

**Honeywell**

# ZSIM Command Reference

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**User Guide**

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## Technical Assistance

To search our knowledge base for a solution or to log in to the Technical Support portal and report a problem, see [Technical Support](#)

For our latest contact information, see [sps.honeywell.com](https://sps.honeywell.com).

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## Limited Warranty

For warranty information, go to [sps.honeywell.com](https://sps.honeywell.com) and click **Support > Warranties**.



# ZSIM COMMAND REFERENCE

ZSIM is a printer programming language that emulates commands in the Zebra Programming Language Version II (ZPL II). This Command Reference includes descriptions of ZSIM commands.

- [Commands Listed by Syntax](#)

For Honeywell PC, PD, PM, and PX printers only. For migration information on Datamax-O'Neil I-class printers, see [sps.honeywell.com](https://sps.honeywell.com).

## Supported Printers

Printer Type	Printer Model
Mobile	RP2f, RP4f
Desktop	PC23d, PC43d, PC43t, PC43K, PC42d, PC42t
Industrial	PM23c, PM43, PM43c, PM42, PD43, PD43c, PX940A, PX940V, PX4ie, PX6ie, PM45, PM45c, PX240S, PX240, PD45S, PD45

Other Honeywell printers support an earlier version of ZSIM. For more information, see the product page for your printer at [sps.honeywell.com](https://sps.honeywell.com).

## Upgrade the Printer Firmware

To ensure you have the latest version of ZSIM, check for periodic updates to the printer firmware. The latest version of the firmware is available from the Honeywell Technical Support Downloads portal ([honeywell.com/PSSsoftware-downloads](https://honeywell.com/PSSsoftware-downloads)). Refer to your printer's user guide for instructions on upgrading the firmware.



## COMMANDS LISTED BY SYNTAX

Syntax	Command	Description
^A	<a href="#">Set Font for Field Data</a>	Sets the font to be used for a subsequent Field Data (^FD) call.
^A@	<a href="#">Use Font Name to Call Font</a>	Selects font based on file path.
^B0	<a href="#">Aztec Bar Code Parameters</a>	Sets configuration parameters for Aztec.
^B1	<a href="#">Code 11 Bar Code</a>	Sets configuration parameters for Code 11.
^B2	<a href="#">Interleaved 2 of 5 Bar Code Parameters</a>	Sets configuration parameters for Interleaved 2 of 5.
^B3	<a href="#">Code 39 Bar Code Parameters</a>	Sets configuration parameters for Code 39.
^B5	<a href="#">Planet Bar Code Parameters</a>	Sets configuration parameters for Planet.
^B7	<a href="#">PDF417 Bar Code Parameters</a>	Sets configuration parameters for PDF417.
^B8	<a href="#">EAN-8 Bar Code Parameters</a>	Sets configuration parameters for EAN-8.
^B9	<a href="#">UPC-E Bar Code</a>	Sets configuration parameters for UPC-E.
^BA	<a href="#">Code 93 Bar Code Parameters</a>	Sets configuration parameters for Code 93.
^BB	<a href="#">CODABLOCK Barcode</a>	Sets configuration parameters for CODABLOCK.
^BC	<a href="#">Code 128 Bar Code Parameters</a>	Sets configuration parameters for Code 128.
^BD	<a href="#">UPS Maxicode Bar Code Parameters</a>	Sets configuration parameters for Maxicode.
^BE	<a href="#">EAN-13 Bar Code Parameters</a>	Sets configuration parameters for EAN-13.
^BF	<a href="#">Micro-PDF 417 Bar Code</a>	Sets configuration parameters for Micro-PDF 417.
^BI	<a href="#">Industrial 2 of 5 Bar Codes</a>	Sets configuration parameters for Industrial 2 of 5.
^BJ	<a href="#">Standard 2 of 5 Bar Code</a>	Sets configuration parameters for Standard 2 of 5.
^BK	<a href="#">Codabar Bar Code Parameters</a>	Sets configuration parameters for Codabar.
^BL	<a href="#">LOGMARS Bar Code</a>	Sets configuration parameters for LOGMARS.
^BM	<a href="#">MSI Bar Code</a>	Sets configuration parameters for MSI.
^BP	<a href="#">Plessey Bar Code</a>	Sets configuration parameters for Plessey.
^BQ	<a href="#">QR Code Bar Code Parameters</a>	Sets configuration parameters for QR Code.

Syntax	Command	Description
^BR	<a href="#">GS1 DataBar Bar Code Parameters</a>	Sets configuration parameters for GS1 DataBar.
^BS	<a href="#">UPC/EAN Extension Parameters</a>	Extends the UPC-A bar code ( <a href="#">^BU</a> ) and UPC-E bar code (^B9).
^BT	<a href="#">TLC39 bar code</a>	Sets configuration parameters for TLC39.
^BU	<a href="#">UPC-A Bar Code Parameters</a>	Sets configuration parameters for UPC-A.
^BX	<a href="#">DataMatrix Bar Code Parameters</a>	Sets configuration parameters for DataMatrix.
^BY	<a href="#">Bar Code Field Defaults</a>	Sets default values for the bar code width and height, and for the ratio of wide bars to narrow bars.
^BZ	<a href="#">Postal Bar Code Parameters</a>	Sets configuration parameters for Postal.
^CC ~CC	<a href="#">Change Caret</a>	Sets the prefix of the command format.
^CD ~CD	<a href="#">Change Delimiter</a>	Sets the delimiter character.
^CF	<a href="#">Change Alphanumeric Default Font</a>	Sets the default font and font size.
^CI	<a href="#">Change International Font/Encoding</a>	Sets character encoding.
^CM	<a href="#">Change Memory Letter Designation</a>	Reallocates a letter designation to the printer memory devices.
^CN	<a href="#">Cut Now</a>	Cycles the media cutter.
^CT ~CT	<a href="#">Change Tilde</a>	Sets the control command prefix.
^CV	<a href="#">Code Validation</a>	Enables/disables validation of bar code data.
^CW	<a href="#">Font Identifier</a>	Assigns a one-character identifier to a downloaded font.
~DB	<a href="#">Download Bitmap Font</a>	Gets a downloaded bitmap font and sets cell size, baseline, space size, and copyright.
~DE	<a href="#">Download Encoding</a>	Downloads translation tables that convert field data from non-Unicode formats to Unicode.
^DF	<a href="#">Download Format</a>	Saves commands as strings. Use with ^XF to merge with variable data.
~DG	<a href="#">Download Graphics</a>	Downloads an ASCII hex representation of a graphic image.
~DN	<a href="#">Abort Download Graphic</a>	Aborts graphics mode and resumes normal printer operation.

Syntax	Command	Description
~DT	<a href="#">Download Bounded TrueType Font</a>	Gets a downloaded TrueType font of less than 256 characters.
~DU	<a href="#">Download Unbounded TrueType Font</a>	Gets a downloaded TrueType font of more than 256 characters.
~DY	<a href="#">Download Objects</a>	Downloads graphic objects or fonts in any supported format to the printer.
~EG	<a href="#">Erase Download Graphics</a>	Erases all the graphic images from memory.
^F	<a href="#">Select Unicode Encoding</a>	Sets the Unicode decoding when ^CI17 is in use.
^FA	<a href="#">Field Allocate</a>	Field allocate command is used to allocate the size of "field number" field.
^FB	<a href="#">Field Block</a>	Prints text in a defined block format.
^FC	<a href="#">Field Clock</a>	Sets the clock mode and clock indicators when used with real-time hardware.
^FD	<a href="#">Field Data</a>	Defines data string to be printed in a field.
^FH	<a href="#">Field Hexadecimal Indicator</a>	Allows the hex value for any character to be used in an ^FD statement.
^FL	<a href="#">Font Linking</a>	Links all TrueType fonts to associated fonts, including private character fonts.
^FN	<a href="#">Field Number</a>	Assigns a number to data fields.
^FO	<a href="#">Field Origin</a>	Sets the position of the next field.
^FP	<a href="#">Field Parameter</a>	Enables vertical or right-to-left printing in a font field, typically used for printing Asian language fonts.
^FR	<a href="#">Field Reverse Print</a>	Reverse prints a field, making a field white on black or black on white.
^FS	<a href="#">Field Separator</a>	Defines end of field.
^FT	<a href="#">Field Typeset</a>	Sets the field origin relative to the label home position.
^FV	<a href="#">Field Variable</a>	Defines variable data string to be printed in a field.
^FW	<a href="#">Field Orientation</a>	Sets the default orientation and justification for all commands that support these parameters.
^FX	<a href="#">Comment</a>	Add non-printing, informational comments within a label format.
^GB	<a href="#">Graphic Box</a>	Draws boxes or lines.
^GC	<a href="#">Graphic Circle</a>	Draws circles.
^GD	<a href="#">Graphic Diagonal Line</a>	Draws a diagonal line.
^GE	<a href="#">Graphic Ellipse</a>	Draws an ellipse.

Syntax	Command	Description
^GF	Graphic Field	Downloads graphic field data into the printer bitmap storage area.
^GS	Graphic Symbol	Prints the symbols for registered trademark, copyright, Underwriters Laboratories (UL), or Canadian Standards Association Approval.
^HF	Host Format	Sends stored formats to the host.
^HH	Configuration Label Return	Echoes back the printer configuration to the host.
~HI	Host Identification	Retrieve information from the printer.
~HM	Host RAM Status	The ~HM command is used to return a memory status to the host.
~HS	Host Status Return	Returns three lines indicating printer status.
^HT	Host Linked Fonts List	Returns the full list of font links.
~HQ	Host Query	The ~HQ command group causes the printer to send information back to the host.
^HV	^HV - Host Verification	Use this command to return data from specified fields along with an optional ASCII header to the host computer
^HW	Host Directory List	The ^HW command is used by the host to retrieve a directory listing objects in a specific memory area.
^HZ	Display Description Information	The ^HZ command returns printer description information in XML format.
^ID	Object Delete	Deletes objects, graphics, fonts, and stored formats from printer storage areas.
^IL	Image Load	Loads a stored image format.
^IM	Image Move	Loads an image from the storage area into the bitmap.
^IS	Image Save	Saves a format as an image.
~JA	Cancel All	Cancels processing of all commands in the buffer.
~JC	Set Media Sensor Calibration	Use this command for label length measurement, or to adjust the media and ribbon sensor values.
~JF	Set Battery Condition	The ~JF command controls printer behavior in battery low condition.
~JI	Start ZBI	Initializes the Zebra BASIC interpreter.
^JJ	Set AuxiliaryPort	The ^JJ command is used to regulate an online verifier or applicator device.
~JK	Delayed Cut	Cuts a label when the printer is in Delayed Cut print mode.

Syntax	Command	Description
~JL	<a href="#">Set Label Length</a>	The ~JL command is used to set the label length.
^JM	<a href="#">Set Dots per Millimeter</a>	Decreases the print density by changing the number of dots printed per millimeter.
~JP	<a href="#">Pause and Cancel Format</a>	The ~JP command clears the format currently being processed and places the printer into Pause Mode.
~JR	<a href="#">Power On Reset</a>	Performs a power-on initialization: resets the firmware and communication parameters, restores default settings, and clears the buffer.
~JS	<a href="#">Change Backfeed Sequence</a>	Controls the back feed sequence.
^JZ	<a href="#">Reprint After Error</a>	Enables reprinting an improperly or partially printed label due to an error condition.
^KV	<a href="#">Kiosk Values</a>	Sets several parameters that affect printer operations when Print mode is "Kiosk."
^LF	<a href="#">List Font Links</a>	Prints a list of linked fonts in the printer.
^LH	<a href="#">Label Home</a>	Sets the home position.
^LL	<a href="#">Label Length</a>	Defines the label length.
^LR	<a href="#">Label Reverse Print</a>	Reverse prints all fields in a label format, making a field white on black or black on white.
^LS	<a href="#">Label Shift</a>	Shifts all field positions to the left. Provides backward compatibility with legacy Zebra printers.
^LT	<a href="#">Label Top</a>	Moves the label format up or down from the current label position.
^MA	<a href="#">Set Maintenance Alerts</a>	The ^MA command is used to control printed maintenance alerts of the printer. These maintenance alerts basically indicate the TPH should be cleaned or changed and also printed on labels.
^MC	<a href="#">Map Clear</a>	Retains the current bitmap even after the current label is printed. Clear the bitmap with ^MCY.
^MD	<a href="#">Media Darkness</a>	The ^MD command modifies the darkness relative to the current darkness setting.
^MF	<a href="#">Media Feed</a>	Sets media feed behavior when the printer is turned on and when the printhead is closed.
^ML	<a href="#">Maximum Label Length</a>	Sets the maximum length of the label.
^MM	<a href="#">Print Mode</a>	Sets the next action for the printer after a label of group of labels is printed.
^MN	<a href="#">Media Tracking</a>	Defines the media type and sets the black mark offset.
^MT	<a href="#">Media Type</a>	Selects thermal transfer or direct thermal printing.

Syntax	Command	Description
~NC	<a href="#">Network Connect</a>	~NC command is used to connect a particular printer to a network by calling up the printer's network ID number.
^NI	<a href="#">Network ID Number</a>	To assign Network ID number to printer.
~NR	<a href="#">Set All Network Printers Transparent</a>	After receiving ~NR command, all the printers in the network will stop responding to ZPL commands until the printers receives ~NC command with their respective network IDs.
~NT	<a href="#">Set Currently Connected Printer Transparent</a>	Sets Currently Connected Printer Transparent.
^MU	<a href="#">Set Units of Measurement</a>	Sets the unit of measure (dots, inches, or millimeters).
^PA	<a href="#">Advanced Text Properties</a>	^PA command sets up the advance text layout features in the printer.
^PH ~PH	<a href="#">Slew to Home Position</a>	The ^PH ~PH command causes the printer to feed one blank label.
^PM	<a href="#">Print Mirror Image of Label</a>	Prints the printable area of a label as a mirror image, flipping the image from left to right.
^PO	<a href="#">Print Orientation</a>	Rotates the label format 180 degrees, printing the label upside down.
^PP ~PP	<a href="#">Programmable Pause</a>	Stops the printing operation after printing the current label is completed.
^PQ	<a href="#">Print Quantity</a>	Sets the number of labels to print, the number of labels to print before pausing, and the number of copies of each serial number.
^PR	<a href="#">Print Rate</a>	Sets the print, slew, and backfeed speeds.
~PR	<a href="#">Applicator Reprint</a>	The ~PR command, if enabled, reprints the last printed label.
~PS	<a href="#">Print Start</a>	Allows the printer to start printing when in Pause mode.
^PW	<a href="#">Print Width</a>	Sets the print width.
^RB	<a href="#">Define EPC Data Structure</a>	This command is used to define the structure of EPC data, which can be read from or written to an RFID tag.
^RF	<a href="#">Read or Write RFID Format</a>	Read or write to an RFID tag, or specify the RFID password.
^RR	<a href="#">Enable Adaptive Antenna Selection</a>	Enables adaptive antenna selection for RFID.
^RR	<a href="#">Specify RFID Retries for a Block</a>	Sets the number of times the printer tries to read from or write to one block of a single tag.

Syntax	Command	Description
^RS	Set Up RFID Parameters	Sets RFID parameters.
^RT	Read RFID Tag	^RT command is used to read data from RFID tag and associate with a numbered field.
^RW	Set RFID Read and Write Power Levels	This command is used to set the RFID read and write power levels if the desired levels are not achieved through RFID tag calibration.
^RZ	Set RFID Tag Password and Lock Tag	This command is used to define a password for a tag during writing.
~SD	Set Darkness	The ~SD command sets the darkness of printing.
^SE	Select Encoding Table	Sets the encoding table.
^SF	Serialization Field	Serializes any standard ^FD string.
^SN	Serialization Data	Indexes data fields by a selected increment or decrement value.
^ST	Set Date and Time (for Real-Time Clock)	The ^ST command is used to set the date and time of the Real-Time Clock.
^SZ	Set ZPL Mode	Selects the ZPL version.
~TA	Tear-off Adjust Position	Adjusts the media rest position after a label is printed, changing the position at which the label is torn or cut.
^TB	Text Blocks	The ^TB command is used to print a text block with defined width and height.
^TO	Transfer Object	^TO command is used to copy one or group of files from one storage location to another.
~WC	Print Configuration Label	Prints a label of the printer configuration.
^WD	Print Directory Label	Prints a list of the bar codes, objects and fonts installed in the printer.
^WT	Write (Encode) Tag	This command is used to encode the current RFID tag.
^XA	Start Format	Indicates the start of a new label format in ZPL II code.
^XA	Start Format	Indicates the start of a new label format in ZPL II code.
^XB	Suppress Backfeed	Suppresses forward media feed to the tear-off position.
^XF	Recall Format	Recall a stored format to be populated with variable data.
^XG	Recall Graphic	Recalls one or more graphic images for printing.
^XZ	End Format	Indicates the end of a label format in ZPL II code.

# Set Font for Field Data (^A)

Sets the font to use for a subsequent [^FD](#) (Field Data) statement or field.

Calling ^A affects only one ^FD entry. Subsequent ^FD entries use the default [^CF](#) font unless ^A is called again. If ^CF is unspecified, font A is used.

## Syntax

`^A<p1>,<p2>,<p3>,<p4>`

## Parameters

Parameter	Description	Values
<p1>	Font name	O (does not support Hebrew character set), A, B, D, E, F, G, GS, H, P, Q, R, S, T, U, V.
<p2>	Text field rotation	N - No rotation R - 90 degrees clockwise rotation I - 180 degrees clockwise rotation B - 270 degrees clockwise rotation
<p3>	Font height in dots	Scalable fonts: Range is 10 to 32000. Values greater than 1500 are accepted but truncated to 1500. Default is as specified by ^CF.  Bitmapped fonts: Range is 1 to 10 (multiples of the base height). Default is as specified by ^CF.
<p4>	Font width in dots	Scalable fonts: Range is 10 to 32000. Values greater than 1500 are accepted but truncated to 1500. Default is as specified by ^CF.  Bitmapped fonts: Range is 1 to 10 (multiples of the base width). Default is as specified by ^CF.

## Remarks

If only font height or width is specified, the other dimension is automatically calculated based on each font's dimension ratio. If neither font height nor width is specified, the default size for the font as defined by ZPL II is used.

If the insertion position of horizontal text is to the left of the label O point, Zebra prints all text to the left of O one character atop the other. Honeywell printers truncate text to the left of O.

If the insertion point of vertical text is above the label O point, Zebra prints all text above O one character atop the other. Honeywell printers truncate text above the O.

Font name C maps to same font as D.

# Use Font Name to Call Font (^A@)

Selects a font based on the font name and path.

## Syntax

`^A@<p1>,<p2>,<p3>,<p4>,<p5>,<p6>`

## Parameters

Parameter	Description	Values
<p1>	Text field orientation	N - No rotation (default, unless <a href="#">^FW</a> has been called) R - 90 degrees clockwise rotation I - 180 degrees clockwise rotation B - 270 degrees clockwise rotation
<p2>	Font height in dots (scalable fonts only)	Default is the specified magnification by character width, or as specified by the last <a href="#">^CF</a> command. Otherwise this parameter uses the base height  .For bitmap fonts this parameter is rounded to the nearest integer multiple of the base height, and the corresponding magnification is determined and used.
<p3>	Font width in dots (scalable fonts only)	Default is the specified magnification by character height, or as specified by the last <a href="#">^CF</a> command. Otherwise this parameter uses the base width.  <a href="#">For bitmap fonts this parameter is rounded to the nearest integer multiple of the base width, and the corresponding magnification is determined and used.</a>
<p4>	Drive where the font is stored	A: B: E: R: (default)
<p5>	Font name	Range is a valid font name. Default is specified by <a href="#">^CF</a> , or A otherwise.
<p6>	Extension	FNT - Font TTF - TrueType font TTE - TrueType extension

## Remarks

If ^A@ is called without parameters, the printer calls the font specified by the previous ^A@ call.

# Code 93 Bar Code Parameters (^BA)

Use this command to generate and set parameters for Code 93 bar codes.

## Syntax

`^BA<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Orientation	Default is specified by <a href="#">^FW</a> . Valid values are: N - Normal R - Rotated 90 degrees clockwise I - Rotated 180 degrees clockwise B - Rotated 270 degrees clockwise
<p2>	Height in dots	Range is 1 to 32000. Default is specified by <a href="#">^BY</a>
<p3>	Enables human-readable interpretation	N - Disable interpretation Y - Enable interpretation (default)
<p4>	Human-readable interpretation appears above barcode	N - Interpretation does not appear above barcode (default) Y - Interpretation appears above barcode
<p5>	Print check digit	N - No check digit (default) Y - Enables check digit

## Remarks

Printable field data length (specified by [^FD](#)) is limited by the label size.

Full ASCII character set is supported by using Full ASCII mode:

ASCII	Pair	ASCII	Pair	ASCII	Pair	ASCII	Pair
NUL	'U	SP	Space	@	'V	'	'W
SOH	&A	!	(A	A	A	a	)A
STX	&B	"	(B	B	B	b	)B
ETX	&C	#	(C	C	C	c	)C

ASCII	Pair	ASCII	Pair	ASCII	Pair	ASCII	Pair
EOT	&D	\$	(D	D	D	d	)D
ENQ	&E	%	(E	E	E	e	)E
ACK	&F	&	(F	F	F	f	)F
BEL	&G	'	(G	G	G	g	)G
BS	&H	(	(H	H	H	h	)H
HT	&I	)	(I	I	I	i	)I
LF	&J	*	(J	J	J	j	)J
VT	&K	++	++	K	K	k	)K
FF	&L	,	(L	L	L	l	)L
CR	&M	-	-	M	M	m	)M
SO	&N	.	.	N	N	n	)N
SI	&O	/	/	O	O	o	)O
DLE	&P	0	0	P	P	p	)P
DC1	&Q	1	1	Q	Q	q	)Q
DC2	&R	2	2	R	R	r	)R
DC3	&S	3	3	S	S	s	)S
DC4	&T	4	4	T	T	t	)T
NAK	&U	5	5	U	U	u	)U
SYN	&V	6	6	V	V	v	)V
ETB	&W	7	7	W	W	w	)W
CAN	&X	8	8	X	X	x	)X
EM	&Y	9	9	Y	Y	y	)Y
SUB	&Z	:	(Z	Z	Z	z	)Z
ESC	'A	;	'F	[	'K	{	'P
FS	'B	<	'G	\	'L		'Q
FS	'C	=	'H	]	'M	}	'R
RS	'D	>	'I	^	'N	~	'S
US	'E	?	'J	_	'O	DEL	'T

# CODABLOCK Barcode (^BB)

The ^BB command is used to produce a two dimensional multirow stacked symbology. It is ideally suited for applications that require large amounts of information.

## Syntax

^BB<p0>, <p1>,<p2>,<p3>,<p4>,<p5>

## Parameters

Parameter	Description	Values
<p1>	O=Orientation	Default: As specified by ^FW command Range: N=Normal R=90 degrees clock-wise rotation I=180 degrees clock-wise rotation B=270 degrees clock-wise rotation
<p2>	h = bar code height for individual rows (in dots)	Default: 8 Range: 2 to 32000
<p3>	s = security level	Default : N Range: Y = Yes N = No Security level determines whether symbol check sums are generated and added to the symbol. Check sums are never generated for single row symbols. This can be turned off only if parameter m is set to A.
<p4>	c = number of characters per row (data columns)	Range: 2 to 62 This is used to encode a CODABLOCK symbol. It gives you control over the width of the symbol.

Parameter	Description	Values
<p5>	r = number of rows to encode	<p>Range: for CODABLOCK A: 1 to 22 for CODABLOCK E and F: 2 to 4 If values for c and r are not specified, a single row is produced.</p> <ul style="list-style-type: none"> <li>• If a value for r is not specified, and c exceeds the maximum range, a single row equal to the field data length is produced.</li> <li>• If a value for c is not specified, the number of characters per row is derived by dividing the field data by the value of r.</li> <li>• If the s parameter is set to the default of Y, then the checksum characters that are included count as two data characters . For example, if c = 6, r is set to 3 and s is set to N, then up to 18 characters can be used (6 x 3). However, if s is set to Y, then only 16 character can be used.</li> <li>• If the data field contains primarily numeric data, fewer than the specified rows might be printed. If the field data contains several shift and code-switch characters, more than the specified number of rows might be printed.</li> </ul>
<p6>	m=mode	<p>Default :  F Range: A, E, F  CODABLOCK A uses the Code 39 character set. CODABLOCK F uses the Code 128 character set.  CODABLOCK E uses the Code 128 character set and automatically adds FNC1.</p>

## Remarks

1. If more characters are sent in than the code allows, Zebra only encodes the maximum characters in the bar code but will display all characters in its human-readable interpretation. This violates the spec. Fiji printers will encode and print only the maximum characters allowed by the spec.

2. If invalid characters are passed in the data stream (i.e.: parentheses), Zebra will only encode the valid characters but will print the entire character stream. Fiji printers will do the same.

## Code 128 Bar Code Parameters (^BC)

Use this command to generate and set parameters for Code 128 bar codes.

### Syntax

`^BC<p1>,<p2>,<p3>,<p4>,<p5>,<p6>`

### Parameters

Parameter	Description	Values
<p1>	Barcode orientation	Default: as specified by ^FW Range: N = Normal R = 90 degrees clock-wise rotation I = 180 degrees clock-wise rotation B = 270 degrees clock-wise rotation
<p2>	Bar code height in dots	Default is specified by <a href="#">^BY</a> . Range is 1 to 32000
<p3>	Enable interpretation (human readable) field.	N - Disable interpretation Y - Enable interpretation (default)

Parameter	Description	Values
<p4>	Human readable interpretation appears above barcode	N - Interpretation does not appear above barcode (default) Y - Interpretation appears above barcode.  If more characters are sent in than the code allows, Honeywell printers will respect the ISO specification for code 128 and will only encode and print human-readable text for those characters.
<p5>	Enable UCC (Mod 10) check digit	N - Check digit disabled (default) Y - Check digit enabled
<p6>	Mode	N - No mode selected (default) U - UCC Case mode. Field data is automatically capped (or zeroes are appended at end) at 19 digits A - Automatic mode. The most suitable encoding is selected by analyzing the sent data. the full ASCII character set can be used. IF the data contains more than four numeric digits, the mode shifts to Subset C sutomatically. D - UCC/EAN mode. Code starts with the appropriate subset followed by FNC1, indicating a UCC/EAN 123 barcode. Parenthesis and spaces are automatically stripped from the barcode but still printed in the human-readable field. Check digit is automatically generated if required. Human-readable font size is automatically determined.

## Remarks

None.

# UPS MaxiCode Bar Code Parameters (^BD)

Use this command to generate and set parameters for UPS MaxiCode bar codes.

## Syntax

`^BD<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Mode	2 - Structured carrier message: numeric U.S. postal code (default) 3 - Structured carrier message: alphanumeric U.S. postal code 4 - Standard symbol, secretary 5 - Full EEC 6 - Reader program, secretary
<p2>	Symbol number	Range is 1 (default) to 8
<p3>	Number of symbols	Range is 1 (default) to 8

## Remarks

When invalid data is input no bar code is printed. A bar code using this symbology

A bar code using this symbology printed by ZSIM will be no larger than the same bar code printed by ZPL II. Although the ZSIM bar code pattern may be different, the encoded data is identical to the ZPL II equivalent.

# EAN-13 Bar Code Parameters (^BE)

Use this command to generate and set parameters for EAN-13 bar codes.

## Syntax

`^BE<p1>,<p2>,<p3>,<p4>`

## Parameters

Parameter	Description	Values
<p1>	Orientation	Default is specified by <a href="#">^FW</a> . Valid values are: N - Normal R - Rotated 90 degrees clockwise I - Rotated 180 degrees clockwise B - Rotated 270 degrees clockwise
<p2>	Height in dots	Range is 1 to 32000. Default is specified by <a href="#">^BY</a>
<p3>	Enable interpretation (human readable) field	N - Disable interpretation Y - Enable interpretation (default)
<p4>	Human-readable interpretation appears above barcode	N - Interpretation does not appear above barcode (default) Y - Interpretation appears above barcode.

## Remarks

For JAN-13 symbols, the first two non-zero digits of the field data must be "49".

[^FD](#) length is either padded with zeros or truncated so that it has exactly 12 characters.

# Micro-PDF 417 Bar Code (^BF)

Command ^BF generates the Micro-PDF 417 barcode.

## Syntax

^BF<p1>,<p2>,<p3>

## Parameters

Parameter	Description	Values
<p1>	Barcode orientation	Default: as specified by ^FW Range: N = Normal R = 90 degrees clock-wise rotation I = 180 degrees clock-wise rotation B = 270 degrees clock-wise rotation
<p2>	Bar code individual row height in dots	Default: as specified by ^BY Range: 1 - label height
<p3>	Mode.	Default: 0 Range:0 - 33 (see table below)

## Remarks

1. ^FD and ^FH are limited to:
  - 250 7-bit characters
  - 150 8-bit characters
  - 366 4-bit numeric characters
2. Micro-PDF 417 mode

Mode	Columns	Rows	Max Errors Corrected	Symbol Width	Symbol Height	Max Binary Data Bytes	Max Alpha Characters	Max Numeric Characters
0	1	11	4	40	24	3	6	8
1	1	14	4	40	30	7	12	17
2	1	17	4	40	36	10	18	26
3	1	20	5	40	42	13	22	32
4	1	24	5	40	50	18	30	44
5	1	28	5	40	58	22	38	55
6	2	8	5	57	18	8	14	20
7	2	11	6	57	24	14	24	35
8	2	14	6	57	30	21	36	52
9	2	17	7	57	36	27	46	67
10	2	20	8	57	42	33	56	82
11	2	23	10	57	48	38	67	93
12	2	26	12	57	54	43	72	105
13	3	6	9	84	14	6	10	14
14	3	8	11	84	18	10	18	26
15	3	10	13	84	22	15	26	38
16	3	12	15	84	26	20	34	49
17	3	15	18	84	32	27	46	67
18	3	20	23	84	42	39	66	96
19	3	26	29	84	54	54	90	132
20	3	32	35	84	66	68	114	167
21	3	38	41	84	78	82	138	202
22	3	44	47	84	90	97	162	237
23	4	4	5	101	10	8	14	20
24	4	6	9	101	14	13	22	32
25	4	8	11	101	18	20	34	49
26	4	10	13	101	22	27	46	67
27	4	12	15	101	26	34	58	85

Mode	Columns	Rows	Max Errors Corrected	Symbol Width	Symbol Height	Max Binary Data Bytes	Max Alpha Characters	Max Numeric Characters
28	4	15	18	101	32	45	76	111
29	4	20	23	101	42	63	106	155
30	4	26	29	101	54	85	142	208
31	4	32	35	101	66	106	178	261
32	4	38	41	101	78	128	214	313
33	4	44	47	101	90	150	250	366

# Industrial 2 of 5 Bar Codes (^BI)

Command ^BI generates the Industrial 2 of 5 barcode.

## Syntax

^BI<p1>,<p2>,<p3>,<p4>

## Parameters

Parameter	Description	Values
<p1>	Barcode orientation	Default: as specified by ^FW Range: N = Normal R = 90 degrees clock-wise rotation I = 180 degrees clock-wise rotation B = 270 degrees clock-wise rotation
<p2>	Bar code height in dots	Default: as specified by ^BY Range: 1 - 32000
<p3>	Enable interpretation (human readable) field	Default: Y Range: Y = yes N = no
<p4>	Interpretation (human readable) field above bar code	Default: N Range: Y = yes N = no

## Remarks

1. Supported bar code ratios are 2.0:1 to 3.0:1.
2. Printable field data length (^FD) is limited by the label size.

## Standard 2 of 5 Bar Code (^BJ)

Command ^BJ generates the Standard 2 of 5 barcode.

### Syntax

^BJ<p1>,<p2>,<p3>,<p4>,

### Parameters

Parameter	Description	Values
<p1>	Barcode orientation	Default: as specified by ^FW Range: N = Normal R = 90 degrees clock-wise rotation I = 180 degrees clock-wise rotation B = 270 degrees clock-wise rotation
<p2>	Bar code height in dots	Default: as specified by ^BY Range: 1 - 32000
<p3>	Enable interpretation (human readable) field	Default: Y Range: Y = yes N = no
<p4>	Interpretation (human readable) field above bar code	Default: N Range: Y = yes N = no

### Remarks

1. Supported bar code ratios are 2.0:1 to 3.0:1.
2. Printable field data length (^FD) is limited by the label size.

# Codabar Bar Code Parameters (^BK)

Use this command to generate and set parameters for Codabar bar codes.

## Syntax

^BK<p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>

## Parameters

Parameter	Description	Values
<p1>	Orientation	Default is specified by <a href="#">^FW</a> . Valid values are: N - Normal R - Rotated 90 degrees clockwise I - Rotated 180 degrees clockwise B - Rotated 270 degrees clockwise (read from bottom up)
<p2>	Enable check digit	Always set to N
<p3>	Bar code height in dots	Default is specified by <a href="#">^BY</a> . Range is 1 to 32000
<p4>	Enable human-readable interpretation	N - Disable interpretation Y - Enable interpretation (default)
<p5>	Human-readable interpretation appears above barcode	N - Interpretation does not appear above barcode (default) Y - Interpretation appears above barcode
<p6>	Start character	A - default B C D
<p7>	Stop character	A - default B C D

## Remarks

None.

# LOGMARS Bar Code (^BL)

Command ^BL generates the LOGMARS barcode.

## Syntax

^BA<p1>,<p2>,<p3>

## Parameters

Parameter	Description	Values
<p1>	Barcode orientation	Default: as specified by ^FW Range: N = Normal R = 90 degrees clock-wise rotation I = 180 degrees clock-wise rotation B = 270 degrees clock-wise rotation
<p2>	Bar code height in dots	Default: as specified by ^BY Range: 1 - 32000
<p3>	Enable interpretation (human readable) field	Default: Y Range: Y = yes N = no

## Remarks

1. Supported bar code ratios are 2.0:1 to 3.0:1.
2. Printable field data length (^FD) is limited by the label size.
3. Lowercase letters in the ^FD are converted to the supported uppercase LOGMARS characters

# MSI Bar Code (^BM)

Command ^BM generates the MSI barcode.

## Syntax

^BM<p1>,<p2>,<p3>,<p4>,<p5>,<p6>

## Parameters

Parameter	Description	Values
<p1>	Barcode orientation	Default: As specified by ^FW Range: N = Normal R = 90 degrees clock-wise rotation I = 180 degrees clock-wise rotation B = 270 degrees clock-wise rotation
<p2>	Check digit type	Default: B Range: A = None B = 1 Mod 10 C = 2 Mod 10 D = 1 Mod 11 and 1 Mod 10
<p3>	Bar code height in dots	Default: as specified by ^BY Range: 1 - 32000
<p4>	Enable interpretation (human readable) field	Default: Y Range: Y = yes N = no
<p5>	Interpretation (human readable) field above bar code	Default: N Range: Y = yes N = no
<p6>	Add check digit into the interpretation field	Default: N Range: Y = yes N = no

## Remarks

1. Supported bar code ratios are 2.0:1 to 3.0:1.
2. Printable field data length (^FD) is limited to 1 to 14 digits when <p2> is B, C, or D and 1 to 13 digits when <p2> is A, plus a quiet zone.

# Plessey Bar Code (^BP)

Command ^BP generates the Plessey barcode.

## Syntax

^BP<p1>,<p2>,<p3>,<p4>,<p5>

## Parameters

Parameter	Description	Values
<p1>	Barcode orientation	Default: as specified by ^FW Range: N = Normal R = 90 degrees clock-wise rotation I = 180 degrees clock-wise rotation B = 270 degrees clock-wise rotation
<p2>	Print check digit	Default: N Range: Y = yes N = no
<p3>	Bar code height in dots	Default: as specified by ^BY Range: 1 - 32000
<p4>	Enable interpretation (human readable) field	Default: Y Range: Y = yes N = no
<p5>	Interpretation (human readable) field above bar code	Default: N Range: Y = yes N = no

## Remarks

1. Supported bar code ratios are 2.0:1 to 3.0:1.
2. Printable field data length (^FD) is limited by the label size.

# QRCode Bar Code Parameters (^BQ)

Use this command to generate and set parameters for QRCode bar codes.

## Syntax

`^BQ<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Orientation	The only valid value is N. ^FW does not affect this command
<p2>	Model	1 - Original 2 - Enhanced (default, recommended)
<p3>	Magnification factor	Range is 1 to 30 Defaults are as follows: 2 (203 dpi printers) 3 (300 dpi) 4 (400 dpi) 6 (600 dpi)
<p4>	Error correction level	H - Highest reliability level L - High density level Q - High reliability level (default if p4 is missing) M - Standard level (default if an invalid or out-of-range value is specified)
<p5>	Mask value	Range is 0 to 7 (default is 7)

## Remarks

See the ZPL II documentation for behavior details.

A bar code using this symbology printed by ZSIM will be no larger than the same bar code printed by ZPL II. Although the ZSIM bar code pattern may be different, the encoded data is identical to the ZPL II equivalent.

# GS1 Databar Bar Code Parameters (^BR)

Use this command to generate and set parameters for GS1 Databar bar codes.

## Syntax

`^BR<p1>,<p2>,<p3>,<p4>,<p5>,<p6>`

## Parameters

Parameter	Description	Values
<p1>	Orientation	Default is specified by <a href="#">^FW</a> . Valid values are: N - Normal R - Rotated 90 degrees clockwise I - Rotated 180 degrees clockwise B - Rotated 270 degrees clockwise
<p2>	Type of symbology in the GS1 DataBar family	1 - Omnidirectional 2 - Truncated 3 - Stacked 4 - Stacked omnidirectional 5 - Limited 6 - Expanded 7 - UPC-A 8 - UPC-E 9 - EAN-13 10 - EAN-8 11 - UCC/EAN-128 and CC-A/B 12 - UCC/EAN-128 and CC-C
<p3>	Magnification factor	Range is 1 to 10 Default values are as follows: 24 dot = 6, 12 dot is 3; 8 dot and lower is 2 12 dot = 6, >8 dot is 3; 8 dot and less is 2
<p4>	Height of separator	Range is 1 (default) or 2
<p5>	Barcode height in dots	Range is 1 to 32000. Default is 25. Changing this value changes only the linear part of the bar code.
<p6>	Width of segment (only if expanded)	Range is 2 to 22 (only even numbers, in segments per line). Default is 22.

## Remarks

None.

## UPC/EAN Extension Parameters (^BS)

The ^BS command extends the UPC-A bar code ([^BU](#)) and UPC-E bar code (^B9).

This parameter extends the width of the code by either two digits or five digits. The Field Data (^FD) provided to ^BS has a limit of 2 or 5 characters. Digits on the left are either truncated or padded with zeroes to achieve the required number of characters.

### Syntax

^BS<p1>,<p2>,<p3>,<p4>

### Parameters

Parameter	Description	Values
<p1>	Orientation	Default is specified by <a href="#">^FW</a> . Valid values are: N - Normal R - Rotated 90 degrees clockwise I - Rotated 180 degrees clockwise B - Rotated 270 degrees clockwise (read from bottom up)
<p2>	Barcode height in dots	Default is specified by <a href="#">^BY</a> . Range is 1 to 32000
<p3>	Enable human-readable interpretation	N - Disable interpretation Y - Enable interpretation (default)
<p4>	Human-readable interpretation appears above barcode.	N - Interpretation does not appear above barcode Y - Interpretation appears above barcode (default)

### Remarks

None.

# TLC39 bar code (^BT)

Command ^BT generates the TLC39 barcode.

## Syntax

^BT<p1>,<p2>,<p3>,<p4>,<p5>,<p6>

## Parameters

Parameter	Description	Values
<p1>	Barcode orientation	Default: as specified by ^FW Range: N = Normal R = Rotated I = Inverted B = Bottom up
<p2>	Bar code width of the Code 39 in dots	Default: 2 on 203 and 300 dpi printers 4 on 600 dpi printers Range: 1 - 10
<p3>	Width ratio of wide bar to narrow bar of the Code 39	Default: 2.0 Range: 2.0 - 3.0 Note: This parameter is in 0.1 increment.
<p4>	Bar code height of the Code 39 in dots	Default: 40 on 203 dpi printers 60 on 300 dpi printers 80 on 406 dpi printers 120 on 600 dpi printers Range: 1 - 9999

Parameter	Description	Values
<p5>	Row height of the MicroPDF417	Default: 4 on 203 and 300 dpi printers 8 on 600 dpi printers Range: 1 - 255
<p6>	Narrow bar width of the MicroPDF417	Default: 2 on 203 and 300 dpi printers 4 on 600 dpi printers Range: 1 - 10

## Remarks

None.

# UPC-A Bar Code Parameters (^BU)

Use this command to generate and set parameters for UPC-A bar codes.

## Syntax

`^BU<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Orientation	Default is specified by <a href="#">^FW</a> . Valid values are: N - Normal R - Rotated 90 degrees clockwise I - Rotated 180 degrees clockwise B - Rotated 270 degrees clockwise
<p2>	Barcode height in dots	Default is specified by <a href="#">^BY</a> . Range is 1 to 32000
<p3>	Enable human-readable interpretation	N - Disable interpretation Y - Enable interpretation (default)
<p4>	Human-readable interpretation appears above barcode.	N - Interpretation does not appear above barcode Y - Interpretation appears above barcode (default)
<p5>	Print Mod 10 check digit	N - No check digit Y - Enables check digit (default)

## Remarks

Check digit is calculated using Mod 10.

Field data length (specified by `^FD`) must be 11 characters. Longer data strings are automatically truncated. Shorter data strings are prepended by zeroes.

The human-readable interpretation font depends on the modulus (narrow bar width) selected with `^BY`:

Modulus (Narrow Bar Width)	Font A for Modulus	OCR-B for Modulus
6 dots/mm	1	> 1
8 dots/mm	1 to 2	> 2

Modulus (Narrow Bar Width)	Font A for Modulus	OCR-B for Modulus
12 dots/mm	1 to 4	> 4
24 dots/mm	1 to 8	> 8

# DataMatrix Bar Code Parameters (^BX)

Use this command to generate and set parameters for DataMatrix bar codes.

## Syntax

`^BX<p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>`

## Parameters

Parameter	Description	Values
<p1>	Orientation	Default is specified by <a href="#">^FW</a> . Valid values are: N - Normal R - Rotated 90 degrees clockwise I - Rotated 180 degrees clockwise B - Rotated 270 degrees clockwise
<p2>	Height of each element	Range is 1 to the label width. For Honeywell printers, no barcode is printed if this value exceeds 62. If this value is not specified, or if this value is set to 0, the default height is specified by <a href="#">^BY</a>
<p3>	Quality (ECC) level	0 (default) 50 100 200
<p4>	Columns	An odd number of columns may be used only if <p3> = 0, 50, 80, 100, or 140 An even number of columns may be used only if <p3> = 200. If set to less than 9, no symbol is printed. If set to more than 49, the appropriate size is determined automatically.
<p5>	Rows	Range is 9 to 49

Parameter	Description	Values
<p6>	Data Type	<p>0 - Automatically select the encoding scheme based on the <a href="#">^FD</a> data to be encoded.</p> <p>1 - ^FD data is numeric + space (0...9,) - no \&amp;"</p> <p>2 - ^FD data is uppercase alphanumeric + space (A...Z,) - no \&amp;"</p> <p>3 - ^FD data is uppercase alphanumeric + space, period, comma, dash, and slash (0...9, A...Z, "-/)"</p> <p>4 - ^FD data is uppercase alphanumeric + space (0...9, A...Z,) - no \&amp;"</p> <p>5 - ^FD data is full of 128 ASCII 7-bit set</p> <p>6 - ^FD data is full of 256 ISO 8-bit set</p> <p>This parameter is in effect only when the ECC value = 0 to 140.</p>
<p7>	Character sequence control data	<p>Range is any character (default is ~). A value must always be specified when using the escape sequence control character. If no value is entered, the command is ignored.</p>
<p8>	Aspect ratio	<p>1 - Square (default)</p> <p>2 - Rectangular</p>

## Remarks

See the ZPL II reference material for behavior details.

Embedded codewords ~d and code page change ~5 and ~6 commands are not supported.

For Honeywell printers, certain datasets may result in more additional rows or columns than expected.

A bar code using this symbology printed by ZSim will be no larger than the same bar code printed by ZPL II. Although the ZSim bar code pattern may be different, the encoded data is identical to the ZPL II equivalent.

## Bar Code Field Defaults (^BY)

Use this command to set default values for bar code width, bar code height, and the wide-to-narrow bar width ratio.

When this command is called, it remains in effect until called again, or until the printer is restarted.

### Syntax

`^BY<p1>,<p2>,<p3>`

### Parameters

Parameter	Description	Values
<p1>	Bar code width in dots	Range is 1 to 10. Default is 2.
<p2>	Width ratio of wide bars to narrow bars	Range is 2.0 to 3.0 in 0.1 increments. Default is 3.0. This parameter does not affect fixed-ratio bar codes.
<p3>	Bar code height in dots	Initial value at power-up is 10.

# Postal Bar Code Parameters (^BZ)

Use this command to generate and set parameters for Postal bar codes.

## Syntax

`^BZ<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Orientation	Default is specified by <a href="#">^FW</a> . Valid values are: N - Normal R - Rotated 90 degrees clockwise I - Rotated 180 degrees clockwise B - Rotated 270 degrees clockwise
<p2>	Barcode height in dots	Default is specified by <a href="#">^BY</a> .  For Honeywell printers, range is 1 to 200.  For Datamax-O'Neil printers, value is fixed at 25 (for 203-dpi printhead) or 37 (for 300-dpi printhead).
<p3>	Enable human-readable Interpretation	N - Disable interpretation (default) Y - Enable interpretation
<p4>	Human-readable interpretation appears above barcode	N - Interpretation does not appear above barcode (default) Y - Interpretation appears above barcode
<p5>	Postal code type	0 - Postnet barcode 1 - Planet barcode 2 - Reserved 3 - USPS Intelligent Mail barcode

## Remarks

The command supports a print ratio of 2.0:1 to 3.0:1. When field data ([^FD](#)) is used with this command, it is limited to the width of the label (or length of the label if rotated) and also restricted by the bar code specification.

The bar code height is fixed at 0.123 inches for all Datamax-O'Neil printers.

# Aztec Bar Code Parameters (^B0)

Use this command to generate and set parameters for Aztec bar codes.

## Syntax

`^B0<p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>`

## Parameters

Parameter	Description	Values
<p1>	Orientation	Default is specified by <a href="#">^FW</a> . Valid values are: N - Normal R - Rotated 90 degrees clockwise I - Rotated 180 degrees clockwise B - Rotated 270 degrees clockwise
<p2>	Magnification	Range is 1 to 10. Default values are: 2 (203 dpi printers) 3 (300 dpi) 4 (406 dpi) 6 (600 dpi)
<p3>	Extended channel interpretation code indicator	N - Data not containing ECICs (default) Y - Data containing ECICs
<p4>	Error control level	0 - Default error correction 01 to 99 - Minimum error correction percentage 101 to 104 - 1- to 4-layer compact symbol 201 to 232 - 1- to 32-layer full range symbol 300 - Aztec rune
<p5>	Menu symbol flag	N - Not a menu symbol (default) Y - Menu symbol (bar code reader initialization)
<p6>	Structured append symbol count	Range is 1 (default) to 26

Parameter	Description	Values
<p7>	ID field for structured append, specified by a text string of up to 24 characters	Default is an empty string (no ID specified)

A bar code using this symbology printed by ZSIM will be no larger than the same bar code printed by ZPL II. Although the ZSIM bar code pattern may be different, the encoded data is identical to the ZPL II equivalent.

# Code 11 Bar Code (^B1)

Command ^B1 generates the Code 11 barcode.

## Syntax

^B1<p1>,<p2>,<p3>,<p4>,<p5>

## Parameters

Parameter	Description	Values
<p1>	Barcode orientation	Default: as specified by ^FW Range: N = Normal R = 90 degrees clock-wise rotation I = 180 degrees clock-wise rotation B = 270 degrees clock-wise rotation
<p2>	Print check digit	Default: N Range: Y = yes N = no
<p3>	Bar code height in dots	Default: as specified by ^BY Range: 1 - 32000
<p4>	Enable interpretation (human readable) field.	Default: Y Range: Y = yes N = no
<p5>	Interpretation (human readable) field above bar code	Default: N Range: Y = yes N = no

## Remarks

1. Supported bar code ratios are 2.0:1 to 3.0:1.
2. Printable field data length (^FD) is limited by the label size.

# Interleaved 2 of 5 Bar Code Parameters (^B2)

Use this command to generate and set parameters for Interleaved 2 of 5 bar codes.

## Syntax

`^B2<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

`<p1>`

Orientation. Default is specified by [^FW](#). Valid values are:

- N - Normal
- R - Rotated 90 degrees clockwise
- I - Rotated 180 degrees clockwise
- B - Rotated 270 degrees clockwise

`<p2>`

Height in dots. Range is 1 to 32000. Default is specified by [^BY](#).

`<p3>`

Enables human-readable interpretation. Valid values are:

- N - Disable interpretation.
- Y - Enable interpretation (default).

`<p4>`

Human-readable interpretation appears above bar code. Valid values are:

- N - Interpretation does not appear above bar code (default).
- Y - Interpretation appears above bar code.

`<p5>`

Enable mod 10 check digit. Valid values are:

- N - No check digit (default)
- Y - Enables check digit

## Remarks

Supported bar code ratios are 2.0:1 to 3.0:1.

Printable field data length (specified by [^FD](#)) is limited by the label size.

Field data length must be even. If an odd number of digits is specified, a leading zero is prepended to the bar code data.

# Code 39 Bar Code Parameters (^B3)

Use this command to generate and set parameters for Code 39 bar codes.

## Syntax

`^B3<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Orientation	Default is specified by <a href="#">^FW</a> . Valid values are: N - Normal R - Rotated 90 degrees clockwise I - Rotated 180 degrees clockwise B - Rotated 270 degrees clockwise (read from bottom up)
<p2>	Enable Mod 43 check digit	N - Check digit disabled (default) Y - Check digit enabled.
<p3>	Bar code height in dots	Default: as specified by <code>^BY</code> Range: 1 - 32000
<p4>	Enable interpretation (human readable) field.	Default: Y Range: Y - enable interpretation (default) N - disable interpretation
<p5>	Interpretation (human readable) field above bar code	Default: N Range: Y - Interpretation appears above bar code N - Interpretation does not appear above bar code (default)

## Remarks

Supported bar code ratios are 2.0:1 to 3.0:1.

Printable field data length (specified by [^FD](#)) is limited by the label size.

For scanners supporting extended ASCII, use "+\$" to enable extended ASCII and "-\$" to disable extended ASCII.

If <p4> = Y, start- and stop-characters (\*) are automatically generated.

# Planet Bar Code Parameters (^B5)

Use this command to generate and set parameters for Planet bar codes.

## Syntax

`^B5<p1>,<p2>,<p3>,<p4>`

## Parameters

Parameter	Description	Values
<p1>	Orientation	Default: as specified by ^FW Range: N = Normal R = 90 degrees clock-wise rotation I = 180 degrees clock-wise rotation B = 270 degrees clock-wise rotation
<p2>	Barcode heights in dots	Default is specified by <a href="#">^BY</a> .  For Honeywell printers, range is 1 to 200.  For Datamax-O'Neil printers, value is fixed at 25 (for 203-dpi printhead) or 37 (for 300-dpi printhead).
<p3>	Enable human readable interpretation	N - Disable interpretation (default). Y - Enable interpretation.
<p4>	Human-readable interpretation appears above barcode	N - Interpretation does not appear above bar code (default). Y - Interpretation appears above bar code.

## Remarks

The bar code height is fixed at 0.123 inches for all Datamax-O'Neil printers.

# PDF417 Bar Code Parameters (^B7)

Use this command to generate and set parameters for PDF417 bar codes.

## Syntax

`^B7<p1>,<p2>,<p3>,<p4>,<p5>,<p6>`

## Parameters

Parameter	Description	Values
<p1>	Orientation	Default is specified by <a href="#">^FW</a> . Valid values are: N - Normal R - Rotated 90 degrees clockwise I - Rotated 180 degrees clockwise B - Rotated 270 degrees clockwise
<p2>	Individual row height in dots	Range is 1 to label height. Default is specified by <a href="#">^BY</a> .
<p3>	Security level	0 - Error detection only (default). 1 to 8 - Error detection and correction.
<p4>	Encode data column count	Range is 1 to 30. Default is automatically set to result in a 1:2 row-to-column ratio.
<p5>	Encode data row count	Range is 3 to 90. Default is automatically set to result in a 1:2 row-to-column ratio.
<p6>	Enable truncation of right row and stop pattern	N - Disabled (default) Y - Enabled

## Remarks

When specifying both column and row count, (column count)\*(row count) must be less than 928, or no symbol is generated.

If (number of code words) > (column count)\*(row count), no symbol is generated.

[^SN](#) (data serialization) cannot be used with this bar code.

If ^BY sets any default parameters:

- <p1> sets the module width (in dots).
- <p2> has no effect.

For Honeywell printers, certain datasets may result in generation of additional rows or columns.

A bar code using this symbology printed by ZSIM will be no larger than the same bar code printed by ZPL II. Although the ZSIM bar code pattern may be different, the encoded data is identical to the ZPL II equivalent.

# EAN-8 Bar Code Parameters (^B8)

Use this command to generate and set parameters for EAN-8 bar codes.

## Syntax

`^B8<p1>,<p2>,<p3>,<p4>`

## Parameters

Parameter	Description	Values
<p1>	Orientation	Default is specified by <a href="#">^FW</a> . Valid values are: N - Norma R - Rotated 90 degrees clockwise I - Rotated 180 degrees clockwise B - Rotated 270 degrees clockwise
<p2>	Height in dots	Range is 1 to 32000. Default is specified by <a href="#">^BY</a>
<p3>	Enables human-readable interpretation	N - Disable interpretation Y - Enable interpretation (default)
<p4>	Human-readable interpretation appears above barcode.	N - Interpretation does not appear above barcode (default) Y - Interpretation appears above barcode.

## Remarks

"49" is always sent to the printer as the first two non-zero digits when using JAN-8.

[^FD](#) is either padded with zeros or truncated from the left so that it has exactly seven characters.

`^B8` uses a fixed ratio.

# UPC-E Bar Code (^B9)

Command ^B9 generates the UPC-E bar code.

## Syntax

^B9<p1>,<p2>,<p3>,<p4>,<p5>

## Parameters

Parameter	Description	Values
<p1>	Barcode orientation	Default: as specified by ^FW Range: N = Normal R = 90 degrees clock-wise rotation I = 180 degrees clock-wise rotation B = 270 degrees clock-wise rotation
<p2>	Bar code height in dots	Default: as specified by ^BY Range: 1 - 32000
<p3>	Enable interpretation (human readable) field	Default: Y Range: Y = yes N = no
<p4>	Interpretation (human readable) field above bar code	Default: N Range: Y = yes N = no
<p5>	Print check digit	Default: N Range: Y = yes N = no

## Remarks

1. Supports a fixed ratio.
2. Field data length (^FD) must be 10 characters.

## Change Caret (^CC or ~CC)

Use this command to set the prefix for the command format.

### Syntax

`^CC<p1>` or `~CC<p1>`

### Parameters

Parameter	Description	Values
<p1>	Prefix character for commands	Range is any ASCII character. Default is ^

### Remarks

The prefix character must be specified. If omitted, the next character in the data stream is used as the command prefix character.

## Change Delimiter (^CD)

Use this command to set the delimiter character for the command format. The delimiter character separates parameter values in the command.

### Syntax

`^CD<p1>` or `~CD<p1>`

### Parameters

Parameter	Description	Values
<p1>	Delimiter character for commands	Range is any ASCII character. Default is , (comma)

### Remarks

The prefix character must be specified. If omitted, the next character in the data stream is used as the delimiter character.

# Change Alphanumeric Default Font (^CF)

Use this command to set the default font and size.

## Syntax

`^CF<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Font type	Range is A to Z and 0 to 9. Default is A.
<p2>	Font height in dots	Range is 0 to 32000. Default is 9.
<p3>	Font width in dots	Range is 0 to 32000. Default is 5 (or a permanently saved value)

## Remarks

Defining only the height or the width forces the magnification to be proportional to the parameter defined.

If neither value is defined, the last height and width value set by ^CF is used.

# Change International Font/Encoding (^CI)

Use this command to set the character encoding.

## Syntax

`^CI<p1>,<p2>,<p3>,<p4>,<p5>,...<px>`

## Parameters

`<p1>`

Character set. Valid values are listed in the next table.

Value	Description
0	U.S.A. 1 Character Set (Single Byte)
1	U.S.A. 2 Character Set (Single Byte)
2	U.K. Character Set (Single Byte)
3	Holland Character Set (Single Byte)
4	Denmark/Norway Character Set (Single Byte)
5	Sweden/Finland Character Set (Single Byte)
6	Germany Character Set (Single Byte)
7	France 1 Character Set (Single Byte)
8	France 2 Character Set (Single Byte)
9	Italy Character Set (Single Byte)
10	Spain Character Set (Single Byte)
11	Miscellaneous Character Set (Single Byte)
12	Japan (ASCII with Yen symbol) Character (Single Byte) Set
13	ZPL Code Page 850
14	Asian Encodings (Double Byte). See the Remarks for more information.
15	Shift-JIS. See the Remarks for more information.
16	EUC-JP and EUC-CN. See the Remarks for more information.
17	Deprecated. See the Remarks for more information.
18 to 23	Reserved
24	Asian Encodings (Single Byte). See the Remarks for more information.

Value	Description
25	Reserved
26	Asian Encodings with ASCII Transparency (Multibyte). See the Remarks for more information.
27	Special Code Page II
28	Unicode (UTF-8 encoding) - Unicode Character Set
29	Unicode (UTF-16 Big-Endian encoding) - Unicode Character Set
30	Unicode (UTF-16 Little-Endian encoding) - Unicode Character Set
31	ZPL Code Page 1250
33	Code Page 1251
34	Code page 1253
35	Code Page 1254
36	Code Page 1255

<p2>

Output image of the character (Pair1). Range is 0 to 255.

<p3>

Input of the character (Pair1). Range is 0 to 255.

<p4>

Output image of the character (Pair2). Range is 0 to 255.

<p5>

Input of the character (Pair2). Range is 0 to 255.

<px>

Continuation of the pattern. Up to 256 source and destination pairs are supported by this command.

## Remarks

The space character cannot be remapped for any font.

Encoding is controlled by the conversion table (\*.dat). The correct table must be present for the conversion to function.

Shift-JIS encoding converts Shift-JIS to JIS, and then looks up the JIS conversion in JIS.DAT. This table must be present for Shift-JIS to function.

This command supports ASCII transparency for Asian encodings. 7F and less are treated as single-byte characters. 80 to FE are treated as the first byte of a 2-byte character (8000 to FEFF) in the encoding table for Unicode.

^CI17 has been deprecated, along with the ^F8 and ^F16 commands that are required for CI17 to function. Use ^CI28, ^CI29, or ^CI30 instead.

# Change Memory Letter Designation (^CM)

Reallocates a letter designation to the printer memory devices. Existing formats can reallocate the memory device to the corresponding letter without forcing or altering or recreating the format itself. This command affects every subsequent command that refers to specific memory locations.

## Syntax

`^CM<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Memory alias for B	A B: default E R NONE
<p2>	Memory alias for E	A B E: default R NONE
<p3>	Memory alias for R	A B E R: default NONE
<p4>	Memory alias for A	A: default B E R NONE
<p5>	Multiple alias	M No Value

## Remarks

If <p5> (multiple alias) parameter is not used, and if two or more parameters specify the same letter designator, all letter designators are set to their default values.

^JUS is entered after entering the ^CM command to save changes permanently. Any duplicate parameters entered resets the letter designations back to the default.

This command is ignored if any of the parameters are out of specification.

# Cut Now (^CN)

Cycles the media cutter.

## Syntax

^CN<p1>

## Parameters

Parameter	Description	Values
<p1>	Cut mode override	0 - Use the "kiosk cut amount" setting from ^KV 1 - Ignore "kiosk cut amount" setting from ^KV and do a full cut

## Remarks

The ^CN command works only when the printer is in Print Mode Kiosk (^MMk). Otherwise this command has no effect.

This command is ignored if the parameter is missing or invalid.

## Change Tilde (^CT or ~CT)

Use this command to set the control command prefix.

### Syntax

`^CT<p1>` or `~CT<p1>`

### Parameters

Parameter	Description	Values
<p1>	Control command character	Range is any ASCII character. Default is ~

### Remarks

The character must be specified. If omitted, the next character in the data stream is used as the control command prefix character.

# Code Validation (^CV)

Use this command to enable or disable validation of bar code data.

## Syntax

^CV<p1>

## Parameters

Parameter	Description	Values
<p1>	Enable code validation	Y - Code validation enabled N - Code validation not enabled

## Remarks

This command supports these symbologies:

- Interleaved 2 of 5 (B2)
- Code 39 (B3)
- PDF417 (B7)
- Code 128 (BC)
- UPS MaxiCode (BD)
- QR Code (BQ)
- DataMatrix (BX)

Upon detection of invalid data, an error message in the format "INVALID - X" is printed in reverse in place of the bar code, where X is one of the error codes explained in the next table. Only the first error detected is printed if more data errors are detected for one data field.

X	Error Description
C	Character not in character set.
E	Check digit incorrect.
L	Data field too long.
S	Data field too short.
P	Parameter string contains incorrect data or is missing a parameter.

# Font Identifier (^CW)

Assigns a one-character identifier to a downloaded font.

## Syntax

^CW<p1>,<p2>,<p3>,<p4>

## Parameters

Parameter	Description	Values
<p1>	Font ID	Range is A to Z and 0 to 9. By default, a one-character entry is required
<p2>	Device where font is stored	A B E R: default
<p3>	File name of downloaded font	Range is any name up to 8 characters. Default is UNKNOWN
<p4>	File extension	.FNT - Font .TTF - TrueType font .TTE - TrueType extension

## Remarks

If the referenced font does not exist on the printer, ZSIM reverts to the default font. Incoming data may print differently than expected.

## Download Bitmap Font (~DB)

Gets a bitmap font and sets the native cell size, baseline, space size, and copyright.

### Syntax

~DB<p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>,<p8>,<p9>,<p10>,<p11>

### Parameters

Parameter	Description	Values
<p1>	Drive where font is stored	A B E R: default
<p2>	Font name	Range is 1 to 8 alphanumeric characters. Default is UNKNOWN if a name is not specified.
<p3>	Extension	Always set to .FNT
<p4>	Orientation of native font	Always set to normal
<p5>	Maximum height of cell in dots	Range is 1 to 32000. By default, a value must be specified.
<p6>	Maximum width of cell in dots	Range is 1 to 32000. By default, a value must be specified.
<p7>	Distance in dots from top of cell to character baseline	Range is 1 to 32000. By default, a value must be specified.
<p8>	Width in dots of a space or non-existent characters	Range is 1 to 32000. By default, a value must be specified.
<p9>	Number of characters in the font	Range is 1 to 256 and must match the characters being downloaded. By default, a value must be specified.

Parameter	Description	Values
<p10>	Copyright holder	Range is 1 to 63 alphanumeric characters. By default, a value must be specified.
<p11>	Structured ASCII data defining each character in the font	The data structure is <i>#xxxx.h.w.x.y.i.data</i> , where: <i>#xxxx</i> = Character code <i>h</i> = Bitmap height in dot rows <i>w</i> = Bitmap width in dot rows <i>x</i> = x-offset in dots <i>y</i> = y-offset in dots <i>i</i> = Typesetting motion displacement (width including the inter-character gap of a particular character in the font) <i>data</i> = Hexadecimal bitmap description

## Remarks

Parameters <p1> through <p10> define the font. Parameter <p11> is a structured data segment defining each character in the font.

## Download Encoding (^DE)

Downloads translation tables that convert field data from non-Unicode formats to Unicode.

### Syntax

`^DE<p1>,<p2>,<p3>,<p4>,<p5>`

### Parameters

Parameter	Description	Values
<p1>	Drive or device where the table is located	A B E R: default
<p2>	Name of the table	Range is 1 to 8 alphanumeric characters. Default is UNKNOWN if name is not specified
<p3>	Extension of the table	Only value is .DAT
<p4>	Memory size (in bytes) required to hold the downloadable format of the fonts	By default, this command is ignored if <p4> is not specified, or if an incorrect value is specified
<p5>	Data string in ASCII hex values without the leading "0x"	By default, this command is ignored if <p5> is not specified.

### Remarks

In the .DAT file, the first four characters specify the encoding scheme for the font, and the second four characters specify the encoding scheme for the data (the encoding table).

# Download Format (^DF)

Saves ZPL II formatted commands as strings. Use with the Recall Format command ([^XF](#)) to merge with variable data.

## Syntax

`^DF<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Drive or device where the image is to be stored	A B E R: default
<p2>	Name of image being stored	Range is 1 to 8 alphanumeric characters. Default is UNKNOWN if name is not specified
<p3>	Extension of the image	Only valid value is ZPL

## Remarks

References to the formats use the Field Number ([^FN](#)) command to store and to recall later.

Input this command immediately after [^XA](#), as it stores the subsequent commands in the format.

## Download Graphics (~DG)

Downloads an ASCII hex representation of a graphic image.

### Syntax

~DG<p1>,<p2>,<p3>,<p4>,<p5>,<p6>

### Parameters

Parameter	Description	Values
<p1>	Drive or device where the font is to be stored	A B E R: default
<p2>	Name of image being stored	Range is 1 to 8 alphanumeric characters. Default is UNKNOWN if name is not specified
<p3>	Extension	Always set to .GRF
<p4>	Total number of bytes in graphic	To calculate this number, use the formula $(XZ/8)*(YZ)$ , where: X = Width of the graphic in mm Y = Height of the graphic in mm Z = Printhead density of the printer that will print the label in dots/mm
<p5>	Number of bytes per row	To calculate this number, use the formula $(XZ/8)$ , where: X = Width of the graphic in mm Z = Printhead density of the printer that will print the label in dots/mm
<p6>	ASCII hexadecimal string defining the imag	Each character represents a horizontal nibble of four dots.

### Remarks

If multiple graphics with the same name are sent to the printer, the first graphic is erased and replaced by the next graphic.

## Abort Download Graphic (~DN)

Aborts the graphics mode and resumes normal printing.

### Syntax

~DN

### Parameters

None.

### Remarks

The printer returns to normal print mode once it finishes decoding and printing the number of bytes in the graphic (<p4> of the [~DG](#) command).

Send this command to clear ~DG.

To stop a graphic from downloading, abort the transmission from the host device.

# Download Bounded TrueType Font (~DT)

Downloads a TrueType font of less than 256 characters.

## Syntax

~DT<p1>,<p2>,<p3>,<p4>,<p5>

## Parameters

Parameter	Description	Values
<p1>	Drive where the font is to be stored	A B E R: default
<p2>	Font name	Range is 1 to 8 alphanumeric characters. Default is UNKNOWN if a name is not specified.
<p3>	Extension	Always set to .DAT
<p4>	Font size	Set to the number of memory bytes required to hold the Zebra downloadable format of the font. By default, if this value is missing or incorrect, this command is ignored.
<p5>	Data string of ASCII hex values (two hex digits/byte)	The total number of two-digit values must equal <p4>. By default, if this value is missing or incorrect, the command is ignored.

## Remarks

None.

# Download Unbounded TrueType Font (~DU)

Downloads a TrueType font of more than 256 characters.

## Syntax

~DU<p1>,<p2>,<p3>,<p4>,<p5>

## Parameters

Parameter	Description	Values
<p1>	Drive or device where the font is to be stored	A B E R: default
<p2>	Font name	Range is 1 to 8 alphanumeric characters. Default is UNKNOWN if name is not specified
<p3>	Extension	Always set to .FNT
<p4>	Font size	Set to the number of memory bytes required to hold the Zebra downloadable format of the font. By default, if this value is missing or incorrect, this command is ignored.
<p5>	Data string of ASCII hex values (two hex digits/byte)	The total number of two-digit values must equal <p4>. By default, if this value is missing or incorrect, the command is ignored.

## Remarks

None.

# Download Objects (~DY)

Downloads graphic objects or fonts in any supported format. Use this command instead of [^DG](#) for more saving and loading options.

## Syntax

~DB<p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>

## Parameters

Parameter	Description	Values
<p1>	Drive or device where the font is to be stored	A B E R: default
<p2>	File name	Range is 1 to 8 alphanumeric characters. Default is UNKNOWN if name is not specified
<p3>	Format downloaded in data field.	By default, a value must be specified. Valid values are: A - Uncompressed (ZB64, ASCII) B - Uncompressed (.TTE, .TTF, binary) C - AR-compressed P - Portable network graphic (.PNG), ZB64 encoded
<p4>	File extension	B - .BMP (Bitmap) C - .WML (user-defined menu file) G - .GRF (raw bitmap) P - .PNG (store as compressed) T - .TTF (TryeType) or .OTF (OpenType) X - .PCX (Paintbrush) Not supported: E (.TTE), NRD (.NRD), PAC (.PAC), F (.HTM), H (.GET)
<p5>	Total number of bytes in file	For .BMP, PCX, .PNG, and .TTF, this value is the actual size of the file, not the amount of disk space required.  For .GRF images, this value is the actual size of the file after decompression into memory, not the amount of disk space required.

Parameter	Description	Values
<p6>	For .GRF images only,	specify the number of bytes per row. For other image formats, this value is ignored.
<p7>	Data	ASCII hexadecimal or ZB64 if <p3> is set to A or P  Binary if <p3> is set to B or C. When binary data is sent, all control prefixes and flow control characters are ignored until the total number of bytes needed for the graphic format is received.

## Remarks

When transmitting fonts or graphics, if the ~DY command and data content are sent separately, the connection must be maintained with the printer until both the command and data content have been sent. The data indicator on the printer remains lit until the printer receives all the data called for in the ~DY command. When the total number of bytes called out in the ~DY command is received, the download is considered complete.

To get best results, graphic files must be monochrome (black and white), or dithered.

## Erase Download Graphics (~EG)

Erases all the graphic images from memory (label format images and hexadecimal images). This command deletes all user downloaded files present inside the R:, E: and B: memory of the printer.

### Syntax

~EG

### Parameters

None.

### Remarks

To delete only individual graphics, use the ^ID command.

# Select Unicode Encoding (^F)

Allows Unicode encoding selection when [^C17](#) is in use.

## Syntax

`^F<p1>`

## Parameters

Parameter	Description	Values
<p1>	Unicode encoding selection	8 - UTF-8 16 - UTF-16 (default when ^C17 is in use)

## Remarks

None.

# Field Allocate (^FA)

The ^FA command is used to allocate the number of characters for the numbered field.

## Syntax

^FA<p1>

## Parameters

Parameter	Description	Values
<p1>	Indicates the number of characters to be allocated to a numbered field.	0 to 3072 Default value 0

## Remarks

1. ^FA command determines the number of characters to be allocated to a Field Number (^FN).
2. Only the Field Number which also falls between the same two ^FS commands will be affected.
3. If the value specified by <p1> is 0, <p1> is not specified or ^FA is not used, the number of characters allocated to a given field is the maximum of 3072.
4. If multiple ^FA commands are used, the last ^FA command will take effect.

## Field Block (^FB)

Defines a block format in which text is printed.

### Syntax

`^FB<p1>,<p2>,<p3>,<p4>,<p5>`

### Parameters

Parameter	Description	Values
<p1>	(Required) Width of the block in dots.	Range is 0 (default) to the media width. Text is not printed if this value is less than the font width, or unspecified.
<p2>	Maximum number of lines in the text block.	Range is 1 (default) to 9999. Text that exceeds the maximum number of lines overwrites the last line. Changing the font size automatically increases or decreases the block size.
<p3>	Additional line space	Range is -9999 to 9999. Default is 0. Positive values add space and negative values delete space.
<p4>	Text alignment	L - Left (default) C - Center R - Right J - Justified. If this value is specified, the last line is left-justified. Not supported by Honeywell printers.
<p5>	Hanging indentation of the second and subsequent lines, specified in dots	Range is 0 (default) to 9999.

### Remarks

These special functions (escape sequences) listed below can be used within the text in the block:

- `\&` - Carriage return/line feed/new line.
- `\(*)` - Soft hyphen (to break a word with a dash). In order to print the soft hyphen ( - ), place the soft hyphen escape sequence ( `\(*)` ) at the end of the line, or it is ignored. (\*) represents any alphanumeric character. A soft hyphen is automatically printed in the word, at the block edge (right-end) when a word is too long to fit in one line, even though a soft hyphen is not specified. The remainder of the word is in the next line. Hyphen position depends on the word length but not on the syllables in it. Hyphenation can be controlled by using it within a word.
- `\\` - Backslash (`\`). `^CI13` (Change International font/Encoding) command must be selected to print a backslash(`\`).

The Maximum string data length is 3K, including the control characters and escape sequences.

Normal Carriage returns, line feeds and white spaces (between words) at the line breaks are discarded.

While using [^FT](#) (Field Typeset), `^FT` uses the origin of the last possible text line. The increase in the font size causes the text block to increase in size from bottom to top. This could cause a label to print beyond its top margin.

In [^FO](#) (Field Origin), the increase in the font size causes the text block to increase in size from top to bottom.

[^FS](#) (Field Separator) command terminates an `^FB` command. Each block requires its own `^FB` command to be exclusively mentioned again.

While the `^FB` command has a text justification parameter that defines the justification of the text within the block, it also interacts with the justification of `^FO` (Field Origin) and `^FT` (Field Typeset) which defines the justification of the origin.

This command does not support large TrueType fonts exceeding 256 characters.

## Field Clock (^FC)

Sets the clock mode and clock indicators when used with real-time hardware.

### Syntax

`^FC<p1>,<p2>,<p3>`

### Parameters

Parameter	Description	Values
<p1>	Indicator character for primary clock	Range is any ASCII character. Default is %.
<p2>	Indicator character for secondary clock	Range is any ASCII character. Default is none. Must be different from <p1> and <p3>.
<p3>	Indicator character for third clock	Range is any ASCII character. Default is none. Must be different from <p1> and <p2>.

### Remarks

If the real-time clock is not present, ^FC is ignored.

This command works with [^SN](#).

%a, %A, %B, %P, %l, %J, %U, and %W are not supported.

# Field Data (^FD)

Defines the data string to be printed in a field.

## Syntax

`^FD<p1>`

## Parameters

Parameter	Description	Values
<p1>	Data to be printed (for all printers), or the password to be written to an RFID tag (for RFID printers)	Range is any string up to 3072 bytes. Default is nothing (a character string is required).

## Remarks

Fields missing an ^FD command or with an invalid ^FD command are not printed.

Field data can be any printable character except the command prefixes (by default, ^ or ~).

To print ^ or ~, use the [^CD](#) (or ~CD, Change Delimiter) and [^CT](#) (or ~CT, Change Tilde) commands. Either way, the new command prefix cannot be printed.

To print characters with codes above 127, or the ^ and ~ characters, use [^FH](#) (Field Hexadecimal Indicator) and ^FD.

## Field Hexadecimal Indicator (^FH)

Allows the hex value for any character to be entered directly into the [^FD](#) (Field Data) statement.

### Syntax

`^FH<p1>`

### Parameters

Parameter	Description	Values
<p1>	Hexadecimal indicator	Range is any character except the current format and control prefix (^ or ~)

### Remarks

This command can be used with any command that includes field data ([^FD](#), [^FV](#), and [^SN](#)).

This command must be placed at the beginning of each ^FD command using hex values.

The default hex indicator is \_ (underscore). This character must precede each hex value within the ^FD statement.

A minimum of two characters must follow the underscore.

Add <n1> when a different hex indicator is needed.

To print any ASCII value, enter the ASCII code for that value after the underscore character. This applies to all supported font types (such as UTF-8 or UTF-16BE).

# Font Linking (^FL)

Links all TrueType fonts to associated fonts, including private character fonts.

The printer searches the linked fonts for a glyph if the base font does not have the glyph for the required character. The font links can be user-defined, and remain intact until the link is broken or the printer is turned off.

## Syntax

`^FL<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Fully-qualified file name for the extension	In the format: <Memory device><font name>.TTF (for example, D:ARIAL.TTF).  Wildcard characters are not accepted in the format. See the Remarks for more information.
<p2>	File name of the base font(s) associated with <p1>	All files which can be partially or fully wildcarded that match the wildcard specification will be associated with this extension. File name can be different from the file that is in the printer.  Specifying *.TTF results in all *.TTF font files loaded on the printer (current or future) to be related to the specified <p1> font extension.
<p3>	Indicator to link or un-link the extension with the base	Default: An accepted value else it is ignored. Valid values are: 0 - Un-link <p1> from the file(s) specified in <p2>. 1 - Link <p1> to the file(s) specified in <p2>.

## Remarks

A font can be linked to a maximum of five fonts. The printer resident font (O.FNT, usually the last font in the link list) is not counted as one of the five fonts. The resident font can occupy any place in the font link list.

If a glyph cannot be found in the font link list, the default glyph is printed. The default glyph (either a space character or a hollow box) is determined by the ^PA command.

The .TTE extension is not supported.

Only UTF-8 is supported in Honeywell printers.

# Field Number (^FN)

Numbers the data fields in the [^DF](#) (Download Format) and [^XF](#) (Recall Format) commands.

## Syntax

`^FN<p1>,<p2>`

## Parameters

Parameter	Description	Values
<p1>	Number to assign to the field	Range is 0 (default) to 9999
<p2>	Optional parameter that has no effect	

## Remarks

Use this command instead of [^FD](#) (Field Data) in a stored format. To recall a stored format, use ^FN in conjunction with ^FD.

The number of fields and data that can be stored depends on the available printer memory.

The same ^FN value can be saved with several different fields.

If a label format has a field with ^FN and ^FD, data in that field prints for any other field containing the same ^FN value.

If no field definition exists for a field referenced in a passed data stream, the field is ignored and nothing prints.

## Field Origin (^FO)

Sets the position of the next field.

### Syntax

`^FO<p1>,<p2>,<p3>`

### Parameters

Parameter	Description	Values
<p1>	X position in dots	Range is 0 (default) to 32000
<p2>	Y position in dots	Range is 0 (default) to 32000
<p3>	Justification	Default is specified by ^FW. Valid values are: 0 - Left 1 - Right 2 - Auto (may cause unexpected results for variable or bidirectional fields)

### Remarks

The field origin position is defined as the top left corner of the field relative to the home position (specified by ^LH), independent of the rotation.

Large <p1> or <p2> values may position the field outside the label.

The field direction (specified by ^FP) and character rotation (^A) affect the field positioning.

# Field Parameter (^FP)

Allows vertical and reverse formatting of the font field. Generally used for printing Asian fonts.

## Syntax

`^FP<p1>,<p2>`

## Parameters

Parameter	Description	Values
<p1>	Direction	H - Horizontal printing, left-to-right R - Reverse printing, right-to-left V - Vertical printing, top-to-bottom
<p2>	Additional inter-character gap (in dots)	Range is 0 (default if no value is specified) to 9999.

## Remarks

For printing in vertical and reverse directions, combine semantic clusters to place characters.

This command interacts with [^A](#), [^FO](#), and [^FT](#).

## Field Reverse Print (^FR)

Renders a field as an inversion of its background (for example, prints white-on-black instead of black-on-white).

### Syntax

`^FR`

### Parameters

None.

### Remarks

This command applies to only one field and must be called each time the effect is desired.

## Field Separator (^FS)

Indicates the end of the field definition. Use this to separate two fields on the printed label.

### Syntax

^FS

### Parameters

None.

### Remarks

The field separator can also be specified as a single ASCII control code, SI (hex 0F).

## Field Typeset (^FT)

Sets the field origin relative to the label home position set by Label Home (^LH). The typesetting origin of the field does not change with rotation.

### Syntax

`^FT<p1>,<p2>,<p3>`

### Parameters

Parameter	Description	Values
<p1>	X-axis position in dots	Range is 0 to 32000. Default is the position after the last formatted text field.
<p2>	Y-axis position in dots	Range is 0 to 32000. Default is the position after the last formatted text field.

Parameter	Description	Values
<p3>	Justification	<p>0 - Left justification</p> <ul style="list-style-type: none"> <li>• Text starts from the origin, at the left edge.</li> <li>• Bar code origin is the base of the bar code, at the left edge.</li> <li>• Graphic box origin is at the bottom-left corner of the box.</li> <li>• Image origin is at the bottom-left corner of the image area.</li> </ul> <p>1 - Right justification:</p> <ul style="list-style-type: none"> <li>• Text starts from the origin, at the right edge.</li> <li>• Bar code origin is the base of the bar code, at the right edge.</li> <li>• Graphic box origin is at the bottom-left corner of the box.</li> <li>• Image origin is at the bottom-right corner of the image area.</li> </ul> <p>2 - Auto justification (depends on script). This value can cause unexpected results when used with variable fields or bidirectional text.</p>

## Remarks

^FT interacts with [^FP](#) (Field Parameter) and [^A](#) (rotation).

This command is capable of field concatenation.

The position following the last formatted field is assumed if a coordinate is missing, which simplifies field positioning with respect to other fields. When the first field is positioned, subsequent fields automatically follow.

Using ^FT without parameters <p1> or <p2> is not recommended:

- when positioning the first field in a label format.
- at any time with [^FN](#).
- following [^SN](#).
- for variable data or bidirectional text.

## Field Variable (^FV)

Specifies field data to be printed. Use this instead of [^FD](#) (Field Data) for variable fields.

## Syntax

`^FV<p1>`

## Parameters

Parameter	Description	Values
<p1>	Variable field data to be printed	Range is a string of 0 to 3072 bytes. By default, this command is ignored if no string is specified.

## Remarks

^FV fields are cleared each time the label is printed.

# Field Orientation (^FW)

Sets the default orientation and justification for all commands using those parameters.

## Syntax

`^FW<p1>,<p2>`

## Parameters

Parameter	Description	Values
<p1>	Rotate field	Works in conjunction with <a href="#">^FO</a> . Valid values are: N - Normal (initial value when the printer is turned on) R - 90 degrees clockwise rotation I - 180 degrees clockwise rotation B - 270 degrees clockwise rotation
<p2>	Justification	0 - Left Justification (default) 1 - Right Justification 2 - Auto justification (depends on script)

<p2>

Justification. Valid values are:

0 - Left justification (default)

1 - Right justification

2 - Auto justification (depends on script)

## Remarks

This command only affects subsequent fields. The ^FW setting is retained between print jobs, and is reset only when the printer is restarted or when a new ^FW is issued.

Fields using AON print the field in normal rotation.

If there is no rotation specified for a field, the field uses the rotation specified by this command.

If there is no justification specified for a field, the field uses the justification specified by this command.

## Comment (^FX)

Adds non-printing comments or statements within a label format.

## Syntax

`^FX<p1>`

## Parameters

Parameter	Description	Values
<p1>	Non-printing comment	Range is a string of any characters except the command delimiter (^ or ~)

## Remarks

Data after ^FX up to the next command delimiter (^ or ~) is ignored by the printer, and has no effect on the label format. ^FX should be terminated by [^FS](#).

# Graphic Box (^GB)

Draws boxes and lines in a label format.

## Syntax

`^GB<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Width of the box in dots	Range is <p3> to 32000. Default is <p3> or 1
<p2>	Height of the box in dots	Range is <p3> to 32000. Default is <p3> or 1
<p3>	Thickness of the border in dots	Range is 1 (default) to 32000.
<p4>	Line color	B - Black (default) W - White
<p5>	Degree of corner rounding	Range is 0 (default - corner is a right angle) to 8 (heaviest rounding).

## Remarks

If the width and height are not specified, a solid box with width = <p3> and height = <p3> is printed.

The roundness-index determines the rounding-radius for each box. Rounding-radius =  $(\text{<p5>/8}) * (\text{shortest side}/2)$ .

## Graphic Circle (^GC)

Draws circles in a label format.

### Syntax

`^GC<p1>,<p2>,<p3>,<p4>,<p5>`

### Parameters

Parameter	Description	Values
<p1>	Diameter of the circle in dots	Range is 3 (default) to 4095. Values larger than 4095 result in a diameter of 4095.
<p2>	Thickness of the border in dots	Range is 2 to 4095. Default is 1. This distance extends inward starting from the outline.
<p3>	Line color	B - Black (default) W - White

### Remarks

None.

# Graphic Diagonal Line (^GD)

Draws a diagonal line in an imagined box in a label format.

## Syntax

`^GD<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Width of the box in dots	Range is <p3> to 32000. Default is <p3> or 3
<p2>	Height of the box in dots	Range is <p3> to 32000. Default is <p3> or 3
<p3>	Thickness of the border in dots	Range is 1 (default) to 32000.
<p4>	Line color	B - Black (default) W - White
<p5>	Direction of the diagonal	R - Diagonal is drawn from lower-left to upper-right (default) L - Diagonal is drawn from upper-left to lower-right

## Remarks

None.

# Graphic Ellipse (^GE)

Draws ellipses in a label format.

## Syntax

`^GE<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Width of the ellipse in dots	Range is 3 to 4095. Values larger than 4095 result in a diameter of 4095. Default is <p3> or 1.
<p2>	Height of the ellipse in dots	Range is 3 to 4095. Default is <p3> or 1
<p3>	Thickness of the border in dots	Range is 2 to 4095. Default is 1. This distance extends inward starting from the outline
<p4>	Line color	B - Black (default) W - White

## Remarks

None.

# Graphic Field (^GF)

Downloads graphic field data directly into the bitmap storage area on the printer. The graphic field follows the conventions for any other field, including [^FW](#).

## Syntax

`^GF<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Compression type	Valid values are: A (default) - ASCII hexadecimal. Follows the format for other download commands. B - Binary. Data sent after <p3> is strictly binary. C - Compressed binary. Data sent after <p3> is in compressed binary format. Data is compressed on the host side using the standard compression algorithm. The data is then decompressed and placed directly into the bitmap
<p2>	Binary byte count: the total number of bytes to be transmitted for the total image, or the total number of bytes following <p4>	Range is 1 to 99999. By default, if no value is specified the command is ignored. This parameter should match <p3> for ASCII downloads. Out-of-range values are set to the nearest limit.
<p3>	Graphic field count: the total number of bytes making up the graphic format (width * height), and sent as <p4>.	This count divided by the number of bytes per row gives the number of lines in the image. This number represents the image size, but not necessarily the size of the data stream.
<p4>	Bytes per row: the number of bytes in the downloaded data that make up one row of the image.	Range is 1 to 99999. By default, if no value is specified, this command is ignored
<p5>	A string of ASCII hexadecimal numbers, two digits per image byte	Range is 00 to FF

## Remarks

For <p5>, for readability CR and LF can be inserted as needed. The number of two-digit pairs must match <p3>. Any numbers sent after the count is satisfied are ignored.

A comma in the data pads the current line with 00 (a white space), minimizing the data sent. [~DN](#) (or ^ or ~) stops the download.

For binary data, the host sends the binary data. All control prefixes are ignored until the total number of bytes needed for the graphic format is sent successfully.

# Graphic Symbol (^GS)

Enables printing of specific symbols, including the trademark, registered trademark, copyright, Underwriters Laboratories Approval, or Canadian Standards Association Approval symbols.

## Syntax

`^GS<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Field orientation	Valid values are: N - No rotation R - 90 degrees clockwise rotation I - 180 degrees clockwise rotation B - 270 degrees clockwise rotation
<p2>	Character height proportional to width (in dots)	Range is 0 to 32000. Default is the last ^CF value
<p3>	Character height proportional to width (in dots)	Range is 0 to 32000. Default is the last ^CF value

## Remarks

To print one of the available symbols, call ^GS followed by [^FD](#) and the desired character, where:

- A - Registered trademark (®)
- B - Copyright symbol (©)
- C - Trademark (™)
- D - Underwriters Laboratories approval
- E - Canadian Standards Association approval

## Host Format (^HF)

Sends stored formats to the host.

### Syntax

`^HF<p1>,<p2>,<p3>`

### Parameters

Parameter	Description	Values
<p1>	Device to recall image	A B E R: default
<p2>	Image name	Range is 1 to 8 alphanumeric characters. Default is UNKNOWN if the name is not specified.
<p3>	Extension	Always set to .ZPL

### Remarks

None.

# Configuration Label Return (^HH)

Echoes back the printer configuration to the host.

## Syntax

`^HH`

## Parameters

None.

## Remarks

1. For D-O printers return the native printer configuration label.
2. For Honeywell printers, return the basic configuration parameters in the printer configuration label.

## Host Identification (~HI)

This command is sent from the host to retrieve information from the printer. The printer responds with information on the model, software version, dots-per-millimeter setting, memory size and any detected options.

### Syntax

~HI

### Parameters

None.

### Remarks

When the printer receives ~HI command, it returns P,V,D,M,O, where:

- P - Printer model. For example:
  - PM43-203DPI (Honeywell printers)
  - Model IDS I and E Models (Datamax-O'Neil printers)
- V - Software version. For example:
  - Honeywell printers: P10.10.010851
  - Datamax-O'Neil printers: Native version strings, as in 9.05.0003 (for E-Class Mark III) or 10.05\_0003 (for I-Class Mark II)
- D - Dots/mm (6, 8, 12, or 24 dots/mm print heads)
- M - Total amount of RAM memory.
- O - Recognizable options, such as a cutter.

For example, if a PM43 printer has a configured model name of "PM43-203DPI", its software version is set to "P10.11.011300MN", it has a 203dpi print head, 128MB of RAM and a cutter is installed, ~HI returns:

```
PM43-203DPI,P10.11.011300MN,8,125300KB,CUTTER DETECTED
```

Do not put a comma in the model name field to avoid problems parsing the output of this command.

## Host RAM Status (~HM)

The ~HM command is used to return a memory status to the host.

### Syntax

~HM

### Remarks

When the printer receives ~HM command, it returns :- M1,M2,M3

where

- M1 = Total RAM (in kilobytes) installed in the printer.
- M2 = Total RAM (in kilobytes) available to the user.
- M3 = Amount of RAM (in kilobytes) currently available to the user.

## Host Query (~HQ)

The ~HQ command group causes the printer to send information back to the host.

### Syntax

^HQ<p1>

### Parameters

Parameter	Description	Values
<p1>	Query-type	Accepted Values: ES = requests the printer's status HA = hardware address of the internal wired print server JT = requests a summary of the printer's printhead test results MA = maintenance alert settings MI = maintenance information OD = odometer PH = printhead life history PP = printer's Plug and Play string SN = printer's serial number UI = USB product ID and BCD release version(Device release number in binary coded decimal format) Default Value: must be an accepted value or the command is ignored.

### Output response for ES query:

#### Printer Status

**ERRORS:** <error flag> <e16 to e9> <e8 to e1>

**WARNINGS:** <warning flag> <w16 to w9> <w8 to w1>

Parameter	Description
<error flag>	0 if there is no error 1 if there is any error
<e16> to <e9>	8 zeros (00000000)
<e8> to <e4>	5 zeros (00000)
<e3>	2 if Printhead thermistor is open 0 if Printhead thermistor is closed
<e2>	8 if Printhead is not detected 4 If there is a faulty dot in print head or printhead is removed 2 If motor is too hot 1 If Printhead is too hot 0 if none of above errors exist. If at any time more than one of above errors is present, <e2> will be the sum of the error values.
<e1>	8 If cutter is jammed 4 If Printhead is lifted 2 If Ribbon is out 1 If Media is out 0 If none of above errors exist If at any time more than one of above errors is present, <e1> will be the sum of the error values.
<warning flag>	0 if there is no warning 1 if there is any warning .
<w16 to w9>	8 zeros (00000000)
<w8 to w3>	5 zeros (00000)
<w2>	8 4 2 1 0 If none of above warnings exist If more than one of above warnings exists, <w1> will be the sum of existing warning values.
<w1>	8 If paper is near end sensor 4 Replace print head (If enabled using ^MA command) 2 Clean Printhead (If enabled using ^MA) 1 Need to calibrate media. 0 If none of above warnings exist If more than one of above warnings exists, <w1> will be the sum of existing warning values.

## MAC Address

<12 digit Ethernet MAC address>

Parameter	Description
<12 digit Ethernet MAC address>	Six groups of two hexadecimal digits separated by colons ( : (ASCII value is 58)) (e.g. 01:23:45:67:89:ab)

### Output response for JT query:

#### Head Test Results

<r1><r2><r3><r4><r5>

Parameter	Description
<r1>	0 if no element is failed. 1 if any element is failed.
<r2>	M If Range of test elements is set manually using ^JT command A If Range of test elements is not set manually using ^JT command.
<r3>	First test element set using ^JT command (4 digits)
<r4>	Last test element set using ^JT command (4 digits)
<r5>	Number of test elements failed (4 digits)

### Output response for MA query:

#### Maintenance Alert Settings

Head Replacement Interval: <m1> <u>

Head Replacement Frequency: <m2> <u>

Head Cleaning Interval: <m3> <u>

Head Cleaning Frequency: <m4> <u>

PRINT Replacement Alert: <m5>

PRINT Cleaning Alert: <m6>

Units: <m7>

Parameter	Description
<m1>	Head replacement interval set using ^MA command (interval specify the value which is set using ^MA command) .
<m2>	Head replacement frequency set using ^MA command (frequency specify the value which is set using ^MA command).
<m3>	Head cleaning interval set using ^MA command (interval specify the value which is set using ^MA command)
<m4>	Head cleaning frequency set using ^MA command (frequency specify the value which is set using ^MA command)
<u>	"If units set by ^MA command is Inches (" is a true double quote which is ASCII 34) cm if units set by ^MA command is Centimeters M if units set by ^MA command is Meters.
<m5>	YES if replacement alert is enabled using ^MA command NO if replacement alert is disabled using ^MA command )
<m6>	YES if cleaning alert is enabled using ^MA command NO if cleaning alert is disabled using ^MA command
<m7>	C If units is set by ^MA command is Centimeters I If units is set by ^MA command is Inches M If units is set by ^MA command is Meters

### Output response for MI query:

#### Maintenance Alert Messages

Clean: <message1>

Replace: <message2>

Message	Description
<message1>	Message set by ^MI command to clean print head.
<message2>	Message set by ^MI command to replace print head.

### Output response for OD query:

#### Print Meters

Odometer (Printer): <od1> <u>

Odometer (Printhead): <od2> <u>

Odometer (User Resettable): <od3> <u>

Parameter	Description
<od1>	Printer Odometer reading.
<od2>	Printhead odometer reading.
<od3>	User resettable odometer reading.
<u>	" if units set by ^MA command is Inches ( " is a true double quote which is ASCII 34) cm if units set by ^MA command is Centimeters M if units set by ^MA command is Meters

### Output response for PH query:

#### Last Cleaned:

<od1> <u>

Head Life History  
# Distance

1: <od2> <u>

Parameter	Description
<od1>	Odometer reading since last cleaned.
<u>	" if units set by ^MA command is Inches ( " is a true double quote which is ASCII 34) cm if units set by ^MA command is Centimeters M if units set by ^MA command is Meters

### Output response for PP query:

#### Plug and Play Messages

MFG: Honeywell International

CMD: ZSIM

MDL: <Printer model>

Parameter	Description
<printer model>	Model ID of corresponding printer.

## Output response for SN query:

### Serial Number

<snnumber>

Parameter	Description
<snnumber>	Unique Serial Number of Printer

## Output response for UI query:

### USB Information

PID: <pid>

Release Version: <rv>

Parameter	Description
<pid>	Product ID of printer's USB
<rv>	Device release number specified by USB device manufacturer in Binary Coded Decimal format

## Remarks

1. The parameters SN, ES, HA, PP are supported.
2. For the parameter ES, the following errors and warnings are supported.
3. For unsupported parameters, the response is nothing, means nothing is displayed over terminal which is same as that of a wrong/unsupported command is sent.

## Errors

Error Flags
No Error
Printhead Thermistor Open
Printhead Detection Error
Bad Printhead Element
Motor Over Temperature
Printhead Over Temperature
Cutter Fault
Head Open
Ribbon Out
Media Out

## Warnings

Warning Flags
No Warning
Need to Calibrate Media

# Host Status Return (~HS)

Obtains three data strings from the printer, starting with an <STX> control code and ending with an <ETX><CR><LF> control code sequence. All are printed on separate lines.

## Syntax

~HS

## Parameters

None.

## Response - String 1

<STX><p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>,<p8>,<p9>,<p10>,<p11>,<p12><ETX><CR><LF>

<p1>

A three-digit decimal representation of a binary number, specifying printer baud rate, number of data bits, parity setting, and handshaking. To evaluate this number, convert the decimal to a binary number:

<p1> = b8b7b6b5b4b3b2b1b0

Bit	Description	Values
b7		0 = Xon/Xoff 1 = DTR
b6	Parity Odd/Even	0 = Odd 1 = Even
b5	Disable/Enable	0 = Disable 1 = Enable
b4	Stop Bits	0 = 2 bits 1 = 1 bit
b3	Data Bits	0 = 7 bits 1 = 8 bits

Bit	Description	Values
b8b2b1b0	Baudrate	0 000 = 110 0 001 = 300 0 010 = 600 0 011 = 1200 0 100 = 2400 0 101 = 4800 0 110 = 9600 0 111 = 19200 1 000 = 28800 1 001 = 38400 1 010 = 57600 1 011 = 14400

<p2>

Paper out flag. 1 ASCII character (1 = Paper out).

<p3>

Paper flag. 1 ASCII character (1 = Pause active).

<p4>

Label length. 4 ASCII characters representing the value in dots.

<p5>

Number of formats in receive buffer. 3 ASCII characters. Not supported by Honeywell printers.

<p6>

Not used. Always 0.

<p7>

Not used. Always 0.

<p8>

Partial format flag. 1 ASCII character (1 = Partial format in progress). Not supported by Honeywell printers.

<p9>

Not used. Always 000.

<p10>

Not used. Always 0.

<p11>

Not used. Always 0.

<p12>

Not used. Always 0.

## Response - String 2

<STX><p13>,<p14>,<p15>,<p16>,<p17>,<p18>,<p19>,<p20>,<p21>,<p22>,<p23><ETX>  
<CR><LF>

<p13>

Function settings. 3 ASCII characters as defined next:

<p13> = f7f6f5f4f3f2f1f0

Bit	Description	Values
f7	Media type	0 = Die-cut 1 = Continuous
f6	Not used	Not applicable
f5	Not used	Not applicable
f4f3f2f1	Not used	Not applicable
f0	Print mode	0 = Direct thermal 1 = Thermal transfer

<p14>

Not used. Always 0.

<p15>

Head up flag. 1 ASCII character (1 = Head in "up" position).

<p16>

Ribbon out flag. 1 ASCII character (1 = Out of ribbon).

<p17>

Thermal transfer mode. 1 ASCII character (1 = Thermal transfer mode selected).

<p18>

Print mode. 1 ASCII character:

- 0 - Rewind
- 1 - Peel-off
- 2 - Tear-off (always this value for Datamax-O'Neil printers)
- 3 - Cutter

<p19>

Not used. Always 5.

<p20>

Not used. Always 0.

<p21>

Not used. Always 00000000.

<p22>

Not used. Always 1.

<p23>

Number of graphic images stored in memory. 3 ASCII characters.

## Response - String 3

<STX><p24>,<p25><ETX><CR><LF>

<p24>

Password. 4 ASCII characters. Always 0000 for Honeywell printers.

<p25>

Not used. Always 0.

## Remarks

The printer will not respond if it is in one of the following states:

- Head over-temperature
- Rewinder full
- Head open
- Ribbon out
- Media out

If multiple ~HS commands are inside a data stream sent to printer, the printer responds only once.

### Example 1:

```
~HS
^XA
^FO50,50^FDTEST^FS
^XZ
```

The printer responds one time.

### Example 2:

```
~HS
^XA
^FO50,50^FDTEST^FS
^XZ
~HS
```

The printer responds one time.

Example 3:

```
~HS~HS~HS~HS
^XA
```

^FO50,50^FDTEST^FS

^XZ

~HS

The printer responds one time as well.

# Host Linked Fonts List (^HT)

Returns the full list of font links.

## Syntax

^HT

## Parameters

None.

## Remarks

To run this command, Send ^HT as part of a label job. Syntax is:

```
^XA  
^HT  
^XZ
```

For example, if the base font is ARIAL.TTF, the first linked font is TIMES.TTF, and the second linked font is COURIER.TTF, the returned text should be:

```
LIST OF FONT LINKS  
F: ARIAL.TTF  
F: TIMES.TTF  
F: COURIER.TTF
```

# Host Verification (^HV)

Use this command to return data from specified fields along with an optional ASCII header to the host computer.

## Syntax

`^HV<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Field number specified with other Field number commands like ^FN, ^RI, ^RT.	0 to 9999 Default: 0
<p2>	Number of bytes of field data to be returned.	1 to 256 Default: 64
<p3>	Header string to be returned with data. This field is Field Hex (^FH) capable.	0 to 3072 bytes. Default: No header.
<p4>	Trailer string to be returned with data. This field is Field Hex (^FH) capable.	0 to 3072 bytes. Default: No header.
<p5>	Specifies if the command should be applied to each label format or one for every label printed when print quantity is greater than 1.	F - Applies to each format. L - Applies to each label printed. Default: F

## Remarks

^HV (Host Verification) command returns data from specified fields to the host computer along with an optional ASCII header and trailer. This command applies to any field which has been assigned a number using ^FN, ^RI, ^RT or other field numbering commands.

## Host Directory List (^HW)

The ^HW command is used by the host to retrieve a directory listing objects in a specific memory area. This command is sent from the host to the printer. This command returns a formatted ASCII string of object names to the host.

### Syntax

^HW<p1>:<p2>.<p3>

### Parameters

Parameter	Description	Values
<p1>	Source Device	Default: R: Range: R:, E:, B:, A:, Z:
<p2>	Object Name	Default: * (Use of a "?" is also allowed) Range: 1 - 8 alphanumeric characters
<p3>	Extension	Default: * (Use of a "?" is also allowed) Range: any extension conforming to Zebra conventions

### Remarks

None.

# Display Description Information (^HZ)

The ^HZ command returns printer description information in XML format.

## Syntax

^HZ<p1>

^HZO<p1>:<p2>.<p3>,<p4>

## Parameters

Parameter	Description	Values
<p1>	Display Information	Default: Ignore the command if no value or invalid value is input Range: a = all information f = printer format setting information l = directory listing information o = individual object data information r = printer status

Parameter	Description	Values
<p1>	Source Device (Optional)	Default: R: Range: R:, E:, B:, A:, Z:
<p2>	Object Name (Optional)	Default: if a name is not specified, UNKNOWN is used. Range: 1 - 8 or or 1 to 16 alphanumeric characters based on <p4>
<p3>	Extension (Optional)	Range: .FNT = font .ZPL = stored ZPL format .GRF = GRF graphic .DAT = font encoding .STO = data storage .PNG = PNG graphic .ZOB = downloadable object

Parameter	Description	Values
<p4>	Long filename enabled	Default: N Range: Y = Yes N = No

## Remarks

None.

# Object Delete (^ID)

Deletes objects, graphics, fonts, and stored formats from printer storage areas either individually or in groups.

## Syntax

`^ID<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Location of the stored object	A B E R: default
<p2>	Name of the object to delete	Range is a string of 1 to 8 characters. Default is UNKNOWN (if nothing is specified).
<p3>	Extension	Range is any extension complying with conventions of the language. Default is .GRF.

## Remarks

Use the asterisk character (\*) as a wild card to delete groups of objects.

## Image Load (^IL)

Loads a stored image of a format, allowing the addition of more objects. The loaded image is positioned at [^FOO,0](#).

### Syntax

`^IL<p1>,<p2>,<p3>`

### Parameters

Parameter	Description	Values
<p1>	Location of the stored object	A B E R: default
<p2>	Name of the object to delete	Range is a string of 1 to 8 characters. Default is UNKNOWN (if nothing is specified).
<p3>	Extension	.GRF .PNG

### Remarks

None.

# Image Move (^IM)

Loads an image from the printer storage area into the bitmap.

## Syntax

`^IM<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Location of the stored image	A B E R: default
<p2>	Name of the image to load	Range is a string of 1 to 8 characters. Default is UNKNOWN (if nothing is specified).
<p3>	Extension	.GRF .PNG

<p2>

Name of the image to load. Range is a string of 1 to 8 characters. Default is UNKNOWN (if nothing is specified).

<p3>

Extension. Valid values are:

- .GRF
- .PNG

## Remarks

None.

# Image Save (^IS)

Saves a format as an image.

## Syntax

^IS<p1>,<p2>,<p3>,<p4>

## Parameters

Parameter	Description	Values
<p1>	Location of the stored object	A B E R: default
<p2>	Name of the object	Range is a string of 1 to 8 characters. Default is UNKNOWN (if nothing is specified).
<p3>	Extension	.GRF .PNG
<p4>	Prints the image after storing	N - Do not print the image Y - Print the image (default)

## Remarks

None.

## Cancel All (~JA)

Cancels processing of all commands in the buffer as well as any batches that are printing.

### Syntax

~JA

### Parameters

None.

### Remarks

Once the current label is finished printing, the printer stops. This command clears all internal buffers of all data before ~JA in the input buffer, and turns off the Data LED. The printer does not scan the rest of the buffer for additional ~JA commands.

## Set Media Sensor Calibration (~JC)

Use this command for label length measurement, or to adjust the media and ribbon sensor values.

### Syntax

~JC

### Parameters

None.

### Remarks

Only the media and ribbon sensors are calibrated when the printer is in continuous mode.

# Set Battery Condition (~JF)

The ~JF command controls printer behavior in battery low condition. There are two levels of battery voltage. When the battery voltage goes below the first level printer issues a warning, but the printer continues its printing work. Similarly, if printing continues and battery voltage reaches second level then printer again issues a warning, and this time printing automatically pauses.

## Syntax

^JF<p1>

## Parameters

Parameter	Description	Values
<p1>	Pause on low voltage	Default : Y Range : Y = Pause N = Do not pause

## Remarks:

1. The ~JF command is ignored by the printer, if it is not equipped with any battery.
2. When pause on low voltage is active (~JFY) and the battery voltage level falls below the second low voltage level, printing pauses and issues an warning. In this situation FEED button can be used for printing on a label-by-label basis.
3. When pause on low voltage is not active (~JFN), and the battery voltage level falls below the second low voltage level, printing continues and no warning is issued. But there are chances of losing the label information which can cause the printer to stop operating.

# Set Auxiliary Port (^JJ)

The ^JJ command is used to regulate an online verifier or applicator device.

## Syntax

^JJ<p1>,<p2>,<p3>,<p4>,<p5>,<p6>

## Parameters

Parameter	Description	Values
<p1>	Operational mode for auxiliary port	Default: 0 Range: 0 = OFF  1 = Reprint on error (The printer shows an verification error and stops on a label. The label reprints (if ^JZ is set to reprint) after pressing the PAUSE button. If a bar code is present near to the upper edge of a label, the label feeds out to an extent where the bar code can be verified and then back-feeds to allow the next label to be printed and verified.) 2 = Maximum throughput (Once a verification error is detected, the printer stops. It starts printing the next label while the verifier is still verifying the previous label. This mode provides maximum throughput, but it does not stops the printer immediately on a label with a verification error.)

Parameter	Description	Values
<p2>	Application mode	Default: 0 Range: 0 = OFF 1 = End Print signal normally high, and low only when the printer is moving the label forward. 2 = End Print signal normally low, and high only when the printer is moving the label forward. 3 = End Print signal normally high, and low for 20 ms when a label has been printed and positioned. 4 = End Print signal normally low, and high for 20 ms when a label has been printed and positioned.
<p3>	Application mode start signal print	Default: 0 Range: p = Pulse Mode(Start Print signal must be removed before it is applied for the next label.) l = Level Mode(Start Print signal does not need to be removed to print the next label. As long as the Start Print signal is low and a label is formatted, a label gets printed.)
<p4>	Application label error mode	Default: f Range: e = Error mode (The printer will assert the Service Required signal (svce_req-pin 10) on the application port, then enter into Pause Mode and will display an error message on the LCD.) f = Feed Mode(When the web is not found where expected, a blank label will be printed to sync the printer to the media.)

Parameter	Description	Values
<p5>	Reprint mode	Default: d Range: e = Enabled (on assertion of the signal, the last label will be reprinted. If canceled, the label to be reprinted is also canceled. More memory is consumed in this case.) d = Disabled(The printer ignores the reprint signal.)
<p6>	Ribbon low mode	Default: e Range: e = Enabled (When the printer sense ribbon is going to run out, it issues a warning.) d = Disabled(No warning is issued which will indicate the ribbon low condition.)

## Remarks

None.

## Delayed Cut (~JK)

Cuts a label when the printer is in Delayed Cut print mode.

### Syntax

~JK

### Parameters

None.

### Remarks

The ~JK command only works if:

- Print Mode is set to Delayed Cut.
- there is a label waiting to be cut.
- the printer is in an idle state (that is, sufficient time has elapsed since the last print job).

The ~JK command will not work if it is within or immediately outside the ^XA/^XZ format in a script.

## Set Label Length (~JL)

The ~JL command is used to set the label length.

### Syntax

~JL

### Parameters

None.

### Remarks

None.

# Set Dots per Millimeter (^JM)

Decreases the density of the printed output, and doubles the format size of the label when issued to the printer. For example, if the printer normally prints at 16 dots/mm, this command changes that value to 8 dots/mm.

## Syntax

^JM<p1>

## Parameters

Parameter	Description	Values
<p1>	Sets the dots per millimeter for printing. The new dot value depends on the printhead type.	A - Sets the normal value for the printhead: 16 dots/mm, 12 dots/mm, or 8 dots/mm (default). B - Changes the density to half the normal value: 8 dots/mm, 6 dots/mm, or 4 dots/mm.

## Remarks

This command also affects the field origin placement ([^FO](#)) on the label.

Enter this command before the first [^FS](#) in a format. This command remains in effect when called.

The UPS MaxiCode is out of specification if ^JMB is called.

## Pause and Cancel Format (~JP)

The ~JP command clears the format currently being processed and places the printer into Pause Mode.

### Syntax

~JP

### Parameters

None.

### Remarks

None.

## Power On Reset (~JR)

Performs a power-on initialization: resets the firmware and communication parameters, restores default settings, and clears the buffer.

### Syntax

~JR

### Parameters

None.

## Change Backfeed Sequence (~JS)

Controls the backfeed sequence. This command can be used on printers with or without built-in cutters.

### Syntax

~JS<p1>

### Parameters

Parameter	Description	Values
<p1>	Backfeed order in relation to printing	A or N - 90% backfeed after printing and cutting, and 10% backfeed on the next label. Default is N. B - No backfeed after printing and cutting, but 100% backfeed before printing the next label. O - No backfeed at all. Range of 10 to 90, representing the percentage of backfeed to perform. Value must be a multiple of 10. Values not divisible by 10 are rounded to the nearest acceptable value.

### Remarks

The ~JS command sets the rest point of the cut edge of continuous media, and provides immediate backfeed after peel-off when the printer is used in a print and apply application configuration. The command stays in effect until:

- the printer is turned off, or
- a new ~JS command is sent, or
- the control panel setting is changed. The current control panel setting for the backfeed sequence is overridden when a new ~JS command is encountered.

Printers operating in "Rewind Mode" do not backfeed at all. After a label prints, the leading edge of the next label is placed at the print line, eliminating the need for backfeed and without introducing a non-printable

area at the leading edge or bottom of the label. The printed label cannot be taken from the printer because the label is not fed out from under the printhead. If the printer runs in another mode with backfeed turned off, the label can be removed, eliminating the time-reduction of the backfeed sequence.

When using a specific value, the difference between the value entered and 100 percent is calculated before the next label is printed. For example, a value of 40 means 40 percent of the backfeed takes place after the label is cut or removed. The remaining 60 percent takes place before the next label is printed.

The value for this command is also reflected in the Backfeed parameter on the printer configuration label.

## Reprint After Error (^JZ)

Determines whether the printer reprints an improperly or partially printed label caused by a Ribbon Out, Media Out, or Head Open error condition.

### Syntax

^JZ<p1>

### Parameters

Parameter	Description	Values
<p1>	Sets the reprint after error state	N - Do not reprint Y - Reprint the label (default - initial value when the printer is turned on)

### Remarks

When enabled, the label is reprinted as soon as the error condition is rectified.

This setting is active until the printer is restarted, or until the next ^JZ command. If ^JZ changes, only labels printed after the change are affected.

^JZ is ignored if <p1> is missing or incorrect.

# Kiosk Values (^KV)

Sets several parameters that affect printer operations when Print mode is "Kiosk."

## Syntax

`^KV<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Kiosk cut amount	0 - Full cut (default) 10 to 60 - Partial cut
<p2>	Kiosk cut margin	This value is not supported, and any specified value is ignored
<p3>	Kiosk present type	This value is not supported, and any specified value is ignored
<p4>	Kiosk present timeout	This value is not supported, and any specified value is ignored
<p5>	Presenter loop length	This value is not supported, and any specified value is ignored

## Remarks

Only <p1> is supported, and other parameters are ignored.

Partial cut has a fixed value and is supported on the Honeywell PC and PD series printers.

The I-Class printer does not support partial cut.

## List Font Links (^LF)

Prints a list of linked fonts in the printer.

### Syntax

^LF

### Parameters

None.

### Remarks

To run this command, Send ^LF as part of a label job. Syntax is:

```
^XA  
^LF  
^XZ
```

For example, if the base font is ARIAL.TTF, the first linked font is TIMES.TTF, and the second linked font is COURIER.TTF, the returned text should be:

For Honeywell printers:

```
LIST OF FONT LINKS  
F: ARIAL.TTF  
- F: TIMES.TTF  
- F: COURIER.TTF
```

For Datamax-O'Neil printers:

```
LIST OF FONT LINKS  
F: ARIAL.TTF  
F: TIMES.TTF  
F: COURIER.TTF
```

# Label Home (^LH)

Sets the label home position.

## Syntax

`^LH<p1>,<p2>`

## Parameters

Parameter	Description	Values
<p1>	X-axis position in dot	Range is 0 to 32000. Default is 0 (initial value when the printer is turned on), or the most recent permanently saved value.
<p2>	Y-axis position in dots	Range is 0 to 32000. Default is 0 (initial value when the printer is turned on), or the most recent permanently saved value.

## Remarks

Use the values in this table to calculate the desired X-axis and Y-axis positions.

Printhead Density	Distance
8 dots/mm	203 dots = 1 inch
11.8 dots/mm	300 dots = 1 inch
16 dots/mm	406 dots = 1 inch
24 dots/mm	600 dots = 1 inch

For backward compatibility, this command must precede the first [^FS](#) (Field Separator) command. Once an ^LH command is issued, this setting is retained until the printer is turned off, or until a new ^LH command is sent.

## Label Length (^LL)

Defines the length of the label.

### Syntax

`^LL<p1>`

### Parameters

Parameter	Description	Values
<p1>	Y-axis position in dots	Range is 0 to 32000, not exceeding the label size. Default is the current length set in the printer configuration.

### Remarks

When this command is issued, it remains in effect until the printer is turned off or until a new ^LL command is sent.

Values for <p1> depend on the printer memory. If the value exceeds the available memory, the bottom of the label is cut off and the label shifts down from top to bottom.

If multiple ^LL commands are entered in the same label format, the last ^LL command affects the next label unless it is prior to the first [^FS](#).

# Label Reverse Print (^LR)

Reverses the output of all fields in a label format (for example, prints white-on-black instead of black-on-white).

## Syntax

`^LR<p1>`

## Parameters

Parameter	Description	Values
<p1>	Reverse print all fields	Default is N, or the last permanently saved value. Valid values are: N - Do not reverse fields Y - Reverse print all fields

## Remarks

Use [^GB](#) with this command to create a black background.

This setting remains in effect until the printer is turned off, or until a new ^LR command is sent. Only fields specified after this command is issued are affected.

## Label Shift (^LS)

Shifts all field positions to the left. Provides backward compatibility with certain printers.

### Syntax

`^LS<p1>`

### Parameters

Parameter	Description	Values
<p1>	Value to shift fields to the left, in dots	Range is -9999 to 9999. Default is 0 (initial value when the printer is turned on).

### Remarks

This command must be issued before the first [^FS](#) (Field Separator) command. This setting remains in effect until the printer is turned off, or until a new ^LS command is sent.

# Label Top (^LT)

Moves the label format up or down from the current label position, relative to the top edge of the label.

## Syntax

`^LT<p1>`

## Parameters

Parameter	Description	Values
<p1>	Distance to move the top of the label format, in dot rows.	Range is -120 to 120 (might be smaller depending on the printer). Negative values move the format towards the top of the label, and positive values move the format away from the top of the label. By default, this command is ignored if no value is specified.

## Remarks

This command does not change the media rest position. Use this command to fine-tune the position of the finished label without changing any other parameters.

# Set Maintenance Alert (^MA)

The ^MA command is used to control printed maintenance alerts of the printer. These maintenance alerts basically indicate the TPH should be cleaned or changed and also printed on labels.

## Syntax

`^MA<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Type of alert.	Default: This parameter must be specified as R or C for <p2>, <p3> and <p4> to be saved. However, <p5> will always be set.  Range: R = head replacement C = head cleaning
<p2>	Determines if the alert prints a label	Default: N  Range: N = No Y = Yes

Parameter	Description	Values
<p3>	Distance where the first alert occurs	<p>Default: R = 50 km (1,968,500 inches) and C = 0 (off).</p> <p>Range: R = head replacement (unit of measurement for head is km with a range of 0 to 150 km) C = clean head (unit of measurement is 1 meter = 39.37 inches with a range of 0 to 2000 meters).</p> <p>O = off (when set to 0, the selected alert is disabled; otherwise it is enabled)</p>
<p4>	Distance before reissuing the alert	<p>Default: 0 (print on power-up).</p> <p>Range: 0 to 2000. (in meters)</p> <p>When set to 0, the alert label is only printed on power-up or when the printer is reset.</p>
<p5>	Odometer and printhead maintenance commands	<p>Default: I</p> <p>Range: C = centimeters (displays as: cm) I = inches (displays as: ") M = meters (displays as: M)</p> <p><b>Note:</b> The &lt;p5&gt; parameter reports units of the odometer and printhead maintenance commands, is ~HQOD,~HQPH,~WQOD, ~WQPH</p>

## Remarks

1. The command is ignored, if the values of parameters fall outside the specified range.
2. The ^MA command is used to print a label when the defined threshold is reached..
3. This command is supported by printer products with SNMP capability. On other printers, the command is ignored.

## Map Clear (^MC)

Retains the current bitmap format after the format is printed.

### Syntax

^MC<p1>

### Parameters

Parameter	Description	Values
<p1>	Sets the state for clearing the bitmap after printing	N - Do not clear the bitmap after printing Y - Clear the bitmap after printing (default - initial value when the printer is turned on)

### Remarks

When <p1> = N, the bitmap appears in the background of the next label printed.

# Media Darkness (^MD)

The ^MD command modifies the darkness relative to the current darkness setting.

## Syntax

^MD<p1>

## Parameters

Parameter	Description	Values
<p1>	Allowed range is -30 to 30.	Default : 0 (At Power-Up for Industrial Printers) Last saved value for Desktop printers. Range : -30 to 30

## Remarks

1. ^MD either add to or subtract from the current system Darkness setting.
2. Sending ^MD multiple times, the changes do not accumulate. Hence if Current Darkness is 15 and ^MD5 is sent, the Darkness setting is now  $(15 + (5 * 100 / 30)) = 32$ . If ^MD5 is sent again, the Darkness setting will still be 32 because the setting changes the system setting, not the current value.
3. If the resulting value after using ^MD is beyond range (lower than -30 or greater than 30), the value will be limited to the bounding values. In Fiji printer values aligns with 1 to 100.
4. ^MD command value remains until printer power cycle and continuous even after power cycle in Desktop printers.
5. In Fiji printer as we have Darkness range of 1 to 100 the MD command inputs value maps accordingly.

Following formula will evaluates the relation between input value and updating darkness value in the printer.

Formula: darkness value for printing a label = [current value + (input value \* (100/30))]

Here,

current value is SD value present in web page.

input value is MD value.

## Example 1:

Input command is ^MD5  
Current SD value in printer is 50  
Updated darkness value will be 66.

**Example 2 (For a fraction values):**

1. Input command is ^MD0.2  
Current SD value in printer is 50  
Updated darkness value will be 50.
2. Input command is ^MD0.3  
Current SD value in printer is 50  
Updated darkness value will be 51.

# Media Feed (^MF)

Controls media behavior when the printer is turned on and when the printhead is closed.

## Syntax

^MF<p1>

## Parameters

Parameter	Description	Values
<p1>	Feed action when the printer is turned on	C or L - Testfeed + length measure (default is C) F - Feed to the first web after sensor N - No media feed S - Testfeed
<p2>	Feed action after closing the printhead	C or L - Testfeed + length measure (default is C) F - Feed to the first web after sensor N - No media feed S - Testfeed

<p1>

Feed action when the printer is turned on. Valid values are:

- C or L - Testfeed + length measure (default is C)
- F - Feed to the first web after sensor
- N - No media feed
- S - Testfeed

<p2>

Feed action after closing the printhead. Valid values are:

- C or L - Testfeed + length measure (default is C)
- F - Feed to the first web after sensor
- N - No media feed
- S - Testfeed

## Remarks

For N, the printer assumes that the media and its position relative to the printhead are the same as before power was turned off, or before the printhead was opened.

Use ^JU to save changes.

## Maximum Label Length (^ML)

Sets the maximum length of the label. This command is ignored by Honeywell printers.

### Syntax

`^ML<p1>`

### Parameters

Parameter	Description	Values
<p1>	Maximum label length in dot rows	Range is 0 to the maximum label length. The default is the last permanently saved value, or 0 if the printer has been set to factory defaults. If the value is 0, [1.5 x label length] is used.

*<p1>*

Maximum label length in dot rows. Range is 0 to the maximum label length.

The default is the last permanently saved value, or 0 if the printer has been set to factory defaults. If the value is 0, [1.5 x label length] is used.

### Remarks

The maximum label length should be greater than or equal to the actual label length for the calibration to work properly.

## Print Mode (^MM)

Sets the next course of action for the printer after a label or set of labels is printed.

### Syntax

`^MM<p1>,<p2>`

### Parameters

Parameter	Description	Values
<p1>	Mode. For more information, see Remarks	<p>A - Applicator: Supported only by printers with applicator ports, being used in a print-and-apply system. When used with an application device, the label moves far enough forward so that it can be removed by the applicator and applied to an item.</p> <p>C - Cutter: The media feeds forward and is automatically cut into predetermined lengths after printing.</p> <p>D - Delayed cutter: The printer cuts the label when it receives the ~JK (Delayed Cut) command. To activate the ~JK command, there must be a label waiting to be cut. The ~JK command has no effect if this Print Mode value is not set.</p> <p>F - RFID: Increases throughput time when printing batches of RFID labels by eliminating back feed between labels.</p> <p>K - Kiosk: Media is moved to presentation position after printing. Most applications maintain a loop of media in the printer.</p> <p>P - Peel-off: After printing is done, the label moves forward and activates a label available sensor. Next round of printing starts after the label is manually removed from the printer. for more information, see the Remarks.</p> <p>R - Rewind: The label and liner are rewound on an (optional) external rewind device. The next label is positioned under the print head (no back feed motion).</p> <p>T - Tear-off (default): The label advances after printing to place the web over the tear bar. If the label has a liner attached to it, then it can be torn off manually.</p>

Parameter	Description	Values
<p2>	Pre-peel select. For more information, see Remarks	N - No (default) Y - Yes

## Remarks

If any parameters are missing or invalid, this command is ignored and the current value of the command remains intact. Unexpected results may occur if inappropriate Print Mode values are used for the installed hardware.

For Honeywell printers:

- Applicator and RFID modes will not be supported because IN printers do not have an applicator interface and RFID capabilities are already optimized.
- Pre-peel select is achieved by moving the next label slightly beyond the tear bar after the current label is removed.

For Datamax-O'Neil printers:

- The RFID option and a mid-range stop and go position are not supported. Selection will be parsed and ignored.
- This command has an Applicator mode and GPIO for Start of Print and End of Print. In Applicator mode the printer just feed out the correct distance for the applicator to take the label. Once label is taken then the printer can retract to the print position. At any time, if using a peel mechanism with present sensor, CEE cannot present out past the sensor after the label is taken.

## Media Tracking (^MN)

Defines the media type: continuous or non-continuous, and sets the black mark offset when appropriate.

Media Type	Description
Continuous media	This type of media does not have physical characteristics (such as a web, notch, perforation, black mark) to separate labels. The label length is determined by the <a href="#">^LL</a> command.
Continuous media with variable length	This is same as Continuous Media, but if portions of the printed label fall outside of the defined label length, the label size is automatically extended to contain them. This label length extension applies only to the current label. The ^MNV command still requires the use of the ^LL command to define the initial desired label length.
Non-continuous media	This type of media has some type of physical characteristic (such as web, notch, perforation, black mark) to separate the labels.

## Syntax

`^MN<p1>,<p2>`

## Parameters

Parameter	Description	Values
<p1>	Media type	A - Auto-detect the media type during calibration M - Non-continuous media, mark sensing N - Continuous media V - Continuous media, variable length W or Y - Non-continuous media, web sensing
<p2>	Black mark offset in dots	Range is -120 to 283. Default is 0. This parameter is ignored unless <p1> is M. If no value is specified, the default value of 0 is used.

## Remarks

The black mark offset  $\langle p2 \rangle$  sets the expected location of the media mark relative to the point of separation between labels. If  $\langle p2 \rangle$  is set to 0, the media mark is expected to be found at the point of separation (the perforation between labels, the cut point, and so on).

## Media Type (^MT)

Sets the type of media being used.

### Syntax

^MT<p1>

### Parameters

Parameter	Description	Values
<p1>	Media type	By default, a valid value must be specified or this command is ignored. Valid values are: D - Direct thermal media. Heat sensitive; does not use ribbon. T - Thermal transfer media (uses ribbon).

### Remarks

None.

# Set Units of Measurement (^MU)

Sets the units of measurement.

## Syntax

`^MU<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Measurement units	D - dots (default) I - Inches M - Millimeters
<p2>	Format base in dots per inch	By default, a valid value must be specified or this command is ignored. Valid values are 150, 200, or 300
<p3>	Dots per inch conversion	By default, a valid value must be specified or this command is ignored. Valid values are 300 or 600

## Remarks

`^MU` must appear at the beginning of the label format. This command works on a field-by-field basis. Once this unit is set, the value remains the same for each field until a new unit value is sent. The units of measurement set using `^MU` specify the maximum allowable value.

To turn the conversion off, you need to set matching values for `<p2>` and `<p3>`.

This command does not affect the Unit of Measure system settings in the printer UI.

## Network Connect (~NC)

~NC command is used to connect a particular printer to a network by calling up the printer's network ID number.

### Syntax

~NC<p1>

### Parameters

Parameter	Description	Values
<p1>	Network ID of the printer to be connected.	000 to 999 Default : 000

### Remarks

<p1> has to be a 3 digit number. For values less than 100, 0's must be padded to make it a 3 digit number.

If <p1> has no value or 1 or 2 digit value, the command will be ignored.

If <p1> has more than 3 digits, all the digits after 3rd are ignored. So for the input "0056", <p1> will be considered to be "005".

# Network ID Number (^NI)

^NI is to assign the Network ID number for printer.

## Syntax

^NI<p1>

## Parameters

Parameter	Description	Values
<p1>	Network ID number to be assigned to printer.	000 to 999 Default : 000

## Remarks

<p1> has to be a 3 digit number. For values less than 100, 0's must be padded to make it a 3 digit number.

If <p1> has no value or 1 or 2 digit value, the command will be ignored.

If <p1> has more than 3 digits, all the digits after 3rd are ignored. So for the input "0056", <p1> will be considered to be "005".

## Set All Network (~NR)

After receiving ~NR command, all the printers in the network will stop responding to ZPL commands until the printers receives ~NC command with their respective network IDs.

### Syntax

~NR

### Parameters

None.

### Remarks

Irrespective of ~NR command, all the services which doesn't include ZPL commands will continue to work.

The effect of ~NR command on a printer will stay in effect until it powered off.

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# Set Currently Connected Printer Transparent (~NT)

After receiving ~NT command, the currently connected printer will stop responding to ZPL commands until the printer receives ~NC command with its network ID.

## Syntax

~NT

## Parameters

None.

## Remarks

~NT command will not have any effect on printer services which don't include ZPL commands.

The effect of ~NT command will stay in effect until the printer is powered off.

# Advanced Text Properties (^PA)

^PA sets up the advance text layout features in the printer.

## Syntax

^PA<p1>,<p2>,<p3>,<p4>

## Parameters

Parameter	Description	Values
<p1>	Default Glyph	Range: 0 = Off (Space) 1 = On (Depends on the default glyph of font used ) Default: 0
<p2>	Bi-directional Text Layout	Range: 0 = Off (Space) 1 = On (Depends on the default glyph of font used ) Default: 0
<p3>	Always ignored	1 Ascii Character
<p4>	Always ignored	1 Ascii Character

## Remarks

Default glyph: If a character is not defined in font file, a blank space is printed by default. By setting <p1> to 1, default glyph of font is used (often a hollow box).

Bidirectional text: Allows Right-to-Left printing of fonts like Hebrew text.

# Slew to Home Position (^PH or ~PH)

The ^PH ~PH command causes the printer to feed one blank label.

## Syntax

^PH or ~PH.

## Parameters

None.

## Remarks

1. ~PH - Feeds one blank label after the format currently being printed or when the printer in pause stage.
2. ^PH - Feeds one blank label after the current format prints.

## Print Mirror Image of Label (^PM)

Prints the entire printable area of a label as a mirror image by flipping the image from left to right.

### Syntax

`^PM<p1>`

### Parameters

Parameter	Description	Values
<p1>	Print a mirror image of the entire label	N - Do not print the mirror image (default) Y - Print the mirror image

### Remarks

If <p1> is missing or invalid, this command is ignored.

This setting remains in effect until the printer is turned off, or until a new ^PM command is sent.

# Print Orientation (^PO)

Prints the label upside down by inverting the label format 180 degrees.

## Syntax

^PO<p1>

## Parameters

Parameter	Description	Values
<p1>	Invert the label 180 degrees	N - Do not invert the label (default) Y - Invert the label

## Remarks

If multiple ^PO commands are issued in the same label format, only the last command sent to the printer is used.

This setting remains in effect until the printer is turned off, or until a new ^PO command is sent.

## Programmable Pause (^PP, ~PP)

Stops the printing operation after printing the current label is completed. This also places the printer in Pause mode.

Similarly, this command pauses the printer once printing of the current format is completed. As the effect of ^PP command is not immediate, many labels may get printed before a Pause is performed.

### Syntax

^PP

or

~PP

### Parameters

None.

### Remarks

Using ^PP or ~PP is identical to pressing PAUSE on the printer control panel.

The printer remains in paused mode until PAUSE is pressed or a Print Start ([^PS](#)) command is sent to the printer.

# Print Quantity (^PQ)

Controls these print operations:

- Sets the total quantity of labels to print.
- Sets the quantity of labels to print before the printer pauses, or overrides this count.
- Sets the number of replications of each serial number.
- Enables cut after a voided RFID label.

## Syntax

`^PQ<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Total quantity of labels to print	Range is 1 (default) to 99999999.
<p2>	Quantity of labels to print before pause and cut	Range is 0 (default, no pauses) to 99999999.
<p3>	Number of copies of each serial number	Range is 0 (default, no copies) to 99999999.
<p4>	Override pause count	N - Do not override (default). The printer pauses after each <p2> group is printed. Y - Override. The printer cuts but does not pause, and will not pause after each <p2> group is printed.
<p5>	Cut on error label (RFID void is an error label)	N - Do not cut. If a cutter is installed, a cut is made after a voided RFID label only if a cut would be made after a non-voided label and this was the last retry. Y - Cut after the voided label. If a cutter is installed, a cut is made after any voided RFID label.

## Print Rate (^PR)

Regulates the media, slew, and backfeed speed during printing.

Honeywell recommends that you test the print quality of all applications using this command.

## Syntax

`^PR<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Print speed	1 - 25.4 mm/second (1 inch/sec) 2 or A - 50.8 mm/sec (2 in/sec) 3 or B - 76.2 mm/sec (3 in/sec) 4 or C - 101.6 mm/sec (4 in/sec) 5 - 127 mm/sec (5 in/sec) 6 or D - 152.4 mm/sec (6 in/sec) 7 - 177.8 mm/sec (7 in/sec) 8 or E - 203.2 mm/sec (8 in/sec) 9 - 220.5 mm/sec (9 in/sec) 10 - 245 mm/sec (10 in/sec) 11 - 269.5 mm/sec (11 in/sec) 12 - 304.8 mm/sec (12 in/sec) 13 - 13 in/sec 14 - 14 in/sec

Parameter	Description	Values
<p2>	Slew speed	2 or A - 50.8 mm/sec (2 in/sec) 3 or B - 76.2 mm/sec (3 in/sec) 4 or C - 101.6 mm/sec (4 in/sec) 5 - 127 mm/sec (5 in/sec) 6 or D - 152.4 mm/sec (6 in/sec) 7 - 177.8 mm/sec (7 in/sec) 8 or E - 203.2 mm/sec (8 in/sec) 9 - 220.5 mm/sec (9 in/sec) 10 - 245 mm/sec (10 in/sec) 11 - 269.5 mm/sec (11 in/sec) 12 - 304.8 mm/sec (12 in/sec) 13 - 13 in/sec 14 - 14 in/sec
<p3>	Backfeed speed	2 or A - 50.8 mm/sec (2 in/sec) 3 or B - 76.2 mm/sec (3 in/sec) 4 or C - 101.6 mm/sec (4 in/sec) 5 - 127 mm/sec (5 in/sec) 6 or D - 152.4 mm/sec (6 in/sec) 7 - 177.8 mm/sec (7 in/sec) 8 or E - 203.2 mm/sec (8 in/sec) 9 - 220.5 mm/sec (9 in/sec) 10 - 245 mm/sec (10 in/sec) 11 - 269.5 mm/sec (11 in/sec) 12 - 304.8 mm/sec (12 in/sec) 13 - 13 in/sec 14 - 14 in/sec

## Remarks

Printer hardware determines the actual limits of print speeds. For example, if the maximum print speed is 6 in/sec, setting a value greater than that defaults to 6 in/sec.

# Applicator Reprint (~PR)

The ~PR command, if enabled, reprints the last printed label.

## Syntax

~PR

## Parameters

None.

## Remarks

1. ~PR command if enabled, reprints the last printed label.
2. At least one label must be printed after enabling the ~PR command to cause a reprint.
3. If the ^SN field is used on a label, reprinting the label will not increment the serial number. The reprinted label will be an exact duplicate of the original label.

~PR command can be enabled and disabled using one of the following methods on Fiji Printer.

1. Sending parameter <p5> of ^JJ command as 'e' and 'd' to printer to enable and disable it respectively.
2. Turning "Reprint" option "ON" and "OFF" in the webpage from Configure > Languages > ZSIM > Reprint to enable and disable it respectively.
3. Turning "Reprint" option "ON" and "OFF" in LCD screen Menu from Settings > Languages > ZSim > Reprint to enable and disable it respectively.

~PR command can be enabled and disabled using one of the following methods on CEE Printer.

1. Sending parameter <p5> of ^JJ command as 'e' and 'd' to printer to enable and disable it respectively.
2. Enabling and Disabling "Reprint" option in the webpage from Menu > Input Mode Settings > PL-Z > Reprint to enable and disable it respectively.
3. Enabling and Disabling "Reprint" option in the LCD menu from Menu > Input Mode Settings > PL-Z > Reprint to enable and disable it respectively.

## Print Start (~PS)

Resumes printing when the printer is in Pause mode.

### Syntax

~PS

### Parameters

None.

### Remarks

This command has the same effect as pressing the Pause button when the printer is already in Pause mode.

## Print Width (^PW)

Sets the print width.

### Syntax

^PW<p1>

### Parameters

Parameter	Description	Values
<p1>	Label width in dots	Range is 2 to the actual media width. Default is the last permanently saved value..

### Remarks

None.

## Define EPC Data Structure (^RB)

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

### Syntax

`^RB<p1>,<p2>,<p3>,<p4>,....,<p16>`

### Parameters

Parameter	Description	Values
<p1>	Total bit size of the partition	1 to bit size of the tag Default: 96
<p2> ... <p16	Partition size	1 to 64 Default: 1

### Remarks

None.

# Read or Write RFID Format (^RF)

Reads or writes to an RFID tag, or specifies the password. While reading a tag with this command, a field variable prints the tag data on the label or returns data to the host.

## Syntax

`^RF<p1>,<p2>,<p3>,<p4>,<p5>`

## Parameters

Parameter	Description	Values
<p1>	Specifies the action	L - Write with LOCK if supported by tag type. Gen 2 tags do not support the locking function. Not supported by Honeywell HF printers. P - Read password (Gen 2 tags only - not supported by all Gen 2-capable printers). R - Read the tag. S - Specify the access password. W - Write to the tag (default).
<p2>	Format	A - ASCII E - EPC. Ensure proper setup with ^RB. H - Hexadecimal (default)
<p3>	Starting block number (and password, Gen 2 tags only)	For non-Gen 2 tag types, range is 0 (default) to <i>n</i> , where <i>n</i> is the maximum number of blocks for the tag. For Gen 2 tags, valid values for <p3> are defined by <p1>, as seen in the next table.
<p4>	Sets the number of bytes to read or write	For all printers and tag types (except UCODE EPC 1.19), range is 1 (default) to <i>n</i> , where <i>n</i> is the maximum number of bytes for the tag. For UCODE EPC 1.19 tags only, range is 1 (default) to 32.

Parameter	Description	Values
<p5>	(Gen 2 tags only) Memory bank	Default is E. Valid values are: E - EPC 96-bit. When writing data, this setting performs the operation on Gen 2 bit address 20h, and accesses 12 bytes of the EPC memory bank. When reading data, this parameter reads the amount of data specified in the PC bits on the tag. A - EPC and Auto adjust PC bits. When writing data, this setting performs the operation on Gen 2 bit address 20h of the EPC memory bank, and accesses the number of bytes specified by ^FD. The PC bits are updated to match the amount of data written to the tag. When reading data, this setting reads the amount of data specified in the PC bits on the tag. 0 - Reserved 1 - EPC 2 - TID (tag ID) 3 - User

<p1> Value	<p3> Valid Values	Description
W	P, 0 to <i>n</i>	P indicates that an access password, a kill password, or both, follow in a ^FD command. Each password must be 8 hex characters. If the password is omitted, the password is not written. An access password is used in subsequent lock commands in the format. 0 (default) to <i>n</i> specifies the 16-bit starting block number, where <i>n</i> is the maximum number of blocks in the bank specified in the memory bank parameter. When the memory bank parameter is set to A (EPC and Auto adjust PC bits) or E (EPC 96-bit), this value is always set to 2.
R	0 to <i>n</i>	0 (default) to <i>n</i> specifies the 16-bit starting block number, where <i>n</i> is the maximum number of blocks in the bank specified in the memory bank parameter. When the memory bank parameter <p5> is set to A (EPC and Auto adjust PC bits) or E (EPC 96-bit), this value is always set to 2.
S	P	Always set to P. Must be followed by the access password in a ^FD command.

## Remarks

None.

# Specify RFID Retries for a Block or Enable Adaptive Antenna Selection (^RR)

Sets the number of times the printer tries to read or write to a particular block of an RFID tag. Also enables adaptive antenna selection.

## Syntax

`^RR<p1>,<p2>`

## Parameters

Parameter	Description	Values
<p1>	Number of retries	Range is 0 to 10. Default is 6. Not supported by some industrial printers.
<p2>	Adaptive antenna element selection	0 - None. The printer uses only the currently selected antenna element. 1 - Neighbors. The printer attempts to read the tag using the antenna elements to the left and right of, and above and below, the currently selected antenna element. The element that successfully reads the tag is used for all subsequent RFID commands until the next unsuccessful attempt.

## Remarks

This setting is valid only on some of the industrial printers with 51-mm (2-inch) labels (or longer).

If the printer cannot find RFID tags with the antenna element specified during the number of retries specified (if applicable), the printer may try neighboring antenna elements. If the printer is unsuccessful communicating with the RFID tag after trying neighboring elements, the printer voids the label.

Enabling <p2> may slow throughput on damaged or weak RFID tags.

# Set Up RFID Parameters (^RS)

Sets up RFID parameters, including tag type, read/write position, and error handling.

## Syntax

`^RS<p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>,<p8>`

## Parameters

Parameter	Description	Values
<p1>	Tag type	Valid values depend on your printer. For UHF printers, valid values are: 0 - None 1 - EPC Class 0 2 - EPC Class 0 Plus 3 - EPC Class 1 64-bit 4 - EPC Class 1 96-bit 5 - UCODE EPC 1.19 6 - Impinj Class 0 Plus 7 - ISO 18000-06A 8 - EPC Class 1, Gen 2 9 - ISO 18000-06B  For HF printers, valid values are: A or 0 - None B or 1 - Auto detect (query tag to determine type) C or 2 - Tag*It (Texas Instruments) D or 3 - I*code (Phillips) E or 4 - Pico Tag (Inside Technology) F or 5 - ISO 15693 G or 6 - EPC (13.56 MHz) H or 7 - UID tag I or 8 - Mifare UltraLight
<p2>	Read/write tag position	Valid values are defined in the next table.

Parameter	Description	Values
<p3>	Sets the length of the "void" print in vertical Y-axis dot rows.	Range is 0 to the label length (default is label length)
<p4>	Number of labels to try encoding in case of read/write failure.	Range is 1 to 10. Default is 3
<p5>	Defines error handling after reaching <p4>	<p>N - No action (default). Printer drops the label format causing the error and moves to the next queued label.</p> <p>P - Places printer in Pause mode. Label format stays in the queue until the user cancels the print.</p> <p>E - Places printer in Error mode. Label format stays in the queue until the user cancels the print.</p> <p>Printer can be set to send an error message to the host for each failure.</p>
<p6>	Signals on applicator	<p>S - Single signal mode (default). On the start print signal, the label starts printing until &lt;p2&gt; (assuming a non-zero value). The printer stops printing, encodes the tag, finishes printing, and sends a single end print signal when done.</p> <p>D - Double signal mode. On the start print signal, the label starts printing until &lt;p2&gt;. The printer stops printing and waits for another start print signal before encoding the tag and finishing printing. The printer sends a single end print signal when done.</p> <p>If &lt;p2&gt; is set to 0, F0, or B0, single signal mode is used and this parameter is ignored.</p>
<p7>	Reserved	
<p8>	Speed at which "VOID" is printed on a label when voided	Range is any valid print speed. Default is the maximum print speed.

Mode	Range	Default	Description
Absolute mode	0 to label length in dot rows (up to xxxx rows)	n For Desktop printers: 0 For all other printers: Label length minus 1 mm	Moves the media xxxx dot rows from the label top before encoding. Set to 0 (no movement) if the tag is already in the effective area without moving the media.
Relative mode	F0 to Fxxx, where xxx is the label length in mm or 999, whichever is less	None	Printer prints the first part of the label until it reaches this distance, and then begins encoding. After encoding, the printer prints the rest of the label.
Relative mode	B0 to B30, where the numeral specifies the distance to backfeed the media	None	Printer backfeeds the label by the specified distance before encoding. To account for the backfeed, allow empty media liner to extend out of the front of the printer when using a backward programming position. If a label format specifies a value for the programming position, this value is used for the programming position for all labels until a new position is specified, or until the tag calibration procedure occurs.

## Remarks

Honeywell printers support EPC Class 1 Gen 2 tags.

ZPL II RFID commands provides RFID exception handling such as setting the number of read/write retries before declaring a tag defective (set with [^RR](#) and [^RF](#)) or setting the number of labels that will be attempted if an error occurs (set with [^RS](#)).

If an RFID label fails to program correctly or if the tag cannot be detected, the printer ejects the label and prints VOID across it. The printer tries to print another label with the same data and format for the number of labels

specified (<p4>). If the problem persists, the printer follows the error handling instructions specified by the error handling parameter (<p5>). The printer may remove the problematic format from the print queue and proceed with the next format (if one exists in the buffer), or it may place the printer in Pause or Error mode.

## Read RFID Tag (^RT)

This command is used to read data from RFID tag and associate with a numbered field. This command has been superseded by ^RF, ^RM and ^RR commands.

### Syntax

^RT<p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>

### Parameters

Parameter	Description	Values
<p1>	Number to be assigned to the field.	000 to 999 Default : 000
<p2>	Always Ignored.	000 to 999 Default : 000
<p3>	Always Ignored.	000 to 999 Default : 000
<p4>	Format in which the data needs to be presented.	1 - Hexadecimal Default : 0
<p5>	Number of retries.	0 to 10. Default : 0
<p6>	Always Ignored.	1 digit
<p7>	Always Ignored.	1 digit

### Remarks

^RT command reads data from an RFID tag and associates it with the field number provided in <p1>.

If <p5> is set to 0, printer will not retry after first failed attempt to read the data.

**Note:** This command will not have any effect on CEE printers.

# Set RFID Read and Write Power Levels (^RW)

This command is used to set the RFID read and write power levels if the desired levels are not achieved through RFID tag calibration.

## Syntax

`^RW<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Always Ignored	1 digit
<p2>	Write power	Range: H = High M = Medium L = Low Default: L
<p3>	Always Ignored	1 digit

## Remarks

None.

# Set RFID Tag Password and Lock Tag (^RZ)

This command is used to define a password for a tag during writing.

## Syntax

`^RZ<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Password	00000000 to FFFFFFFF (Hexadecimal value) Default: none
<p2>	Memory bank	Range: K = Kill password A = Access password E = EPC T = Tag identifier (TID) U = User Default: none
<p3>	Always Ignored	1 digit

## Remarks

None

# Set Darkness (~SD)

The ~SD command sets the darkness of printing.

## Syntax

~SD<p1>

## Parameters

Parameter	Description	Values
<p1>	Allowed range is 0 to 30	Default : last permanently saved value Range : 0 - 30

## Remarks

1. This command is ignored for I-Class and E-Class printers.
2. If the Current Darkness is 15 and ^MD5 is sent, the Darkness setting is now  $(15+(5*100/30)) = 32$ . If ~SD10 is sent, a new darkness value will be set  $(10*100/30 = 33)$  and then the existing ^MD5 value will be added  $(33 + (5*100/30)) = 50$ , because printing darkness depends on the current Darkness setting as set by ~SD and any ^MD value.
3. If the input value is outside the range(<0 or >30), the command is ignored).
4. This setting persists through printer restarts.
5. The actual value based on the calculation described above will be reflected in the "Darkness" setting on the web page and UI setting on FIJI printer.
6. Since Honeywell printers accept Darkness values from 1-100 compared with 0-30 in other ZPL printers, the value entered by this command will be multiplied by 3.33 and then rounded to the nearest integer to arrive at the new Darkness value.

Following formulas will evaluate the relation between input value and updating darkness value in the printer.

### FORMULA-1:

Darkness value for printing a label = (MD value + input value) \* (100/30)

### FORMULA-2:

Darkness value on web page = (input value \* (100/30)).

### Example 1:

MD value is 0

Input Command is ~SD5  
Updated darkness value will be 16

**Example 2:**

MD Value is 0  
Input Command is ~SD0.3  
Updated darkness value will be 1

**Example 3:**

MD Value is 5  
Input Command is ~SD5  
Updated darkness value will be 33

# Select Encoding Table (^SE)

Sets the encoding table.

## Syntax

`^SE<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Location of the encoding table	A B E R: default
<p2>	Name of encoding table	Range is 1 to 8 alphanumeric characters. By default, a value must be specified.
<p3>	Extension	Always set to .DAT

## Remarks

Encoding tables are provided with the font card, or can be downloaded to flash memory with the font. The table filename is typically XXXXXXXX.DAT.

The most active encoding table is indicated by \* on the directory label.

# Serialization Field (^SF)

Serializes any standard [^FD](#) string.

## Syntax

`^SF<p1>,<p2>`

## Parameters

Parameter	Description	Values
<p1>	Mask string	A - Uppercase alphabetic (A to Z) a - Lowercase alphabetic (a to z) D or d - Numeric, 0 to 9 H - Hexadecimal, 0 to 9 plus A to F h - Hexadecimal, 0 to 9 plus a to f N - Uppercase alphanumeric n - Lowercase alphanumeric O or o - Octal, 0 to 7 % - Ignore character or skip  The mask string sets the serialization scheme. The length of the mask string defines the number of characters combining semantic clusters in the current ^FD string to be serialized. The mask is aligned to the characters combining semantic clusters in the ^FD string, starting with the right-most (or last, in firmware x.14 and later) in the backing store position.

Parameter	Description	Values
<p2>	Increment string: the value to be added to the field on each label	<p>The string is composed of any characters combining semantic clusters defined in the serial string. Invalid characters (or in firmware version x.14 and later, combining semantic clusters) are assumed to be equal to a value of zero in that character's combining semantic clusters position.</p> <p>The increment value for alphabetic strings starts with 'A' or 'a' as the zero placeholder. To increment an alphabetic character combining semantic cluster by one, a value of 'B' or 'b' must be in the increment string.</p>

## Remarks

The maximum size of the mask combined with increment string is 3 kb. Strings are serialized from the last character in the backing store with respect to the alignment of the mask and increment strings. For combining semantic clusters which do not get incremented and the mask character "%" needs to be added to the increment string.

A single % masks an entire combining semantic cluster rather than a single code point. Similarly, the mask string and increment string should be aligned at the last code point in their respective backing stores.

Control and bidirectional characters do not require a mask and are ignored for serialization purposes.

# Serialization Data (^SN)

Indexes data fields by a selected increment or decrement value.

## Syntax

`^SN<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Starting Value	Range is up to a maximum of 12 digits for the portion to be indexed. Default is 1.
<p2>	Increment or decrement value	Range is up to a maximum of 12 digits. Precede the value with a minus sign (-) to indicate a decrement value. Default is 1.
<p3>	Add leading zeroes if needed	N - Do not add leading zeroes (default) Y - Add leading zeroes

## Remarks

Serialization can be performed on 100 to 150 fields in a given format, on both alphanumeric and bar code fields. A maximum of 12 of the rightmost integers are subject to indexing. The first integer found during scanning from end of the backing store towards the beginning starts the indexing portion of the data field.

If the backing store of any alphanumeric field ending with an alpha character is to be indexed, the data is scanned character by character from the end of the backing store until a numeric character is encountered. Serialization takes place using the value of the first number found.

Incrementing and decrementing takes place for each serial-numbered field when all replicates for each serial number have been printed.

If the printer runs out of either media or ribbon while printing serialized labels, the first label printed (after the media or ribbon has been replaced and calibration completed) has the same serial number as the last label

printed before the error condition occurred, if the last label did not fully print before the error. This action is controlled by the [^JZ](#) command.

# Set Date and Time (for Real-Time Clock) (^ST)

The ^ST command is used to set the date and time of the Real-Time Clock.

## Syntax

`^ST<p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>`

## Parameters

Parameter	Description	Values
<p1>	Month	Default: current month Range: 01 to 12
<p2>	Day	Default: current day Range: 01 to 31
<p3>	Year	Default: current year Range:1998 to 2097
<p4>	Hour	Default: current hour Range: 00 to 23
<p5>	Minute	Default: current minute Range: 00 to 59
<p6>	Second	Default: current second Range:00 to 59
<p7>	Format	Default: M Range: A = a.m. P = p.m. M = 24-hour military

## Remarks

None.

# Set ZPL Mode (^SZ)

Selects ZPL II as the programming language.

## Syntax

^SZ<p1>

## Parameters

Parameter	Description	Values
<p1>	ZPL Version	Always set to 2

## Remarks

None.

## Tear-Off Adjust Position (~TA)

Adjusts the rest position of the media after a label is printed, changing the position at which the label is torn or cut.

### Syntax

~TA<p1>

### Parameters

Parameter	Description	Values
<p1>	Change in media rest position, specified as a 3-digit value, in dot rows	Range is 000 to 120 for desktop printers, -120 to 120 for all other printers. Default is the last permanent value saved.

### Remarks

The command is ignored if <p1> is less than three characters, missing, or invalid.

# Text Blocks (^TB)

The ^TB command is used to print a text block with defined width and height. An auto word-wrap function is available for the text block to truncate the text if it exceeds the block height. Complex text layout features is also supported by this command.

## Syntax

`^TB<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Block rotation	Default: As specified by the last ^A command (which has the default of ^FW)  Range: N = Normal R = 90 degrees clock-wise rotation I = 180 degrees clock-wise rotation B = 270 degrees clock-wise rotation
<p2>	Block width in dots	Default: 1 Range: 1 - Label width in dots
<p3>	Block height in dots	Default: 1 Range: 1 - Label length in dots

## Remarks:

1. ^TB command is preferred over ^FB command for printing fields or blocks of text.
2. Justification parameters of ^FO, ^FT or ^FN command are used in ^TB command. The default justification is the auto justification.
3. Data present between < and > is processed as an escape sequence.
4. Soft hyphens are not printed and are not used as a line break position.

# Transfer Object (^TO)

^TO command is used to copy one or group of files from one storage location to another like copy function used in PCs.

## Syntax

^TO<p1>:<p2>,<p3>,<p4>,<p5>,<p6>

## Parameters

Parameter	Description	Values
<p1>	Memory location ID where source file is stored.	B, E, R, A Default: N/A. If value is not provided or invalid value provided, command will be ignored.
<p2>	Source file name.	Alphanumeric string up to 16 characters long. Default: * is used - all objects are selected.
<p3>	Extension of source file.	BMP, BMF, DAT, FNT, GRF, NRD, OTF, PAC, PCX, PNG, TTE, TTF, ZPL Default: * is used - all extensions are selected.
<p4>	Memory location ID where file is to be stored.	R, E, B, A Default: N/A If value is not provided or invalid value provided, command will be ignored.
<p5>	Destination file name.	Alphanumeric string up to 16 characters long. Default: If file name is not provided, source file name will be used.
<p6>	Extension of destination file.	BMP, BMF, DAT, FNT, GRF, NRD, OTF, PAC, PCX, PNG, TTE, TTF, ZPL Default: If extension is not provided, source file extension will be used.

## Remarks

1. ^TO command works similar to a copy command on PC's.
2. An asterisk (\*) can be used as a wild card for object names and extensions. For instance, HONEYWEL.\* or \*.GRF are acceptable forms for use with the ^TO command.
3. At least one source parameter (<p1>, <p2>, or <p3>) and one destination parameter (<p4>, <p5>, or <p6>) must be specified. If only ^TO is entered, the command is ignored.
4. Source and destination devices must be supplied and must be different and valid for the action specified. Else the command is ignored.
5. ^TO command should be included between ^XA and ^XZ commands, else command will be ignored.
6. If a file already exists with destination file name, it will be replaced by the new source file.

## Print Configuration Label (~WC)

Prints a label of the printer configuration containing information about the printer setup such as sensor type, network ID, ZPL mode, and firmware version, and descriptive data on the R:, E:, B:, and A: modules.

### Syntax

~WC

### Parameters

None.

### Remarks

The printer needs to be in idle state for ~WC command to work.

The output is the native configuration label.

# Print Directory Label (^WD)

Prints a list of the bar codes, objects and fonts installed in the printer.

## Syntax

^WD<p1>,<p2>,<p3>

## Parameters

Parameter	Description	Values
<p1>	(Optional) Source device.	A B E R: default Z
<p2>	(Optional) Object Name	Range is 1 to 8 alphanumeric characters and the question mark (?). Default is *.
<p3>	(Optional) Extension	.FNT - font .BAR - bar code .ZPL - stored ZPL format .GRF - GRF graphic .CO - memory cache .DAT - font encoding .BAS - ZBI encrypted format .BAE - ZBI encrypted format .STO - data storage .PNG - PNG graphic .TTF - true type font .TTE - true type extension* - all objects

## Remarks

For bar codes, the bar code names are displayed in the list.

For fonts, the name of the font, the number to use with ^A command and the size are displayed in the list.

For objects installed in printer, the name of the object, extension, size and option flags are displayed in the list.

All lists are contained in a double-line box.

The extensions BAR, CO, BAS and BAE are not supported.

## Write (Encode) Tag (^WT)

This command is used to encode the current RFID tag.

### Syntax

`^WT<p1>,<p2>,<p3>,<p4>,<p5>,<p6>`

### Parameters

Parameter	Description	Values
<p1>	Block number	0 to 999 Default: 0
<p2>	Number of retries	0 to 10 Default: 0
<p3>	Always Ignored	1 digit
<p4>	Write protect	0 - Not write protected 1 - Write protected Default: 0
<p5>	Data format	0 - ASCII 1 - Hexadecimal Default: 0
<p6>	Verify valid data	N = Do not verify Y = Verify valid data before writing Default: N

### Remarks

None.

## Start Format (^XA)

Marks the beginning of ZPL II code, indicating the start of a new label format.

### Syntax

`^XA`

### Parameters

None.

### Remarks

This command may be substituted with the single ASCII control character STX (control-B, hexadecimal 02).

## Suppress Backfeed (^XB)

Depending on the current printer mode, suppresses forward media feed to the tear-off position. Backfeed before printing the next label is unnecessary since no forward feed occurs.

### Syntax

^XB

### Parameters

None.

### Remarks

In tear-off or peel-off modes, normal operation is backfeed, print, and feed to rest. When ^XB is called, operation is Rewind Mode.

To prevent jamming in cut-off printing mode, this command suppresses backfeed and cutting.

# Recall Format (^XF)

Recalls a stored format to be populated with variable data.

## Syntax

`^XF<p1>,<p2>,<p3>`

## Parameters

Parameter	Description	Values
<p1>	Source device of stored image	Default is search priority (R:, E:, B:, A:) A B E R
<p2>	Name of stored image	Range is 1 to 8 alphanumeric characters. Default is UNKNOWN if a name is not specified.
<p3>	Extension	Always set to .ZPL

## Remarks

It is possible to have multiple ^XF commands in one format and they can be located anywhere within the code. While recalling a stored format and merging data using the [^FN](#) (Field Number) function, the calling format must contain the ^FN command to merge the data properly. Using stored formats reduces data transmission time but formatting time is not saved. The ZPL II format being recalled is saved as text strings to be formatted at print time.

## Recall Graphic (^XG)

Recalls one or more graphic images for printing.

### Syntax

`^XG<p1>,<p2>,<p3>,<p4>,<p5>`

### Parameters

Parameter	Description	Values
<p1>	Source device of stored image	Default is search priority (R:, E:, B:, A:) A B E R
<p2>	Name of stored image	Range is 1 to 8 alphanumeric characters. Default is UNKNOWN if a name is not specified.
<p3>	Extension	Always set to .GRF
<p4>	Magnification factor X-axis	Range is 1 (default) to 10
<p5>	Magnification factor Y-axis	Range is 1 (default) to 10

### Remarks

An image can be recalled and resized as many times as needed in each label format. Additional images and data can also be added to the format.

## End Format (^XZ)

Marks the ending of ZPL II code, indicating the end of a label format.

### Syntax

`^XZ`

### Parameters

None.

### Remarks

This command may be substituted with the single ASCII control character ETX (control-C, hexadecimal 03).

## ABOUT AUTOEXEC.ZPL

The AUTOEXEC.ZPL file contains a series of ZPL commands that execute when the printer is powered up. When the printer is starting up, it checks for AUTOEXEC.ZPL. If this file is present, these commands are executed after ZSIM initializes and performs any power-up actions that were already configured. AUTOEXEC.ZPL is stored in:

- /home/user for Honeywell printers.
- G module for Datamax-O'Neil printers.



## INTERNAL DRIVE MAPPING

The drive mapping below applies to all ZPL commands that store files in Honeywell and Datamax-O'Neil printers.

## Drive Mapping for Honeywell Printers

ZPL Drive	Honeywell Printer Drive	Notes
A:	/home/user	Persistent storage
B:	/home/user	Persistent storage
E:	/home/user	Persistent storage
R:	/tmp	Volatile storage. Cleared on next power-up.
Others (such as D:)	/tmp	Volatile storage. Cleared on next power-up.

## Drive Mapping for Datamax-O'Neil Printers

ZPL Drive	Datamax-O'Neil Print- teDrive	Notes
A:	F:	SDIO memory. If not available, defaults to R:.
B:	H:	USB memory. If not available, defaults to R:.
E:	G:	Persistent storage
R:	D:	Volatile storage. Cleared on next power-up.

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