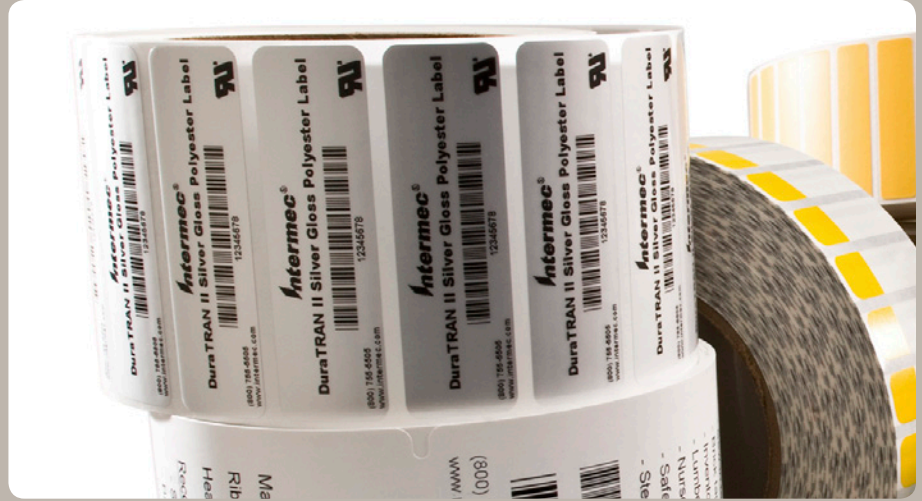


Precision Print For PM43 and PM43c



Introduction

Precision Print enables you to print dense text, graphics and bar codes with high accuracy and repeatability on very short labels where the distance between the top or bottom of printed elements and the physical edge of the label is very small.

This technology brief will help you design label layouts that ensures that the entire image is printed on each label.

Supported Printers

Precision Print is supported by these Intermec printers:

- PM43
- PM43c

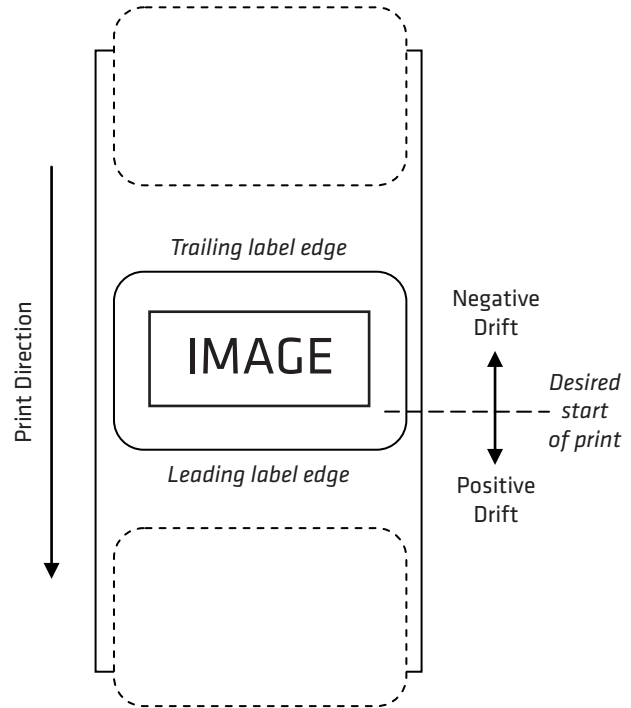
Image Drift

The most important factor in precision printing is the phenomenon of “image drift.” Drift is the tendency for an image to vary slightly in the vertical direction from label to label. **Positive** drift means that the image prints closer to the leading (bottom) edge of the label than desired; **negative** drift means it prints closer to the trailing (top) edge.

To compensate for drift, you must always design labels with at least some white space at top and bottom. The illustration at right shows this concept.

Printing Mode

The printing mode also affects precision. In particular, if you are retracting media from the tear bar position back to the print head in order to print at the very bottom of the label, the action of backing up decreases precision a certain amount. You must therefore factor the printing mode into the top and bottom margin of your label designs.



Here are the printing modes discussed:

- Straight Through
 - Label prints without retract.
- Straight Through with retract
 - Label retracts before each print job.
- Batch with Rewind
 - Labels are printed continuously and wound up by a re-winder. (Using Self-Strip kit)
- Self-Strip with retract
 - Label gets printed and peeled. Label is retracted before each print job

The table below illustrates the maximum drift, positive and negative direction, for different printing modes.

Printing Modes	Drift (mm)	
	Positive	Negative
Straight Through	0.6	0.6
Straight Through with retract	1.5	0.7
Batch with Rewind	0.8	0.6
Self-Strip with retract	1.6	0.8

To illustrate: if you are designing a label to be printed on a printer using self-strip with retract, you should design an image located at least 1.6 mm from the leading edge and 0.8 mm from the trailing edge.

Minimum Font Size and Barcode Height

Even with the high label-to-label precision that Intermec printers can achieve, text and bar codes that are too small will be difficult read or decode. We recommend the following minimum sizes:

Object	203dpi	300dpi	406dpi
Barcode	0.6 mm (height)	0.6 mm (height)	0.6 mm (height)
Text	Font 7pt (2.5 mm)	Font 5pt (1.8 mm)	Font 4pt (1.4 mm)

Media Type

The type of media used will affect precision. The more slippery the media and/or liner, the lower the precision will be. Adjusting the print head pressure using the pressure arm could improve the precision.

Print Speed

Finally, the speed at which labels are printed impacts label-to-label registration. At high print speeds it is more difficult to maintain the minimum drift values in the table above. Therefore we recommend that in precision printing operations you print at lower speeds.

Start/Stop Adjustment

Start adjustment is used for adjusting the media before printing starts. For small labels this needs to be changed to start printing at the start of the label.

Stop Adjustment is used for aligning the media after the printing has finished. This can be used to stop the label in the position where it can be torn off.

The position of the printed image may vary between printers due to mechanical differences, hence Start and Stop adjustments must be individually optimized. Using the same value on each printer may not provide optimized printing precision.

Considerations

- The test results for 'batch with rewind' are based on using the Self-Strip kit provided as an accessory. If the Batch Plate is being used the precision will not be as good.
- All recommendations discussed in this document are derived by using the following parameters during testing:
 - Media Type: Polyester
 - Print Method: Ribbon
 - Media Length: 0.25" (6 mm)
 - Printing Speed: 4 IPS (100 mm/s)
 - Pressure Arm Position: Center of label

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