PRINTRONIX®
AUTO ID

Printer Protocol Interpreter IGL™
Programmer's Reference Manual for IGL,
an Intermec® IPL™ Printer Protocol Interpreter

Thermal Series Printers

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<EOT>*n*–Postamble, Set 32
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1 *Introduction*

About This Manual

This manual explains the differences between Printer Protocol Interpreter Intermec Graphic Language (IGL) Utility and the Intermec® Printer Language (IPL). Use this manual in conjunction with your *Administrator's Manual*.

Since the Printronix printer comes equipped with scalable fonts, some fonts will be fully compatible in appearance only if you download bitmap fonts into the printer. For most applications, scalable fonts have a better appearance.

Upload and Download IPL3 Resident Bitmap Fonts

You can upload the resident bitmap fonts from different Intermec printers and then download them to Printronix thermal printers that have IGL installed.

You can upload the fonts from Intermec printers in either Emulation or Advanced mode. The resulting font data will describe the same fonts but in different formats. In Emulation mode, one byte is used to describe each pixel. In Advanced mode, one byte describes six pixels. Although Advanced mode is more compact, you may have problems when you upload some of the Intermec fonts using Advanced mode.

The Intermec printer will upload the font through the serial port. You can use a terminal program to capture the data and download the uploaded data to a Printronix printer with no change.

IGL allows downloading fonts to any of the font IDs, and IGL will replace the scalable font by a downloaded bitmap font.

In the following examples, font number 12 will upload from the Intermec. Emulation mode font upload:

<STX><ESC>c<ETX>

<STX><ESC>v12<ETX>

Advanced mode font upload:

<STX><ESC>C<ETX>

<STX><ESC>v12<ETX>

Upload and Download IPL3 Saved Formats In Flash

If the Printronix thermal printer is replacing an Intermec printer, the customer must transfer the saved formats on the Intermec printer to the new Printronix printer.

When you send the <ESC>x command to the Intermec printer, all the saved formats will upload from the flash memory. Use a serial terminal on the host to capture these data, then download these saved formats directly to the Printronix printer.

After downloading the data, use the Save state menu item to save these formats to the flash memory.

Save Format

IGL allows you to edit the formats and save the results to the flash memory.

Use the Save state menu item to save the current state of the printer to the flash memory. The pages, formats, and fields that currently exist in RAM memory will save to the flash memory and restore at power up. This allows you to send the format once and make it resident in the printer.

DPI Compatibility

Intermec has printer models with print head resolutions of 203, 300 (older models), and 406 dpi (dots per inch). The Printronix printers with a 203 dpi printhead can replace an Intermec 203 dpi model. The Printronix printers with a 300 dpi printhead can replace an Intermec 300 dpi model. The Printronix printers with a 203 dpi printhead can replace an Intermec 406 dpi printer if the Intermec printer operates in Advanced 5mil mode, but not if it operates in Advanced 2.5mil mode.

In IGL, the <ESC>C*n*, <ESC>c*n*, and <SI>C*n* have been implemented. The *n* parameter in the <ESC>C*n* command is ignored since Printronix printers do not support the 2.5 mil dot size (only Intermec 406 dpi printers support the *n* parameter). The dot size will always be set to 5 mil when this command is received. The dot size can be set to 10 or 15 mil (bar codes only) using the <ESC>c*n* command. Images, fonts, lines, bar codes, and boxes will be scaled to the configured dot size. For example, if a label is printed in Emulation 10mil mode, it will be twice the size of the same label printed in Advanced 5mil mode.

The <SI>*n* command has been implemented, and it will change the Mode on Power Up value on printers with a 203 dpi printhead. As on Intermec printers, Printronix 203 dpi printers will ignore the Advanced 2.5mil mode, since these printers cannot print a 2.5 mil dot size.

NOTE: The configured mode does not save automatically. You must save the value in one of the user configurations and make it the Power-Up Config. so that this mode is selected automatically on power up.

On printers with a 300 dpi printhead, the <ESC>C*n*, <ESC>c*n*, and <SI>C*n* commands will not change the dot size. Printronix 300 dpi printers are compatible with Intermec 300 dpi printers, and will always use a dot size of 3.3mil. Since the 300 dpi printers do not use the Mode on Power Up menu, it will not appear when a 300 dpi printhead is installed.

Selecting Serial Protocols

You can access the serial interface by default (hot port) or by setting the Interface to Serial.

The following three menus affect the serial protocol selection:

- *Host IO* > *Serial* > *Data Protocol*
- *Application* > *IGL Setup* > *Preparsing data*
- *Application* > *IGL Setup* > *Status on <ETX>*

If you are not interested in Immediate commands or feedbacks sent back to the host, set *Application* > *IGL Setup* > *Preparsing data* to Disable.

Intermec Standard Protocol

Intermec standard protocol is a block protocol. Each block begins with STX and ends with ETX. After each block the host will wait for a status response from the printer. Refer to Table 1 for a list of status responses in priority.

Intermec Standard Protocol Status Responses Priority	
Status Response	**Description**
NAK (0x15)	Serial interface transmission error
GS (0x1D)	Buffer already full
US (0x1F)	Ribbon Fault
EM (0x19)	No label
DC3 (0x13)	Buffer now full or offline
SI (0x0F)	Printhead hot
y DC1 (0x11)	Skipping, printing, or ready/online

To select this protocol, set the menus as follows:

- *Host IO > Serial > Data Protocol* Set to *DTR*
- *Application > IGL Setup > Preparsing data* Set to *Enable*
- *Application > IGL Setup > Status on <ETX>* Set to *Enable*

XON/XOFF Protocol (With Status)

XON/XOFF Protocol is the standard XON/XOFF serial protocol for flow control. The data is sent in STX/ETX blocks and status must be sent when an ETX is received. Refer to Table 2 for a list of status responses in priority.

XON/XOFF Protocol Status Responses in Priority	
Status Response	**Description**
GS (0x1D)	Buffer already full
US (0x1F)	Ribbon Fault
EM (0x19)	No label
DC4 (0x14)	Buffer now full or offline
SI (0x0F)	Printhead hot
DC2 (0x12)	Skipping, printing, or ready/online

To select this protocol, set the menus as follows:

- *Host IO > Serial > Data Protocol* Set to *XON/XOFF*
- *Application > IGL Setup > Preparsing data* Set to *Enable*
- *Application > IGL Setup > Status on <ETX>* Set to *Enable*

XON/XOFF Protocol (Without Status)

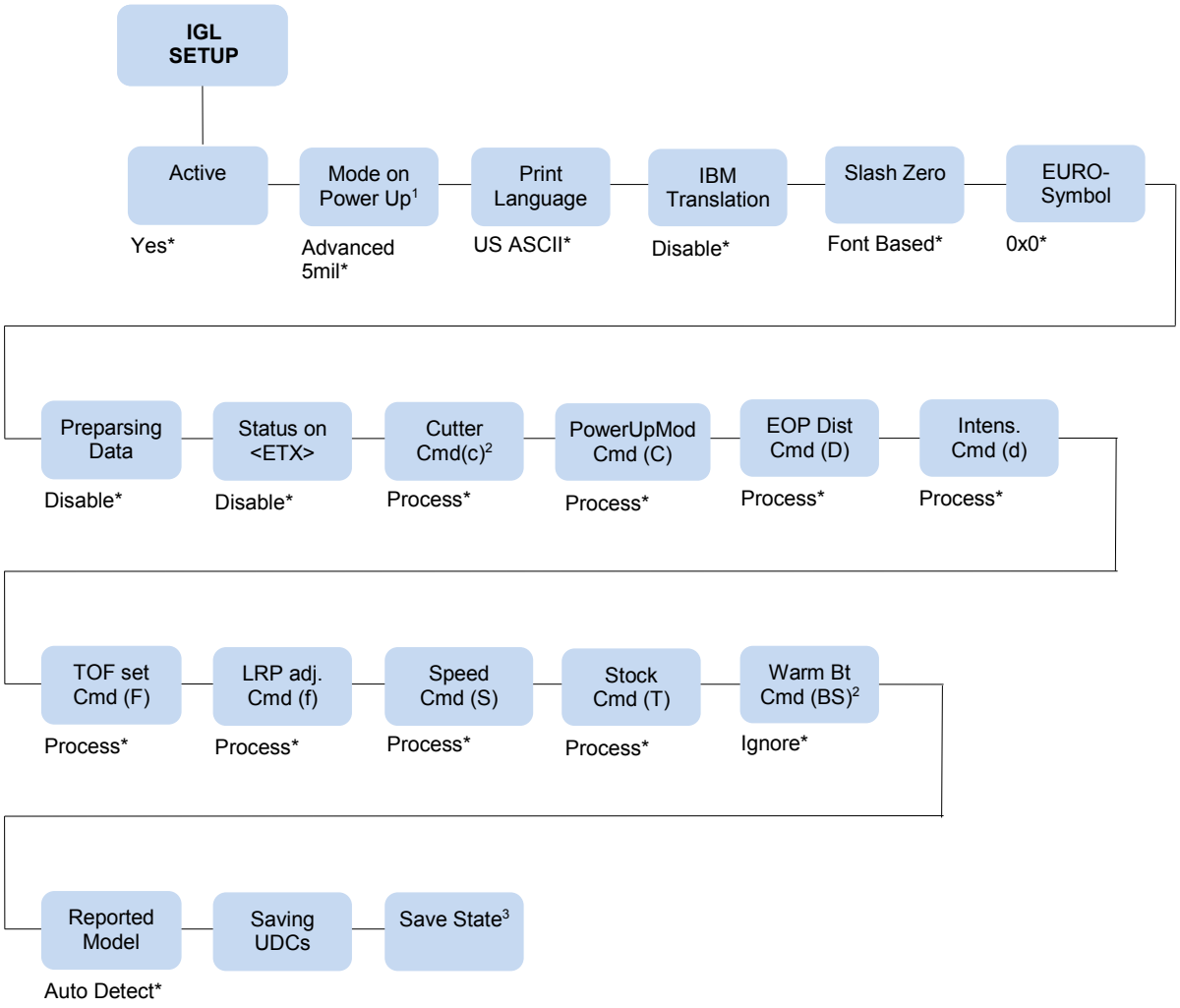
XON/XOFF Protocol is the standard XON/XOFF serial protocol for flow control. The data is sent in STX/ETX blocks, but no status is sent when an ETX is received.

To select this protocol, set the menus as follows:

- *Host IO > Serial > Data Protocol* Set to *XON/XOFF*
- *Application > IGL Setup > Preparsing data* Set to *Enable*
- *Application > IGL Setup > Status on <ETX>* Set to *Disable*

IGL Setup Menu

The IGL Setup submenu is found by selecting the Application icon within the Settings section of the menu. The IGL Setup submenu will only be present when the *Application* > *Control* > *Active IGP Emul* is set to IGL.



[1] This menu does not appear when a 300 dpi printhead is installed. When a 300 dpi printhead is installed, the mode will always be Advanced 3.3mil.

[2] This menu does not appear unless a cutter is installed.

[3] This menu is used to save the current state. To activate, press Enter.

IGL SETUP Submenus

IMPORTANT **The IGL Setup submenu will only be present when the Active IGP Emulation menu *Application > Control > Active IGP Emul* is set to IGL.**

Application > IGL Setup > Active	
Indicates if the IGL parser should process all incoming data, or that all data should be passed to the bottom emulation.	
Yes	IGL is active; processes all IEGL commands.
No	IGL is inactive; data is processed as pure text.
Factory Default	Yes

Application > IGL Setup > Mode on Power Up	
This menu item defines the IGL mode on power up. You can select advanced modes or one of the two emulation modes.	
Advanced 5mil	
Emulation 10mil	
Emulation 15mil	
Factory Default	Advanced 5mil
IMPORTANT	This menu does not appear when a 300 dpi printhead is installed. When a 300 dpi printhead is installed, the mode will always be Advanced 3.3mil.

Application > IGL Setup > Print Language		
This menu item selects the character set.		
Character Set	US ASCII UK ASCII Germany Denmark France Sweden	Italy Spain 8-Bit ASCII Switzerland Code Page 850
Factory Default	US ASCII	

Application > IGL Setup > IBM Translation	
If set to Enable, the IBM version of the selected character set will be used.	
Disable	Do not use IBM version of the character set.
Enable	Use IBM version of the character set.
Factory Default	Disable

Application > IGL Setup > Slash Zero	
This menu determines if the zero character is printed as slash-zero (Ø).	
Disable	Zero characters will never be printed as slash-zero.
Enable	All zero characters will be printed as slash-zero, independent of the selected font.
Font Based	The zero will only print as slash-zero if the selected font contains the slash-zero character. This mimics the IPL3 printers, where not all fonts contain a slash-zero.
Factory Default	Font Based

Application > IGL Setup > Euro Symbol	
This menu item defines the code page position that contains the Euro symbol (€).	
Minimum	0x0
Maximum	0xFF
Factory Default	0x0

Application > IGL Setup > Preparsing data	
This menu item enables or disables the data preparser (currently supported on serial interface and network).	
Disable	The data is processed synchronously: commands are not processed until all preceding commands have been processed.
Enable	The data received from the host is preprocessed to quickly respond to the Immediate commands.
Factory Default	Disable
IMPORTANT	When the preparser is enabled on network, the host should use the Intermec standard protocol.
WARNING	When enabled, Printronix PGL Windows Drivers cannot be utilized nor can the TN protocol be used.

Application > IGL Setup > Status on <ETX>	
This menu item determines if a printer status should be returned to the host on receipt of the block terminator <ETX>. This has been implemented for serial interface only, X-on, X-off, or Intermec protocol. See Intermec Standard Protocol page 9 for information on selecting these protocols.	
Disable	Do not return status to the host upon <ETX>.
Enable	Return status to the host upon <ETX>.
Factory Default	Disable

Application > IGL Setup > Cutter Cmd(c)	
This menu item defines if the <SI>c command (which enables or disables the cutter) is processed or ignored.	
Ignore	Ignore the <SI>c command.
Process	Process the command.
Factory Default	Process
IMPORTANT	This menu does not appear unless the cutter is installed.

Application > IGL Setup > PwrUpMod Cmd (C)	
This menu item defines if the <SI>C command (which selects the Emulation or Advanced power up mode) is processed or ignored.	
Ignore	Ignore the <SI>C command.
Process	Process the command.
Factory Default	Process

Application > IGL Setup > EOP Dist Cmd (D)	
This menu item is used to define if the <SI>D command (which sets the End Of Print distance) is processed or ignored.	
Ignore	Ignore the <SI>D command.
Process	Process the command.
Factory Default	Process

Application > IGL Setup > Intens. Cmd (d)	
This menu item is used to define if the <SI>d command (which sets the print darkness) is processed or ignored.	
Ignore	Ignore the <SI>d command and use the *Media* > *Image* > *Print Intensity* menu.
Process	Process the command.
Factory Default	Process

Application > IGL Setup > TOF set Cmd (F)	
This menu item is used to define if the <SI>F command (which sets the Top Of Form [start print point]) is processed or ignored.	
Ignore	Ignore the <SI>F command.
Process	Process the command.
Factory Default	Process

Application > IGL Setup > LRP adj. Cmd (f)	
This menu item is used to define if the <SI>f command (which sets the Label Rest Point [label position after printing]) is processed or ignored.	
Ignore	Ignore the <SI>f command.
Process	Process the command.
Factory Default	Process

Application > IGL Setup > Speed Cmd (S)	
This menu item is used to define if the <SI>S command (which sets the print speed) is processed or ignored.	
Ignore	Ignore the <SI>S command and use the *Media* > *Speed* > *Print Speed* menu.
Process	Process the command.
Factory Default	Process

Application > IGL Setup > Stock Cmd (T)	
This menu item is used to define if the <SI>T command (which sets the media handling) is processed or ignored.	
Ignore	Ignore the <SI>T command and use the *Media* > *Handling* > *Media Handling* menu.
Process	Process the command.
Factory Default	Process

Application > IGL Setup > Warm Bt Cmd (BS)	
This menu item defines the handling of the warm boot <BS> command. It has four options: Ignore, Soft Reset, Save State, or Both. For backwards compatibility the default setting is Ignore.	
Ignore	Ignore the boot <BS> command. For backwards compatibility, this is the default setting.
Soft Reset	The emulation will reset. In this case the host needs to stop sending data for at least 1 minute to give the system time to perform the reset.
Save State	The printer executes the save state action as if it was performed from the Save State menu option (page 9).
Both	The printer performs the Save State action first and then resets the emulation.
Factory Default	Ignore

Application > IGL Setup > Reported model	
This menu item is used to define which printer model IGL reports on the <ESC>M command. If set to “Auto detect” IGL will report a model that corresponds with the actual width and resolution of the printer running IGL. For example, IGL running on a 6 inch printer with 203 dpi head will report model 3600. Manual selection may be needed in cases where the auto-detected Intermec model does not support a feature the user may want to use. For example, TrueType font download is not supported on an Intermec 3600 printer. However, IGL always supports this feature. To download TrueType fonts via the Intermec utility, the user can set the model to 4420E (which does support TrueType font download), and download the font	
Auto Detect	Ignore the <SI>T command and use the *Media* > *Handling* > *Media Handling* menu.
3600	Model 3600
4420E	Model 4420E
4630	Model 4630
4830	Model 4830
Factory Default	Auto Detect
IMPORTANT	This setting only affects the model reported to the host. It does not affect the IGL behavior in any other way.

Application > IGL Setup > Saving UDCs	
This menu item is used to define if User Defined Characters (UDCs) are saved to flash automatically or manually via the Save state menu. Manual saving must be selected in cases where UDCs are sent over and over again for each label. If the menu is set to Automatic in these cases, the file system could run full, as it is not automatically optimized.	
Automatic	User Defined Characters (UDCs) are saved to flash automatically.
Use Save State	User Defined Characters (UDCs) are saved to flash via the *Save State* menu.
Factory Default	Automatic

Application > IGL Setup > Save State	
This menu item saves the current state of the printer to FLASH memory. The pages, formats, and fields that currently exist in RAM memory save to FLASH memory and are restored at power up. This allows you to send the format once and make it resident in the printer.	
Press ENTER	This is an executable menu. Pressing ENTER key will save the state.
IMPORTANT	Saving the state does not save general printer settings. This must be done using the *Configs* menu section.

2 *Fully Supported Commands*

*These fully supported commands can be rendered ignored if set as ignored in the IGL menu.

; – Command Terminator

This command terminator must end all commands in Test and Service mode, except the last command in a message.

<ACK> – First Data Entry Field, Select

This command selects the first data entry field that can accept Print mode data.

<BS> – Warm Boot

This command performs a warm boot that resets the printer. Handling of this command depends on the setting under *Warm Bt Cmd (BS)* menu.

See IGL Setup Menu page 11.

<CAN> – Clear All Data

This command clears all host-entered data from the current format or page.

<CR> – Next Data Entry Field, Select

This command moves the field pointer to the next data entry field.

<DEL> – Clear Data From Current Field

This command erases data from the current field.

<ESC><SP> – Start and Stop Codes (Code 39), Print

This command prints the start and stop characters of the current Code 39 field.

<ESC>D*n* – Field Decrement, Set

This command sets the field decrement value for the selected field.

<ESC>E*n*[,*m*] – Format, Select

This command selects the format for printing or data entry.

<ESC>F*n* -or- <ESC>F"*name*" – Field, Select

This command selects field *n* or field *name* for entering or working with data.

<ESC>g*m* – Direct Graphics Mode, Select

This command selects Direct Graphics mode, which allows you to download graphic images directly into image memory without storing them in FLASH memory.

<ESC>G*n* – Page, Select

This command selects page *n* for printing or data entry.

<ESC>I*n*[,*m*] – Field Increment, Select

NOTE: The sixth character in this command is an uppercase "i". This command selects field increment *n* for the selected field.

<ESC>M*n* – Program Number, Transmit

This command transmits the program and version numbers to the host.

<ESC>N – Increment and Decrement, Disable

This command resets increment or decrement flags for the current field.

<ESC>P – Program Mode, Enter

This command places the printer in Program mode, which allows you to create or edit pages, formats, fonts, or graphics.

<ESC>T – Test and Service Mode, Enter

This command places the printer in Test and Service mode.

<ESC>Z*t* – User-Defined Tables, Transmit

This command transmits user-defined command and protocol tables (which the printer receives to download a new command set) to the host.

<ETB> – Print

This command prints the current page or format that contains previously entered data.

<FF> – Form Feed

This command performs a form feed, which feeds a label out to the next print point.

<FS>*data*<FS> – Numeric Field Separator

This command indicates which numeric data within a field to increment or decrement.

<GS>*data*<GS> – Alphanumeric Field Separator

This command increments or decrements alphanumeric characters within a field-separated region.

<LF> – Command Terminator 2

The command terminates the current command.

<NUL> – Command Terminator 1

This command terminates the current command.

<RS>*n* – Quantity Count, Set

This command sets the quantity count, which is the quantity of label batches *n* that will print with the next print command.

NOTE: The third character in the following 11 commands are uppercase "i"s.

<SI>c*n* – Cutter, Enable or Disable*

This command enables or disables the cutter feature (if installed).

n = 0 disables, *n* = 1 enables.

<SI>C*n* – Emulation or Advanced Mode on Power-Up

This command specifies whether the printer will be in Emulation or Advanced mode when powered on.

<SI>d*n* – Dark Adjust, Set*

This command sets the dark adjust command which determines the print darkness on the labels.

This command supports a range of -10 to +10.

<SI>D[*n*] – End-of-Print Skip Distance, Set*

This command sets the end-of-print skip distance. This value, in 5 mil increments, is the distance that the label advances after printing or when you pause printing.

This command supports a range of 0" to 50".

<SI>f*n* – Label Reset Point, Adjust*

This command adjusts the label reset point (the point where the labels stop for removal) to *n*. This command is for self-strip applications.

This command supports a range of -0,15" to +0,15".

<SI>F*n* – Top of Form, Set*

This command sets the top of form (left margin or start print point) to *n*. Using *n* for the distance, in 5 mil increments, from the label origin to its leading edge. This command supports a range of 0.05" to 4".

<SI>i*n* – IBM Language Translation, Enable or Disable

This command enables or disables the IBM language translation feature.

n = 0 disables, *n* = 1 enables.

This command overrides the control panel setting, but the value will not be automatically saved in the configuration. You must save the configuration manually.

<SI>S*n* – Print Speed, Set*

This command sets the print speed to *n*.

This command supports a range of 20 to 100, which represents 2 to 10 ips.

<SI>t*n* – Self-Strip, Enable or Disable*

This command enables or disables the self-strip (label taken sensor).

n = 0 disables, *n* = 1 enables.

<SI>T*n* – Label Stock Type, Select*

This command selects the type of label stock.

<SI>W*n* – Label Width, Set

This command sets the label width to *n*, the number between the minimum and maximum number of dots for your printer.

<SO> – Cut

This command cuts the label stock by advancing the label to the cutter.

<SUB> – Data Shift – International Characters

This command allows you to enter command characters as data.

<US>*n* – Batch Count, Set

This command sets the batch count, which is the number of labels *n* that will print in the next batch.

A*n*[,*name*] – Format, Create or Edit

This command creates or edits a format.

NOTE: This is the same command as the F*n*[,*name*] – Format, Create or Edit command.

b*n* – Border Around Human-Readable Text, Define

This command defines a border around a human-readable text field.

B*n*[,*name*] – Bar Code Field, Create or Edit

This command creates or edits a bar code field.

c*n* – Graphic, Select

This command selects a graphic for graphic fields.

d*n*[,*m1*][,*m2*] – Field Data, Define Source

This command defines the current field's data source and number of characters in the field.

D*n* – Field, Delete

This command deletes field *n* from the format.

e*n*[,*m1*][,*m2*] – Data Source for Format in a Page, Define

This command defines a data source for a format assigned to a page position.

E*n* – Format, Erase

This command erases the format ID number *n*.

f*n* – Field Direction, Define

This command defines the field rotation.

F*n*[,*name*] – Format, Create or Edit

This command creates or edits a format.

NOTE: This is the same command as the A*n*[,*name*] – Format, Create or Edit command.

g*n* – Pitch Size, Set

This command sets the pitch size that defines the size of the characters in human-readable fields. This command is available in Advanced mode only. When you use the Pitch Size, Set command, the Height Magnification, Width magnification, and Point Size, Set commands are disabled.

G*n*[,*name*] – User-Defined Character, Clear or Create

This command clears or creates a graphic bitmap.

h*n* – Height Magnification of Bar, Box, or UDC, Define

This command defines the height magnification of bar, box, or UDC. It defines the height *n* in number of dots for bar codes and box fields.

H*n*[,*name*] – Human-Readable Field, Create or Edit

This command creates or edits a human-readable field.

i*n* – Interpretive Field, Enable or Disable

This command edits an interpretive field.

I*n* – Interpretive Field, Edit

NOTE: The first character in this command is an uppercase "i". This command edits and interpretive field.

n = 0 disables, *n* = 1 enables with start or stop characters, *n* = 2 enables without start or stop characters.

k*n* – Point Size, Set

This command sets the point size that defines the size of the characters in human-readable fields. This command is available in Advanced mode only.

l*n* – Length of Line or Box Field, Define

NOTE: The first character in this command is a lowercase "L".

This command defines the length of a line or box. *n* is the number of dots that defines the length of a line or box field.

L*n*[,*name*] – Line Field, Create or Edit

This command creates or edits a line field.

m*p* – Format Position From Page, Delete

This command deletes the page position *p* from a page.

M*p*,*n* – Format Position in a Page, Assign

This command assigns the numeric format ID *n* to page position *p*.

o*n*,*m* – Field Origin, Define

This command defines the field origin. Horizontal *n* and vertical *m* locations define the number of dots from the label's field origin. The upper-left corner of the label is the field origin (0,0).

O*n*,*m* – Format Offset Within a Page, Define

This command defines the format offsets within a page. This command also creates new origins for fields within a format by adding the format offsets to the original field offsets. *m* and *n* represent dot size increments.

p[*n1*][*n2*][*n3*][*n4*]; – Code 39 Prefix Character, Define

This command defines the Code 39 field's prefix character. The prefix is valid for Code 39 fields only.

q*n* – Format Direction in a Page, Define

This command defines the format directions within a page.

r*n* – Character Rotation or Bar Code Ratio, Define

This command defines the human-readable field's character rotation, or the bar code field's bar code ratio.

R – Program Mode, Exit -also- Test and Service Mode, Exit

This command causes the printer to exit Program or Test and Service mode and enter Print mode. This command also saves any current page or format being edited.

s*n* – Page, Delete

This command deletes a page. *n* is the numeric page ID.

S*n* – Page, Create or Edit

This command creates or edits a page. *n* is the numeric page ID.

t*n* – User-Defined Font Character, Create

This command indicates the font character you will define next.

T*n*[,*name*] – Bitmap User-Defined Font, Clear or Define

This command clears or creates a user-defined bitmap font set. *n* is the font ID number.

u*n*,*m*...*m* – Graphic or UDC, Define

This command maps one column (*n*) of bitmap for a graphic or a font character.

In Emulation mode, *m*...*m* is a string of 1s and 0s that defines the column and specifies whether or not to print in that row element of the column (*m* = 1: prints; *m* = 0: does not print). Unmapped columns or row elements default to *m* = 0. In Advanced mode, each data byte *m* represents 6 bits of the bitmap.

U*n*[,*name*] – User-Defined Character Field, Create or Edit

This command creates or edits a user-defined character (graphic) field.

w*n* – Width of Line, Box, or Character, Define

This command defines width magnification of a line, box, or character. The number of dots specified for *n* defines the width of line, box, or bar code fields. Using *n* for the character width magnification for human-readable fields, graphics, and the POSTNET symbology.

W*n*[,*name*] – Box Field, Create or Edit

This command creates or edits a box field.

x*n* – Bitmap Cell Width for Graphic or UDF, Define

This command defines the maximum width for a graphic or a character in a font. Each character's width is within this amount, and is at least as wide as the font's widest character. Using *n* for the number of columns for the UDC, bitmap, or user-defined font. For outline fonts, *n* is the number of dots that defines the width of the base character.

X*n* – Character Bitmap Origin Offset, Define

This command defines the offset, to the right, of all the characters in a font. If you define each character's width in columns, with the first column numbered 0, then the origin of each character is at the same column number as *n*. For example, *n* = 2 shifts the character origin two columns to the right.

y*n* – Bitmap Cell Height for Graphic or UDF, Define

This command defines the height of a graphic or user-defined font.

z*n* – Intercharacter Space for UDF, Define

This command defines the intercharacter space, which is the amount of space added to a bitmap font's default intercharacter gap length. Using *n* for the number of dots you select for the intercharacter gap length.

3 *Partially Supported Commands*

<BEL> – Error Code, Request

The printer sends an ASCII number representing the most recent error code. The are two types of errors: command syntax and printer RAM usage.

If there have been no errors since the printer was powered on, the printer sends 00.

IGL will not detect all errors that IPL3 does. See Appendix B for a list of error codes.

<DLE> – Reset

This command performs a printer power on reset immediately. All data and commands in the input buffer erase when the printer resets.

<ENQ> – Status Enquiry

This command transmits the current printer status to the host.

IGL will not detect all errors that IPL3 does. See Appendix B for a list of error codes.

The printer uploads the status in the following order of priority for Intermec Standard Protocol. See Appendix A for an ASCII codes table.

<GS> Buffer already full	<BS> Takeup reel full
<SO> Printhead test fail	<SI> Printhead hot
<US> Label path open	<FS> Label at strip pin
<US> Ribbon fault	<DC1> Skipping
<EM> No label stock	<DC1> Printing
<DC3> Buffer now full	<DC1> Ready

<ESC>c*n* – Emulation Mode, Enter

This command places the printer in Emulation mode. *n* specifies the dot size. Not all dot sizes are supported.

<ESC>C*n* – Advanced Mode, Select

This command places the printer in Advanced mode, the default. *n* specifies the dot size. Not all dot sizes are supported.

<ESC>m*n* – Memory Usage, Transmit

This command transmits memory usage information (memory installed or allocated and memory not being used) to the host.

<ESC>O – Options Selected, Transmit

This command transmits a list of select options to the host.

This command transmits a hardcoded value that says no options are installed, then a list of actual options installed.

<ESC>p – Configuration Parameters, Transmit

This command transmits the printer's current configuration commands to the host.

This command transmits hardcoded values as transmitted by an IPL3 4420, then actual values where possible.

<ESC>u*n* – User-Defined Characters, Transmit

This command transmits user-defined characters (graphic ID *n*), in the form of commands and data, to the host.

This command transmits only the image directory part (required by the PrintSet™ utility).

<ESC>v*n*–Font, Transmit

This command transmits font ID *n*, in the form of commands and data, to the host.

This command transmits only the font directory part (required by the PrintSet utility).

<ESC>x*n*–Format, Transmit

This command transmits format ID *n*, in the form of commands and data, to the host.

This command transmits only the format directory part (required by the PrintSet utility).

<ESC>y*n*–Page, Transmit

This command transmits format ID n, in the form of commands and data, to the host. This command also transmits all the formats in the page.

This command transmits only the page directory part (required by the PrintSet utility).

c*n*[,*m1*][,*m2*][,*m3*]–Bar Code, Select Type

Refer to the tables below for a list of supported and non-supported bar codes.

Supported and Non-Supported Bar Codes	
Bar Code	**Support**
Code 39	Supported
Code 93	Supported
Interleaved 2 of 5	Supported
Code 2 of 5	Supported
Codabar	Supported
Code 11	Supported
Code 128	Supported
UPC/EAN Codes	Supported, although versions D1, D2, D3, D4, and D5 are obsolete and are not supported

Supported and Non-Supported Bar Codes	
Bar Code	**Support**
HIBC Code 39	Supported
Code 16K	Not supported – obsolete in industry
Code 49	Not supported – obsolete in industry
Postnet	Supported
PDF417	Supported
Code One	Not supported – obsolete in industry
Maxicode	Supported
JIS-ITF	Not supported
HIBC Code 128	Supported
Data Matrix	Supported
QR Code	Supported **NOTE:** IPL3 supports Automatic Mask selection. This is not supported on IGL emulation. If Automatic Mask selection is specified in the barcode command, IGL will use the No Mask value for the Mask parameter.
MicroPDF417	Supported
RSS-14	Supported

c*n*[,*m*] – Font Type, Select

This command selects a font type for human-readable fields.

This command does not support Asian TrueType, and does not support Kanji and Katakana fonts.

<SI>h*n*[,*m*] – Printhead Loading Mode, Select

NOTE: The third character in this command is an uppercase “i”.

This command selects the printhead loading mode that determines how the entire image prints on the label.

Mirror Printing mode reverses the order in which the data loads into the printhead.

Inverse Printing mode, which causes all white pixels to invert to black and vice versa, is not supported.

<SI>I*n* – Printer Language, Select

NOTE: The third character in this command is an uppercase “i” and the fifth character is a lowercase “L”.

This command selects the printer language.

This command is fully implemented with the exception of CP850 (110), which is not implemented for bitmap fonts in any font type.

This command overrides the control panel setting, but the value will not be automatically saved in the configuration. You must save the configuration manually.

<VT> – Status Dump

This command causes the printer to upload all current printer status.

IGL will not detect all errors that IPL3 does. See Appendix B for a list of error codes.

The printer uploads the status in the following order of priority for Intermec Standard Protocol. See Appendix A for an ASCII codes table.

<GS> Buffer already full	<BS> Takeup reel full
<SO> Printhead test fail	<SI> Printhead hot
<US> Label path open	<FS> Label at strip pin
<US> Ribbon fault	<DC1> Skipping
<EM> No label stock	<DC1> Printing
<DC3> Buffer now full	<DC1> Ready

Z*n* – Font Character Width, Define

This command defines the font character width, which is the amount of space from the origin of one character to the origin of the next character. If you define *n* too small, characters may overlap.

This command supports bitmap fonts only.

4 *Ignored Commands*

<EM> – Abort Print Job

This command stops the current batch print job, resets the batch quantity count to the default value, and executes the commands remaining in the buffer.

<EOT>*n* – Postamble, Set

This command sets the postamble character *n*.

<ESC>d – Auto-Transmit 2, Enable

This command enables auto-transmit level 2.

<ESC>e – Auto-Transmit 3, Enable

This command enables auto-transmit level 3.

<ESC>H – Printhead Parameters, Transmit

This command transmits the printhead parameters (number and size of dots in the printhead) to the host.

<ESC>j – Auto-Transmit 1, Enable

This command enables auto-transmit level 1.

<ESC>k – Auto-Transmit 1, 2, and 3, Disable

This command disables auto-transmit levels 1, 2, and 3.

<ESC>L – Label and Gap Length, Transmit

This command transmits the label and gap length in 5 mil increments. Label length is the length of the label being processed.

If the distance between the label sensor and the printhead is less than the label length, the printer transmits the length of the previous label.

If continuous stock is selected, the printer transmits the length defined by the Maximum Label Length, Set command.

<ESC>Q – Remaining Quantity and Batch Count, Transmit

This command transmits the remaining quantity and batch counts for the current print job.

<ESC><SYN>*n* – Message Delay, Set

This command sets the message delay in *n* milliseconds.

NOTE: The third character in the following 17 commands are uppercase “i”s.

<SI>a*n* – Audible Alarm, Enable or Disable

This command enables or disables the audible alarm.

n = 0 disables, *n* = 1 enables.

<SI>A*n* – Control Panel Access Permission, Set

This command restricts access to certain menus.

<SI>b*n* – Takeup Motor Torque, Increase

This command increases the takeup motor torque for 0% to 50% above the default value.

<SI>e*n* – Media Fault Recovery Mode, Set

This command sets the media fault recovery mode.

<SI>g*n*[,*m*] – Media Sensitivity, Select

This command selects the media sensitivity of the printer.

<SI>H*n* – Printhead Pressure, Select

This command compensates for variations in the thickness of label stock.

<SI>I*n* – Number of Image Bands, Select

NOTE: The fourth character in this command is an uppercase "i". This command selects the number of image bands.

<SI>L*n* – Maximum Label Length, Set

This command sets the maximum label length.

<SI>N*n* – Amount of Storage, Define

This command defines, in kilobytes, the amount of RAM you have allocated for storage.

<SI>O*n* – Online or Offline on Power-Up

This command specifies whether the printer will be online or offline when powered on.

<SI>p*n*[,*m*] – Pin 11/20 Protocol, Set

This command sets the pin 11/20 protocol.

<SI>P[*n1*][,*n2*][,*n3*][,*n4*][,*n5*][,*n6*] – Communication Port Configuration, Set

This command sets the communication (serial and parallel) port configuration.

<SI>r*n* – Label Retract Distance, Set

This command sets the label retract distance.

<SI>R*n* – Label Retract, Enable or Disable

This command enables or disables the label retract option.

n = 0 disables, *n* = 1 enables.

<SI>s*n* – Interlabel Ribbon Save, Enable or Disable

This command enables or disables the interlabel ribbon save option.

n = 0 disables, *n* = 1 enables.

<SI>U*n*[,*m*][,*p*][,*q*] – Printhead Test Parameters, Set

This option sets the printhead test parameters.

<SI>Z*n*[,*m*] – Ribbon Save Zones, Set

This option sets the start and stop positions of a ribbon save zone within a label.

<SOH>*n* – Preamble, Set

This command sets the preamble character.

<SYN>*n* – Intercharacter Delay, Set

This command sets the intercharacter delay, which is the time delay between characters in a printer's transmitted message.

A – Ambient Temperature, Transmit

This command transmits the ambient temperature sensor A/D output to the host.

B – Printhead Resistance Test, Begin

This command begins the printhead resistance test.

C – Pitch Label, Print

The command prints the pitch label.

D – Factory Defaults, Reset

This command resets the printer configuration to the factory defaults.

f – Formats, Print

This command prints all stored formats.

g – User-Defined Characters (UDC) and Graphics, Print

This command prints all stored user-defined characters and graphics.

G – Transmissive Sensor Value, Transmit

This command transmits the label gap transmissive sensor A/D output to the host.

h – Hardware Configuration Label, Print

This command prints a label containing hardware configuration information.

j*nn*...*nn* – Outline Font, Download

This command downloads outline font descriptions.

J*n*[,*name*][,*type*][,*size*] – Outline Font, Clear or Create

This command clears or creates an outline font or graphic. *n* is the font or graphic ID.

K – Dark Adjust

This command adjusts the darkness of the print on the labels.

L – Label Path Open Sensor Value, Transmit

This command transmits the label path open sensor value to the host.

M – Reflective Sensor Value, Transmit

This command transmits the label mark reflective sensor A/D output to the host.

N – Current Edit Session, Save

This command saves the current page, format, and UDC or UDF being edited. The printer stays in Program mode.

NOTE: Current edit session is saved only by selecting *Save state* in the *IGL Setup* menu.

p – Pages, Print

This command prints all stored pages.

P – Printhead Temperature Sensor Value, Transmit

This command transmits the printhead thermistor A/D output to the host.

Q – Print Quality Label, Print

This command prints a label containing the print quality program and model number.

s – Software Configuration Label, Print

This command prints a label containing software configuration information.

S – Printhead Resistance Values, Transmit

This command transmits the average, maximum, and minimum printhead dot resistance values to the host.

t – User-Defined Fonts, Print

This command prints all stored user-defined fonts.

T – Label Taken Sensor Value, Transmit

This command transmits the label taken sensor A/D output to the host.

U – 12 Volt Supply Value, Transmit

This command transmits the 12 volt supply A/D output to the host.

V – Printhead Volt Supply Value, Transmit

This command transmits the printhead volt supply A/D output to the host.

A *ASCII Codes*

Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex
NUL	0	00	EM	25	19	2	50	32	K	75	4B
SOH	1	01	SUB	26	1A	3	51	33	L	76	4C
STX	2	02	ESC	27	1B	4	52	34	M	77	4D
EXT	3	03	FS	28	1C	5	53	35	N	78	4E
EOT	4	04	GS	29	1D	6	54	36	O	79	4F
ENQ	5	05	RS	30	1E	7	55	37	P	80	50
ACK	6	06	US	31	1F	8	56	38	Q	81	51
BEL	7	07		32	20	9	57	39	R	82	52
BS	8	08	!	33	21	:	58	3A	S	83	53
HT	9	09	+	34	22	;	59	3B	T	84	54
LF	10	0A	#	35	23	<	60	3C	U	85	55
VT	11	0B	$	36	24	=	61	3D	V	86	56
FF	12	0C	%	37	25	>	62	3E	W	87	57
CR	13	0D	&	38	26	?	63	3F	X	88	58
SO	14	0E	+	39	27	@	64	40	Y	89	59
SI	15	0F	(	40	28	A	65	41	Z	90	5A
DLE	16	10	)	41	29	B	66	42	[	91	5B
DC1	17	11	*	42	2A	C	67	43	\	92	5C
DC2	18	12	+	43	2B	D	68	44	]	93	5D
DC3	19	13	,	44	2C	E	69	45	^	94	5E
DC4	20	14	-	45	2D	F	70	46	_	95	5F
NAK	21	15	.	46	2E	G	71	47	`	96	60
SYN	22	16	/	47	2F	H	72	48	a	97	61
ETB	23	17	0	48	30	I	73	49	b	98	62
CAN	24	18	1	49	31	J	74	4A	c	99	63

Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex
d	100	64	k	107	6B	r	114	72	y	121	79
e	101	65	l	108	6C	s	115	73	z	122	7A
f	102	66	m	109	6D	t	116	74	{	123	7B
g	103	67	n	110	6E	u	117	75	|	124	7C
h	104	68	o	111	6F	v	118	76	}	125	7D
i	105	69	p	112	70	w	119	77	~	126	7E
j	106	6A	q	113	71	x	120	78		127	7F

B *Error Codes*

#	Message	Explanation	Solution
0		No error (only reported via interface in case of no error).	No action required.
1	Not supported	Invalid bar code check character.	Verify that the host supplied digit is correct.
2	Not supported	Invalid number of bar code characters (Code UPC/EAN).	Verify the number of bar code characters used in the Bar Code, Select Type command.
4	Not supported	Bar code check character within numeric field marks.	
5	Not supported	Supplemental delimiter within numeric field marks (Code UPC/EAN).	
6	Not supported	Invalid supplemental character count (Code UPC/EAN).	Make sure that the supplemental data consists of either two or five characters.
7	Not supported	More than one supplemental delimiter (Code UPC/EAN).	Make sure that you have only one supplemental delimiter (".") between the bar code data and the supplemental data.
8	PARAMETER ERROR 08	Invalid start/stop characters (Codabar).	
11	PARAMETER ERROR 11	Invalid bar code data.	Verify data in the label format.
12	RANGER ERROR 12	Data count exceeded.	Data count cannot exceed what is specified for the field.
13	Not supported	Data is being entered into a non-data entry field.	Check the field for accuracy.
21	RANGE ERROR 21	Quantity or batch count out of range.	Quantity of labels or number of batches must be between 1 and 9999.

#	Message	Explanation	Solution
22	RANGE ERROR 22	Field increment or decrement out of range.	Quantity must be between 1 and 9999.
23	RANGE ERROR 23	Intercharacter/message delay out of range.	Delay must be between 0 and 9999.
24	SYNTAX ERROR 24	Missing preamble or postamble data.	Change the configuration command to no preamble/ postamble or include preamble/postamble data.
25	Not supported	Invalid format transmission syntax.	Check the Format, Transmit command syntax. The correct syntax is <ESC> x*n* with *n* ranging from 0 to 19 on most printers. On some printers, such as the 3440, *n* ranges from 0 to 99. For more information, see the Format, Transmit command.
26	Not supported	Invalid page transmission syntax.	Check the Page, Transmit command syntax. The correct syntax is <ESC> y*n* with *n* ranging from 0 to 9.
27	Not supported	Invalid font transmission syntax.	Check the Font, Transmit command syntax. The correct syntax is <ESC>v*n*. Values for *n* vary depending on your printer model. For more information, see the Font, Transmit command.
28	Not supported	Invalid UDC transmission syntax.	Check the User-Defined Characters, Transmit command syntax. The correct syntax is <ESC>u*n* with *n* ranging from 0 to 99.
32	OVERFLOW ERROR 32	Non-immediate command or data received after buffer is full.	Allow the printer to empty the buffer contents before sending commands or data.
33	SYNTAX ERROR 33	Invalid field marks.	Check for all pairs of field delimiters and make sure both are numeric or alphanumeric.
34	SYNTAX ERROR 34	Invalid escape command.	Correct the escape command syntax.

#	Message	Explanation	Solution
35	SYNTAX ERROR 35	Invalid data shift command.	Correct the shift command syntax.
36	PARAMETER ERROR 36	Invalid or undefined format number.	Verify that the format numbers are between 0 and 19.
37	OVERFLOW ERROR 37	Insufficient room in RAM to print format.	Reduce the number of data fields in the format or add more DRAM.
38	PARAMETER ERROR 38	Invalid or undefined field number.	Verify the field number in the label format.
41	SYNTAX ERROR 41	Syntax error for Program Commands.	Check the Program Command for proper syntax.
42	OVERFLOW ERROR 42	Insufficient room in RAM to store format.	1. Empty the buffer contents. 2. If the format still does not fit, delete some fields or other data from the format. 3. If necessary, remove or reduce the UDCs, formats, or fonts. **NOTE:** Entering <ESC>m tells the host how much memory is installed and how much is available.
43	OVERFLOW ERROR 43	Too many fields.	You can use up to 200 fields in a format and each field can use up to 250 characters. Reduce field size or delete some fields.
44	SYNTAX ERROR 44	No ; delimiter found after the <ESC>P command.	Verify if all <ESC>P commands are terminated with a delimiter.
46	SYNTAX ERROR 46	Undefined statement.	Check the statement syntax.

#	Message	Explanation	Solution
52	RANGE ERROR 52	Invalid UDC or UDF bitmap cell height/width or inter-character space.	Verify that the UDC/UDF bitmap cell height/width or inter-character space is within the specified values for *n*. For more information, see the Bitmap Cell Height/ Width for Graphic or UDF, Define or the Inter-character Space for UDF, Define command.
53	OVERFLOW ERROR	Insufficient room in RAM to store UDC or UDF.	Remove or reduce formats, fonts, or UDCs.
54	SYNTAX ERROR	Invalid UDC command syntax.	Correct the UDC command syntax.

C Contact Information

Printronix Auto ID Customer Support Center

IMPORTANT **Please have the following information available prior to calling the Printronix Customer Support Center:**

- Model number
- Serial number (located on the back of the printer)
- Installed options (i.e., interface and host type if applicable to the problem)
- Configuration printout: Refer to the *Administrator's Manual.*
- Is the problem with a new install or an existing printer?
- Description of the problem (be specific)
- Good and bad pictures that clearly show the problem (faxing or emailing of these pictures may be required)

Americas	(844) 307-7120 Service@PrintronixAutoID.com
Europe, Middle East, and Africa	+31 (0) 24 3030 340 EMEA_support@PrintronixAutoID.com
Asia Pacific	+886 3 990 6155 APAC_support@PrintronixAutoID.com
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