-in the Special Function option there are three function choices:

[F0] - Autosize value & fixed ==> EEPROM provides a quick method of updating the parameter EEPROM storage with the measured size of a registration marked document. By entering this path, with a registration mark document in the printer, the document will be measured, its length along with the “use fixed size” flag will be stored in the EEPROM parameter memory.

[F1] - Reset EEPROM is a quick way of setting the stored printer parameters back to a known starting point, the factory default settings (refer to section 5.1.3.1).

[F2] - The PH ADJ. is used to print, and at the same time, adjust the print intensity, incrementally, storing the new value in the EEPROM. This is an efficient way of matching the response characteristics of the paper, being used in the application, to the Printhead intensity level being applied (energy level). Refer to section 8 for details on saving parameters in the EEPROM.

10.2.2 Burn-in and Cut Tests

These tests are used as tools by the factory to insure proper operation under continuous cycling operations.

10.3 Periodic Maintenance

10.3.1 Paper/Registration Mark Sensor Maintenance

Periodic cleaning of the optical sensors (3) may be required to insure that the accumulation of paper dust does not impair their operation. The transport sensor is located under the center idler wheel on the transport presenter. The two paper sensors are located under the printhead near the paper input. The best way to clean these is to use compressed air to blow off the built up dust. Contact the factory if this method is not successful.

10.3.2 Printhead Cleaning

The printhead and drive roller should be cleaned periodically to eliminate the build up of thermal ink residue and paper dust. This is easily accomplished by using a soft, isopropyl alcohol impregnated, cleaning sheet. This sheet should be fed through the paper path. A specific combination of menu buttons is used to facilitate this.

Following a Reset, press F1 and then F0 to enter the Special Functions menu. Press F3 to enter the printhead cleaning mode. Now remove the paper and insert the cleaning card. The card will automatically advance and reverse. Remove the cleaning card and insert it again if needed.

Caution: *Although printhead cleaning is a normal, and recommended, preventative maintenance activity, if frequent cleaning of heavy buildup is occurring, this is a symptom that something is wrong with the media/printer thermal operating relationship. Heavy buildup will shorten the life of the printhead because it blocks the flow of thermal energy, from the printhead, to the media, which is acting as a heat-sink path for this energy. If the thermal media is depositing onto the printhead it is most likely due to a quality problem: the media has not been cured properly, or the press-printed inks are not thermally stable and are burning off, etc. Also, it could be due to a mismatch of the media's thermal response characteristic to the printer's thermal energy delivery level. If very fast media is being used, the printer's thermal energy may need to be reduced to better match it. The best solution is to select the thermal media that is compatible with the printer's normal (default) energy level setting.*

11 POWER SUPPLY INFORMATION

11.1 Power supply D.C. Output Cable

The ITK-24i Series Printer uses an external, 24V, 60 watt power supply. This power supply is connected to the printer by a shielded D.C. power cable with a 5-pin circular DIN input connector on its output. This cable mates to the printer's 5 pin circular DIN mounted on the rear panel of the printer. The pin-out for both connectors is shown below. *Note* only the first five pins are active for the 60 Watt power supply.

PIN #	SIGNAL TITLE	SIGNAL DESCRIPTION	NOTES
1	POWER GROUND	POWER RETURN	
2	POWER GROUND	POWER RETURN	
3	+24 VDC	POWER INPUT	+24 VDC @ 2.3A Avg.
4	POWER GROUND	POWER RETURN	
5	+24 VDC	POWER INPUT	+24 VDC @ 2.3A Avg.
SHELL	CHASSIS GROUND	Chassis ground-power cable shield connection	

11.2 User Provided Power Supply

The ITK-24i printers are budgeted to operate from a power supply of 60 average watts. However, due to in-rush and other current surges, not every power supply will work properly with the ITK-24i.

Please consult the factory if you plan to use your own power supply.

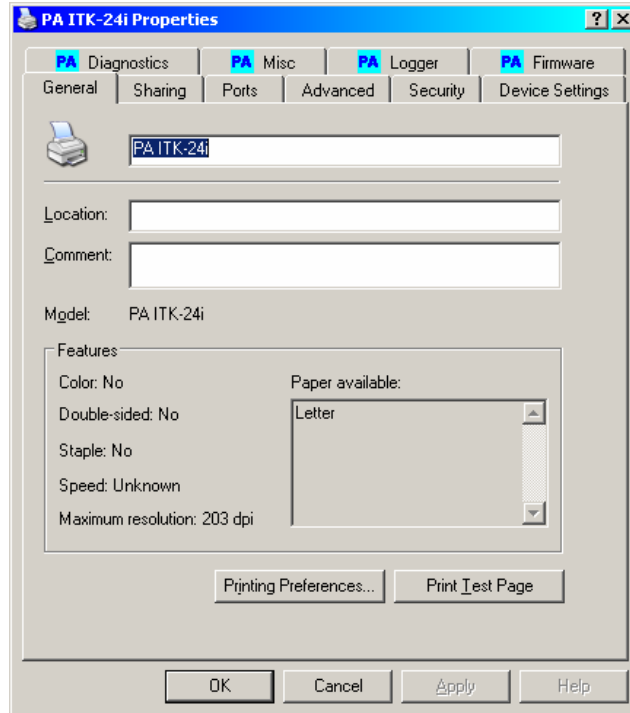
12 APPLICATION PROGRAMMERS INFORMATION

12.1 Driver

The Practical Automation Printer Drivers are very adept at managing complex images and printing multi-page documents quickly, while providing prompt status responses to both the Operating System and the host Application.

The Printer Driver has several custom features, which are described in detail in the Help File.

The Printer Properties Panel can be accessed by double-clicking on the printer icon, and then selecting Printer/Properties from the menu.



The blue “PA” tabs provide custom features related to the printer.

Diagnostics allows you to read the status of the printer directly. There are some other useful tools, including the ability to turn on a real-time debug monitor.

Misc provides for certain OS specific conditions.

The **Logger** will create a file that logs the printer data traffic.

The **Firmware** tab is useful for updating the printer firmware. If you have a newer firmware file, you can download it to the printer using this tool.

12.2 DLL Support

The PADLL.dll file has many useful utilities designed to integrate with an application. Download the DLL design kit from the website.

13 SPECIFICATIONS

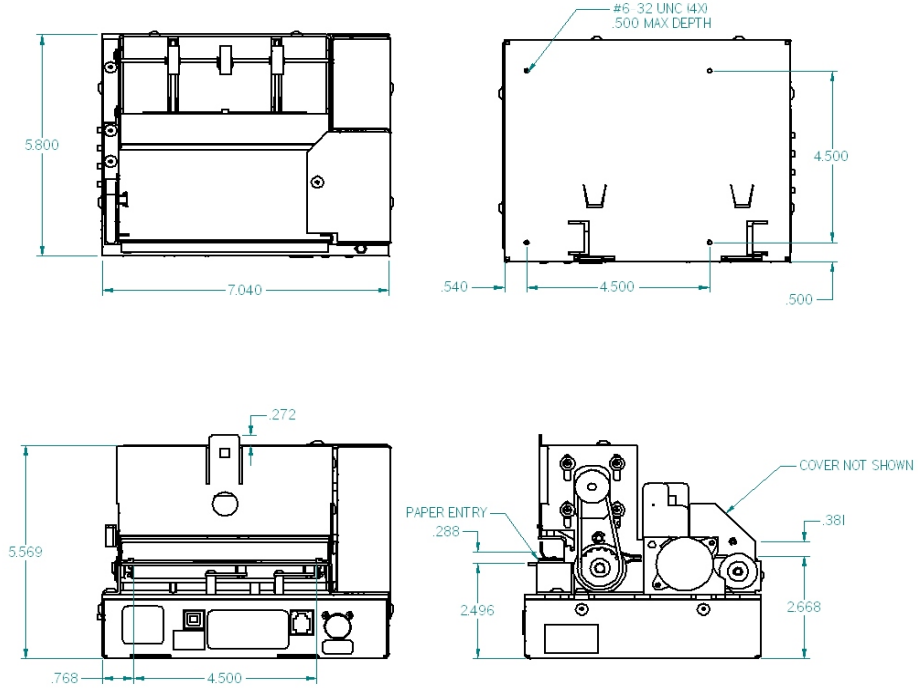
These are the performance and usage specifications for the ITK-24i printers. All specifications subject to change without notice.

Printing Method	Raster, direct thermal. Any graphic or text image created by your application can be printed using the PA supplied printer WYSIWYG driver.	Printer Drivers	Windows™ 2000, XP, and Vista drivers provided. Drivers for Linux platforms available.
Printhead		PC Requirements	Windows™ compatible PC 100 MHZ or higher.
Dot Density	203 DPI (8 dots/mm)	User Switches	Select (F0) Test (F1) Line Feed (F2) Form Feed (F3) Reset (F1 & F2)
Dot Cycle Life	100x10 ⁶ Dot Cycles typical	Indicators	Power/Paper (green LED) Ready (green LED) Attention/Error (amber LED) Beeper
Abrasive Life	164K ft (50Km) typical	Output Paper Delivery Options	
Print Length	3.5" min ; 17" max.	Loop Presenter	Holds document until print and cut is complete, then presents and holds for the user.
Print Width	4.10" (832 Dots) ITK-24	Cutter Only	Paper exits as it prints. An output sensor indicates whether the user has removed the paper.
Paper Width	4.48" (ITK-24)	Paper Holders	The available roll holder accepts rolls up to 6" in diameter. The roll holder can be mounted to the printer, or placed away from the printer. A Low-Paper sensor is provided.
Paper Caliper	.0034" typical, .004" max.	Setup Parameters	All optional control features can be changed, by the user, with a user-friendly switch panel entry sequences.
Paper Type	Appleton Optima Superior, or equivalent	Printer Status	Printer status information such as low paper, out of paper, ticket not taken, and system errors are available to the host PC using DLL tools provided.
Paper Feed	Friction		
Print Speed	3.1 in/sec max (80mm/sec)		
Interface	USB Full Speed (12MBit/sec)		
Interface Cable	USB 2.0 compliant A-B cable		
Cutter Life	300K cuts typical		
Power Requirements	24 VDC, 60 W max. average. 90-264 VAC 47/63Hz, 1.6 A MAX.		
Regulatory Compliance			
CE Mark	Compliant		
Safety	UL 60950-1 CSA C22.2 No. 60950-1-03 CENELEC EN 60950-1		
CB SCHEME	Compliant Consult factory for Countries listed.		
EMI/EMC	FCC Part 15 Class A CENELEC EN 55024 EN 55022 Class B		
Environment			
Temperature	Operating: +5 to 40°C Storage: -5 to 65°C		
Humidity	20-85% relative, non-condensing		

14 APPENDIX

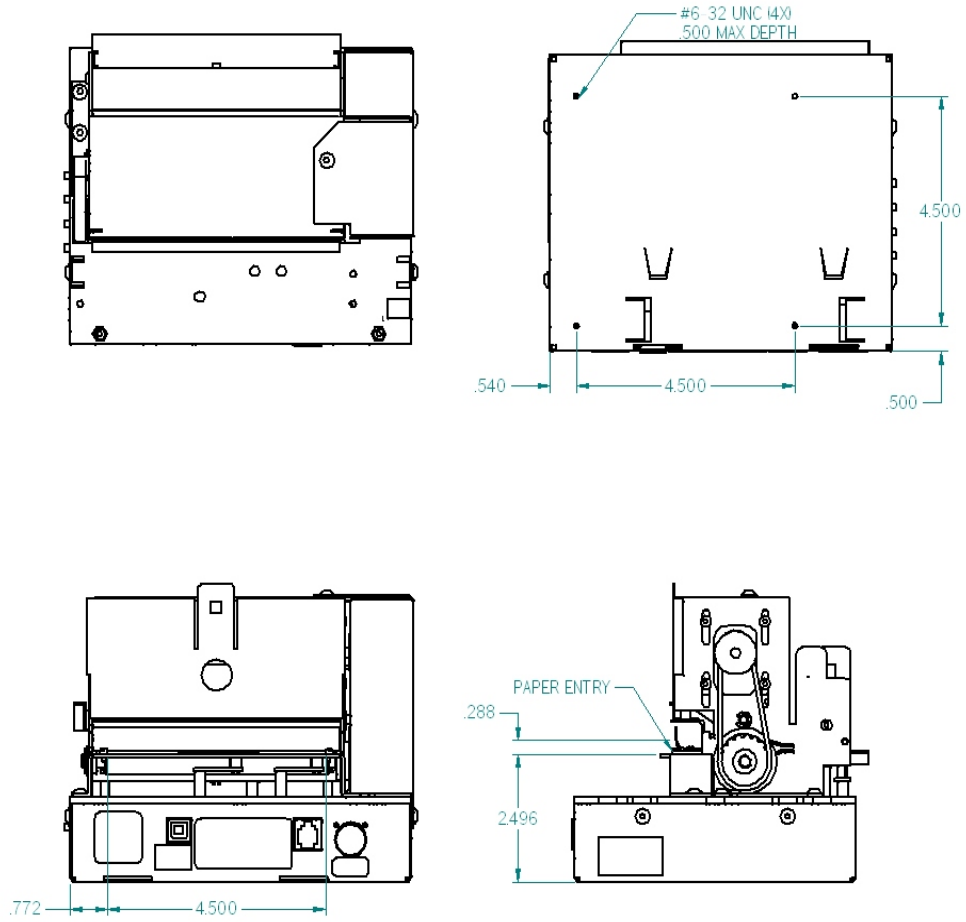
14.1 ITK-24i Mechanical Drawings

14.1.1 Mechanical Detail Drawing: ITK-24i Printer with Transport Presenter



Shown without cover

14.1.2 Mechanical Detail Drawing: ITK-24i Printer with Cutter Only



Shown without cover

