Configuration Guide for Practical Automation + Series Printers

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G. Belanger

Reference: Menu Guide for the PA Plus series ticket printers

Introduction

Practical Automation typically ships printers configured per the customer's order. There are times when the printer has to be reconfigured due to changes in the customer's environment. This guide covers several common configuration change requirements which may occur after the printer leaves the factory. The covered items include:
- Printer type change, Graphics vs FGL
- Paper mode change for ITL+
- Ticket Width change between 2" and 3"
- Ticket black mark adjustments for type of mark and/or positioning.
- Serial port configuration

Printer type change, Graphics vs. FGL

The firmware in the Plus series printers can be set to operate as an FGL or a Graphics/Windows ("G") printer. It should be noted that "G" printers require a Windows driver. FGL printers may or may not use a driver, depending on the requirements of the ticketing software driving the printer. Changing the type of printer attached to the same computer will likely require a new driver to be loaded.

Procedure to toggle between G and FGL or FGL and G
1. Disconnect printer from the host computer
2. Insure that ticket stock is loaded in the printer
3. Turn the printer off
4. Touch and Hold F1- **"TEST"** and then flip the printer power switch to on
   - The printer will 'beep' and then print the "DIAGNOSTIC HELP" menu ticket
   - let go of button F1- **"TEST"**

5. Touch F0 **"SELECT"** button once

- o <u>Allow </u>printer to completely print the "SPECIAL FUNCTION/SETUP MENU" ticket.

6. Touch and Hold F3 **"TICKET FEED"** button for about 5 seconds until the printer beeps several times
7. Then let go of button F3 **"TICKET FEED"**

Your printer will automatically reset. The printer type has now been changed.

Paper mode change, Registration Mark and Continuous (Roll)

The ITL+ printers support both Registration Mark and Continuous Form media for both FGL and Graphics types. There are some form length interactions to be cognizant of.

Graphics Form Length considerations

Registration Mark – In this mode, the minimum print length is the mark spacing. If the TRUNCATE option is set to PRINT ALL, and the form length is longer, the data will continue onto the next form, subject to the printer maximum of 11 inches. If the TRUNCATE option is set to TRUNCATE, data beyond the registration Mark length is discarded.

To avoid problems with the ticket image length, and the physical ticket length, the ticket image should be designed to account for:

- An unprintable margin at the leading edge, about .030". This margin insures that the printer retains a grip on the ticket when the leading edge is under the printhead
- A trailing margin so that the printer can cut behind the perforation. This is good practice to avoid jams and incomplete cuts. Typically 1/16".
- Mark to mark deviations in the registration mark printing. This is a small error term, but it still exists.
- Top and bottom margins to account for the needed play in the ticket tray.

Continuous (Roll) – In this mode, the form length sent with the data is used to determine the length of the document printed, subject to the printer buffer maximum of 11 inches

FGL Form Length considerations

Registration Mark – In this mode, the form length is usually dictated by the distance between the registration marks. While the print length may be changed by FGL commands, the physical ticket produced will be the registration mark distance.

Continuous (Roll) – In this mode, there is no form length inherent in the media or the data. The default form length used will be the EEPROM **STORED SIZE** value. That value may be changed using the EEPROM menu, where the value is set in hundredths if an inch, or via FGL commands which specify the length as a dot count. The number of dots specified would be the desired length in inches times the printer dot density, 203 or 300 dpi.

FGL Paper Type control – In addition to the manual method described below, if the printer is configured for FGL, there are commands available to set the paper type.

<pme> will set the printer in Continuous mode.

\<pmd\> will set the printer in Registration Mark mode

If the mode is changed by one of these commands, the printer resets. If it is already in the desired mode, the command will be ignored.

Procedure to toggle between Registration Mark and Continuous

1. Disconnect printer from the host computer
2. Ensure that ticket stock is loaded in the printer
3. Turn the printer off
4. Touch and Hold F1- **"TEST"** and then flip the printer power switch to on
   - The printer will 'beep' and then print the "DIAGNOSTIC HELP" menu ticket

   - let go of button F1- **"TEST"**

5. Touch F0 **"SELECT"** button once

   - Allow printer to completely print the "SPECIAL FUNCTION/SETUP MENU" ticket.

6. Touch and Hold F2 **"LINE FEED"** button for about 5 seconds until the printer beeps several times
7. Then let go of button F2 **"LINE FEED"**

Your printer will automatically reset. The printer paper mode has now been changed.

Ticket width changes between 2" and 3"

The Plus series printers all have an adjustable ticket tray capable of using ticket stock up to 3 ¼" wide. Printers are typically ordered as 3" or 2" printers. This allows the ticket guides to be set at the factory.

The Plus series printers are configured to identify identically to their legacy ITL or ITX predecessors. This is intentional so that drivers need not be changed to replace a legacy printer. Thus, if a 2" printer is ordered, not only is the ticket tray set for 2", the firmware personality configuration is programmed to identify as a 2" printer.

Additionally, the ITL+ has a feature which allows it to masquerade as an ITX printer for installations where it is replacing an ITX printer.

Mechanical Ticket width adjustment

(This needs a discussion on how to adjust the ticket tray)

Changing the 2"/3" printer personality

Regardless of the 2" or 3" personality setting, the Plus series printers are native 3.25" printers and can print full width tickets even if set to the 2" personality. The personality setting affects the printer in the following ways:

- The identification to Windows which selects the printer driver if any.
- The identification on the System Status ticket
- The Splash ticket printed if configured for FGL operation.

Because this setting changes the identification to Windows, changing it on a printer currently connected to a PC may result in a new instance of a driver being installed for what Windows sees as a new printer.

The **2-INCH PERSONALITY** setting is located on the 3rd page of the EEPROM settings. Consult the **Menu Guide for the PA Plus series ticket printers** for detailed information on accessing and using the EEPROM menus.

Steps to access and change this setting:
1. Insure the printer is off with paper loaded.
2. Press and hold the F3 button
3. Turn on the printer power.
4. When the first 'beep' is heard, release F3
5. Press F3 twice. The printer should print the EEPROM Help information and the first EEPROM Menu page.
6. Press the F3 button again. The second EEPROM menu will print.
7. Press the F3 button again. The third EEPROM menu will print.
8. Press the F0 button once. This moves the cursor up one entry, wrapping around to the **2-INCH PERSONALITY** setting. After 2 seconds, the third EEPROM menu should print again with the cursor pointing to the **2-INCH PERSONALITY** setting.
9. Pressing F2 will toggle the setting between **ENABLED** and **DISABLED**. The menu will re-print 2 seconds after the button is pressed.
10. When the setting is where it should be, power cycle the printer.

ITX Masquerade for ITL+

The ITL+ can be configured to identify to the host as the equivalent ITX printer. This feature is useful if the ITL+ is replacing an ITX 203dpi printer, and an ITX driver is already installed. The setting for this is **PNP RETURN STRING**, located in the 3rd page of the EEPROM settings. The choices are:

- **ITL STANDARD** (default)
- **ITX ALTERNATE**

This setting works with the printer configured for G or FGL, and also works with the **2-INCH PERSONALITY** setting.

Steps to access and change this setting:

1. Insure the printer is off with paper loaded.
2. Press and hold the F3 button
3. Turn on the printer power.
4. When the first 'beep' is heard, release F3
5. Press F3 twice. The printer should print the EEPROM Help information and the first EEPROM Menu page.
6. Press the F3 button again. The second EEPROM menu will print.
7. Press the F3 button again. The third EEPROM menu will print.
8. Press the F0 button twice. This moves the cursor up one entry, wrapping around to the **PNP RETURN STRING** setting. After 2 seconds, the third EEPROM menu should print again with the cursor pointing to the **PNP RETURN STRING** setting.
9. Pressing F2 will toggle the setting between **ITL STANDARD** and **ITX ALTERNATE**. The menu will re-print 2 seconds after the button is pressed.
10. When the setting is where it should be, power cycle the printer.

Ticket black mark adjustments for type of mark and/or positioning

There are several factors involved with using Black mark ticket registration. Some of these are:

- Side of the ticket the black Mark is on.
- Black Mark Style
- Mark positioning relative to the ticket perforation for cutting

The Plus series printers have adjustments and EEPROM settings to accommodate a range of these factors.

Mark Side Selection

The Plus series printers are equipped with Mark sensors on both the Fixed and Moveable sides of the ticket tray. There are 2 EEPROM settings on EEPROM setup menu 2 which control which sensor is used:

SENSOR SELECT MODE – Selects how the active sensor will be determined.
> **AUTOMATIC** (default) – The autosize function will use the last selected sensor to find a mark. If it fails to do so, it will retry with the other sensor. If a mark is found on the second attempt, the **SELECTED SENSOR** is updated. A second failure will result in an error.
> **MANUAL** – Force the use of only the selected sensor

SELECTED SENSOR – Identifies the sensor in use for registration. In AUTOMATIC operation, it will be the first sensor checked in the ticket measuring operation. In Manual operation, it will be the only sensor checked. The sensors are

> For ITL+:
> **FRONT FIXED** (default) – This sensor is built into the print mechanism.
> **REAR MOVEABLE** – Located on the adjustable side of the ticked guide.

> For ITX+:
> **MOVEABLE SIDE** (default) - Located on the adjustable side of the ticket guide.
> **FIXED_SIDE** – Located along the fixed side of the ticket guide.

Note that even in AUTOMATIC mode, the selected sensor can be changed to force which sensor is checked first.

CAUTION: If the ticket stock has valid marks on one side, and non-mark print on the other, the automatic switching mechanism can fail. In this case, use the EEPROM settings to force manual selection, and then select the correct sensor.

Black Mark Style

The Plus series printers can accommodate a variety of mark styles. The type of mark used is controlled by an EEPROM setting on EEPROM menu page 2:

REG_MARK_STYLE Select the type of registration mark on the ticket stock.
>   **AUTO** (default) - The automatic ticket sizing operation will measure the sensed mark and determine the effective mark style. This works for TOF, ITX/ETX, and ITL/LTX style marks with the correct nominal widths.
>   **TOF** – a .2" mark at the ticket perforation/top of form.
>   **ITX/ETX** – A 0.5" mark with the leading edge 6.7" behind the perforation
>   **ITL/LTX** – A 0.75" mark with the trailing edge 2.2" behind the perforation.
>   **TOF-5.8125** - A .5" mark with the leading edge 5.8125" behind the perforation

The AUTO selection should work for ticket stock designed for use with Practical Automation printers. If the mark width is in between the nominal values cited above, the REG_MARK_STYLE may have to be changed to the selection matching the mark position.

For tickets which do not quite match the above mark position criteria, there is some measure of adjustability in sensor positioning on the ITX+ and the moveable side of the ITL+. See the next section for this.

CUT positioning

Cutting Behind the Perforation

Cutting on the perforation is not recommended. The correct cut position is approximately 1/16" behind the perforation. When this position is correctly set, the ticket emerges with the perforation at the trailing edge and with 1/16" of material attached to the perforation. Although cutting directly on the perforation can often be successful, occasional incomplete cuts may occur. This incomplete cut is due to the paper folding at the perforation and preventing the normal shearing action of the cutting blades. Incomplete cuts can cause jams.

Mechanical adjustment, ITX+ , and ITL+ rear moveable sensors.

SENSOR ADJUSTMENT SCREW
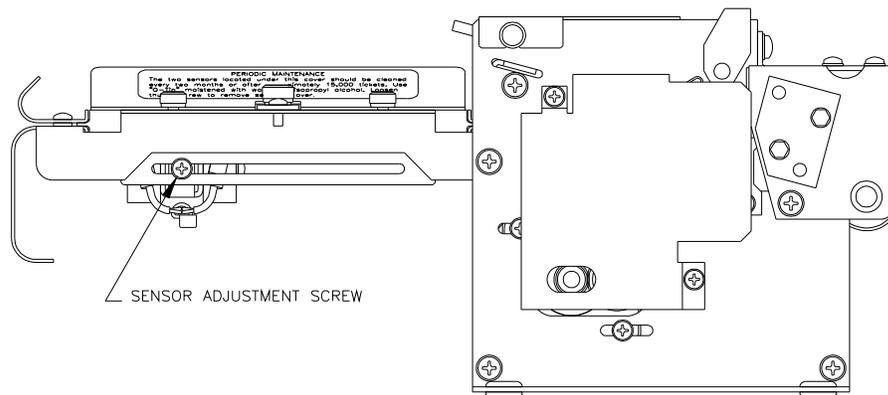
Example adjustment of the moveable side sensor, ITX+ and ITL+.

The cut sensor position, and the mechanically arrayed load sensor, can be adjusted from the factory set position of 6.7" (170.2 mm) behind the cut line. The purpose of this adjustment is two fold: (1) cut/tear position adjustment (2) to accommodate ticket stock with non-standard placement of the registration mark.

On the ITX+, the fixed side sensor is adjustment screw has to be accessed from the moveable side, under the ticket tray. On the ITL+, there is no mechanical adjustment for the fixed side sensor.

Fine tuning the cut position with a programmable adjustment

There is a programmable adjustment for fine tuning the cut positioning. When the printer is online, pressing the F3 and F2 buttons will adjust the cut position. Each press of the F3 button moves the perf line forward 20 mils relative to the cut line. Each press of the F2 button moves the perf backward 20 mils relative to the cut line. The maximum adjustment using this method is +/- 200 mils (0.2"). This mechanism is available for any selected sensor. It is the only means of cut position adjustment for the ITL+ Front Fixed sensor.

Serial Port Settings

The serial port on the Plus series printers is only active in FGL mode. The port is configured to connect to a PC style serial port with a 9-pin Male-Female one to one serial cable. Serial port setup is done through settings on the EEPROM Menu page 1.
The settings for the serial port are:

> **SERIAL BAUD RATE** - Serial data bit rate,
>> Revision 5.09 and earlier: 1200, 2400, 4800, 9600(default),
>>> 19200, 57600.
>> Revision 5.10 and later: 1200, 2400, 4800, 9600(default),
>>> 19200, 28800, 38400, 57600, 115200.
> **SERIAL DATA BITS** – 7 or 8(default)
> **SERIAL PARITY** – ENABLED, DISABLED(default)
> **PARITY TYPE** – EVEN(default), ODD (ignored if DISABLED)
> **SERIAL FLOW CONTROL** – BUSY(default), XON/XOFF

Note that if the application requires the use of serial status, XON/XOFF flow control must be used.

To access the EEPROM menu follow these steps:

1. Insure the printer is off with paper loaded.
2. Press and hold the F3 button
3. Turn on the printer power.
4. When the first 'beep' is heard, release F3
5. Press F3 twice. The printer should print the EEPROM Help information and the first EEPROM Menu page.

The EEPROM Help information describes how to navigate the menu and change items. Once the desired changes are made, simply power cycle the printer.

As of Firmware Revision 5.10, the printer also supports the FGL <brx,y,z> commands as defined in FGL46. The arguments are:

> X: the baud rate, without commas, i.e 9600.
> Y: Parity selection: N (no parity), E (Even Parity) O (odd parity)
> Z: Number of data bits: 7 or 8

If any of the arguments are invalid, or if the arguments match the current settings, the command will be ignored. If all of the arguments are valid, and any values have changed, the printer will automatically reset.