PRINTRONIX®
AUTO ID

ZGL, a Zebra® ZPL® Printer Protocol Interpreter

Programmer's Reference Manual

Thermal Series Printers

Trademark Acknowledgments

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1 *Introduction*

About This Manual

This manual explains the differences between the Printer Protocol Interpreter Zebra Graphic Language (ZGL) Utility and the Zebra® ZPL® language. Use this manual in conjunction with the proper Administrator's Manual.

ZGL Configuration Options

ZGL has several configuration options available. Depending on the printer model, the configuration options may be located in a different part of a front panel menu or within a separate application. In some cases, the selections may differ. For this reason, the options are described in detail within their respective Administrator's Manuals.

ZGL Menu Conversions

When substituting a Zebra Xi III model printer with a Printronix printer, the menus and configuration between the Zebra and Printronix printer are different. Conversion tables that help users migrate from Zebra printers to Printronix printers have been created. Because the menu structures and configuration options vary between Printronix models, the conversion tables can be found in their respective User's Manuals.

ZGL Setup Menus

The *ZGL Setup* submenu is found by selecting the Application icon within the Settings section as shown in Figure 1. The ZGL Setup submenu will only be present when the *Application > Control > Active IGP Emul* is set to ZGL.

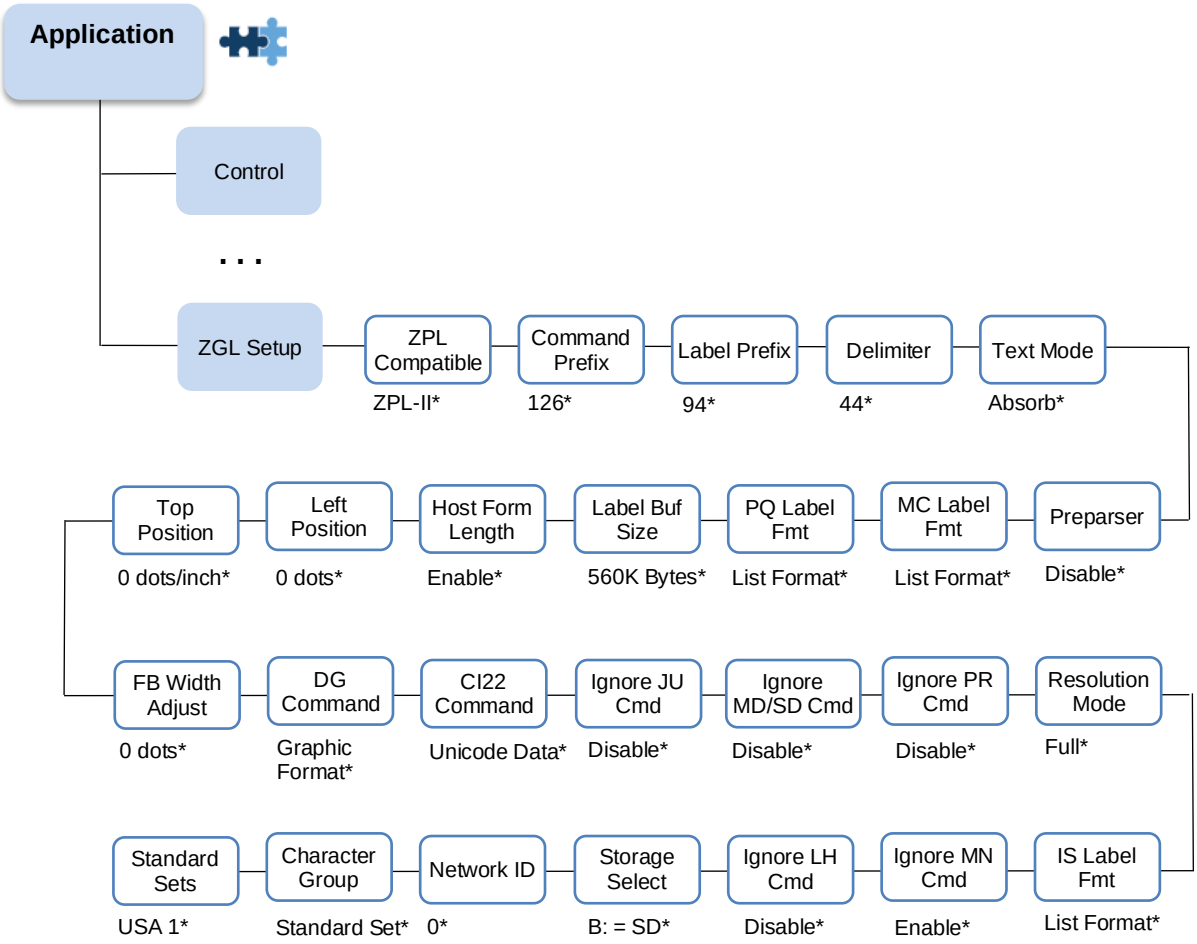

Figure 1

Menus Descriptions

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

Application > ZGL Setup > ZPL Compatible	
This menu allows you to select the compatibility mode for ZGL.	
ZPL-I	Zebra Programming Language I.
ZPL-II	Zebra Programming Language II.
Factory Default	ZPL-II

Application > ZGL Setup > Command Prefix	
This menu allows you to select the prefix for the control instructions command.	
Minimum	1
Maximum	255
Factory Default	94

Application > ZGL Setup > Label Prefix	
This menu allows you to select the prefix for the format instructions command.	
Minimum	1
Maximum	255
Factory Default	94

Application > ZGL Setup > Delimiter	
This menu allows you to select the delimiter used to separate the parameter of a command.	
Minimum	1
Maximum	255
Factory Default	44

Application > ZGL Setup > Text Mode	
Determines how text outside of ZGL commands and labels is treated.	
Absorb	All non-ZGL data is absorbed including any system-generated line terminators.
Auto Pass-thru	Non-ZGL data is automatically detected and printed as text (ZGL data is processed normally). System-generated line terminators within commands are also printed as text and not absorbed.
ZGL Quiet	All data (including all ZGL commands except ~L0, ~L1, and ~L2) are printed as text.
Factory Default	Absorb
IMPORTANT	For Auto Pass-thru, hex commands 0x02 or 0x03 are treated as binary data and printed as text; they are not treated as equivalent ^XA and ^XZ commands.

Application > ZGL Setup > Preparser	
Activates a pre-parser which will process certain immediate commands in advance of the main parser, allowing immediate feedback to the host. Used with status requests such as the HS and JA commands.	
Disable	Pre-parser is disabled.
Enable	Pre-parser is enabled.
Factory Default	Disable

Application > ZGL Setup > MC Label Fmt	
This option determines how MC label formats are retained in memory.	
List Format	A display list of print elements (graphics, text, and barcodes) is used to store form data. Optimized for memory and speed for typical applications. The display list is executed (rastered) for each label printed.
Bitmap Format	Instead of using display lists, forms are kept in memory as bitmaps. This can be faster than using the List Format when lots of different print elements are used or the form is complex.
Factory Default	List Format

Application > ZGL Setup > PQ Label Fmt	
This option determines how PQ label formats are retained in memory.	
List Format	A display list of print elements (graphics, text, and barcodes) is used to store form data. Optimized for memory and speed for typical applications. The display list is executed (rastered) for each label printed.
Bitmap Format	Instead of using display lists, forms are kept in memory as bitmaps. This can be faster than using the List Format when lots of different print elements are used or the form is complex.
Factory Default	List Format

Application > ZGL Setup > Label Buf Size	
This option allows you to set the label buffer size. The buffer is used to store the data from ^XA up to ^XZ for command processing. The maximum size of the buffer cannot exceed the amount of available memory in the system. If a value greater than the amount of memory available is selected, the setting will revert to the original setting. The new buffer size only takes effect upon save the configuration as the Power-Up Config.	
Minimum	160
Maximum	3600
Factory Default	560K Bytes

Application > ZGL Setup > Host Form Length	
This menu chooses between *Media* > *Image* > *Label Length* parameter or the host application for the actual label size.	
Disable	Label length will be determined by the *Media* > *Image* > *Label Length* value parameter.
Ignore	The ^LL command is ignored.
Enable	Label length will be determined by the ^LL command if it is present. If the ^LL command is not present, it will be based on *Media* > *Image* > *Label Length* value.
Factory Default	Enable

Application > ZGL Setup > Left Position	
The ^LS command specifies a horizontal offset to be added to all label element positions. The Left Position option displays the value specified by the ^LS command and provides an alternative method for specifying the horizontal offset.	
Minimum	-1000
Maximum	+1000
Factory Default	0 dots

Application > ZGL Setup > Top Position	
The value of this option specifies a vertical offset to be added to all label element positions in dots per inch. For example, if the value is 3 and the current form length is 6 inches, then 18 dots will be added to element's vertical position.	
Minimum	-100
Maximum	+100
Factory Default	0 dots/inch

Application > ZGL Setup > Resolution Mode	
The ^JM command determines the apparent print resolution of the printed label.	
Half	If half resolution mode is selected by the ^JM command, the printed output of a 300 dpi printer matches that printed by a 150 dpi printer (half resolution). This doubles the size of the label image, including label dimensions
Full	If full resolution mode is selected, the output is printed normally. The Resolution Mode option displays and selects the current setting associated with the ^JM command.
Factory Default	Full

Application > ZGL Setup > IS Label Fmt	
This option determines how IS label formats are retained in memory.	
List Format	A display list of print elements (graphics, text, and barcodes) is used to store form data. Optimized for memory and speed for typical applications. The display list is executed (rastered) for each label printed.
Bitmap Format	Instead of using display lists, forms are kept in memory as bitmaps. This can be faster than using the List Format when lots of different print elements are used or the form is complex.
Factory Default	List Format

Application > ZGL Setup > FB Width Adjust	
The FB Width Adjust command allows the user to adjust (increase or decrease) the width of field block from the field block command ^FB, so that the text line in the block can be broken at a different word.	
Minimum	-100 dots
Maximum	+100 dots
Factory Default	0 dots

Application > ZGL Setup > DG Command	
This menu sets the format type to correctly process a command.	
Label Format	The command is used in label format (within ^XA..^XZ).
Graphic Format	The command is used in graphic format (outside of ^XA...^XZ).
Factory Default	Graphic Format

Application > ZGL Setup > CI22 Command	
This menu allows the user to select either Unicode printing or DBCS printing for CI22.	
Unicode Data	The data are treated as straight Unicode data.
DBCS Data	The data are treated as DBCS data.
Factory Default	Unicode Data

Application > ZGL Setup > Ignore JU Cmd	
This menu allows the ^JU Configuration Update command to be ignored.	
Disable	Process the ^JU command.
Enable	Ignore the ^JU command.
Factory Default	Disable

Application > ZGL Setup > Ignore MD/SD Cmd	
This menu allows the ^MD Media Darkness and ~SD Set Darkness commands to be ignored.	
Disable	Use the darkness settings from the ^MD and ~SD commands in the data stream.
Enable	Ignore the ^MD and ~SD commands in the data stream and use the *Media* > *Image* > *Print Intensity* value.
Factory Default	Disable

Application > ZGL Setup > Ignore PR Cmd	
This menu allows the ^PR Print Rate command to be ignored.	
Disable	Use the print rate settings from the ^PR command in the data stream.
Enable	Ignore the ^PR commands in the data stream, and use the front panel *Media* > *Speed* > *Print Speed* setting.
Factory Default	Disable

Application > ZGL Setup > Ignore MN Cmd	
This menu allows the ^MN Media Tracking command to be ignored.	
Disable	Use the media tracking (sensor setting) as set by the ^MN command in the data stream.
Enable	Ignore the ^MN commands in the data stream, and use the *Sensors* > *Control* > *Gap/Mark Sensor* setting configured via the front panel menu
Factory Default	Enable

Application > ZGL Setup > Ignore LH Cmd	
This menu allows the ^LH command to be ignored.	
Disable	Process the ^LH command.
Enable	Ignore the ^LH command.
Factory Default	Disable

Application > ZGL Setup > Storage Select	
This menu allows the user to map the B drive to either the Flash (PCB Flash) or SD card.	
B: = PCB Flash	B drive maps to PCB Flash.
B: = SD	B drive maps to SD card.
Factory Default	B: = SD

Application > ZGL Setup > Network ID	
This menu assigns a network ID number to the printer. This must be done before the printer can be used in a network.	
Minimum	0
Maximum	999
Factory Default	0

Application > ZGL Setup > Character Group	
This option selects the Character Set Group. Based on the group selected, then the character set can be chosen with the menu following *ZGL Sets*.	
Standard Sets	A set of legacy sets via Standard Sets menu.
Arabic Sets	A set of Arabic sets via Arabic Sets menu.
Cyrillic Sets	A set of Cyrillic sets via Cyrillic Sets menu.
European Sets	A set of European sets via European Sets menu.
Greek Sets	A set of Greek sets via Greek Sets menu.
Hebrew Sets	A set of Hebrew sets via Hebrew Sets menu.
Turkish Sets	A set of Turkish sets via Turkish Sets menu.
Factory Default	Standard Sets
IMPORTANT	Refer to the section that describes the ^CI - Select International Set command for the international character set selections. Only the Standard Sets group is shown below.

Application > ZGL Setup > Standard Sets		
This is the legacy Character Group for ZGL is within the Standard Sets.		
Standard Sets	USA 1 USA 2 UK Holland Denmark / Norway Sweden / Finland German France 1 France 2	Italy Spain Miscellaneous Japan IBM CP 850 UTF-8 Win. CP 1252 Win. CP 1250
Factory Default	USA 1	

2 *Fully Supported Commands*

^Bx - Barcodes

This command selects various barcodes. ZGL supports the following ZPL barcodes:

^B1	Code 11
^B2	Interleaved 2 of 5
^B3	Code 39
^B5	Planet
^B7	PDF417
^B8	EAN-8
^B9	UPCE
^BA	Code 93
^BB	Codablock (see Note below)
^BC	Code 128
^BD	UPS Maxicode
^BE	EAN-13
^BF	Micro-PDF417
^BI	Industrial 2 of 5
^BK	Codabar
^BL	Logmars
^BM	MSI
^BP	Plessey (see Note below)
^BQ	QR Bar Code
^BR	RSS (GS1 Databar, formerly RSS)
^BS	UPC/EAN Extensions
^BU	UPCA
^BV	BC412
^BX	Data Matrix (GS1 Datamatrix, formerly Datamatrix)
^BZ	Postnet, USPS Intelligent Mail, and Planet barcodes

NOTE: ^BB Stacking of barcodes is not supported, only single rows print.
^BP Plessey does not support optional printing of checkdigit in PDFs.

ZGL also supports these additional barcodes:

^B$A	UPC-E0
^B$B	UPCSHIP
^B$C	EAN/UCC-128
^B$D	FIM
^B$E	German Interleaved 2 of 5

The syntax of the extended barcode commands differs from the standard ZPL barcode commands in that the extended commands require a dollar sign ($) between the ^B and the character designator for the barcode. Refer to Chapter 3 for additional programming information.

When barcodes are generated on printers with unique print densities, the dot ratio of the wide/narrow bar/space does not match the ZPL printer. Match the exact number of dots shifted for each density through trial and error.

^BY - Barcode Defaults

This command changes default settings associated with barcodes, including the narrow bar width, the ratio of the wide bar to the narrow bar, and the barcode height.

~CC / ^CC - Change Caret

This command changes the format instruction prefix, usually the caret (^).

~CD / ^CD - Change Delimiter

This command changes the command parameter delimiter.

^CF - Change Alphanumeric Default Font

This command changes the default font selection and default character size.

~CT / ^CT - Change Tilde

This command changes the command instruction prefix, usually the tilde (~).

^CV - Bar Code Validation

The ^CV command enables and disables the bar code validation function. When validation is enabled, the barcode data is checked for error conditions such as invalid characters, incorrect check digits, and data field errors.

~ DE - Download Encoding Table

This command allows the user to download the desired encoding table for converting DBCS data to Unicode data.

^DF - Download Format

This command saves the ZPL format instructions as a text string into a file stored in the printer DRAM or other designated storage device. The format can contain Field Number (^FN) instructions to be referenced when the file is recalled with the ^XF command.

~DT - Download Bounded TrueType Font

This command downloads bounded TrueType fonts to the printer, limited to 256 characters.

~DU - Download Unbounded TrueType Font

This command downloads unbounded TrueType fonts to the printer.

~EF / ^EF - Erase Format

This command deletes all label formats stored with the ^DF Download Format command.

~EG / ^EG - Erase Downloaded Images

This command deletes all graphics images previously stored in RAM with various commands (^IS, ~DG, etc.).

^FA - Field Allocate

This command allocates space for a dynamic field.

^FC - Field Clock

This command sets the clock indicators and the clock mode when used with the Real Time Clock hardware.

^FD - Field Data

This command denotes the start of “data” for a field (as used in text and barcode elements).

^FH - Field Hex

This command allows entering a “hex” value into a ^FD, ^FV, or ^SN data string.

^FN - Field Number

This command works in conjunction with the ^DF (Download Format) and the ^XF (Recall Format) commands and allows dynamic data to be merged with a previously stored label definition.

^FO - Field Origin

This command assigns the *x* and *y* position coordinates (relative to the label “home” position) to the field.

^FR - Field Reverse

This command provides the ability to reverse print fields. Any field immediately followed by this command is “XOR’d” against the label bitmap.

^FS - Field Separator

This command denotes the end of a field definition (as used in text and barcode elements).

^FT - Field Type Set

This command sets the *x*/*y* coordinate (relative to the “home” position) of a subsequent field. It differs from the ^FO command in that the coordinate is always for the left end of the “baseline” of a field regardless of rotation.

^FW - Field Orientation

This command sets the default rotation for commands that have a rotation parameter that is left blank.

^FX - Comment

This command allows comments that do not print to be placed in the label definitions.

^GB - Graphics Box

This command generates boxes and lines. It is also used in conjunction with reversed fields.

^GC - Graphic Circle

This command generates circles. It is also used in conjunction with reversed fields.

^GD - Graphic Diagonal Line

This command generates diagonal lines. It is also used in conjunction with reversed fields.

^GE - Graphic Ellipse

This command generates ellipses. It is also used in conjunction with reversed fields.

^GS - Graphic Symbol

This command generates any of the five special symbols: registered trademark, copyright, trademark, UL, and CSA.

~HI - Host Identification

This command returns a string to the host, including the printer model, software version, dots per millimeter setting, memory size, and other options.

^HG - Host Graphic

This command uploads a graphic image from RAM or Flash to the host.

^HV - Host Verification

This command sends back the data in a ^FN (Field Number) field to the host.

^HY - Upload Graphic

This command uploads different graphic image formats from RAM or Flash to the host.

^IL - Image Load

This command recalls an entire label graphic image previously stored in RAM for overlaying with other label data which follows this command.

^IM - Image Move

This command recalls the stored graphic bit-image and places it on the label (without magnification).

^IS - Image Save

This command saves an entire label in RAM as a graphic image for recalling later and for overlaying with other label data.

~JA - Cancel All

This command cancels the current label printing (if any) and clears any label definition data queued in the input buffer. ~JA is a preparser command which is processed immediately when the command is sent. Before sending this command, enable the *Application > ZGL Setup > Preparser* configuration option if available. If this option is not available, the command will be processed automatically.

~JL - Set Label Length

This command performs a calibration and sets the printer's label length if the printer is configured to automatically adjust the label length based on calibration.

^JM - Set Half Density

This command sets the printer density to half.

^JR - Power On Reset

This command resets the printer to the power-up state.

^JX - Cancel Partial Input Format

This command cancels any partial label definition data queued in the input buffer.

^LH - Label Home

This command sets the "home" *x*/*y* coordinate used as a reference for all positioning commands, and, therefore, allows an entire label to be moved without changing the individual element position commands.

^LL - Label Length

This command defines the length of a label in printer dots. Any label printed on continuous media causes the defined length of media to be moved. The ^LL will be ignored if you are using NON-CONTINUOUS gap/mark media. The printer will calibrate and measure the label length in those.

^LR - Label Reverse

This command provides the ability to reverse print ALL fields following the ^LR in a label (in contrast with the ^FR command which reverse prints only an individual field).

^LS - Label Shift

This command shifts the "home" position to the left by a defined number of dots. It is used so that the label definitions for printers where narrow media is "right justified" works on printers that are "left justified."

^LT - Label Top

This command shifts the label image vertically on the media.

~Lx - Base Emulation Support

ZGL supports text printing using the LP+ emulation. See Chapter3.

^MM - Print Mode

This command determines what happens after a label has been printed: tear off, rewind, peel off, continuous, and cutter.

^MT - Media Type

This command selects the type of media used: thermal transfer or direct thermal.

^MU - Mode Units

This command selects the measurement units in commands having parameters, which specify distance, height, or width.

~NC - Network Connect

This command connects a particular printer to a network by calling up the printer's network ID number.

^NI - Network ID Number

This command assigns a network ID number to the printer. This must be done before the printer can be used in a network.

~NR - Set All Network Printers Transparent

This command sets all printers in the network to transparent, regardless of the ID or current mode.

~NT - Set Currently Connected Printer Transparent

This command sets the currently connected network printer to transparent.

^PM - Print Mirror Image of Label

This command prints the entire label as a “mirror image.”

^PW - Print Width

This command sets the print width.

^SE - Select Encoding Table

This command selects the desired encoding table.

^SF - Serialization Field

This command allows the user to serialize a standard ^FD string.

^SL - Set Mode/Language

This command specifies the mode of operation for the Real Time Clock and the language in which Real Time Clock information is printed.

^SN - Serialized Data

This command provides the ability to increment or decrement alphanumeric fields in a repeated label.

^SO - Set Offset

This command sets the offset for second clock or third clock from the primary Real Time Clock.

^SZ - Set ZPL

This command selects the programming language used by the printer.

^TA - Tear Off Adjust

This command adjusts the media rest position relative to the tear-off bar after the label is printed.

^XA - Label Start

This command defines the start of a label definition.

^XB - Suppress Backfeed

This command improves throughput in tear off mode by keeping labels from feeding forward to the tear bar while printing successive label definitions.

^XF - Recall Format

This command recalls a label definition previously stored with the ^DF Download Format command and merges ^FN dynamic fields to produce a label.

^XG - Recall Graphic

This command recalls a stored graphic bit-image and places it on the label.

^XZ - Label End

This command denotes the end of a label definition.

3 *Command Enhancements and Differences*

^A@-SelectFontbyName

This command only applies to built-in fonts or bitmap fonts downloaded via the ~DB command.

^Ax - Select Alphanumeric Font

ZGL uses scalable fonts rather than bitmapped fonts.

^B$x - Barcodes

ZGL includes the following barcodes:

^B$A - UPC-E0

Command Format: ^B$A *fp, hgt, rdt, pos, chk*

a: UPC-E0 barcode command

fp: Barcode orientation

N = No Rotation (Default)

R = Rotate 90 degrees, clockwise I = Rotate 180 degrees, inverted

B = Rotate 90 degrees, counter-clockwise

hgt: Barcode Height

Value entered in dots at the printer dpi.

The default is 10 dots or the height set by the ^BY command. If the height exceeds the label length, then the barcode is cut off at the bottom of the label.

rdt: Human readable data

Y = Print human readable data (Default)

N = No human readable data

pos: Human readable data print position

Y = Print it above the barcode

N = Print it below the barcode (Default)

chk: Mod-10 Check Digit

Y = Calculate and print check digit (Default)

N = No check digit

^B$B - UPCSHIP

Command Format: ^B$B *fp, hgt, rdt, pos*

b: UPCSHIP barcode command

fp: Barcode orientation

N = No Rotation (Default)

R = Rotate 90 degrees, clockwise I = Rotate 180 degrees, inverted

B = Rotate 90 degrees, counter-clockwise

hgt: Barcode Height

Value entered in dots at the printer dpi.

The default is 10 dots or the height set by the ^BY command. If the height exceeds the label length, then the barcode is cut off at the bottom of the label.

rdt: Human readable data

Y = Print human readable data (Default)

N = No human readable data

pos: Human readable data print position

Y = Print it above the barcode

N = Print it below the barcode (Default)

^B$C - EAN/UCC-128

Command Format: ^B$C *fp, hgt, rdt, pos, chk*

c: EAN/UCC-128 barcode command

fp: Barcode orientation

N = No Rotation (Default)

R = Rotate 90 degrees, clockwise I = Rotate 180 degrees, inverted

B = Rotate 90 degrees, counter-clockwise

hgt: Barcode Height

Value entered in dots at the printer dpi.

The default is 10 dots or the height set by the ^BY command. If the height exceeds the label length, then the barcode is cut off at the bottom of the label.

rdt: Human readable data

Y = Print human readable data (Default)

N = No human readable data

pos: Human readable data print position

Y = Print it above the barcode

N = Print it below the barcode (Default)

chk: Mod-103 Check Digit (only applies to subset C)

Y = Calculate and print check digit

N = No check digit (Default)

^B$D - FIM

Command Format: ^B$D *fp, type, height*

d: FIM barcode command

fp: Barcode orientation

N = No Rotation (Default)

R = Rotate 90 degrees, clockwise I = Rotate 180 degrees, inverted

B = Rotate 90 degrees, counter-clockwise

type: Type of FIM barcode.

Only four choices are valid: A (default), B, C, and D.

^B$E - German Interleaved 2 of 5

Command Format: ^B$E *fp, hgt, rdt, pos*

e: German Interleaved 2 of 5 barcode command

fp: Barcode orientation

N = No Rotation (Default)

R = Rotate 90 degrees, clockwise I = Rotate 180 degrees, inverted

B = Rotate 90 degrees, counter-clockwise

hgt: Barcode Height

Value entered in dots at the printer dpi.

The default is 10 dots or the height set by the ^BY command.

If the height exceeds the label length, then the barcode is cut off at the bottom of the label.

rdt: Human readable data

Y = Print human readable data (Default)

N = No human readable data

pos: Human readable data print position

Y = Print it above the barcode

N = Print it below the barcode (Default)

^CI - Select International Set

Each character set contains different individual characters. ZGL uses scalable fonts rather than bitmapped fonts.

Table 1 Printer Character Sets by Group

Group Name	Character Set Name	Character Set ID
Standard Sets	USA 1	0
	USA 2	1
	UK	2
	Holland	3
	Denmark/Norway	4
	Sweden/Finland	5
	German	6
	France 1	7
	France 2	8
	Italy	9
	Spain	10
	Miscellaneous	11
	Japan	12
	IBM CP 850	13
	Non-UTF8 DBCS	14, 15, 22, 26
	Unicode	22
	UTF-8	17 or 28
	Win CP 1252	27
	UTF-16 Big-Endian	29
	UTF-16 Little-Endian	30
	Win CP 1250	31
NOTE: Based on the *Application > ZGL Setup > CI22 Command* option, ^CI22 can process DBCS data or straight Unicode data.		

Table 1 Printer Character Sets by Group

Group Name	Character Set Name	Character Set ID
Arabic Sets	ASMO 449	100
	ASMO 449+	101
	ASMO 708	102
	ASMO 708+	103
	MS DOS CP710	104
	MS DOS CP720	105
	Sakr CP714	106
	Aptec CP715	107
	CP 786	108
	IBM CP864	109
	IBM CP1046	110
	Arabic Lam One	111
	Arabic Lam Two	112
Cyrillic Sets	Code Page 866	200
	Cyrillic CP 437	201
	Cyrillic CP 113	202
	Cyrillic 8859-5	203
	ISO 915	204
	Code Page 855	205
	Cyrillic 7 Bit	206
	Ukrainian	207
	Bulgarian	208
NOTE: Based on the ZGL configuration option “CI22 Command”, ^CI22 can be set to process DBCS data or straight Unicode data.		
European Sets	Latin 2 8859-2	300
	Code Page 852	301
	Mazovia	302
	Kamenicky	303
	Roman 8	304
	PC-437 Slavic	305
	Slavic 1250	306
	Code Page 865	307
	Code Page 860	308
	Latin 1 8859-1	309
	Latin 5 8859-9	310
	Latin 9 8859-15	311
	Polish POL1	312
	CP 858 EURO	313

Table 1 Printer Character Sets by Group

Group Name	Character Set Name	Character Set ID
Greek Sets	DEC 256 Greek	400
	ELOT 928 Greek	401
	Greek 3	402
	ABY Greek	403
	ABG Greek	404
	ELOT 927 Greek	405
	Greek 851	406
	Greek 437	407
	Greek 8859-7	408
Hebrew Sets	Hebrew Old	500
	Hebrew New	501
	Hebrew DEC	502
	Latin-1 Hebrew	503
Turkish Sets	Data Gen. Turk.	600
	DEC Turkish	601
	IBM Turkish	602
	Siemens Turkish	603
	PTT Turkish	604
	IBC Turkish	605
	Bull Turkish	606
	AS400 Turkish	607
	Unisys Turkish	608
	NCR Turkish	609
	PST Turkish	610
	UNIS-1 Turkish	611
	Code Page 853	612
	INFO Turkish	613

^CW - Font Identifier

ZGL uses scalable fonts rather than bitmapped fonts. The device naming convention differs as follows:

ZPL device specifiers:

R: DRAM

B: Optional Memory

E: Extra EPROM

Z: Standard EPROM

ZGL device specifiers:

R: DRAM

B: External Memory Cartridge, SD card, or PCB Flash Refer to Flash Memory Usage on page 43 for an explanation on how B: is utilized on PTX thermal printers.

E: PCB Flash

Z: Standard Fonts

~DB - Download Bitmap Font

Downloaded bitmap fonts are stored in flash with the .bmp, rather than .fnt, extension. The device naming convention differs as follows:

ZPL device specifiers:

R: DRAM

B: Onboard (permanent) or removable flash.

E: Extra EPROM

Z: Standard EPROM

ZGL device specifiers:

R: DRAM

B: External Memory Cartridge, SD card, or PCB Flash Refer to Flash Memory Usage on page 43 for an explanation on how B: is utilized on PTX thermal printers.

Z: Standard Fonts

~DG - Download Graphics

The device naming convention differs as follows:

ZPL device specifiers:

R: DRAM

B: Optional Memory

E: Extra EPROM

Z: Standard EPROM

ZGL device specifiers:

R: DRAM

B: External Memory Cartridge, SD card, or PCB Flash Refer to Flash Memory Usage on page 43 for an explanation on how B: is utilized on PTX thermal printers.

E: PCB Flash

Z: Standard Fonts

~DN - Abort Download

This command aborts the downloading of a graphics bit-image (~DG command) before the specified number of bytes have been input.

NOTE: This command is ignored.

~DY - Download Graphic

The device naming convention is the same as ~DG. The command does not currently support AR - compressed bitmap font.

^FB - Field Block

ZGL scalable fonts use proportional character spacing and may have different inter-character gaps. As a result, the formatting of text using the Field Block command may cause some words to overwrite each other at the end of the block.

^FP - Field Parameter

This command allows vertical and reverse formatting of the font field. Currently, the command only applies to ASCII fonts, not Asian fonts.

^FV - Field Variable Data

This command works in conjunction with the ^MC (Map Clear) command and allows variable fields to be printed with static fields of the previous label bitmap to produce the current label. ZGL may not keep the previous label as a bitmap, but as text.

^GF - Graphic Field

In binary data mode, data is interpreted as strict binary and may be in the range hex 00 through FF. Because of the wider range of acceptable data values, instruction prefix characters do NOT abort the data, and ZGL continues reading data until the required number of bytes is acquired.

~HM - Host Memory Status

This command returns three memory values (in kilobytes) to the host:

- Total amount of RAM installed in the printer
- Maximum amount of RAM available to the user
- RAM currently available to the user

Currently, only the second and third values are implemented.

^HR - Calibrate RFID Transponder Position

This command initiates an RFID transponder calibration for a specific RFID label and returns the results to the host computer.

NOTE: This command is ignored for non-RFID printers.

~HS - Host Status Return

The ~HS command returns various printer status information to the host. The status information is returned in three separate strings, each of which contains several sub-fields. The following sub-fields contain valid status information:

aaa : communication (interface) settings

b : paper out flag

c : pause flag

dddd : label length

h : partial format flag

o : head up flag

p : ribbon out flag

r : Print Mode

t : label waiting flag

uuuuuuuu : labels remaining in batch

The remaining sub-fields are returned with dummy values for the purpose of allowing host applications to run correctly.

~HS is a preparser command, which is processed immediately when the command is sent. Before sending the command, enable the *Application* > *ZGL Setup* > *Preparser* if available. If this option is not available, the command will be processed in the order it was received.

^HW - Host Directory List

This command returns a directory list of objects in a specific memory area (storage device) back to the host with object names and object size. Currently, the command only lists the objects stored in DRAM.

^ID - Item Delete

The device naming convention differs as follows:

ZPL device specifiers:

R: DRAM

B: Optional Memory.

E: Extra EPROM

Z: Standard EPROM

ZGL device specifiers:

R: DRAM

B: EMC or SD Card. Refer to Flash Memory Usage on page 43 for an explanation on how B: is utilized on PTX thermal printers.

E: PCB Flash

Z: Standard Fonts

NOTE: The ZGL ^ID command only deletes font (*.FNT and *.ttf) and graphics logos (*.GRF) from both DRAM and Flash. It does not delete the stored format (*.ZPL).

~J$A - Paper Feed

This command is used to feed the media in tenths of an inch. Enter ~J$A followed by a number. For The number can vary in range depending on the printer model and its capabilities.

^J$E - Switch Emulation

This command is used to switch emulations from ZGL to PGL or VGL:

^J$EP → Switch to PGL

^J$EV → Switch to VGL

~JD - Enable Diagnostics

The hex dump format is different from the ZPL format. In addition, communication errors may not be displayed. This command also changes the value of the related front panel option.

^JE - Disable Diagnostics

This command disables Hex Dump mode.

~JP - Pause & Cancel

The Status LED is illuminated when the printer is ONLINE.

^JU - Configuration Update

This command saves/loads the configuration.

^JU *op*, *num*

op = Configuration update operation to perform.

F: Load factory configuration

R: Load saved configuration number *num*

S: Save current configuration as power-up configuration number *num*

num = Configuration number to load, used only when *op* = R or S

^JZ - Reprint After Error

The current setting is reflected in the corresponding front panel value. The conditions which generate a fault are determined by the capabilities of the model or engine type.

~Lx - Base Emulation Support

ZGL supports text printing of pure text (non-ZGL data) by sending the data to the LP+.

In addition to the three front panel Text Mode selections, there are three ZGL commands which allow you to select Text Mode through the data stream:

~L0 - Text Mode = Absorb (ZPL compatibility)

~L1 - Text Mode = Auto Pass-thru

~L2 - Text Mode = ZGL Quiet

With Text Mode set to “Absorb,” all non-ZGL data is absorbed including any system-generated line terminators.

When Text Mode is set to “Auto Pass-thru,” non-ZGL data is automatically detected and printed as text (ZGL data is processed normally). If the hex commands 0x02 or 0x03 are received, they are treated as binary data and printed as text; they are not treated as the equivalent ^XA and ^XZ commands. System-generated line terminators within commands are also printed as text and not absorbed, as they are in the “Absorb” mode.

If Text Mode is set to “ZGL Quiet,” all data (including all ZGL commands except ~L0, ~L1, and ~L2) are printed as text. When a ~Lx command is received, the corresponding front panel setting is updated to reflect the current Text Mode value.

Text printing is useful in debugging label definitions, as it allows the incoming data to be printed without entering hex dump mode. Simply placing ~L2 before the label definition (to enter Quiet mode) and ~L0 or ~L1 after it (to return to ZGL command processing) causes the label definition commands to be printed rather than executed. Text generated via the base emulation is not part of overlay data for any repetitive job.

^MC - Map Clear

This command controls clearing of the label bitmap after printing. ZGL may not keep the previous label as a bitmap, but as text.

^MD - Media Darkness

Identical darkness values may not produce the same darkness on your printer as ZPL. The command displays the final value on the “Print Intensity” configuration setting. Each ^MD syntax is treated separately in relation to the current value of the configuration setting. For example, if the current value on the configuration setting is 10, ^MD5 will change the current value to 15.

^MD-5 will change the current value to 5 (from 10 to 5).

^MN - Media tracking

This command selects the type of media the printer is using: continuous, transmissive, or reflective.

^PF - Slew Dot Rows

With ZGL, a slew speed increase may not occur since the engine slew definition and use may be different than ZPL.

~PH / ^PH - Slew to Home

This command causes the printer to move to the top of the next label.

^PO - Print Orientation

The following orientation parameter values are allowed:

N: No rotation (Normal)

R: Rotate 90 degrees (Landscape)

I : Rotate 180 degrees (Inverted)

B: Rotate 270 degrees (Inverted Landscape)

~PP / ^PP - Programmable Pause

The ~PP command takes the printer offline as soon as the current label being printed is completed. The exact moment at which this occurs in the label stream may not match exactly. The ^PP command takes the printer offline after the label definition in which the command appears is finished printing.

^PQ - Print Quantity

The ^PQ command controls printing operations such as the number of labels to print, labels printed before the printer pauses, and replications of each serial number.

~PR / ^PP - Print Rate

This command sets the print speed of the printer in inches per second. The exact set of available speed settings provided by the ZGL is printer dependent and may not match those available through ZPL.

^RB - Define EPC Data Structure

This command defines the structure of EPC data, which can be read from or written to an RFID tag.

NOTE: This command is ignored for non-RFID printers.

^RF - Read or Write RFID Format

This command allows you to read or write to an RFID tag.

NOTE: This command is ignored for non-RFID printers.

^RM - Enable RFID Motion

This command enables or disables RFID motion. When disabled, Zebra does not move the label. Printronix moves the label if there is data to print on the label. When enabled, both Zebra and PTX moves the label.

NOTE: This command is ignored for non-RFID printers.

^RR - Specify RFID Retries for Read/Write

This command changes the number of times that the printer attempts to read or write to a tag. By default, Zebra attempts six retries. Printronix attempts two retries. The command value ranges from 0 to 10 for Zebra and 1 to 9 for Printronix.

NOTE: This command is ignored for non-RFID printers.

^RS - RFID Setup

This command sets up parameters including tag type, read/write position of the transponder, and error handling. Currently, only the read/write position of the transponder and label retry are supported by Printronix.

NOTE: This command is ignored for non-RFID printers.

^RT - Read RFID Tag

This command tells the printer to read the current RFID tag data.

start	Starting block location where data will be read from the RFID tag.The default is 0. Since there is currently only one 8-byte or 12-byte block, the starting block number can only be 0.
length	The number of blocks to be read from the RFID tag. The default is 1. Since there is currently only one 8-byte or 12-byte block, the block length can only be 1.

NOTE: This command is ignored for non-RFID printers.

^RU - RFID Chip Serialization

This command performs a Read of TID and EPC data. The data will be available for other RFID or print operations and can be used in several different formats.

NOTE: This command is ignored for non-RFID printers.

^RZ - Set RFID Tag Password

This command lets you define the password for the tag during writing.

NOTE: This command is ignored for non-RFID printers.

~SD - Set Darkness

Identical darkness values may not produce the same relative darkness on your printer as ZPL. This command overrides the current value of *Media* > *Image* > *Print Intensity* configuration option for the printer.

^SP - Start Print

With ZPL I selected, this command is ignored. With ZPL II selected, printing does not start until ^XZ is received.

^ST - Set Date/Time

This command sets the date and time of the Real Time Clock.

NOTE: The valid year parameter range for Printronix printers is 2000 to 2097, whereas the range on Zebra printers is 1998 to 2097.

^SX - Set Alert

This command requests the printer to send an alert message when a certain condition is set or clear.

The serial port is the only supported destination for route alert.

PQ Done is the only supported condition type. If both condition set and condition clear are enabled, a message will be sent immediately while the job is still in progress and another message will be sent when the job is complete.

~WC - Print Configuration

ZGL uses the Printronix configuration format.

^WD - Print Directory

The ZGL format of this directory may differ from the ZPL format.

^WT - Write RFID Tag

This command allows you to program the current RFID tag with the data.

start	Starting block location where data will be programmed into the RFID tag. The default is 0. Since there is currently only one 8-byte or 12-byte block, the starting block number can only be 0.

NOTE: This command is ignored for non-RFID printers.

AUTOEXEC Bootup File

ZGL supports this feature via the PTX-SETUP capability to process files in battery-backed RAM or flash memory on power-up.

Missing Characters with Font E (OCR-B)

ZGL uses the OCR-B character sets, which may differ from other manufacturers. Among others, characters 0x5B, 0x5C, and 0x5D are different.

A ZGL-DBCS

Overview

This appendix describes the additional and unique commands for the thermal ZGL-DBCS Series, including DBCS printing capability on standard ASCII printers with downloaded DBCS TrueType fonts.

ZGL-DBCS includes ZGL-Hangul, ZGL-Hanzi GB, and ZGL-Japanese emulation software. These are Premium Asian fonts that come as an optional SD card.

ZGL-DBCS is an extension to the existing ZGL (ASCII) emulation supporting Korean KSC, Chinese GB, and Japanese Shift-JIS character printing. The differences between those printers are as follows:

- ZGL-Hangul supports the KSC code table for Korean character code points used only in South Korea.
- ZGL-Hanzi GB supports the GB code table for simplified Hanzi character code points used in the People's Republic of China.
- ZGL-Japanese supports the Shift-JIS code table for Kanji character code points used in Japan.

The above differences affect only the DBCS code points, but the command syntax and the behavior are similar.

Command Syntax

Use ^Ax, ^CI, ^CW, ^SE, and ^DE together to enable DBCS printing.

^Ax – Select Alphanumeric Font Command

Purpose This command selects an alphanumeric font, orientation and magnification. When a DBCS character set is selected with the ^CI command and the font_id is mapped to a DBCS font ID, the ^Ax command is used to print, magnify, and orientate DBCS characters with that ID. The default font_id is '1' for all DBCS- ZGL products.

Format `^ Afont_id {orit}, height, width`

^A Selects the Alphanumeric Font command.

font_id Selects the font choice from:
A through H - non-proportional (Default)
0 - scalable
Acceptable value: A-Z and 0-9

orit Font orientation:
N- No rotation (Default)
R- Rotate 90 degrees clockwise
I - Inverted
B - Rotate 270 degrees clockwise

For Scalable fonts:

height Individual character height in printer dots Default value: 10 dots
Acceptable value: 10 to 1500

width Individual character width in printer dots Default value: 10 dots
Acceptable value: 10 to 1500

NOTE: If (^CI14, ^CI15, ^CI22, ^CI26) or (^CI17, ^CI28) command is not received, the ^Ax command will print normal ASCII instead of DBCS characters.

^CI – Select International Set

Purpose When this command is used with character set ID 14, 15, or 26, it selects the DBCS character set for non-UTF8 data. When this command is used with character set ID 17 or 28, it can be used for DBCS printing with UTF8 data. There is no difference between ID 17 or 28. When this command is used with character set ID 22, it can be used for DBCS printing with either straight Unicode data or non-UTF-8 data based on the ZGL configuration option “CI22 Command”.

Format `^CI`*`character_set`*

^CI Selects International Set Command

`character_set`
14 or 15 or 22 or 26 – for all DBCS character set with non-UTF8 data.
17 or 28 – for all DBCS character set with UTF8 data.
22 – for all DBCS character set with straight Unicode data.

NOTE: If ^CI command is not used, the default set is 0 (US-ASCII).

The ^CI command must be received before the ^Ax command for DBCS printing to take place.

Once the ^CI command is used, the character set stays until power off or the next ^CI command is received.

When ^CI14 is used, the data will be processed every two bytes to form a 2-byte character. For example, 0x31 alone will not print, but 0x00 0x31 will print as 1.

When ^CI22 is used to print straight Unicode data, the valid range of straight Unicode data is from 0x0 to 0xFFFF. The non-printable character (less than 0x20 or greater than 0x7F) will combine the next byte to form a 2-byte character, and the printable character (between 0x20 and 0x7F) will be treated as single byte ASCII character. Currently, CI22 does not cover the 2-byte Unicode character which has the first byte between 0x20 and 0x7F.

When ^CI26 is used, 0x7F or less is treated as a single byte character. 0x80 or above is treated as the first byte of a double byte character, and the following byte will be the second byte of the double byte character. This command also supports GB18030 quad byte data when g180302u.dat is selected by the ^SE command.

When ^CI15 is used, the data will be processed based on Shift-JIS encoding.

DBCS Data

For products with extended memory such as SD cards, CI14, CI15, CI22 and CI26, DBCS data requires the presence of a Premium Asian font SD card, or downloaded TTF DBCS fonts to work for DBCS printing.

For CI22, the ZGL configuration option “CI22 Command” is available to select either Unicode printing or DBCS printing with options “Unicode Data” and “DBCS Data”, respectively. The default is Unicode printing. However, if the ^CW command is used with the resident DBCS font name (msgbl.ttf, hgrml.ttf, msung.fnt, kgothic.fnt, or gothic24.fnt), the DBCS printing will be automatically enforced regardless of the configuration setting. Unicode format fonts such as hzmjsm.ttf or Andalé fonts, support both Unicode and DBCS data.

In the DBCS printer, when ^CW command is not used and the default ID is 1, ZGL automatically locates and prints the DBCS font, including the Andalé font on the SD card or on the Flash to replace the default Gothic font while using CI14, CI15, CI22, CI26, CI17 and CI28. For a different ID, when the ^CW command is not used, the default font will be used (ex, CG Trium font for ID 0 and Gothic font for ID 2). For CI22 with ID = 1, the ZGL configuration option *Application > ZGL Setup > CI22 Command* must be set to “DBCS Data” to print DBCS data.

For any ID in DBCS printing, when the ^CW command is used and a new mapped font (DBCS or non-DBCS) is found, the new font will be used. If a new mapped font is not found, print the current font associated with the ID. If no other font has been previously mapped to the ID, the current font could be the previously mapped DBCS (or non-DBCS) font or the default font. For ID = 1, if the new mapped font is not found and the current font is the default Gothic font, ZGL automatically locates and prints the DBCS font installed on SD card or PCB Flash to replace the default Gothic font. Also, if the font used with ^CW is a Zebra resident font (msung.fnt, kgothic.fnt and gothic24.fnt), the font will be replaced with Printronix resident fonts (msgbl.ttf, h2mjsm.ttf, and hgrml.ttf, respectively).

In DBCS printing with resident fonts, by default, ZGL will use the default encoding table corresponding to the resident DBCS font currently used (refer to Table 3 and Table 4 on page 41). However, when the ^SE command is used, the selected encoding table will be used instead.

ZGL allows downloaded fonts for DBCS printing with or without the SD card installed in the printer. As long as the font and corresponding encoding table are downloaded to the printer, the font can be used to print DBCS. For CI22Unicode, CI17, and CI28, the commands go through ASCII path to print Unicode data. The downloaded font is allowed with or without the DBCS SD card.

Unicode Data

For CI22 only, when the ZGL configuration option “CI22 Command” is set to “Unicode Data”, ZGL treats the data as straight Unicode data. However, if the ^CW command is used with the resident DBCS font name (msgbl.ttf, h2mjsm.ttf, hgrml.ttf, msung.fnt, kgothic.fnt or gothic24.fnt), DBCS printing will be automatically enforced regardless of the configuration setting and the data will be treated as DBCS data.

UTF8 Data

For CI17 and CI28, ZGL treats the data as UTF8 data and decodes them into straight Unicode data. By default, ^CI17 uses Unicode encoding and UTF-8 when combined with ^F8.

Andalé Font

For CI22, when the ZGL configuration option “CI22 Command” is set to “Unicode Data”, ZGL treats the data as straight Unicode data. When the ZGL configuration option “CI22 Command” is set to “DBCS Data”, ZGL treats the data as DBCS data and uses the KSC encoding table. For DBCS data printing, the ^SE command is ignored.

For CI15, ZGL treats the data as DBCS data and uses the SJIS encoding table. The ^SE command is ignored.

For CI14 and CI26, ZGL treats the data as DBCS data. When the ^SE command is not used, the encoding table corresponds to the Andalé font type (BIG5, GB, KSC or SJIS). Refer to Table 3 on page 40. When the ^SE command is used, the selected encoding table will be used.

For CI17 and CI28, ZGL treats data as UTF8 data and decodes them into straight Unicode data. By default, ^CI17 uses Unicode encoding and UTF-8 when combined with ^F8.

For other CI commands, ZGL treats data as ASCII data.

Table 2 DBCS Fonts and the Corresponding Default Encoding Table

Encoding Type	PTX Resident Font	Font Type	Default Encoding Table
GB	msgbl.ttf	Non-Unicode Format	u2gb.dat
KSC	h2mjsm.ttf	Unicode Format	k2u.dat
SJIS	hgrml.ttf	Non-Unicode Format	u2sjis.dat

Table 3 Andalé Fonts and the Corresponding Default Encoding Table

Encoding Type	Andalé Font	Font Type	Default Encoding Table
BIG5	anmdt.ttf	Unicode Format	b52u.dat
GB	anmds.ttf	Unicode Format	gb2u.dat
KSC	anmdk.ttf	Unicode Format	k2u.dat
SJIS	anmdj.ttf	Unicode Format	sjis2u.dat

NOTE: Depending on the encoding type, the Unicode Format font files will use b52u.dat, gb2u.dat, k2u.dat, or sjis2u.dat. Non-Unicode Format font files will use u2b.dat, u2gb.dat, u2k.dat, or u2sjis.dat. The encoding tables for the Non-Unicode Format font files are not included in the Andalé SD card. You must download the encoding table to obtain the corresponding Non-Unicode Format fonts. For example, if you download msgbl.ttf to an Andalé SD card, you also need to download u2gb.dat for GB encoding to work properly (see Table 2). Unicode format fonts support both Unicode data and DBCS data.

^CW – Select Font Identifier

Purpose This command maps a one character font ID to a resident or downloaded font for both UTF8 and non-UTF8 mode. After mapping, the font ID can be used with the ^Ax command to print the resident or downloaded font. Once the ^CW command is used and the font is successfully found and mapped, the font will stay effective for that mapped font ID until power off or a different font is mapped to the same ID. If the newly mapped font is not found, print the current font for the ID. The current font could be the previously mapped font (DBCS or non-DBCS) or the default font if no other font has been previously mapped to the ID.

Format `^ CW`*`font_id,{src:}fname`*

^CW Font Identifier command.

font_id The internal character (0-9, A-Z) used to identify a font to be substituted or a new font to be added. No default; one character is required for this parameter.

{src:} Device source where the font is stored or is to be stored.
Device B: compared to the Zebra DBCS font flash card.

fname Name of the font to be downloaded or as additional font. The file extension is .FNT or .ttf. The default is UNKNOWN.

NOTE: Zebra font names MSUNG.FNT, KGOTHIC.FNT, and GOTHIC24.FNT are not resident DBCS fonts in Printronix products by default. If these fonts are not downloaded, the Printronix resident DBCS fonts are used instead.

Printronix supports three resident DBCS fonts to replace Zebra resident fonts as described earlier in this Appendix. The resident DBCS fonts for Printronix are different from Zebra as specified in Table 4.

Table 4 Printronix and Zebra Resident DBCS Fonts

Build Type	Printronix Resident Fonts	Zebra Resident Fonts
Hanzi GB	msgbl.ttf	msung.fnt
Hangul	h2mjsm.ttf	kgothic.fnt
Kanji-Shift-JIS	hgrml.ttf	gothic24.fnt

^DE - Download Encoding

Purpose The ^DE command is used to download the desired ZPL/ZPL-II encoding table for converting DBCS data to Unicode data.

Format `~DEd:o.x,s,data`

~DE: download Encoding table command

D location of table (R:,E:,B:)

O name of table (1 to 8 alphanumeric characters)

X extension (.DAT)

S table size (the number of memory bytes)

Data data string (in hexadecimal values)

^SE- Select Encoding

Purpose The ^SE command is used to select the desired ZPL/ZPL-II encoding table.

Format `~SEd:o.x`

^SE select Encoding command

D location of table (R:,E:,B:)

O name of table (1 to 8 alphanumeric characters)

X extension (.DAT)

Printronix provides different encoding tables built into standard ASCII printers, which can be called by the ^SE command to select different DBCS encoding (see Table 5 on page42).

Table 5 DBCS Encoding Table

Table	Purpose
g180302u.dat	GB18030 encoding, including GB18030 quad byte
gb2u7.dat	GB2312 7 bit encoding
k2u.dat	KSC5601 encoding
jis2u7.dat	JIS 7 bit encoding
sjis2u.dat	SJIS encoding
b52u.dat	Big5 encoding

B *Flash Memory Usage*

Overview

Zebra printers utilize the device names R:, B:, and E: for storing/retrieving data onto DRAM, Expanded Memory (SD Card), and onboard PCB flash memory.

All printers have a certain amount of onboard, non-removable flash memory on the main controller board that can be used for permanent storage.

Depending on the application, this Onboard Flash Memory may not be sufficient. Certain models of Printronix printers can be ordered with extended memory such as the SD card. Expanded Memory can be used to extend the range of permanent data storage for applications. For printers with SD capability, the extended range of data storage can be significant (GB).

Since printers with extended memory have two storage choices (allowing the same file name to exist on both on the extended memory and Onboard Flash Memory), a hierarchy (search order) is required for finding, reading, writing, and deleting files. This hierarchy is described below. Such a hierarchy is not needed for printers without extended memory since there is only one location allowed for permanent data storage.

Read

NOTE: For commands including ^A@, ^CW, ^HG, ^HW, ^HY, ^IL, ^IM, ^WD, ^XF, and ^XG).

When extended memory is installed, the printer automatically searches the file first from DRAM, then extended memory, then PCB Flash. The search stops at the first occurrence when the file is found. If the file is not found, the file is not printed.

When the extended memory is not installed, the printer automatically searches the file from DRAM and then PCB Flash. The search stops at the first occurrence when the file is found. If the file is not found, the file is not printed. If the device is specified as 'B:', the external memory will be searched first, followed by the PCB Flash. If the device is specified as 'E', only the PCB flash will be searched.

For ^HW and ^WD commands which lists the files in the DRAM or Flash, only the files on the specified device will be listed.

Write

NOTE: For commands including ~DB, ^DF, ~DG, ~DU, ~DY, ~DZ, and ^IS.

When the cartridge is installed, B: will write to the extended memory or PCB Flash based on the ZGL configuration option *Application > ZGL Setup > Storage Select*. E: will write to PCB Flash. R: will write to DRAM.

When the extended memory is not installed, B: will try to write to the extended memory and cause an error message to print, or write to PCB Flash with no error message based on the ZGL configuration option *Application > ZGL Setup > Storage Select.* E: will write to PCB Flash. R: will write to DRAM. If a drive letter is not specified, the file will be written to DRAM only.

Delete

NOTE: For commands including ^ID.

When the extended memory is installed, B: will delete from extended memory or PCB Flash based on the ZGL configuration option *Application > ZGL Setup > Storage Select.* E: will delete from PCB Flash. R: will delete from DRAM.

When the extended memory is not installed, B: will have no action or delete from PCB Flash based on the ZGL configuration option *Application > ZGL Setup > Storage Select.* E: will delete from PCB Flash. R: will delete from DRAM. If a drive letter is not specified, the file will be deleted from DRAM only.

C Contact Information

Printronix Auto ID Customer Support Center

IMPORTANT **Please have the following information available prior to calling the Printronix Auto ID 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)

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Visit the Printronix web site at https://usca.tscprinters.com/en/printronix-auto-id-enterprise-printers