Lexmark

Card for IPDS (Emulation)

User's Guide

Printers

- Lexmark CS82x
- Lexmark CS72x
- Lexmark CS92x
- Lexmark MS52x
- Lexmark MS62x
- Lexmark MS82x

Multifunction Products

- Lexmark CX82x
- Lexmark CX860
- Lexmark CX72x
- Lexmark CX92x
- Lexmark MX32x
- Lexmark MX42x
- Lexmark MX52x
- Lexmark MX62x
- Lexmark MX72x
- Lexmark MX82x

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1 Introduction

1.1 About This Guide

Thank you for purchasing the **Lexmark Card for IPDS**. This card provides emulation support for the Intelligent Printer Data Stream (IPDS) on your printer**.** With the appropriate adapter and host software, your printer becomes an IBM host workstation printer capable of printing AFP or IPDS documents from an AS/400, iSeries, System/370, System/390, or zSeries.

This guide contains information to assist you in understanding the Lexmark IPDS menu settings and Lexmark IPDS function support.

If you need information on configuring host and printer settings to prepare the printer to receive IPDS jobs, refer to the separate document, ***IPDS Printer and Host Setup Guide***.

Information on **how to install the card** is in a separate document shipped with your printer. Refer to the documentation shipped with your printer for information on how to install the optional firmware cards.

If you need **basic information** about your printer setup and printer operation, please refer to the printer's user's guide and specific documentation.

1.2 Equipment Requirements and Specifications for IPDS Emulation Printing

This manual applies to the following printers:

- Lexmark CS82x
- Lexmark CS72x
- Lexmark CS92x
- Lexmark MS52x
- Lexmark MS62x
- Lexmark MS82x

This manual applies to the following multi-function products (MFPs):

- Lexmark CX82x
- Lexmark CX860
- Lexmark CX72x
- Lexmark CX92x
- Lexmark MX32x
- Lexmark MX42x
- Lexmark MX52x
- Lexmark MX62x
- Lexmark MX72x
- Lexmark MX82x

NOTE: Unless otherwise stated, the term printer includes both printers and multi-function products (MFPs).

To print IPDS jobs, the printer must have the following:

1. Optional **Lexmark Card for IPDS** (emulation) installed.
2. Minimum required user memory (DRAM) - A minimum amount of user memory (DRAM) may be required to support IPDS. Refer to Memory Requirements and Recommendations on page **116** for more details.
3. One of the following supported connections:
   - Standard Network (Ethernet connection integrated into the printer system board).
   - MarkNet internal LAN print server (optional card providing an Ethernet connection).
   - Lexmark wireless internal print server.

1.3 Customer Support

Information on how to configure the host and printer during the initial installation is found in the ***Lexmark Card for IPDS Printer and Host Setup Guide***.

If you require firmware updates or cannot find answers in this guide about using the IPDS emulation, please contact your point of purchase, your local Lexmark office, or check the Lexmark support web site at http://support.lexmark.com**.**

1.4 Conventions Used in the Manual

- Printer menu keys and operator panel texts are written in bold.
- **Option names** usually correspond to menu texts and are **bold** when used in sentences or shown as the first column on a table listing options and general descriptions of the listed options.
- ”Option values” described within sentences are written in “quotation marks”. They are **bolded** when shown as the first column on a table describing values for an option.
- Some document or book titles are written in *italic*.
- On screen text is written in Courier typeface.
- Keyboard keys are written in angle brackets, e.g. <Enter> or <F1>.
- Bold is sometimes used for **emphasis** or as **subheaders** for blocks of text within a section.
- *Italics* are used to label *Examples*, *Notes* and blocks of text with very *Important* information.
- Unless otherwise stated, the term **printer** covers both printers and MFPs.

2 Using the Control Panel for IPDS MENU Setup

The IPDS emulation settings may be changed from the printer's operator panel or through the printer's embedded web server (EWS), which may be accessed from a browser using the printer's network IP address.

Information on how to use the printer control panel is found in your printer publications. If you are not familiar with the printer control panel, please refer to your printer publications. These publications may be found at: http://support.lexmark.com

2.1 IPDS MENU Setup Options vs. Printer Setup Options

Changes to the option settings under the **IPDS MENU** will only affect the way IPDS jobs print. These changes will not affect PostScript™ or PCL™ jobs.

Changes to general printer settings under the various printer menus will affect the way PostScript and PCL jobs are printed. Many of these printer settings may also affect IPDS jobs.

Printer IPDS settings are for the most part used as default. They are only used in the absence of specific instructions from the host. Thus, the settings you choose from your IPDS print job may override default settings, including those you set on the printer's menu settings yourself.

User-selected default settings remain in effect until you save new settings or restore the factory defaults.

This guide discusses changing the **IPDS** Settings. Please refer to your printer's documentation for information on changing other (non-IPDS) printer settings.

2.2 Activation of New Menu Settings

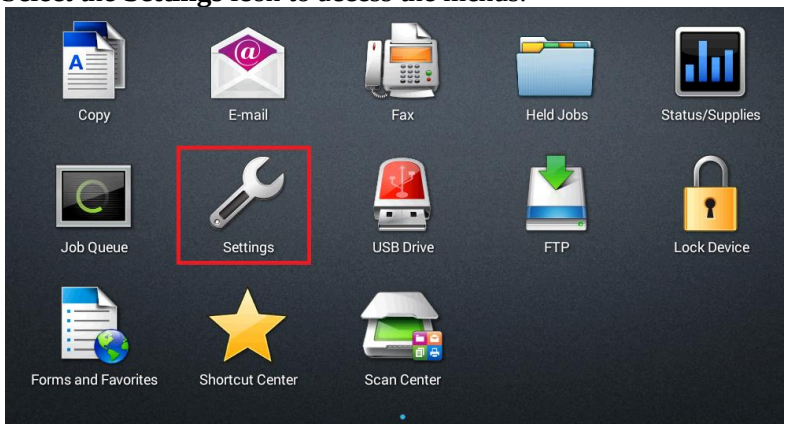
All saved settings will become active on the next IPDS host session.

If the printer **IPDS Timeout** is NOT set to "Host Controlled**"** (**Settings >IPDS Settings > Emulation > IPDS Timeout** = "Host Controlled"), power the printer **OFF** and **ON** to activate the new settings. For more information on **IPDS Timeout**, see page **24**.

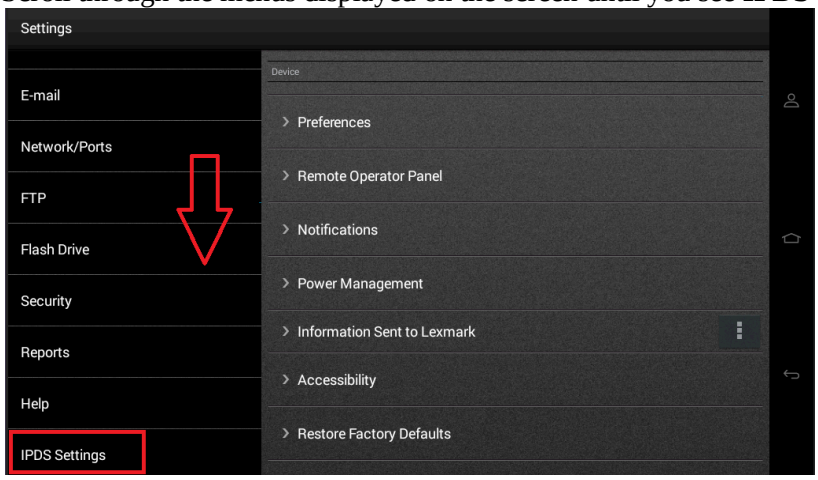
2.3 Accessing the IPDS MENU

The IPDS emulation options and settings are accessed from the **IPDS Settings**. To reach the menu:

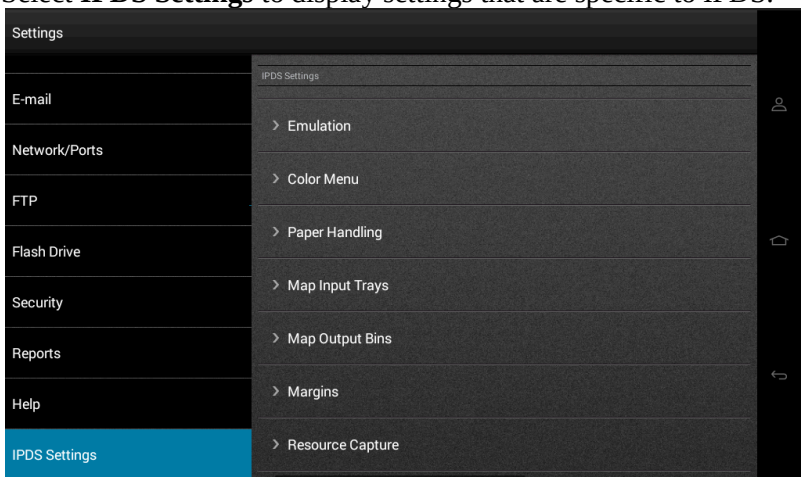
1. Go to the printer's operator panel.
2. Make sure the printer is powered **ON** and the **Ready** message appears.
3. Select the **Settings** icon to access the menus.



4. Scroll through the menus displayed on the screen until you see **IPDS Settings**.



5. Select **IPDS Settings** to display settings that are specific to IPDS.



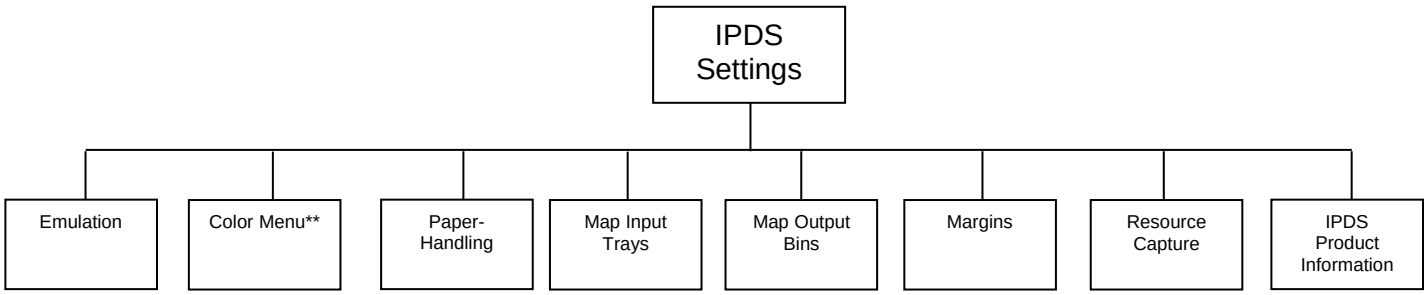
2.4 Printing the Menu Settings Page

1. Make sure the printer is powered **ON** and the **Ready** message is displayed.
2. On the Home screen, select the **Settings** icon to access the menu settings.
3. Select **Reports** then select **Menu Settings Page.**
4. The printer will start to print the menu settings page and the message **Printing Menu Settings Page Printing** is displayed on the operator panel.
5. The printer returns to the **Ready** state after the list of current active settings is printed.

3 Setup Operations Reference

3.1 IPDS MENU - Map of All Options

This section describes the menu structure for the IPDS emulation. Settings are displayed on the printer by accessing **Settings** > **IPDS Settings**.



IPDS Emulation
Host Resolution
Color Processing
Toner Saver
BAR CODE
  Bar Code Symbol
  Bar Code Size
Default Codepage
Codepage Version
Default FGID
  Resident FGID
  3812/3816 FGID
Default CPI
Printable Area
Exception Ctrl
Font Ctrl
Font Style
IPDS Print Res
Intervention Req
IPDS Timeout
Fax Interrupt *
Print Resource List
  Print Resources
Stream Capture
  Download IRP Stream
IPDS Version

Color Management
User CMYK Profile
User RGB Profile
User Dest. Profile
RGB Grey to K
Preserve Black
Black Point Comp
Embedded ICC Prof
HL Mapping Table
OCA Mapping Table
Def Rend Intent
  Images
  Text
  Graphics
CMOCA Options
  IPDS CMOCA
  Instruction CC
Color Files Upload
  User CMYK Profile
  User RGB Profile
  User Dest Profile
  User OCA Mapping Table
  User HL Mapping Table
Remove User Files
  User CMYK Profile
  User FGB Profile
  User Dest. Profile
  User HL Mapping Table
  User OCA Mapping Table
  All User Files

Offset Stacking
Universal Size
  Paper Length
  Paper Width
Other Env Size
  Envelope Length
  Envelope Width

Tray Mapping 1
Tray Mapping 2
Tray Mapping 3
Tray Mapping 4
Tray Mapping 5
Tray Mapping 6
Tray Mapping 7
Tray Mapping 8
Tray Mapping 9
Tray Mapping 10

Bin Mapping 1
Bin Mapping 2
Bin Mapping 3
Bin Mapping 4
Bin Mapping 5
Bin Mapping 6
Bin Mapping 7
Bin Mapping 8
Bin Mapping 9
Bin Mapping 10
Bin Mapping 11
Bin Mapping 12

All Input Trays
Tray 1 Adjust
Tray 2 Adjust
Tray 3 Adjust
Tray 4 Adjust
Tray 5 Adjust
MP FEEDER ADJUST
MANUAL PAPER ADJ
MANUAL ENV. ADJ

Capture Media
Capture Fonts
Capture Data Objects
Capture CMR Objects
Remove Resources
  Fonts
  Objects
  CMRs
  Remove All

Device Type
Manufacturer
Model Number
Serial Number
IPDS Version
SDK
API
APP
Base Code
Printer Name

** Available only on MFP products*
*** Available only on Color printers*

Note: Only those menu items that are supported by the product are displayed.

3.2 IPDS Settings – Default Values Overview

If you are viewing this in Acrobat Reader, you can click the Option Name to link to the detailed description of the option.

3.2.1 Emulation

Option Name	Default Value
IPDS Emulation	Resident
Host Resolution	Auto
Color Processing	Black (Default for Mono printers) Color (Default for Color printers)
Toner Saver	Printer Setting
Bar Code Symbol	Always Print
Bar Code Size	Resident
Default Codepage	Int. Set 5 500
Codepage Version	Version 1
Default FGID	416 (Resident FGID) 11 (3812/3816 FGID)
Default CPI	10.0
Printable Area	Whole Page
Exception Control	Report All
Font Control	Relaxed
Font Style	Standard
IPDS Print Res	600 (default for Mono printers) 1200 Image Quality or 4800CQ (default for Color printers)
Intervention Required	Report
IPDS Timeout	Host Controlled
Fax Interrupt (Only available on MFPs)	Disable
Print Resource List	Print Resources: Yes
Stream Capture	Disable
Download IRP Stream	n/a
IPDS Version	“Current code version”

3.2.2 Color Menu

Option name	Default Value
Color Management	Ignore Color Management Settings
User CMYK Profile	Use as Source Profile
User RGB Profile	Use as Source Profile
User Dest. Profile	Use
RGB Grey to K	No
Preserve Black	No
Black Point Comp	No
Embedded ICC Prof	Use
HL Mapping Table	IPDS CMT, Use HL, IPDS HL
OCA Mapping Table	IPDS CMT, User OCA, Def OCA
Def Rend Intent	Images: Perception
	Text: Relative Colorim
	Graphics: Saturation
CMOCA Options	IPDS CMOCA: Enable
	Instruction CC: Use
Remove User Files	User CMYK Profile
	User RGB Profile
	User Dest. Profile
	User OCA Mapping Table
	User HL Mapping
	All User Files

3.2.3 Paper Handling

Option name	Default Value Narrow Format	Default Value Wide Format	Default Value Banner Print*
Offset Stacking	Host Controlled	Host Controlled	-
UNIVERSAL SIZE, Paper Length	4200	5100	6824
UNIVERSAL SIZE, Paper Width	2550	3510	2550 or 3510
OTHER ENV SIZE, Envelope Length	4200	5100	-
OTHER ENV SIZE, Envelope Width	2550	3510	-

* Some models are capable of printing paper lengths up to 22.75 inches. An optional special media tray may be required to print this size media. It is sometimes referred to as banner media.

3.2.4 MAP Input Trays

Option name (MAP INPUT TRAYS Menu Options)	Default Value (When a tray is not installed the value is “No Map”)
Tray Mapping 1	Tray 1 → 0
Tray Mapping 2	Tray 2 → 1
Tray Mapping 3	Tray 3 → 2
Tray Mapping 4	Tray 4 → 3
Tray Mapping 5	Tray 5 → 4
Tray Mapping 6	Envelopes (Feeder) → 64
Tray Mapping 7	Envelopes (Manual) → 64
Tray Mapping 8	Manual Paper → 99
Tray Mapping 9	MP Feeder → 98
Tray Mapping 10	No Map

3.2.5 Map Output Bins

Option name MAP OUTPUT BINS Menu Options	Default Value Printer Output Bin Value → IPDS (Bin Selection) Number. (When an output bin is not installed the value is “No Map”)
Bin Mapping 1	Standard Bin → 1
Bin Mapping 2	Output Bin 1 → 2
Bin Mapping 3	Output Bin 2 → 3
Bin Mapping 4	Output Bin 3 → 4
Bin Mapping 5	Output Bin 4 → 5
Bin Mapping 6	Output Bin 5 → 6
Bin Mapping 7	Output Bin 6 → 7
Bin Mapping 8	Output Bin 7 → 8
Bin Mapping 9	Output Bin 8 → 9
Bin Mapping 10	Output Bin 9 → 10
Bin Mapping 11	Output Bin 10 → 11
Bin Mapping 12	Fin High Cap → 25

3.2.6 Margins

Option name	Default Value
All Input Trays	0, 0, 0, 0
Tray 1 Adjust	0, 0, 0, 0
Tray 2 Adjust	0 ,0, 0 ,0
Tray 3 Adjust	0, 0, 0, 0
Tray 4 Adjust	0, 0, 0, 0
Tray 5 Adjust	0, 0, 0, 0
MP FEEDER ADJUST	0, 0, 0, 0
MANUAL PAPER ADJ	0, 0 , 0, 0
MANUAL ENV ADJ	0, 0

3.2.7 Resource Capture

Option name	Default Value
Capture Media	Disk
Capture Fonts	Disable

Option name	Default Value
Capture Data Objects	Disable
Capture CMR Objects	Disable
Remove Resources	Fonts
	Objects
	CMRs
	Remove All

3.3 EMULATION – Options Descriptions

In the following settings, an asterisk "*" indicates the default factory value. The selected value for each of these options can be printed; see Printing the Menu Settings Page on page **11**.

3.3.1 IPDS Emulation

This option selects the printer emulation to be used when processing IPDS data. It is important to select the correct emulation before receiving IPDS data. The IPDS Printer and Host Setup Guide includes guidelines for selecting the emulation.

Resident* This printer's native emulation

3812/3816 IBM 3812/3816 emulation

Printing with Double Byte Character Set (DBCS) is not supported in the "3812/3816" emulation.

3.3.2 Host Resolution

Specifies the resource resolution support for raster font and IM1 image reported to the host in the XOA OPC command. The resolution selected determines the printer resident raster fonts which are activated. For example, 240 dpi raster fonts will be activated with a setting of "240", but not at the "300" or "600" setting.

Auto* Reply to host indicates support for IM1 image and any dpi raster fonts. Captured raster fonts of any resolution are only activated when the activation request is accompanied by a matching Font Resolution and Metric Technology Triplet.

240 240 dpi raster font and 240 IM1 image support is reported to the host. Captured raster fonts of other resolutions will not be activated unless a matching Font Resolution and Metric Technology Triplet is received with the request.

300 300 dpi raster font and 300 IM1 image support is reported to the host. Captured raster fonts of other resolutions will not be activated unless a matching Font Resolution and Metric Technology Triplet is received with the request.

600 600 dpi raster font and 600 IM1 image support is reported to the host. Captured raster fonts of other resolutions will not be activated unless a matching Font Resolution and Metric Technology Triplet is received with the request.

Note: If you select the "3812/3816" emulation in the **IPDS Emulation** option, the **Host Resolution** is forced to "240 dpi".

3.3.3 Color Processing

Specifies how color commands associated with the following page elements are processed:

- Text (PTOCA)
- Bar codes (BCOCA)
- Images (IM and IOCA except FS45)
- Graphics (GOCA)

See section 11.5, on page **84**, for more information on color command processing.

Black	Process color commands and print all colors as black.
Shades of Grey	Process color commands and print all colors as shades of grey.
Color*	Print in full color. (Default for color products.)
Grey, Black Text	Process color commands and print all images and graphics objects as shades of grey. Print text and barcodes as black.
Color, Black Text	Process color commands and print all images and graphics objects in full color. Print text and barcodes as black.

Note: Color options are only applicable on color models.

3.3.4 Toner Saver

Specifies the action taken when the **IPDS Print Quality Control** command is received.

Printer Setting* Use the values in the printer menu's **Settings > Quality Menu > Toner Darkness** option to control print quality. The value specified in the **IPDS Print Quality Control** command is ignored.

Host Controlled Use the value specified in the **IPDS Print Quality Control** command to control print quality. See XOA Print Quality Control on page **80** for additional information.

3.3.5 BAR CODE

3.3.5.2 Bar Code Symbol

Specifies the action taken when the IPDS data stream specifies suppressing the printing of the bar code symbol. The default setting of "Always Print" is useful when older applications have accidentally specified suppression of the bar code symbol.

Host Controlled Use the value specified in the **Write Bar Code** command to control printing of the bar code.

Always Print* Always print the bar code. Ignore the value specified in the **Write Bar Code** command to control printing of the bar code.

3.3.5.3 Bar Code Size

This option controls the size of the bar code when using the Resident IPDS emulation. When the 3812/3816 emulation is selected, this setting is ignored. Bar codes will be printed in a size that closely matches the IBM 3812/3816 family of printers.

Resident*	Prints the bar code in a size that gives the best quality on this printer.
4028	Bar codes are printed in a size that closely matches the IBM 4028 printer.
43xx	Bar codes are printed in a size that closely matches the IBM 43xx family of printers.

3.3.6 Default Codepage

This option defines the default code page with the appropriate character set to be used. The list is a limited selection of all supported code pages associated with the three types of supported fonts, which are known as “Compatibility”, “Core Interchange”, and “Coordinated”. For details see Appendix about

Font and Code Page Information, starting on page **89**.

Values are in alphabetical order. See table below.

Codepage	CPGID	Codepage	CPGID	Codepage	CPGID
Arabic Eur	420	Fin/Swe	278	Latin 2	870
ASCII	367	Fin/Swe	1143	Latin 2	1110
Aus/Ger	273	Fin/Swe Alt	288	Latin 2	1153
Aus/Ger	1141	French/Cat	297	Latin 3	905
Aus/Ger Alt	286	French/Cat	1147	Latin 4	1069
Baltic	1112	Greek	423	Latin 9 Eur	924
Baltic	1156	Greek Eur	875	OCR-A	892
Belgium	274	Hebrew Eur	424	OCR-B	893
Brazil	275	Hebrew Set A	803	PC Multi	850
Can. French	260	Iceland	871	PC Multi Eur	858
Can. French	276	Iceland	1149	PC std	437
Cyrillic	880	Int. Set 5	500*	Portugal	282
Cyrillic	1025	Int. Set 5	1148	Publishing	361
Cyrillic	1154	Italy	280	Spain/L. Am	284
Den/Nor	277	Italy	1144	Spain/L. Am	1145
Den/Nor	1142	Japan (Eng)	281	Spain Alt	289
Den/Nor Alt	287	Katakana	290	Turkish Lat 3	905
Estonian	1122			Turkish Lat 5	1026
Estonian	1157			Turkish	1155
				UK	285
				UK	1146
				USA/Canada	037
				USA/Canada	1140

Note 1: The code pages with the designation “Alt” – as well as Can. French 276, ASCII 367, OCR-A 892, and OCR-B 893 – are supported by one or both of the Compatibility Font Sets. OCR-A 892 and OCR-B 893 are also supported by the Coordinated Font Set. All of the other code pages in the above list are in the Core Interchange Font Set.

Note 2: The Euro symbol is supported in code pages 1140-1159, 1153-1158 and in code pages whose text description includes the designation Eur, such as Arabic Eur 420.

3.3.7 Codepage Version

This option determines which version of a code page is used. Some of the code pages are available in two versions. Some characters differ between the two versions of the same code page. If characters print differently than those entered on the keyboard, check the code page version.

Version 1* Use version 1 of appropriate code pages.

Version 0 Use version 0 of appropriate code pages.

3.3.8 Default FGID

Selects the default Font Global Identifier (FGID) to be used by the IPDS emulation when the host does not send an FGID at the start of a job.

Select an FGID for the emulation chosen in the **IPDS Emulation** option. FGIDs available on the operator panel are listed in the appendix in

Font and Code Page Information, starting on page **89**.

Resident FGID Default FGID is **416*.**
When using a CPI value of 10.0 FGID 416 is equal to FGID 11.

3812/3816 FGID Default FGID for 3812/3816 is **11*.**

3.3.9 Default CPI

Selects the default characters per inch (CPI) to be used by the IPDS emulation when the host does not send a CPI value at the start of a job. The option does not apply to the fixed pitch fonts.

10.0* Default CPI. The range is 5.0 to 30.9

3.3.10 Printable Area

This option defines the printable area on the page and how clipping is performed. Top, bottom, and side margins for your print jobs are set through your print application.

Important: Printing within 4.2 mm (.167 in) of the media edge may result in poor print quality. Printing within 4.2 mm (.167 in) of the media edge may also result in printing off the edge of the media. Continual printing within 4.2 mm (.167 in) of the media edge is not recommended. It can result in paper jams due to toner contamination of the paper path and toner appearing on the back side of duplex sheets. Toner contamination of the paper path can make more frequent maintenance necessary.

Whole Page* The printable area for the media loaded is reported to the host. Clipping occurs if data is printed outside the printable area. All four edges will clip.

Print Page The printable area for the media loaded is reported to the host. If the logical page is outside the printable area it is moved down and to the right. The right and bottom edges will be clipped.

Physical Page The printable area reported to the host is the physical media size (edge to edge).

Edge to edge printing is not supported on all printers. The Physical Page value will be displayed on all printers. Selecting Physical Page on a printer that does not support edge to edge allows the first print position to be located at the edge of the media. This allows print position compatibility with printers which support edge to edge printing. The print image will be clipped to the printable area supported by the printer when edge to edge printing is not supported.

Note: The Lexmark MS82x, MS52x, MS62x, CS92x, CS82x, MX32x, MX42x, MX52x, MX62x, MX72x, MX82x, CX92x, CX82x and CX860 can physically print edge to edge.

Full Page The job is formatted for a page using a printable area of edge to edge. When the page is printed, the page image is compressed approximately 2% in both the horizontal and vertical directions and is centered on the page. Full page printing is not supported on all printers.

Note: The Lexmark MS82x, MS52x, MS62x, CS92x, CS72x, CS82x, MX32x,

MX42x, MX52x, MX62x, MX72x, MX82x, CX92x, CX72x, CX82x and CX860 support the Full Page print mode.

4028 Whole Page The printable area for the media loaded is reported to the host. A printable area that more closely matches the values reported by the IBM 4028 printer is reported. Clipping occurs if data is printed outside the printable area. All four edges will be clipped.

4028 Print Page The printable area for the media loaded is reported to the host. A printable area that more closely matches the values reported by the IBM 4028 printer is reported. If the logical page is outside the printable area it is moved down and to the right. The right and bottom edges will be clipped.

Note: For Physical Page and Full Page to utilize the edge to edge printable area, enable to printer's Edge to Edge setting. Please refer to printer documentation for the instructions to enable setting.

3.3.11 Exception Control

It is often practical to suppress exception reporting on undefined characters and on position errors (printing outside the valid printable area, VPA). This option overrides the **Exception Handling Control** in the IPDS data stream.

Report All* No suppression of exceptions. Exception reporting is controlled by the IPDS data stream.

Sup Beyond VPA Exception reporting on position errors (outside VPA) is suppressed. The printer IPDS emulation will print the IPDS job but not report "08C1" printable area exceptions or "0411" bar code exceptions to the host.

Sup Undef Char If an undefined character is found, exception reporting is suppressed. The printer IPDS emulation will print the IPDS job but not report "0821" undefined character exceptions to the host.

Suppress Both Both position errors and undefined character exceptions are suppressed.

3.3.12 Font Control

This option defines how strict the reporting will be if a selected font does not correspond to a valid combination of code page and character set.

Relaxed* The printer makes an intelligent decision concerning whether the selected combination of code page and character set is adequately supported. A "Relaxed" setting will report very few exceptions. If the selected font is not found, the printer will substitute with the closest matching font. If a font/code page combination is selected, which is not fully supported, characters may be missing.

Strict A "Strict" setting reports exceptions when a requested font/code page or substituted font/code page combination is not valid. The "Strict" setting prints all characters.

3.3.13 Font Style

This option defines the visual appearance of characters in certain standard resident fixed pitch fonts such as Courier, Prestige, or Letter Gothic Font. When set to Standard, the styles will more closely match previous generations of printers with the Card for IPDS. When set to Alternate the font style will more closely match InfoPrint products that do not use the Card for IPDS.

Standard* The font styles are similar to fonts in previous generations of printers using the Card for IPDS.

Alternate The font styles are similar to font in other types of InfoPrint printers.

3.3.14 IPDS Print Res

This option defines the internal print resolution used to print IPDS jobs. Host resources received in the job are converted to the **IPDS Print Res** setting before printing. This is a separate setting from **Print Resolution** menu option in the printer menu.

This setting alters the quality of text, bar codes, graphics, and scalable images.

The default setting is specific to the printer model and usually produces the best print quality. Resolutions that are not available on the printer are not displayed.

600 dpi Print at 600 pel resolution.

1200 dpi Print at 1200 pel resolution.

1200 Image Q Print with 1200 Image Quality. Select **1200 Q** when your job contains grayscaled images that will benefit from enhanced line screening.

2400 Image Q Print with 2400 Image Quality. Select **2400 Q** when your job contains grayscaled images that will benefit from enhanced line screening.

4800 CQ Print with 4800 Color Quality. Select 4800 CQ for high resolution color printing.

3.3.14.2 Memory Considerations

Additional memory above the total recommended may be required when receiving TrueType fonts, DBCS fonts, complex mono or color IPDS jobs. See page **116** for information on the minimum total recommended memory for each resolution setting.

3.3.15 Intervention Required

This option defines if the emulation should report Intervention Required messages to the host. Types of Intervention Required messages include paper jam, paper out, cover open or offline message. These types of messages mean the printer is not ready to print.

Report* Report Intervention Required messages to the host. This is the typical setting.

Do Not Report Do not report Intervention Required messages to the host. Used only in special

cases.

3.3.16 IPDS Timeout

This option is also referred to as the **printer IPDS Timeout**. It allows the printer IPDS emulation to determine when to timeout and allow printing of jobs waiting on other ports.

The printer is capable of receiving jobs on multiple printer ports. These jobs may be non-IPDS jobs such as PCL and PostScript, or IPDS jobs from other hosts connected to port 5001that are assigned for printing IPDS. While the printer is busy printing jobs from one printer port, jobs on other printer ports remain in a waiting status. When the host disconnects from the printer or when the printer IPDS emulation times out, the printer automatically switches to another printer port with a waiting print job.

Note: The host port is specified when configuring the printer parameters on the host. Refer to the *IPDS Printer and Host Setup Guide* for more information on specifying the port and host timeout values.

Host Controlled* The **printer IPDS Timeout** is disabled and the printer IPDS emulation remains active until the host disconnects from the printer. **Host timer/timeout** values control when the host will disconnect. When the host disconnects all downloaded IPDS resources for that session will be deleted and the printer will be ready to print jobs from other printer ports.

***Host Timer/Timeout** Values and Actions:*
The **host timer/timeout** value should be set to a small value (15 to 30 seconds) so the host will quickly disconnect after an IPDS job is printed and allow non-IPDS jobs from other ports and IPDS jobs from other host connections to print. All IPDS resources downloaded to the printer will be deleted when the host disconnects.

An infinite or large **host timer/timeout** value will cause the printer IPDS emulation to remain active and prevent printing of jobs from other ports. **IPDS** will remain on the printer operator panel even though the printer has completed processing and printing the IPDS job.

15 seconds
30 seconds
60 seconds
90 seconds
2 minutes
3 minutes
5 minutes
10 minutes

Printer IPDS Timeout values.
If the host does not send another IPDS job or send additional IPDS resource data to the printer, the printer IPDS emulation will time out according to the specified time, place all IPDS resources in temporary storage, and allow the printer to print jobs from other printer ports.

***Host Timer/Timeout** Values and Actions:*
A printer IPDS Timeout value, should only be used if the **host timer/timeout** value is set to an infinite or a large value that prevents the host from disconnecting and subsequently prevents the printer from printing jobs from other ports.

Important: The **host timer/timeout** value and the printer **IPDS Timeout** value must not be set to the same number of seconds. The difference in these values should always be 30 or more seconds in order to avoid communication errors.

IPDS resources from the last active session are temporarily stored in the printer memory when printer **IPDS Timeout** values ("15 seconds" to "10 Minutes") are selected and the **host timer/timeout** values are set to a large value or disabled. Operator actions and processing of other jobs may cause the resources to be deleted. Events such as the following will cause deletion of the downloaded resources.

- The host ends the IPDS session.
- TCP/IP communications is interrupted for the IPDS session.
- Another IPDS session is started on port 5001.
- **IPDS MENU** option values are changed.
- Printing IPDS Resource List from IPDS MENU.
- Processing of a non-IPDS job that requires more memory than is available in printer memory.
- The printer is powered **OFF**.

If the IPDS resources are deleted, the printer will return a **Printer Reset** exception to the host. The host will download the resources again with the next IPDS job.

3.3.17 Fax Interrupt

On MFPs that can receive fax, this option controls when an incoming fax will be printed in relation to IPDS print jobs.

Enabling this option will allow an incoming fax to be printed during an active IPDS session. On host systems that include IPDS job separation headers a fax will be printed between job boundaries, except if the host explicitly has defined "keep pages together" across job boundaries. For host systems that do not include IPDS job separation headers (typically older systems), the fax will be printed between any two pages that are not logically associated by either a duplex operation, a finishing group or a copy group.

Disabling this option will prevent a fax to be printed during an active IPDS session. The fax will be printed when either the host terminates the IPDS session or the IPDS time out ends the session. See section 3.3.16 IPDS Timeout on page 24.

Disable*	Prevent Fax printing during an active IPDS session
Enable	Allow Fax printing during an IPDS session between valid Group Boundaries

3.3.18 Print Resource List

This option prints a list of the following IPDS resources:

- All resident fonts
- All captured bitmap, Type 1 and TrueType fonts
- All captured DBCS fonts
- All captured Code Pages
- All captured data objects

(Refer to RESOURCE CAPTURE Menu Options on page **46** on how to enable Resource Capture.)

Yes	Print IPDS resource list.
No	Do not print IPDS resource list.

Printing an IPDS resource list will delete any IPDS resources stored in the printer memory. A “Printer Reset” NACK will be returned to the host and the resources will be downloaded again at the start of the next host session.

Note: This function cannot be operated remotely.

3.3.19 Stream Capture

This option allows capture of IPDS stream in IRP format. When enabled, the Download IRP Stream link appears. Click this link to download the IPDS stream after capture.

The Stream Capture option should be disabled after use. Print performance may be degraded when enabled.

This option is usually only operated by service personnel for troubleshooting purpose.

Disable* Disable stream capture

Enable Enable stream capture.

Note 1: This function is accessed via EWS.

Note 2: The captured stream is erased when set back to **Disabled**.

3.3.20 IPDS Version

This option displays the current IPDS firmware version / level.

Note 1: This option cannot be used remotely.

Note 2: The IPDS level is also shown on the printed **Menu Settings Page.** It is found as “IPDS Emulation” under the **Device Information** heading.

3.4 COLOR MENU – Options Descriptions

In the following settings an asterisk "*" indicates the default factory value. The selected value for each of these options can be printed; see Printing the Menu Settings Page on page **11**.

Note: Color options are only applicable on color models.

3.4.1 Color Management

This option allows disabling of all Color Management (including CMOCA).

Ignore Color Management Settings*	Perform IPDS color management using the menu selections in Color Menu.
Use Color Management Settings	Do not use the settings in this menu to control IPDS color management. The HL Mapping Table and OCA Mapping Table menu items can still be used to manage color output. Refer to section 6 Color Management – User Files on page **67** for more information on uploading user files.

3.4.2 User CMYK Profile

This option controls whether a user uploaded CMYK profile should be used.

Use as Source Profile*	If no input profile is specified in the IPDS data the User Input CMYK Profile will be used. If no User Input CMYK profile is present in the printer, the IPDS assumes that the input color space is device CMYK. Refer to section 6 Color Management – User Files on page **67** for more information on uploading user files.
Ignore	Ignore the User CMYK Profile. The IPDS assumes that the input color space is device CMYK.

3.4.3 User RGB Profile

This option controls whether a user uploaded RGB profile should be used.

Use as Source Profile*	If no RGB input profile is found applicable in the IPDS data or embedded in the RGB IPDS object, the User Input RGB Profile will be used. If a User Input RGB profile is not present, the IPDS assumes a SMPTE-C RGB as the default RGB input profile. Refer to section 6 Color Management – User Files on page **67** for more information on uploading user files.
Ignore	Ignore the User Input RGB Profile. The IPDS assumes a SMPTE-C RGB as the default RGB input profile.

3.4.4 User Dest. Profile

This option controls whether a user uploaded destination profile should be used. The device output color space is defined as CMYK or Grey.

Use* If no destination profile is found applicable in the IPDS data the User Destination Profile will be used. If no User Destination Profile is present in the printer, the IPDS uses a built-in destination profile adapted for the specific printer model as the default destination profile.

Refer to section 6 Color Management – User Files on page **67** for more information on uploading user files.

Ignore Ignore the User Destination Profile. The IPDS uses a build-in destination profile adapted for the specific printer model as the default destination profile.

3.4.5 RGB Grey to K

This option controls how to handle RGB Grey colors where the R, G, B values are equal.

Yes Convert RGB Color to pure K (Black) for Colors where R=G=B).

No* Do not apply any special processing for Grey colors where R=G=B.

3.4.6 Preserve Black

This option controls how to handle pure black in CMYK.

Yes Convert input colors to pure K for CMYK black (K only).

No* Do not apply special processing for CMYK pure black

3.4.7 Black Point Comp

This option controls enabling of the Black Point Compensation algorithm.

Yes Enable Black Point Compensation. This option applies an algorithm that follows the description from Adobe Systems' implementation of black point compensation. The option may produce better visibility in details of dark areas.

No* Do not apply Black Point Compensation.

3.4.8 Embedded ICC Prof

This option controls whether to use the ICC profile embedded in the IPDS object. If an applicable Audit Color Correction (CC) CMR is directly associated with the IPDS object to render, this Audit CC CMR will always be used as input profile regardless of the setting of this option.

Use* If no applicable Audit CC CMR is directly associated with the IPDS object to render, then use the embedded profile in the IPDS objects.

Ignore Do not use the embedded profile in the IPDS objects.

3.4.9 HL Mapping Table

This option controls IPDS highlight color processing priority.

IPDS CMT, User HL, IPDS HL * The IPDS Color Mapping Table (CMT) is searched first (if one exists). For HL colors not found in this table the User HL Mapping Table file is used (if one exists). For HL colors not found in this table, the default IPDS HL Grey algorithm is used

IPDS CMT, IPDS HL The IPDS Color Mapping Table (CMT) is searched first (if one exists). For HL colors not found in this table, the default IPDS HL Grey algorithm is used.

User HL, IPDS HL The User HL Mapping Table file is searched first (if one exists). For HL colors not found in this table, the default IPDS HL Grey algorithm is used.

IPDS HL Both the IPDS Color Mapping Table (CMT) and the User HL Mapping Table files are ignored. Only the default IPDS HL Grey algorithm is used.

Refer to section 6 Color Management – User Files on page **67** for more information on uploading user files.

3.4.10 OCA Mapping Table

This option controls the OCA color mapping modes and search priority for OCA color.

Note: The default OCA mapping table (Def OCA) specifies full device saturated colors.

Note: When using the IPDS specified SMPTE-C RGB color space, color values are used and will be color managed, and thereby keep color appearance.

IPDS CMT,User OCA,Def OCA* An IPDS defined Color Mapping Table (CMT) is searched first (if one exists). For OCA colors not defined in this table, the user defined OCA Mapping Table file is used (if one exists). For OCA colors not defined in this table, the default OCA Color mapping table is used.

IPDS CMT,Def OCA An IPDS defined Color Mapping Table (CMT) is searched first (if one exists). For OCA colors not defined in this table, the default OCA Color mapping table is used.

IPDS CMT,IPDS Spec An IPDS defined Color Mapping Table (CMT) is searched first (if one exist). For OCA colors not defined in this table the OCA color values defined in the IPDS specification using SMPTE-C RGB color space are used.

User OCA,Def OCA The user defined OCA Mapping Table file is searched (if one exists). For undefined entries in this table, the default OCA Color mapping table is used.

Def OCA	Only the default OCA Color mapping table is used.
IPDS Spec	The OCA color values are converted to SMPTE-C RGB values according to the IPDS specification.

Refer to section 6 Color Management – User Files on page **67** for more information on uploading user files.

3.4.11 Def Rend Intent

This option menu controls the default rendering intent for different types of IPDS data (Images, Text and Graphics). The following type of intent can be selected:

- **Perception** Perceptual Rendering Intent. Attempts to preserve appearance by maintaining color relationships; typically used to render continuous-tone images.
- **Relative Colorim** Relative Colorimetric Rendering Intent. Maps white point of source color to white point of output media; colors 'look right' but may not be accurate colorimetrically. Typically used for vector graphics or images.
- **Saturation** Saturation Rendering Intent. Attempts to generate vivid, saturated colors, even at the expense of color accuracy; typically used for business graphics.
- **Absolute Colorim** Absolute Colorimetric Rendering Intent. Does not map white point of source color to white point of output media. If source white is bluish and media white is yellowish, system adds cyan to simulate blue on output medium. Colors are accurate colorimetrically but may not 'look right'. Typically used for logos or proofing.

Images	Default rendering intent is **Perception***.
Text	Default rendering intent is **Relative Colorim***.
Graphics	Default rendering intent is **Saturation***.

3.4.12 CMOCA Options

The option menu control the printer's action for processing CMOCA resources.

3.4.12.2 CMOCA Options

Enable*	Accept and process all CMOCA resources.
Disable	Do not accept CMOCA resources. CMOCA support is not returned to the host.
Ignore	Support for CMOCA is returned to the host. CMOCA resources are accepted but ignored.

3.4.12.3 Instruction CC

CC CMRs contains ICC profiles (in their ICC defined syntax) that convert a device-specific color to/from the device-independent ICC Profile Connection Space (PCS).

Use*	Use the IPDS CMOCA instruction CC CMR. If no applicable CMR exist, the IPDS uses the default User Destination Profile. If the User Destination Profile option is set to Ignore or no User Destination Profile is present in the printer, the IPDS uses a build-in output profile adapted for the specific printer model as the default output profile.
Ignore	Ignore the IPDS CMOCA instruction CC CMR. The IPDS will use the default User Destination Profile. If the User Destination Profile option is set to Ignore or no User Destination Profile is present in the printer, the IPDS uses a built-in output profile adapted for the specific printer model as the default output profile.

Refer to section 6 Color Management – User Files on page **67** for more information on uploading user files.

Note: CMOCA feature is available on the following printers: Lexmark CS82x, CS72x, CS92x, CX82x CX86x, CX72x and CX92x.

3.4.13 Remove User Files

This function is used to remove color management files uploaded by the user through the printer web interface and stored on a disk, user flash or the flash of the IPDS Card.

User CMYK Profile	Remove all user CMYK profile files.
User RGB Profile	Remove all user RGB profile files.
User Dest. Profile	Remove all user Destination profile files.
User OCA Mapping Table	Remove all user OCA Mapping Table files.
User HL Table	Remove all user Highlight Mapping Table files.
All User Files	Remove all user files, stored on any media.

3.5 PAPER HANDLING Menu – Option Descriptions

In the following an asterisk "*" indicates the default factory value. Values only display when they are available on your printer. The selected value for each of these options can be printed; see Printing the Menu Settings Page on page **11**.

3.5.1 Offset Stacking

This option controls the offset stacking function. It is only displayed when offset stacking is supported in the printer standard bin or when an optional bin with offset stacking capability is installed. Offset stacking is only available in selected bins and may be limited to selected media.

Bin selection has a higher priority than offset stacking commands in the IPDS job. The job must be routed to a bin that supports offset stacking and have offset stacking specified in the job before offset stacking will be performed.

See section 5.1 on page **50** for additional information on offset stacking.

Host Controlled* Offset stacking is controlled by the commands received in the IPDS job.

Disabled Offset stacking is not performed. Offset stacking commands received in the IPDS jobs are ignored.

3.5.2 UNIVERSAL SIZE

The IPDS emulation uses the paper size setting specified in the printer menu to determine the size loaded. The paper size is returned to the host. A printer paper size of "Universal" is displayed in the printer menu when a non-standard size paper is detected in an auto size sensing tray or is selected as the paper size loaded into a non-size sensing tray or feeder.

This option allows you to specify the physical paper size returned to the host when a non-standard paper size is loaded. The paper size is specified in 300 dots per inch.

Important: A **34 Incorrect Media**, or paper jam message may be displayed if printing occurs past the length of the physical paper. You should specify the actual paper size to avoid errors.

Product	Menu Option	Value Range	Function
Lexmark CS72x **Lexmark CS82x** **Lexmark CX72x** **Lexmark CX82x** **Lexmark CX86x**	**UNIVERSAL SIZE > Paper Length**	4200*, 1500 to 6825	Specific Universal paper size dimensions. See notes below.
	UNIVERSAL SIZE > Paper Width	2550* 900 to 2550	
Lexmark MS82x **Lexmark MX72x** **Lexmark MX82x**	**UNIVERSAL SIZE > Paper Length**	4200*, 1500 to 4251	
	UNIVERSAL SIZE > Paper Width	2550* 900 to 2550	
Lexmark MS52x **Lexmark MS62x** **Lexmark MX32x** **Lexmark MX42x** **Lexmark MX52x** **Lexmark MX62x**	**UNIVERSAL SIZE > Paper Length**	4200*, 1500 to 4251	
	UNIVERSAL SIZE > Paper Width	2550* 900 to 2550	
Lexmark CS92x **Lexmark CX92x**	**UNIVERSAL SIZE > Paper Length**	5100*, 1157 to 6825	

Product	Menu Option	Value Range	Function
	UNIVERSAL SIZE > Paper Width	3780* 1050 to 3780	

Note: The printer paper trays and feeders are limited to feeding of specific media sizes. Refer to your printer documentation when loading a non-standard media size to determine if that media size can be fed from that tray or feeder.

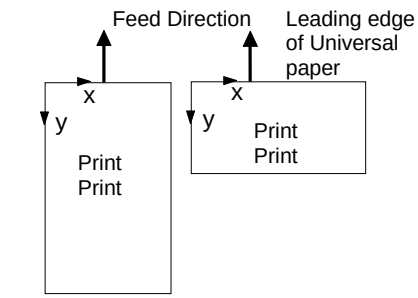
Conversion example:

Paper Size = 215.9 x 355.6 mm (8.5 x 14.0 in)

Paper Width = 215.9 mm / 25.4 $\frac{mm}{in}$ = 8.5 in x 300 $\frac{dots}{in}$ = 2550

Paper Length = 355.6 mm / 25.4 $\frac{mm}{in}$ = 14.0 in x 300 $\frac{dots}{in}$ = 4200

Universal feed directions:

Lexmark CS72x **Lexmark CS82x** **Lexmark CS92x** **Lexmark CX72x** **Lexmark CX82x** **Lexmark CX86x** **Lexmark CX92x** **Lexmark MS52x** **Lexmark MS62x** **Lexmark MS82x** **Lexmark MX32x** **Lexmark MX42x** **Lexmark MX52x** **Lexmark MX62x** **Lexmark MX72x** **Lexmark MX82x**	 x = Left Margin y = Top Margin

3.5.3 OTHER ENV SIZE

The IPDS emulation uses the envelope size setting specified in the printer menu to determine the envelope size loaded. The envelope size is returned to the host. A printer envelope size of "Other Envelope" may be selected in some printer menus when a non-standard size envelope is loaded into a non-size sensing tray or feeder.

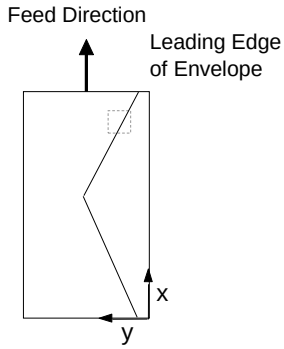
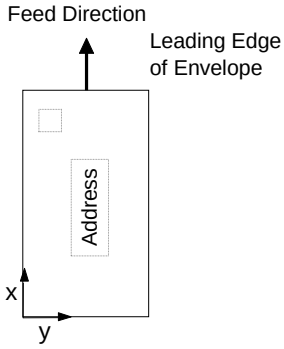
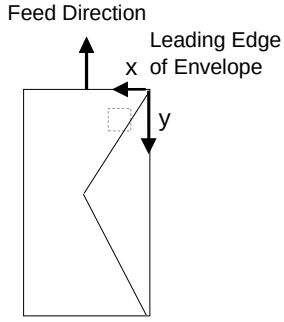
This option allows you to specify the envelope size returned to the host when "Other Envelope" is selected in the printer menu as the envelope size. The envelope size is specified in 300 dots per inch. See the conversion example for **UNIVERSAL SIZE** (section 3.5.2).

Important: A **34 Incorrect Media** or paper jam message may be displayed if printing occurs past the length of the physical envelope. You must specify the actual envelope size to avoid incorrect text positioning or clipping of text. Some printers do not report an error when the size is incorrect and the text is clipped.

Product	Menu Option	Value Range	Function
Lexmark CS72x **Lexmark CS82x** **Lexmark CX72x** **Lexmark CX82x** **Lexmark CX86x**	**OTHER ENV SIZE** **> Envelope Length**	4200* 2250 to 4200	Specific Other Envelope dimensions. See notes below.
	OTHER ENV SIZE **> Envelope Width**	2550* 1163 to 2550	
Lexmark MS82x **Lexmark MX72x** **Lexmark MX82x**	**OTHER ENV SIZE** **> Envelope Length**	4200* 2250 to 4200	
	OTHER ENV SIZE **> Envelope Width**	2550* 1163 to 2550	
Lexmark MS52x **Lexmark MS62x** **Lexmark MX32x** **Lexmark MX42x** **Lexmark MX52x** **Lexmark MX62x**	**OTHER ENV SIZE** **> Envelope Length**	4200* 2250 to 4200	
	OTHER ENV SIZE **> Envelope Width**	2550* 1163 to 2550	
Lexmark CS92x **Lexmark CX92x**	**OTHER ENV SIZE** **> Envelope Length**	5048* 2250 to 5048	
	OTHER ENV SIZE **> Envelope Width**	3506* 1163 to 3506	

Note: The printer trays and feeders are limited to feeding of specific media sizes. Refer to your printer documentation when loading a non-standard media size to determine if that media size can be fed from that tray or feeder.

Envelope feed directions:

Lexmark CS720 **Lexmark CS820** **Lexmark CS725** **Lexmark CX725** **Lexmark CX820** **Lexmark CX825** **Lexmark CX860** **Lexmark MS52x** **Lexmark MS62x** **Lexmark MX32x** **Lexmark MX42x** **Lexmark MX52x** **Lexmark MX62x**	 x = Left Margin y = Top Margin
Lexmark CS92x **Lexmark CX92x**	 x = Left Margin y = Top Margin
Lexmark MS82x **Lexmark MX72x** **Lexmark MX82x**	 x = Left Margin y = Top Margin

3.6 MAP INPUT TRAYS Menu Options

This option defines the mapping of the host's request for a physical feeder or input tray in the printer. Any host input source can be mapped to any printer input source. The printer input source is mapped to an IPDS host number. Input sources include the multi-purpose feeder, envelope feeder, manual paper feed, and manual envelope feed.

Some models may not support all printer input sources listed below. The optional sources will only be displayed when installed on the printer. The Tray x Hp values are only displayed when the an optional output option that supports hole punching is installed. Pages can be hole punched using the "Tray x Hp" value settings. See Hole Punch on page **65** for additional information.

You can configure up to 10 mappings. Select a **Tray Mapping x** in the **MAP INPUT TRAYS** menu group (the value x represents any given Tray Mapping number). This displays a list of Tray Values which identify the available printer input sources. When you select a Tray Value, the operator panel displays a numerical setting screen to set the IPDS tray selection number that will select that printer input source.

Tray Mapping 1 through Tray Mapping 10

Tray Mapping x is a sub-menu selection item. Each item refers to the number of the mapping, not to the physical printer tray.

Tray Value

Tray Values specify the physical printer tray. The tray values specified below are available under the specified printer's Tray Mapping sub-menu when the physical tray is installed and available.

Check your printer documentation for information on optional tray and feeder support. Values that may be displayed when trays on feeders are installed are shown below.

Tray 1, Tray 1 Hp, Tray 2, Tray 2 Hp, Tray 3, Tray 3 Hp, Tray 4, Tray 4 Hp, Tray 5, Tray 5 Hp, MP Feeder, Env Feeder, Manual Paper, Manual Paper Hp, Manual Env, No Map

IPDS Tray Selection Number Values

The value range for the **IPDS Tray Selection Number** is 0 to 255. If an IPDS tray selection number is mapped (used) twice, the lowest tray mapping (if available) is used.

A typical relationship between IPDS Numbers and input sources would be

Tray Map. No.	→	Input Source Value	→	IPDS (Tray Selection) Number
Tray Mapping 1		Tray 1		0
Tray Mapping 2		Tray 2		1
Tray Mapping 3		Tray 3		2
Tray Mapping 4		Tray 4		3
Tray Mapping 5		Tray 5		4
Tray Mapping 6		Envelopes (Feeder)		64 (40H)
Tray Mapping 7		Envelopes (Manual)		64 (40H)
Tray Mapping 8		Manual Paper		99 (63H)
Tray Mapping 9		MP Feeder		98 (62H)
Tray Mapping 10		No Map		---

Note: The labels *Tray Mapping 1 - Tray Mapping 10* refer to the **number** of the mapping, not the physical tray.

Important: For MAP INPUT TRAYS to work correctly, the Paper Size/Type for each printer input tray must be set differently in the printer's Paper Menu. See example 1 below. The only time you set the PAPER TYPE the same for more than one input tray is when you want to link the input trays involved. See example 2.

Examples of tray mapping

Example 1 - Making a higher capacity input tray the default tray

You may want to use one of the higher capacity input trays for IPDS **0**. To swap the IPDS tray selection number for Tray 1 and Tray 2, you will need to do the following:

1. Set **Tray Mapping 2** for **Tray 2** to **IPDS 0**.
2. Set **Tray Mapping 1** for **Tray 1** to **IPDS 1**.

This will give you:

Tray Mapping 1	=	IPDS 1 mapped to Tray 1
Tray Mapping 2	=	IPDS 0 mapped to Tray 2

Note: You must set the **Paper Size/Type** for the high capacity tray to a different value from all other trays. For instance, you could choose a different custom paper type. This setting is found in the printer's **Paper Menu**.

Example 2 - Linking input trays

To link multiple input trays as one big input tray, you need to make changes under the printer's **Paper Menu.** You need to set the same **Paper Size/Type** for each of the trays you want to link to the same value.

For example, the host expects colored paper in Tray 1 and you want to link Tray 2 and Tray 3, which have plain paper. Do the following:

Leave the **MAP INPUT TRAYS** at their defaults:

Tray Mapping 1 = IPDS 0 mapped to Tray 1
Tray Mapping 2 = IPDS 1 mapped to Tray 2
Tray Mapping 3 = IPDS 2 mapped to Tray 3

Insert letter-size colored paper in Tray 1. Insert letter-size plain paper in Trays 2 and 3.

The paper size is detected by the printer:

Tray 1 Size =	Letter
Tray 2 Size =	Letter
Tray 3 Size =	Letter

Set the paper type for each tray**.** In this example, you would configure the three trays as follows:

Tray 1 Type =	Colored Paper
Tray 2 Type =	Plain Paper
Tray 3 Type =	Plain Paper

The printer will feed paper from Tray 3 when Tray 2 is empty.

Example 3 - Understanding what happens when an IPDS tray selection number is mapped twice

If an IPDS tray selection number is mapped (used) twice, the lowest tray mapping number is activated (if available). For example if Tray Mapping 6 and 7 both map to IPDS 64 as shown below, the printer will select media from the Env Feeder.

Tray Mapping 6 = IPDS 64 mapped to Env Feeder
Tray Mapping 7 = IPDS 64 mapped to Manual Env

In other words, the printer attempts to map to (select media from) the Env Feeder first, and if it is not installed, the printer defaults to Manual Env.

3.7 MAP OUTPUT BINS Menu Options

This option defines the mapping of the host's request for a physical output bin in the printer. The printer physical bin is mapped to an IPDS output bin selection number that is specified in the IPDS data stream. Printer output bins include the top of the printer (standard bin) and optional output bins that attach to the printer.

Some printer models may not support all the bins listed. The optional printer output bin value will only be displayed when the physical output bin is installed on the printer. Fin High Cap Hp values are only displayed when an optional finisher that supports a hole punch is installed. Bin x Hp values are only displayed when an optional output option that supports a hole punch is installed. Pages can be hole punched using the "Hp" value settings. See Hole Punch on page **65** for additional information.

You can configure up to 12 mappings. This allows the Standard Bin, up to 10 optional bins, and a special high capacity setting **(Fin High Cap)** explained in section 3.7.1 on page **39**.

Select a **Bin Mapping x** in the **MAP OUTPUT BINS** menu group (the value x represents any given Bin Mapping number). This displays a list of Output Bin Values that identify the available printer physical bins. When you select an Output Bin Value, the operator panel displays a numerical setting screen to set the IPDS bin selection number that will select that physical bin.

Bin Mapping 1 through Bin Mapping 12	Bin Mapping x is a sub-menu selection item. Each item refers to the number of the mapping, not to the physical printer output bin.
Output Bin Value	Output Bin Values specify the physical printer output bin. The output bin values specified below are available under the specified printer's Bin Mapping sub-menu when the physical bin is installed and available. General Descriptions of Output Bin Values are found on page **39**. Check your printer documentation for information on optional bin and finisher support. Values that may be displayed when optional bins or optional finishers are installed are shown below. Standard Bin, Output Bin 1, Output Bin 2, Output Bin 3, Output Bin 4, Output Bin 5, Output Bin 6, Output Bin 7, Output Bin 8, Output Bin 9, Output Bin 10, Fin High Cap, Bin 1 Hp, Fin High Cap Hp, No Map
IPDS Bin Selection Number Values	The value range for the **IPDS Bin Selection Number** is 1 to 255. If an IPDS bin selection number is mapped (used) twice, the lowest bin mapping (if available) is used. General Descriptions of IPDS Bin Selection Numbers are found on page **40**.

3.7.1 Descriptions of Output Bin Values

Output bin values are associated with physical bins on the printer. Bin values will only appear in the menu when the physical bin is available on the printer.

A description for each output bin value is given below.

Std Bin – Selects the printer standard output bin.

Output Bin 1 – Output Bin 10 – Selects additional standard output bins available on the printer or optional physical output bins when installed.

Fin High Cap – Selects the optional finisher output bin with the highest capacity. The order of option installation does not affect the physical bin associated with the Fin High Cap bin value. This value is always associated with the highest capacity physical bin of the optional finisher.

Bin Mapping 12 = Fin High Cap = IPDS number 25 is a default value on all printers. Assuming the optional finisher is installed and this default value is not changed, jobs that select IPDS bin number 25 on the host will always be routed to the finisher bin with the highest capacity.

When hole punching is available in a physical bin, bin selection values may be followed by 'Hp' which indicates hole punching is available. Examples are: Output Bin 1 Hp, Output Bin 2 Hp, and Fin High Cap Hp. When a value with 'Hp' is selected, all pages in an IPDS job routed to this bin are hole punched. See Hole Punch on page **65** for additional information.

3.7.2 Descriptions of IPDS Bin Selection Numbers

Host applications select printer physical bins by sending IPDS bin selection numbers ranging from 1 to 255. These IPDS bin numbers may be mapped to any physical bin on the printer by changing the printer physical bin selected by the IPDS bin selection number. Assuming printer default output bin mapping, when IPDS number 1 is received in an IPDS job, the pages are routed to the printer Standard Bin. When IPDS bin selection number 2 is received in an IPDS job, the pages are routed to the second printer physical output bin.

Bin Mapping 12 = Fin High Cap = IPDS bin selection number 25, is a default value on all printers. Assuming the optional finisher is installed and this default value is not changed, jobs that select IPDS bin selection number 25 on the host will always be routed to the finisher bin with the highest capacity.

3.7.3 Default Bin Mapping

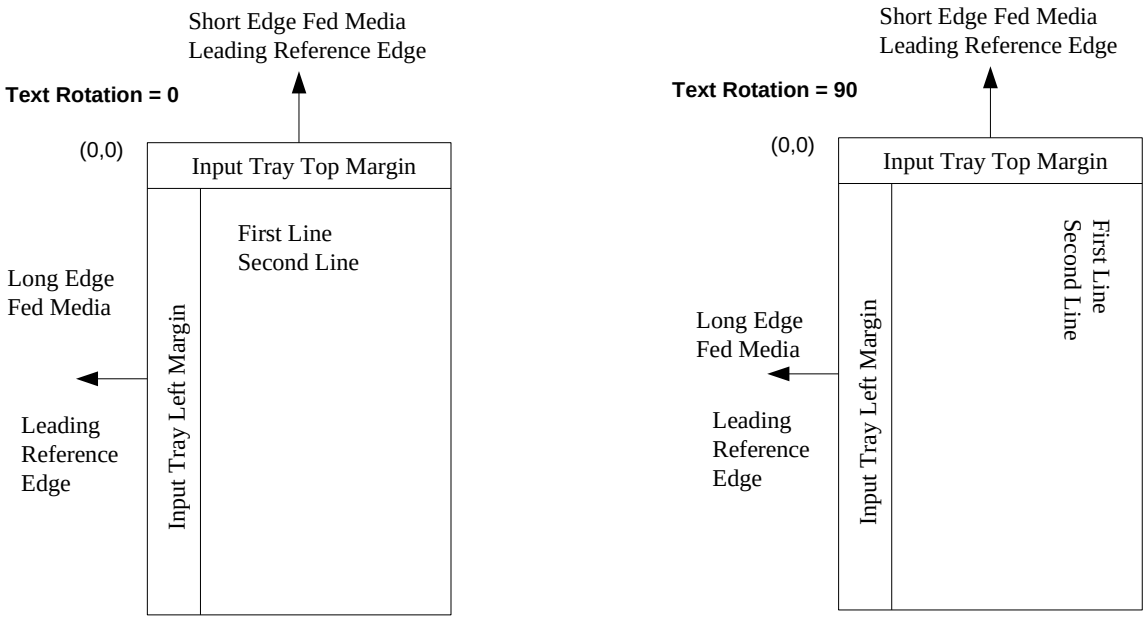
The default bin mapping shown below represents a typical relationship between IPDS output bin selection numbers and the printer physical output bins. The default mapping when optional output bins are installed on the printer is shown in the table below for all printers. In the table below, the labels *Bin Mapping 1- Bin Mapping 12* refer to the **number** of the mapping, not the printer physical output bin. All printers do not support ten optional output bins or an optional finisher. Default settings will be assigned for all output bins available on your printer.

Bin Mapping No.	→	Output Bin Value	→	IPDS (Bin Selection) Number
Bin Mapping 1		Standard Bin		1
Bin Mapping 2		Bin 1		2
Bin Mapping 3		Bin 2		3
Bin Mapping 4		Bin 3		4
Bin Mapping 5		Bin 4		5
Bin Mapping 6		Bin 5		6
Bin Mapping 7		Bin 6		7
Bin Mapping 8		Bin 7		8
Bin Mapping 9		Bin 8		9
Bin Mapping 10		Bin 9		10
Bin Mapping 11		Bin 10		11
Bin Mapping 12		Fin High Cap		25

3.8 MARGINS Menu Options

Use margin settings to adjust the position of the page image. Margin settings, which could be compared to movements of the tractor feeder and paper knob of a matrix printer, affect all IPDS jobs and are not affected by IPDS commands in the job.

The input tray and input feeder **Left Margin** and **Top Margin** option settings should not be confused with the IPDS left and top margin settings sent from the host. Input tray **Left Margin** settings adjust the page image left or right in relation to the media leading reference edge as it is fed through the printer. Input tray **Top Margin** settings adjust the page image up or down in relation to the media leading reference edge as it is fed through the printer. The illustrations below apply to paper and envelopes when a finisher is not installed.



Margins may be adjusted for all input trays and feeders using the **All Input Trays** menu. Additional adjustments may be made to the **All Input Trays** margin settings for an individual tray or feeder using the tray or feeder specific margin menu. Most often, the **All Input Trays** margin settings will remain at the default setting of zero and adjustments will be made using the specific tray or feeder margin menu. The **All Input Trays** margin adjustment PLUS the specific tray or feeder margin adjustment determines the total margin adjustment for a specific tray or feeder.

Margin Adjustment = All Input Trays setting + Specific Tray / Feeder Setting

The IPDS emulation is limited by the printer's printable area. The **MARGINS** menu may be used to adjust page images outside the valid printable area. The page image will be clipped. Valid Printable Area (VPA) exception conditions will not be reported to the host.

Margin adjustments are in 1/300ths of an inch.

See the Examples below.

The selected value for each of these options can be printed; see Printing the Menu Settings Page on page **11**.

Example 1 – Margins

The **All Input Trays Left Margin** is set to the default of **0**. The **Tray 1 Adjust Left Margin** is set to **+25**. This adjusts the page image left margin for all pages printed from tray 1 by 25/300ths of an inch to the right of the margin specified in the IPDS job.

Example 2 – Margins

The **All Input Trays Left Margin** has been adjusted to **–25**. This moves the left margin for pages printed for all IPDS jobs 25/300ths of an inch to the left. The **Tray 1 Adjust Left Margin** has been adjusted to **+25**. For tray 1, the additional **Tray 1 Adjust Left Margin** value will also be used to adjust the left margin. The tray 1 left margin adjustment will be zero for pages printed from tray 1. The **All Input Trays Left Margin** adjustment PLUS the **Tray 1 Adjust Left Margin** adjustment equals the total left margin adjustment. {–25 pels +25 pels = 0 adjustment}.

Margin and Tray Linking Interaction

When trays are linked, the margins set in the **All Input Trays** menu and the margins set for the tray specified in the IPDS data stream will be used to adjust the page image on the paper.

Example 1 – Margin and Tray Linking

Tray 1 is requested as the input source from the host. If tray 1 and tray 2 are linked and tray 1 runs out of paper, paper will be pulled from tray 2. The margin adjustments applied when printing from tray 2 will be the **All Input Trays** margins PLUS the **Tray 1 Adjust** margins set for the requested IPDS input source (tray 1).

Example 2 – Margin and Tray Linking

Tray 2 is requested as the input source from the host. If tray 1 and tray 2 are linked and tray 2 runs out of paper, paper will be pulled from tray 1. The margin adjustments applied when printing from tray 1 will be the **All Input Trays** margins PLUS the **Tray 2 Adjust** margins set for the requested IPDS input source (tray 2).

Example 3 – Margin and Tray Linking

Tray 2 is requested as the input source from the host. If tray 2, tray 3, and tray 4 are linked and tray 2 runs out of paper, paper will be pulled from tray 3 until it is empty and then from tray 4. The margin adjustments applied when printing from tray 3 or tray 4 will be the **All Input Trays** margins PLUS the **Tray 2 Adjust** margins set for the requested IPDS input source (tray 2).

Margin and Tray Mapping Interaction

When the host's IPDS Tray Selection Number has been mapped to another input source using the **MAP INPUT TRAYS** option, the value of the **MAP INPUT TRAYS** option will determine the margin adjustment applied to pages printed from the selected tray.

Example – Margin and Tray Mapping

The host input source IPDS Tray Selection Number 1 normally selects the printer physical tray 2. If IPDS Tray Selection Number 1 has been mapped to **Tray 1**, the **Tray 1 Adjust** margin values will be applied to all pages in a job that have tray 2 specified as the input source.

Each margin menu option has four sub-menus. The exception is the envelope menu options, which have only two. The available margin menu options and their sub-menus are shown below.

Margin menu option	Top Margin	Left Margin	Top Margin Back	Left Margin Back
All Input Trays	x	x	x	x
Tray 1 Adjust	x	x	x	x
Tray 2 Adjust	x	x	x	x
Tray 3 Adjust	x	x	x	x
Tray 4 Adjust	x	x	x	x
Tray 5 Adjust	x	x	x	x
MP FEEDER ADJUST	x	x	x	x
MANUAL PAPER ADJ	x	x	x	x
MANUAL ENV ADJ	x	x		

Margin menu options will only appear when the printer option is installed or when the printer supports feeding the media. The following sections describe each of the margin menu options.

3.8.1 All Input Trays

This menu option allows the top and left margins for simplex and duplex pages to be adjusted. Margin settings of this menu option apply to pages printed from any tray or feeder. Adjustments to the **All Input Trays** margin settings can be made by adjusting the individual margin settings for a specific tray or feeder. Negative values indicate a decrease in the margin value from the default margin of zero.

All Input Trays	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from all input trays and feeders.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from all input trays and feeders.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from all input trays and feeders.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from all input trays and feeders.

3.8.2 Tray 1 Adjust

This menu option allows additional adjustment to the top and left margins for simplex and duplex pages printed from tray 1. **Tray 1 Adjust** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from tray 1. See margin settings examples under MARGINS Menu Options on page **41** for additional information.

Tray 1 Adjust	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from tray 1.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from tray 1.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from tray 1.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from tray 1.

3.8.3 Tray 2 Adjust

This menu option allows additional adjustment to the top and left margins for simplex and duplex pages printed from tray 2. **Tray 2 Adjust** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from tray 2. See margin settings examples under MARGINS Menu Options on page **41** for additional information.

Tray 2 Adjust	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from tray 2.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from tray 2.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from tray 2.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from tray 2.

3.8.4 Tray 3 Adjust

This menu option allows additional adjustment to the top and left margins for simplex and duplex pages printed from tray 3. **Tray 3 Adjust** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from tray 3. See margin settings examples under MARGINS Menu Options on page **41** for additional information.

Tray 3 Adjust	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from tray 3.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from tray 3.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from tray 3.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from tray 3.

3.8.5 Tray 4 Adjust

This menu option allows additional adjustment to the top and left margins for simplex and duplex pages printed from tray 4. **Tray 4 Adjust** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from tray 4. See margin settings examples under MARGINS Menu Options on page **41** for additional information.

Tray 4 Adjust	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from tray 4.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from tray 4.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from tray 4.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from tray 4.

3.8.6 Tray 5 Adjust

This menu option allows additional adjustment to the top and left margins for simplex and duplex pages printed from tray 5. **Tray 5 Adjust** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from tray 5. See margin settings examples under MARGINS Menu Options on page **41** for additional information.

Tray 5 Adjust	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from tray 5.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from tray 5.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from tray 5.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from tray 5.

3.8.7 MP FEEDER ADJUST

This menu option allows additional adjustment to the top and left margins for simplex and duplex pages printed from the multipurpose feeder. **MP Feeder Adjust** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from the MP feeder.

See margin settings examples under MARGINS Menu Options on page **41** for additional information.

MP FEEDER ADJUST	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from the MP feeder.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from the MP feeder.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from the MP feeder.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from the MP feeder.

3.8.8 MANUAL PAPER ADJ

This menu option allows additional adjustment to the top and left margins for simplex and duplex pages printed from the manual tray. **Manual Paper Adj** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from the manual tray.

MANUAL PAPER ADJ	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from the manual tray.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from the manual tray.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from the manual tray.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from the manual tray.

3.8.9 MANUAL ENV ADJ

This menu option allows additional adjustment to the top and left margins for jobs printed from the manual tray. **Manual Env Adj** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all envelopes printed from the manual tray. See margin settings examples under MARGINS Menu Options on page **41** for additional information.

MANUAL ENV ADJ	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for envelopes printed from the manual tray.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for envelopes printed from the manual tray.

3.9 RESOURCE CAPTURE Menu Options

The **RESOURCE CAPTURE** menu only displays **Flash** if only userflash is available or **Disk** if hard disk is installed in the printer.

In the following an asterisk "*" indicates the default factory value. The selected value for each of these options can be printed; see Printing the Menu Settings Page on page **11**.

The **RESOURCE CAPTURE** menu controls the capturing of eligible resources of the following types:

Fonts:

- Bitmap fonts (LF1 format)
- Outline fonts (LF3 format)
- TrueType and OpenType fonts (Downloaded in an Object Container)

Data Objects:

- JPEG (JFIF) images
- GIF images
- TIFF images
- IOCA tiles
- IO Images as resource
- EPS objects (embedded PostScript)
- CMR objects

If the IPDS job specifies a font resource that is a permanently resident in the printer, or a resource that has already been captured, the host selects the resident resource and does not download the resource. This saves network traffic. See Working with Captured Resources on page **71** for further details.

Important: You should always check your licensing information before making a font or data object eligible for capture.

3.9.1 Capture Media

This menu allows the selection of the storage media to use when capturing and removing resources.

Disk *	Capture resources and store them on the printer disk. A disk with sufficient space has to be available in order to store captured resources. This option displays only if a disk is installed.
Flash	Capture resources and store them in user flash memory. A flash with sufficient memory has to be available in order to store captured resources. This option displays only if a flash is available.

3.9.2 Capture Fonts

This option selects whether or not to capture Fonts from the data stream. Note that the storage media for capturing the fonts is selected in the **Storage Media** menu.

Disable*	No Fonts will be captured. Fonts already captured remain in the printer.
Enable	Fonts will be captured.

3.9.3 Capture Data Objects

This option selects whether or not to capture Data Objects from the data stream. Note that the storage media for capturing the Data Objects is selected in the **Storage Media** menu.

Disable* No Data Objects will be captured. Data Objects already captured remain in the printer.

Enable Data Objects will be captured.

3.9.4 Capture CMR Objects

This option selects whether or not to capture Color Management Resource (CMR) Objects from the data stream. Note that the storage media for capturing the CMR Objects is selected in the **Capture Media** menu.

Disable* No CMR Objects will be captured. CMR Objects already captured remain in the printer.

Enable CMR Objects will be captured.

3.9.5 Remove Resources

This function is used for the removal of captured resources from the storage device specified in the Capture Media setting.

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Fonts Only fonts on the current storage media selected in the Capture Media setting will be removed.

Objects Only data objects on the current storage media selected in the Capture Media setting will be removed.

CMRs Only CMRs on the current storage media selected in the Capture Media setting will be removed.

Remove All All captured resources on the current storage media selected in the Capture Media setting will be removed.

Note: These actions will NOT delete the user uploaded files stored on the media. Refer to section 3.4.13 Remove User Files on page **29** on how to remove user uploaded files.

4 Duplex Printing Using Preprinted Media

The IPDS emulation uses the value selected in the printer's **Paper Menu** under **Paper Loading** to determine how paper is loaded.

For each media type, you can select **Duplex** or **Off**. If you have set the value in the printer menu to **Duplex** and have loaded preprinted media (such as letterhead) correctly for duplex printing, any IPDS job received from the host, whether duplex or simplex, will print correctly on the paper.

Refer to your printer manual for more information on the **Paper Loading** option and how to load preprinted paper for duplex printing.

5 Finishing Support

Finishing support includes offset stacking and stapling.

The table below shows the finishing support provided when an optional output bin is installed. The finishing functions may not apply to all media sizes. When a function cannot be applied to a specific media, the job will print but finishing functions will not be performed. Refer to your printer documentation for media size support of these functions.

Finishing functions for all products:

Function/ Support	Hole Punch	Offset Stacking	Stapling	Staple position	Maximum Staple Packet Size*	Center Fold	Saddle Staple
Lexmark CS82x **Lexmark CX82x** **Lexmark CX86x**	Super Finisher	In-Line Stapler Super Finisher	In-Line Stapler Super Finisher	Single (Top Left) Single, Dual Staple	50 Sheets	-	-
Lexmark CS72x **Lexmark CX72x**	-	-	-	-	-	-	-
Lexmark MS82x	Staple, Hole Punch Finisher	Staple Finisher Staple, Hole Punch Finisher	Staple Finisher Staple, Hole Punch Finisher	Single (Top Left)	50 Sheets	-	-
Lexmark MX72x	-	-	-	-	-	-	-
Lexmark MX82x	Staple, Hole Punch Finisher	Staple Finisher Staple, Hole Punch Finisher Offset Stacker	Staple Finisher Staple, Hole Punch Finisher	Single (Top Left)	50 Sheets	-	-
Lexmark MS52x **Lexmark MS62x**	-	-	-	-	-	-	-
Lexmark MX32x **Lexmark MX42x** **Lexmark MX52x**	-	-	-	-	-	-	-
Lexmark MX62x	-	-	Staple Finisher	Single (Top Left)	20 Sheets	-	-
Lexmark CS92x **Lexmark CX92x**	Floor Finisher Physical Bin 1 and 2	Inner Finisher, Floor Finisher Physical Bin 2	Inner Finisher, Floor Finisher Physical Bin 2 and 3	Single Front Single Back Dual Saddle Stitch[1]	50/20 Sheets[2]	Floor Finisher Physical Bin 3 (Advance Finisher Only)	Floor Finisher Physical Bin 3 (Advance Finisher Only)

* Assumes 20 lb. plain letter sheets

** Two optional finisher units are supported. The Standard Finisher has two bins and does not support Center Fold-in or Saddle staple (Saddle stitch-in). The Advanced Finisher supports all listed finishing functions. Letter and A4 paper must be loaded Short Edge Feed (SEF) for Center fold-in and Saddle stitch-in to be performed.

Note 1: Saddle stitch only supported with SEF.

Note 2: 50 Sheets for Inner Finisher and Physical Bin 2. 20 Sheets for Physical Bin 3.

"–" Indicates **not** supported.

5.1 Offset Stacking

Offset stacking of IPDS jobs is available when offset stacking is supported in the printer standard bin or when an optional bin with offset stacking capability is installed. For offset stacking to occur, the following must happen:

- **Host Controlled** must be selected in **IPDS Settings > Paper Handling > Offset Stacking**. **Host Controlled** is the default value. See section 3.5.1 on page **32** for additional information.
- Offset stacking commands must be received with the IPDS job.
- The bin selection specified in the IPDS job must be mapped to a bin that supports offset stacking. See MAP OUTPUT BINS Menu Options on page **39** for additional information on bin mapping.

Output bin selection takes precedence over offset stacking.

* Hole punching may be performed with offset stacking on standard bin.

Note: The **Offset Pages** menu item under the printer's menu does not affect offset stacking of IPDS jobs.

Note: Offset stacking is not supported for all papers sizes or types. Refer to your printer documentation for additional information.

5.1.1 AS/400 and iSeries Offset Stacking

When offset stacking is available, the IPDS emulation reports to the host that offset stacking is supported. The AS/400 and iSeries automatically send offset stacking commands with each job. The host default output bin selection number is 1, which selects the printer standard bin. If the printer supports offset stacking in the standard bin, the job will be offset.

Following are different ways to ensure that jobs are offset. *Refer to the table for X and Y values denoting the printer specific bin numbers.*

	Bin Selection Number **X**	Output Bin Value **Y**
Lexmark CS82x **Lexmark CX82x**	1	Standard Bin
Lexmark MS82x	2 (Use bin 3 if the optional finisher is installed on top of an output expander)	Output Bin 1 (Use Bin 2 if the optional finisher is installed on top of an output expander)
Lexmark MX82x	2	Output Bin 1
Lexmark CS92x **Lexmark CX92x**	1* or 2	Standard Bin or Output Bin 1

* When installed, the Inner Finisher's output bin becomes the device's Standard Bin.

The following examples assume that offset stacking is supported in *Output Bin Value Y* as specified in the above table.

- Change the host output bin selection number to X in the default printer file using the `CHGPRTF` command. (Assumes printer default bin mappings.)
- Create a new printer file using the CRTPRTF command and set the host output bin selection number to X. (Assumes printer default bin mappings.)

- In the printer's **IPDS Settings > Map Output Bins** menu, change **Bin Mapping 1** output bin value from **Standard Bin** to **Bin Y**. (Assumes the host output bin selection number is 1.) This routes all jobs that would normally have gone to the printer standard bin to bin Y, which supports offset stacking. See MAP OUTPUT BINS Menu Options on page **39** for details on bin mapping.

5.1.2 Mainframe Offset Stacking

For MVS JES2/JES3 offset stacking is controlled by the **COPYMARK** parameter contained in the printer device definition statement in the JES2/JES3 initialization member. The following examples illustrate the options and syntax for both JES2/JES3.

Example 1- JES2
JES2 Specifications using the **COPYMARK** parameter. (See note):

`COPYMARK=DATASET`	Offset stacking increment on dataset boundary.
`COPYMARK=JOB`	Offset stacking increment on job boundary.
`COPYMARK=CONSTANT`	No offset stacking is performed.

Example 2 – JES3
JES3 Specifications using the **COPYMARK** parameter. (See note):

`COPYMARK=C`	Offset stacking increment on dataset boundary.
`COPYMARK=J`	Offset stacking increment on job boundary.
`COPYMARK=N`	No offset stacking is performed.

Note: Copy marks are not generated by the IPDS emulation.

Example 3 - Output bin selection
The host default output bin selection number is 1, which selects the printer standard bin. If offset stacking is supported in the printer standard bin, offset stacking will be performed.

Following are different ways to ensure jobs are offset. The following examples assume that an optional bin is installed and offset stacking is supported in physical bin 1. Refer to the table on page **50** for X and Y values denoting the printer specific bin numbers.

- Specify OUTBIN in the JCL statements as follows:
```
//OUT1 OUTPUT OUTBIN=Y
//DDNAME DD SYSOUT=CLASS,OUTPUT=(*,OUT1)
```
- Specify `OUTBIN=X` in the `OUTPUT DD` card of your `IEBGENER` job.
- In the printer's **IPDS Settings > Map Output Bin**menu, change **Bin Mapping 1** output bin value from **Standard Bin** to **Bin Y**. (Assumes the host output bin selection number is 1.) This routes all jobs that would normally have gone to the printer standard bin to bin Y, which supports offset stacking. See MAP OUTPUT BINS Menu Options on page **39** for details on bin mapping.

5.2 Stapling

Stapling is available when an optional finisher is installed.

When stapling is specified in the IPDS job, the job bin selection will be ignored and the job will be routed to a bin that supports stapling.

Jobs are stapled according to the following printer and finisher restrictions. It is the user's responsibility to load a media type and size that can be stapled by the optional finisher. Refer to your printer documentation for media types and sizes supported by the optional finisher and for any additional restrictions that may apply.

- Jobs that exceed the maximum staple packet size will not be stapled.
- Stapling has a higher priority than all other finishing functions.
- Stapling and hole punch may be performed on the same job.
- Offset stacking receives the lowest priority of all finishing functions. Offset stacking may not be performed when combined with other finishing operations.

Note: The **Staple Job** menu item under the printer's menu does not affect stapling of IPDS jobs.

5.2.1 AS/400 and iSeries Stapling

Stapling is controlled in the printer file parameters on the AS/400 and iSeries. Printer files may be created using the 'CRTPRTF' command or changed using the 'CHGPRTF' command. Check to see that all PTFs that affect stapling have been applied before calling for technical support.

Finishing capabilities for optional finishers vary. Differences are explained below.

5.2.1.1 Lexmark CS820, CX820, CX825 and CX860 In-Line Stapler Finisher

The In-Line Stapler (ILS) finisher supports only one staple position. You cannot physically change the position of the staple. The printer automatically rotates text before stapling when the finisher is installed. If necessary, reformat your job on the host with a different text orientation to avoid stapled sets that are hard to read.

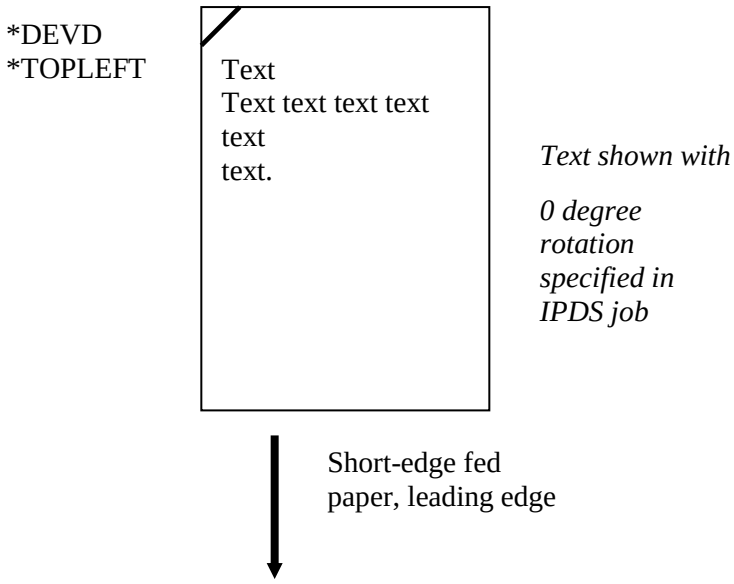
Refer to your printer or finisher documentation to determine the finishing support and staple location for various paper sizes. Finishing functions may not be applied to all paper sizes.

Parameters in the printer file that affect stapling

Printer device type	*IPDS
Output bin	For CS820, CX820, CX825 and CX860 use 1. If ILS is installed, there is still only one output bin and that is the standard bin.
Corner staple	*DEVD or *TOPLEFT

The *DEVD staple position is the top left. Specifying any other setting may cause an exception to be reported to the host.

Drawing of staple placement



5.2.1.2 Lexmark CX825 and CX860 Super Finisher Finisher

The optional Super Finisher (SFin) supports Corner staple and Dual staple (IPDS Edge stitch). The printer automatically rotates the text 180 degrees for short-edge fed paper. If necessary, reformat your job on the host with a different text orientation to avoid stapled sets that are hard to read.

Refer to your printer or finisher documentation to determine the finishing support and staple location for various paper sizes. Finishing functions may not be applied to all paper sizes.

The **Printer device type** must always be ***IPDS**.

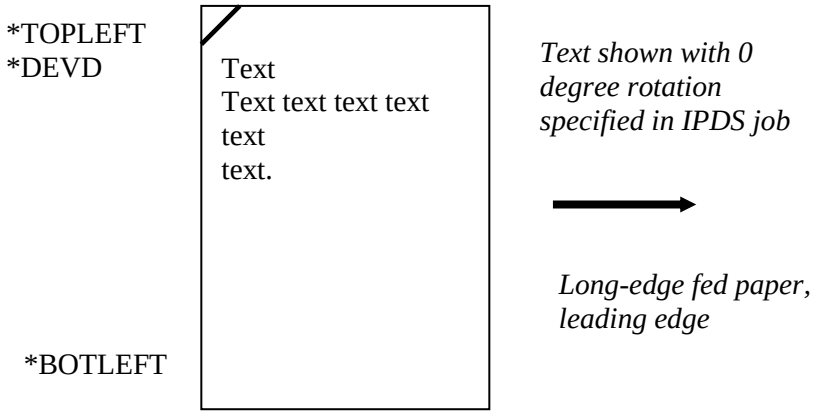
How to specify Printer File parameters is shown below.

5.3.1.2.1 Corner Staple

Parameters in the printer file

```
Corner Staple.......*TOPLEFT, *DEVD,
```

Drawing of staple placement





5.3.1.2.2 Dual Staple (IPDS Edge stitch with 2 staples)

Parameters in the printer file

```
Edge Stitch
      Reference edge...........*LEFT, *TOP or *DEVD
```

```
Reference edge offset....*DEVD

Number of staples........*DEVD or 2

Staple offsets...........*DEVD
```

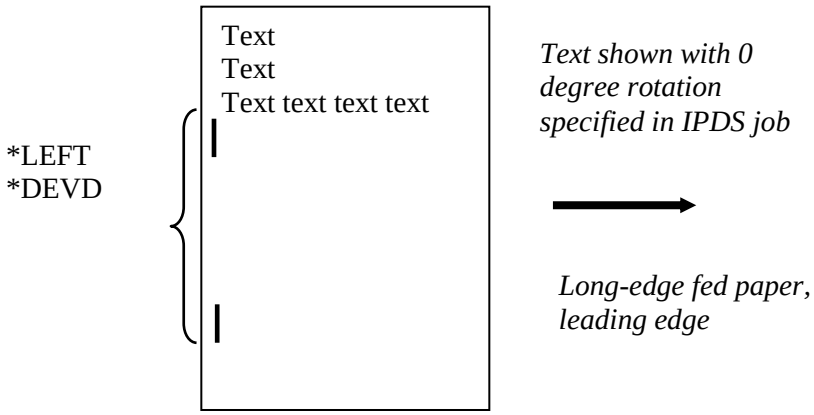
Two staples are placed on the left or top reference edge of the paper.

* TOP must only be used with short edge fed paper.
* LEFT must only be used with long edge fed paper.

An invalid staple position parameter may cause an exception to be reported to the host.

The “Reference edge offset”. “Number of staples”, and “Staple offsets” parameters are not supported.

Drawing of staple placement





5.2.1.3 Lexmark MS82x, MX82x and MX62x Optional Finisher

The optional finisher supports only one staple position. You can not physically change the position of the staple. The printer automatically rotates text before stapling when the finisher is installed. If necessary, reformat your job on the host with a different text orientation to avoid stapled sets that are hard to read.

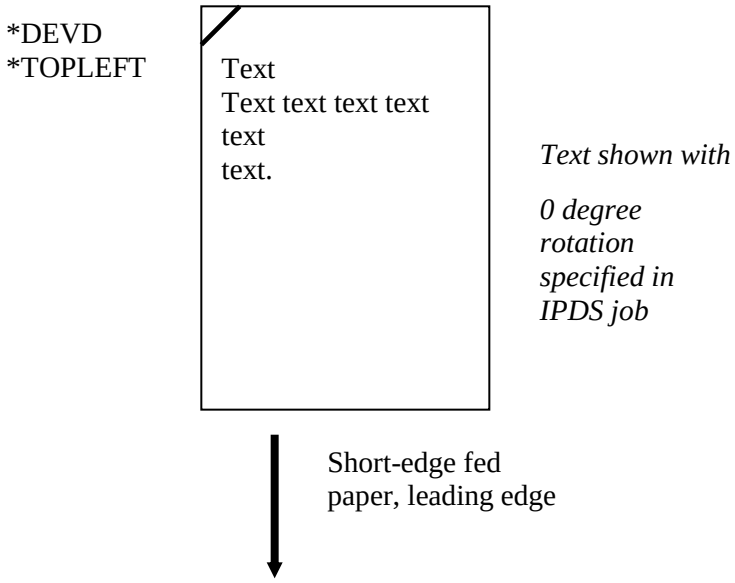
Refer to your printer or finisher documentation to determine the finishing support and staple location for various paper sizes. Finishing functions may not be applied to all paper sizes.

Parameters in the printer file that affect stapling

Printer device type	*IPDS
Output bin	For Lexmark MS82x and Lexmark MX82x use 2 if only the optional finisher is installed. For Lexmark MS82x use 3 if optional finisher is installed on top of output expander. For Lexmark MS82x use 6 if optional finisher is installed on top of 4-Bin mailbox. For Lexmark MX62x use 2 if optional finisher is installed.
Corner staple	*DEVD `or` *TOPLEFT

The *DEVD staple position is the top left. Specifying any other setting may cause an exception to be reported to the host.

Drawing of staple placement



5.2.1.4 Lexmark CS92x and Lexmark CX92x Optional Standard Finisher

The optional 2-Bin Floor Finisher supports Corner staple and Dual staple (IPDS Edge stitch)The printer automatically rotates the text 180 degrees for short-edge fed paper. If necessary, reformat your job on the host with a different text orientation to avoid stapled sets that are hard to read.

Refer to your printer or finisher documentation to determine the finishing support and staple location for various paper sizes. Finishing functions may not be applied to all paper sizes.

The **Printer device type** must always be ***IPDS**.

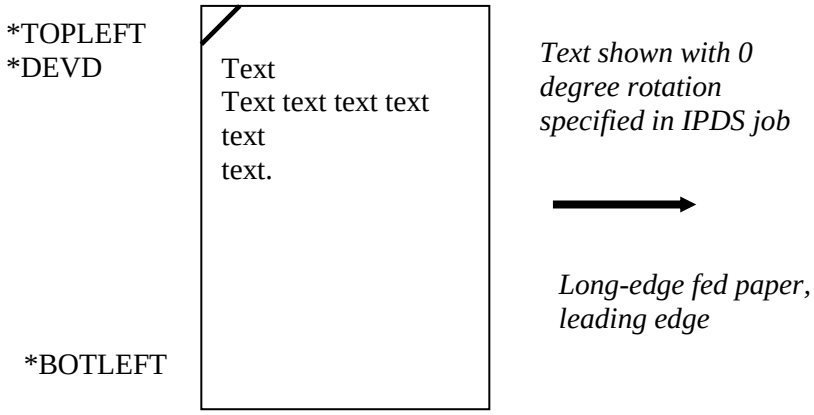
How to specify Printer File parameters is shown below.

5.2.1.4.1 Corner Staple

Parameters in the printer file

```
Corner Staple.......*TOPLEFT, *BOTLEFT, *TOPRIGHT, *DEVD,
```

Drawing of staple placement





5.2.1.4.2 Dual Staple (IPDS Edge stitch with 2 staples)

Parameters in the printer file

Edge Stitch

```
      Reference edge...........*LEFT, *TOP or *DEVD

      Reference edge offset....*DEVD

      Number of staples........*DEVD or 2

      Staple offsets...........*DEVD
```

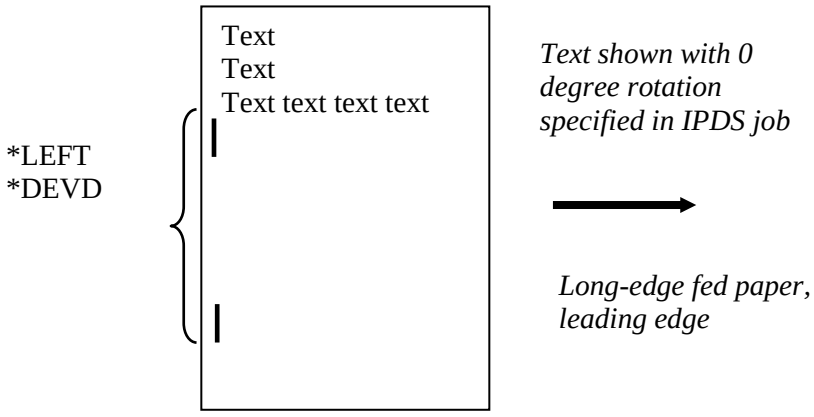
Two staples are placed on the left or top reference edge of the paper.

* TOP must only be used with short edge fed paper.
* LEFT must only be used with long edge fed paper.

An invalid staple position parameter may cause an exception to be reported to the host.

The “Reference edge offset”. “Number of staples”, and “Staple offsets” parameters are not supported.

Drawing of staple placement





5.2.1.5 Lexmark CS92x and Lexmark CX92x Optional Advanced Finisher Functions

The 3-Bin Floor Finisher supports Corner staple, Dual staple (IPDS Edge stitch with 2 staples) Center Fold (IPDS Center Fold-in), and Saddle staple (IPDS Saddle stitch-in). The printer automatically rotates the text 180 degrees for short-edge fed paper and 90 degrees for long-edge fed paper. If necessary, reformat your job on the host with a different text orientation to avoid stapled or folded sets that are hard to read.

Finishing functions may not be applied to all paper sizes. Refer to your printer or finisher documentation to determine the finishing support and staple location for various paper sizes.

The **Printer device type** must always be *IPDS>

How to specify the Printer File parameters for Center Fold, and Saddle staple is shown below. Examples for Corner staple, Dual staple and Double Dual staple are in section 5.2.1.1 on page 52.

5.2.1.5.1 Center Fold (IPDS Center Fold-in)

Center Fold-in may be specified using various application programs using the Operation Type Center Fold-in (X'08' in the IPDS data stream).

Center Fold-in folds the paper along the centerline of the paper with the printed side folded in. Center Fold-in is only supported on selected paper sizes. Refer to your printer or finisher documentation for the paper sizes supported.

Center Fold-in is only supported on Letter and A4 paper when the paper is loaded for Short Edge Fed (SEF) printing. All jobs specifying Center Fold-in will be routed to the finisher physical bin 3. Center Fold-in has a higher priority than the bin selection, offset, and hole punch. These functions will be ignored when specified with Center Fold-in.

5.2.1.5.2 Saddle Staple (IPDS Saddle stitch-in)

Saddle staple may be specified using various application programs using the Operation Type Saddle stitch-in (X'12' in the IPDS data stream).

Saddle stitch-in folds the paper inward (printed side in) along the centerline and places two staples in the centerline fold. Saddle stitch-in is only supported on selected paper sizes. Refer to your printer or finisher documentation for the paper sizes supported.

Saddle stitch-in is only supported on Letter and A4 paper when the paper is loaded for Short Edge Fed (SEF) printing. All jobs specifying Saddle stitch-in will be routed to the finisher physical bin 3. Saddle stitch-in has a higher priority than the bin selection, offset, and hole punch. These functions will be ignored when specified with Saddle stitch-in.

Saddle stitch-in may be controlled by the following parameters in the Printer File

Saddle stitch-in

```
Reference edge...........*LEFT or *DEVD

Reference edge offset....*DEVD

Number of staples........ *DEVD, Integer (see Number of staples below)

Staple offsets...........*DEVD
```

Reference edge: *LEFT or *DEVD – NACKs may be generated for other parameters.
Reference edge offset: *DEVD – All other values are ignored.
Number of staples:

*DEVD – Two staples
Integer – All integer values result in two staples.

Staple Offsets: *DEVD – All other values are ignored.

5.3 Mainframe Stapling

Stapling is controlled in MVS by the PSF Form Definition parameters used within the job being sent to the printer from the host system. The form definition for stapling can be defined either in the host PSF printer member or on the sysout statement of the job being sent.

5.3.1.1 Lexmark CS820, CX820, CX825 and CX860In-Line Stapler Finisher

The In-Line Stapler (ILS) finisher supports only one staple position. You cannot physically change the position of the staple. The printer automatically rotates text before stapling when the finisher is installed.

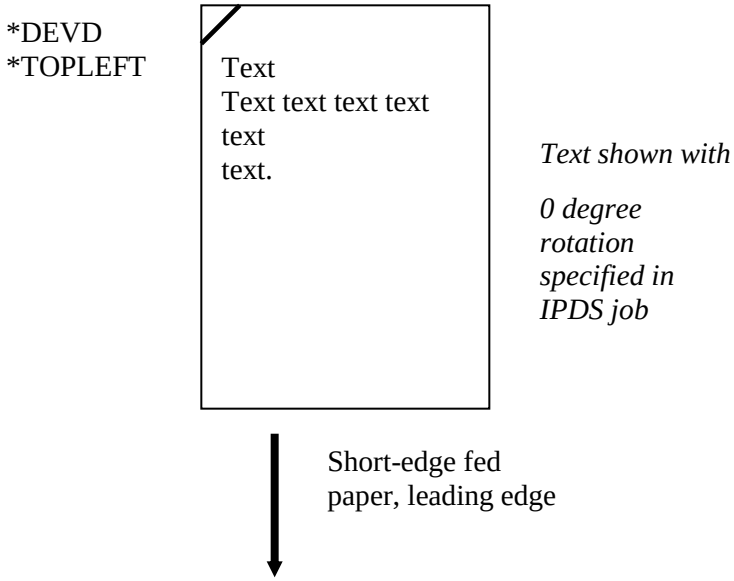
If necessary, reformat your job on the host with a different text orientation to avoid stapled sets that are hard to read. Refer to your printer or finisher documentation to determine the staple location for various paper sizes.

The form definition to use in the PSF printer member or in the job output statement for simplex printing is: F1FC0010. This applies to PSF OS/390 and PSF for zOS (v. 3.4, 4.1 and 4.2). (See PSF OS/390 Users Guide for other Form Definitions Supplied with PSF, for Staple with Duplex, Tumble etc.)

The following is an example of a job output statement that includes the Form Definition to use IPDS staple function for a simplex job:

```
//OUT1 OUTPUT CLASS=C,COPIES=1,FORMDEF=FC0010
```

Drawing of staple placement



5.3.1.2 Lexmark CX825 and CX860 Super Finisher

The optional Super Finisher (SFin) supports Corner staple and Dual staple (IPDS Edge stitch). The printer automatically rotates the text 180 degrees for short-edge fed paper. If necessary, reformat your job on the host with a different text orientation to avoid stapled sets that are hard to read.

Refer to your printer or finisher documentation to determine the finishing support and staple location for various paper sizes. Finishing functions may not be applied to all paper sizes.

Below are example of job output statements that include the Form Definition to place staples in the printed output.

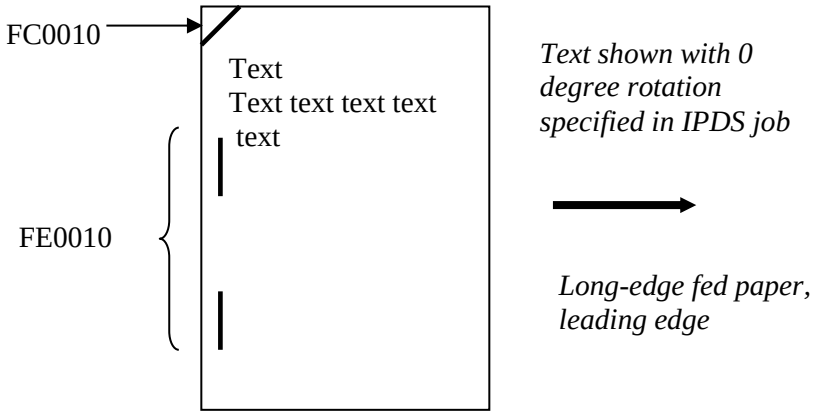
Corner staple

```
//OUT1 OUTPUT CLASS=C,COPIES=1,FORMDEF=FC0010
```

Dual staple

```
//OUT1 OUTPUT CLASS=C,COPIES=1,FORMDEF=FE0010
```

Drawing of staple placement for simplex form definitions





5.3.1.3 Lexmark MS82x, MX82x and MX62x Optional Finisher

The optional finisher supports only one staple position. You can not physically change the position of the staple. The printer automatically rotates text before stapling when the finisher is installed.

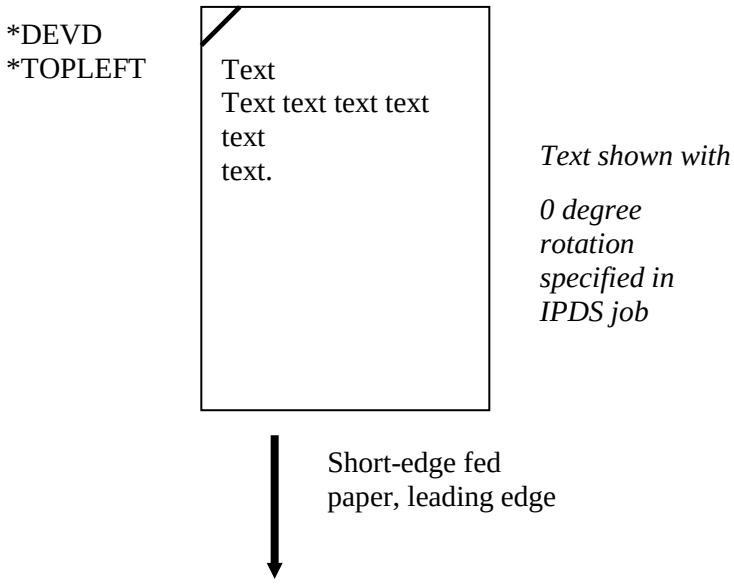
If necessary, reformat your job on the host with a different text orientation to avoid stapled sets that are hard to read. Refer to your printer or finisher documentation to determine the staple location for various paper sizes.

The form definition to use in the PSF printer member or in the job output statement for simplex printing is: F1FC0010. This applies to PSF OS/390 and PSF for zOS (v. 3.4, 4.1 and 4.2). (See PSF OS/390 Users Guide for other Form Definitions Supplied with PSF, for Staple with Duplex, Tumble etc.)

The following is an example of a job output statement that includes the Form Definition to use IPDS staple function for a simplex job:

```
//OUT1 OUTPUT CLASS=C,COPIES=1,FORMDEF=FC0010
```

Drawing of staple placement



5.3.1.4 Lexmark CS92x and CX92x Optional Standard Finisher

The optional 2-Bin finisher supports Corner staple and Dual staple (IPDS Edge stitch). The printer automatically rotates the text 180 degrees for short-edge fed paper. If necessary, reformat your job on the host with a different text orientation to avoid stapled sets that are hard to read.

Refer to your printer or finisher documentation to determine the finishing support and staple location for various paper sizes. Finishing functions may not be applied to all paper sizes.

Below are example of job output statements that include the Form Definition to place staples in the printed output.

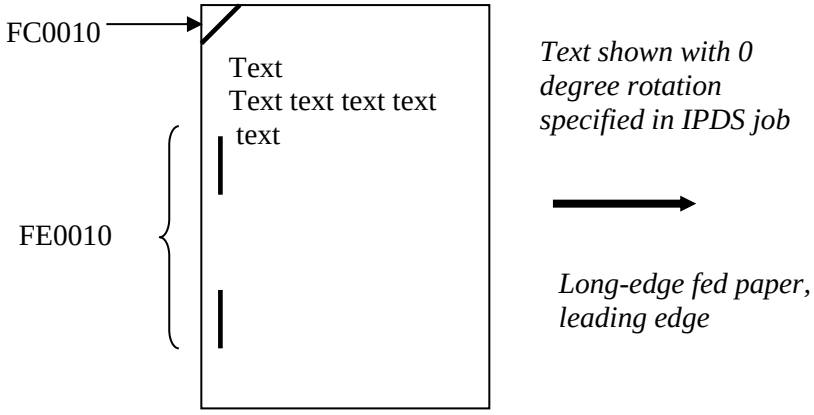
Corner staple

```
//OUT1 OUTPUT CLASS=C,COPIES=1,FORMDEF=FC0010
```

Dual staple

```
//OUT1 OUTPUT CLASS=C,COPIES=1,FORMDEF=FE0010
```

Drawing of staple placement for simplex form definitions





5.3.1.5 Lexmark CS92x and CX92x Optional Advanced Finisher Functions

The 3-Bin Floor Finisher supports Corner staple, Dual staple (IPDS Edge stitch with 2 staples), Center Fold (IPDS Center Fold-in), and Saddle staple (IPDS Saddle stitch-in). The printer automatically rotates the text 180 degrees for short-edge fed paper and 90 degrees for long-edge fed paper. If necessary, reformat your job on the host with a different text orientation to avoid stapled or folded sets that are hard to read.

Finishing functions may not be applied to all paper sizes. Refer to your printer or finisher documentation to determine the finishing support and staple location for various paper sizes.

How to specify the Printer File parameters for Center Fold, and Saddle staple is shown below. Examples for Corner staple, Dual staple and Double Dual staple are in section 5.2.1.1 on page **52.**

5.3.1.5.1 Saddle Staple (IPDS Saddle stitch-in)

Saddle staple may be specified using various application programs using the Operation Type Saddle stitch-in (X'12' in the IPDS data stream).

Saddle stitch-in folds the paper inward (printed side in) along the centerline and places two staples in the centerline fold. Saddle stitch-in is only supported on selected paper sizes. Refer to your printer or finisher documentation for the paper sizes supported.

Saddle stitch-in is only supported on Letter and A4 paper when the paper is loaded for Short Edge Fed (SEF) printing. All jobs specifying Saddle stitch-in will be routed to the finisher physical bin 3. Saddle

stitch-in has a higher priority than the bin selection, offset, and hole punch. These functions will be ignored when specified with Saddle stitch-in.

The following is an example of a job output statement that includes the From Definition to perform Saddle stitch-in.

```
//OUT1 OUTPUT CLASS=C,COPIES=1,FORMDEF=FS0010
```

5.4 Hole Punch

Hole punching of IPDS jobs is available when an optional output bin with hole punch capability is installed. See the table on page **49** to determine if your finisher supports hole punching.

A job may select hole punch by specifying it in an IPDS command. When hole punch is selected through an IPDS data stream command, hole punch will override output bin selection and the job will be routed to a bin that supports hole punch.

The following is an example of a job output statement that includes the Form Definition to perform 3-hole punch.

```
//OUT1 OUTPUT CLASS=C,COPIES=1,FORMDEF=F1H10110
```

Pages may also be hole punched by selecting a value in the printer's **IPDS SETTINGS > MAP INPUT TRAYS** menu or in the printer's **IPDS SETTINGS > MAP OUTPUT BINS** menu. When this method is used, the hole punch command does not have to be received in the job. Refer to your printer or output bin documentation to determine the hole punch location for various paper sizes. The following sections describe how to use the printer menus to hole punch IPDS jobs.

Note: The **Hole Punch** menu item under the printer menu does not affect hole punching of IPDS jobs.

5.4.1 Hole Punch from an Input Source

Hole punching may be performed on paper pulled from most input sources on the printer. Hole punching from an input source is specified using the printer's **IPDS SETTINGS > MAP INPUT TRAYS** menu. See MAP INPUT TRAYS Menu Options on page **36** for additional information. A combination of the printer physical input source and the IPDS data stream requested input source is used to specify hole punching.

Example 1 - To have all pages from Tray 1 hole punched (Default settings are assumed in this example)

To have all pages printed from the printer physical Tray 1 hole punched, specify the following in the **MAP INPUT TRAYS** menu:

1. Select Tray Mapping 1
2. Select Tray 1Hp
3. Select IPDS Number 0

This sets **Tray Mapping 1** to **Tray 1Hp** to **IPDS Number 0**. When the IPDS input source **0** is specified in the data stream, paper is picked from the printer physical Tray 1 and hole punched.

Example 2 - To have selected pages from Tray 1 hole punched (Default settings are assumed in this example.)

To have some pages punched and some pages not punched from Tray 1, specify the following in the **IPDS MENU > MAP INPUT TRAY** menu:

Tray Mapping 1 to Tray 1 to IPDS Number 0 (Default Setting)
(When **IPDS Number 0** is the requested source in the IPDS data stream, pages are pulled from the printer physical Tray 1 and are not hole punched. **0** is the IPDS default input source value.)

Tray Mapping 8 to Tray 1 Hp to IPDS Number 4.
(When **IPDS Number 4** is the requested source in the IPDS data stream, pages are pulled from the printer physical Tray 1 and all pages are hole punched.)

5.4.2 Hole Punch to an Output Bin

Hole punching may be performed on paper routed to most output bins which support hole punch. Hole punching to an output bin is specified using the printer's **IPDS SETTINGS > MAP OUTPUT BINS** menu. See MAP OUTPUT BINS Menu Options on page **39** for additional information. A combination of the printer physical output bin and the IPDS data stream specified output bin is used to specify hole punching.

*Example 1 - To have <u>all pages</u> stacked in an output bin hole punched (Default settings are assumed in this example. Check the finishing support table on page **49** to determine the bins that support hole punch.)*

To have <u>all pages</u> stacked in an output bin hole punched, specify the following in the **IPDS MENU > MAP OUTPUT BINS** menu:

Output option Physical Bin 1	Output option Physical Bin 2
1. Select **Bin Mapping 1**	1. Select **Bin Mapping 1**
2. Select **Output Bin 1 Hp**	2. Select **Output Bin 2 Hp**
3. Select IPDS Number **1**	3. Select IPDS Number **1**

When the requested output bin number is **1** in the IPDS data stream, pages are hole punched and stacked in the output option physical output bin selected.

*Example 2 - To have <u>selected pages</u> stacked in an output bin hole punched (Default settings are assumed in this example. Check the finishing support tables on page **49** to determine the bins that support hole punch.)*

To have some <u>pages punched and some pages not punched</u> as they are stacked in the output option physical output bin, specify the following in the **IPDS MENU > MAP OUTPUT BINS** menu:

Output option Physical Bin 1	Output option Physical Bin 2
1. Select **Bin Mapping 1**	1. Select **Bin Mapping 1**
2. Select **Output Bin 1**	2. Select **Output Bin 2**
3. Select IPDS Number **1**	3. Select IPDS Number **1**
4. Select **Bin Mapping 4**	4. Select **Bin Mapping 4**
5. Select **Output Bin 1 Hp**	5. Select **Output Bin 2 Hp**
6. Select IPDS Number **2**	6. Select IPDS Number **2**

Note: **IPDS Number 1** is the default IPDS data stream output bin.

When **IPDS Number 1** is the requested output bin in the IPDS data stream, pages are stacked in the output option physical output bin and are not hole punched.

When **IPDS Number 2** is the requested output bin in the IPDS data stream, pages are stacked in the output option physical output bin and are hole punched.

6 Color Management – User Files

Color printers support a set of user files that can be loaded to a persistent storage media in the printer and affect the color processing depending on the setting of the color options described in section 3.4 COLOR MENU – Options Descriptions on page **27**.

Note: Color options are only applicable on color models.

6.1 Types of User Files:

User Dest. Profile This ICC output profile is used if no instruction CMR exits or matches. The CMR profile in the job can also be ignored with the CMOCA option Instruction CC described on page **30**.

If no user default output profile is in the printer, a printer specific default profile is used.

User CMYK Profile This input profile will be used if no input (audit) CMR for CMYK is defined in the IPDS job.

User RGB Profile This input profile will be used if no input (audit) CMR is defined for RGB in the IPDS job.

HL Mapping Table The Highlight Mapping Table defined by the user is used to map index values to CMYK values.

This table can contain multiple lines. The format of each line:

index ccc mmm yyy kkk

Index values can be from 0 to 65535.

ccc,mmm,yyy and kkk values can be from 0 to 255.

Separators can be spaces or ",". The values must be decimal values.

# indicates a comment line. It is recommended to add a comment line in the start of the file with a description of this mapping file.

Example:

```
#Highlight table for acme marketing printers v. 1.1

1 100 0 200 30
293,0,255,0,0
33, 0 0 0 255
```

Note: The table must be created as a text file using e.g. MS Notepad. Do not use an editor that may insert control codes.

Note: This table is still active even if the Color Management is set to Ignore Color Management Settings. For values not found in this table the default IPDS HL Grey algorithm will be used.

OCA Mapping Table The OCA Mapping Table maps each or some of the 16 OCA colors to CMYK values.

This table can contain multiple lines. The format of each line:

index ccc mmm yyy kkk

Index values can be from 1 to 16.

ccc,mmm,yyy and kkk values can be from 0 to 255.

Separators can be spaces or ",". The values must be decimal values.

# indicates a comment line. It is recommended to add a comment line in the start of the file with a description of this mapping file.

Example:

```
#OCA table for acme marketing printers v. 1.1

1 100 0 200 30
2,0,255,0,0
16, 0 0 0 255
```

Note: The table must be created as a text file using e.g. MS Notepad. Do not use an editor that may insert control codes.

Note: This table is still active even if the Color Management is set to Ignore Color Management Settings. For values not defined in this table the default OCA Color mapping table will be used.

6.2 Managing User Color files

6.2.1 Uploading a User Color file to the Printer

The user files are uploaded through the Web interface of the printer. To upload a file do the following:

1. Type the IP address or DNS name of the printer in your browser.
2. In the left menu select **Settings → IPDS Settings → Color Menu → Color Files Upload**.
3. Select the link **Upload File** on the appropriate color profile option listed.
4. Select the type of file to upload from the drop down list and browse the file on your local machine.
5. Select **Save** to save the file to a persistent storage media in the printer.

Note: The file will be validated before storing. If the contents of the file does not match the criteria for the file type, the file will be ignored, and you will receive an error in the browser.

Note: If the file is valid, it will be stored on disk, user flash or the IPDS Card flash memory (disk will always have priority over flash, and user flash will have priority over the IPDS Card flash).
If a file of that file type already exists on any storage media, it will be overwritten with the new file, regardless of the name of the old and new file.

The name of currently installed files is shown on the screen. These names are also listed on the IPDS Menu page.

6.2.2 Delete a User File

You can delete a file using the option described in section 3.4.13 Remove User Files on page **29**.

A user file will automatically be deleted if you load a new file of the same type. This is regardless of the name of the files.

7 IPDS Job Cancel

7.1 Canceling IPDS Jobs

IPDS jobs may be cancelled using the normal cancel sequence for the printer.

Cancel Job while an IPDS job is being processed causes an “IPDS cancel exception” to be sent to the host. The host responds by placing the first non-completed IPDS job in a held status and sending the remaining jobs on the queue.

IPDS resources are saved by the printer unless the host requests deletion of these resources.

Selecting a specific job to cancel can be difficult when several small jobs are queued to print from the host.

7.2 How to Cancel a Job

1. While any job is printing, click on any part of the black bar found at the upper portion of the panel and drag down the Status/Supplies and Job Queue window.
2. On the message indicating that an IPDS job is printing, click the **Cancel** button.
3. Click **Yes** on the “Cancel Job” prompt window.
4. The IPDS job will now indicate it is cancelling.
5. Wait for the printer to get back to ready state.

8 Working with Captured Resources

8.1 Capture Resource and Remove Resources

Capture is a function whereby downloaded resources can be stored on disk or user flash. The flash memory and hard disk may be printer optional storage media ordered separately from the printer.

Menu path: **Settings > IPDS Settings > Resource Capture**.

These menu items are described in RESOURCE CAPTURE Menu Options on page **46**.

A captured resource is treated as if it is printer resident (e.g. a captured font will appear to the host as if it is part of the printer resident font list). Unlike resident resources, which cannot be deleted, captured resources may be deleted when storage space is required. Resources that are resident on the printer will not be downloaded for capture by the host.

Captured resources are:

- Only available to the IPDS emulation.
- Retained in the printer across job boundaries, IPDS sessions and power cycles.
- Available for use by any host connected to the printer.
- Resources captured to flash memory or a disk remain in the printer until:
  - Removed using selections under the **Remove Resources** menu item or
  - Overwritten with a later capture of a resource with the same object ID or characteristics or the disk or flash is formatted.

When there is not enough space remaining to capture a resource, the job will be printed without capturing any remaining resources.

8.2 Preparing Fonts for Capture

Fonts that can be captured are: eligible bitmap fonts (LF1 format), eligible outline fonts (LF3 format), and eligible TrueType and OpenType fonts.

The resolution of the captured font must match the IPDS emulation resolution for the font to be used by the host application. For instance, a bitmap font captured with a 300 pel resolution cannot be used by the IPDS emulation when it is emulating an IBM 3812/3816 printer. The fonts used in emulating a 3812/3816 printer have a resolution of 240 pels.

Important: Fonts intended for capturing must be marked **eligible for capture** on the host before they will be downloaded to the printer for capture. You should **always** check your font licensing information before making a font eligible for capture. Sensitive fonts should not be made eligible for capture.

Basic information about how to mark a font as eligible on the AS/400 or iSeries is on page **71**. Basic information about how to mark a fonts as eligible on a Mainframe is on page **73**.

8.2.1 Capturing Fonts from an AS/400 or iSeries

8.2.1.2 Enabling Font Capture on the Printer

Follow the steps below to enable font capture on the printer. For details refer to RESOURCE CAPTURE Menu Options on page **46**):

1. Select the storage media: **Settings > IPDS Settings > Resource Capture > Capture Media.** (This step is only necessary if both disk and flash are installed in the printer.)

2. Activate font capture: **Settings > IPDS Settings > Resource Capture> Capture Fonts.** Make sure that the value is set to **Enable**.

8.2.1.3 Program Requirements

On an AS/400, PSF/400 V4R2 or later is required for making fonts eligible for capture. All iSeries releases support font capture.

8.2.1.4 Making Bitmap LF1 and Outline LF3 font Fonts Eligible for Capture on an iSeries host

Two steps are required to capture fonts. These are:

1. Make the font resource eligible for capture.

   To mark a font resource eligible for capture, set `FNTCAPTURE` to `*YES`. This is done when you create the font resource using the `CRTFNTRSC` command or change the font resource using the `CHGFNTRSC` command. A raster font is built from a font character set and a code page. Both of these font resources must be marked eligible for the raster font to be captured. Additional information on font capture may be found in iSeries Printer Device Programming Version 5 (SC41-5713-04).

2. Identify the printer as being capable of capturing fonts.

   Set the `FNTCAPTURE` parameter to `*YES` in the printer `PSFCONFIG`.

8.2.1.5 Making TrueType Fonts eligible for Capture on an iSeries host

The Font Installer for AFP Systems can mark TrueType fonts as eligible for capture. However, this is not related to the Font capture flag available to AFP fonts.

For detailed information about TrueType font capture, refer to the guide “Using OpenType Fonts in an AFP System” (G544-5876-00).

8.2.2 Capturing Fonts from a Mainframe Host

8.2.2.1 Enabling Font Capture on the Printer

Follow the steps below to enable font capture on the printer. For details refer to RESOURCE CAPTURE Menu Options on page **46**):

1. Select the storage media: **Settings > IPDS Settings > Resource Capture > Capture Media.** (This step is only necessary if both disk and flash are installed in the printer.)
2. Activate font capture: **Settings > IPDS Settings > Resource Capture > Capture Fonts.** Make sure that the value is set to **Enable**.

8.2.2.2 Mainframe Program Requirements

Font capture is supported by PSF/MVS 2.2.0 with APAR OW08340 and PSF/VSE 2.2.1 with APAR DY43969. PSF 3.0 and later for OS390/zOS includes font capture support.

8.2.2.3 Making Bitmap LF1 and Outline LF3 font Fonts Eligible for Capture on a Mainframe

Note: The procedures/documentation below are for OS390/MVS/PSF platform. The following are the software release requirements for font capture feature within this platform. (For details on font capture with PSF refer to the PSF Customization Guide, Program Number: 5655-B17)

OS390/MVS 2.4 or later
PFS for MVS 2.2 or later

Note: Earlier releases may also support "Font Capture". For details - check your "PSF Customization Guide".

There are basically 3 steps involved regarding font capture as follows:

1. Display current font marking status.
2. Mark fonts for capture.
3. Send job from host to printer with the font and font character set you want printer to capture.

Fonts on the host can be marked either "PUBLIC", "PRIVATE", or "UNMARKED". In order for the printer to capture fonts as resident the fonts must be marked "PUBLIC" on the host. Fonts marked "PRIVATE" are only temporarily downloaded and are removed from printer by the host. "UNMARKED" fonts are treated the same as if they were marked "PRIVATE" and will not be captured as printer resident fonts.

Detailed examples of the three steps are shown below.

STEP 1. DISPLAY CURRENT FONT MARKING STATUS

To determine the marking status of your host fonts you can run the APSRMARK report utility. The following is a sample of the JCL to run the font report listing.

Sample JCL to run font report listing to determine current font marking status:

```
//APSHORT  JOB   (),
//         CLASS=A,
//         MSGCLASS=A,
//         MSGLEVEL=(1,1),
//         NOTIFY=&SYSUID,
//         TIME=1440
//*** NOTE: USE THIS JOB TO PRINT SHORT FONT STATUS MARKINGS ONLY ****
//*** NOTE: CHANGE DSN LINE 13 (IN1 STATEMENT) TO MATCH YOUR FONTLIB *
//*******************************************************************
//STEP1    EXEC  PGM=APSRMARK
//SYSPRINT DD SYSOUT=J
//*
//IN1    DD UNIT=3390,DSN=SYS1.FONTLIBB,DISP=SHR,VOL=SER=OS3R7A
//SYSIN  DD *
  INDD=IN1,MEMBER=ALL,REPORT,SHORT
/*
```

Note: Change report type to "LONG" for font detailed report (replace the "SHORT" option).

STEP 2. MARKING FONTS FOR CAPTURE

In order for printer to capture host fonts as resident printer fonts they must be marked "PUBLIC". The following is a sample of the JCL commands to mark existing fonts as "PUBLIC".

Sample JCL to Mark Fonts "PUBLIC":

```
//APSMARK  JOB   (),
//         CLASS=A,
//         MSGCLASS=A,
//         MSGLEVEL=(1,1),
//         NOTIFY=&SYSUID,
//         TIME=1440
//*******************************************************************
//* THIS JOB WILL MARK FONTS FOR CAPTURE FOR PRINTER FROM FONT LIB.   *
//* MARK THEM AS EITHER PUBLIC OR PRIVATE. TO MARK PUBLIC ENTER       *
//* "PUBLIC" KEYWORD ON LINE 18 INDD STATEMENT. FOR PRIVATE ENTER     *
//* "PRIVATE" KEYWORD ON LINE 18 INDD STATEMENT. THEN SUBMIT.         *
//* TO DISPLAY STATUS MARKING CHANGE RUN REPORT JOB "APSSHORT".       *
//*******************************************************************
//* NOTE: USE "REPLACE" IF MEMBER ALREADY EXIST: SEE FOLLOWING EXAMPLE*
//* NOTE: USE "REPLACE" IF MEMBER ALREADY EXIST: SEE FOLLOWING EXAMPLE*
//* INDD=IN1,OUTDD=OUT1,MEMBER=C0H20000,PUBLIC,REPLACE                *
//*******************************************************************
//* NOTE: BEFORE YOU RUN THIS JOB YOU MUST ALLOCATE NEW FONTLIB DSN   *
//* 1ST CREATE NEW LIB, THEN USE IEBGENER TO COPY FROM OLD LIB        *
//* I.E. SYS1.FONTLIBB TO NEW LIB SYS1.FONTPRIV OR SYS1.FONTPUB       *
```

```
//*****************************************************************
//STEP1    EXEC  PGM=APSRMARK
//SYSPRINT DD SYSOUT=J
//*
//IN1    DD UNIT=3390,DSN=SYS1.FONT300,DISP=SHR,VOL=SER=OS3R7A
//OUT1   DD UNIT=3390,DSN=SYS1.FONTNEW,DISP=SHR,VOL=SER=OS3R7A
//SYSIN  DD *
  INDD=IN1,OUTDD=OUT1,MEMBER=T1V10037,PUBLIC
  INDD=IN1,OUTDD=OUT1,MEMBER=C08400B0,PUBLIC
/*
```

Note: If you want to mark all fonts in a particular font library "PUBLIC" you can create a new font library, copy, and mark all fonts as "PUBLIC" at the same time. The following is a sample of the JCL commands to copy and mark all fonts "PUBLIC" to a new library.

Sample JCL to copy and mark all fonts "PUBLIC" to a new font library:

```
//APSRMARK JOB   (),
//         CLASS=A,
//         MSGCLASS=A,
//         MSGLEVEL=(1,1),
//         NOTIFY=&SYSUID,
 //         TIME=1440
//*****************************************************************
//* THIS JOB WILL COPY/MOVE MEMBERS TO ALTERNATE FONT LIB AND       *
//* MARK THEM AS EITHER PUBLIC OR PRIVATE. TO MARK PUBLIC ENTER     *
//* "PUBLIC" KEYWORD ON LINE 18 INDD STATEMENT. FOR PRIVATE ENTER   *
//* "PRIVATE" KEYWORD ON LINE 18 INDD STATEMENT. THEN SUBMIT.       *
//* TO DISPLAY STATUS MARKING CHANGE RUN REPORT JOB "APSSHORT".     *
//* ***************************************************************
//* NOTE: BEFORE YOU RUN THIS JOB YOU MUST ALLOCATE NEW FONTLIB DSN *
//* 1ST CREATE NEW LIB, THEN USE IEBGENER TO COPY FROM OLD LIB      *
//* I.E. SYS1.FONTLIBB TO NEW LIB SYS1.FONTPRIV OR SYS1.FONTPUB     *
//*****************************************************************
//STEP1    EXEC  PGM=APSRMARK
//SYSPRINT DD SYSOUT=J
//*
//IN1    DD UNIT=3390,DSN=SYS1.FONTLIBB,DISP=SHR,VOL=SER=OS3R7A
//INOUT1 DD UNIT=3390,DSN=SYS1.FONTPRIV,DISP=SHR,VOL=SER=OS3R7A
//SYSIN  DD *
  INDD=IN1,OUTDD=INOUT1,PUBLIC,MEMBER=ALL
/*
```

STEP 3. SENDING JOB FROM HOST TO PRINTER SELECTING FONT CHARACTER SET YOU WANT PRINTER TO CAPTURE

Once you have marked fonts "PUBLIC" you can select the font character set to be captured from either within printer definition member in PSF or from within the in-stream JCL of the job. The following is an example of both.

To select font capture from printer definition member, add the "CHARS" option as follows to your PSF printer member.

```
//        CHARS=(88FB)          /* default font set */
```

To select font capture from in-stream JCL add the "CHARS" option to sysout/output statement as follows.

```
//OUT1 OUTPUT CLASS=A,
DEST=LOCAL,FORMDEF=A10110,PAGEDEF=A06462,CHARS=88FB
```

To print a list of the captured fonts, select **Print Resource List** from **IPDS SETTINGS > EMULATION** (see page **25**).

8.2.2.4 Making TrueType Fonts eligible for Capture on mainframe

The Font Installer for AFP Systems can mark TrueType fonts as eligible for capture. However, this is not related to the Font capture flag available to AFP fonts.

For detailed information about TrueType font capture, refer to the guide “Using OpenType Fonts in an AFP System” (G544-5876-00).

8.3 Preparing Data Objects (non-font resources) for Capture

8.3.1 Capturing Data Objects from an IBM Host

8.3.1.1 Enabling Data Object Capture on the Printer

Follow the steps below to enable capturing of data objects in the printer. For details refer to RESOURCE CAPTURE Menu Options on page **46**).

1. Select the storage media: **Settings > IPDS Settings > Resource Capture > Capture Media.** (This step is only necessary if both disk and flash are installed in the printer.)
2. Activate font capture: **Settings > IPDS Settings > Resource Capture > Capture Data Object.** Make sure that the value is set to **Enable.**

8.3.1.2 Making Data Objects Eligible for Capture on the Host

Object containers are used to carry non-OCA objects, such as GIF and TIFF images, in an AFP data stream. There are different ways to include them in your data, depending on your installation and how you want to use them.

On the iSeries the DDS keyword AFPRES lets you reference a print resource stored in the integrated file system, including an object container.

Object containers can be mapped using the MO:DCA Map Data Resource (MDR) structured field. Mapping causes PSF to send the object container to the printer to be used multiple times, just like it does fonts, overlays and page segments. If you want them downloaded once to the printer and used repeatedly on subsequent pages or overlays, they should be included as *data object resources*. Data object resources are those object containers (or IOCA objects) that are sent to the printer in the IPDS home state. Object containers sent to the printer in this state are saved as data object resources to be used later while processing a page or overlay.

9 Remote Configuration of Printer IPDS Settings

9.1 Why Use a Browser

Most IPDS emulation settings stored in the printer (the default IPDS settings) can be changed remotely using a browser. This method of changing settings is especially useful during printer installation to set all of the IPDS options to the values recommended by your system administrator. At a later time, any necessary changes can be made on each printer, either from a browser or via the operator panel.

Using the browser, you can save new settings to a printer. Option changes will become active when the next IPDS host session starts.

It is not possible to do everything from the browser that you can do from the operator panel; see section 9.3 on page **77**.

Finally, using a browser can also be useful to display selected information about **IPDS Settings** and **IPDS Product Information**. This can be used as an alternative or supplement to printing menu settings (as shown in Printing the Menu Settings Page on page **11**.)

9.2 Remote Configuration Using a Browser

A browser may be used to remotely configure most IPDS settings on printers attached to a LAN using a Standard Network port or MarkNet internal print servers.

To access and change IPDS option settings through your browser:

1. End all IPDS sessions with the printer. This may involve ending all active AS/400 or iSeries writers and draining all active Mainframe printers. (see Note)
2. Access the printer web page by typing the IP address of the printer as the URL.
3. Select **Settings → IPDS Settings**.
4. All option values that may be changed remotely will be displayed. In addition, the IPDS Version will be displayed (read only).
5. Change option settings as desired.
6. Click **Save** at the bottom of each group of settings. After saving, the new values are sent and saved in the printer. The new setting will become active when the next IPDS host session is started.
7. Restart all IPDS sessions. Option changes will become active when the next IPDS host session starts.

Note: If new values are submitted during an IPDS session, the new settings will not be used until the current IPDS session ends and a new IPDS session is established.

Beside the **Save** button you will see a **Reset** button. If you have entered values in the page without submitting, and decide to start all over again, click **Reset.** The page will then display the values that were current when you opened the **IPDS Settings** page.

9.3 Functions that Cannot be Operated Remotely

The following IPDS functions cannot be operated remotely:

- Print Resource List – This operation is not shown.

- Remove Resources – This operation is not shown.
- Remove User Files – This operation is not shown.
- IPDS Version – The current version is shown but cannot be changed.

To operate these setting use the printer front panel menus.

10 Printer Messages and Problems

Please refer to the *IPDS Printer and Host Setup Guide* for information on various problems and solutions.

11 Command Reference

11.1 XOA Print Quality Control

The Execute Order Any State (XOA) Print Quality Control command specifies the print quality at which jobs will be printed. Specifying lower print quality levels can save toner. The following table gives the Quality Level value range.

The processing of this command only takes effect when the **Toner Saver** option in the **IPDS Settings > Emulation** is set to **Host Controlled**. See Toner Saver on page **17** for more information.

Print Quality Control Quality Level Values

Quality Level (Byte 2 Value)	Description
X'01' – X'55'	Lowest print quality. Best toner saving. The result corresponds to the printer value for Toner Darkness with an additional greyscaling on mono printers and a color intensity reduction on color printers of all page elements that effectively reduces the toner applied to each page. The lower the Toner Darkness setting, the lighter the printed result.
X'56' – X'AA' X'AB' – X'FE' X'FF'	Use the operator panel setting for the value specified in the printer Toner Darkness menu.

The print quality setting is saved as part of IPDS resources when the printer and host settings are set correctly to allow resources to be saved in the printer.

The following Negative Acknowledgment is returned by printers that support the XOA Print Quality Control command.

Exception	Description	Action Code
X'0292..02'	Invalid XOA Print Quality Control parameter. An invalid quality level value of X'00' was received.	X'01'

11.2 XOH OPC Product Identifier Self Defining Field

The XOH OPC Product Identifier Self Defining field is returned to the host. This information may be useful in locating the printer for maintenance or inventory purposes. The following table specifies the values returned.

Product Identifier Self Defining Field Values: Bytes 0-6

Special Data Area	Value	Description
Bytes 0-1	X'004C'	Length of this Self Defining field
Bytes 2-3	X'0013'	Product Identifier Self Defining Field ID
Byte 4	X'39'	Length of Self Defining Product ID Parameter
Bytes 5-6	X'0001'	Unique Product Identifier Parameter ID

Special Data Area	Value	Description for	
Bytes 7-12	X'F0F0F5F0F6F3'	005063	Lexmark CS82x
	X'F0F0F7F5F6F3'	007563	Lexmark CX820
	X'F0F0F7F5F6F4'	007564	Lexmark CX825 and CX860
	X'F0F0F5F0F2F8'	005028	Lexmark CS72x
	X'F0F0F7F5F2F8'	007528	Lexmark CX72x
	X'F0F0F5F0F5F9'	005059	Lexmark CS92x
	X'F0F0F7F5F5F9'	007559	Lexmark CX92x
	X'F0F0F4F6F0F0'	004600	Lexmark MS52x and MS62x
	X'F0F0F7F0F1F7'	007017	Lexmark MX32x, MX42x and MX52x
	X'F0F0F7F0F1F8'	007018	Lexmark MX62x
	X'F0F0F4F0F6F4'	004064	Lexmark MS82x
	X'F0F0F7F4F6F3'	007463	Lexmark MX72x
	X'F0F0F7F4F6F5'	007465	Lexmark MX82x

Product Identifier Self Defining Field Values: Bytes 13-63

Special Data Area	Value	Description
Bytes 13-15	X'404040'	Model Number Specific model numbers are not returned
Bytes 16-18	X'D3E7D2'	Manufacturer LXK for Lexmark
Bytes 19-20	X'0000'	Plant
Bytes 21-32	12 Hex Bytes	Sequence Number Printer Serial Number
Bytes 33-34	X'0000'	Tag
Bytes 35-43	9 Hex Bytes	EC Level. IPDS Code Level in following form: xxxxyyyyy
Bytes 44-60	17 Hex Bytes	Device Specific Information Printer Base Code Level in following form: Base Code aa.bb.cccc
Byte 61	X'0F'	Length of Self Defining Product ID Parameter
Bytes 62-63	X'0003'	Printer Name Parameter ID

Product Identifier Self Defining Field Values: Bytes 64 (length equals 64 plus length of printer name string.)

Area	Value	Description
Bytes 64-75 or 64-77	X'D385A79481999240C3E2F8F2F0'	Lexmark CS820
	X'D385A79481999240C3E7F8F2F0'	Lexmark CX820
	X'D385A79481999240C3E7F8F2F5'	Lexmark CX825
	X'D385A79481999240C3E7F8F6F0'	Lexmark CX860
	X'D385A79481999240C3E2F7F2F0'	Lexmark CS720
	X'D385A79481999240C3E2F7F2F5'	Lexmark CS725
	X'D385A79481999240C3E7F7F2F5'	Lexmark CX725
	X'D385A79481999240C3E2F9F2F18485'	Lexmark CS921de
	X'D385A79481999240C3E2F9F2F38485'	Lexmark CS923de
	X'D385A79481999240C3E7F9F2F18485'	Lexmark CX921de
	X'D385A79481999240C3E7F9F2F28485'	Lexmark CX922de
	X'D385A79481999240C3E7F9F2F384A385'	Lexmark CX923dte
	X'D385A79481999240C3E7F9F2F384A785'	Lexmark CX923dxe
	X'D385A79481999240C3E7F9F2F484A385'	Lexmark CX924dte
	X'D385A79481999240C3E7F9F2F484A785'	Lexmark CX924dxe
	X'D385A79481999240D4E2F5F2F18494’	Lexmark MS521dn
	X'D385A79481999240D4E2F6F2F18494’	Lexmark MS621dn
	X'D385A79481999240D4E2F6F2F28494’	Lexmark MS622dn
	X'D385A79481999240D4E7F3F2F18494’	Lexmark MX321dn
	X'D385A79481999240D4E7F4F2F18485’	Lexmark MX421de
	X'D385A79481999240D4E7F5F2F18485’	Lexmark MX521de
	X'D385A79481999240D4E7F5F2F2848885’	Lexmark MX522dhe
	X'D385A79481999240D4E7F6F2F2848885’	Lexmark MX622dhe
	X'D385A79481999240D4E2F8F2F0D395’	Lexmark MS820Ln
	X'D385A79481999240D4E2F8F2F0D38495’	Lexmark MS820Ldn
	X'D385A79481999240D4E2F8F2F0D38485’	Lexmark MS820Lde
	X'D385A79481999240D4E2F8F2F0D384A385’	Lexmark MS820Ldte
	X'D385A79481999240D4E2F8F2F1D495’	Lexmark MS821Mn
	X'D385A79481999240D4E2F8F2F1D48495’	Lexmark MS821Mdn
	X'D385A79481999240D4E2F8F2F1D48485’	Lexmark MS821Mde
	X'D385A79481999240D4E2F8F2F1D484A385’	Lexmark MS821Mdte
	X'D385A79481999240D4E2F8F2F1D484A595’	Lexmark MS821Mdvn
	X'D385A79481999240D4E2F8F2F1D484A585’	Lexmark MS821Mdve
	X'D385A79481999240D4E2F8F2F2C88495’	Lexmark MS822Hdn
	X'D385A79481999240D4E2F8F2F2C88485’	Lexmark MS822Hde
	X'D385A79481999240D4E2F8F2F2C884A385’	Lexmark MS822Hdte
	X'D385A79481999240D4E7F7F2F0D48485’	Lexmark MX720Mde
	X'D385A79481999240D4E7F7F2F1C88485’	Lexmark MX721Hde
	X'D385A79481999240D4E7F7F2F1C884A585’	Lexmark MX721Hdve
	X'D385A79481999240D4E7F8F2F0D38485’	Lexmark MX820Lde
	X'D385A79481999240D4E7F8F2F1D48485’	Lexmark MX821Mde
	X'D385A79481999240D4E7F8F2F2C88485’	Lexmark MX822Hde

11.3 Finishing Operations Self-Defining Field

Finishing operations are supported when an optional finisher is installed and the functions are supported by the finisher. Finishing operations are reported in the Finishing Operations Self-Defining Field. The values below are reported to the host when the finishing function is supported by the finisher. Check your printer or output option documentation for functions supported.

Table 1: Finishing Operations Self-Defining Field

Bytes	Description	Values: Optional Finisher Supporting
0 - 1	Length of this self-defining field, including this field	X'004' to X'008'
2 – 3	Finishing operation self-defining field ID	X'0018'
4 – 7	Operation Type	X'01': Corner staple X'03': Edge stitch X'08': Center fold-in X'12': Saddle stitch-in

11.4 N-up Printing

N-up print support allows multiple pages to be printed on a single sheet. N-up allows 1-4 partitions to be defined per side of a sheet of paper. This allows up to 8 pages to be printed per sheet. Default page placement (N-up) and explicit page placement (N-up EPP) are supported. Refer to the "Load Copy Control and Logical Page Position" command in the Intelligent Printer Data Stream Reference for more information.

11.5 Color and Simulated Grey Scale Printing

Color or simulated grey scale printing is supported in all IPDS towers. Function Sets (FS) 10, 11, 42, and 45 are supported. Full process color is supported when using FS45. ABIC (Bi-level Q-Coder) compression is not supported. Additional information may be found in the "Image Object Content Architecture (IOCA) Reference".

Full process color using FS45 is supported on iSeries V5R2 and higher.

11.6 TrueType/OpenType Fonts

TrueType and OpenType fonts may be downloaded from the host.

TrueType fonts can be linked to a TrueType base font to form an ordered list of fonts that are essentially processed as a single font. IPDS supports printing of linked fonts. The font linking function fulfills two primary requirements:

- Supports the ability to add user-defined characters to a given font. This requirement is particularly strong in Japanese, Simplified Chinese, and Traditional Chinese markets.
- Supports the ability to extend a font with additional characters. These are not user-defined characters, but characters that did not fit into a single font due to the 64K restriction for TrueType fonts. The most important example for this requirement is the extension of the base Chinese character set for GB18030 support.

For more information about installing and managing TrueType Fonts, consult Chapter 4 in "Using OpenType Fonts in an AFP System" (G544-5876). For detailed information, please consult the product documentation for the Font Installer for AFP Systems.

11.7 Object Container Support

Support for object containers makes it possible to send various types of resource and presentation objects to the printer.

Support is currently provided for:

- TrueType/OpenType fonts
- JPEG (JFIF) – presentation object
- GIF – presentation object
- IOCA tiles (used in IO images)
- IO images as resources
- TIFF images
- EPS (Encapsulated PostScript)
- CMRs (Color Management Resources)

11.8 Media Reporting by Object ID (OID)

Media names identified as media IDs are returned to the host for each printer paper source. This information is reported in Bytes 24-36 of the Execute Order Home State (XOH) Obtain Printer Characteristics (OPC) Printable Area Self Defining Field (SDF). The tables below define the values reported to the host.

The printer supports multiple input sources. A Printable Area SDF is returned for each input source in a single XOH-OPC Acknowledgement Reply. The printer only reports media names for media sizes supported by the printer input sources.

Below are tables showing common information returned in the replay and specific media IDs returned sorted by media names.

Additional information may be found in the Mixed Object Content Architecture (MODCA) Reference version 5.

Table 1: Common Information Returned in the Reply

Special Data Area	Value Returned	Description
Bytes 24-25	X'000C' X'000D'	Single Byte OID Double Byte OID
Byte 26	 X'10'	Input Media ID Type MODCA Input Media Type OID
Byte 27	X'06'	OID Encoding
Byte 28	X'07' X'08'	OID Length: Single OID Byte OID Length: Double OID Byte
Bytes 29-34	X'2B1200040301'	Input Media ID common bytes
Bytes 35-36	X'bbbb'	One or two bytes representing the specific Media ID. Values for specific media IDs (bb or bbbb) are found in the following table.

Table 2: Specific Media IDs Returned Sorted By Media Names

Media Name (Note 1)	Media Type	ID	Media type OID (Value for 'bb' or 'bbbb' in table above)	Note
BSNS ENV	North American business envelope (9 Envelope)	143	X'810F'	2
COM 10 ENV	Com 10 envelope (9.5 x 4.125 in.)	75	X'4B'	2
C5 ENV	C5 envelope (229 x 162 mm)	79	X'4F'	2
DL ENV	DL envelope (220 x 110 mm)	77	X'4D'	2
EXEC	North American executive (7.25 x 10.5 in.)	65	X'41'	
ISO A3	ISO A3 white (297 x 420 mm)	10	X'0A'	
ISO A3 CO	ISO A3 colored	11	X'0B'	3
ISO A4	ISO A4 white (210 x 297 mm)	0	X'00'	
ISO A4 CO	ISO A4 colored	1	X'01'	3
ISO A4 TR	ISO A4 transparent	2	X'02'	4
ISO A5	ISO A5 white (148.5 x 210 mm)	20	X'14'	

Media Name (Note 1)	Media Type	ID	Media type OID (Value for 'bb' or 'bbbb' in table above)	Note
ISO A5 CO	ISO A5 colored	21	X'15'	3
ISO B5 ENV	ISO B5 envelope	73	X'49'	2
JIS B4	JIS B4 (257 x 364 mm)	42	X'2A'	
JIS B5	JIS B5 (182 x 257 mm)	43	X'2B'	
LEDGER	North American ledger (11 x 17 in)	69	X'45'	
LEGAL	North American legal white (8.5 x 14 in.)	60	X'3C'	
LEGAL CO	North American legal colored	61	X'3D'	3
LEGAL 13	North American legal 13 (Folio) 8.5 x 13 in.)	63	X'3F'	
LETTER	North American letter white (8.5 x 11 in.)	50	X'32'	
LETTER CO	North American letter colored	51	X'33'	3
LETTER TR	North American letter transparent	52	X'34'	4
MON ENV	Monarch envelope (7.5 x 3.875 in)	76	X'4C'	2
STATEMNT	North American statement (5.5 x 8.5 in.)	69	X'45'	

Notes:

1) The paper size and paper type in the printer's **Paper Menu > Paper Size/Type** option must be set to match the media loaded in the tray. If these do not match the media loaded in the tray, incorrect media type information will be returned to the host.

2) Media type must be set to envelope in the printer's **Paper Menu > Paper Size/Type** option and the media size must be set to the correct envelope size in **Size** option.

3) Media type must be set to Colored Paper in the printer's **Paper Menu > Paper Size/Type** option. If the media type is not set to Colored Paper, the OID for the white media type will be returned.

4) Media type must be set to Transparency in the printer's **Paper Menu > Paper Size/Type** option. If the media type is not set to Transparency, the OID for the white media type will be returned.

When paper is loaded in the tray or feeder and a Paper Type of Card Stock, Labels, Bond, Letterhead, Preprinted, and Custom Type 1-6 is selected, a media ID is not returned to the host. When the **Paper Size** in the printer paper menu is set to an envelope size, the **Paper Type** is ignored and a media ID is returned for the envelope size selected in the **Paper Size** option.

12 Warranty

The limited warranty you received with your printer gives warranty terms and conditions. For warranty information, refer to your printer documentation.

Appendices
A.Technical Specifications

A.1 IPDS Feature Overview

The IPDS emulation supports a rich set of features and functions. Support is only available for some of the features and functions listed when optional hardware features are installed on the printer. Check your printer specification for feature and optional hardware support.

- Full SAA Core Interchange Resident Code Page Support
- Full Core Interchange and Coordinated font set
- Bitmap LF1, outline LF3 font and TrueType/OpenType support
- Font capture support for all download font formats
- OCA image resource support (downloadable as a resource)
- Auto resolution scaling of fonts and IM images (240 to 300/600dpi)
- One-dimensional barcodes support
- 2D barcode support (PDF417, MaxiCode, DataMatrix, QR)
- Advanced N-Up support
- IPDS scalable (IO) and non-scalable (IM) images
- Vector graphics
- Overlays and page segments
- OCA Traditional color support (8/16 color values)
- Full image color support (FS45) with grayscaling option.
- Color Management Object Content Architecture (CMOCA) Support
- Duplex support
- Multiple input tray support
- Multiple output bin support
- Finishing supported (Offset stacking, Stapling and Hole punching depending on printer capabilities)
- Object Container support (TrueType/OpenType fonts, JPEG/JFIF and GIF Images, IOCA Tiles, IO images as resource, TIFF, EPS)
- Capture of Object Container objects using optional hard disk or user flash installed in the printer
- Edge-to-edge printing on some printers

A.2 Host Software Compatibility Overview for IPDS Printing

- AS/400, iSeries and other OS/400-based systems (PSF/400 minimum V3R1 recommended V5R4 or higher)
- Mainframe and zSeries: PSF V3.3 for OS/390; PSF 4.0 for z/OS; PSF/VM; LRS VPS/IPDS

Note: With AS/400 OS/400 V3R1 or OS/400 V3R6, to print IPDS over TCP/IP through PSF/400, PTF SF29249 - WRKAFP2 is required.

B.Font and Code Page Information

B.1 International Language Definitions

The IPDS emulation supports a variety of languages. Note that quite a few languages are supported by a number of different code pages.

B.1.1 Latin 1

Afrikaans	Belgian (French and Dutch)
Brazilian Portuguese	Canadian English
Canadian French	Catalan
Danish	Dutch
Finnish	French and Canadian French
German	Icelandic
Italian	Japanese English
Latin American Spanish	Norwegian
Portuguese	Spanish (Castilian)
Swedish	United Kingdom English
United States English	Swiss (German, French and Italian)

These languages are supported by Latin1 IPDS Core Interchange Font Set Code Pages; see the detailed lists in Appendix B.5.1 on **page 95**, Appendix B.5.2 on page **96**, and Appendix B.5.3 on page **96**.
Note that many of these languages are also supported by the Compatibility Font Sets Code Pages (see Appendix B.3 on page **91**).

B.1.2 Latin 2/ROECE, Latin 3, Latin 4, Latin 5

Latin 2/ROECE

Albanian	Croatian
Czech	East German
Hungarian	Polish
Romanian	Serbian
Slovak	Slovenian

Latin 3

Esperanto	Maltese
Turkish	

Latin 4

Baltic Multilingual	Estonian
Greenlandic	Lappish
Latvian	Lithuanian

Latin 5

Turkish	

For a detailed list of supported IPDS “Core Interchange” Font Set Code Pages, see Appendix B.5.4 Latin 2, 3, 4, 5, and 9 Code Pages on page **96**.

B.1.3 Cyrillic and Greek

Cyrillic / Cyrillic Multilingual

Bulgarian	Byelorussian
Macedonian	Russian
Serbo-Croatian	Ukrainian

Greek

Greek	

For a detailed list of supported IPDS "Core Interchange" Font Set Code Pages, see Appendix B.5.6 Cyrillic and Greek Code Pages on page **97**.

B.1.4 Arabic and Hebrew

For a detailed list of supported IPDS "Core Interchange" Font Set Code Pages, see

- Appendix B.5.7 Arabic Code Pages on page **98**
- Appendix B.5.8 Hebrew Code Pages on page **98**

B.1.5 Japanese (non-Latin)

Katakana is implemented in

- The 3812/3816 Compatibility Font Set used by the **3812/3816** emulation (by a Special Code page only, See page **94**).
- The IBM Coordinated Font Set. See page **99**.

B.2 About the Three Types of Supported Font Sets

Supported fonts may be selected by their Font Global Identifier (FGID) assigned value.

Compatibility Font Sets

- The **4028 Compatibility Font Set** emulates **300 dpi** fonts**.** This font set is used by the **Resident emulation.** For details, including the supported code pages, see Appendix B.3.1, starting on page **91**.
- The **3812/3816 Compatibility Font Set** emulates **240 dpi** fonts**.** This font set is used by the **3812/3816 emulation**. For details, including the support code pages, see Appendix B.3.2, starting on page **93**.

Core Interchange Font Set (Scalable)

Both printer emulations support the Core Interchange Font Set. For details, see Appendix B.4, starting on page **94**, and the associated code pages in Appendix B.5, starting on page **95**.

Coordinated Font Set (Scalable)

Both printer emulations support the Coordinated Font Set. For details, see Appendix B.6, starting on page **99**.

B.3 Compatibility Font Sets

B.3.1 4028 Compatibility Font Set - (Resident Emulation)

The fonts included below are used by the **Resident** emulation. For some of these fonts the IPDS emulation will use an equivalent scalable font. Most of these fonts support the Latin 1 languages.

Typeface	FGID	Width	Pitch/Point	Codepage support (CPGID or G-code)
OCR-B	3	144	10.0	893 (S), 877 (S)
Courier 10	11	144	10.0	G2, 259 (S)
Prestige Pica	12	144	10.0	G2, 259 (S)
Courier Italic 10	18	144	10.0	G2
OCR-A	19	144	10.0	892 (S), 876 (S)
Courier Bold 10	46	144	10.0	G2
APL 12	76	120	12.0	310 (S)
Courier 12	85	120	12.0	G2, 259 (S)
Prestige Elite	86	120	12.0	G2, 259 (S)
Courier Italic 12	92	120	12.0	G2
Prestige Elite Bold	111	120	12.0	G2
Prestige Elite Italic	112	120	12.0	G2
Boldface	159	120	PS	G2
Prestige PS	164	120	PS	G2
Gothic-text 13	203	108	13.3	G3
Prestige	221	96	15.0	G1
Courier 15	223	96	15.0	G1
Courier 17	254	84	17.1	G1
Prestige	256	84	17.1	G1
Letter Gothic 20	281	72	20.0	G1
Gothic-text 20	283	72	20.0	G3
Gothic-text 27	290	54	26.7	G3
Times™ Roman	5687	40	6 pt *	G3
Times Roman	5687	53	8 pt *	G3
Times Roman	5687	67	10 pt *	G3
Times Roman	5687	80	12 pt *	G3
Times Roman Bold	5707	67	10 pt *	G3
Times Roman Bold	5707	80	12 pt *	G3
Times Roman Bold	5707	93	14 pt *	G3
Times Roman Bold	5707	120	18 pt *	G3
Times Roman Bold	5707	160	24 pt *	G3
Times Roman Italic	5815	67	10 pt *	G3
Times Roman Italic	5815	80	12 pt *	G3
Times Roman Bold Italic	5835	67	10 pt *	G3
Times Roman Bold Italic	5835	80	12 pt *	G3

* = For these fonts the scalable Times New Roman™ Typefaces in the appropriate sizes from the Core Interchange Font Set are always used.

G-codes

G1 = All code pages listed under the Core Interchange Font Set "Latin 1 Country Extended Code Pages" are supported (see Appendix B.5.1 starting on page **95**). In addition, the following Compatibility Font Set Code Pages are supported: ASCII 367; Austrian/German (Aus/Ger Alt 286), Canadian French (Can. French 276 (Alt), Denmark/Norway (Den/Nor Alt 287), Finland/Sweden (Fin/Swe Alt 288), Spain / Latin America (Spain Alt 289).

G2 = All code pages in group G1 plus code page (CPGID) 1002.

G3 = All code pages in group G2 plus code pages (CPGIDs) 437 and 850.

S = See descriptions under Special Code Pages below.

In addition to the above set of fonts, a number of other FGIDs are also recognized by the IPDS printer emulation. These are simulated by substitution with one of the above fonts or by bolding one of the above fonts. See Font Substitution on page **100**.

If an FGID is not available, the font will be mapped to another font either at the host or in the printer using a font best-fit algorithm.

Special Code Pages

The following special code pages are supported when the **Resident** emulation is selected.

Codepage (CPGID)	GCSGID	Language / Function / Description
259	340	Symbols, Set 7
310	963	APL (Graphic Escape APL/TN)
876	968	OCR-A (ASCII)
877	969	OCR-B (ASCII)
892	968	OCR-A
893	969	OCR-B
1002	1132	DCF Rel. 2 Compatibility

B.3.2 3812/3816 Compatibility Font Set

When the **3812/3816** emulation is selected, these fonts replace the Resident font set. For some of these fonts the IPDS emulation will use an equivalent scalable font. Most of these fonts support the Latin 1 languages.

Typeface	FGID	Width	Pitch/Point	Codepage support (CPGID)
OCR-B	3	144	10.0	893 (S)
Orator	5	144	10.0	**
Courier 10	11	144	10.0	**
Courier Italic 10	18	144	10.0	**
OCR-A	19	144	10.0	892 (S)
Gothic-text 10	40	144	10.0	**
Katakana-gothic 10	44	144	10.0	290 (S)
APL 10	45	144	10.0	293 (S)
Gothic-text 12	66	120	12.0	**
Gothic Italic 12	68	120	12.0	**
Script 12	84	120	12.0	**
Courier 12	85	120	12.0	**
Prestige 12	86	120	12.0	**
Letter-gothic 12	87	120	12.0	**
Prestige Italic 12	112	120	12.0	**
Boldface Italic	155	120	PS	**
Essay	160	120	PS	**
Essay Italic	162	120	PS	**
Essay Light	173	120	PS	**
Document	175	120	PS	**
Gothic-text 13	204	108	13.3	**
Gothic-text 15	230	96	15.0	**
Courier 5	244	288	5.0	**
Courier 17	252	84	17.1	**
Courier 17ss	254	84	17.1	**
APL 20	280	72	20.0	293 (S)
Gothic-text 20	281	72	20.0	**
Gothic-text 27	290	54	26.7	**
Sonoran serif	751/4407	54	8 pt *	**
Sonoran serif	1051/4407	66	10 pt *	**
Sonoran serif bold	1053/4427	66	10 pt *	**
Sonoran serif italic	1056/4535	66	10 pt *	**
Sonoran serif	1351/4407	78	12 pt *	**
Sonoran serif bold	1653/4427	108	16 pt *	**
Sonoran serif bold	2103/4427	162	24 pt *	**

* = For these fonts the scalable Times New Roman™ Typefaces in the appropriate sizes from the Core Interchange Font Set are always used.

** = Most of the 3812/3816 Compatibility Fonts support the Latin 1 set of code pages. This includes a number of code pages that support the Euro symbol; for details see especially Appendix B.5.1 starting on page 95. In addition, the following Compatibility Font Set Code Pages are supported: ASCII 367; Austrian/German (Aus/Ger Alt 286), Canadian French (Can. French 276 (Alt), Denmark/Norway (Den/Nor Alt 287), Finland/Sweden (Fin/Swe Alt 288), Spain / Latin America (Spain Alt 289).

S = See descriptions under Special Code Pages below.

In addition to the above set of fonts a number of other FGIDs are also recognized by the IPDS. These are simulated by substitution with one of the above fonts or by bolding one of the above fonts.

Special Code Pages

The following special code pages are supported when the **3812/3816** emulation is selected.

Codepage (CPGID)	GCSGID	Language / Function / Description
290	332	Katakana, Japan Katakana, Japanese
293	380	APL (USA)
892	968	OCR-A
893	969	OCR-B

B.4 IBM Core Interchange Scalable Font Set

The typefaces defined for the IBM Core Interchange Set font provide support for the following groups of languages and are supported in the printer: Latin 1 including DCF, Latin 2, Latin 3, Latin 4 (including Baltic), Latin 5, Cyrillic, Greek, and Symbols. Symbols are provided in medium and bold typefaces only.

Typeface	FGID
Courier Italic Bold	428
Courier Italic Medium	424
Courier Roman Bold	420
Courier Roman Medium	416
Helvetica™ Italic Bold	2307
Helvetica Italic Medium	2306
Helvetica Roman Bold	2305
Helvetica Roman Medium	2304
Times New Roman Bold	2309
Times New Roman Italic Bold	2311
Times New Roman Italic Medium	2310
Times New Roman Medium	2308

These fonts are supported through country or language extended code pages as defined in Appendix B.5, starting on page **95**.

To access the IBM Core Interchange Set, the FGIDs above with a font width or point size value must be used. If an FGID is not available, the font is mapped to another font either at the host or in the printer using a font best-fit algorithm.

B.5 IBM Core Interchange Font Set Code Page Support

The code pages supported by the Core Interchange Font Set are listed below.

A selection of these code pages can be set as default from the front panel. See Default Codepage on page **18** in the **IPDS Settings** section, for a list of those code pages that can be selected.

B.5.1 Latin 1 Country Extended Code Pages

Latin 1 Country Extended Code Pages – Languages and/or Countries	**Codepage (CPGID)**	**GCSGID**
Austrian / German, Germany, Austria, Aus/Ger	273	697
Austrian / German, German, Austria , Aus/Ger– with Euro	1141	695
Belgium, Belgian	274	697
Brazilian Portuguese, Brazil	275	697
Canadian French, Can. French, Canada	260	341
Danish / Norwegian, Den/Nor, Denmark, Norway	277	697
Danish / Norwegian, Den/Nor, Denmark, Norway – with Euro	1142	695
Finnish / Swedish, Fin/Swe, Finland, Sweden	278	697
Finnish / Swedish, Fin/Swe Finland, Sweden – with Euro	1143	695
French / Catalan, French/Cat, France	297	697
French / Catalan, French/Cat, France – with Euro	1147	695
Icelandic, Iceland	871	697
Icelandic, Iceland – with Euro	1149	695
International Set 5, Int. Set 5: Multinational, Multilingual, Belgian French, Dutch, Swiss French, Swiss German, Swiss Italian; Belgium, Switzerland / International	500	697
International Set 5 Int. Set 5: Multinational, Multilingual, Belgian French, Dutch, Swiss French, Swiss German, Swiss Italian; Belgium, Switzerland / International – with Euro	1148	695
Italian, Italy	280	697
Italian, Italy – with Euro	1144	695
Japanese (English), Japanese (Latin), Japan (Eng)	281	697
Portugal, Portuguese	282	697
Portugal, Portuguese (part of USA / Canada etc.)	037	697
Spain / Latin America, Spain/L. Am, Spanish, Castilian Spanish, Latin American Spanish	284	697
Spain / Latin America, Spain/L. Am, Spanish, Castilian Spanish, Latin American Spanish – with Euro	1145	695
USA / Canada, US English, Canadian English, Canadian French, Dutch, Brazilian, Portuguese, Portuguese; US, Canada, Netherlands, Portugal	037	697
USA / Canada, US English, Canadian English, Canadian French, Dutch, Brazilian Portuguese, Portuguese; US, Canada, Netherlands, Portugal – with Euro	1140	695
UK English	285	697
UK English – with Euro	1146	695

The Euro symbol is supported in all code pages so marked. On the list of selectable default code pages on the operator panel, the designation Eur is not included on code pages 1140-1159 and 1153-1158.

B.5.2 Latin 1 EBCDIC Publishing Code Pages

Latin 1 EBCDIC Publishing - Languages (and Countries)	Codepage (CPGID)	GCSGID
Belgian (Belgium)	383	1145
Brazilian Portuguese (Brazil)	384	1145
Canadian French (Canada (French))	385	1145
Castilian Spanish (Spain, Philippines)	392	1145
Danish / Norwegian (Denmark, Norway)	386	1145
Finnish / Swedish (Sweden, Finland)	387	1145
French / Catalan (France, Switzerland)	388	1145
German (Austria, Germany, Switzerland)	382	1145
Italian (Italy, Switzerland (Italian))	389	1145
Japanese (Latin), Japan (Eng)	390	1145
Latin American Spanish (Latin America (Spanish))	393	1145
Publishing – Multilingual Belgian, Dutch, Swiss; Multinational Belgian French, Belgian Dutch, Swiss French, Swiss German, Swiss Italian (International Set 5)	361	1145
Portuguese (Portugal)	391	1145
UK English (UK, Australia, Ireland, Hong Kong, New Zealand)	394	1145
US English, Canadian English (United States, Canada (English)	395	1145

B.5.3 Latin 1 ASCII Code Pages

Latin 1 ASCII – Languages and/or Countries	Codepage (CPGID)	GCSGID
Baltic Rim Windows – with Euro	1257	1421
Canadian French PC, Canada	863	993
Icelandic PC, Iceland	861	991
ISO/ANSI 8-bit Latin 1	819	697
Nordic PC, Norway, Sweden, Denmark	865	995
PC (standard)	437	919
PC IBM Desktop Publishing	1004	1146
PC Multinational, Multilingual	850	980
PC Multinational, Multilingual – with Euro	858	988
Portuguese PC	860	990

B.5.4 Latin 2, 3, 4, 5, and 9 Code Pages

Latin 2, 3, 4, 5, and 9 Code Pages – Languages and/or Countries	Codepage (CPGID)	GCSGID
Baltic, Baltic Multilingual	1112	1305
Baltic, Baltic Multilingual – with Euro	1156	1393
Baltic Multilingual PC (ASCII)	921	1346
Baltic Multilingual PC (ASCII) – with Euro	901	1394
Baltic Rim Windows (ASCII) – with Euro	1257	1421
Eastern Europe Multilingual PC (ASCII Latin 2) Croatian, Czech, East German, Hungarian, Polish, Romanian, Slovak, Slovenian	852	982
Eastern Europe Multilingual PC (ASCII Latin 2) Croatian, Czech, East German, Hungarian, polish, Romanian, Slovak, Slovenian – with Euro	852	1377
Estonian	1122	1307
Estonian ISO/ANSI – 8 bit ASCII	902	1392
Estonian PC (ASCII)	922	1347
Estonian with Euro	1157	1391
Latin 2 ISO/ANSI – 8 bit ASCII	912	959
Latin 2 Multilingual	870	959

Latin 2, 3, 4, 5, and 9 Code Pages – Languages and/or Countries	Codepage (CPGID)	GCSGID
Latin 2 Multilingual	1110	1111
Latin 2 Multilingual – with Euro	1153	1375
Latin 2 Windows (ASCII) – with Euro	1250	1410
Latin 3 Multilingual – incl. Turkish	905	1286
Latin 3 Multilingual PC (ASCII)	853	983
Latin 4	1069	1256
Latin 4 ISO/ANSI – 8 bit ASCII	914	1256
Latin 5 – incl. Turkish	1026	1152
Latin 5 ISO/ANSI – 8 bit ASCII – incl. Turkish	920	1152
Latin 5 PC (ASCII) – incl. Turkish	857	987
Latin 5 PC (ASCII) – incl. Turkish	857	1380
Latin 9 – with Euro	924	1353
Latin 9 (ASCII) – with Euro	923	1353
Turkish – with Euro	1155	1378
Turkish Windows (ASCII) – with Euro	1254	1414
Turkish: See also Latin 3 and Latin 5		

B.5.5 Latin EBCDIC DCF Code Pages

Latin DCF Code Pages	Codepage (CPGID)	GCSGID
DCF Release. 2 Compatibility	1002	1132
GML List symbols	1039	1258
Text with numeric spacing	1068	1269
US Text Subset	1003	1133

B.5.6 Cyrillic and Greek Code Pages

Cyrillic and Greek Code Pages - Languages and/or Countries	Codepage (CPGID)	GCSGID
Cyrillic #2 PC (ASCII)	866	996
Cyrillic ISO 8-bit ASCII	915	1150
Cyrillic multilingual	880	960
Cyrillic multilingual (primary)	1025	1150
Cyrillic multilingual – with Euro	1154	1381
Cyrillic Russian PC (ASCII) - with Euro	808	1385
Cyrillic PC (ASCII)	855	985
Cyrillic PC (ASCII)– with Euro	872	1383
GML List symbols	1039	1258
Greek (Greece 183)	423	218
Greek (Primary)	875	1371
Greek (Primary)– with Euro (Greek Eur)	875	925
Greek ISO 8-bit ASCII	813	925
Greek ISO 8-bit ASCII – with Euro	813	1371
Greek PC (ASCII)	851	981
Greek PC (ASCII)	869	998
Greek PC (ASCII) – with Euro	869	1373
Greek Windows (ASCII) – with Euro	1253	1413

B.5.7 Arabic Code Pages

Arabic Code Pages	Codepage (CPGID)	GCSGID
Arabic, Arabic Bilingual	420	235
Arabic, Arabic Bilingual – with Euro (Arabic Eur)	420	1461
Arabic ISO/ASCII 8-bit	1008	1162
Arabic ISO/ASCII 8-bit – with Euro	1008	1464
Arabic Extended ISO/ASCII 8-bit – with Euro	1046	1465
Arabic PC (ASCII)	864	994
Arabic PC (ASCII) – with Euro	864	1463
GML List symbols	1039	1258

B.5.8 Hebrew Code Pages

Hebrew (Israeli) Code Pages	Codepage (CPGID)	GCSGID
GML List symbols	1039	1258
Hebrew	424	941
Hebrew – with Euro (Hebrew Eur)	424	1356
Hebrew ISO/ASCII 8-bit	916	941
Hebrew PC (ASCII)	856	986
Hebrew PC (ASCII) – with Euro	856	1358
Hebrew PC (ASCII)	862	992
Hebrew Publishing	1028	1199
Hebrew Set A	803	1147

B.5.9 Symbol Code Pages

Languages (Symbol Setsl	Codepage (CPGID)	GCSGID
GML List symbols	1039	1258
Math Symbols	829	909
Symbols, Adobe	1087	1257
Symbols, Adobe (ASCII)	1038	1257
Symbols, Set 7	259	340
Symbols, Set 7 (ASCII)	899	340
Symbols, Set 7 Modified	1091	1191
Symbols, Set 7 Modified PC (ASCII)	1092	1191
Symbols, Set 8	363	630

B.6 IBM Coordinated Font Set

The IBM Coordinated Font Set is supported only in the following Code Page sets: Latin 1 Country Extended Code Pages, Latin 1 EBCDIC Publishing Code Pages, Latin 1 ASCII, and Latin EBCDIC DCF code pages. See Appendix B.4 IBM Core Interchange Scalable Font Set, on page **94** for a complete listing of fonts.

Typefaces in Outlines (Latin 1)	FGID	GCSGID
APL	307	1304
APL Bold	322	1304
Boldface	20224	2039
Gothic Text (simulated)	304	2039
Letter Gothic	400	2039
Letter Gothic Bold	404	2039
Letter Gothic Italic (Additional)	408	2039
Prestige	432	2039
Prestige Bold	318	2039
Prestige Italic	319	2039
Katakana Gothic	304	1306

These fonts are scalable. To access the fonts above, you must specify the FGID and the width or point size in the IPDS job.

If an FGID is not available, the font will be mapped to another font either at the host or in the printer using a font best-fit algorithm.

B.6.1 OCR Scalable Font Set

These fonts are scalable. To access the fonts below, you must specify the FGID and the width or point size in the IPDS job.

Typefaces in Outlines	Encoding	FGID	Code Page (CPGID)	GCSGID
OCR-A	EBCDIC	305	892	968
OCR-A	ASCII	305	876	968
OCR-B	ABCDI	306	893	969
OCR-B	ASCII	306	877	969

B.7 POSTNET Font Support

The IPDS Emulation supports generation of the POSTNET bar code in the IPDS Bar Code tower. In addition, the following FGID may be used to generate a POSTNET bar code.

Typeface	FGID
POSTNET	4094

Code pages that can be used with FGID 4094 include the following.

Codepage (CPGID)	GCSGID	Function / Descriptions
1301	1451	ZIP +4 POSTNET bar code
1302	1452	Facing Identification Marks
1303	1453	Business Reply Bar

In addition the POSTNET font can also be used to replace numeric characters on other code pages.

B.8 Font Substitution

If a font is not available, a different font is substituted using a best-fit algorithm. This substitution is based on the FGID and the font width.

If any of the font IDs in the following tables are used in a document, they are mapped to the substituted font id given.

B.8.1 Resident Emulation Font Substitution

Typestyle	Original FGID	Substituted FGID/Font Width	
Courier 12 Bold	108 or 85 b	420	120 fw
Courier 17.1 Bold	253 or 254 b	420	84 fw
Gothic Text 12 Bold	69	85 b	120 fw
Gothic Text 13	204	203	108 fw
Letter Gothic 12	87 or 85	400	120 fw
Letter Gothic 12 Bold	110 or 85 b	404	120 fw
Light Gothic 12	91	112	120 fw
Math Symbol 12	80	86	120 fw
Prestige Pica Bold	60 or 12 b	318	144 fw
Roman Text	41	12	144 fw
Serif Text 10 Italic	43	18	144 fw
Serif Text 12 Bold	72	85 b	120 fw
Serif Text 12 Italic	71	92	120 fw
Sonoran-Serif 8 pt	751 or 4407 54 fw or 5687	2304	53 fw
Sonoran-Serif 10 pt	1051 or 4407 66 fw or 5687	2304	67 fw
Sonoran-Serif 12 pt	1351 or 4407 78 fw or 5687	2304	80 fw
Sonoran-Serif.Bold 10 pt	1053 or 4427 66 fw or 5707	2305	67 fw
Sonoran-Serif.Bold 16 pt	1653 or 4427 108 fw or 5707	2305	108 fw
Sonoran-Serif.Bold 18 pt	1803 or 4427 120 fw or 5707	2305	120 fw
Sonoran-Serif.Bold 24 pt	2103 or 4427 162 fw or 5707	2305	60 fw
Sonoran-Serif.Italic 10 pt	1056 or 4535 66 fw or 5815	2306	67 fw
Times Roman 6 pt	760 or 5687 40 fw	2308	40 fw

Typestyle	Original FGID	Substituted FGID/Font Width	
Times Roman Bold 12 pt	761 or 5707 80 fw	2309	80 fw
Times Roman Bold 14 pt	762 or 5707 93 fw	2309	93 fw
Times Roman Bold Italic 10 pt	764 or 5835 67 fw	2311	67 fw
Times Roman Bold Italic 12 pt	765 or 5835 80 fw	2311	80 fw
Times Roman Italic 12 pt	763 or 5815 80 fw	2310	80 fw

b = Bold

B.8.2 3812/3816 Emulation Font substitution

Typestyle	Original FGID	Substituted FGID/Font Width	
Matrix Gothic 10	26	40	144 fw
Roman Text	41	40	144 fw
Serif Text 10	42	40	144 fw
Serif Text 10 Italic	43	68	144 fw
Prestige Pica Bold	60 or 12 b	318	144 fw
Serif Text 12	70	66	120 fw
Serif Text 12 Italic	71	68	120 fw
Serif Text 12 Bold	72	69	120 fw
Math Symbol 12	80	86	120 fw
Light Gothic 12	91	112	120 fw
Elite 12	107	85	120 fw
Courier 12 Bold	108 or 85 b	420	120 fw
Letter Gothic 12 Bold	110 or 87 b	404	120 fw
Bold PS	176	159	120 fw
Bold Italic PS	177	155	120 fw
Math Symbol 15	225	86	120 fw
Courier 17.1 Bold	253 or 252 b	420	84 fw

b = Bold

C.Bar Code Support: Linear (1-D) Bar Codes

See Appendix D page **110** for information on 2-D bar code support.

Abbreviations used within the tables:

AIM USS	Automatic Identification Manufacturers Uniform Symbol Specification
BCD1	Entries marked with BCD1 are a part of the BCD1 Subset of the full capabilities of the BCOCA architecture, which specifies the minimum support required of all BCOCA receivers.
BSA data	Bar Code Symbol Data
EAN	European Article Numbering
HRI	Human Readable Interpretation
JAN	Japanese Article Numbering
MSI	MSI Data Corporation
USPS	United States Postal Service
POSTNET	POSTal Numeric Encoding Technique (United States Postal Service)
RM4SCC	Royal Mail 4 State Customer Code – also used for a Dutch modification
UPC	Universal Product Code (United States)
UPC/CGPC	Universal Product Code (United States) and the Canadian Grocery Product Code

Additional information may be found in the ”Bar Code Object Content Architecture (BCOCA) Reference”.

Column Labels:
Type = Value for Bar Code Type
(Bar Code Symbol Descriptor Byte 12; Bar Code Data Descriptor Byte 16)
Mod = Modifier Value
(Bar Code Symbol Descriptor Byte 13; Bar code Data Descriptor Byte 17)

Type	Bar Code Type	Mod	Description
X’01’	Code 3 of 9, AIM USS-39, (BCD1)		The Standard Code 3 of 9 character set and Extended Code 3 of 9 character set are supported. Also known as Code 39.
		X’01’	Print the bar code without a printer generated check digit.
		X’02’	Generate check digit and print it with the bar code.
X’02’	MSI (modified Plessey code (BCD1)	X’01’	Print the bar code with no printer generated check digits.
		X’02’	Print the bar code with a generated IBM modulo-10 check digit, which will be the second check digit (at end of data). The first check digit is the last byte of the BSA data.
		--------	----------
			All of the following variants print the bar code with two check digits.
		X’03’	Both check digits are generated using the IBM modulo-10 algorithm.

Type	Bar Code Type	Mod	Description
		X’04’	The first check digit is generated using the NCR modulo-11 algorithm, the second using the IBM modulo-10 algorithm. The first check digit equals the remainder; error (exception condition EC-0E00) exists if the first check-digit calculation results in a value of 10.
		X’05’	The first check digit is generated using the IBM-modulo-11 algorithm, the second using the IBM modulo-10 algorithm. The first check digit equals the remainder. Exception condition EC-0E00 exists if the first check-digit calculation results in a value of 10.
		X’06’	The first check digit is generated using the NCR-modulo-11 algorithm, the second using the IBM modulo-10 algorithm. The first check digit equals 11 minus the remainder. A first check digit value of 10 is assigned the value zero.
		X’07’	The first check digit is generated using the IBM-modulo-11 algorithm, the second using the IBM modulo-10 algorithm. The first check digit equals 11 minus the remainder. A first check digit value of 10 is assigned the value zero.
		X’08’	The first check digit is generated using the NCR-modulo-11 algorithm, the second using the IBM modulo-10 algorithm. The first check digit equals 11 minus the remainder. Exception condition EC-0E00 exists if the first check-digit calculation results in a value of 10.
		X’09’	The first check digit is generated using the IBM-modulo-11 algorithm, the second using the IBM modulo-10 algorithm. The first check digit equals 11 minus the remainder. Exception condition EC-0E00 exists if the first check-digit calculation results in a value of 10.
X’03’	UPC/CGPC Version A (BCD1)	X’00’	Print the standard UPC-A bar code with a generated check digit. The data to be encoded consists of eleven digits. The first digit is the number-system digit; the next 10 digits are the article number.
X’05’	UPC/CGPC Version E (BCD1)	X’00’	Print a UPC-E bar code symbol. Of the 10 input digits, six digits are encoded. The check digit is generated using all 10 input data digits. The check digit is not encoded; it is used only to assign odd or even parity to the six encoded digits.
X’06’	UPC 2-Character (Two-digit) Supplemental (Periodicals)	X’00’	Print a UPC two-digit supplemental bar code symbol (bar/space pattern and HRI). This option assumes that the base UPC Version A or E symbol is presented as a separate bar code object. The bar and space patterns used for the two supplemental

Type	Bar Code Type	Mod	Description
	(BCD1)		digits are left-odd or left-even parity, with the parity determined by the digit combination.
		X’01’	The two-digit UPC supplemental bar code symbol is preceded by a UPC Version A, Number System 0, bar code symbol. The bar code object contains both the UPC Version A symbol and the two-digit supplemental symbol. The input data consists of the number system digit, the ten-digit article number, and the two supplement digits, in that order. A check digit is generated for the UPC Version A symbol. The two-digit supplemental bar code is presented after the UPC Version A symbol using left-hand odd and even parity as determined by the two supplemental digits.
		X’02’	The two-digit UPC supplemental bar code symbol is preceded by a UPC Version E symbol. The bar code object contains both the UPC Version E symbol and the two-digit supplemental symbol. The input data consists of the ten-digit article number and the two supplemental digits. The bar code object processor generates the six-digit UPC Version E symbol and a check digit. The check digit is used to determine the parity pattern of the six-digit Version E symbol. The two-digit supplemental bar code symbol is presented after the Version E symbol using left-hand odd and even parity as determined by the two digits.
X’07’	UPC 5-Character (Five-digit) Supplemental (Paperbacks) (BCD1)	X’00’	Print the UPC five-digit supplemental bar code symbol (bar/space pattern and HRI). This option assumes that the base UPC Version A or E symbol is presented as a separate bar code object. A check digit is generated from the five supplemental digits and is used to assign the left-odd and left-even parity of the five-digit supplemental bar code. The supplemental check digit is not encoded or interpreted.
		X’01’	The five-digit UPC supplemental bar code symbol is preceded by a UPC Version A, Number System 0, bar code symbol. The bar code object contains both the UPC Version A symbol and the five-digit supplemental symbol. The input data consists of the number system digit, the ten-digit article number, and the five supplement digits, in that order. A check digit is generated for the UPC Version A symbol. A second check digit is generated from the five supplement digits. It is used to assign the left-hand odd and even parity of the five-digit supplemental bar code symbol. The supplement check digit is not encoded or interpreted.
		X’02’	The five-digit UPC supplemental bar code symbol is preceded by a UPC Version E symbol. The bar code object contains both the UPC Version E symbol and the five-digit supplemental symbol. The input data consists of the ten-digit article number

Type	Bar Code Type	Mod	Description
			and the five-digit supplemental data. The bar code object processor generates the six-digit UPC Version E symbol and check digit. The check digit is used to determine the parity pattern of the Version E symbol. The five-digit supplemental bar code symbol is presented after the Version E symbol. A second check digit is calculated for the five-digit supplemental data and is used to assign the left-hand odd and even parity. The supplement check digit is not encoded or interpreted.
X'08'	EAN-8 (includes JAN Short) (BCD1)	X'00'	Print an EAN-8 bar code symbol. The input variable data is 7 digits (2 flag and 5 article ID digits). All seven digits are encoded along with a generated check digit.
X'09'	EAN-13 (includes JAN Standard)(BCD1)	X'00'	Print an EAN-13 bar code symbol. The input variable data is 12 digits (2 flag and 10 article ID digits).
X'0A'	Industrial 2 of 5	X'01' X'02'	Print the bar code without a printer generated check digit. Generate check digit and print it with the bar code.
X'0B'	Matrix 2 of 5	X'01' X'02'	Print the bar code without a printer generated check digit. Generate check digit and print it with the bar code.
X'0C'	Interleaved 2 of 5, AIM USS-I 2/5 (BCD1)	 X'01' X'02'	The Interleaved 2 of 5 symbology requires an even number of digits. The printer will add a leading zero if necessary to meet this requirement. Print the bar code without a printer generated check digit. Generate check digit and print it with the bar code.
X'0D'	Codabar, 2 of 7 AIM USS-Codabar	 X'01' X'02'	The input data consists of a start character, digits to be encoded, and a stop character. Print the bar code without a printer generated check digit. Generate check digit and print it with the bar code.
X'11'	Code 128, AIM USS-128	X'01' X'02'	Print a Code 128 bar code using subset A, B, or C as appropriate to produce the shortest possible bar code from the given data. The Code 128 page (CPGID = 1303, GCSGID = 1454) is used to interpret the bar code symbol data. Generate check digit and print with bar code using original

Type	Bar Code Type	Mod	Description
			(1986) start-character algorithm.
		X'03'	Generate UCC/EAN 128-compatible bar code (no parenthesis – see next modifier). This modifier is functionally identical to modifier X'02'. Generate a check digit and print with bar code.
		X'04'	Generate a UCC/EAN 128-compatible bar code, as in modifier X'03', but use parenthesis in the HRI to distinguish each application identifier. The printer inserts the parentheses in the printed HRI when modifier X'04' is specified; these parentheses are not part of the input data.
		X'05'	This is a bar code that is defined in "BARCODE, CONTAINER, INTELLIGENT MAIL" (USPS-B-3215) published by the United States Postal Service (USPS). The bar code uses a special form of the GS1-128 symbol that is defined in "GS1 General specifications" published by GS1. Refer to the table C.1 Intelligent Mail Container Barcode Data Field Ranges on page **110** for details.
X'16'	EAN 2 Digit Add-on (Supple-mental) (BCD1)	X'00'	Print the EAN 2-digit supplemental bar code add-on (bar/space pattern and HRI).This option assumes that the base EAN-13 symbol is presented as a separate bar code object. The value of the two digit supplemental data determines their bar and space patterns chosen from number sets A and B.
		X'01'	The two-digit supplemental bar code symbol is preceded by a normal EAN-13 bar code symbol. The bar code object contains both the EAN-13 symbol and the two-digit supplemental symbol. The two-digit supplemental bar code is presented after the EAN-13 symbol using left hand odd and even parity as determined by the two supplemental digits chosen from number sets A and B.
X'17'	EAN 5 Digit Add-on (Supple-mental) (BCD1)	X'00'	Print the EAN 5-digit supplemental bar code (bar/space pattern and HRI). This option assumes that the base EAN-13 symbol is presented as a separate bar code object. A check digit is calcu-lated from the five supplemental digits. The check digit is also used to assign the bar and space patterns from number sets A and B for the five supplemental digits. The check digit is not encoded or interpreted.
		X'01'	The five-digit supplemental bar code symbol is preceded by a normal EAN-13 bar code symbol. The bar code object contains both the EAN-13 symbol and the five-digit supplemental symbol. A check digit is generated from the five-digit supplemental data. The check digit is used to assign the bar and space patterns from number sets A and B. The check digit is not encoded or interpreted.

Type	Bar Code Type	Mod	Description
X’18’	POSTNET		USPS Specification For all POSTNET modifiers that follow, the BSA HRI flag field and the BSD module width, element height, height multiplier, and wide-to-narrow ratio fields are not applicable to the POSTNET bar code symbology. These fields are ignored because the POSTNET symbology defines specific values for these parameters.
		X’00’	Print a POSTNET ZIP Code bar code symbol.
		X’01’	Print a POSTNET ZIP+4 (delivery point) bar code symbol.
		X’02’	Print a POSTNET Advance Bar Code (ABC) bar code symbol.
		X’03’	Print a POSTNET variable-length bar code symbol. The bar code symbol is generated without length checking; the symbol is not guaranteed to be scannable or interpretable. The bar code consists of a leading frame bar, the encoded data, a correction digit, and a trailing frame bar.
		X’04’	PLANET Bar Code. Print a POSTNET PLANET bar code symbol. This is a “reverse topology” of POSTNET; tall bars are swapped with short bars.
X’1A’	RM4SCC (Royal Mail 4-State Customer Code)		A 4-state customer code defined by the Royal Mail Postal service of England for use in bar coding postal code information. This symbology is also called the Royal Mail bar code or the 4-State customer code. The symbology (as defined for modifier X’00’) is used in the United Kingdom and in Singapore.
		’X’00’	Print an RM4SCC bar code symbol with a printer generated start bit (start bar), checksum character, and a stop bit (stop bar). The start and stop bars identify not only the beginning and end of the bar code symbol, but also the orientation of the symbol. Input data is of variable length. The checksum algorithm is performed on the data characters only. The user is responsible for 2 mm quiet zone (all around) and proper sequencing of the Postal Code data (including International Prefix, Outward Code, Inward Code and Delivery Point Suffix).
X’1A’	RM4SCC (Dutch KIX Postal Bar		This is a variation used in the Netherlands. KIX = KlantenIndeX = customer index.

Type	Bar Code Type	Mod	Description
	Code)	X'01'	Print a RM4SCC bar code symbol with NO start bar, NO checksum digit and NO stop bar. The checksum algorithm is performed on the data characters only. The user is responsible for 2 mm quiet zone (all around) and proper sequencing of the Postal Code data (including International Prefix, Outward Code, Inward Code and Delivery Point Suffix).
X'1B'	Japan Postal Bar Code		A bar code symbology defined by the Japanese Postal Service for use in bar coding postal code information.
		X'00'	Print a Japan Postal Bar Code symbol with a start character, checksum character and stop character. The generated bar code symbol will consist of a start code, a 7-digit new postal code, a 13-digit address indication number, a check digit, and a stop code.
		X'01'	Print a Japan Postal Bar Code symbol directly from the bar code data. Each valid character in the BSA data field is converted into a bar/space pattern with no validity or length checking. The printer will not generate start, stop, and check digits.
X'1F'	Australia Post Bar Code		A bar code symbology defined by Australia Post for use in Australian post systems. Start, stop, filler bar, and check digits are generated by the printer. Using any characters other than those prescribed for any part of the bar code will result in a NACK.
		X'01'	Standard Customer Barcode (format code = 11). An 8-digit number representing the Sorting Code.
		- - - - -	- - - - -

Type	Bar Code Type	Mod	Description
		X’05’	Customer Barcode 3 using the N encoding table (format code = 62). Customer Information is represented by up to 15 digits (0-9).
		X’06’	Customer Barcode 3 using the C encoding table (format code = 62). Customer Information is represented by up to 10 characters (A-Z, a-z, 0-9, space, #).
		X’07’	Customer Barcode 3 using proprietary encoding (format code = 62). Customer Information is represented by up to 31 digits (numeric 0-3), each of which specifies one of the four types of bar.
		X’08’	Reply Paid Barcode (format code = 45). 8-digits (0-9) number representing the Sorting Code.
X’21’	Code 93		The Standard Code 93 character set and Extended Code 93 character set are supported.
		X’00’	Generate check digit and print it with the bar code.
X’22’	USPS Four-State		Also referred to as OneCode^{SOLUTION} bar code.
		X’00’	No Routing ZIP Code is used to present the USPS Four-State bar code symbol. 20 numeric digits must be used as input data for this bar code symbol.
		X’01’	X'01' A 5-digit Routing ZIP code is used to present the USPS Four-State bar code symbol. 25 numeric digits must be used as input data for this bar code; the valid values for the Routing ZIP Code are 00000–99999.
		X’02’	X'02' A 9–digit Routing ZIP Code is used to present the USPS Four-State bar code symbol. 29 numeric digits must be used as input data for this bar code symbol; the valid values for the Routing ZIP Code are 000000000–999999999.
		X’03’	X'03' An 11–digit Routing ZIP Code is used to present the USPS Four-State bar code symbol. 31 numeric digits must be used as input data for this bar code symbol; the valid values for the Routing ZIP Code are 00000000000–99999999999.
X’23’	Royal Mail Red Tag	X’00’	Present a Royal Mail Red Tag bar code symbol with a RED TAG indicator printed at each end of the symbol. The RED TAG indicator is a capital “O” printed in Arial 20 point bold type. Refer to the table C.2 Royal Mail Red Tag Data Field Ranges on page **110** for details.

C.1 Intelligent Mail Container Barcode Data Field Ranges

This table refers to the Code 128 Type X'11' modifier X'05'.

Field name	Source	Field Size and Data type	Field Range
Function 1 Symbol Character	USPS assigned	1 byte	FNCI (X'8F')
Application Identifier	USPS assigned	2 bytes (numeric)	99
Type Indicator	USPS assigned	1 byte (alphabetic)	M
Mailer ID	USPS assigned	either 6 bytes or 9 bytes (alphanumeric)	Six-byte Mailer IDs are in the range 000000-899999 Nince-byte Mailer IDs are in the range 900000000-999999999
Serial Number	Mailer assigned	Either 12 bytes or 9 bytes (alphanumeric)	Any alphanumeric value When the Mailer ID is 6 bytes, the Serial Number is 12 bytes When the Mailer ID is 9 bytes, the Serial Number is 9 bytes

Note: The Valid Data Length of this barcode is 22 characters.

C.2 Royal Mail Red Tag Data Field Ranges

This table refer to Royal Mail Red Tag Type X'23' modifier X'00'.

External field Name	Source	Field Size	BCOCA Range	RED TAG Recommended Range
Account ID	Royal Mail	6 bytes	1-213,868	1-200,000
Product ID	Royal Mail	2 bytes	1-99	1-99
Class	Mailer	1 byte	1-3	1-3
Day	Mailer	2 bytes	1-31	1-31
Month	Mailer	2 bytes	1-12	1-12
Consignment ID	Mailer	2 bytes	1-49	1-49
Item UniqueID	Mailer	6 bytes	1-249,999	1-249,999

D.Bar Code Support: 2-D Bar Codes

Two-dimensional (2-D) bar codes (sometimes called matrix symbologies) allow large amounts of data to be encoded in a small area. The information is represented in a two-dimensional matrix. The printer supports four 2-D bar code symbologies as shown in the table below.

Column Labels:

Code = Value for Bar Code Type
(Bar Code Symbol Descriptor Byte 12; Bar Code Data Descriptor Byte 16)
Mod = Modifier Value
(Bar Code Symbol Descriptor Byte 13; Bar code Data Descriptor Byte 17)
Module Width = Module Width in mils
(Bar Code Symbol Descriptor Byte 17)

Code	Bar Code Type	Mod	Module Width	Description
1C	Data Matrix	00	Range: 0x0C-0xFE Default: 0x15 *	Print a Data Matrix bar code symbol using error checking and correcting algorithm 200 as defined in the AIM International Symbology Specification – Data Matrix.
1D	MaxiCode	00	Range: 0x07-0x38 Default: 0x0D *	Print a MaxiCode bar code symbol as defined in the AIM International Symbology Specification – MaxiCode.
1E	PDF417		Range: 0x07-0xFE Default: 0x0E *	PDF417 bar code as defined in the AIM International Symbology Specification – PDF417.
		00		Print a full PDF417 bar code symbol.
		01		Print a truncated PDF417 bar code symbol. The right row indicator is not printed and the stop pattern is printed in a single module width bar. For use in a relatively clean environment where risk of damage to the bar code is minimal.
20	QR Code	02	Range: 0x0C-0xFE Default: 0x15 *	Print a Model 2 QR Bar Code symbol as defined in AIM International Symbology Specification – QR Code.

* Defaults indicates the produced width when the host selects 0xFF to select the optimal symbol size.

The printer supports several additional parameters defined for printing bar codes in the IPDS data stream. These parameters are described in the following sections. Additional information on these parameters may be found in the ”Bar Code Object Content Architecture (BCOCA) Reference”.

D.1 Data Matrix Special Function Parameter Support

These values are found in the Bar Code Symbol Data. A description of the supported values may be found in the ”Bar Code Object Content Architecture (BCOCA) Reference”.

Offset	Name	Supported Values
Byte 5 Bit 0	EBCDIC	B’0’, B’1’
Byte 5 Bit 1	Escape Sequence Handling	B’0’, B’1’
Bytes 6-7	Desired Row Size	X’0000’, See table below for supported row sizes.
Bytes 8-9	Desired Number of Rows	X’0000’, See table below for supported number of rows.
Byte 10	Sequence Indicator	X’00’ – X’10’
Byte 11	Total Symbols	X’00’, X’02’ – X’10’
Byte 12	File ID First Byte	X’01’ – X’FE’
Byte 13	File ID Second Byte	X’01’ – X’FE’
Byte 14 Bit 0	UCC/EAN FNC1	B’0’, B’1’
Byte 14 Bit 1	Industry FNC1	B’0’, B’1’
Byte 14 Bit 2	Reader Programming	B’0’, B’1’
Byte 14 Bit 3	HDR/TRL Macro	B’00’, B’01’, B’10’, B’11’

Supported Sizes for a Data Matrix Symbol							
Square Symbols				**Rectangular Symbols**			
Symbol Size		**Data Region**		**Symbol Size**		**Data Region**	
Number of Rows	Row size	Size	Number	Number of Rows	Row size	Size	Number
10	10	8x8	1	8	18	6x16	1
12	12	10x10	1	8	32	6x14	2
14	14	12x12	1	12	26	10x24	1
16	16	14X14	1	12	36	10x16	2
18	18	16x16	1	16	36	14x16	2
20	20	18x18	1	16	48	14x22	2
22	22	20x20	1				
24	24	22x22	1				
26	26	24x24	1				
32	32	14x14	4				
36	36	16x16	4				
40	40	18x18	4				
44	44	20x20	4				
48	48	22x22	4				
52	52	24x24	4				
64	64	14x14	16				
72	72	16x16	16				
80	80	18x18	16				
88	88	20x20	16				
96	96	22x22	16				
104	104	24x24	16				
120	120	18x18	36				
132	132	20x20	36				
144	144	22x22	36				

D.2 MaxiCode Special Function Parameter Support

These values are found in the Bar Code Symbol Data. A description of the supported values may be found in the ”Bar Code Object Content Architecture (BCOCA) Reference”.

Offset	Name	Supported Values
Byte 5 Bit 0	EBCDIC	B’0’, B’1’
Byte 5 Bit 1	Escape Sequence Handling	B’0’, B’1’
Byte 6	Symbol Mode	X’02’ – X’05’
Byte 7	Sequence Indicator	X’00’ – X’08’
Byte 8	Total Symbols	X’00’, X’02’ – X’08’
Byte 9 Bit 0	Zipper	B’0’, B’1’

D.3 PDF417 Special Function Parameter Support

These values are found in the Bar Code Symbol Data. A description of the supported values may be found in the ”Bar Code Object Content Architecture (BCOCA) Reference”.

Offset	Name	Supported Values
Byte 5 Bit 0	EBCDIC	B’0’, B’1’
Byte 5 Bit 1	Escape Sequence Handling	B’0’, B’1’
Byte 6	Data Symbols	X’01’ – X’1E’
Byte 7	Rows	X’03’ – X’5A’, X’FF’
Byte 8	Security	X’00’ – X’08’
Byte 9 – 10	Macro Length	X’0000’ – X’7FED’
Byte 11	Macro Data	Values as defined in BCOCA Reference Version 4.

D.4 QR Code (Quick Response Code)

These values are found in the Bar Code Symbol Data. A description of the supported values may be found in the ”Bar Code Object Content Architecture (BCOCA) Reference”.

Offset	Name	Supported Values
Byte 5 Bit 0	EBCDIC	B’0’, B’1’
Byte 5 Bit 1	Escape Sequence Handling	B’0’, B’1’
Byte 6	EBCDIC code page	X’00’ – X’03’
Byte 7	Version	X’00, X’01 – X’28’
Byte 8	Error correction level	X’00’ – X’03’
Byte 9	Sequence indicator	X’00’ – X’10’
Byte 10	Total symbols	X’00’ or X’02’ – X’10’
Byte 11	Parity Data	X’00’ – X’FF’
Byte 12 Bit 0	UCC/EAN FNC1	B’0’, B’1’ see below
Byte 12 Bit 1	Industry FNC1	B’0’, B’1’ see below
Byte 13	Application indicator	Dependent on Byte 12 (special-function flags). See below

Byte 12 Bit 0 and 1, special-function flags

The special-function flags in Byte 12 specify special functions that can be used with a QR Code symbol. Bits 0 and 1 are alternate data type identifiers. Exception condition EC-0F11 exists if an incompatible combination of the two bits in Byte 12 is specified.

Byte 12 Bit 0 UCC/EAN FNC1:

If this flag is B'1', this QR Code symbol will indicate that it conforms to the UCC/EAN application identifiers standard. Byte 12 Bit 1 must be B'0'.

Byte 12 Bit 1 Industry FNC1

If this flag is B'1', this QR Code symbol will indicate that it conforms to the specific industry or application specifications previously agreed with AIM International. An application indicator must be specified in Byte 13. Byte 12 Bit 0 must be B'0'.

Byte 13, Application indicator for Industry FNC1

When the Industry FNC1 flag (Byte 12, Bit 1) is B'1', this parameter specifies an application indicator.

When the Industry FNC1 flag is B'0', this parameter is ignored and should be set to X'00'. Exception condition EC-0F12 exists if an invalid application-indicator value is specified.

E. Printing DBCS Characters

Several languages, such as Chinese, Korean, and Japanese, have fonts so large that it takes two bytes of information to represent each character. These fonts are referred to as Double Byte Character Set (DBCS) fonts. Information on DBCS fonts can be found in the following technical references.

Technical Reference for AFP Font Collection Japanese Fonts	S544-5685-02
Technical Reference for AFP Font Collection Korean Fonts	S544-5686-00
Technical Reference for AFP Font Collection Simplified Chinese Fonts	S544-5687-00
Technical Reference for AFP Font Collection Traditional Chinese Fonts	S544-5688-01
Infoprint Fonts Japanese Font Library Technical Reference	S544-5849-01
Infoprint Fonts Japanese Font Library Technical Reference	S544-5850-00
Infoprint Fonts Simplified Chinese Font Library Technical Reference	S544-5851-00
Infoprint Fonts Traditional Chinese Font Library Technical Reference	S544-5852-00

DBCS resident fonts are not included in the Card for IPDS. DBCS fonts required to print a job must be downloaded with the job from the host. DBCS fonts that are marked eligible for capture on the host can be captured to disk or flash in the printer. Once captured, the fonts are treated as resident fonts and do not need to be downloaded with each job. This reduces network traffic when this font is requested for use in printing of future jobs. Capturing the fonts to disk is recommended. Due to the large size of the fonts, only a few fonts can be saved on user flash before the flash becomes full. See section Preparing Fonts for Capture on page **71** for information on how to capture fonts.

Select the following settings to enable DBCS characters to print:

1. IPDS Emulation – Select the **Resident** emulation. The **3812/3816** emulation does not support DBCS printing.
2. Host Resolution – Select Auto or the resolution that matches the raster fonts stored on the host. If you need to use 300 dpi and 240 dpi raster font resources in the same job, select Auto.

DBCS fonts require a large amount of printer memory for storage and printing during an IPDS session. Depending on the language, one font can require up to 15 MB of printer memory for temporary storage while printing a job. Because of the additional memory requirements to store and print DBCS fonts, additional memory may be required in the printer.

F. Memory Requirements and Recommendations

Additional memory above the minimum recommended may be required for printing DBCS characters, TrueType fonts, complex mono IPDS jobs or if printer memory is used to save other emulation resources or hold other emulation jobs for later printing.

In the tables below, you will see that some values apply when ”saving of IPDS resources” is activated. Activation requires that the host timeout and printer IPDS Timeout values are properly set (refer to page **24** section 3.3.16 IPDS Timeout” for more information).

Optional installed memory is listed under the Installed Features section on the print menu page. Total installed memory (standard memory + installed feature memory) is listed under the Device Information section on the print menu page (see Printing the Menu Settings Page on page **11**.)

Lexmark CS820, CX820, CX825, CX860 (standard 1GB for CS820; 2GB for CX820, CX825, CX860):

IPDS print resolution	Job attributes	Recommended optional memory
600 dpi / 1200 Image Q	Simplex/Duplex	None
600 dpi / 1200 Image Q	Simplex and saving IPDS resources	1GB
600 dpi / 1200 Image Q	Duplex and saving IPDS resources	1GB
600 dpi / 1200 Image Q	DBCS, TrueType, Complex Jobs	2GB
600 dpi / 1200 Image Q	CMOCA Jobs	2GB
600 dpi / 2400 Image Q	Simplex/Duplex	None
600 dpi / 2400 Image Q	Simplex and saving IPDS resources	1GB
600 dpi / 2400 Image Q	Duplex and saving IPDS resources	1GB
600 dpi / 2400 Image Q	DBCS, TrueType, Complex Jobs	2GB
600 dpi / 2400 Image Q	CMOCA Jobs	2GB
1200 dpi	Simplex/Duplex	None
1200 dpi	Simplex and saving IPDS resources	1GB
1200 dpi	Duplex and saving IPDS resources	1GB
1200 dpi	DBCS, TrueType, Complex Jobs	2GB
1200 dpi	CMOCA Jobs	2GB

Lexmark CS720, CS725, CX725 (Standard 1GB for CS720, CS725; 2GB for CX725):

IPDS print resolution	Job attributes	Recommended optional memory
600 dpi / 1200 Image Q	Simplex/Duplex	None
600 dpi / 1200 Image Q	Simplex and saving IPDS resources	1GB
600 dpi / 1200 Image Q	Duplex and saving IPDS resources	1GB
600 dpi / 1200 Image Q	DBCS, TrueType, Complex Jobs	2GB
600 dpi / 1200 Image Q	CMOCA Jobs	2GB
600 dpi / 2400 Image Q	Simplex/Duplex	None
600 dpi / 2400 Image Q	Simplex and saving IPDS resources	1GB
600 dpi / 2400 Image Q	Duplex and saving IPDS resources	1GB
600 dpi / 2400 Image Q	DBCS, TrueType, Complex Jobs	2GB
600 dpi / 2400 Image Q	CMOCA Jobs	2GB
1200 dpi	Simplex/Duplex	None

IPDS print resolution	Job attributes	Recommended optional memory
1200 dpi	Simplex and saving IPDS resources	1GB
1200 dpi	Duplex and saving IPDS resources	1GB
1200 dpi	DBCS, TrueType, Complex Jobs	2GB
1200 dpi	CMOCA Jobs	2GB

Lexmark CS92x, CX92x (standard 1GB for CS92x; 2GB for CX92x):

IPDS print resolution	Job attributes	Recommended optional memory
600 dpi / 1200 Image Q	Simplex/Duplex	None
600 dpi / 1200 Image Q	Simplex and saving IPDS resources	1GB
600 dpi / 1200 Image Q	Duplex and saving IPDS resources	1GB
600 dpi / 1200 Image Q	DBCS, TrueType, Complex Jobs	2GB
600 dpi / 1200 Image Q	CMOCA Jobs	2GB
600 dpi / 2400 Image Q	Simplex/Duplex	None
600 dpi / 2400 Image Q	Simplex and saving IPDS resources	1GB
600 dpi / 2400 Image Q	Duplex and saving IPDS resources	1GB
600 dpi / 2400 Image Q	DBCS, TrueType, Complex Jobs	2GB
600 dpi / 2400 Image Q	CMOCA Jobs	2GB
1200 dpi	Simplex/Duplex	None
1200 dpi	Simplex and saving IPDS resources	1GB
1200 dpi	Duplex and saving IPDS resources	1GB
1200 dpi	DBCS, TrueType, Complex Jobs	2GB
1200 dpi	CMOCA Jobs	2GB

Lexmark MS52x, MS62x, MX32x, MX42x, MX52x, MX62x (standard 512MB for MS52x, MX32x; 1GB for MS62x, MX42x, MX52x, MX62x):

IPDS print resolution	Job attributes	Recommended optional memory
600 dpi / 1200 Image Q	Simplex/Duplex	None
600 dpi / 1200 Image Q	Simplex and saving IPDS resources	1GB
600 dpi / 1200 Image Q	Duplex and saving IPDS resources	1GB
600 dpi / 1200 Image Q	DBCS, TrueType, Complex Jobs	2GB
600 dpi / 1200 Image Q	CMOCA Jobs	Not applicable
600 dpi / 2400 Image Q	Simplex/Duplex	None
600 dpi / 2400 Image Q	Simplex and saving IPDS resources	1GB
600 dpi / 2400 Image Q	Duplex and saving IPDS resources	1GB
600 dpi / 2400 Image Q	DBCS, TrueType, Complex Jobs	2GB
600 dpi / 2400 Image Q	CMOCA Jobs	Not applicable
1200 dpi	Simplex/Duplex	None
1200 dpi	Simplex and saving IPDS resources	1GB
1200 dpi	Duplex and saving IPDS resources	1GB
1200 dpi	DBCS, TrueType, Complex Jobs	2GB
1200 dpi	CMOCA Jobs	Not applicable

Lexmark MS82x, MX72x, MX82x (standard 1GB for MS82x; 2GB for MX72x, MX82x):

IPDS print resolution	Job attributes	Recommended optional memory
600 dpi / 1200 Image Q	Simplex/Duplex	None
600 dpi / 1200 Image Q	Simplex and saving IPDS resources	1GB
600 dpi / 1200 Image Q	Duplex and saving IPDS resources	1GB
600 dpi / 1200 Image Q	DBCS, TrueType, Complex Jobs	2GB
600 dpi / 1200 Image Q	CMOCA Jobs	Not applicable
600 dpi / 2400 Image Q	Simplex/Duplex	None
600 dpi / 2400 Image Q	Simplex and saving IPDS resources	1GB
600 dpi / 2400 Image Q	Duplex and saving IPDS resources	1GB
600 dpi / 2400 Image Q	DBCS, TrueType, Complex Jobs	2GB
600 dpi / 2400 Image Q	CMOCA Jobs	Not applicable
1200 dpi	Simplex/Duplex	None
1200 dpi	Simplex and saving IPDS resources	1GB
1200 dpi	Duplex and saving IPDS resources	1GB
1200 dpi	DBCS, TrueType, Complex Jobs	2GB
1200 dpi	CMOCA Jobs	Not applicable

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