EPL Programming

Guide

Part Number: 14245L-001 A

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Functional Table of Contents for EPL Commands

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About This Document

This section provides you with contact information, document structure and organization, and additional reference documents.

Contents

Who Should Use This Document

This Guide is for programmers who are familiar working with programming languages.

How This Document Is Organized

The Guide is set up as follows:

Section	Description
Introduction	Provides a high-level overview about this guide and EPL.
Printer Configuration	Covers interpreting your printer's configuration setup and setting basic modes.
EPL Commands	Contains the complete alphabetical listing of EPL commands.
SGD Printer Setting Commands	Provides a high-level overview of printer setting Set / Get / Do (SGD) commands.
SGD Wired Commands	Provides a high-level overview of the wired Set / Get / Do (SGD) commands.
SGD Wireless Commands	Provides a high-level overview of the wireless Set / Get / Do (SGD) commands.
Appendixes	The appendixes include: *Character References* *2746e Print Odometer* *SGD Command Support*

Contacts

You can contact Zebra Technologies at the following:

Web Site

http://www.zebra.com

Technical Support via the Internet is available 24 hours per day, 365 days per year. Go to http://www.zebra.com/support.

The Americas

Regional Headquarters	Technical Support	Customer Service Dept.
Zebra Technologies International, LLC 333 Corporate Woods Parkway Vernon Hills, Illinois 60061.3109 U.S.A T: +1 847 793 2600 Toll-free +1 800 423 0422 F: +1 847 913 8766	T: +1 847 913 2259 F: +1 847 913 2578 Hardware: ts1@zebra.com Software: ts3@zebra.com	For printers, parts, media, and ribbon, please call your distributor, or contact us. T: +1 877 ASK ZEBRA (275 9327) E: clientcare@zebra.com

Europe, Africa, Middle East, and India

Regional Headquarters	Technical Support	Internal Sales Dept.
Zebra Technologies Europe Limited Zebra House The Valley Centre, Gordon Road High Wycombe, HP13 6EQ, UK Buckinghamshire T: +44 (0)1494 472872 F: +44 (0) 1494 450103	T: +44 (0) 1494 768298 F: +44 (0) 1494 768210 Germany: Tsgermany@zebra.com France: Tsfrance@zebra.com Spain/Portugal: Tsspain@zebra.com All other areas: Tseurope@zebra.com	For printers, parts, media, and ribbon, please call your distributor, or contact us. T: +44 (0) 1494 768316 F: +44 (0) 1494 768244 E: cseurope@zebra.com

Asia Pacific

Regional Headquarters	Technical Support	Customer Service
Zebra Technologies Asia Pacific, LLC 120 Robinson Road #06-01 Parakou Building Singapore 068913 T: +65 6858 0722 F: +65 6885 0838	T: +65 6858 0722 F: +65 6885 0838 E: China: tschina@zebra.com All other areas: tsasiapacific@zebra.com	For printers, parts, media, and ribbon, please call your distributor, or contact us. T: +65 6858 0722 F: +65 6858 0836

Document Conventions

The following conventions are used throughout this document to convey certain information.

Alternate Color (online only) Cross-references contain hot links to other sections in this guide. If you are viewing this guide online in .pdf format, you can click the cross-reference (blue text) to jump directly to its location.

Command Line Examples Command line examples appear in `Courier New` font. For example, type `ZTools` to get to the Post-Install scripts in the `bin` directory.

Files and Directories File names and directories appear in `Courier New` font. For example, the `Zebra<version number>.tar` file and the `/root` directory.

Icons Used

> **Important •** Advises you of information that is essential to complete a task.

> **Note •** Indicates neutral or positive information that emphasizes or supplements important points of the main text.

> **Example •** Provides an example, often a scenario, to better clarify a section of text.

1

Introduction

This section contains information about the basic features, command syntax, and terminology of the EPL2 programming language for Zebra's desktop printers with flash memory architecture. These printers incorporate common programming code sets and architectural features.

The primary operating mode for the printer is EPL2, a page description language. EPL2 is an ideal language for your labeling and bar code requirements. To speed printing, it is designed to assemble all of the elements of the label prior to printing. EPL2 is versatile and capable of printing graphics, a wide range media, and bar codes.

Some direct thermal printer models also include a legacy printer compatibility mode, Line Mode. Line Mode supports our early model EPL programming language - ELP1. A separate manual is provided for Line Mode printing. See the printer's Software and Documentation CD for the programmer's manual that applies to your printer, or visit our web site at: www.zebra.com

What's New in this Document

Newly added to this programming guide are Set/Get/Do (SGD) commands. SGD commands are commands that allow you to configure printers and have the printer perform the specified function immediately after receiving the command.

See *SGD Command Support* on page 311 to determine if these commands are compatible with your printer/firmware combination.

Command Conventions

The manual uses the following typographic conventions to describe commands.

Example	Description
A	Commands (case sensitive)
p1,p2,p3	Required parameters
[p,p,p]	Optional parameters
{Choice 1|Choice2}	Indicates a mandatory choice between two or more items. You must include one of the items unless all of the items are also enclosed in square brackets.
"NAME"	The name of a form or graphic in double quote marks.
"DATA"	The text or bar code data in double quote marks. The backslash (\) character designates the following character is a literal and will encode into the data field.

To Print	Enter into data field
"	\"
"Company"	\"Company\"
\	\\
\code\	\\code\\

"PROMPT"	An ASCII text field that will be transmitted to the host (via the serial interface) each time this command is executed.

> **!** **Important •** All commands and alpha character command parameters are case sensitive!

Basic Command Syntax

Each command consists of one or two ASCII (case sensitive) alpha characters to identify the specific command desired. Some commands require one or more additional parameters to supply the printer with sufficient information to complete the command. Refer to Figure 1- for the basic command syntax.

Figure 1 • Basic Command Syntax

Command Name

WRITE TEXT

$A\ p_1, p_2, p_3, p_4, p_5, p_6, p_7,$ "DATA"

Command   Parameters   Command Specific Data

Each command line must be terminated with a Line Feed (LF) character (Dec. 10). Most PC based systems send CR/LF when the Enter key is pressed. The Carriage Return (CR) character is ignored by the printer and cannot be used in place of LF.

Command Editor

One method to create command files is through an ASCII-based text editor. In the DOS environment, MS-DOS EDIT or BRIEF are good choices. In the Windows environment, TextPad® for Windows is a good choice and is available for download of a free evaluation copy at: www.textpad.com

Sending Commands Directly to the Printer

The easiest method available in the Microsoft Windows environment is to use the Zebra Universal Printer Driver (ZUD) for sending single EPL Page Mode commands to the printer. This method supports all of the printer interfaces. If you have successfully installed the printer and its printer driver, you can use the following procedure:

1. Find and open your printer in the Windows Start > Settings > Printers and Faxes selection.
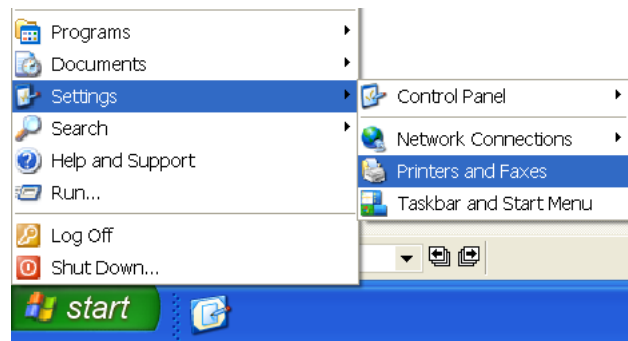
2. In the newly opened Printers and Faxes window, left click a single time to select your printer and then right click to open a menu window.
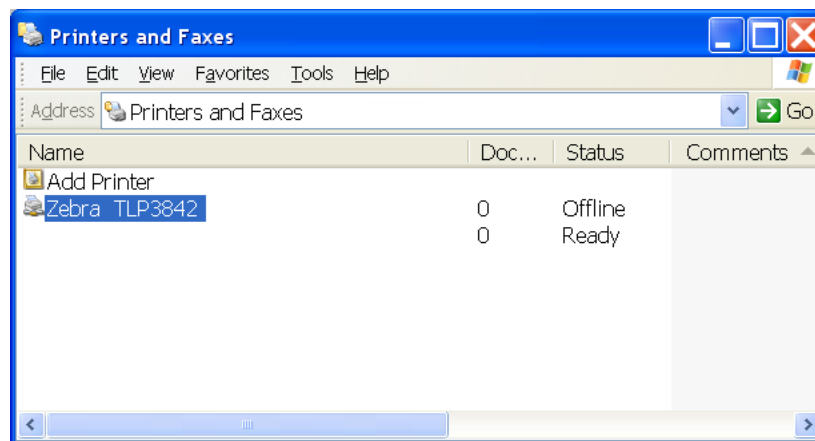
3. Click on the Properties menu selection.

4. Click on the Printer Tab.
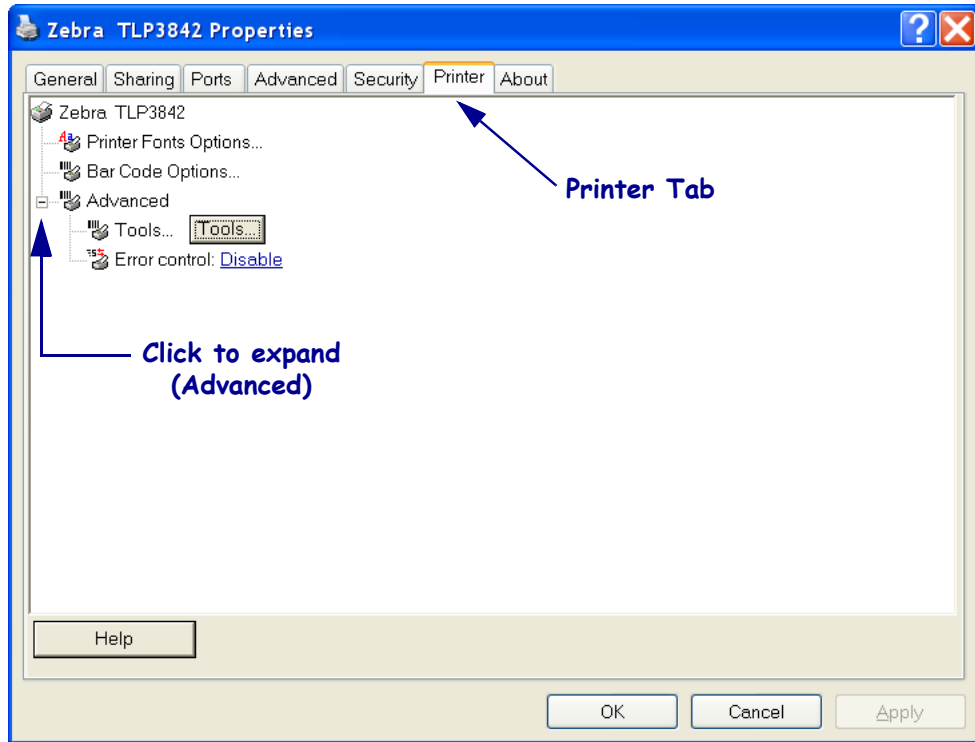
5. Click on the plus sign in front of Advanced to expand the selections available.

6. Click on the Tools button.
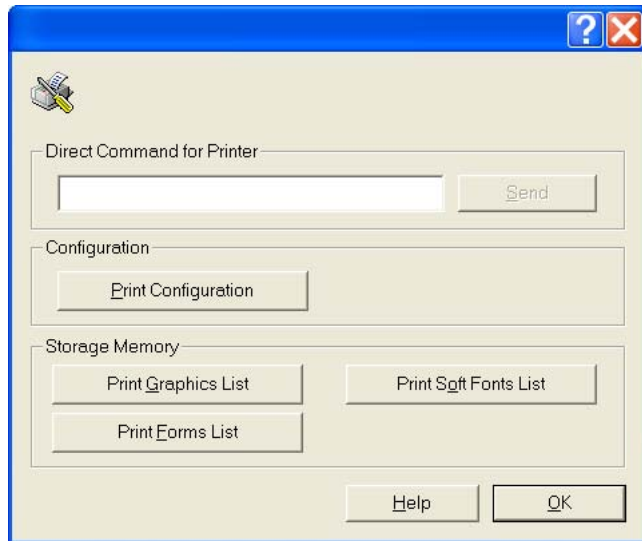
7. Click in Direct Command for Printer and begin typing EPL Page Mode printer commands. Press the Send button to send a single command. Do not use the Enter key on the key board; it is the same thing as pressing the OK button (to exit the Tools window).

Sending Command Programming Files to the Printer

Page Mode programming files can be sent to the printer from Windows operating systems by using the Zebra Firmware Downloader (found on the user's CD or at www.zebra.com. In the DOS enviroment, use the Copy command at the command prompt. The easiest method is to use the Zebra Firmware Downloader to transfer files to the printer.

Transferring files with the Firmware Downloader

1. Install the printer. Verify communication is working properly by printing a Printer Configuration or Test using the printer's driver properties window. See *Sending Commands Directly to the Printer* on page 21 for more details.

2. Install the Zebra Firmware Downloader on your system by selecting Start > Programs > Zebra > Firmware Downloader.
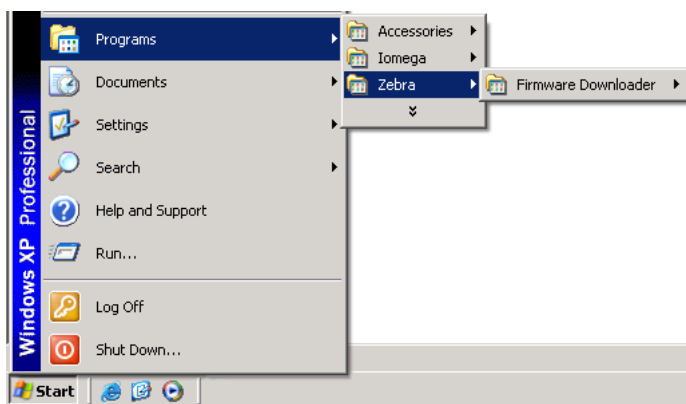
3. From the Printer menu, select Auto-Detect.
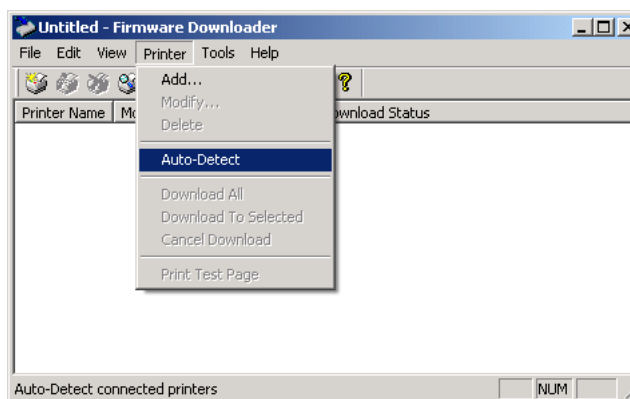
4. Click on your Zebra printer to select the printer for download.
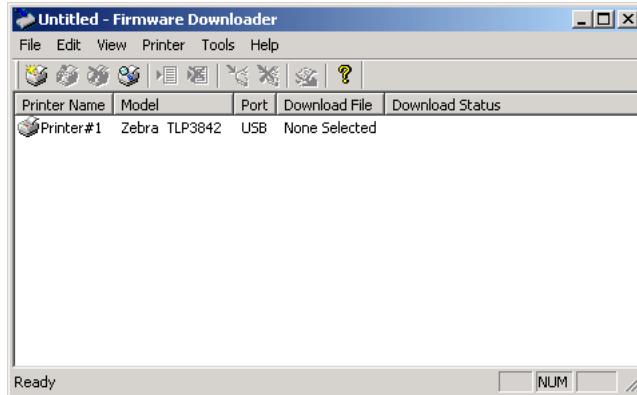
5. From the File menu, choose Select Firmware File.
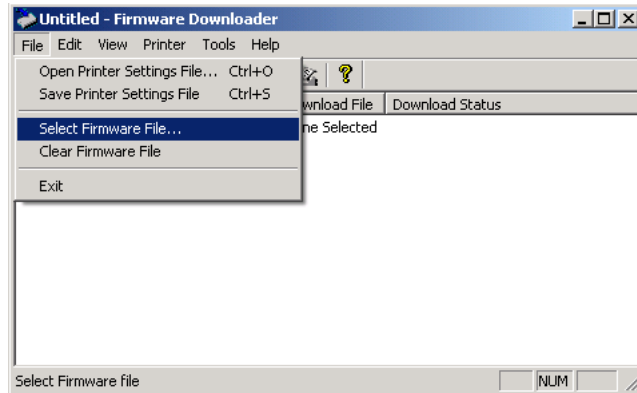
Use the Browser window to select your command file for download to your printer.

Downloading a File in the DOS Enviroment

To execute the file, use the editor's print command or from the DOS prompt, use the COPY command to send the file directly to the printer. This method does not support USB or Ethernet printer interfaces.

An example of the use of the COPY command is:

```
COPY "FILENAME.EXT" LPT1
```

or

```
COPY FILENAME.EXT" COM1
```

For more information on the use of the COPY command, refer to your DOS software manual. Configure the COM port to match the printer's serial port setting (typically set to defaults). See the Y command in section 2 for details.

Placing Elements in the Print Image

Image elements are located in the image print buffer on an X-Y grid expressed in dots. The X value represents the width and the Y value represents the height of the grid.

The point of origin (the starting point) for a non-rotated object is the upper left corner. As an object rotates, the point of origin rotates with the object.

These image buffer properties are depicted graphically in the following illustration.

Figure 2 • Sample Format
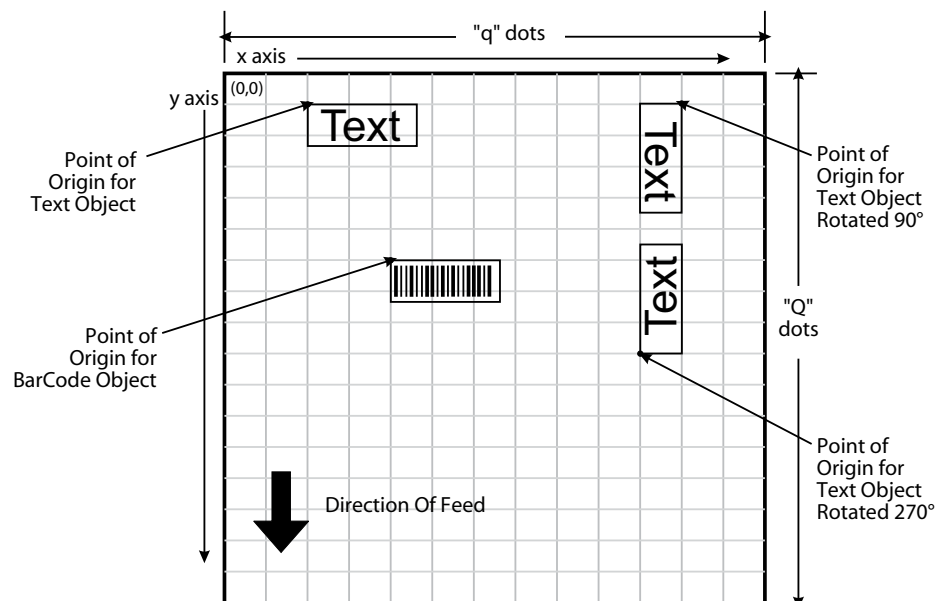
The minimum non-printing margin on all edges of the label is 1 mm. Printing closer than 1 mm to the top or bottom edge of the label may cause the printer to advance unwanted labels or cause the printer to go into error condition.

Text (Fonts)

The standard EPL2 printer has five (1-5) resident mono-spaced dot fonts. Fonts A-Z and a-z (upper and lower case alpha characters) are reserved for downloading soft fonts.

Figure 3 • Character spacing
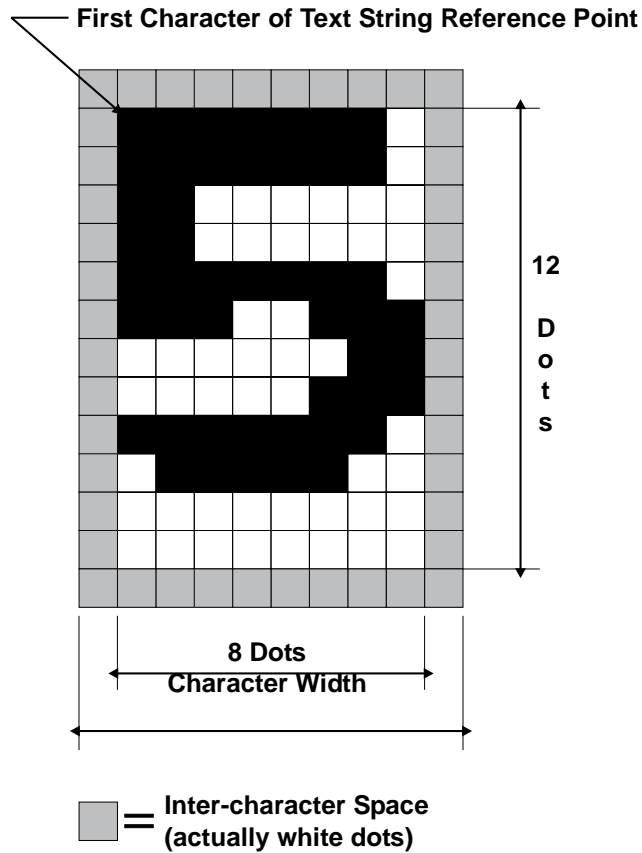
Control text height (in horizontal dots) and width (in vertical dots) with the horizontal and vertical multipliers. The text is oriented first and then the A command's font multipliers and font rotation are applied.

Note • The reference point of the first character in a text string is not affected by the font size multiplier values.

The standard Latin font (1-5) and soft font characters are dot mapped differently than the Asian font (8 & 9) characters. The Asian character does not have a built-in inter-character gap. The Latin characters include a single dot border around each character.
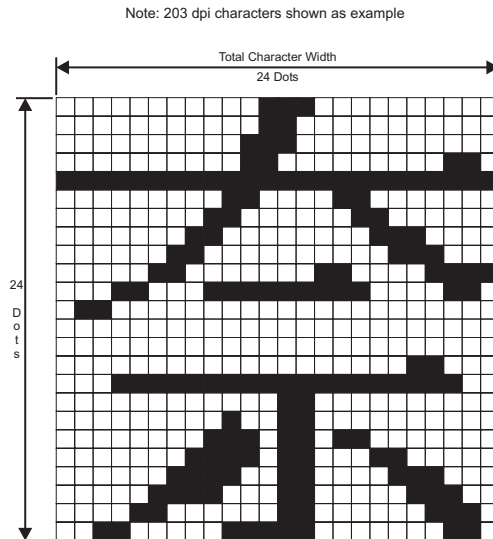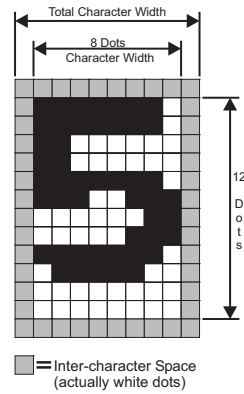
Fonts 1 (8 x 12 dots)   **Font 8 (24 x 24 dots)**

With the (A) command's horizontal multiplier (p5) set to 2, the inter-character spacing will look like the following example.
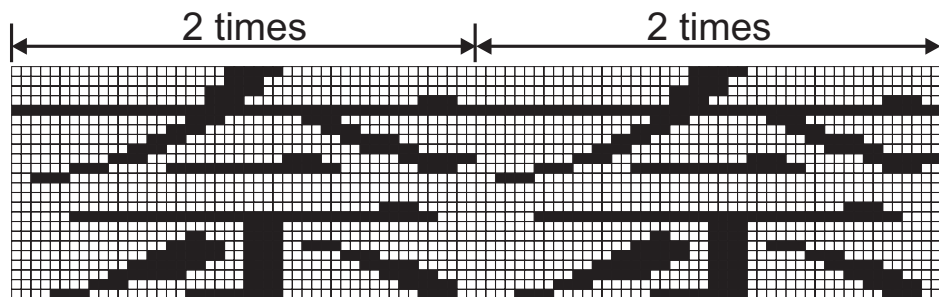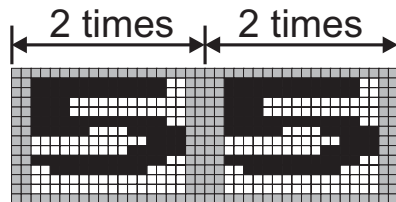
Text is placed into the image buffer. See the following example.
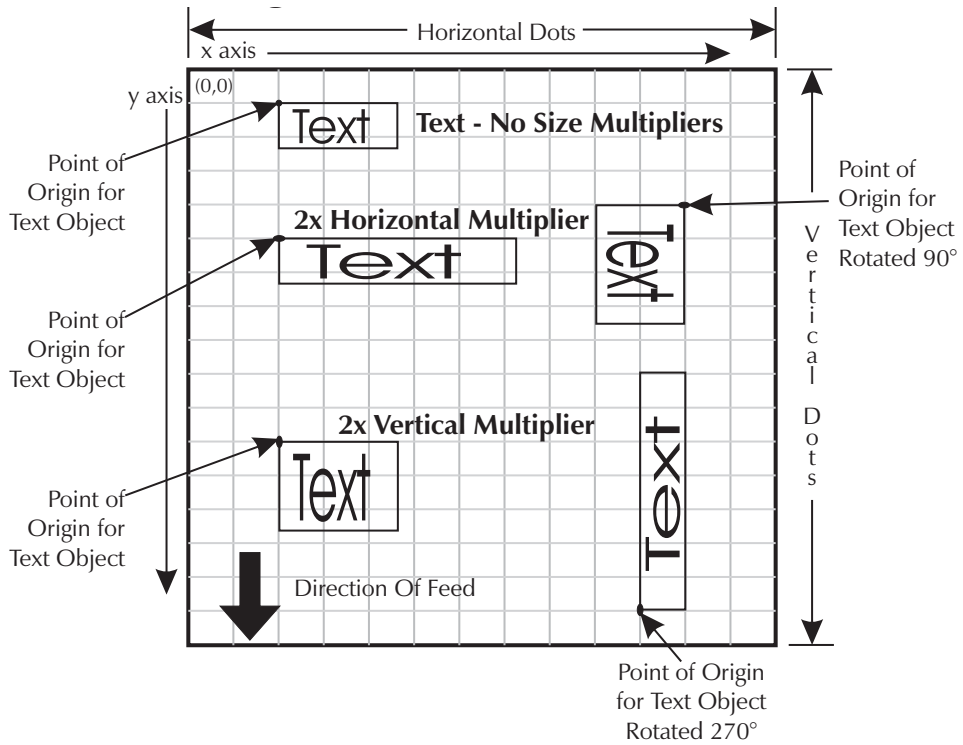
The Asian fonts (8-9) can print character strings oriented from top to bottom (p_3 values 4–7), as well as the standard Latin word orientation from left to right (p_3 values 0–3). The characters will print in the sequence that they are entered into the (A) command's data field.
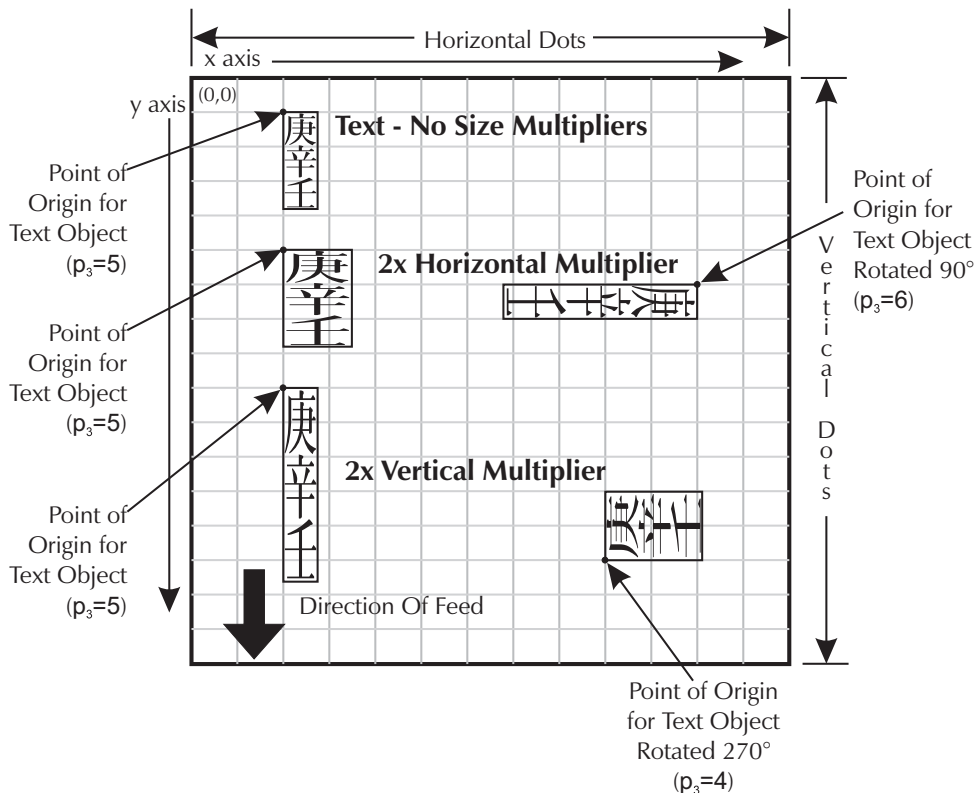
Language Character Sets (Fonts 1-5)

The Latin-based language and Greek character support is controlled and enabled with the *I command on page 110*. The default language set is the English DOS codepage 437. Characters, such as the Euro symbol, can be substituted using the *oR command on page 127*.

Asian Character Sets (Fonts 8 & 9)

The Page Mode EPL2 programming language supports up to two (2) font sets of a single Asian language as well as the standard EPL2 Latin (Multilingual) fonts 1-5 and downloadable soft fonts (A-Z and a-z).

Asian language support is an optional feature and requires a special version of the printer (PCBA) to support the large Asian character sets. The flash-based printers support up to five different Asian language character (ideogram) sets. See the *A command on page 41* for the detailed list of of fonts.

For Asian language firmware updates, publications, and support options, see www.zebra.com.

All fonts can be expanded both horizontally and vertically. The Asian fonts can also be printed from top to bottom or in the Latin character orientation from left to right. The Asian printers support the standard Latin fonts with the single character map code page 437 for all five (5) fonts.

The Asian characters are 16 bit (or double-byte) mapped characters. The printed Asian character is dependent on the double-byte ASCII values. The Latin (English, etc.) font sets are 8 bits per (or single-byte) ASCII character maps.

Note • Only one (1) Asian language is supported by a printer. Each Asian language (character set) is a separate printer firmware version.

Asian printers with flash firmware can be reprogrammed for a different Asian language, but we do not recommend this for normal use.

Chinese Character Set

The printer automatically recognizes single-byte characters and double-byte characters.

The single-byte font characters are mapped to hexadecimal address range 00 to 7F hex (0-127 decimal) for 203 dpi printers and 00 to FF hex (0-255 decimal) for 300 dpi printers.

The double-byte font characters are mapped to hexadecimal address range A1A0 to F7FF hex. First byte, 161 (A1h) and second byte 160 (A0h) to first byte, 247 (F7h) and second byte, 255 (FFh) is the decimal, grouped byte range.

Chinese Fonts 8 & 9 Double-Byte Ideographic Characters

The Chinese ideographic font characters are mapped to double-byte hexadecimal address range A1A0 to F7FFhex.

See the following pages for the codepage character mappings.

- Simplified — 203 dpi printers
- Simplified — 300 dpi printers
- Traditional — 300 dpi printers

Japanese Character Sets

The printer automatically recognizes single-byte characters and double-byte characters in the Shift-JIS codepage. The single-byte font characters are mapped to hexadecimal address range 00 to 7F hex (0-127 decimal) for 203 dpi printers and 00 to FF hex (0-255 decimal) for 300 dpi printers.

The double-byte font characters are mapped to the hexadecimal address ranges in the following table.

Codepage Reference	Range	From		To	
		1st byte	**2nd byte**	**1st byte**	**2nd byte**
JIS	2120-7424	33 (21h)	32 (20h)	116 (74h)	36 (24h)
Shift-JIS	8140-9FFC	129(81h)	64 (40h)	159 (9Fh)	252 (FCh)
	E040-EAA4	224 (E0h)	64 (40h)	234 (EAh)	164 (A4h)

Japanese Fonts 8 & 9 Double-Byte Ideographic Characters

The Japanese ideographic font characters are mapped to double-byte hexadecimal addresses. See the following electronic document (Acrobat format) pages for codepage character maps.

- 203 dpi printers — JIS
- 203 dpi printers — Shift JIS
- 300 dpi printers — JIS
- 300 dpi printers — Shift JIS

Korean Character Sets

The printer automatically recognizes single-byte characters and double-byte characters.

The single-byte font characters are mapped to hexadecimal address range 00 to 7F hex (0-127 decimal).

The double-byte font characters are mapped to hexadecimal address range A1A0 to F0FF hex. First byte, 161 (A1h) and second byte 160 (A0h) to first byte, 253 (FDh) and second byte, 255 (FFh) is the decimal, grouped byte range.

Korean Font 8 Double-Byte Characters

The Korean font characters are mapped to double-byte hexadecimal address range A1A0 to FDFF hex. See the following pages for the character maps.

- 203 dpi printers
- 300 dpi printers

Bar Codes

All bar codes supported by the EPL2 language have associated industry specifications that the programmer should be aware of and adhere to. The programmer needs to consider bar code features and requirements when choosing and using a bar code for different applications. Some of the features and requirements that need consideration are listed below:

- Data used by the application are per the bar code specification (numbers only, alphanumeric, alphanumeric and special characters, etc.).
- Minimum and maximum number of characters allowed or required per bar code.
- Density or magnification of a given bar code type.
- White area required around bar codes (the "Quiet Zone").
- The bar code must print within the image buffer (printable area of the label).

Note • Bar Code Orientation Tip: To help ensure that generated bar codes are readable by the widest variety of bar code readers, print bar codes in the "Picket Fence" orientation versus the "Ladder" orientation.
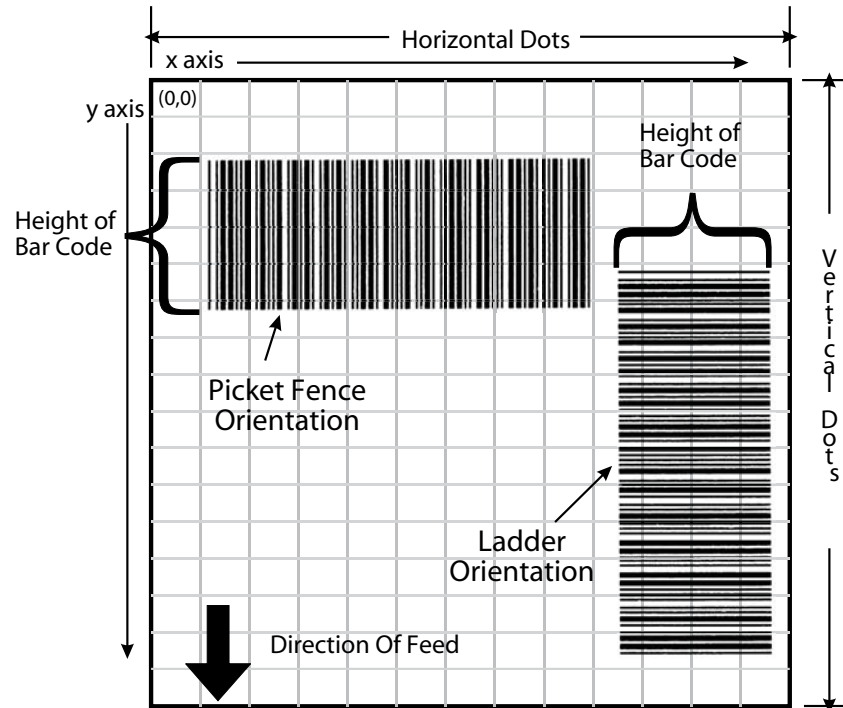
QR Code Bar Code

The QR Code bar code is only offered with Japanese Character bar code printer configurations.

Programming Sequences Affect Graphic Results

Graphic elements can interact and the resultant image can be affected by other commands. Structure command sequences to reduce the chances of unexpected print results. The printer will process lines, text, boxes, and most bar codes in command sequence. The printer then processes the printer control processes, counters, variable data, Postnet, and then graphics last.

2

Printer Configuration

This section covers interpreting your printer's configuration setup and setting basic modes. To determine your printer's configuration and operating mode, do one of the following:

- Print a configuration label using the control panel.
- Print a configuration label by sending the U command to the printer.
- Use the AutoSense feature.

The primary functions that AutoSense provides are:

- adjustment of the Media Sensor in the printer to the media in use
- the programming mode — page (EPL2) or line (EPL1 emulation) mode.
- the printer's serial interface settings
- the printer's configuration status including printer options

Note • The AutoSense feature and Line Mode are not available for all printer models. Refer to your printer's user guide for specific feature information.

Explanation of the Status Printout

Depending on your printer model, your dump mode label will look similar to one of those shown below. See for additional information.

Figure 4 • Dump Mode Print Samples
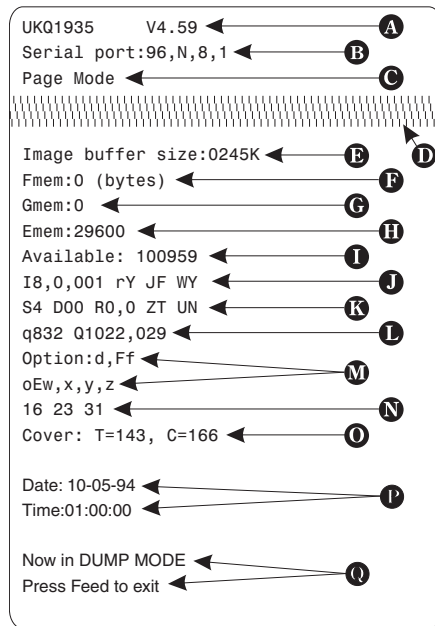
Dump Mode Print Sample

A. Printer I.D. code number and firmware version.
B. Serial port configuration.
C. Programming Mode
Print head resolution
D. Print head test pattern.
E. Amount of memory available for the Image buffer.
F. Amount of memory used and memory available for Form storage.
G. Amount of memory used and memory available for Graphics storage.
H. Amount of memory used and memory available for Soft fonts.
I. Total free memory available for Forms, Fonts, or Graphics
J. Currently selected Character Set (**I**) and Image Buffer mode setting (**r**).
rY = Double Buffering Enabled
rN = Double Buffering Disabled
K. Currently selected Print Speed (**S**), Heat Density (**D**), Reference Point (**R**), Print Orientation (**Z**) and Error Status (**U**).
L. Currently selected Form Width (**q**) and Length (**Q**).
M. Current Hardware and Software Option status.
N. Current AutoSense Through (Web/Gap) Sensor values. The three numbers represent;
1. Backing Transparent point
2. Set point
3. Label Transparent point.
O. Head Up (Open) Sensor settings
P. Current Date and Time set in Real Time Clock. Thess values will only be displayed if your printer is equipped with the Real Time Clock feature.
Q. Current Dump Mode Status.

Determining Printer Firmware Version

The printer version numbers are a code used to document product function and the feature support level of the printer. The latest firmware version and updates can be obtained from our web site.

Programming Mode Configuration

Flash based printers are, by default, configured for Page (EPL2) mode operations. The operator must convert the printer to Line Mode prior to the initial use of Line Mode. This is done via a hardware select procedure with the Feed button during printer power-up. See the *OEPL1* command on page 132 for details on switching between line and page modes via programming.

The following direct thermal printers support Line Mode (EPL1 emulation):

- LP2824
- LP2844

Note • The Line Mode (and Page Mode) configuration setting is retained after reset has been issued or power has been cycled.

Manually Setting Line Mode

The Line Mode capable printer utilizes the Feed button during printer power-up to toggle between the printer personality modes, Line and Page (EPL2).

1. With printer power off, press and hold the Feed button while turning on the printer, and then release the button when the LED starts blinking red.

2. When the indicator LED starts flashing green, immediately press and hold the Feed button.

3. Release the Feed button when the LED turns a steady amber (orange) color.

4. Verify printer personality with Dump Mode printout: Line Mode or Page Mode (EPL2).

5. Press the Feed button to exit the Dump Mode.

Media Detection

Media detection in EPL2 printers is a combination of programming and printer media sensing. The Q (Set Form Length) and O (Option) commands program the media detection method. The user must configure the printer for the media type and the (programmed) form or label in use.

The printer can detect the beginning and end of the printable area on the media by one of three methods: gap, notch (hole), or black line. The gap method detects the difference in optical density of a label on a liner from the liner only with the transmissive (gap) sensor. The notch method uses the transmissive sensor to detect a hole in the media (gap-less labels or tag stock). The black line method uses the reflective sensor to detect a preprinted black line on the media back (for gap-less labels or tag stock).

Printing on continuous media requires programming to control media positioning.

EPL2 printers also support a "Label Dispense" mode as a printer configuration option (for most models). The printers use a "Label Taken" sensor to detect the removal of a label.

One or more of these sensors may require user adjustment or configuration for proper operation. All EPL2 printers have an AutoSense feature to optimize label and label gap detection by the transmissive (gap) sensor. See the printer's user manual for printer specific sensor adjustment control.

3

EPL Commands

This section contains a complete alphabetical listing of all EPL commands.

Memory and Command Usage

The printer stores configuration settings, fonts, graphics (logos) and label form files into printer memory. The Command Reference includes a Memory column with the following terms:

- **Image** commands are use to assemble the printed label image in the print image buffer.

- **Form** commands are only used within forms.

- **Session** commands place the configuration setting in temporary RAM memory. The setting reverts to the printer default when the printer has power cycled or is reset.

- **Stored memory** commands will check for differences with the existing command setting prior to validating a memory write operation. The printer's non-volatile "flash" memory has a limited number of write cycles (100,000 plus).

- **Writes to memory** commands are commands that do not check to see if a setting, file, font, character or graphic is already present or if that condition is already set. These commands are rarely used in forms except as a printer initialization and function oriented configuration.

Command Description Memory Page

Command	Description	Memory	Page
A	ASCII Text	Image	41
AUTOFR	Automatic Form Printing	Form	48
B	Bar Code	Image	50
B	RSS-14 Bar Code	Image	56
b	Aztec	Image	60
	Aztec Mesa	Image	64
	Data Matrix	Image	66
	MaxiCode	Image	70
	PDF417	Image	74
	QR Code	Image	81
C	Counter	Form	83
C	Cut Immediate	—	85
D	Density	Stored	86
dump	Enable Dump Mode	—	87
EI	Print Soft Font Info.	—	88
EK	Delete Soft Font	Writes	89
eR	User Definable Error Response	Writes	90
ES	Store Soft Font	Writes	91
f	Cut Position	Stored	96
fB	Adjust Backup Position	Writes	97
FE	End Form Store	Writes	98
FI	Print Form Info.	—	99
FK	Delete Form	Writes	100
FR	Retrieve Form	—	101
FS	Store Form	Writes	102
GG	Retrieve Graphics	Image	103
GI	Print Graphics Info.	—	104
GK	Delete Graphic	Writes	105
GM	Store Graphic	Writes	106
GW	Direct Graphic Write	Image	108
i	Asian Character Spacing	Stored	109
I	Character Set Selection	Stored	110
JB	Disable Top Of Form Backup	Stored	112
JC	Disable Top Of Form Backup - All Cases	Stored	113

Command	Description	Memory	Page
JF	Enable Top Of Form Backup	Stored	114
LE	Line Draw Exclusive OR	Image	115
LO	Line Draw Black	Image	116
LS	Line Draw Diagonal	Image	117
LW	Line Draw White	Image	118
M	Memory Allocation	Writes	119
N	Clear Image Buffer	Image	120
o	Cancel Customized Settings	Writes	121
oB	Cancel Customize Bar Code	Writes	122
oE	Line Mode Font Substitution	Writes	123
oH	Macro PDF Offset	Image	124
oM	Disable Initial Esc Sequence Feed	Stored	126
oR	Character Substitution (Euro)	Writes	127
oW	Customize Bar Code Parameters	Writes	128
O	Options Select	Stored	130
OEPL1	Set Line Mode	Writes	132
P	Print	—	133
PA	Print Automatic	Form	134
q	Set Form Width	Stored	135
Q	Set Form Length Transmissive (Gap) Sensor Black Line Sensor| Continuous Stock	Stored	137
r	Set Double Buffer Mode	Stored	140
R	Set Reference Point	Stored	141
S	Speed Select	Stored	142
T	Define Date Layout (& Print Date)	Writes	143
TS	Set Real Time Clock	Stored	144
TT	Define Time Layout (& Print Time)	Writes	145
U	Print Configuration	—	146
UA	Enable Clear Label Counter Mode	Session	147
UB	Reset Label Counter Mode	Writes	148
UE	External Font Information Inquiry	—	149
UF	Form Information Inquiry	—	150
UG	Graphic Information Inquiry	—	151
UI	Host Prompts/Codepage Inquiry	Session	152

Command	Description	Memory	Page
UM	Codepage & Memory Inquiry	Session	153
UN	Disable Error Reporting	Stored	154
UP	Codepage & Memory Inquiry/Print	—	155
UQ	Configuration Inquiry	—	156
US	Enable Error Reporting	Stored	157
UT	Enable Alternate Error Reporting	Stored	159
U%	Host Prompts/Battery Inquiry	—	160
U$	Host Prompts/Motor Temperature Inquiry	—	161
V	Define Variable	Form	162
W	Windows Mode	Stored	164
xa	Sense Media	Writes	165
X	Box Draw	Image	166
Y	Serial Port Setup	Stored	167
Z	Print Direction	Stored	168
?	Download Variables	Form	170
^@	Reset Printer	—	171
^default	Set Printer to Factory Defaults	Writes	172
^ee	Status Report - Immediate	—	173
;	Code Comment Line	Form	174

A

ASCII Text

Description   Renders an ASCII text string to the image print buffer. See *Text (Fonts) on page 26* for discussion on text handling in Page Mode programming.

Asian language EPL2 Page Mode printers have special firmware and printer (PCBA) memory order options to support the large Asian character (ideogram) sets.

The Latin (English, etc.) font sets (1-5, a-z, and A-Z) are single-byte (8 bits per byte) ASCII character maps. The Asian characters are double-byte mapped characters. The printed Asian character is dependent on the double-byte ASCII values.

Syntax $Ap_1, p_2, p_3, p_4, p_5, p_6, p_7,$ "DATA"

Parameters   This table identifies the parameters for this format:

Parameters	Details
$p_1 =$ Horizontal start position	Horizontal start position (X) in dots.
$p_2 =$ Vertical start position	Vertical start position (Y) in dots.

$p_3 =$ Rotation	Characters are organized vertically from left to right and then rotated to print.
	
	Accepted Values:
	  0 = normal (no rotation)
	  1 = 90 degrees
	  2 = 180 degrees
	  3 = 270 degrees
	
	Rotation for Asian Printers Only
	Characters are organized horizontally from top to bottom and then rotated to print. Asian printers support both horizontal and vertical character rotation.
	
	Accepted Values: (Asian Printers Only)
	  4 = normal (no rotation)
	  5 = 90 degrees
	  6 = 180 degrees
	  7 = 270 degrees

Parameters	Details
p_4 = Font selection	

Value	Description	
	203 dpi	**300 dpi**
1	20.3 cpi, 6 pts, (8 x 12 dots)	25 cpi, 4 pts, (12 x 20 dots)
2	16.9 cpi, 7 pts, (10 x 16 dots)	18.75 cpi, 6 pts, (16 x 28 dots)
3	14.5 cpi, 10 pts, (12 x 20 dots)	15 cpi, 8 pts, (20 x 36 dots)
4	12.7 cpi, 12 pts, (14 x 24 dots)	12.5 cpi, 10 pts, (24 x 44 dots)
5	5.6 cpi, 24 pts, (32 x 48 dots)	6.25 cpi, 21 pts, (48 x 80 dots)
A - Z	Reserved for Soft Font storage.	
a-z	Reserved for printer driver support for storage of user-selected Soft Fonts.	
6	Numeric Only (14 x 19 dots)	Numeric Only (14 x 19 dots)
7	Numeric Only (14 x 19 dots)	Numeric Only (14 x 19 dots)
	Asian Printers	
8	**Simplified Chinese, Japanese, Korean** 203 dpi fonts : 24 x 24 dots 300 dpi Double-byte fonts: 36 x 36 dots 300 dpi Single-byte fonts: 24 x 26 dots	
9	**Traditional Chinese, Japanese** 300 dpi Double-byte fonts: 36 x 36 dots 300 dpi Single-byte fonts: 24 x 26 dots **Korean - Reserved**	

- Fonts 1-5 are fixed pitch.
- Asian language option printers support a single language with fonts 8 and 9.

Parameters	Details
p_5 = Horizontal multiplier	Horizontal multiplier expands the text horizontally. *Accepted Values:* 1–6, 8
p_6 = Vertical multiplier	Vertical multiplier expands the text vertically. *Accepted Values:* 1–9
p_7 = Reverse image	*Accepted Values:* N = normal R = reverse image
DATA = Fixed data field	Fixed data field The backslash (\) character designates the following character is a literal and will encode into the data field.

To Print	Enter into data field
"	\"
"Company"	\"Company\"
\	\\
\code\	\\code\\

Example • In this example, font 5 only supports upper case characters. Refer to Appendix B, Character References, for a complete listing of available fonts and character sets supported.

```
N↵
A50,0,0,1,1,1,N,"Example 1"↵
A50,50,0,2,1,1,N,"Example 2"↵
A50,100,0,3,1,1,N,"Example 3"↵
A50,150,0,4,1,1,N,"Example 4"↵
A50,200,0,5,1,1,N,"EXAMPLE 5"↵
A50,300,0,3,2,2,R,"Example 6"↵
P1↵
```

The code above will produce this label:
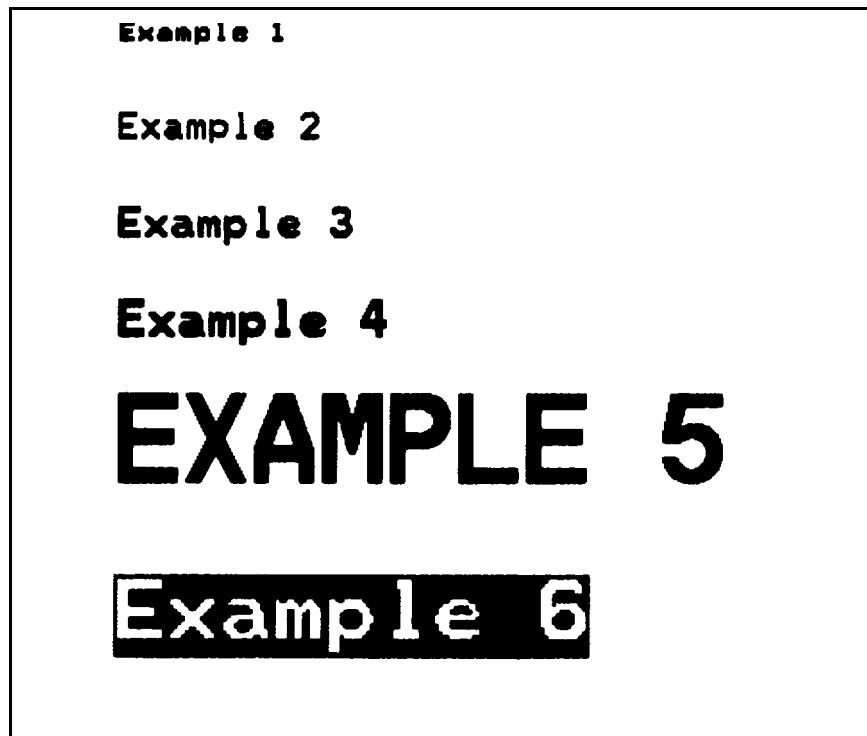
Note • Use the LE command to create reverse print text instead of the "R" in the A command parameter p_7. This is the recommend method because it provides the best size, position, and centering of the black line (rectangle) bordering the reversed text.

Special JIS Code Page Programming Considerations

The JIS keyboard technique utilizes double-byte data characters. Each byte of the of the double-byte character can be represented by one of the lower 128 ASCII data characters (20 through 7F hexadecimal).

The printer uses a Shift-& to recognize a JIS character text data string. Once the JIS text mode has been set with the Shift-&, the JIS text mode remains in effect until the text data string is terminated.

> Shift = 1C hexadecimal or 28 decimal
>
> & (Ampersand) = 26 hexadecimal or 38 decimal

If any text data string contains the ASCII character values for the quote (") character, then it must be proceeded by a backslash.

> " (quote) = 22 hexadecimal or 34 decimal
>
> \ (backslash) = C5 hexadecimal or 92 decimal

Note • Enter the "Shift" character with the number pad on the standard 101 key PC keyboard. With the Number Lock on, type 028 on the number pad while holding the ALT key down. This is a standard method of entering ASCII characters not directly supported by a keyboard.

When using the JIS, if the last character in a string of characters is a backslash (\), then the Shift character followed by any character is required to exit the JIS character mode.

Example •

```
A50,0,0,8,1,1,N,"Example JIS <Shift>&5\<Shift>."
```

In this example:

- \<Shift\> represents the ASCII value 28 decimal.
- \<Shift\>& enters JIS text mode.
- \<Shift\>. exits JIS text mode
- (returns to Shift JIS text mode).

Variable Data and Counter Functions

The "Data" field can be replaced by or combined with the following commands:

- Vnn= Prints the contents of variable "nn" at this position where nn is a 2 digit number from 00 to 99. For more information, refer to the *V command on page 162*.

- Cn= Prints the contents of counter "n" at this position where n is a one digit number from 0 to 9. For more information, refer to the *C command on page 83*.

Example •

```
A50,0,0,1,1,1,N,"DATA"↵      : Writes Text
A50,50,0,2,1,1,N,V01↵        : Writes contents of variable
                               01
A50,100,0,3,1,1,N,C1↵        : Writes contents of counter 1
A50,100,0,3,1,1,N,C1+2↵      : Writes contents of counter 1
                               plus 2
```

Data with the RTC Time & Date Functions

The "Data" field can be replaced by or combined with the following variables:

- TT = Prints the current time at this position in the predefined format. See the TT command for format selection. This variable is available only if the printer Time & Date option is installed.

- TD = Prints the current date at this position in the predefined format. See the TD command for format selection. This variable is available only if the printer Time & Date option is installed.

Example •

```
A50,150,0,4,1,1,N,TT↵        : Writes current time
A50,200,0,5,1,1,N,TD↵        : Writes current date or a
                               combination of several
                               options:
A50,300,0,3,2,2,R,"Deluxe"V01C2"Combo"TDV01TT↵

                             : Writes the text "Deluxe"
                               followed by the contents of
                               variable 01 followed by the
                               contents of counter 2 followed
                               by the text "Combo" followed
                               by the current date followed
                               by the contents of variable 01
                               followed by the current time.
```

A

Simple Expressions in Data Fields

An advanced function of the A command allows addition and subtraction to be performed on constant and variable values in flash printers.

Syntax $Ap_1,p_2,p_3,p_4,p_5,p_6,p_7,"DATA" [p_8p_9p_{10}\ldots]$

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 through p_7, "DATA"	See the first page of the *A command on page 41*.
p_8 = Required variable data field number	Must be a variable data field number, such as V00, V01, and so forth.
p_9 = Required operator	*Accepted Values:* + or –
p_{10} = Required	Variable data field number or constant value.
	Accepted Values:
	Constant = 0 to 2147483647
	Variable = 0 to 2147483647
	Result = -2147483648 to 2147483647
	• The expression must start with a variable field.
	• The character field length defined for the first variable in the expression will be used to format the result. If the result is of a greater length than the defined character length, then the result field will contain 'X's.
	• A syntax error will be generated during form storage if the constant value is too large.
	• If an error occurs during the evaluation of the expression, the resultant field will be filled with 'X's.

Example •

```
FK"1"↵
FK"1"↵
FS"1"↵
V00,10,N,"Enter current mileage"↵
A100,100,0,4,1,1,N,"Current mileage is "V00" miles."↵
A100,200,0,4,1,1,N,"Change oil at "V00+3000" miles."↵
FE↵
↵
FK"2"↵
FK"2"↵
FS"2"↵
V00,10,N,"Enter current mileage."↵
V01,10,N,"Enter interval mileage."↵
A100,100,0,4,1,1,N,"Current mileage is "V00" miles."↵
A100,200,0,4,1,1,N,"Mileage interval is "V01" miles."↵
A100,200,0,4,1,1,N,"Change oil at "V00+V01" miles."↵
FE↵
↵
FK"3"↵
FK"3"↵
FS"3"↵
V00,10,N,"Enter value 1."↵
V01,10,N,"Enter value 2."↵
V02,10,N,"Enter value 3."↵
A100,200,0,4,1,1,N,"Answer: "V01+123+V00-10-V02↵
FE↵
```

Asian Character Font Sets

Asian language support is an optional feature and requires a special version of the printer (PCBA) to support the large Asian character sets.

The Asian character maps and special features of the A command that support the character sets can be found starting on .

AUTOFR

Automatic Form Printing

Description   This special form process allows you to detach the printer from the computer and print in a standalone mode. The EPL2 printer reserves the form name AUTOFR to allow the printer to automatically start a form when the printer is initialized power-up. This feature can be used in many ways, including the following:

• Feed a single label in peel mode and print multiple labels set to the number of labels on the roll.

• Have a form with a variable and enter the variable with a scanner, terminal, weight scale, circuit analyzer or any other device capable of sending ASCII character data.

Mobile printers, such as the TR 220, ignore this command.

Syntax   `FK"AUTOFR"` or `FS"AUTOFR"`

Parameters   There are no parameters for this command.

Example • Download a form to the printer with the name AUTOFR.

```
↵                          : Line Feed to initialize the
                             printer
FK"AUTOFR"↵                 : Form Kill (delete any existing
                             AUTOFR)
FS"AUTOFR"↵                 : Form Save (save file from here
                             to FE at the bottom)
V00,8,L,""↵                 : Variable field definition
Q254,20↵                    : Label height followed by gap
                             width
S2↵                         : Speed (2ips)
D7↵                         : Density setting
ZB↵                         : Print direction (ZT flips it
                             180 degrees)
A340,20,0,4,1,2,N,"QUANTITY"↵: Fixed text line
B265,75,0,3,2,4,101,B,V00↵  : Bar code definition
PA1↵                        : Print 1 label Automatically *
FE↵                         : Form End (Line Feed)
```

Note • AUTOFR treats any incoming data as a variable intended for printing. If you send the printer a memory partition command, the label will print, and if you send a delete command, the label will also print. So, while you are testing AUTOFR it is best to use another name for the form. Once you are satisfied with the form, rename it AUTOFR before you download it. There is no need to specify a file extension.

Isolating Data from the Input Device

Place the printer in the diagnostic dump mode and send from your data input device.

- All characters the device sends will be printed on the label.

- If nothing prints, nothing is arriving; check pin-outs and serial settings.

Disabling **AUTOFR**

Send a XOFF data character (13 hex. or ASCII 19) or a NUL(00 hex. or ASCII 0) to the printer. The form may now be deleted from the printer.

Removing **AUTOFR**

The programmer must send a Delete Form - `FK` command to the printer after disabling AUTOFR.

```
FK"AUTOFR"↵
```

```
FK"AUTOFR"↵
```

B

Bar Code

Description Use this command to print standard bar codes.

Syntax Bp_1,p_2,p_3,p_4,p_5,p_6,p_7,p_8,"DATA"

Parameters This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.

p_3 = Rotation	*Accepted Values:*
	  0 = normal (no rotation)
	  1 = 90 degrees
	  2 = 180 degrees
	  3 = 270 degrees

p_4 = Bar Code selection.	See Table 1, *Bar Codes* on page 51 for more information.
p_5 = Narrow bar width	Narrow bar width in dots. See Table 1, *Bar Codes* on page 51 for more information.
p_6 = Wide bar width	Wide bar width in dots. *Accepted Values:* 2-30 See Table 1, *Bar Codes* on page 51 for more information.
p_7 = Bar code height	Bar code height in dots.

p_8 = Print human readable code	*Accepted Values:*
	  B = yes
	  N = no

DATA = Fixed data field	The data in this field must comply with the selected bar code's specified format. The backslash (\) character designates the following character is a literal and will encode into the data field. Refer to the following examples: | To Print	Enter into data field | |---|---| | " | \" | | "Company" | \"Company\" | | \ | \\ | | \code\ | \\code\\ |

Table 1 • Bar Codes

Description	P4 Value	P5 Value	P6 Value
Code 39 std. or extended	3	1-10	Y
Code 39 with check digit	3C	1-10	N
Code 93	9	1-10	N
Code 128 UCC Serial Shipping Container Code	0	1-10	N
Code 128 auto A, B, C modes	1	1-10	N
Code 128 mode A	1A	1-10	N
Code 128 mode B	1B	1-10	N
Code 128 mode C	1C	1-10	N
Code 128 with Deutsche Post check digit	1D	2-10	N
Codabar	K	1-10	Y
EAN8	E80	2-4	N
EAN8 2 digit add-on	E82	2-4	N
EAN8 5 digit add-on	E85	2-4	N
EAN13	E30	2-4	N
EAN13 2 digit add-on	E32	2-4	N
EAN13 5 digit add-on	E35	2-4	N
German Post Code	2G	3-4	N
Interleaved 2 of 5	2	1-10	Y
Interleaved 2 of 5 with mod 10 check digit	2C	1-10	Y
Interleaved 2 of 5 with human readable check digit	2D	1-10	Y
Postnet 5, 9, 11 & 13 digit	P	—	N
Planet 11 & 13 digit	PL	—	N
Japanese Postnet	J	—	—
UCC/EAN 128	1E	1-10	N
UPC A	UA0	2-4	N
UPC A 2 digit add-on	UA2	2-4	N
UPC A 5 digit add-on	UA5	2-4	N
UPC E	UE0	2-4	N
UPC E 2 digit add-on	UE2	2-4	N
UPC E 5 digit add-on	UE5	2-4	N
UPC Interleaved 2 of 5	2U	1-10	Y
Plessey (MSI-1) with mod. 10 check digit	L	—	—
MSI-3 with mod. 10 check digit	M	—	—

Bar Code Table Notes

1. Hyphens maybe used in data as a data separator and will be ignored.

2. Use ASCII 06 to delimit variable length fields.

3. Japanese Postal Code accepts alpha-numeric characters. It truncates the data after 20 characters, and pads up to 20 with a pad character.

4. The data for a Deutsche Post Code 128 barcode consists of 12 characters: BBNNNNNNNNDE, where B is any character in the 'B' character set, N is any decimal digit ('0' – '9'), and DE are the literal characters "DE" (Germany). A 1D bar code type creates a standard Code 128 symbol, but the firmware calculates and inserts a check digit between the last N and the DE before rendering the bar code. It will abort and report a syntax error if any of the 8 characters between AA and DE are not digits. It will, however, allow any number of function codes F1 through F3 to be interspersed with the digits.

5. Planet: See USPS Publication 197 for details. Either 11 or 13 digits may be supplied, and the printer calculates and appends a check digit for a total of 12 or 14 digits. As with Postnet, hyphens ('-') may be used as data separators for readability and will be discarded by the printer.

Example 1 •

```
B10,10,0,PL,5,5,5,N,"12-34567-890123"
```

Example 2 •

```
N↵
B10,10,0,3,3,7,200,B,"998152-001"↵
P1↵
```

produces this label:

998152-001

Bar Codes with Variables & Counters

The data field can be replaced by or combined with the following commands:

- `Vnn` = Prints the contents of variable "nn" at this position.
  Range of nn = 00 to 99.

- `Cn` = Prints the contents of counter "n" at this position.
  Range of n = 0 to 9

See Appendix C for additional Data parameters for printers with the RTC (real time clock) option installed.

Example •

```
B50,0,0,3,1,2,50,B,"DATA"↵   : Writes bar code
B50,50,0,3,1,2,50,N,V01↵     : Writes contents of variable 01
                               as bar code
B50,50,0,3,1,2,50,N,C1↵      : Writes contents of counter 1
                               as bar code
B50,50,0,3,1,2,50,N,C1+2↵    : Writes contents of counter 1
                               plus2 as bar code or a
                               combination of several
                               options:
B50,300,0,3,1,2,50,B,"Deluxe"V01C2"Combo"V01↵
                             : Writes the text "Deluxe"
                               followed by the contents of
                               variable 01 followed by the
                               contents of counter 2 followed
                               by the text "Combo" followed
                               by the contents of variable 01
                               all as a code 39 bar code.
```

or a combination of several options:

```
B50,300,0,3,1,2,50,B,"Deluxe"V01C2"Combo"V01↵
                             : Writes the text "Deluxe"
                               followed by the contents of
                               variable 01 followed by the
                               contents of counter 2 followed
                               by the text "Combo" followed
                               by the contents of variable 01
                               all as a code 39 bar code.
```

Data with the RTC Time & Date Functions

The "Data" field can be replaced by or combined with the following variables:

- TT = Prints the current time at this position in the predefined format. See the TT command for format selection. This variable is available only if the printer Time & Date option is installed.

- TD = Prints the current date at this position in the predefined format. See the TD command for format selection. This variable is available only if the printer Time & Date option is installed.

Note • Some bar code formats will not support date names or the date or time delimiters used by the printer to separate data parameters.

Code 128 Bar Code Function Characters

The printer supports Code 128 function control characters (FCN#). Multiple FCN#s, TTs, TDs and "DATA" strings can be concatenated, allowing them to be inserted anywhere within the symbol.

FCN2, FCN3 and FCN4 are illegal in Code 128 mode C (p4 = 1C) and will result in a syntax error.

Please refer to the Code 128 standard for a description of function characters FNC1 through FNC3.

"Standard" Code 128 can encode all 128 standard ASCII characters (0 – 127). Function character FCN4 provides a means of also encoding extended ASCII characters (128 – 255). It directs the reader to add 128 to the value of each affected character before transmitting it.

Two consecutive FCN4s toggle between standard and extended ASCII mode for all succeeding data characters (until the end of the symbol, or until another pair of FCN4s is encountered). This is referred to as latching into extended ASCII mode or latching into standard ASCII mode.

A single FCN4 toggles between standard and extended ASCII mode for only a single following data character. This is referred to as shifting into extended ASCII mode or shifting into standard ASCII mode.

Both code sets A and B are needed to represent the entire extended ASCII character set, just as both sets are needed to represent the standard ASCII character set.

FCN4s can be inserted manually, if necessary or desired, by following the syntax described above. The printer will, however, insert them automatically if extended ASCII characters are encountered in the DATA. It will do so in the most efficient manner possible:

- If up to 4 contiguous extended ASCII characters are encountered, it will shift into extended ASCII mode by inserting a single FCN4 before each one;

- If 5 or more contiguous extended ASCII characters are encountered, it will latch into extended ASCII mode by inserting two FCN4s before them.

- While latched into extended ASCII mode, it will apply the same rules if standard ASCII characters are encountered.

Thus, the preferred way to encode extended ASCII characters is to simply embed them in the DATA and let the printer manage the encoding task. For best results, the code set should also not be specified (i.e., p4=1). FCN4 s should be manually inserted only in systems where extended ASCII characters cannot be transmitted to the printer.

Important • It is illegal to mix automatic and manual modes within the data for a single symbol; i.e., an extended ASCII character encountered in the data after an will be considered a syntax error. Likewise, an FCN4 after an extended ASCII character will also be considered a syntax error.

B

RSS-14 Bar Code Specific Options

Description   Use this command to print RSS-14 bar code family bar codes for numeric data. The printer supports a subset of the RSS bar code family set. The subset includes basic RSS-14, RSS Limited, RSS Stacked and RSS Truncated. The printer does not support RSS Expanded or two dimensional composite bar codes.

Printer Models: 3842 and 2844*
* - Available as a firmware download from the www.zebra.com website.

Syntax $Bp_1, p_2, p_3, p_4, p_5, p_6, p_7, p_8, "DATA"$

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.
p_3 = Rotation	*Accepted Values:* 0 = normal (no rotation) 1 = 90 degrees 2 = 180 degrees 3 = 270 degrees
p_4 = RSS-14 Bar Code selection	<table><tr><th>Value</th><th>Description</th><th>Width Multiplier</th><th>Min. Height Multiplier</th></tr><tr><td>R14</td><td>Basic RSS-14</td><td>96</td><td>33</td></tr><tr><td>RL</td><td>Limited</td><td>74</td><td>10</td></tr><tr><td>RS</td><td>Stacked</td><td>50</td><td>13</td></tr><tr><td>RT</td><td>Truncated</td><td>96</td><td>13</td></tr></table>
p_5 = Narrow bar width	Narrow bar width in dots. *Accepted Values:* 1-10 The narrowest module will be this number of dots. Symbol Width is the value of p_5 times the applicable bar code Width Multiplier listed in the table for the selected RSS-14 bar code type (p4). This overall symbol width value includes the required symbol "quite zone".
p_6 = Wide bar width	Wide bar width in dots. *Accepted Values:* 2
p_7 = Bar code height	Bar code height in dots.

Parameters	Details
p_8 = Print human readable code.	*Accepted Values:* B = yes N = no
DATA = Fixed data field.	The data in this field must comply with the selected bar code's specified format. The backslash (\) character designates the following character is a literal and will encode into the data field. Refer to the following examples:

Value	Description	Max. Numeric Value
R14	Basic RSS-14	9999999999999
RL	Limited	1999999999999
RS	Stacked	9999999999999
RT	Truncated	9999999999999

Data with the RTC Time & Date Functions

The "`Data`" field can be replaced by or combined with the following variables:

- TT = Prints the current time at this position in the predefined format. See the TT command for format selection. This variable is available only if the printer RTC Time & Date option is installed.

- TD = Prints the current date at this position in the predefined format. See the TD command for format selection. This variable is available only if the printer RTC Time & Date option is installed.

Because the RSS-14 bar code symbols only support numeric data, the time and date data recalled by the TD and TT commands must not include delimiters, i.e. "/,-, or :" or any other delimiters

Example 1 •

```
N↵
B100,100,0,RL,4,4,40,B,"1234567890"↵
B100,300,0,R14,4,4,40,B,"1234567890"↵
B100,500,0,RS,4,4,52,B,"1234567890"↵
B100,700,0,RL,4,4,40,B,"9876543210"↵
P↵
```

will produce this label:
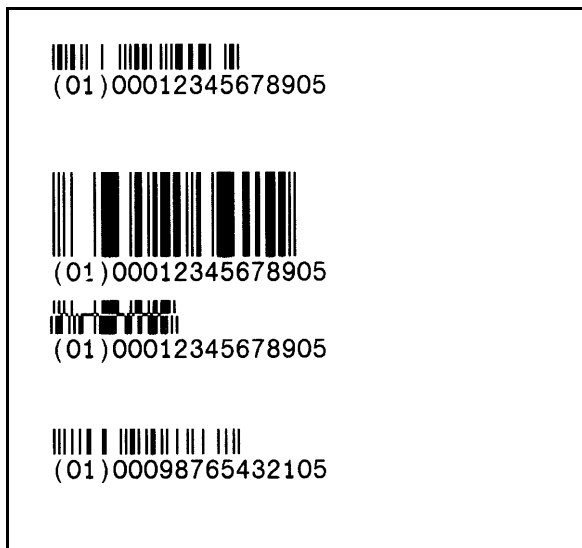
Example 2 •

```
N↵
B100,100,0,RL,4,4,40,B,"1234567890"↵
B400,300,0,RT,4,4,40,B,"1234567890"↵
B500,900,0,RS,4,4,54,B,"1234567890"↵
B500,900,1,RS,4,4,54,B,"1234567890"↵
B500,900,2,RS,4,4,54,B,"1234567890"↵
B500,900,3,RS,4,4,54,B,"1234567890"↵
B100,1350,0,RL,4,4,40,B,"9876543210"↵
P↵
```

will produce this label:
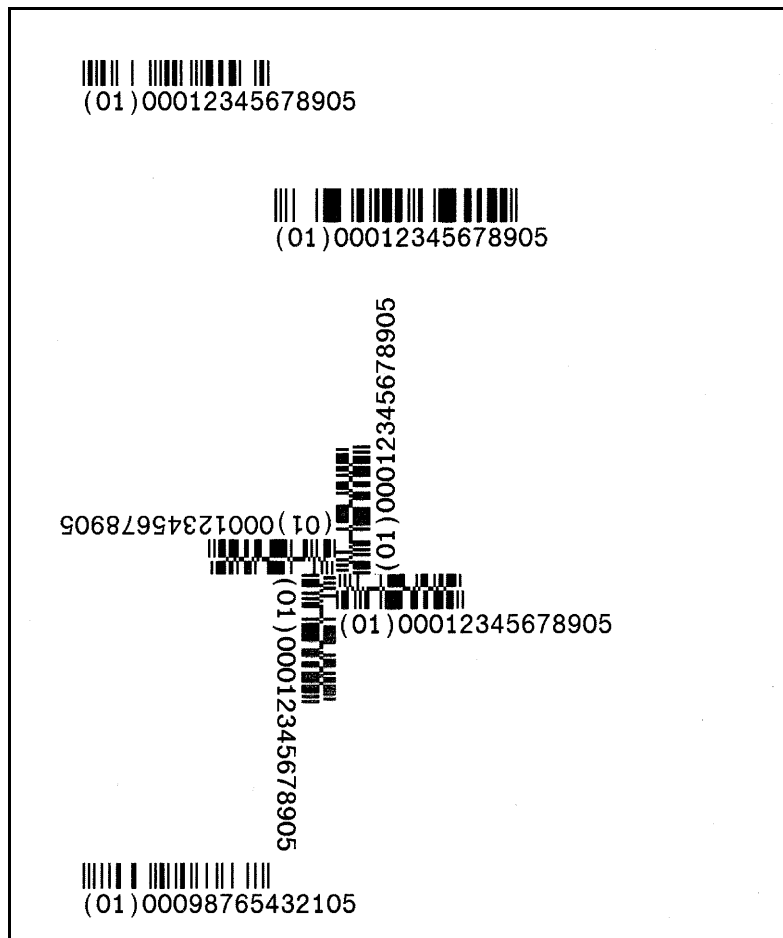
b

2D Bar Code – Aztec Specific Options

Description   Use this command to print an Aztec two dimensional bar code symbol. The symbols are square on a square grid with a square central bullseye finder. Data is encoded in a series of "layers" that circle around the bullseye pattern. Each additional layer completely surrounds the previous layer thus causing the symbol to grow in size as more data is encoded.

Supported Printer Models: 2844
Available as a firmware download from the www.zebra.com website.

Syntax $bp_1,p_2,p_3,[p_4,][p_5,][p_6,][p_7,][p_8,]"DATA"$

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.
p_3 = A - Selects Aztec bar code	—

Order is not important for parameters p_4-p_8. Include the prefix letter (d,e,f,m or r) to select the parameter followed by a valid numeric value.

p_4 (d) = Symbol Scaling	*Default Value:* 3 *Accepted Values:* 1–55

p_5 (e) = Symbol layer and/or error correction levels.	Both layer and error correction effect the symbol size.
	Accepted Values:
	    e0 = Default checkword level (23% +3)
	    e1–e99 = 1% to 99% check words
	    e101–e104 = Compact symbol with 1 to 4 layers
	    e201–e232 = Full symbol with 1 to 32 layers
	    e300 = Rune symbol

p_6 (f) = Enables the flg(n) format	Enables the flg(n) format using the ASCII Escape character (27 decimal). *Default Value:* Disabled
p_7 (m) = Enables menu support option	*Default Value:* Disabled
p_8 (r) = Selects an inverse image of the bar code	Selects an inverse image of the bar code (sometimes known as reverse video or a negative image).
"DATA"=ASCII data or Binary data bytes	Any combination of data strings, time fields (TT), date fields (TD), variables and/or counters (the latter two within forms only) that resolve to a valid string of characters.

Within literal strings all ASCII characters 0–255 dec. (00-FF hex.) are allowed. Quotes (ASCII 34d) and backslashes (ASCII 92d) must be uniquely handled.

The backslash (\) character designates the following character is a literal and will encode into the data field. Refer to the following examples:

To Print	Enter into data field
"	\"
"Company"	\"Company\"
\	\\
\code\	\\code\\
ø	\↵

Within forms, further limitations include that a NULL (ASCII 0) character may not appear within bar code DATA and entry limitations do not provide for a way to enter linefeed characters into variables.

The programmer should rely on the symbology's specification to insure format compliance and proper implementation. See the AIM web site for specifications at: http://www.aimglobal.org/

Example 1 • This Aztec Bar Code example uses default values for all parameters.

```
b0,0,A,"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ"
```

Example 2 • This Aztec Bar Code example specifies an element size of 9 (triple the default).

```
b0,0,A,d9,"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ"
```
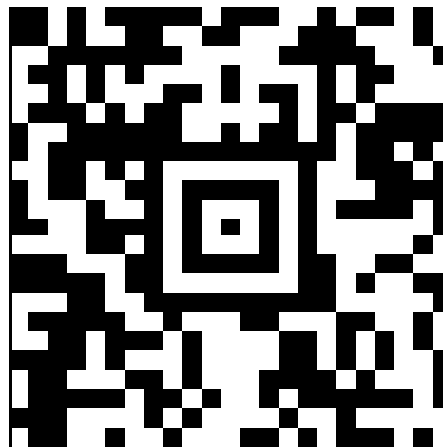
Example 3 • This Aztec Bar Code example specifies a checkword level of 98%.

`b0,0,A,e98,"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ"`
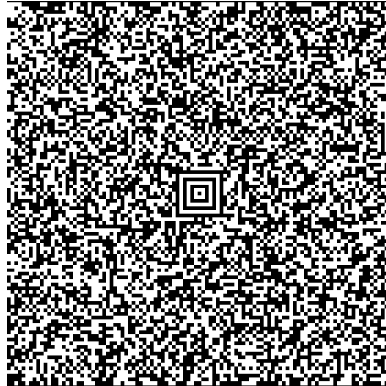
Example 4 • This Aztec Bar Code example specifies a compact symbol with 4 layers.

`b0,0,A,e104,"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ"`

Example 5 • This Aztec Bar Code example specifies a full symbol with 9 layers.

`b0,0,A,e209,"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ"`

Example 6 • This Aztec Bar Code example specifies a Rune symbol.

`b0,0,A,e300,"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ"`

Example 7 • This Aztec Bar Code example specifies flg(n) format using ASCII 27 escape character.

```
b0,0,A,f,"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ"
```


Example 8 • This Aztec Bar Code example specifies a menuing symbol.

```
b0,0,A,m,"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ"
```


Example 9 • This Aztec Bar Code example specifies reverse printing (white on black).

```
b0,0,A,r,"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ"
```

b

2D Bar Code – Aztec Mesa Specific Options

Description   Use this command to print an Aztec Mesa composite bar code symbol (a standard linear bar code and a modified Aztec two dimensional bar as a single symbol. The two dimensional data is encoded in a series of "layers" lying above and in some cases continuing below the adjacent standard bar code symbol.

Printer Models: 2844
Available as a firmware download from the www.zebra.com website.

Syntax $bp_1,p_2,p_3,p_4,[p_5,][p_6,][p_7,][p_8,][p_9,][p_{10},][p_{11},]$"DATA

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.
p_3 = AZ - Selects Aztec bar code	—

Order is not important for parameters p_4-p_8. Include the prefix letter (d,e,f,m or r) to select the parameter followed by a valid numeric value.

p_4 (d) = Standard linear bar code	Use the B command parameters to populate this parameter. The B command's horizontal and vertical start symbol position parameters p_1 and p_2 are not used.
	This p_4 parameter is terminated with the a Z immediately following the standard bar codes DATA parameter 'close quote' (").
	Example • This is an example of a standard bar code:
	`B50,0,0,3,1,2,50,B,"1234567890abc"↵`
	Example • This is an example of p_4 portion of the standard bar code of the same bar code symbol.
	`0,3,1,2,50,B,"1234567890abc"Z`
p_5 (e) = Symbol layer and/or error correction levels.	Both layer and error correction effect the symbol size.
	Accepted Values:
	e0 = Default checkword level (23% +3)
	e1–e99 = 1% to 99% check words
	e101–e104 = Compact symbol with 1 to 4 layers
	e201–e232 = Full symbol with 1 to 32 layers
p_6 (f) = Enables the flg(n) format	Enables the flg(n) format using the ASCII Escape character (27 decimal).
	Default Value: Disabled

Parameters	Details
p_7 (m) = Enables menu support option	*Default Value:* Disabled
p_8 (r) = Selects an inverse image of the bar code	Selects an inverse image of the bar code (sometimes known as reverse video or a negative image).
p_9 (b) = Intra Symbol Barrier Width	Specifies the width of the barrier in narrow bar widths between the Aztec and standard linear bar code areas. *Accepted Values:* 1–9 *Default Value:* 4 for EAN 13 and UPC A, 2 for all other supported standard linear bar codes
p_{10} (s) = Symbol Symmetry	Must preceed the p_{11} (c) parameter. *Default Value:* Regular (stacked) *Value:* e (even symmetry)
p_{11} (c) = Selects an inverse image of the bar code	Enables the flg(n) format using the ASCII Escape character (27 decimal). *Default Value:* Disabled
"DATA"=ASCII data or Binary data bytes	Any combination of data strings, time fields (TT), date fields (TD), variables and/or counters (the latter two within forms only) that resolve to a valid string of characters.

Within literal strings all ASCII characters 0–255 dec. (00-FF hex.) are allowed. Quotes (ASCII 34d) and backslashes (ASCII 92d) must be uniquely handled.

The backslash (\) character designates the following character is a literal and will encode into the data field. Refer to the following examples:

To Print	Enter into data field
"	\"
"Company"	\"Company\"
\	\\
\code\	\\code\\
ø	\↵

Within forms, further limitations include that a NULL (ASCII 0) character may not appear within bar code DATA and entry limitations do not provide for a way to enter linefeed characters into variables.

The programmer should rely on the symbology's specification to insure format compliance and proper implementation. See the AIM web site for specifications at: http://www.aimglobal.org/

b

2D Bar Code – Data Matrix Specific Options

Description   Use this command to print Data Matrix two dimensional bar code symbols. The printer will automatically interpret and encode data into Data Matrix bar code symbols, using the ECC 200 data quality format. Individual module size, columns and rows parameters can be specified or the printer can automatically calculate and set one or all of these parameters.

The symbol is made of square modules arranged within a rectangular shape which includes a perimeter scan recognition pattern. The scan recognition pattern produced by the EPL2 printer also includes a "quiet zone" one module wide on all outside edges of the bar code to ensure data integrity.

Printer Models: 3842 and 2844*
* Available as a firmware download from the www.zebra.com website.

Syntax $bp_1,p_2,p_3,[,p_4,][,p_5][,p_6][,p_7],"DATA"$

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.
p_3 = D - Selects Data Matrix bar code	—

Order is not important for parameters p_4-p_7. Include the prefix letter (c, r, h, or v) to select the parameter followed by a valid numeric value.

p_4 (c) = Number of columns to encode	See the Symbol Geometries table for valid column values.
p_5 (r) = Number of rows to encode	See the Symbol Geometries table for valid row values.
p_6 (h) = Enables the flg(n) format	Sets the minimum square data module size used for encoding data. *Accepted Values:* 1-40 *Default Value:* 5
p_7 (v) = Selects an inverse image of the bar code	Selects an inverse image of the bar code (sometimes known as reverse video or a negative image).
"DATA"=ASCII data or Binary data bytes	Any combination of data strings, time fields (TT), date fields (TD), variables and/or counters (the latter two within forms only) that resolve to a valid string of characters.

Within literal strings all ASCII characters 0–255 dec. (00-FF hex.) are allowed. Quotes (ASCII 34d) and backslashes (ASCII 92d) must be uniquely handled.

The backslash (\) character designates the following character is a literal and will encode into the data field. Refer to the following examples:

To Print	Enter into data field
"	\"
"Company"	\"Company\"
\	\\
\code\	\\code\\
ø	\↵

Within forms, further limitations include that a NULL (ASCII 0) character may not appear within bar code DATA and entry limitations do not provide for a way to enter linefeed characters into variables.

The programmer should rely on the symbology's specification to insure format compliance and proper implementation. See the AIM web site for specifications at: http://www.aimglobal.org/

Table 2 • Data Matrix Symbol Geometries

Rows	Columns	Numeric Capacity.	Alpha-numeric Capacity.	Compressed data size.
8	18	10	6	5
8	32	20	13	10
10	10	6	3	3
12	12	10	6	5
12	26	32	22	16
12	36	44	31	22
14	14	16	10	8
16	16	24	16	12
16	36	64	46	32
16	48	98	72	49
18	18	36	25	18
20	20	44	31	22
22	22	60	43	30
24	24	72	52	36
26	26	88	64	44

   1. Paired digits represent the best-case compression. Adjacent digit pairs can be encoded into eight bits.

   2. The implied cmopressibility requires the data be composed of either all lowercase or all uppercase characters with digits and spaces allowed.

   3. Any ASCII character (0–127) can be encoded one-to-one, extended ASCII (128-255) requires an additional two-byte overhead.

Table 2 • Data Matrix Symbol Geometries

Rows	Columns	Numeric Capacity₁	Alpha-numeric Capacity₂	Compressed data size₃
32	32	124	91	62
36	36	172	127	86
40	40	228	169	114
44	44	288	214	144
48	48	348	259	174
52	52	408	304	204
64	64	560	418	280
72	72	736	550	368
80	80	912	682	456
88	88	1152	862	576
96	96	1392	1042	696
104	104	1632	1222	816
120	120	2100	1573	1050
132	132	2608	1954	1304
144	144	3116	2335	1558

1. Paired digits represent the best-case compression. Adjacent digit pairs can be encoded into eight bits.

2. The implied cmopressibility requires the data be composed of either all lowercase or all uppercase characters with digits and spaces allowed.

3. Any ASCII character (0–127) can be encoded one-to-one, extended ASCII (128-255) requires an additional two-byte overhead.

Automatic Data Matrix Bar Code Generation

The printer automatically tests and changes the Data Matrix bar code geometry to optimize the

symbol size per the specified column and row (p_4 - thec prefix and p_5 - the r prefix) parameters. If no row or column parameters are specified, the printer will create a minimum size symbol based on the calculated compressed size of the data. The number of columns and rows in the symbol will be automatically determined with a preference towards the smallest square symbol that will accommodate the compressed size.

The user may wish to force the number of rows and/or columns to a larger value to achieve uniform symbol sizes.

If the column (c) parameter is only specified and it's "18", "26", "32", "36", or "48", or if only rows is specified and it is "8", "12", or "16", a rectangular symbol may be produced. For example, if ",r12" is specified (with no column parameter), then sizes 12x12, 12x26, and 12x36 are possible selections. The alphanumeric capacity of those symbols is 6, 22, or 31 characters respectively. The smallest symbol size that will accommodate the data will be created. If rows, cols, and/or data length are not compatible with a symbol from the Symbol Geometries table, an error 03 (Data Length Error) will be reported, and no symbol will be produced.

Example •

```
N↵

b30,20,D,h8,"Zebra Technologies corporation is the
leading worldwide manufacturer of bar code labeling
solutions and a leading provider of instant-issuance
plastic card printers. We distribute our on-demand bar
code label printers, plastic card printers, secure ID
printing systems, software and related supplies under the
Zebra and Eltron brand names to users in more than 90
countries. Our products are used in high-growth automatic
identification applications that improve quality and
productivity. We count among our customers more than 70
percent of the FORTUNE 500."↵
```

will produce

b

2D Bar Code – MaxiCode Specific Options

Description   Use this command to generate MaxiCode bar code symbols with a single command. The printer will automatically interpret and encode data into MaxiCode symbols for data modes 2, 3, 4, and 6. Up to eight symbols can be linked.

Syntax $bp_1,p_2,p_3,[p_4,][p_5,]$ "DATA"

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.
p_3 = M - Selects MaxiCode bar code	—
p_4 (c) = Mode selection	<table><tr><th>Value</th><th>Description</th></tr><tr><td>Not Used</td><td>Automatic selection Mode 2 or 3</td></tr><tr><td>m2</td><td>Mode 2</td></tr><tr><td>m3</td><td>Mode 3</td></tr><tr><td>m4</td><td>Mode 4</td></tr><tr><td>m6</td><td>Mode 6</td></tr></table> **1.** If p4 (mx) is not used, the printer will use the following rules to automatically format the "DATA" parameter. If the postal code (third parameter, PC) in the "DATA" is: • All numeric characters, the printer will automatically select Mode 2. • Alpha only or alpha-numeric character combinations will set the printer to Mode 3. • Not used, the printer automatically selects Mode 3. **2.** If p4 value is "m2orm3", the printerwill use the following rules to format the "Data" parameter: • In Mode 2 - If a non-numeric character is entered in the Postal Code "Data" parameter field, then the MaxiCode bar code will not print. • In Mode 3 – If the Postal Code "Data" field exceed 6 characters, then the additional characters will be truncated from the bar code field.

Parameters	Details
p₅ =	x,y Associated MaxiCode symbol numbering where: x = Symbol Number of y = Total Number of Associated Symbols *Accepted Values:* 1-8 for both x or y *Default Value:* Not used
`"DATA"`=Mode dependent data format	Mode dependent data is bounded by quotation marks. Maximum of 2 KBytes of data. | Mode	Data Format
2 & 3	"cl,co,pc,lpm"

4 & 6	`"lpm"` |
	
	`cl` = Class Code (3 digits required)
	`co` = Country Code (3 digits required)
	    Mode 2 = Numeric Characters
	    Mode 3 = International Characters (up to 6 characters)
	`pc` = Postal Code
	    Mode 2 = 5 or 9 characters
	    (All Numeric, including USA Postal ZIP 5 or 9 char.) For less than 9 characters, the printer will pad the field with 0's.
	    Mode 3 (International)= Any alphanumeric character (up to 6 characters)
	`lpm` = Low priority message (data)
	    ASCII printable characters (up to 84 characters per symbol), any 256 character map.

The programmer should rely on the symbology's specification to insure format compliance and proper implementation. See the AIM web site for specifications at:
http://www.aimglobal.org/

Example •

```
N↵

b20,20,M,"300,840,93065,1692,This is MaxiCode, but not
MaxiCode formatted data"↵

P1↵
```

will produce
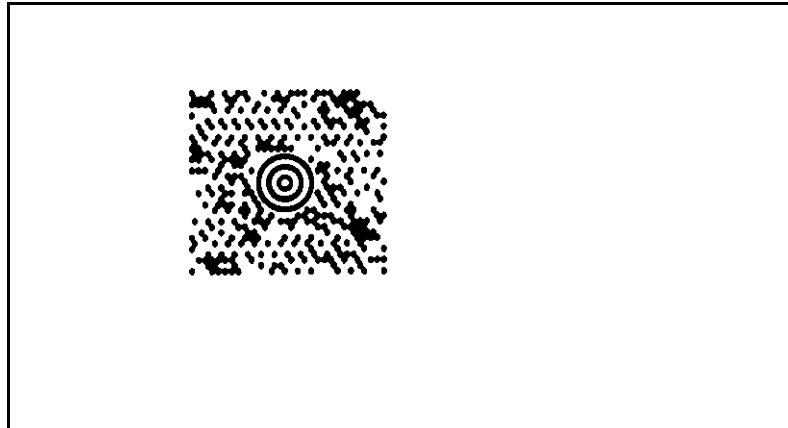
Using AIM Specified MaxiCode Data Formatting

The EPL printer can use and automatically decode the AIM ITS (International Technical Standards) MaxiCode data format. The printer detects the message/start header ([)>RS), field separator (GS), and the end of message marker (RS EOT) data control strings.

The hexadecimal (ASCII) data control strings are in the following table. See the EPL2 dump mode character map in Appendix A.

Control String	Hexadecimal Code
Message/Start Header	
[ ) > RS	5B 29 3E 1E
Field Separator	
GS	1D
End Of Message Marker	
RS EOT	1E 04

Syntax `bp1,p2,M,p4 "[AIM MaxiCode Data]"`

Example •

b20,400,M,m2"001,840,93065,1692,[)>R$_S$

01G$_S$98XXXZZFDAAFG$_S$SHIPGS309G$_S$G$_S$1/1G$_S$10G$_S$

NG$_S$G$_S$CAMARILLOG$_S$CAG$_S$R$_S$E$_{OT}$!!!!!!!!!!!!!!!!!!!!!!!"↵

Note •

1. This programming example represents actual data used to format a single AIM-compliant MaxiCode symbol as programmed by a major international and domestic shipping company.

2. The shipper has explicitly set the MaxiCode symbol for Mode 2. This can be omitted by the programmer and the printer will auto-select the mode per the rules on .

3. The shipper has used the "!" character to pad the symbol's data. A scanner reads back all the "Data" within the quotation marks, including the "!" characters following the End of Message Marker (E$_{OT}$).

4. All of the data fields in the Low Priority Message are not used in the example. Some are left empty with the field delimiting G$_S$ character used as a format field holder.

b

2D Bar Code – PDF417 Specific Options

Description   Use this command to print PDF 417 and Macro PDF bar code symbols. The printer will automatically change from PDF417 to Macro PDF bar code mode if the data sent to the printer exceeds the maximum amount supported by the PDF417 symbol. The oH command is used to place the addition Macro PDF symbols needed for the continuation data.

The printer will automatically optimize the symbol for readability of data (and use the minimum number of symbols when using Macro PDF). The symbol's geometry is adjusted (typically reducing the size of the symbol) per the defined parameters. The printer will use the largest module size (bar width and height) and minimize the number of rows and columns.

Syntax $bp_1,p_2,p_3,p_4,p_5[,p_6][,p_7][,p_8][,p_9][,p_{10}][,p_{11}][,p_{12}][,p_{13}][,p_{14}][,p_{15}],$ "DATA"

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.
p_3 = P	Must be "P" for PDF 417 bar codes.
p_4 (www) = Maximum print width	Maximum print width in dots.
p_5 (hhh) = Maximum print height	Maximum print height in dots

The programmer should rely on the symbology's specification to insure format compliance and proper implementation. See the AIM web site for specifications at:
http://www.aimglobal.org/

Note • The following parameters may be omitted and default values will automatically be inserted. Each parameter value (data string) must be proceeded by its associated command prefix character.

Parameters	Details
p_6 (s) = Sets error correction level	Error Correction codewords per symbol. If level is not specified, a level will automatically be assigned as per the following table: *Accepted Values:* s1 - s8

EC Level	EC Codewords	Auto Select Level
0	2	—
1	4	0–31
2	8	32–63
3	16	64–127
4	32	128–255
5	64	256–511
6	128	512–928
7	256	—
8	512	—

Parameters	Details
p_7 = selects data compaction (compression) method	*Accepted Values:* 0 or 1 *Default Value:* 0 c0 = Auto-encoding The printer will switch between the three compaction modes as needed to create the smallest possible symbol for the given data. c1 = Binary mode The printer will encode the symbol in byte compaction mode. PDF417 uses an intermediate data type called a "codeword" to store the characters in the symbol. Each codeword typically consumes a fixed-size portion of the total symbol. More characters inserted into a codeword results in fewer codewords needed to create a symbol. This results in a smaller symbol. To provide efficient data compaction, PDF-417 supports three types of codewords: text, numeric and binary. Auto-Encoding (c0) data compaction method is set by default, and provides the best compaction. If Binary data compaction (c1) is selected the symbol will typically be larger. Binary data compaction may help to minimize the amount of time it takes a system to scan and decode the data encoded within the symbol. <table><tr><td>Data Type</td><td>Compaction (Byte by Byte)</td></tr><tr><td>Text</td><td>2 Characters per codeword</td></tr><tr><td>Numeric</td><td>2.93 Characters per codeword</td></tr><tr><td>Binary</td><td>1.2 Bytes per codeword</td></tr></table> • Text compaction can be used for uppercase, lowercase, numbers, space, carriage return, tab, line feed, and the following characters: &,:#-.$/+%*=^;@[\]_'~!"|(){}` With text compaction, up to two characters can be encoded in a single codeword. • Numeric compaction can be used for numbers only. Up to 2.93 characters can be encoded in a single codeword. • Byte compaction can be used for any character. But the flexibility comes at a price; byte compaction encodes only 1.2 characters per codeword.
p_8 (pxxx,yyy,mm) = print human readable	This parameter is a non-standard implementor of the PDF417 and is only recommended for troubleshooting purposes. Additional variables: p = "p" - parameter identifier xxx = horizontal start location yyy = vertical start location mm = maximum characters per line

Parameters	Details
p_9 (f) = Bar code origin point	*Accepted Values:* 0 or 1 *Default Value:* 1 f1 - Center of bar code as defined by the automatically adjusted symbol size, i.e. width and height. Parameters p_4 and p_5 values are maximum values only. f0 - Upper left corner of bar code.
p_{10} (x) = module width (in dots)	*Accepted Values:* 2 - 9 (i.e. x2-x9) *Default Value:* Auto selects 6 (dots). Tests data with maximum size limit set by p_4 and p_5 and then the other optional parameters. The printer automatically reduces the module width in one dot increments until the data fits within the symbols maximum dimensions (and other applied parameters) or until 3 dots has failed, then reports an error.
p_{11} (y) = set bar height (in dots)	*Accepted Values:* 4 – 99 (i.e. y4-y99) *Default Value:* 4 times module width (p_{10})
p_{12} (r) = maximum row count	Maximum limit for the number of rows to be used for auto selecting symbol features.
p_{13} (l) = maximum column count	Maximum limit for the number of columns to be used for auto selecting symbol features.

p_{14} (t) = truncated flag	*Accepted Values:*
	    0 = not truncated
	    1 = truncated
	 See the PDF 417 specification for details.

Parameters	Details

p_{15} (o) = rotation	*Accepted Values:*
	    0 = 0º
	    1 = 90º
	    2 = 180º
	    3 = 270º
	 Settings of 90° & 270° will cause the symbols maximum height (p_4) andwidth (p_5) values to transpose when automatically calculating and generating the symbol, i.e. the height would affect column dimensions and width would affect row dimensions.

"DATA" = ASCII data or binary data bytes	Represents a fixed data field. The backslash (\\) character designates the following character is a literal and will encode into the data field.

To Print	Enter into data field
"	\\"
"Company"	\\"Company\\"
\\	\\\\
\\code\\	\\\\code\\\\
ø	\\↵

PDF 417: General Information

A PDF417 symbol is organized into minimum of 3 to a maximum of 90 rows and a minimum of 5 to a maximum of 34 columns of codewords.

Each codeword is 17 modules wide. There are 4 bars and 4 spaces per codeword.

Multiply the module width (in dots, p10) by 17 to get the codeword width.

Multiply the module height (in dots, p11) by the number of rows to get the symbol height.

Four of the codewords in each row are start, stop and two row indicators. The remaining codewords are referred to as the data region and contain symbol overhead and compacted data.

There can be no more than 928 codewords in the data region. All combinations of rows and columns are not legal; 90 rows times 30 columns would produce a data region of 2700 codewords which exceeds the 928 codeword maximum per symbol. See the following table (on the next page) that shows the maximum number of rows and the resulting number of codewords in the data region for each column count.

PDF 417 Symbol Geometry

Columns	Maximum Rows	Codewords	Columns	Maximum Rows	Codewords
5	90	90	18	66	924
6	90	180	19	61	915
7	90	270	20	58	928
8	90	360	21	54	918
9	90	450	22	51	918
10	90	540	23	48	912
11	90	630	24	46	920
12	90	720	25	44	924
13	90	810	26	42	924
14	90	900	27	40	920
15	84	924	28	38	912
16	77	924	29	37	925
17	71	923	30	35	910
18	66	924	31	34	918
19	61	915	32	33	924
20	58	928	33	32	928
21	54	918	34	30	900

Automatic PDF 417 Bar Code Generation

The printer automatically tests and changes the PDF 417 bar code geometry to maximize the readability of the bar code for a given maximum height and width, specified by p_4 and p_5.

The printer tests the PDF 417 parameters in this order for a given data string (error correction and compression included):

1. Module width p_{10} (for codeword width)

2. Symbol width p_4

3. Symbol column maximum p_{13}

4. Module height p_{11}

5. Symbol height p_5

6. Symbol row maximum p_{12}

The printer will start with the maximum value (default or explicit) for these parameters. The printer reduces these values to get the module width and height to maximize readability.

→ **Example •**

N↵

b80,100,P,700,600,x2,y7,l100,r100,f0,s5," \ ↵

Fourscore and seven years ago our fathers brought forth
on this continent a new nation, conceived in liberty and
dedicated to the proposition that all men are created
equal. Now we are engaged in a great civil war, testing
whether that nation or any nation so conceived and so
dedicated can long endure.↵

"↵

Ø

b80,200,P,400,300,p40,440,20,f1,x3,y10,r60,l5,"ABCDEFGHI
JK1234567890abcdefghijk"↵

P↵

will produce this label:
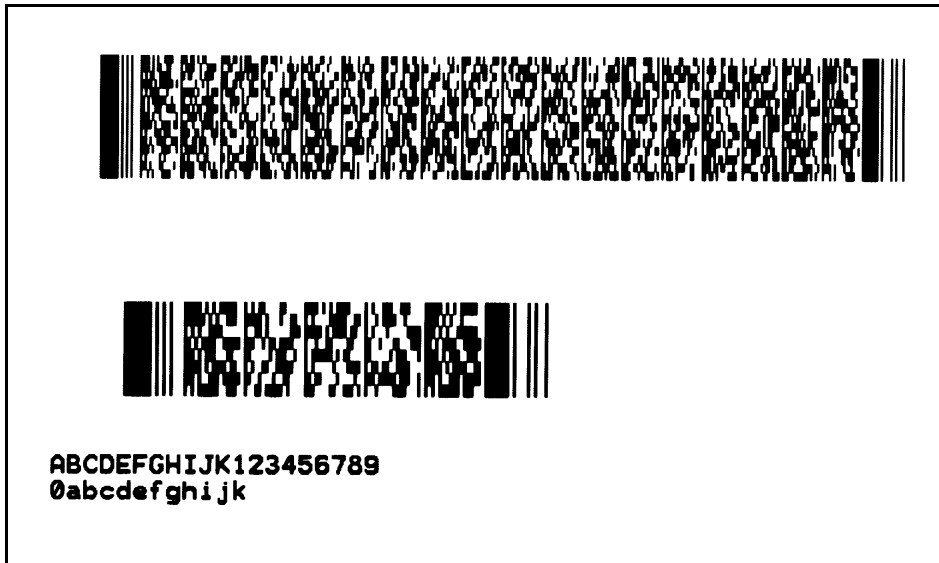
The second symbol has been set to print human readable data with the p_8 parameter
(p40,440,20) and is not part of the PDF417 symbol.

b

2D Bar Code – QR Code Specific Options

Description   *Japanese printer models only.* Use this command to generate QR Code bar code symbols with a single command. See the AIM web site for QR Code specifications at http://www.aimglobal.org/

Syntax $bp_1, p_2, p_3, [p_{4-9}]$ "DATA"

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.
p_3 = Q	Must be "Q" for QR Code.

Parameters p_4 through p_8 are optional and may be omitted. Default values will automatically be inserted when a parameter is omitted. Each parameter value must be proceeded by its associated command prefix character. The parameters p_4 through p_8 can be inserted into the command string in any order prior to the "DATA" and following p_3. Commas between parameters p_4 through p_8 are not required.

Parameters	Details

p_4 = Code Model (prefix m)	*Accepted Values:*
	   1 = Model 1
	   2 = Model 2
	Default Value: Model 2

p_5 = Scale Factor (prefix s)	*Accepted Values:* 1–99 *Default Value:* 3

p_6 = Error Correction Level (prefix e)	*Accepted Values:*
	   L = Lower error correction, most data
	   M = Default
	   Q = Optimized for error correction over data
	   H = Highest error correction, least data
	Default Value: M

p_7 = Data Input Mode (prefix i)	*Accepted Values:*
	   A = Automatic Data Select
	   M = Initialized the manual data mode and the data type is set by the first character in the fixed data field ("DATA").
	Default Value: A

Parameters	Details
p_8 = Append Symbol (prefix D)	The Append Symbol parameter option allows the programmer to join data from 2 to 16 QR code symbols.

Sub-prefix	Values	Description
c	01-16	Symbol Number
d	01-16	Divisions
p	00-FF Hex.	Parity

Parameters	Details
"DATA" = Represents a fixed data field	Data sent to the printer is converted to one of four formats depending upon the value set by parameter p_7, Data Input Mode select. By default, the printer will automatically select the data mode for the entire fixed data string. The printer will check and change the data encoding method to achieve the highest data compression.

If parameter p_7 is set to IM, then first character in the Data must be one of the following:

N - Numeric (0-9)

A - Alphanumeric (0-9, A-Z, a-z and space,$,%, *,+, -, . , /, :)

K - Kanji (Shift JIS character ranges 8140-9FFC and E040-EAA4 Hex)

B - Binary

The data field has reserved characters that normally can not be used within the data string, they are: " and / .

The backslash (\) character designates the following character is a literal and will encode into the data field. Refer to the following examples:

To Print	Enter into data field
"	\"
"Company"	\"Company\"
\	\\
\code\	\\code\\
ø	\↵

C

Counter

Description   The counter (`C`) command defines one of 10 automatic counters used in consecutive numbering applications (i.e. serial numbers). Counters must be defined after variables.

For Numeric Serialization Only. The counter function does not support Alpha or Alpha-Numeric Serialization.

The C command is used in forms that require sequential numbering. When initializing counters, they must be defined in order (e.g. C0 first, C1 second...).

Field justification (p3) affects the printing of counter data. When L, R or C are selected, the counter field is the width of p2 value. Data will justify within the counter (p2) field per the selected p3. The N parameter will print the minimum number of characters.

To print the contents of the counter, the counter number is referenced in the "DATA" field of the A (ASCII text) or B (Bar Code) commands.

Syntax Cp_1,p_2,p_3,p_4 ″[-]PROMPT″

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Counter number	*Accepted Values:* 0–9
p_2 = Maximum number of digits for counter	*Accepted Values:* 1–29

p_3 = Field Justification	*Accepted Values:*
	    L = Left
	    R = Right
	    C = Center
	    N = No Justification

p_4 = Step Value	*Accepted Values:* + or - sign followed by a single digit of 1–9. Using a step value of +0 allows the counter to be used as an additional variable data field.
″PROMPT″	An ASCII text field that will be transmitted to the KDU or host (via the serial interface) each time the command is executed. Typically used to request the operator to enter a starting counter value.
[-] =KDU Prompt Options	Having the first character of the prompt a single minus sign will cause the prompt to display only once after form retrieval.

The C command is used in forms that require sequential numbering. When initializing counters, they must be defined in order (e.g. C0 first, C1 second...).

Field justification (p_3) affects the printing of counter data. When L, R or C are selected, the counter field is the width of p_2 value. Data will justify within the counter (p_2) field per the selected p_3. The N parameter will print the minimum number of characters.

To print the contents of the counter, the counter number is referenced in the "DATA" field of the A (ASCII text) or B (Bar Code) commands.

Note • If the starting value of a counter is "1", then no leading zero padding will be added. If the starting value is "01", then the counter will be padded, up to the maximum number of digits (p_2), with zeros.

Example 1 •

```
C0,10,L,+1,"-Enter Serial Number:"↵
```

Example 2 • Saving and Protecting Consecutive Numbers in Nonvolatile Memory

This feature is useful when the counter field represents a serial number (or others types of numbers) that should never be repeated. This feature allows for automatic retrieval and increment (or decrement) of the previous counter value used every time a form is retrieved (and printed).

By placing one minus sign as the first character of the prompt, the prompt will appear only once after the form is retrieved, thereby protecting the integrity of the data.

Example 3 • Single Digit Summation with Counters

Add or subtract a single digit from the recalled counter value in a form. If form recalled counter C0 had a value of 3, then processing C0+1 would yield a value of 4 and C0-2 would yield a value of 1.

C

Cut Immediate

Description   This command allows the printer to initiate an immediate media cut without a form print operation. The printer must have the cutter option installed.

- The C command – Cut Immediate can not be used inside of a form.

- The initial character C in a command string is used for both the Cut Immediate (C) and Counter Command function (Cp1) which can only be used within a form. The Cut Immediate Command (C) can not be used in a form.

- The C command – Cut Immediate can not be used with the KDU.

Mobile printers, such as the TR 220, ignore this command.

Syntax   C

Parameters   There are no parameters for this command.

Example •

    C↵

Note • Use only cut label liner (backing) or tag stock. Label adhesive will build up on the cutter blade and cause the cutter to operate poorly or jam if the labels are cut along with the label liner.

Use the C command - Cut Immediate 5 times without media loaded, to perform a self cleaning of the cutter blade.

D

Density

Description   Use this command to select the print density. The density command controls the amount of heat produced by the print head. More heat will produce a darker image. Too much heat can cause the printed image to distort.

Syntax Dp_1

Parameters   This table identifies the parameters for this format:

Parameters	Details

p_1 = Density setting	*Accepted Values:* 0–15
	Default Value:
	  2443 (Orion) and 2884: 10
	  All other printers: 7
	  Note • 0 is the lightest print and 15 is the darkest.

Note • The density and speed commands can dramatically affect print quality. Changes in the speed setting typically require a change to the print density.

Example • This example selects density 5.

    D5↵

dump

Enable Dump Mode

Description   This command allows the advanced programmer to force a user diagnostic "data dump" mode. Sending the dump command to the printer allows the programmer to compare actual data sent to printer with the host program.

Send data to the printer after the dump command has been issued to evaluate program and printer control data. The printer will process all data bytes into ASCII character data, range 0-255 decimal (00-FF hexadecimal).

Press the printer's Feed button until "Out of Dump" is printed or power cycle the printer to terminate the dump mode.

Syntax   dump

Parameters   There are no parameters for this format.

- Set the image buffer width with the q command to match the media width prior to issuing the dump command.

- Use the *Dump Mode Character Map* on page 319 to interpret the dump mode data (characters printed on the labels) back into ASCII data.

- Press the Feed button to view dump data that exceeds a single label¡¯s print area. Repeat to view more dump data as required.

- Pressing the Feed button after the dump data is finished printing will cause the printer to exit the dump mode.

- Graphics data dump may be large and require multiple labels to print.

Example •

   dump↵

EI

Print Soft Font Information

Description   This command will cause the printer to print a list of all soft fonts that are stored in memory.

Note • Soft fonts can be downloaded to and deleted from the printer using the Soft Font Downloader Utility or Zebra Designer.

Syntax   EI

Parameters   There are no parameters for this format.

Example • This example prints a soft font list.

        EI↵

        Ext. font information:
        a:096char,022dots,0dir.
        Ext font memory left: 050K

EK

Delete Soft Font

Description   This command is used to delete soft fonts from memory.

Note • Soft fonts can be downloaded to and deleted from the printer using the Soft Font Downloader Utility or Zebra Designer.

Syntax   EK {″FONTNAME″|″*″}

Parameters   This table identifies the parameters for this format:

Parameters	Details
FONTNAME	By entering the name of a font, that font will be deleted from memory.
*	By including an "*" (wild card), ALL fonts will be deleted from memory.

Example 1 • This example deletes font "A"

    EK″A″↵

Example 2 • This example deletes all fonts.

    EK″*″↵

eR

User Defined Error/Status Character

Description   This command allows the advanced programmer to specify the printer's error/status report character for error reporting via the RS-232 serial interface.

Mobile printers, such as the TR 220, ignore this command.

Syntax eRp_1,p_2

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Any single ASCII character	*Accepted Values:* 0–255 decimal (00–FF hexadecimal)
p_2 = Error/Status Response Mode	

p_2	Mode Descriptions
0	**Standard (default):** **XON** (17 dec. / 11 hex.) on Recovery **XOFF** (19 dec. / 13 hex.) on Error
1	**Character Only:** Reports the selected error/status character followed by a Carriage Return and Line Feed.
2	**Character & Error/Status Code:** Reports the selected error/status character, error/status code (see the *^ee* command on page 173 for codes), and then by a Carriage Return and Line Feed.

Example • For Mode 2 Error and Status Reporting:

```
eR$,2↵                          : Sets Error Character to "$"
                                  and
                                : Sets Error Mode to "2".
                                : User operates and prints with
                                  printer.
                                : User opens print head.
$11↵                            : Reports Print Head Open
                                : User closes print head
$00↵                            : Reports No Error
                                : Printer Ready for next
                                  command.
                                : (Status report for Print Head
                                  Closed)
```

ES

Store Soft Font

Description This command is used to download and store soft fonts in memory.

Note • Soft fonts can be downloaded to and deleted from the printer using the Soft Font Downloader Utility or Zebra Designer.

Syntax $ES''FONTNAME''p_1p_2p_3a_1b_1c_1''DATA''a_2b_2c_2''DATA_2''a_nb_nc_n''DATA_n''$

Parameters This table identifies the parameters for this format:

Parameters	Details
FONTNAME = One letter font name	*Accepted Values:* a–z, lower case Lower Case named fonts minimize soft font memory usage to only store fonts downloaded and have 256 character limit.
The following use hexadecimal coding for parameter values.	
p_1 = Number of characters to be downloaded	*Accepted Values:* 00–FF hex (0–255 decimal) for 1 to 256 fonts per soft font set.

p_2 = Character rotation	*Accepted Values:*
	    00 hex = 0 and 180 degrees
	    01 hex = 90 and 270 degrees
	    02 hex = Both 0 and 180 degree rotation pair and the 90 and 270 degree rotation pair

p_3 = Font height	*Accepted Values:* 00–FF hex Measured in dots and expressed as a hexadecimal number, i.e. 1B hex. = 27 dots. Font height includes accentors and dissenters of characters and need to fit in the character cell. • 203 dpi printers = 256 dots = 1.26 in. = 32.03 mm • 300 dpi printers = 00–FF hex. 256 dots = 0.85 in. = 21.67 mm
a_1 = (1st) Download character map position	*Accepted Values:* 00–FF hex
b_1 = (1st) Spacing to next print character	*Accepted Values:* 00–FF hex Downloaded character's next printed character position in dots, i.e. Character tracking - the space between characters. Must be greater than or equal to the character width, see parameter c1. Dots in a decimal number converted to a hexadecimal number.
c_1 = (1st) Downloaded characters width	*Accepted Values:* 00–FF hex Dots in a decimal number converted to a hexadecimal number.

Parameters	Details
"DATA" = (1st) Character bitmap	$p_3 \times c_1$ = bit map data (in bytes) Data is received in bytes, on a line by line basis. The font character's 0,0 cell map position is in the top left corner of the map as viewed in the 0 degree rotation. See the examples on the following pages.
a_2 = (2nd) Download character map position	*Accepted Values:* 00–FF hex
b_2 = (2nd) Spacing to next print character	*Accepted Values:* 00–FF hex
c_2 = (2nd) Downloaded characters width	*Accepted Values:* 00–FF hex
"DATA$_2$" = (2nd) Character bitmap	$p_3 \times c_2$ bytes = bit map data
Repeat for each character until the last character in the set is downloaded.	
a_n = (Last) Download character map position	*Accepted Values:* 00–FF hex
b_n = (Last) Spacing to next print character	*Accepted Values:* 00–FF hex
c_n = (Last) Downloaded characters width	*Accepted Values:* 00–FF hex
"DATA$_n$" =Character bitmap	$p_3 \times c_n$ bytes = bit map data

For fonts with the rotation parameter set for "both" (p2 = 02 hex.):

Repeat the individual font character download for each 90° rotated character from the start of the character set until the last rotated character in the set is downloaded.

```
a1-90°  b1-90°  c1-90°  "DATA1-90°"
a2-90°  b2-90°  c2-90°  "DATA2-90°"
a3-90°  b3-90°  c3-90°  "DATA3-90°"
an-90°  :  (Last) Download Character
bn-90°  :  (Last) Spacing To Next Print Character
cn-90°  :  (Last) Downloaded Character's Width
"DATAn-90°"  :  Character Bitmap
```
   p3 × cn bytes = bit map data

   The number of individual character maps downloaded will be double the characters in the font set (p_1).

Example 1 • This is an example of measuring a soft font size.

Reference Point

10 Dots

12
D
o
t
s

8 Dots

= Inter-character Spac
(actually white dots)
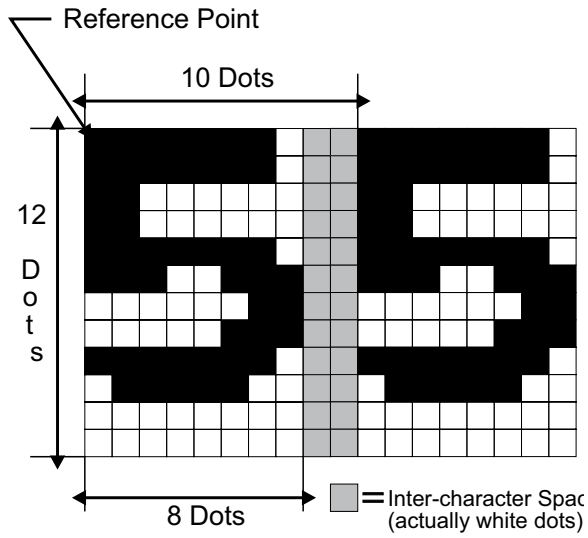
Parameter	Dots	Data Enteres as Hexadecimal
p_3	12	0C hex.
b	10	0A hex.
c	8	08 hex.

> **Example 2 •** This is an example of soft fonts programming code.

The typical soft font downloads command strings to the printer. The following example was generated with the CAL3 software.

```
00000000  0D 0A 45 4B 22 61 22 0D 0A 45 53 22 61 22 03 00   ..EK"a"..ES"a"..
          CR & LF                CR & LF                p1 p2

00000010  1A 41 17 03 00 7C 00 00 7C 00 00 7C 00 00 EE 00   .A...|..|..|....
          p3 a1 b1 c1

00000020  00 EE 00 01 EF 00 01 C7 00 01 C7 00 03 83 80 03   ................
00000030  83 80 07 83 C0 07 01 C0 07 01 C0 0E 00 E0 0F FF    ................
00000040  E0 0F FF E0 1F FF F0 1C 00 70 3C 00 78 38 00 38   .........p<.x8.8
00000050  38 00 38 70 00 1C 70 00 1C F0 00 1E E0 00 0E 00   8.8p..p.........
00000060  00 00 42 17 03 1F FF 00 1F FF C0 1F FF E0 1C 01   ..B.............
                a2    b2    c2

00000070  E0 1C 00 F0 1C 00 70 1C 00 70 1C 00 70 1C 00 E0   ......p..p..p...
00000080  1C 01 E0 1F FF C0 1F FF C0 1F FF E0 1C 00 F0 1C   ................
00000090  00 70 1C 00 38 1C 00 38 1C 00 38 1C 00 38 1C 00   .p..8..8..8..8..
000000A0  38 1C 00 70 1C 00 F0 1F FF E0 1F FF C0 1F FF 00   8..p............
000000B0  00 00 00 43 19 03 00 7F 00 01 FF C0 03 FF E0 07   ...C............
                a3    b3    c3

000000C0  C1 F0 0F 00 78 1E 00 38 1C 00 3C 1C 00 18 3C 00   ....x..8..<...<.
000000D0  00 38 00 00 38 00 00 38 00 00 38 00 00 38 00 00   .8..8..8..8..8..
000000E0  38 00 00 38 00 00 1C 00 0C 1C 00 0E 1C 00 1C 0E   8..8............
000000F0  00 3C 0F 00 7C 07 C0 F8 03 FF F0 01 FF E0 00 7F   .<..|...........
00000100  80 00 00 00 0D 0A                                 ......
                      CR & LF
```

Example 3 • This is an example of font bitmap data format.

The black and white bitmap that represents the font must be converted into ASCII hexadecimal code. The 0° font format has dot converted to data bytes reading from left to right and the last byte in a line is padded with zeros to complete the line and data byte.

Starting Point
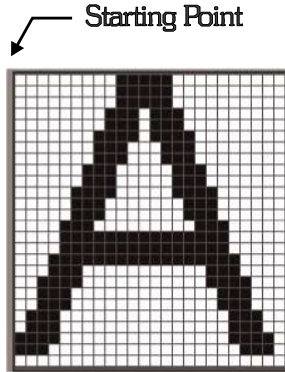
Line 1 - 00000000 01111100 00000000 = 00 7C 00
Line 2 - 00000000 01111100 00000000 = 00 7C 00
Line 3 - 00000000 01111100 00000000 = 00 7C 00
Line 4 - 00000000 11111110 00000000 = 00 FE 00
...
...

0° Data
00 7C 00 00 7C 00 00 7C 00 00 FE 00 ...

Starting Point
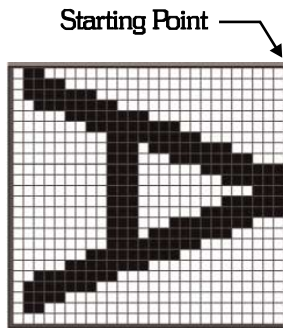
Line 1 - 01 10000000 00000000 00000000 = 01 80 00 00
Line 2 - 01 11100000 00000000 00000000 = 01 E0 00 00
Line 3 - 01 11111100 00000000 00000000 = 01 FC 00 00
Line 4 - 00 11111111 00000000 00000000 = 00 FF 00 00
...
...

90° Data
01 80 00 00 01 E0 00 00 01 FC 00 00 00 FF 00 00 ...

f

Cut Position

Description   Use this command on an individual printer to provide precision cut placement to:

- Compensate for small sensor to cutter position differences on a printer by printer basis.

- Fine-tune the cut position to compensate for differences in media.

Mobile printers, such as the TR 220, ignore this command.

When using the label liner cutter option, the printerwill advance each printed label to the appropriate programmed offset cut position, between labels, before cutting. Due to media differences, the printer may not accurately position the labels before cutting, causing the cutter to cut the label instead of the liner.

Note • The printer's cutter is not designed to cut labels. Labels have adhesive that may interfere with the proper operation of the cutter.

Only cut label liner and tag stock and do not exceed the specified media density and thickness of the cutter.

If the cut position causes the label just printed to be cut, increase the cut position index value (>100). If the cut position causes the label following the one just printed to be cut, decrease the cut position index value (<100).

Syntax fp_1

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Cut position index	Cut position index measured in dots. *Accepted Values:* 070 to 130 *Accepted Values:* 100.

fB

Adjust Backup Position

Description   Use this command to provide precision tear, peel and cut placement to fine-tune the media positioning to compensate for differences in media and handling requirements.

Mobile printers, such as the TR 220, ignore this command.

Syntax fp_1

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Media position offset	Media position offset measured in dots. *Accepted Values:* 0–255 *Default Value:* 0

FE

End Form Store

Description This command is used to end a form store sequence.

Syntax FE

Parameters There are no parameters for this format.

Example • The form store sequence is started with the FS command.

```
FS"FORMNAME"↵
...
FE↵
```

FI

Print Form Information

Description   This command will cause the printer to print a list of all forms stored in memory.

Syntax   `FI`

Parameters   There are no parameters for this format.

Example • This command will print a forms list.

`FI↵`

```
Form information:
1
TESTFORM
Form memory left:004.9K
```

FK

Delete Form

Description   this command is used to delete forms from memory.

Syntax FK ["FORMNAME" | "*"]

Parameters   This table identifies the parameters for this format:

Parameters	Details
"FORMNAME"	By entering the name of a form, that form will be deleted from memory.
	• The namemay be up to **8 characters** long.
	• Form names stored by the printer are case sensitive and will be stored exactly as entered on the FS command line; i.e. "FORM1", "form1" and "FoRm1" are three different forms when stored into the printer or when retrieved by the user.
	• Deleting a single form requires the FK"FORMNAME" be issued twice for each form to be deleted. Some label generation programs re-issue forms (form delete and store) every time a label is printed which reduces flash memory life.
"*" = Wild card	By including an "*" (wild card), ALL forms will be deleted from memory.
	The FK"*" does not need to be issued twice to delete all forms.

Example 1 • This example deletes the AFORM form. A second delete is requierd for flash printers.

    FK"AFORM"↵
    FK"AFORM"↵

Example 2 • This example deletes all forms.

    FK"*"↵

FR

Retrieve Form

Description Use this command to retrieve a form that was previoiusly stored in memory.

Syntax `FR"FORMNAME"`

Parameters This table identifies the parameters for this format:

Parameters	Details
`"FORMNAME"`	This is the form name used when the form was stored. • The namemay be up to **8 characters** long. • Form names stored by the printer are case sensitive and will be stored exactly as entered on the FS command line; i.e. "FORM1", "form1" and "FoRm1" are three different forms when stored into the printer or when retrieved by the user.

Example • This example retrieves the form named TEST1.

```
FR"TEST1"↵
```

Note • To print a list of the forms currently stored in memory, use the `F1` command.

FS

Store Form

Description   This command begins a form store sequence.

- All commands following FS will be stored in form memory until the FE command is received, ending the form store process.

- Delete a form prior to updating the form by using the FK command. If a form (with the same name) is already stored in memory, issuing the FS command will result in an error and the previously stored form is retained.

- To print a list of the forms currently stored in memory, use the FI command.

- Data stored within a form can not have the Null (0 dec. 00 hex.) character as part of any data within that form.

- A form will not store if insufficient memory is available. See the M command for details on adjusting and configuring memory for forms, graphics and soft fonts.

Syntax   FS"FORMNAME"

Parameters   This table identifies the parameters for this format:

Parameters	Details
"FORMNAME"	This is the form name used when the form was stored.
	• The namemay be up to **8 characters** long.
	• Form names stored by the printer are case sensitive and will be stored exactly as entered on the FS command line; i.e. "FORM1", "form1" and "FoRm1" are three different forms when stored into the printer or when retrieved by the user.
	• Global commands such as EI, EK, ES, FI, FK, GI, GK, GM, M, N, P, TS, U, UE, UF, UG, Y, W, ?, ^@ should not be used in a form store sequence.
	Note • Form name, AUTOFR, is reserved for automatic, single form recall. See *AUTOFR on page 48* for details.

Example •

```
FK"TESTFORM"↵                  : delete form "TESTFORM"
FS"TESTFORM"↵                  : begins the form store
                                 sequence of the form
                                 "TESTFORM"
V00,15,N,"Enter Product Name:"↵
B10,20,0,3,2,10,100,B,"998152.001"↵
A50,200,0,3,1,1,N,"Example Form"↵
A50,400,0,3,1,1,N,"Model Name: "V00↵
FE ↵                           : ends form store sequence
FI ↵                           : prints list of stored forms
```

GG

Print Graphics

Description Use this command to print a PCX (format) graphic that has been previously stored in printer memory.

Syntax $GGp_1,p_2,\{N"NAME" \mid Variable\ Data\}$

Parameters This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.
"NAME" or **Variable Data** =Graphic name	This is the graphic name used when the graphic was stored. This name can be supplied via variable data (V00 - V99). • The name may be up to 8 characters long. • Graphic names stored by the printer are case sensitive and will be stored exactly as entered with the GM command line; i.e. "GRAPHIC1", "graphic1" and "graPHic1" are three different graphics when stored into the printer or when retrieved by the user.

Example • This example

```
FK"TESTFORM"↵                      : delete form "TESTFORM"
FS"TESTFORM"↵                      : begins the form store
                                     sequence of the form
                                     "TESTFORM"
V00,8,N,"Enter Graphic Name:"↵
GG50,50,V00↵
FE↵                                : ends form store sequence

FR"TESTFORM"↵                      : retrieves the form named
                                     TESTFORM
?↵                                 : Download variables
LOGO1↵                             : Graphic name to be recalled
                                     and printed
P1↵                                : Print one label with graphic
                                     LOGO1
```

GI

Print Graphics Information

Description This command will cause the printer to print a list of all graphics stored in memory.

Syntax `GI`

Parameters There are no parameters for this command.

Example • This example will print a graphics list.

`GI↵`

```
Graphics information:
LOGO
Graphics memory left:003K
```

GK

Delete Graphics

Description Use this command to delete graphics from memory.

Syntax GK { "NAME" | "*" }

Parameters This table identifies the parameters for this format:

Parameters	Details
"NAME"	By entering the name of a graphic, that graphic will be deleted from memory.
	• Graphic names stored by the printer are case sensitive and will be stored exactly as entered with the GM command line; i.e. "LOGO1", "logo1" and "LoGo1" are three different graphics when stored into the printer or when retrieved by the user.
	• Deleting a single graphic requires that the GK"FORMNAME" command string be issued twice for each form deleted. Some label generation programs re-issue graphics (graphic delete and store) every time a label is printed which will reduce flash memory life.
"*" = Wild card	By including an "*" (wild card), ALL graphics will be deleted from memory. The GK"*" does not need to be issued twice to delete all graphics.

Example 1 • This example deletes the graphic logo. A second delete is requierd for flash printers.

        GK"LOGO"↵
        GK"LOGO"↵

Example 2 • This example deletes all graphics.

        GK"*"↵

GM

Store Graphics

Description Use this command to store PCX graphics files in memory.

Syntax GM″NAME″p$_1$ _{<carriage return>}
        "DATA"

Parameters This table identifies the parameters for this format:

Parameters	Details
"NAME" = Graphic name	This is the grahpic name that will be used when retrieving the stored graphic. • The name may be up to 8 characters long. • Graphic names stored by the printer are case sensitive and will be stored exactly as entered with the GM command line; i.e. "LOGO1", "logo1" and "LoGo1" are three different graphics when stored into the printer or when retrieved by the user. • Deleting a single graphic requires that the GK"FORMNAME" command string be issued twice for each form deleted. Some label generation programs re-issue graphics (graphic delete and store) every time a label is printed which will reduce flash memory life.
p$_1$ = File size in bytes	Use the DOS DIR command to determine the exact file size.
"DATA" =Graphic data	Graphic data in 1-bit (black & white) PCX (binary data) format file. • A graphic will not store if sufficient memory is not allocated to graphic memory. See the M command for details on adjusting and configuring memory to store graphics (forms and soft fonts). • Verify the proper storage of the graphic with the GI command.

Example 1 •

```
GK"LOGO1"↵                      : deletes graphic "LOGO1" -
                                  Required
GK"LOGO1"↵                      : second delete graphic -
                                  Required
GM"LOGO1"584↵                   : Prepares printer to receive
                                  graphic "LOGO1"
DATA↵                           : Data string in PCX format
```

If using a DOS system, the PCX format file (binary data) portion can be sent to the printer using the DOS COPY command. For example, if you have a PCX file named LOGO1.PCX in your current directory, the appropriate command would be:

```
COPY LOGO1.PCX PRN /b
```

After downloading, the GI command can be used to verify that the graphic was successfully stored.

Example 2 •

First, create a text file "STOREIT.TXT" with an ASCII text editor, as follows:

```
GK"WORLD"↵
```

```
GK"WORLD"↵
```

```
GM"WORLD"2004↵
```

Where WORLD is the name of the graphic and 2004 is the size (in bytes) of the PCX file.

DO NOT add extra linefeeds to the STOREIT.TXT file.

Next, at the DOS prompt, type:

```
COPY STOREIT.TXT+WORLD.PCX PRN /b
```

or use the Zebra Firmware Downloader from Windows OS download the STOREIT.TXT and WORLD.PCX in sequence to the printer.

GW

Direct Graphic Write

Description   Use this command to load binary graphic data directly into the Image Buffer memory for immediate printing. Theprinter does not store graphic data sent directly to the image buffer.

The graphic data is lost when the image has finished printing, power is removed or the printer is reset. Commands that size (Q and q) or clear (N and M) the image buffer will also remove graphic image data.

Syntax $GWp_1,p_2,p_3,p_4,DATA$

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.
p_3 = Width of graphic	Width of graphic in bytes. Eight (8) dots = one (1) byte of data.
p_4 = Length of graphic	Length of graphic in dots (or print lines)
DATA	Raw binary data without graphic file formatting. Data must be in bytes. Multiply the width in bytes (p_3) by the number of print lines (p_4) for the total amount of graphic data. The printer automatically calculates the exact size of the data block based upon this formula.

i

Asian Character Spacing

Description   Places an adjustable inter-character space between Asian font characters, fonts 8 and 9, only. The inter-character spacing gets multiplied with the text string by the selected font's horizontal and vertical multiplier values.

Syntax ip_1

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Space in dots between Asian characters	*Accepted Values:* 0-9 (dots) *Default Value:* 0 (dots or no space)

(**i**) Command
Parameter Set to Default (0 dots)

1 Character   1 Character
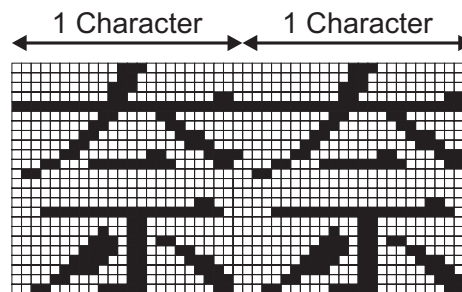
(**i**) Command
Parameter Set to 8 (8 dots)

1 Character   i = 8   1 Character

I
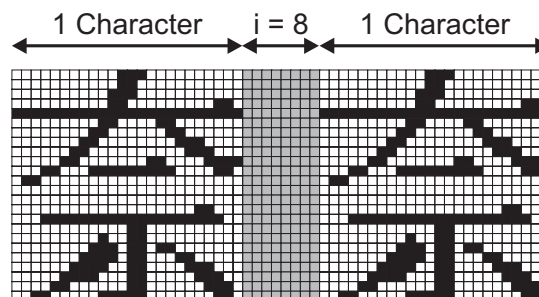
Character Set Selection

Description Use this command to select the appropriate character set for printing (and KDU display).

Syntax $\text{I}p_1,p_2,p_3$

Parameters This table identifies the parameters for this format:

Parameters	Details
p_1 = Number of data bits	*Accepted Values:* 8 = 8 bit data 7 = 7 bit data

Parameters	Details
p_2 = Printer Codepage/Language Support	(see tables below)

8 Bit Data			7 Bit Data	
p_2	Code Page	Description	p_2	Description
0	DOS 437	English - US	0	USA
1	DOS 850	Latin 1	1	British
2	DOS 852	Latin 2 (Cyrillic II/Slavic)	2	German
3	DOS 860	Portuguese	3	French
4	DOS 863	French Canadian	4	Danish
5	DOS 865	Nordic	5	Italian
6	DOS 857	Turkish	6	Spanish
7	DOS 861	Icelandic	7	Swedish
8	DOS 862	Hebrew	8	Swiss
9	DOS 855	Cyrillic		
10	DOS 866	Cyrillic CIS 1		
11	DOS 737	Greek		
12	DOS 851	Greek 1		
13	DOS 869	Greek 2		
A	Windows 1252	Latin 1		
B	Windows 1250	Latin 2		
C	Windows 1251	Cyrillic		
D	Windows 1253	Greek		
E	Windows 1254	Turkish		
F	Windows 1255	Hebrew		

Parameters	Details
p_3 = KDU Countyr Code	8 bit data only.

KDU Country Code (8 bit only)					
032	Belgium	049	Germany	027	S.Africa
002	Canada	031	Netherl'ds	034	Spain
045	Denmark	039	Italy	046	Sweden
358	Finland	003	Latin Am.	041	Swizerl'd
033	France	047	Norway	044	U.K.
		351	Portugal	001	U.S.A.

The default setting is I8,0,001. See Appendix B, Character References for EPL2 standard font character samples.

JB

Disable Top Of Form Backup

Description   This command disables the Top Of Form Backup feature when printing multiple labels. At power up, Top Of Form Backup will be enabled.

Syntax   JB

Parameters   Thre are no parameters for this format.

Example •

JB↵

Note • With the JB command enabled, the first label will backup to the Top Of Form before printing. This preserves the first label which has stopped approximately one-half inch from the print head. This is the label's tear away point as set by the previous print operation.

JC

Disable Top Of Form Backup- All Cases

Description   This command disables the Top Of Form Backup feature for all operations. Use this command for liner-less printing and special media cutting modes.

This command only is available in the 2824, 2844, and 3842 desktop printer models at this time.

Syntax   `JC`

Parameters   Thre are no parameters for this format.

Example •

`JC↵`

JF

Enable Top Of Form Backup

Description   This command enables the Top Of Form Backup feature and presents the last label of a batch print operation. Upon request initiating the printing of the next form (or batch), the last label backs up the Top Of Form before printing the next label.

Syntax   JF

Parameters   Thre are no parameters for this format.

Example •

JF↵

LE

Line Draw Exclusive OR

Description   Use this command to draw lines with an "Exclusive OR" function. Any area, line, image or field that this line intersects or overlays will have the image reversed or inverted (sometimes known as reverse video or a negative image). In other words, all black will be reversed to white and all white will be reversed to black within the line's area (width and length).

Syntax $\text{LE}p_1,p_2,p_3,p_4$

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.
p_3 = Horizontal length	Horizontal length in dots.
p_4 = Vertical length	Vertical length in dots.

Example •

```
N↵                              : clear image buffer
LE50,200,400,20↵                : draw a line
LE200,50,20,400↵                : draw another line
P1↵                             : print one label
```

will produce this label:
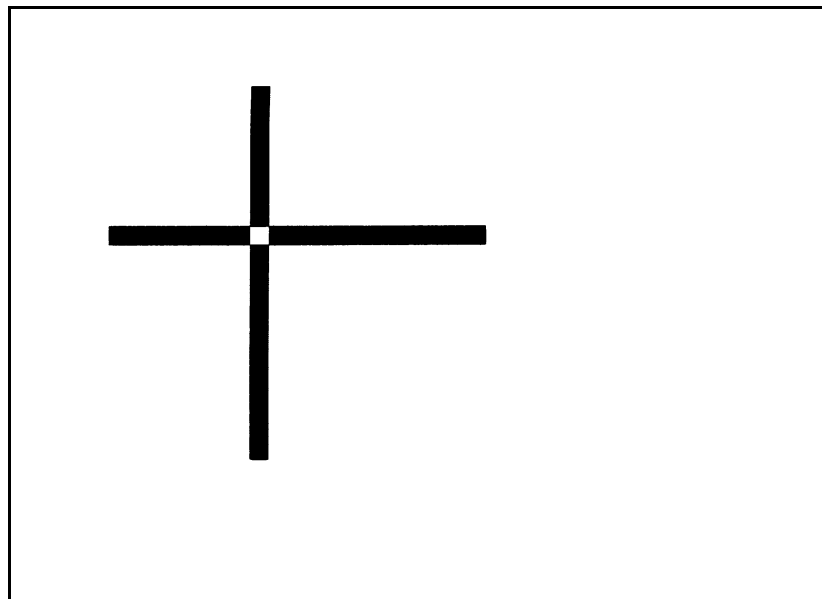
LO

Line Draw Black

Description Use this command to draw black lines, overwriting previous information.

Syntax LOp_1,p_2,p_3,p_4

Parameters This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.
p_3 = Horizontal length	Horizontal length in dots.
p_4 = Vertical length	Vertical length in dots.

Example •

```
N↵                          : clear image buffer
LO50,200,400,20↵            : draw a line
LO200,50,20,400↵            : draw another line
P1↵                         : print one label
```

will produce this label:

LS
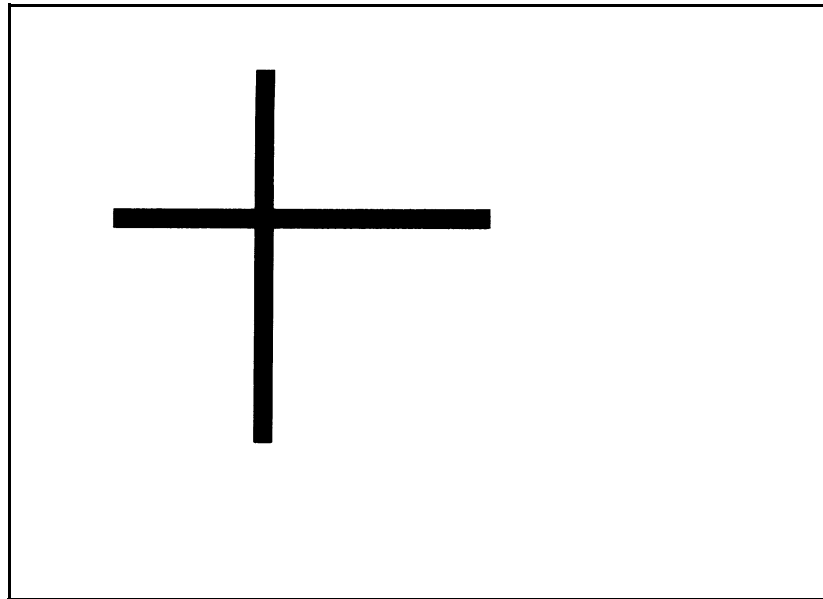
Line Draw Diagonal

Description   Use this command to draw diagonal black lines, overwriting previous information.

Syntax LSp_1,p_2,p_3,p_4,p_5

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.
p_3 = Horizontal length	Horizontal length in dots.
p_4 = Vertical length	Vertical length in dots.
p_5 = Vertical end position	Vertical end position (Y) in dots.

Example •

```
N↵                              : clear image buffer
LS10,10,20,200,200↵             : draw a diagonal line
P1↵                             : print one label
```

will produce this label:
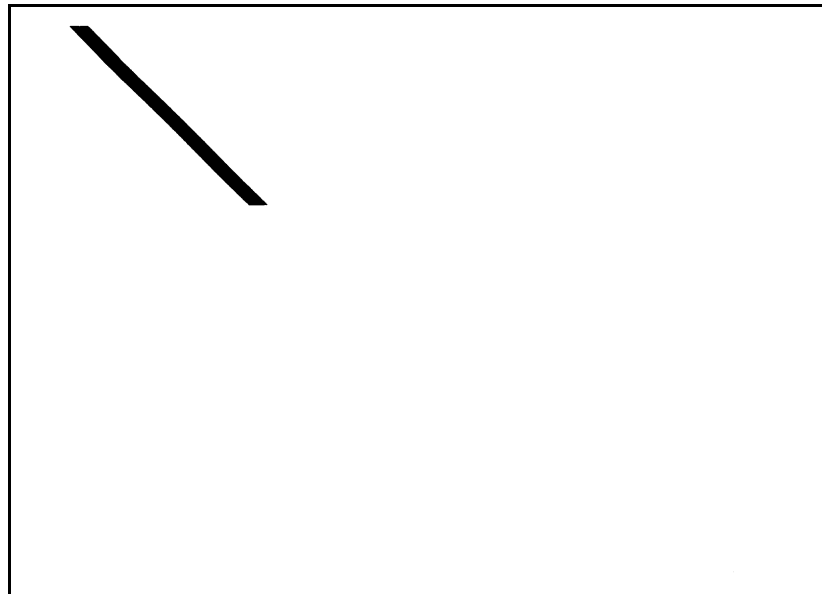
LW

Line Draw White

Description   Use this command to draw white lines, effectively erasing previous information.

Syntax LWp_1,p_2,p_3,p_4

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.
p_3 = Horizontal length	Horizontal length in dots.
p_4 = Vertical length	Vertical length in dots.

Example •

```
N↵                          : clear image buffer
LO50,100,400,20↵            : draw black line
LO50,200,400,20↵            : draw another black line
LO50,300,400,20↵            : draw another black line
LW200,50,20,400↵            : draw a white line over all 3
                              black lines
P1↵                         : print 1 label
```
will produce this label:

M
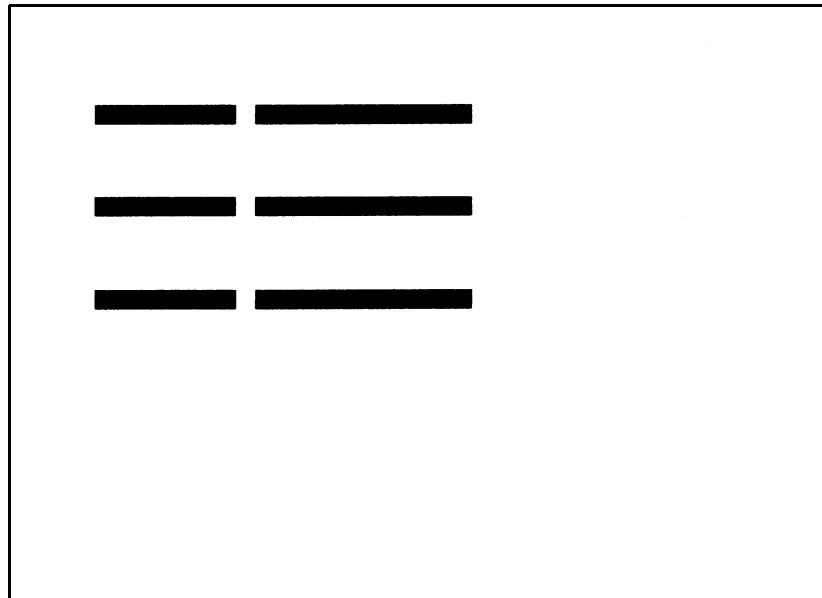
Memory Allocation

Description   Printers except LP 2348 and LP 2348 Plus, with firmware version 4.32 and above ignore this command. Use this command to set the size of form memory. The reminder of the form storage memory will be shared by soft fonts and graphics data.

Syntax Mp_1, p_2, p_3

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Parameter ignored	Parameter ignored, but required to process. Represents Image buffer size in whole KBytes.
p_2 = Form(s) memory size	Form(s) memory size in whole KBytes. The parameter, p2 (form memory size), inversely effects the size of the shared graphics/soft fonts memory.
p_3 = Parameter ignored	Parameter ignored, but required to process. Graphics (and soft font) memory size in whole Kbytes.

If the M command is issued, then all three parameters must be present.

Note • Available memory and the current allocation of memory can be displayed with the U command or an AutoSense procedure, see the printer's user manual for details.

N

Clear Image Buffer

Description This command clears the image buffer prior to building a new label image.

Syntax N

Parameters There are no parameters for this format.

Considerations:

- Do not use the N command within stored forms.

- All printer configuration commands should be issued prior to issuing the N command to begin building the image for printing within the image buffer.

- Always send a Line Feed (LF) prior to the N command to ensure that previous data in the command buffer has cleared and the printer is initialized and ready to accept commands.

Example •

```
↵                              : activates command processing
N↵                             : clears the image buffer
```

o

Cancel Software Options

Description   This command allows the user to cancel most printer customization parameters set by **o** series commands.

Parameters set by the following commands are canceled and returned to default operation:

- oH

- oM

- oE

Syntax   o

Parameters   There are no parameters for this format.

The o command is a global printer command.

- It can not be issued inside of a form.

- It must be issued prior to issuing a text or bar code command (and printing).

oB

Cancel Auto Bar Code Optimization

Description This command allows the advanced programmer to disable bar code optimization for rotated (90° & 270°) bar codes.

Syntax oB

Parameters Thre are no parameters for this format.

The oB command is a global printer command.

- It can not be issued inside of a form.

- It must be issued prior to issuing a bar code command (and printing).

To reapply bar code defaults, issue a o (small letter ¡°o¡±) command. See page C-90 for important details on the effects of using the o command.

Reset the printer with a ^@ command with flash firmware printers or cycle printer power to clear the oB command and return the printer to normal operation.

Important • Zebra Technologies Corporation does not warrant, support, or endorse the use of bar codes generated by the printer after a oB command has been issued.

Zebra Technologies Corporation does not support this feature other than with the information supplied in this document.

oE

Line Mode Font Substitution

Description   This command is a Page Mode (EPL2) command that allows the printer to set alternate Line Mode font character sets. The fonts are activated by the oE command and are intended for EPL1 emulation.

Mobile printers, such as the TR 220, ignore this command.

Syntax $oEp_1, p_2, p_3, p_4, p_5$

Parameters   This table identifies the parameters for this format:

Parameters	Details
$p_1 =$ 5 x 7 bitmap font	5 x 7 bitmap font - Normal (CCSET4) Line Mode EPL1 Compatibility Font A0 Total character area is 8 x 11 dots
$p_2 =$ 5 x 7 bitmap font	5 x 7 bitmap font - Bold (CCSET4) Line Mode EPL1 Compatibility Font A0 Total character area is 8 x 11 dots
$p_3 =$ 5 x 7 bitmap font	5 x 7 bitmap font - Doubled (CCSET4) Line Mode EPL1 Compatibility Font A0 Total character size is 8 x 11 dots
$p_4 =$ 14 x 22 bitmap font	14 x 22 bitmap font - (CCSET1) Line Mode EPL1 Compatibility Font A Total character area is 16 x 26 dots
$p_5 =$ 10 x 18 bitmap font	10 x 18 bitmap font - (CCSET3) Line Mode EPL1 Compatibility Font A Total character area is 12 x 22 dots

- Parameters p1-p5 are preloaded soft fonts.

- Parameters p1-p5 must be all be lower case alpha soft fonts. See the *ES command on page 91* for more details on soft fonts.

- The EPL2 font sets 2 & 4 can be restored as the default Line Mode fonts by sending the o command without a parameter.

oH

Macro PDF Offset

Description   Use this command to place addition secondary, associated Macro PDF symbols for the continuation of data greater than a single PDF 417 bar code can store.

This command must precede any PDF 417 bar code commands in order to print Macro PDF (multiple bar code) symbols from a single b command's data field.

Syntax $\mathtt{oHp_1,p_2}$

Parameters   This table identifies the parameters for this format:

Parameters	Details
$\mathtt{p_1}$ = Horizontal offset position	Horizontal offset position (X) in dots of the next Macro PDF bar code symbol.
$\mathtt{p_2}$ = Vertical offset position	Vertical offset position (Y) in dots of the next Macro PDF bar code symbol.

Example •

```
N↵
q784↵
Q1215,24↵
R0,0↵
oH0,500↵
ø
N↵
b80,100,P,700,600,x2,y7,l100,r100,f0,s5,"\↵
Fourscore and seven years ago our fathers...↵
<<the rest of Lincoln's Gettysburg Address HERE>>
... and that government of the people, by the people, for
the people shall not perish from the earth.↵
"↵
P↵
```

will produce this label:

oM
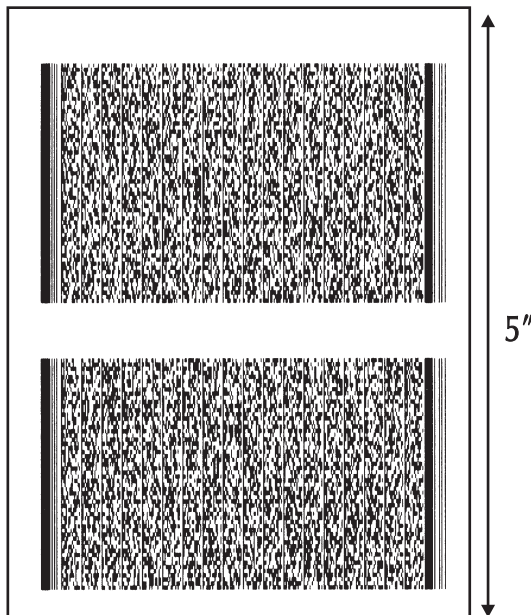
Disable Initial Esc Sequence Feed

Description   This command disables the automatic label calibration routine executed by the printer upon receiving the first escape command sequence from the Windows printer driver. The printer normally measures a single label and sets the top of form prior to printing the first label after a power-up reset. The Windows™ printer driver issues escape sequences when printing.

This command's primary use is to save preprinted forms such as serialized labels, tags or tickets.

Mobile printers, such as the TR 220, ignore this command.

Syntax   oM

This command must be issued prior to printing with the Windows driver's or any other Escape (esc) mode printing operation.

To reinitialize label calibration, issue a o (111 dec. or 6F hex.) command.

Parameters   There are no parameters for this format.

oR

Character Substitution (Euro)

Description This command allows the advanced programmer to substitute the Euro currency character for any ASCII character in printer resident font numbers 1-4.

The second function this command supports is the zero character style toggling between a plain zero character and a zero with a slash.

Character substitution settings are stored in the printers non-volatile 'flash' memory. The original character can be restored by sending the oR command without a parameter.

Syntax $oR[p_1,p_2]$

Parameters This table identifies the parameters for this format:

Parameters	Details
p_1 = E	If the p_2 parameter is not provided, then the Euro character will map to code page position 213 decimal (D5 hexadecimal) for all code pages.
p_1 = 0 (zero)	Toggles the zero character: slash — no slash (out of box default)
p_2 = Decimal number	*Accepted Values:* 0 to 255 The active code page's ASCII character map position to be replaced by the Euro character. The Euro character will be active in this map position for all code pages. See the I command for details on code page selection.
None = No parameters (p_1/p_2)	No Parameters (p_1/p_2) resets to all code pages to original default character mapping. Optionally, to reapply normal character operations, issue a o (111 dec. or 6F hex.) command. See page 121 for important details on the effects of using this command.

Note • The Euro character is not supported in Font 5 character set.

oW

Customize Bar Code Parameters

Description This command allows the advanced programmer to modify specific bar code parameters to exceed the specified bar code's design tolerances, i.e. reduce the bar code size.

Note • Using the oW command may cause bar codes to become unreadable by some or all bar code scanners.

Syntax oWp_1,p_2,p_3,p_4,p_5

Parameters This table identifies the parameters for this format:

Parameters	Details
$p_1 =$ Initial width narrow white bar	*Default Value:* 2
$p_2 =$ Initial width narrow black bar	*Default Value:* 2
$p_3 =$ Initial width wide white bar	*Default Value:* 4
$p_4 =$ Initial width wide black bar	*Default Value:* 4
$p_5 =$ Initial bar code gap	*Default Value:* 3

The oW command is a global printer command.

- They can not be issued inside of a form.

- They must be issued prior to issuing a bar code command (and printing).

- Use only one bar code format. Using more than one bar code may cause unpredictable results or operation.

- Issue all 5 command parameters (p1-5). Use the default parameter values as place holders.

- Bar code printed with this command should be printed in the picket fence orientation (0° & 180° rotations) to maximize scanning.

Reset the printer with a ^@ or o commands with flash firmware printers or cycle printer power to clear theoWcommand and return the printer to normal operation. See page C-90 for important details on the effects of using the o command.

The B command parameters p_5 & p_6 must beset to 0 to use bar codes customized with this command.

Note • The oW command has been tested for parameter functionality for Bar Code 39 only. The oW command may also function with Codabar and Interleaved 2 of 5 bar code, but they have not been functionally verified for this command.

Important • Zebra Technologies Corporation does not warrant, support, or endorse the use of bar codes generated by the printer after aoWcommand has been issued. Zebra Technologies Corporation does not support this feature other than with the information supplied in this document.

O

Hardware Options

Description   Use this command to select various printer options. Options available vary by printer configuration.

Options selected and enabled in a printer can be verified by checking the printer configuration printout, Dump Mode printer status label. See the *U command on page 146* and the *Explanation of the Status Printout* on page 34.

Mobile printers, such as the TR 220, ignore this command.

Syntax   O[C[p1],D,P,L,S,F]

Parameters   This table identifies the parameters for this format:

Parameters	Details
`C` = Enable optional Label Liner Cutter	The cutter will cut at the end of each form as specified by the Q command.
`Cp₁` = Batch print labels and liner cut	p_1p1 = Sets the number of labels to print prior to cut. If a number between 1 - 255 is specified for p_1, the printer will cut after the specified number of labels have been printed. If b is specified for p_1, the "batch print & cut" feature is enabled. This feature uses the P command to control cutter operation.
`D` = Enable direct Thermal Mode	Enable Direct Thermal Mode, use this option when using direct thermal media in a thermal transfer printer.
`d` = Status	Not a command, this is a status only. Out of box default Direct Thermal Mode setting used in a 2844, 2824 or 3842 thermal transfer printer's and is displayed in the Dump Mode status printout. Changing the printer to thermal transfer mode or when the printer detects a transfer ribbon will cause this option parameter to permanently be removed from the status printout.
`P` = Enable label taken sensor	Enable label taken sensor for the Label Dispense (Peel) Mode.
`L` = Enable printer's Feed button	Enable the printer's Feed button for Tap to Print operation in the Label Dispense (Peel) Mode. The printer will present each label and wait for a tap of the Feed button before printing the next label. Use this mode when printing multiple copies of liner-free labels.

Parameters	Details
S = Reverse sensor operation	Reverse the Transmissive (Gap) Sensor's normal operation.
Fp₁ = Form Feed Setting	p_1 = Sets the type of operation the feed button .
	f = Default, normal operation. Tap to feed.
	r = Reprint last label printed.
	i = Ignore the feed button.

Example •

```
O↵                        : disables all options.
OC↵                       : enables cutter only, labels
                            are cut after each
                          : label is printed, disables
                            all other options
OD↵                       : enables direct thermal mode
                            on thermal transfer
                          : printers, disables all other
                            options
OCb↵                      : labels are cut after a batch
                            of five has printed,
…                         : disables all other options
P5↵                       : Sets the number of labels to
                            print before the cut
```

OEPL1

Set Line Mode

Description   This command is used to switch the printer operating mode from Page Mode (EPL2) to Line Mode (EPL1 emulation).

Line Mode configuration setting is retained after reset has been issued or power has been cycled.

Mobile printers, such as the TR 220, ignore this command.

Syntax   OEPL1

Parameters   There are no parameters for this format.

Example •

```
OEPL1↵
```

Returning to Page Mode

The Line Mode command EPL2 can be sent to the printer to return the printer to Page (EPL2) Mode operation.

The EPL2 command is preceded by an ESCape (27 dec or 1Bh) character and followed by a line feed (LF - 10 dec or 0A hex), a carriage return (CR - 13 dec or 0D hex) or CR/LF.

Example •

```
←EPL2↵
```

P

Print

Description   Use this command to print the contents of the image buffer.

Note • The P command cannot be used inside of a stored form sequence. For automatic printing of stored forms, use the PA command.

Syntax $Pp_1, [p_2]$

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Number of label sets.	*Accepted Values:* 1 to 65535
p_2 = Number of copies of each labael	*Accepted Values:* 1 to 65535 Number of copies of each label (used in combination with counters to print multiple copies of the same label).

Example •

```
P1↵                                   : prints one label set
P2,1↵                                 : prints 2 label sets of one
                                        label each
P5,2↵                                 : prints 5 label sets of 2
                                        labels each
```

PA

Print Automatic

Description   Use this command in a stored form sequence to automatically print the form (as soon as all variable data has been supplied).

Syntax $PAp_1, [p_2]$

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Number of label sets.	Can be variable data.
	Accepted Values: 1 to 9999
p_2 = Number of copies of the same labael	Can be variable data.
	Accepted Values: 1 to 9999
	Sets the number of copies of each label (used in combination with counters) to print multiple copies of the same label. This value is only set when using counters.

Example •

```
FK"1"↵                        : delete form named "1"
FS"1"↵                        : start form store sequence
V00,10,N,"prompt:"↵           : define variable 00
V01,1,N,"prompt:"↵            : define variable 01
V02,4,N,"prompt:"↵            : define variable 02
A24,24,0,4,1,1,N,V00↵         : write a line of text including
                                variable
PAV01,V02↵                    : print 1 label automatically
FE↵                           : end form store sequence

FR"1"↵                        : retrieve form "1"
?↵                            : get variables
This Is Text↵                 : data for V00
3↵                            : data for V01= p1- number of
                                sets
2↵                            : data for V02= p2 - number of
                                copies
```

q

Set Label Width

Description Use this command to set the width of the printable area of the media.

Syntax qp_1

This table identifies the parameters for this format:

Parameters	Details
p_1 = The width of the label measured in dots.	The q command will cause the image buffer to reformat and position to match the selected label width (p_1).

Figure 5 • Image Buffer Positioning—Center Aligned Printers
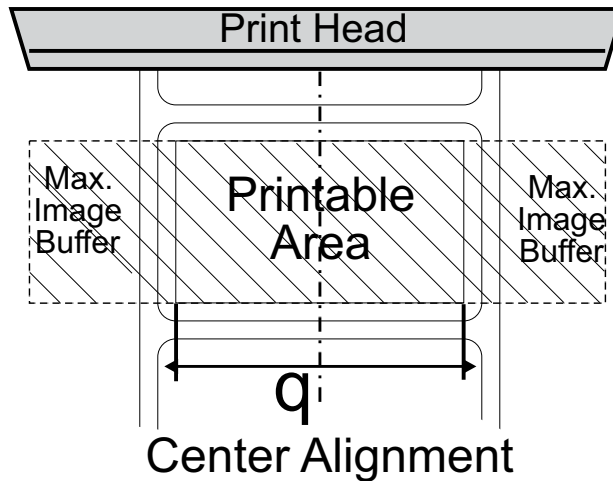
Figure 6 • Image buffer Positioning—Left Aligned Printers
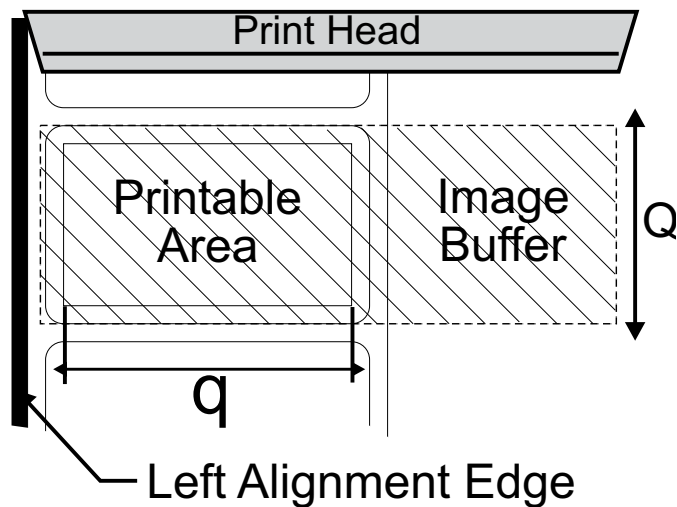
Notes •

For all EPL desktop printers, this command will automatically set the left margin according to the following rules:

(print head width -label width) / 2

The q value affects the available print width. Minimizing the q value will maximize the print length and print speed (double buffering).

If the R Command (Reference Point) is sent after this command, the image buffer will be automatically reformatted to match the width of the print head and is offset by the R command specified image buffer starting point, nullifying the q command.

Example •

```
q416↵                          : sets label width to 416 dots
                                 wide
```

Q

Set Form Length

Description   Use this command to set the form and gap length or black line thickness when using the transmissive (gap) sensor, black line sensor, or for setting the printer into the continuous media print mode.

The Q command will cause the printer to recalculate and reformat image buffer.

Syntax $Qp_1, p_2, [\pm p_3]$

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Label length measured in dots	*Default Value:* Set by the AutoSense of media *Accepted Values:* 0-65535 • Distance between edges of the label or black line marks. • For continuous mode, the p_1 parameter sets the feed distance between the end of one form and beginning of the next.

p_2 = Gap length or thickness of black line	*Accepted Values:*
	    16-240 (dots) for 203 dpi printers
	    18-240 (dots) for 300dpi printers
	Gap Mode
	By default, the printer is in Gap mode and parameters are set with the media AutoSense.
	Black Line Mode
	Set p_2 to B plus black line thickness in dots. See the Gap mode range.
	Continuous Media Mode
	Set p2 to 0 (zero)The transmissive (gap) sensor will beused to detect the end of media.

p_3 = Offset length measured in dots	Required for black line mode operation. Optional for Gap detect or continuous media modes. Use only positive offset values.

AutoSense routine does not detect black line or continuous media.

All EPL2 printers have a transmissive (gap) sensor designed to detect the top of each label or tag. It does this in one of two ways:

• Sensing through the label liner at the gap between labels.

• Looking through a hole (notch) in the tag.

Printers equipped with a black line sensor can determine the top of each label or tag by sensing a "black line" preprinted on the media backing.

Sensor location is important when selecting the proper of label or tag type for printing. See the printer's user manual for specific information on alignment, adjustment, and position of the transmissive (gap) or reflective (black line) sensors.

If the label size is not set properly, the printer may print off the edge of the label or tag and onto the backing or platen roller. Repeated printing off the edge of the label can cause excessive print head wear.

Maintain a minimum margin of 0.04 inches (1 mm) on all sides of the label.

Setting the label size to large can cause the printer to skip labels.

Example 1 • Standard Label
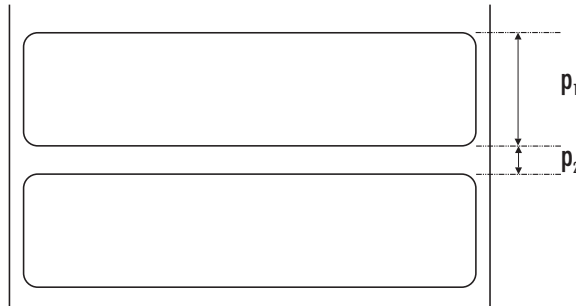
Where:

p1 = 20.mm (160 dots)
p2 = 3.0 mm (24 dots)

The Q command would be:

```
Q160,24↵
```

Example 2 • Butterfly Label
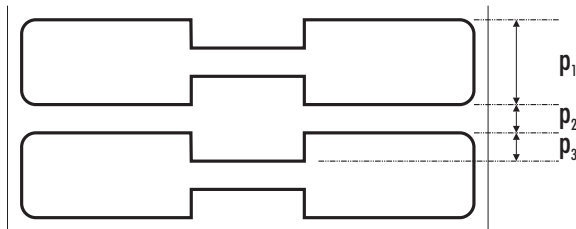
Where:

p1 = 12.5 mm (100 dots)
p2 = 3.0 mm (24 dots)
p3 = 3.0 mm (24 dots)

The Q command would be:

```
Q100,24+24↵
```

Example 3 • Black Line on Perforation

Where:

p1 =
p2 =
p3 =
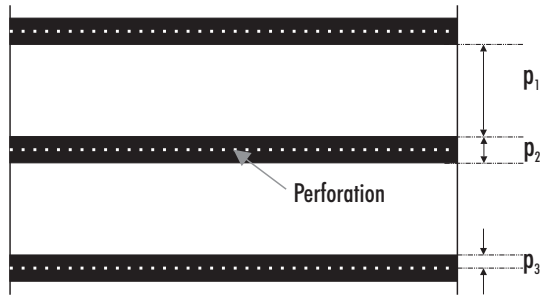
The Q command would be:

    Q100,24+24↵

Example 4 • Black Line Between Perforation

Where:

p1 =
p2 =
p3 =
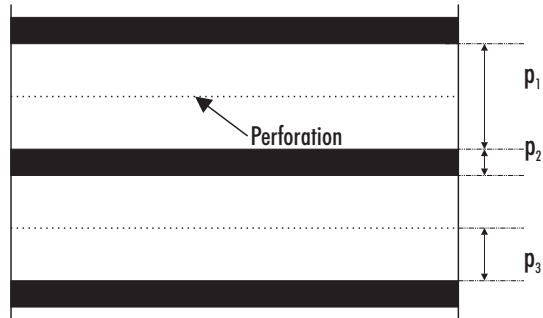
The Q command would be:

    Q100,24+24↵

r

Set Double Buffer Mode

Description   Use this command to disable or reenable the double buffer image (label) printing. The double buffer feature is a automatically tested and set by the q and Q commands.

Mobile printers, such as the TR 220, ignore this command and automatically set the printer to single buffer mode.

Syntax rp_1

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Enable/disable double buffer mode	*Accepted Values:* N = Disable double buffer mode Y = Re-enable the double buffer mode if the printer memory supports the image buffer size set by Q and q parameters **Note •** The rN command must follow the q and Q commands in a form (label) program. Verify the image buffer status with the U command(s). See *Explanation of the Status Printout* on page 34 for a sample of the Dump Mode Printout.

R

Set Reference Point

Description   Use this command to move the reference point for the X and Y axes. All horizontal and vertical measurements in other commands use the setting for R as the origin for measurements. Use the R command as an alternative to sending the q command to position (center) labels that are narrower than the print head.

The R command interacts with image buffer setting, as follows:

- The R command forces the printer to use the full width of the print head as the width of the image buffer. The R command overrides the q commands print width setting.

- Rotate the image buffer with the Z command to establish top and left margins (ZT) or the bottom and right margins (ZB).

- When positioned correctly, prevents printing off two (2) edges of the label opposite the 0,0 reference point.

Syntax Rp_1, p_2

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 =Horizontal (left) margin	Horizontal (left) margin measured in dots.
p_2 = Vertical (top) margin measured in dots.	Vertical (top) margin measured in dots.

Note •

- Use the Q and R commands together for the easiest method of positioning form elements in the print image in left-aligned table top printers.
- Repeated printing off the edge of the label can cause excessive print head wear.

S

Speed Select

Description   Use this command to select the print speed.

Mobile printers, such as the TR 220, ignore this command and automatically set speed to optimize battery use.

Syntax Sp_1

Parameters   This table identifies the parameters for this format:

Parameters	Details		
p_1 = Speed select value			
	Model	**Value**	**Speed**
	2722	0	1.0 ips (25 mm/s)
	2742	1	1.5 ips (37 mm/s)
	3742 3842	2	2.0 ips (50 mm/s)
	2824	1	1.5 ips (37 mm/s)
	2844	2	2.0 ips (50 mm/s)
		3	2.5 ips (63 mm/s)
		4	3.5 ips (83 mm/s)
	2443 (Orion)	1	1.5 ips (37 mm/s)
		2	2.0 ips (50 mm/s)
		3	2.5 ips (63 mm/s)
	2746	2	2.0 ips (50 mm/s)
	2746e	3	3.0 ips (50 mm/s)
	2348	4	4.0 ips (50 mm/s)
		5	5.0 ips (50 mm/s)
		6	6.0 ips (50 mm/s)
	2684 (Strata)	1	1.0 ips (25 mm/s)
		2	2.0 ips (50 mm/s)
		3	3.0 ips (50 mm/s)
		4	4.0 ips (50 mm/s)

Example • This example selects 2 ips (50 mmps).

    S2↵

TD

Date Recall & Format Layout

Description   Use this command to define the date format and print date data. The TD variable is inserted within a Text or Bar Code command's DATA parameter to print the date. The TD variable supports offsetting day by up to 253 days (see examples below for usage).

This command only works in printers equipped with the Real Time Clock time and date option.

Power-Up Default Format - mn-dd-y4

Syntax   TDp$_1$[|p$_2$|p$_3$]

Parameters   This table identifies the parameters for this format:

Parameters	Details
p$_1$ = p$_2$ = p$_3$ =	The parameters describe the format of the date display. At lease one parameter must be supplied. Each parameter can be any of the acceptable values listed below.

Value	Description
y2	Year displayed as 2 digits (07)
y4	Year displayed as 4 digits (2007)
me	Month displayed as 3 letters (JAN)
mn	Month displayed as 2 digits (01)
dd	Day displayed as 2 digits (15)

	= Separator character.	*Accepted Values:* Any ASCII character value between 032 and 063. The separator character is printed between the results of each of the supplied parameters.

Example • In this example, the current date is January 15, 2000.

```
TDy2/me/dd↵                        : 00/JAN/15
TDdd-me-y4↵                        : 15-JAN-2000
TDdd,mn,y4↵                        : 15,01,2000
TDdd/mn/y2↵                        : 15/09/00
A100,100,0,4,1,2,N,"Today is"TD↵: Today is 15/09/00
A100,200,0,4,1,2,N,"Next Week-"TD+07↵: Next Week-22/09/00
A100,300,0,4,1,2,N,"Next Month-"TD+30↵: Next Month-15/10/00
A100,400,0,4,1,2,N,"Two Months-"TD+61↵: Two Months-15/11/00
```

TS

Set Real Time Clock

Description   Use this command to set the time and date in printers equipped with the Real Time Clock option.

Syntax $TSp_1,p_2,p_3,p_4,p_5,p_6$

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Month	*Accepted Values:* 01–12
p_2 = Day	*Accepted Values:* 01–31
p_3 = Year	Value is equivalent to the last two digits of Year (e.g. 95) *Accepted Values:* 90-99 (to indicate 1990-1999) 00-89 (to indicate 2000-2089)
p_4 = Hour	Shown in 24 hour format. *Accepted Values:* 00–23
p_5 = Minutes	*Accepted Values:* 00–59
p_6 = Seconds	*Accepted Values:* 00–59

Example • In this example, the current date is January 15, 2000.

```
TS01,01,95,01,00,00↵          :sets the date to Jan. 1, 1995
                               and the time to 1:00 a.m.
TS12,31,01,15,31,00↵          : sets the date to Dec. 31, 2001
                               and the time to 3:31 p.m.
```

TT

Time Recall & Format Layout

Description   Use this command to define the time format and print time data. The TT variable is inserted within a Text or Bar Code command's DATA parameter to print the time.

This command works only in printers equipped with the Real Time Clock (RTC) time and date option.

Syntax   `TTp1[|p2|p3][+]`

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1, p_2, p_3 = h, m, or s	These parameters describe the format of the time display. • At lease one parameter must be supplied. • Each parameter can be any of the values h, m, or s and are described below. h = Hours displayed as 2 digits (e.g. 01) m = Minutes displayed as 2 digits (e.g. 15) s = Seconds displayed as 2 digits (e.g. 00) *Default Value:* h:m:s (power-up default format)
+ = Enable 12 Hour clock format	Appending a + to the end of the command string selects 12 hour clock mode. The times will display with an "AM" or "PM" indicator. Default (no +) = 24 hour clock mode
| = Separator character	The separator may be any ASCII character value between 032 and 063. The separator character is printed between the results of each of the supplied parameters.

Example • If the current time is 1:25 p.m.:

```
TTh:m:s+↵                      : 01:25:00PM
TTh,m↵                         : 13,25
TTh+↵                          : 01 PM
```
When printing the following:
```
N↵
TTh:m:s+↵
A100,500,0,4,1,2,N,"Current Time↵: "TT
A100,600,0,4,1,2,N,"+ 1Hr↵   "TT+60
A100,700,0,4,1,2,N,"+ 12hrs↵: "TT+720
P1↵
```
the result will be similar to this:
```
Current Time : 01:25:35PM
+1Hr : 02:25:35PM
+12Hrs : 01:25:35PM
```

U

Print Configuration (General)

Description   Use this command to print the current printer configuration for page mode printing. The printout is the same the Dump Mode printout initiated by the printer's AutoSense routine. The printer does not enter Dump Mode. See *Explanation of the Status Printout on page 34* for a description of this printout.

Syntax   U

Parameters   There are no parameters for this format.

Example • The configuration label below is produced by this command:

U↵

```
UKQ1935HLU       V4.59
Serial port:96,N,8,1
Page Mode

Image buffer size:0245K
Fmem used: 0 (bytes)
Gmem used: 0
Emem used: 29600
Available: 100959
I8,0,001 rY JF WY
S4 D10 R0,0 ZT UN
q832 Q1016,24
Option:D,Ff
oEv,w,x,y,z
06 11 18
Cover: T=143, C=166
```

UA

Enable Clear Label Counter Mode

Description   This command sets the printer to clear (empty) the print buffer if a media out condition is detected.

A power cycle, reset, or UB command will clear this setting.

Normal (default) operation for the printer is to resume printing if the empty roll is replaced with new roll (or ribbon) and finish print any labels in the process of printing prior to a media out condition, including batch print jobs.

Syntax   UA

Parameters   There are no parameters for this format.

Example •

UA↵

UB

Reset Label Counter Mode

Description   Use this command to clear the UA command and restore the default setting to allow the printer to resume printing a batch job if a paper empty occurs. The page mode (EPL2) printer, by default, will resume printing if the empty roll is replaced with new roll (or ribbon) and finish a batch print job.

Syntax   UB

Parameters   There are no parameters for this format.

Example •

   UB↵

UE

External Font Information Inquiry

Description   This command will cause the printer to send information about external fonts currently stored in the printer back to the host.

The printer will send the number of external fonts stored and each font's name, height and direction, to the host through the RS-232 port.

Syntax   UE

Parameters   There are no parameters for this format.

Example •

```
UE↵
```
will produce:
```
###                        : number of external fonts
A,xxx,y                    : first font
...                        : A=fontname
...                        : xxx=font height in dots
...                        : y=direction (0=0°, 1=90°,
                             2=both)
A,xxx,y                    : last font
```

UF

Form Information Inquiry

Description This command will cause the printer to send information about forms currently stored in the printer back to the host.

Syntax `UF`

Parameters There are no parameters for this format.

Example •

```
UF↵
```

will produce:

```
###                         : number of forms
FORMNAME1                   : first form name
FORMNAME2                   : second form name
...
FORMNAMEn                   : last form name
```

UG

Graphics Information Inquiry

Description   This command will cause the printer to send information about graphics currently stored in the printer back to the host.

Syntax   UG

Parameters   There are no parameters for this format.

Example •

```
UG↵
```

will produce:

```
###                      : number of graphics
GRAPHICNAME1             : first graphic name
GRAPHICNAME2             : second graphic name
...
GRAPHICNAMEn             : last graphic name
```

UI

Host Prompts/Codepage Inquiry

Description   This command will cause the printer to enable prompts to be sent to the host and it will send the currently selected codepage to the host through the RS-232 port.

This command also disables software flow control (XON/XOFF). Hardware flow control is not disabled (DTR/CTS). To restart software flow control a reset (^@ command) or power must be recycled.

See also the I and U commands.

Syntax UIp_1,p_2,p_3

Parameters   This table identifies the parameters for this format:

Parameters	Details
The printer will send information about the currently selected code page back to the host in the following format:	
p_1	Number of data bits.
p_2	Code page.
p_3	Country code.

Note • The KDU automatically sends this command each time power is applied.

Example •

UI↵

UM

Codepage & Memory Inquiry

Description   This command will cause the printer to send to the host the currently selected codepage and memory status through the RS-232 port.

This command also disables software flow control (XON/XOFF). Hardware flow control is not disabled (DTR/CTS). To restart software flow control a reset (^@ command) or power must be recycled.

See also the I, M, U, UI and UP commands.

Syntax $UMp_1,p_2,p_3,p_4,p_5,p_6,p_7,p_8$

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1	Image buffer size in KBytes.
p_2	Form memory allocation size in KBytes.
p_3	Form memory free in KBytes.
p_4	Graphic memory allocation size in KBytes.
p_5	Graphic memory free in KBytes.
p_6	External font memory allocation size in KBytes.
p_7	External font memory free in KBytes.
p_8	Appends a response in the UI command data format. See the *UI* command on page 152.

Example •

UM↵

UN

Disable Error Reporting

Description Cancels US command.

Syntax UN

Parameters There are no parameters for this format.

UP

Codepage & Memory Inquiry/Print

Description   This command will cause the printer to print and send the currently selected codepage and memory status to the host through the RS-232 port.

This command also disables software flow control (XON/XOFF). Hardware flow control is not disabled (DTR/CTS). To restart software flow control a reset (^@ command) or power must be recycled.

See also the I, M, U, UI and UM commands.

Syntax   UP

The printer will send information about the currently selected code page and memory status back to the host followed by printing the current printer configuration. For an example of the configuration printout, see the U command.

The format of data sent to the host is as follows:

$UPp_1,p_2,p_3,p_4,p_5,p_6,p_7,p_8,p_9$

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1	Image buffer size in KBytes.
p_2	Form memory allocation size in KBytes.
p_3	Form memory free in KBytes.
p_4	Graphic memory allocation size in KBytes.
p_5	Graphic memory free in KBytes.
p_6	External font memory allocation size in KBytes.
p_7	External font memory free in KBytes.
p_8	Appends a response in the UI command data format. See the *UI* command on page 152 .

Example •

Up↵

UQ

Configuration Inquiry

Description   Use this command to send the printer configuration information back to the host via the serial port.

The printer will send the printer configuration, line by line, in ASCII to the host through the RS-232 port. The information matches the configuration information printed in final phase of the printer's AutoSense routine, the Dump Mode Printout or the U command printout.

The information and number of lines of data sent by the printer will vary from printer to printer depending upon the type of printer and options installed.

Syntax   UQ

Parameters   There are no parameters for this format.

Example •

UQ↵

US

Enable Error Reporting

Description   Use this command to enable the printer's status reporting feature.

- Serial Port

    - If an error occurs, the printer will send a NACK(0x15), followed by the error number, to the computer.

    - If no errors occur, the printer will echo ACK(0x6) after each label is printed or removed if in dispense (peel) mode.

    - If paper or ribbon empty occurs, the printer will send, through the serial port, a"-07" and "Pnnn" where nnn is the number of labels remaining to print.

- Parallel Port

    - If an error occurs, the printer will print the error number and the printer's indicator(s) LED will indicate an error condition. See the individual printer's user manual for details.

- Mobile Printers Only (TR220)

    - Additionally enables command error reporting via printer's status indicator. The indicator is turned off by default for this printer only.

Note • The printer's default setting is disabled error reporting.

If enabled, use the UN command to disable error reporting.

Syntax   US[p$_1$]

Parameters This table identifies the parameters for this format:

Parameters	Details
p_1 = 1 (Optional Parameter)	If no errors occur, the printer will echo ACK(0x6) after each label that is successfully printed/dispensed.

Code	Error/Status Description
00	No Error
01	Syntax Error
02	Object Exceeded Label Border
03	Bar Code Data Length Error (e.g.: EAN-13 is a 12 or 1 digit only)
04	Insufficient Memory to Store Data
05	Memory Configuration Error
06	RS-232 Interface Error
07	Paper or Ribbon Empty
08	Duplicate Name: Form, Graphic or Soft Font
09	Name Not Found: Form, Graphic or Soft Font
10	Not in Data Entry Mode (See ? Command)
11	Printhead Up (Open)
12	Pause Mode or Paused in Peel Mode
13	Mobile Printers: Print head too hot
14	Mobile Printers: Motor too hot
15	Mobile Printers: Battery low warning (40%)
16	Mobile Printers: Battery low limit (20%)
50	Printer Busy - Processing Print Job
84	Media Error or Blackline not detected
93	PDF-417 coded data too large to fit in bar code

UT

Enable Alternate Error Reporting

Description   Use this command to enable the printer's status alternate reporting feature.

- Serial Port

    - If an error occurs, the printer will send a NACK(0x15), followed by the error number, to the computer.

    - If no errors occur, the printer will echo ACK(0x6) after last line of the current label has been rasterized.

    - The printer will send a DLE(0x10) when the label is dispensed.

    - If paper or ribbon empty occurs, the printer will send, through the serial port, a "-07", "Pnnn" where nnn is the number of labels remaining to print. (Same as US1 command)

    - The UT command (when compared to the US1 command) then adds a "Lyyyyy" to the end, where yyyyy is the number of unprinted raster lines. (07PnnnLyyyyy)

- Parallel Port

    - If an error occurs, the printer will print the error number and the printer's indicator(s) LED will indicate an error condition. See the individual printer's user manual for details.

- Mobile Printers Only (TR220)

    - Additionally enables command error reporting via printer's status indicator. The indicator is turned off by default for this printer only.

Note • The printer's default setting is disabled error reporting.

If enabled, use the UN command to disable error reporting.

Syntax   UT

Parameters   There are no parameters for this format.

U%

Host Prompts/Motor Temperature

Description   This command will cause the printer to send to the host the motor temperature status through the mobile printer's serial port. This command applies to Mobile Printers Only (TR 220).

The printer will send motor temperature in 2ºC increments to the host via the serial port. The printer uses the data format of NNdeg C, where NN equals the motor temperature.

Range Reported (Degrees Celsius): 24NN60

Syntax   U%

Parameters   There are no parameters for this format.

Example • In this example, the command is sent to the printer and the printer responds with a motor temperature of `24 deg C`.

    U%↵

U$

Host Prompts/Battery Status

Description   This command will cause the printer to send to the host the battery charge status. This command applies to EPL Mobile Printers Only (TR 220).

The printer will send information about battery charge status in increments of 10 percent. The printer uses the data format of VccNNN%, where NNN represents the battery's charge level.

Note • EPL Mobile printers suspend all new printing operations, including printer to host communication, until the battery charge level is greater than 10%.

Print jobs or forms (single label or batch operations) will continue processing until finished. The mobile printer will accept new commands and print after the battey charge is greater than 10%.

Syntax   U$

Parameters   There are no parameters for this format.

Example • In this example, the command is sent to the printer and the printer responds with Vcc90%.

U$↵

V

Define Variable

Description   Use this command to define variable data for the text and bar code data fields in stored forms. Variable data can be combined with fixed data or other data types (counter, date, etc..) in text or bar code data fields.

Use this command in forms that require unique data on each label. When initializing variables:

- They must be defined in order (e.g. V00 first, V01 second...)
- They must be the next entries after the FS"FORMNAME" command.
- They must be located before any counter variables.
- Variables must not contain the NULL character (0 dec.;00 hex.). The NULL character is an illegal text character.

To print the contents of the variable, the variable number is referenced in the "DATA" field of the A (ASCII text) or B (Bar Code) commands.

The field justification parameter effects the way the variable will be printed. When L of R are selected, the variable value will be printed left or right justified in an area with a width defined by p_2 parameter.

Syntax $Vp_1,p_2,p_3,$" [-] PROMPT"

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Variable number	Variable (reference) numbers are sequential and must be input into a form in ascending order. *Accepted Values:* 00 to 99
p_2 = Maximum number of characters	This is the maximum number of characters allowed in the variable field. *Accepted Values:* 1 to 99

p_3 = Field Justification	*Accepted Values:*
	    L = Left
	    R = Right
	    C = Center
	    N = No Justification
	Note • Right and center justification does not apply to soft fonts.

Parameters	Details
PROMPT = ASCII text field	An ASCII text field that will be transmitted to the host (via the serial interface) each time this command is executed.
	Use the prompt to ask for a value to be entered for the variable.
[-] = KDU Options	Having the first character of the prompt a single minus sign will cause the prompt to display only once after form retrieval.
	The KDU allows a maximum of 40 characters for entry into a variable data field and display.
	Accepted Values: 1 to 40 for KDU Range (p_2), but not to exceed a total of 1500 bytes for all variables.

Example •

```
V00,15,N,"Enter Product Name:"↵
```

Note • The maximum amount of data stored as variable data, including counter variables and data reference overhead can not exceed 1500 bytes.

KDU Support: Internally stored variable data fields are reset after cycling printer power or sending a reset command or pressing the Cancel.

W

Windows Mode

Description This command is used to disable/re-enable the Windows command mode.

When enabled, the printer will accept Windows mode escape sequences to print data. When disabled, escape sequences will be ignored.

The Windows mode escape sequences are only used by the optional Windows printer driver. When working with a main frame or other non-Windows host, this mode can be disabled to prevent erratic operation.

Syntax Wp_1

Parameters This table identifies the parameters for this format:

Parameters	Details
p_1 = Windows Mode Enabled	*Accepted Values:* Y = enabled N = disabled *Default Value:* N (disabled)

xa

AutoSense

Description   This command is used to have the printer detect the label and gap length and set the sensor levels. This command will *not* enter into the Dump mode or print the printer configuration label.

Syntax xa

Parameters   There are no parameters for this format.

Example • In this example, the printer will feed labels and measure the labels to set the Q values (label & gap length) and the sensor levels. The printer is at Top of Form (TOF) and ready to print.

xa↵

X

Box Draw

Description Use this command to draw a box shape.

Syntax Xp_1,p_2,p_3,p_4,p_5

Parameters This table identifies the parameters for this format:

Parameters	Details
p_1 = Horizontal start position	Horizontal start position (X) in dots.
p_2 = Vertical start position	Vertical start position (Y) in dots.
p_3 = Line thickness	Line thickness in dots.
p_4 = Horizontal end position	Horizontal end position (X) in dots.
p_5 = Vertical end position	Vertical end position (Y) in dots.

Example • This example will produce the results shown below.

```
N↵
X50,200,5,400,20↵
X200,50,10,20,400↵
P1↵
```

Y
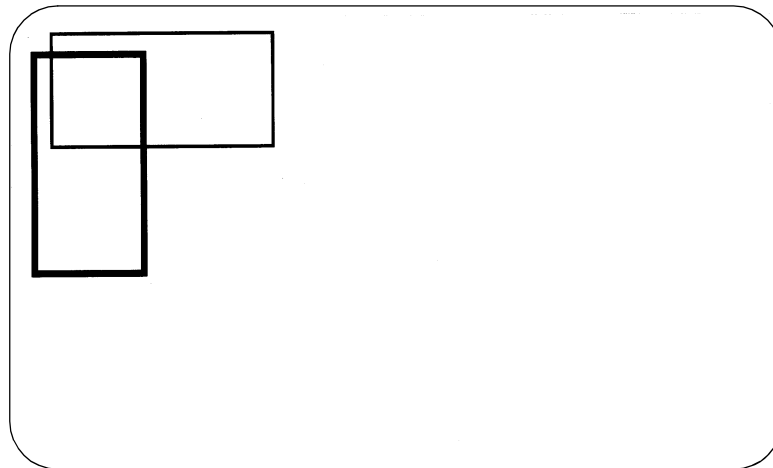
Serial Port Setup

Description   Use this command to establish the serial port communication parameters. After receiving this command, the printer will automatically reset, enabling the new rate.

To send commands and data to the printer, the host's serial port parameters must match the printer's serial port parameters. Verify the printer's configuration settings with the AutoSense/Dump Mode Printout, see the printer's user manual for details. The printer's default serial port parameters are:

9600 baud,No Parity, 8Data Bits, 1 Stop Bit

Change the printer's serial port parameters with the Y command after communication has been established with the host. The host parameters must then be changed to resume communication.

Syntax Yp_1,p_2,p_3,p_4

Parameters   This table identifies the parameters for this format:

Parameters	Details
p_1 = Baud rate	<table><tr><td>p_1</td><td>Description</td></tr><tr><td>38</td><td>38,400 baud (38K)</td></tr><tr><td>19</td><td>19,200 baud</td></tr><tr><td>96</td><td>9,600 baud</td></tr><tr><td>48</td><td>4,800 baud</td></tr><tr><td>24</td><td>2,400 baud</td></tr><tr><td>12</td><td>1,200 baud</td></tr></table>
p_2 = Parity	*Accepted Values:* O = Odd parity E = Even parity N = No parity
p_3 = # Data bits	*Accepted Values:* 7 = Seven data bits 8 = Eight data bits
p_4 = # Stop bits	*Accepted Values:* 1 = One stop bit 2 = Two stop bits

Example • This example sets 19,200 baud, odd parity, 7 data bits and 1 stop bit.

```
Y19,O,7,1↵
```

Z

Print Direction

Description   Use this command to select the print orientation.

Syntax $\text{Z}p_1$

Parameters   This table identifies the parameters for this format:

Parameters	Details

$\text{p}_1 =$ Print orientation	*Accepted Values:*
	    T = Printing from top of image buffer.
	    B = Printing from bottom of image buffer.
	Default Value: T

Note • The top of the image buffer prints first and is viewed by the operator as printing upside down.

Example • This example will produce the results shown below.

```
N↵

ZT↵

GG10,10,"WORLD"↵

A10,200,0,3,1,1,N,"This Graphic Was Printed With
Orientation Set To ZT"↵

P1↵

N↵

ZB↵

GG10,10,"WORLD"↵

A10,200,0,3,1,1,N,"This Graphic Was Printed With
Orientation Set To ZB"↵

P1↵
```

?
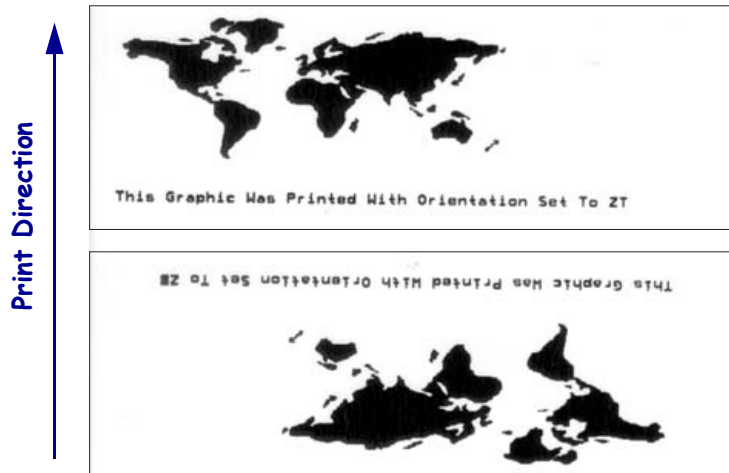
Download Variables

Description This command signals the printer to "fill-in" variable or counter "prompt" data field.

The host system can send data representing variables and/or counters to the printer after a stored form containing variables and/or counters has been retrieved.

Syntax ?
    DATA

The amount of data following the question mark line must match exactly the order and total number of variables and/or counters for that specific form.

Data must be entered, as follows:

- Each DATA line represents a variable or counter data field fill-in.

- Variables in ascending order (e.g. V00 first, V01 second...)

- Counters in ascending order following Variables (e.g. C0 first, C1 second...)

Parameters There are no parameters for this format.

Example •

```
FK"form1"↵                     :delete form "form1"
FS"form1"↵                     :begins the form store
V00,15,N,"Enter Part Name:"↵
V01,5,N,"Enter Quantity:"↵
A50,10,0,3,1,1,N,V00↵
A50,400,0,3,1,1,N,"Quantity: "V01↵
FE↵                            :ends form store sequence
FR"form1"↵                     :retrieve for "form1"
?↵                             :variables follow
Screws↵                        :first variable
235↵                           :second variable
P1↵                            :print one label
```

^@

Reset Printer

Description   This command is used to reset the printer.

Syntax   ^@
where ^ is 94 decimal

This command emulates Power Off and then Power On; thus reinitializing the printer.

- The reset command is unavailable during the operation of storing PCX graphics, soft fonts or while the printer is in dump mode.

- The reset command cannot be used in a stored form.

- The reset command can be sent to the printer during all other printing operations.

- The printer will ignore all commands sent while the reset command is executing, up to 2 seconds.

Parameters   There are no parameters for this format.

Example • This example causes the printer to reset.

^@↵

^default

Set Printer to Factory Defaults

Description   Use this command to return the printer to its default configuration.

The ^default command resets the density, speed, sensors, image buffer parameters, character code page (including re-mapped characters), options, feed button behaviors, gap mode media sensing, serial interface configuration, error reporting and line mode configuration defaults.

This command is intended for troubleshooting and by service organizations. Do not use this command in regular programming! Do not use this command to initialize the printer! This overwrites all stored parameters. The programmer should always minimize writing to the non-volatile 'flash' printer memory.

Supported by firmware versions 4.30 and above.

Syntax   ^default

Parameters   There are no parameters for this format.

^ee

Error Report - Immediate

Description Use this command to get printer errors and status reports immediately. The ^ee command must be sent via the USB and RS-232 serial interface.

Mobile printers, such as the TR 220, ignore this command.

The printer will report 4 bytes back to host in the following format:

```
XX<CR><LF>
        XX = Error/Status code
        <CR>= Carriage Return (ASCII 13 dec.)
        <LF>= Line Feed (ASCII 10 dec.)
```

Syntax ^ee

Parameters There are no parameters for this format.

Code	Error/Status Description
00	No Error
01	Syntax Error
02	Object Exceeded Label Border
03	Bar Code Data Length Error (e.g.: EAN-13 is a 12 or 1 digit only)
04	Insufficient Memory to Store Data
05	Memory Configuration Error
06	RS-232 Interface Error
07	Paper or Ribbon Empty
08	Duplicate Name: Form, Graphic or Soft Font
09	Name Not Found: Form, Graphic or Soft Font
10	Not in Data Entry Mode (See ? Command)
11	Printhead Up (Open)
12	Pause Mode or Paused in Peel Mode
50	Printer Busy - Processing Print Job
80*	Undefined
81*	Cutter Jammed or Not Installed
82*	AutoSense or Sensor Failure
83*	Illegal Interrupt occurred
84*	Excessive Media Feeding

* Requires Intervention: Press Feed or Reset (^@ command)

;

Code Comment Line

Description   This command signals the printer to ignore the following data. All data between the line initiating semicolon character (;) and the next line feed (LF) character (which terminates all command lines) will be ignored.

Supported by firmware versions 4.30 and above.

Syntax   ; Comment Data

Example • The phrase "This is used for xxxXXX" is ignored by the printer.

```
; This is used for xxxXXX↵
```

4

SGD Printer Setting Commands

This chapter provides a high-level overview of printer setting Set / Get / Do (SGD) commands.

| .151 | SGD commands are available in printers with firmware versions E53.15.x or later. |

| ! | **Important •** These are important points to note when using EPL, ZPL, and SGD commands: |

- SGD commands are case-sensitive.
- EPL, ZPL, and SGD commands should be sent to the printer as separate files.
- Certain settings can be controlled by EPL, ZPL, and SGD. Configuration changes made in EPL or ZPL can affect configuration changes made in SGD.
- Changes made with one command type (EPL, ZPL, and SGD) will affect the data returned to the host in response to EPL, ZPL, and getvar commands. The command type (EPL, ZPL, or SGD) that was sent last determines the current setting.
- Some RF cards do not support all of the SGD commands.

Overview

This section describes how and why to use the Set / Get / Do (SGD) commands. It also provides an example of a typical command structure.

Note • SGD commands must be terminated by a carriage return or a space and line feed.

SGD commands are commands that allow you to configure all printers with firmware versions E53.15.x or later. The printer performs the specified function immediately after receiving the command. The commands are:

- **setvar**
- **getvar**
- **do**

setvar Command

Setvar commands:

- are used to configure printer settings to specific values by setting them in the printer
- must be terminated by a space character or a CR/ LF (0x0D, 0x0A)

Important • The setvar command and attributes must be specified in lower case.

getvar Command

Getvar commands:

- are used to get the current value of the printer settings
- must be terminated by a space character or CR/LF (0x0D, 0x0A)

The printer responds with the printer setting of "?" if:

- the printer setting does not exist (usually due to incorrect spelling of the printer setting)
- it has not been configured yet

Important • The printer settings and attributes must be specified in lower case.

do Command

Do commands:

- are used to instruct the printer to perform predefined actions
- must be terminated by a space character or a CR/LF (0x0D, 0x0A)

Some Do commands require additional settings which must be enclosed in double quotes.

! **Important •** The values must be specified in lower case.

Command Structure

It is important to understand the structure of the command and its components. A command structure illustration is provided for each command in this guide.

Example • This is an example of a command structure illustration:

```
! U1 setvar   "ip.addr"   "value"
      1           2          3
```

1	Command—always preceded with an exclamation point (!) and must be specified in lower case. A space resides between the **!** and **U1** and between **U1** and the command (**setvar** or **getvar**).
2	Attribute—always in double quotes and must be specified in lower case.
3	Chosen value—always in double quotes. Only applicable for **setvar** and **do**.

This command must be terminated by a space character or a CR/ LF (0x0D, 0x0A).

Note • Some RF cards do not support all of the SGD commands.

How to Send Multiple SGD Commands

For any getvar, setvar, or do command, if you issue the syntax without the "1" and use the END command followed by a space, multiple SGD commands are sent simultaneously.

Example • This syntax shows how you can send multiple getvar commands:

```
1  ───────►   ! U getvar "ip.telnet.enable"

              getvar "ip.dhcp.enable"
2  ───────►
              getvar "ip.dhcp.cid_prefix"

3  ───────►   END
```

1	The command portion of the string does not use the "1" after the "! U".
2	Commands issued after the first command do not require the "! U".
3	The string of commands is terminated by the word "END" with a space after the word, and by a carriage return/ line feed.

appl.bootblock

Description This command refers to the bootblock version. On the configuration label, the bootblock number is identified as the hardware ID. This command is only supported on Zebra ZM400/ZM600™ printers.

Type getvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
getvar	This command returns the bootblock version number that appears on the configuration label .
	Format: ! U1 getvar "appl.bootblock"

Example • In this example, the getvar returns the bootblock version number.

```
! U1 getvar "appl.bootblock"
```

`appl.name`

Description This command refers to the printer's firmware version. This command is only supported on Zebra ZM400/ZM600™ printers.

Type `getvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
`getvar`	This command returns the printer's firmware version.
	Format: `! U1 getvar "appl.name"`

Example • In this example, the `getvar` returns the printer's firmware version.

```
! U1 getvar "appl.name"
```

device.languages

Description This command identifies the programming language that the printer is currently using. This command is only supported on Zebra ZM400/ZM600™ printers.

Type getvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
getvar	This command retrieves the programming language that the printer is currently using. Table 3 shows the possible response values. *Format:* ! U1 getvar "device.languages"

Example • In this example, the getvar result is the current programming language that the printer is using.

```
! U1 getvar "device.languages"
```

Table 3 • Programming Languages

ZPL (Zebra Programming Language)
EPL (Eltron Programming Language)

ip.active_network

Description This command displays if the printer is actively connected to wireless, external wired, or internal wired. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with what the printer is currently connected to internal wired, wireless, external wired, or unknown. Table 4 provides details on the potential return values.
	Format: ! U1 getvar "ip.active_network"

Example • In this example, the getvar will return the current active network the printer is connected to.

```
! U1 getvar "ip.active_network"
```

Table 4 • Printer Responses

Return Values	Details
"internal wired"	This is the return value when an internal wired device is detected.
"wireless"	This is the return value when a wireless device is detected.
"external wired"	This is the return value when an external wired device is detected.
"unknown"	This is the return value: • if the printer has not established a network connection on any of the devices • if you don't have any of the network devices plugged in • if the printer is trying to establish a connection (for example, when wireless is going through the association process)

ip.ftp.enable

Description This printer setting refers to the FTP protocol setting. This command tells the printer to turn FTP on or off.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the FTP status. *Format:* ! U1 getvar "ip.ftp.enable"

setvar	This command instructs the printer to turn FTP on or off.
	 Format: ! U1 setvar "ip.ftp.enable" "value"
	 Values:
	   "off" = disables FTP
	   "on" = enables FTP
	 Default: "on"

Example • This setvar example shows the FTP status set to "on".

    ! U1 setvar "ip.ftp.enable" "on"

When the setvar value is set to "on", the getvar result is that the FTP status is "on".

ip.http.enable

Description This printer setting refers to the HTTP protocol/web server setting.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the HTTP status. *Format:* ! U1 getvar "ip.http.enable"
setvar	This command instructs the printer to change HTTP to on or off. *Format:* ! U1 setvar "ip.http.enable" "value" *Values:* "off" = disables HTTP protocol "on" = enables HTTP protocol *Default:* "on"

Example • This setvar example shows the value set to "on".

```
! U1 setvar "ip.http.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

ip.lpd.enable

Description This printer setting refers to the LPD (Line Printer Daemon) protocol setting.

Type getvar;setvar

Important • LPD communications from the host should be directed to port 515.

Note • These are key reference links for this command:
- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the LPD status.
	Format: ! U1 getvar "ip.lpd.enable"
setvar	This command instructs the printer to turn LPD on or off.
	Format: ! U1 setvar "ip.lpd.enable" "value"
	Values:
	"off" = disables LPD protocol
	"on" = enables LPD protocol
	Default: "on"

Example • This setvar example shows the value set to "on".

```
! U1 setvar "ip.lpd.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

ip.pop3.enable

Description This printer setting determines if the printer queries a POP3 mailbox for mail.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the POP3 status. *Format:* ! U1 getvar "ip.pop3.enable"
setvar	This command instructs the printer to turn POP3 on or off. *Format:* ! U1 setvar "ip.pop3.enable" "value" *Values:* "off" = disables POP3 "on" = enables POP3 *Default:* "on"

Example • This setvar example shows the value set to "on".

```
! U1 setvar "ip.pop3.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

ip.pop3.password

Description This printer setting refers to the POP3 mailbox password. This only applies if "ip.pop3.enable" is set to on.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the POP3 password.
	Format: ! U1 getvar "ip.pop3.password"
	For protection a single "*" prints.
setvar	This command instructs the printer to change the POP3 password.
	Format: ! U1 setvar "ip.pop3.password" "value"
	Values: A maximum of 20 alphanumeric characters
	Default: " "

Example • This setvar example shows the value set to "password".

```
! U1 setvar "ip.pop3.password" "password"
```

When the setvar value is set to "password", the getvar result is "*".

ip.pop3.poll

Description This printer setting refers to how frequent (in seconds) the printer queries a POP3 mailbox for new mail. This only applies if the "ip.pop3.enable" is set to on.

Type getvar; setvar

Note • A poll value of less then thirty seconds is not recommended. The printer is unresponsive for several seconds when polling for email depending on data transfer time from the server to the printer.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the POP3 poll frequency (in seconds). *Format:* ! U1 getvar "ip.pop3.poll"
setvar	This command instructs the printer to change the POP3 poll interval. A value of "0" causes the printer to only query the POP3 mailbox one time, on printer power up, or following a network reset. *Format:* ! U1 setvar "ip.pop3.poll" "value" *Values:* "0" through "65535" *Default:* "0"

Example • This setvar example shows the value set to "0".

    ! U1 setvar "ip.pop3.poll" "0"

When the setvar value is set to "0", the getvar result is "0".

ip.pop3.server_addr

Description This printer setting refers to the POP3 server IP address that the printer contacts when checking for new mail. This only applies if "ip.pop3.enable" is set to on.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the POP3 server address. *Format:* ! U1 getvar "ip.pop3.server_addr"
setvar	This command instructs the printer to change the POP3 server address. *Format:* ! U1 setvar "ip.pop3.server_addr" "value" *Values:* Any valid POP3 server address *Default:* "0.0.0.0"

Example • This setvar example shows the value set to "10.3.5.10".

    ! U1 setvar "ip.pop3.server_addr" "10.3.5.10"

When the setvar value is set to "10.3.5.10", the getvar result is "10.3.5.10".

ip.pop3.username

Description This printer setting refers to the POP3 user name. This only applies if the "ip.pop3.enable" is set to on.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the POP3 user name.
	Format: ! U1 getvar "ip.pop3.username"
setvar	This command instructs the printer to change the POP3 user name.
	Format: ! U1 setvar "ip.pop3.username" "value"
	Values: A maximum of 20 alphanumeric characters
	Default: " "

Example • This setvar example shows the value set to "user".

```
! U1 setvar "ip.pop3.username" "user"
```

When the setvar value is set to "user", the getvar result is "user".

ip.primary_network

Description This command allows you to set the primary network to either wired or wireless. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the name of the current primary network device. *Format:* ! U1 getvar "ip.primary_network"

setvar	This command instructs the printer to set the current network device.
	Format: ! U1 setvar "ip.primary_network" "value"
	Values:
	    1 = wired
	    2 = wireless
	Default: "wired"

Example • This setvar example shows the value set to "wired".

```
! U1 setvar "ip.primary_network" "wired"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "wired".

ip.smtp.domain

Description This printer setting refers to the domain name used by the printer in sending email with respect to the SMTP server.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to return the SMTP domain name. *Format:* ! U1 getvar "ip.smtp.domain"
setvar	This command instructs the printer to change the SMTP domain name. *Format:* ! U1 setvar "ip.smtp.domain" "value" *Values:* A maximum of 24 alphanumeric characters *Default:* "ZBRPrintServer"

Example • This setvar example shows the value set to "ZBRPrintServer.com".

    ! U1 setvar "ip.smtp.domain" "ZBRPrintServer.com"

When the setvar value is set to "ZBRPrintServer.com", the getvar result is "ZBRPrintServer.com".

ip.smtp.enable

Description This printer setting refers to the SMTP protocol.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to return the SMTP status. *Format:* ! U1 getvar "ip.smtp.enable"
setvar	This command instructs the printer to turn SMTP on or off. *Format:* ! U1 setvar "ip.smtp.enable" "value" *Values:* "off" = disables SMTP "on" = enables SMTP *Default:* "on"

Example • This setvar example shows the value set to "on".

    ! U1 setvar "ip.smtp.enable" "on"

When the setvar value is set to "on", the getvar result is "on".

ip.smtp.server_addr

Description This printer setting refers to the IP address of the SMTP server used for sending email.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the current SMTP server address. *Format:* ! U1 getvar "ip.smtp.server_addr"
setvar	This command instructs the printer to change the SMTP server address. *Format:* ! U1 setvar "ip.smtp.server_addr" "value" *Values:* Any valid IP address. *Default:* 0.0.0.0

Example • This setvar example shows the value set to 10.10.10.10.

```
! U1 setvar "ip.smtp.server_addr" "10.10.10.10"
```

When the setvar value is set to "10.10.10.10", the getvar result is "10.10.10.10".

ip.snmp.get_community_name

Description This printer setting is used when making SNMP queries. The SNMP client must supply the get community name that matches the printer's get community name in order to query any SNMP data.

Type `getvar`; `setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to get the SNMP get community name string. *Format:* `! U1 getvar "ip.snmp.get_community_name"` For protection a single `"*"` prints.
`setvar`	This command instructs the printer to set the SNMP get community name string. *Format:* `! U1 setvar "ip.snmp.get_community_name" "value"` *Values:* A maximum of 19 alphanumeric characters. *Default:* `"public"`

Example • This `setvar` example shows the value set to `"public"`.

```
! U1 setvar "ip.snmp.get_community_name" "public"
```

When the `setvar` value is set to `"public"`, the `getvar` result is `"*"`.

ip.snmp.set_community_name

Description This printer setting is used when changing SNMP data remotely. To alter any SNMP data, the SNMP client must supply the set community name that matches the printer's set community name.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to return the printer's SNMP set community name string.
	Format: ! U1 getvar "ip.snmp.set_community_name"
	For protection a single "*" returns.
setvar	This command instructs the printer to set the SNMP set community name string.
	Format: ! U1 setvar "ip.snmp.set_community_name" "value"
	Values: A maximum of 19 alphanumeric characters
	Default: "public"

Example • This setvar example shows the value set to "public".

```
! U1 setvar "ip.snmp.set_community_name" "public"
```

When the setvar value is set to "public", the getvar result is "*".

`ip.telnet.enable`

Description This printer setting refers to the TELNET (port 23) protocol.

Type `getvar;setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the TELNET status. *Format:* `! U1 getvar "ip.telnet.enable"`
`setvar`	This command instructs the printer to turn TELNET on or off. *Format:* `! U1 setvar "ip.telnet.enable" "value"` *Values:* `"off"` = disables telnet protocol `"on"` = enables telnet protocol *Default:* `"on"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "ip.telnet.enable" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is `"on"`.

ip.snmp.enable

Description This printer setting refers to the SNMP protocol.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the SNMP status. *Format:* ! U1 getvar "ip.snmp.enable"
setvar	This command instructs the printer to enable or disable the SNMP protocol. *Format:* ! U1 setvar "ip.snmp.enable" "value" *Values:* "on" = enable the SNMP protocol "off" = disable the SNMP protocol *Default:* "on"

Example • This setvar example shows the value set to "on".

```
! U1 setvar "ip.snmp.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

ip.tcp.enable

Description This printer setting refers to the TCP socket protocol.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the TCP status. *Format:* ! U1 getvar "ip.tcp.enable"
setvar	This command instructs the printer to turn the TCP on or off. *Format:* ! U1 setvar "ip.tcp.enable" "value" *Values:* "off" = disables TCP protocol "on" = enables TCP protocol *Default:* "on"

Example • This setvar example shows the value set to "on".

    ! U1 setvar "ip.tcp.enable" "on"

When the setvar value is set to "on", the getvar result is "on".

ip.udp.enable

Description This printer setting refers to the UDP socket protocol.

Type getvar;setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the UDP status. *Format:* ! U1 getvar "ip.udp.enable"
setvar	This command instructs the printer to turn UDP on or off. *Format:* ! U1 setvar "ip.udp.enable" "value" *Values:* "off" = disables UDP protocol "on" = enables UDP protocol *Default:* "off"

Example • This setvar example shows the value set to "on".

```
! U1 setvar "ip.udp.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

media.printmode

Description This printer setting determines the action the printer takes after a label or group of labels has printed. This command is only supported on Zebra ZM400/ZM600™ printers.

Type getvar; setvar

Note • These are key reference links for this command:

  • For details on SGD command structure, see *Command Structure* on page 178.

  • For details on the syntax and use of SGD commands, *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the the currently set media print mode. *Format:* ! U1 getvar "media.printmode"
setvar	This command instructs the printer to change the media print mode. *Format:* ! U1 setvar "media.printmode" "value" *Values:* tear off = "T" peel off = "P" rewind = "R" applicator = "A" cutter = "C" delayed cutter = "D" reserved = "L" * reserved = "U" *

* These values are only supported on the Zebra ZM400/ZM600™ printer.

Example • This setvar example shows the value set to "T".

    ! U1 setvar "media.printmode" "T"

What the setvar value is set to is the getvar result. In this example, the getvar result is "tear off".

For more details on how each setvar value relates to the getvar responses, see Table 5, *Setvar / Getvar Relation* on page 202.

Table 5 • Setvar / Getvar Relation

If the setvar is set to …	Then the getvar response and front panel display is …
"T"	TEAR OFF
"P"	PEEL OFF
"R"	REWIND
"A"	APPLICATOR
"C"	CUTTER
"D"	DELAYED CUT
"L"	RESERVED
"U"	RESERVED

odometer.headclean

Description This printer setting refers to the head clean odometer count. This counter tracks how many inches and centimeters have passed through the printer since the head was last cleaned. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to retrieve the values for the head clean counter. *Format:* ! U1 getvar "odometer.headclean"
setvar	This command instructs the printer to reset the head clean counter. *Format:* ! U1 setvar "odometer.headclean" "value" *Values:* "0" = reset the head clean counter *Default:* must be an accepted value or it is ignored

Example • This example shows how to get the odometer head clean, how to reset it, and how to confirm the settings changed.

1. To see the current settings, type:

   ! U1 getvar "odometer.headclean"

   Something similar to this is shown:

   "1489 INCHES, 3784 CENTIMETERS"

2. To reset the these values to 0, type:

   ! U1 setvar "odometer.headclean" "0"

3. To confirm this settings were reset, type:

   ! U1 getvar "odometer.headclean"

   If the resetting was successful, this is shown:

   "0 INCHES, 0 CENTIMETERS"

odometer.headnew

Description This printer setting refers to the head replaced odometer count. This counter tracks how many inches and centimeter passed through the printer since the head was last replaced. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to retrieve the values for the head new counter.
	Format: ! U1 getvar "odometer.headnew"
setvar	This command instructs the printer to reset the head new counter.
	Format: ! U1 setvar "odometer.headnew" "value"
	Values:
	"0" = resets the head new counter
	Default: must be an accepted value or it is ignored

Example • This example shows how to get the odometer head new, how to reset it, and how to confirm the settings changed:

1. To see the current settings, type:

   ! U1 getvar "odometer.headnew"

   Something similar to this is shown:

   "1489 INCHES, 3784 CENTIMETERS"

2. To reset the these values to 0, type:

   ! U1 setvar "odometer.headnew" "0"

3. To confirm this settings were reset, type:

   ! U1 getvar "odometer.headnew"

   If the resetting was successful, this is shown:

   "0 INCHES, 0 CENTIMETERS

odometer.label_dot_length

Description This command returns the length of the last label printed or fed (in dots). This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
getvar	This command returns the length of the last label printed or fed (in dots). *Format:* `! U1 getvar "odometer.label_dot_length"`

Example • This is an example of how to reset the length using the `^LL` command and how to use the getvar to confirm the change. For the `^LL` command to work the printer must be in continuous mode.

1. To change the odometer label dot length, type:

   `^XA`

   `^LL500`

   `^XZ`

2. To get the current odometer label dot length, type:

   `! U1 getvar "odometer.label_dot_length"`

   `Something similar to this is shown:`

   `"500"`

odometer.media_marker_count1

Description This printer setting refers to the value of the first (count1) user resettable counter. The user resettable counters track how much media has passed through the printer in both inches or centimeters. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar; setvar

Note • Here are some reference links for this command:

- For details on the command structure of SGD commands, see *Command Structure on page 178*.

- For details on the syntax and use of SGD commands, see *SGD Command Support on page 311*.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to return the current value of the first (count1) user resettable counter in both inches and centimeters. *Format:* ! U1 getvar "odometer.media_marker_count1"
setvar	This command instructs the printer to reset the first user resettable counter. *Format:* ! U1 setvar "odometer.media_marker_count1" "value" *Values:* "0" = reset the counter *Default:* must be an accepted value or it is ignored

Example • This example shows how to get the first user resettable counter, how to reset it, and how to confirm the settings have changed:

1. To see the current settings, type:

   ! U1 getvar "odometer.media_marker_count1"

   Something similar to this is shown:

   "8516 INCHES, 21632 CENTIMETERS"

2. To reset the these values to 0, type:

   ! U1 setvar "odometer.media_marker_count1" "0"

3. To confirm these settings were reset, type:

   ! U1 getvar "odometer.media_marker_count1"

   If the resetting was successful, this is shown:

   "0 INCHES, 0 CENTIMETERS"

odometer.media_marker_count2

Description This printer setting refers to the value of the second (count2) user resettable counter. The user resettable counters track how much media has passed through the printer in both inches or centimeters. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to return the current value of the second (count2) user resettable counter in both inches and centimeters.
	Format: ! U1 getvar "odometer.media_marker_count2"
setvar	This command instructs the printer to reset the second user resettable counter.
	Format:
	! U1 setvar "odometer.media_marker_count2" "value"
	Values:
	"0" = reset the counter
	Default: must be an accepted value or it is ignored

Example • This example shows how to get the second user resettable counter, how to reset it, and how to confirm the settings have changed:

1. To see the current settings, type:

   ! U1 getvar "odometer.media_marker_count2"

   Something similar to this is shown:

   "8516 INCHES, 21632 CENTIMETERS"

2. To reset the these values to 0, type:

   ! U1 setvar "odometer.media_marker_count2" "0"

3. To confirm these settings were reset, type:

   ! U1 getvar "odometer.media_marker_count2"

   If the resetting was successful, this is shown:

   "0 INCHES, 0 CENTIMETERS"

odometer.total_print_length

Description This command tracks the total length of media that printed over the life of the printer. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 178.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
getvar	This command returns the value of the total length of media that printed over the life of the printer. *Format:* ! U1 getvar "odometer.total_print_length"

Example • This example shows how to get the total length of media that printed over the life of the printer.

1. To get the total length of media that has printed to date, type:
   ! U1 getvar "odometer.total_print_length"

   Something similar to this is shown:
   "8560 INCHES, 21744 CENTIMETERS"

5

SGD Wired Commands

This chapter provides a high-level overview of the wired Set / Get / Do (SGD) commands. The commands in this chapter are only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later.

Important • These are important points to note when using EPL, ZPL, and SGD commands:

- SGD commands are case-sensitive.
- EPL, ZPL, and SGD commands should be sent to the printer as separate files.
- Certain settings can be controlled by EPL, ZPL, and SGD. Configuration changes made in EPL or ZPL can affect configuration changes made in SGD.
- Changes made with one command type (EPL, ZPL, and SGD) will affect the data returned to the host in response to EPL, ZPL, and getvar commands. The command type (EPL, ZPL, or SGD) that was sent last determines the current setting.
- Some RF cards do not support all of the SGD commands.

Overview

This section describes how and why to use the Set / Get / Do (SGD) commands. It also provides an example of a typical command structure.

Note • SGD commands must be terminated by a carriage return or a space and line feed.

SGD commands are commands that allow you to configure all printers with firmware versions E53.15.x or later. The printer performs the specified function immediately after receiving the command. The commands are:

- **setvar**
- **getvar**
- **do**

setvar Command

Setvar commands:

- are used to configure printer settings to specific values by setting them in the printer
- must be terminated by a space character or a CR/ LF (0x0D, 0x0A)

Important • The setvar command and attributes must be specified in lower case.

getvar Command

Getvar commands:

- are used to get the current value of the printer settings
- must be terminated by a space character or CR/LF (0x0D, 0x0A)

The printer responds with the printer setting of "?" if:

- the printer setting does not exist (usually due to incorrect spelling of the printer setting)
- it has not been configured yet

Important • The printer settings and attributes must be specified in lower case.

do Command

Do commands:

- are used to instruct the printer to perform predefined actions

- must be terminated by a space character or a CR/LF (0x0D, 0x0A)

Some Do commands require additional settings which must be enclosed in double quotes.

> **!** **Important •** The values must be specified in lower case.

Command Structure

It is important to understand the structure of the command and its components. A command structure illustration is provided for each command in this guide.

Example • This is an example of a command structure illustration:

```
! U1 setvar   "ip.addr"   "value"
```

```
     1            2           3
```

1	Command—always preceded with an exclamation point (!) and must be specified in lower case. A space resides between the **!** and **U1** and between **U1** and the command (**setvar** or **getvar**).
2	Attribute—always in double quotes and must be specified in lower case.
3	Chosen value—always in double quotes. Only applicable for **setvar** and **do**.

This command must be terminated by a space character or a CR/ LF (0x0D, 0x0A).

Note • Some RF cards do not support all of the SGD commands.

How to Send Multiple SGD Commands

For any getvar, setvar, or do command, if you issue the syntax without the "1" and use the END command followed by a space, multiple SGD commands are sent simultaneously.

Example • This syntax shows how you can send multiple getvar commands:

1 ───────▶ `! U getvar "ip.telnet.enable"`

`getvar "ip.dhcp.enable"`

2 ───────▶

`getvar "ip.dhcp.cid_prefix"`

3 ───────▶ `END`

1	The command portion of the string does not use the "1" after the "! U".
2	Commands issued after the first command do not require the "! U".
3	The string of commands is terminated by the word "END" with a space after the word, and by a carriage return/ line feed.

external_wired.ip.addr

Description This command allows you to get or set the external wired print servers's IP address. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This feature works with the ZebraNet 10/100 External Print Server, firmware version 1.1.5.

Type getvar; setvar

Important • For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with its current external wired print server IP address. *Format:* ! U1 getvar "external_wired.ip.addr"
setvar	This command instructs the printer to change its current external wired print server IP address upon powering the printer on. *Format:* ! U1 setvar "external_wired.ip.addr" "value" *Values:* any valid IP address *Default:* "0.0.0.0"

Note • The setvar value of this command can be affected by the external_wired.ip.dhcp.enable command.

Example • This setvar example shows the value set to "10.14.4.235".

```
! U1 setvar "external_wired.ip.addr" "10.14.4.235"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "10.14.4.235".

external_wired.ip.arp_interval

Description This print server setting allows you to specify the ARP (Address Resolution Protocol) interval or the ARP cache time out for the external wired print server. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the ARP interval or the ARP cache time out value for the external wired print server. *Format:* ! U1 getvar "external_wired.ip.arp_interval"
setvar	This command instructs the printer to change the ARP interval or the ARP cache time out for the external wired print server. *Format:* ! U1 setvar "external_wired.ip.arp_interval" "value" *Values:* 0 - 30 *Default:* "0"

Example • This setvar example shows the value set to "0".

    ! U1 setvar "external_wired.ip.arp_interval" "0"

What the setvar value is set to is the getvar result. In this example, the getvar result is "0".

`external_wired.ip.default_addr.enable`

Description This command allows you to default the external wired print server's IP address. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later.

Type `getvar`; `setvar`

Important • For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to show the status of the setting of external wired print server's default IP address feature. *Format:* `! U1 getvar "external_wired.ip.default_addr.enable"`

`setvar`	This command tells the printer to use it's default address, if no address is provided through DHCP or BOOTP. If you do not assign an IP address after 2 minutes, the 10/100 Internal PS defaults to IP address 192.168.254.254.
	Format:
	`! U1 setvar "external_wired.ip.default_addr.enable" "value"`
	Values:
	   `"on"` = enabled
	   `"off"` = disabled
	Default: `"on"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "external_wired.ip.default_addr.enable" "on"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"on"`.

external_wired.ip.dhcp.cid_all

Description This printer setting defines the entire client identifier (DHCP option 61) if DHCP is enabled on the external print server and
"external_wired.ip.dhcp.cid_type" is set to "0", or "2". The MAC address is used if the type is set to "1". This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This feature works with the ZebraNet 10/100 External Print Server, firmware version 1.1.5.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier prefix and suffix of the external wired print server. *Format:* ! U1 getvar "external_wired.ip.dhcp.cid_all"
setvar	This command instructs the printer to change the client identifier prefix and suffix of the external wired print server. The prefix gets cleared and the suffix contains the entire client identifier. *Format:* ! U1 setvar "external_wired.ip.dhcp.cid_all" "value" *Values:* A maximum length of 60 characters if the CID type is ASCII, or 120 characters if the CID type is hexadecimal. *Default Value:* ""

Example • This setvar example shows the value set to "printer".

    ! U1 setvar "external_wired.ip.dhcp.cid_all" "printer"

What the setvar value is set to is the getvar result. In this example, the getvar result is "printer".

external_wired.ip.dhcp.cid_enable

Description This command determines if DHCP (option 61) on the external wired print server is turned on or off. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This feature works with the ZebraNet 10/100 External Print Server, firmware version 1.1.5.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the status of the client identifier of the external wired print server. *Format:* ! U1 getvar "external_wired.ip.dhcp.cid_enable"
setvar	This command instructs the printer to set the status of the client identifier of the external wired print server. *Format:* ! U1 setvar "external_wired.ip.dhcp.cid_enable" "value" *Values:* "off" = client identifier is turned off "on" = client identifier is turned on *Default:* "off"

Example • This setvar example shows the value set to "off".

   ! U1 setvar "external_wired.ip.dhcp.cid_enable" "off"

What the setvar value is set to is the getvar result. In this example, the getvar result is "off".

external_wired.ip.dhcp.cid_prefix

Description This printer setting defines the prefix to be prepended to the DHCP client identifier (option 61) when DHCP is enabled on the external wired print server and "external_wired.ip.dhcp.cid_type" is set to "0" or "2". This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This feature works with the ZebraNet 10/100 External Print Server, firmware version 1.1.5.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier prefix of the external wired print server. *Format:* ! U1 getvar "external_wired.ip.dhcp.cid_prefix"
setvar	This command instructs the printer to change the CID prefix of the external wired print server. *Format:* ! U1 setvar "external_wired.ip.dhcp.cid_prefix" "value" *Values:* Any text string up to 10 characters if the CID type is ASCII, or 20 characters if the CID type is hexadecimal. *Default Value:* ""

Example • This setvar example shows the value set to "PRT001".

    ! U1 setvar "external_wired.ip.dhcp.cid_prefix" "PRT001"

What the setvar value is set to is the getvar result. In this example, the getvar result is "PRT001".

external_wired.ip.dhcp.cid_suffix

Description This printer setting defines the unique suffix to be used as the client identifier (DHCP option 61) if DHCP is enabled repeated on the external wired print server and *external_wired.ip.dhcp.cid_type* on page 220 is set to "0" or "2", not "1". This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This feature works with the ZebraNet 10/100 External Print Server, firmware version 1.1.5.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier suffix on the external wired print server. *Format:* ! U1 getvar "external_wired.ip.dhcp.cid_suffix"
setvar	This command instructs the printer to change the client identifier suffix value. *Format:* ! U1 setvar "external_wired.ip.dhcp.cid_suffix" "value" *Values:* The maximum length of a value allowed is 60 ASCII characters when the CID type is ASCII, or 120 hexadecimal values when the CID type is hexadecimal. *Default Value:* ""

Example • This setvar example shows setting the suffix to "printer".

```
! U1 setvar "external_wired.ip.dhcp.cid_suffix"
"printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "printer".

external_wired.ip.dhcp.cid_type

Description This printer setting defines the type of client identifier (DHCP option 61) that will be sent if DHCP is enabled on the external wired print server. A value of `"1"` means the type of "Ethernet" and the printer's MAC address will be used. A value of `"0"` or `"2"` means the client identifier sent will be `"external_wired.ip.dhcp.cid_prefix"` concatenated with `"external_wired.ip.dhcp.cid_suffix"`. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This feature works with the ZebraNet 10/100 External Print Server, firmware version 1.1.5.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier type for the external wired print server. *Format:* `! U1 getvar "external_wired.ip.dhcp.cid_type"`
setvar	This command instructs the printer to enable "synthetic" Client Identifier for the external wired print server. *Format:* `! U1 setvar "external_wired.ip.dhcp.cid_type" "value"` *Values:* `"0"` = ASCII string `"1"` = wired print server's MAC address `"2"` = HEX value *Default Value:* `"1"`

Example • This setvar example shows the value set to `"1"`.

```
! U1 setvar "external_wired.ip.dhcp.cid_type" "1"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is `"1"`.

external_wired.ip.gateway

Description This command instructs the printer to change the external wired print server's gateway address. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later.

Type getvar; setvar

Important • This setting refers to the gateway address. A set value is ignored if the IP protocol is not set to permanent.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the external wired printer server's gateway address. *Format:* ! U1 getvar "external_wired.ip.gateway"
setvar	This command instructs the printer to change the external wired printer server's gateway address. *Format:* ! U1 setvar "external_wired.ip.gateway" "value" *Values:* Any valid gateway address *Default:* "0.0.0.0"

Example • This setvar example shows the value set to "10.3.5.1".

```
! U1 setvar "external_wired.ip.gateway" "10.3.5.1"
```

When the setvar value is set to "10.3.5.1", the getvar result is "10.3.5.1".

external_wired.ip.netmask

Description This setting refers to the external wired print server's subnet mask address. This value is ignored if the IP protocol is not set to permanent. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the external wired print server's subnet mask. *Format:* ! U1 getvar "external_wired.ip.netmask"
setvar	This command instructs the printer to change the external wired print servers's subnet mask. *Format:* ! U1 setvar "external_wired.ip.netmask" "value" *Values:* Any valid subnet mask. *Default:* "255.255.255.0"

Example • This setvar example shows the value set to "255.255.255.0".

```
! U1 setvar "external_wired.ip.netmask" "255.255.255.0"
```

When the setvar value is set to "255.255.255.0", the getvar result is "255.255.255.0".

external_wired.ip.port

Description This printer setting refers to the external wired print server's port number that the TCP print service is listening on. Normal TCP communications from the host should be directed to this port. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later.

Type `getvar; setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the external wired printer server's TCP/UDP port number.
	Format: `! U1 getvar "external_wired.ip.port"`
setvar	This command instructs the printer to set the external wired print server's TCP/UDP port number.
	Format: `! U1 setvar "external_wired.ip.port" "value"`
	Values: 1 - 65535 (excluding any ports currently used by other services, such as 21, 23, 80, and 515).
	Default: `"9100"`

Example • This `setvar` example shows the value set to `"9100"`.

```
! U1 setvar "external_wired.ip.port" "9100"
```

When the `setvar` value is set to `"9100"`, the `getvar` result is `"9100"`.

external_wired.ip.protocol

Description This command configures the IP addressing method used by the external wired print server. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
getvar	This command returns the IP addressing method used by the external print server. *Format:* ! U1 getvar "external_wired.ip.protocol"
setvar	This command instructs the printer to configure the IP addressing method used by the external wired print server. *Format:* ! U1 setvar "external_wired.ip.protocol" "value" *Values:* "bootp" = uses the standard bootp addressing method to obtain an IP address and configuration "dhcp" = uses the standard dhcp addressing method to obtain an IP address and configuration for a server specified period of time "rarp" = uses the standard rarp addressing method to obtain an IP address "glean" = uses the IP address from a PING packet that is sent to its hardware address (unicast address) "permanent" = uses static values assigned through other commands "all" = tries all of the dynamic addressing methods, not permanent, to obtain an IP address *Default:* "all"

Example • In this example, the setvar result is the current programming language that the printer is using.

```
! U1 setvar "external_wired.ip.protocol" "bootp"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "bootp".

external_wired.ip.timeout.enable

Description This network setting refers to enabling the connection timeout on the external wired 10/100 print server. For this to take effect, the print server must be reset. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to return whether the timeout checking is enabled on the external wired print server.
	Format:
	! U1 getvar "external_wired.ip.timeout.enable"
setvar	This command instructs the printer to enable or disable the timeout checking on the external wired print server.
	Format:
	! U1 setvar "external_wired.ip.timeout.enable" "value"
	Values:
	"off" = turns off the connection checking
	"on" = turns on the connection checking
	Default: "on"

Example • This setvar example shows the value set to "on".

    ! U1 setvar "external_wired.ip.timeout.enable" "on"

When the setvar value is set to "on", the getvar result is "on".

external_wired.ip.timeout.value

Description This network setting refers to the number of seconds before the connection times out for the external wired print server. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the time of the external wired print server, in seconds, before the connection times out. *Format:* ! U1 getvar "external_wired.ip.timeout.value"
setvar	This command instructs the printer to set the time of the external wired print server, in seconds, before the connection times out. *Format:* ! U1 setvar "external_wired.ip.timeout.value" "value" *Values:* "0" through "3600" *Default:* "300"

Example • This setvar example shows the value set to "300".

  ! U1 setvar "external_wired.ip.timeout.value" "300"

When the setvar value is set to "300", the getvar result is "300".

external_wired.mac_addr

Description This command retrieves the MAC address of the external wired print server. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later.

Type getvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
getvar	This command instructs the printer to respond with the MAC address of the external wired print server. *Format:* ! U1 getvar "external_wired.mac_addr"

Example • In this example, the getvar result is the MAC address of the external wired print server.

```
! U1 getvar "external_wired.mac_addr"
```

internal_wired.ip.addr

Description This command allows you to get or set the internal wired print servers's IP address. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type getvar; setvar

Important • For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with its current internal wired print server IP address.
	Format: ! U1 getvar "internal_wired.ip.addr"
setvar	This command instructs the printer to change its current internal wired print server IP address upon powering the printer on.
	Format: ! U1 setvar "internal_wired.ip.addr" "value"
	Values: any valid IP address
	Default: "0.0.0.0"

Note • The setvar value of this command can be affected by the internal_wired.ip.dhcp.enable command.

Example • This setvar example shows the value set to "10.14.4.235".

    ! U1 setvar "internal_wired.ip.addr" "10.14.4.235"

What the setvar value is set to is the getvar result. In this example, the getvar result is "10.14.4.235".

internal_wired.ip.arp_interval

Description This print server setting allows you to specify the ARP (Address Resolution Protocol) interval or the ARP cache time out for the internal wired print server. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the ARP interval or the ARP cache time out value for the internal wired print server. *Format:* ` ! U1 getvar "internal_wired.ip.arp_interval"`
setvar	This command instructs the printer to change the ARP interval or the ARP cache time out for the internal wired print server. *Format:* ` ! U1 setvar "internal_wired.ip.arp_interval" "value"` *Values:* 0 - 30 *Default:* "0"

Example • This setvar example shows the value set to "0".

```
! U1 setvar "internal_wired.ip.arp_interval" "0"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "0".

internal_wired.ip.default_addr.enable

Description This command allows you to default the internal wired print server's IP address. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type getvar; setvar

Important • For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to show the status of the setting of internal wired print server's default IP address feature. *Format:* ! U1 getvar "internal_wired.ip.default_addr.enable"

setvar	This command tells the printer to use it's default address, if no address is provided through DHCP or BOOTP. If you do not assign an IP address after 2 minutes, the 10/100 Internal PS defaults to IP address 192.168.254.254.
	 Format:
	 ! U1 setvar "internal_wired.ip.default_addr.enable" "value"
	 Values:
	    "on" = enabled
	    "off" = disabled
	 Default: "on"

Example • This setvar example shows the value set to "on".

```
! U1 setvar "internal_wired.ip.default_addr.enable" "on"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "on".

internal_wired.ip.dhcp.cid_all

Description This printer setting defines the entire client identifier (DHCP option 61) if DHCP is enabled on the internal print server and
`"internal_wired.ip.dhcp.cid_type"` is set to `"0"`, or `"2"`. The MAC address is used if the type is set to `"1"`. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier prefix and suffix of the internal wired print server. *Format:* `! U1 getvar "internal_wired.ip.dhcp.cid_all"`
setvar	This command instructs the printer to change the client identifier prefix and suffix of the internal wired print server. The prefix gets cleared and the suffix contains the entire client identifer. *Format:* `! U1 setvar "internal_wired.ip.dhcp.cid_all"` `"value"` *Values:* A maximum length of 60 characters if the CID type is ASCII, or 120 characters if the CID type is hexadecimal. *Default Value:* `""`

Example • This setvar example shows the value set to `"printer"`.

```
! U1 setvar "internal_wired.ip.dhcp.cid_all" "printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is `"printer"`.

internal_wired.ip.dhcp.cid_enable

Description This command determines if DHCP (option 61) is turned on or off of the internal wired print server. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the status of the client identifier of the internal wired print server. *Format:* ! U1 getvar "internal_wired.ip.dhcp.cid_enable"
setvar	This command instructs the printer to set the status of the client identifier of the internal wired print server. *Format:* ! U1 setvar "internal_wired.ip.dhcp.cid_enable" "value" *Values:* "off" = client identifier is turned off "on" = client identifier is turned on *Default:* "off"

Example • This setvar example shows the value set to "off".

    ! U1 setvar "internal_wired.ip.dhcp.cid_enable" "off"

What the setvar value is set to is the getvar result. In this example, the getvar result is "off".

internal_wired.ip.dhcp.cid_prefix

Description This printer setting defines the prefix to be prepended to the DHCP client identifier (option 61) when DHCP is enabled on the internal wired print server and `"internal_wired.ip.dhcp.cid_type"` is set to `"0"` or `"2"`. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier prefix of the internal wired print server. *Format:* `! U1 getvar "internal_wired.ip.dhcp.cid_prefix"`
setvar	This command instructs the printer to change the CID prefix of the internal wired print server. *Format:* `! U1 setvar "internal_wired.ip.dhcp.cid_prefix" "value"` *Values:* Any text string up to 10 characters if the CID type is ASCII, or 20 characters if the CID type is hexadecimal. *Default Value:* `""`

Example • This setvar example shows the value set to `"PRT001"`.

`! U1 setvar "internal_wired.ip.dhcp.cid_prefix" "PRT001"`

What the setvar value is set to is the getvar result. In this example, the getvar result is `"PRT001"`.

internal_wired.ip.dhcp.cid_suffix

Description This printer setting defines the unique suffix to be used as the client identifier (DHCP option 61) if DHCP is enabled on the internal wired 10/100 print server and `"internal_wired.ip.dhcp.cid_type"` is set to `"0"` or `"2"`, not `"1"`. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier suffix of the internal wired 10/100 print server. *Format:* `! U1 getvar "internal_wired.ip.dhcp.cid_suffix"`
setvar	This command instructs the printer to change the client identifier suffix value of the internal wired 10/100 print server. *Format:* `! U1 setvar "internal_wired.ip.dhcp.cid_suffix" "value"` *Values:* The maximum length of a value allowed is 60 ASCII characters when the CID type is ASCII, or 120 hexadecimal values when the CID type is hexadecimal. *Default Value:* `""`

Example • This setvar example shows the value set to `"printer"`.

`! U1 setvar "internal_wired.ip.dhcp.cid_suffix" "printer"`

What the setvar value is set to is the getvar result. In this example, the getvar result is `"printer"`.

internal_wired.ip.dhcp.cid_type

Description This printer setting defines the type of client identifier (DHCP option 61) that will be sent if DHCP is enabled on the internal wired print server. A value of "1" means the type of "Ethernet" and the printer's MAC address will be used. A value of "0" or "2" means the client identifier sent will be "internal_wired.ip.dhcp.cid_prefix" concatenated with "internal_wired.ip.dhcp.cid_suffix". This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier type for the internal wired print server. *Format:* `! U1 getvar "internal_wired.ip.dhcp.cid_type"`

setvar	This command instructs the printer to enable "synthetic" Client Identifier for the internal wired print server.
	 Format:
	 `! U1 setvar "internal_wired.ip.dhcp.cid_type" "value"`
	 Values:
	   "0" = ASCII string
	   "1" = wired print server's MAC address
	   "2" = HEX value
	 Default Value: "1"

Example • This setvar example shows the value set to "1".

```
! U1 setvar "internal_wired.ip.dhcp.cid_type" "1"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "1".

`internal_wired.ip.gateway`

Description This command instructs the printer to change the internal wired print servers gateway address. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type `getvar; setvar`

Important • This setting refers to the gateway address. A set value is ignored if the IP protocol is not set to permanent.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the internal wired printer servers gateway address. *Format:* `! U1 getvar "internal_wired.ip.gateway"`
`setvar`	This command instructs the printer to change the internal wired printer servers gateway address. *Format:* `! U1 setvar "internal_wired.ip.gateway" "value"` *Values:* Any valid gateway address *Default:* `"0.0.0.0"`

Example • This `setvar` example shows the value set to `"10.3.5.1"`.

`! U1 setvar "internal_wired.ip.gateway" "10.3.5.1"`

When the `setvar` value is set to `"10.3.5.1"`, the `getvar` result is `"10.3.5.1"`.

internal_wired.ip.netmask

Description This setting refers to the internal wired print server's subnet mask address. This value is ignored if the IP protocol is not set to permanent. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with internal wired print servers subnet mask.
	Format: ! U1 getvar "internal_wired.ip.netmask"
setvar	This command instructs the printer to change the internal wired print servers subnet mask.
	Format:
	! U1 setvar "internal_wired.ip.netmask" "value"
	Values: Any valid subnet mask.
	Default: "255.255.255.0"

Example • This setvar example shows the value set to "255.255.255.0".

    ! U1 setvar "internal_wired.ip.netmask" "255.255.255.0"

When the setvar value is set to "255.255.255.0", the getvar result is "255.255.255.0".

`internal_wired.ip.port`

Description This printer setting refers to the internal wired print servers port number that the TCP print service is listening on. Normal TCP communications from the host should be directed to this port. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the internal wired printer servers TCP/UDP port number.
	Format: ! U1 getvar "internal_wired.ip.port"
setvar	This command instructs the printer to set the internal wired print servers TCP/UDP port number.
	Format: ! U1 setvar "internal_wired.ip.port" "value"
	Values: 1 - 65535 (excluding any ports currently used by other services, such as 21, 23, 80, and 515).
	Default: "9100"

Example • This setvar example shows the value set to "9100".

```
! U1 setvar "internal_wired.ip.port" "9100"
```

When the setvar value is set to "9100", the getvar result is "9100".

internal_wired.ip.protocol

Description This command configures the IP addressing method used by the internal wired print server. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
getvar	This command returns the IP addressing method used by the internal wired print server. *Format:* ! U1 getvar "internal_wired.ip.protocol"

setvar	This command instructs the printer to configure the IP addressing method used by the internal wired print server.
	Format:
	  ! U1 setvar "internal_wired.ip.protocol" "value"
	Values:
	  "bootp" = uses the standard bootp addressing method to obtain an IP address and configuration
	  "dhcp" = uses the standard dhcp addressing method to obtain an IP address and configuration for a server specified period of time
	  "rarp" = uses the standard rarp addressing method to obtain an IP address
	  "glean" = uses the IP address from a PING packet that is sent to its hardware address (unicast address)
	  "permanent" = uses static values assigned through other commands
	  "all" = tries all of the dynamic addressing methods, not permanent, to obtain an IP address
	Default: "all"

Example • In this example, the setvar result is the current programming language that the printer is using.

```
! U1 setvar "internal_wired.ip.protocol" "bootp"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "bootp".

internal_wired.ip.timeout.enable

Description This network setting refers to enabling the connection timeout on the internal wired print server. For this to take effect, the print server must be reset. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to return whether the timeout checking is enabled on the internal wired print server.
	Format:
	! U1 getvar "internal_wired.ip.timeout.enable"
setvar	This command instructs the printer to enable or disable the timeout checking on the internal wired print server.
	Format:
	! U1 setvar "internal_wired.ip.timeout.enable" "value"
	Values:
	"off" = turns off the connection checking
	"on" = turns on the connection checking
	Default: "on"

Example • This setvar example shows the value set to "on".

    ! U1 setvar "internal_wired.ip.timeout.enable" "on"

When the setvar value is set to "on", the getvar result is "on".

`internal_wired.ip.timeout.value`

Description This network setting refers to the number of seconds before the connection times out for the internal wired print server. For this to take effect, the print server must be reset. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type `getvar; setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the time of the internal wired print server, in seconds, before the connection times out.
	Format: `! U1 getvar "internal_wired.ip.timeout.value"`
`setvar`	This command instructs the printer to set the time of the internal wired print server, in seconds, before the connection times out.

	Format:
	`! U1 setvar "internal_wired.ip.timeout.value"`
	`"value"`

	Values: `"0"` through `"3600"`
	Default: `"300"`

Example • This `setvar` example shows the value set to `"300"`.

`! U1 setvar "internal_wired.ip.timeout.value" "300"`

When the `setvar` value is set to `"300"`, the `getvar` result is `"300"`.

`internal_wired.mac_addr`

Description This command retrieves the MAC address of the internal wired print server. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers running E53.15.xZ or later. This command is only supported on ZM400/ZM600™ printers with a ZebraNet™ 10/100 Internal Print Server.

Type `getvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 212.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the MAC address of the internal wired print server.
	Format: `! U1 getvar "internal_wired.mac_addr"`

Example • In this example, the `getvar` result is the MAC address of the internal wired print server.

```
! U1 getvar "internal_wired.mac_addr"
```

6

SGD Wireless Commands

This chapter provides a high-level overview of the wireless Set / Get / Do (SGD) commands and details on each SGD command.

.15↑

SGD commands are available in printers with firmware version E53.15.x or later.

Note • The commands listed in this chapter are for use with the Wireless Print Server and Wireless Plus Print Server, when used with firmware version E53.15.x or later.

Important • These are important points to note when using EPL, ZPL, and SGD commands:

• SGD commands are case-sensitive.

• EPL, ZPL, and SGD commands should be sent to the printer as separate files.

• Certain settings can be controlled by EPL, ZPL, and SGD. Configuration changes made in EPL or ZPL can affect configuration changes made in SGD.

• Changes made with one command type (EPL, ZPL, and SGD) will affect the data returned to the host in response to EPL, ZPL, and getvar commands. The command type (EPL, ZPL, or SGD) that was sent last determines the current setting.

• Some RF cards do not support all of the SGD commands.

Overview

This section describes how and why to use the Set / Get / Do (SGD) commands. It also provides an example of a typical command structure.

Note • SGD commands must be terminated by a carriage return or a space and line feed.

SGD commands are commands that allow you to configure all printers with firmware versions E53.15.x or later. The printer performs the specified function immediately after receiving the command. The commands are:

- **setvar**
- **getvar**
- **do**

setvar Command

Setvar commands:

- are used to configure printer settings to specific values by setting them in the printer
- must be terminated by a space character or a CR/ LF (0x0D, 0x0A)

Important • The setvar command and attributes must be specified in lower case.

getvar Command

Getvar commands:

- are used to get the current value of the printer settings
- must be terminated by a space character or CR/LF (0x0D, 0x0A)

The printer responds with the printer setting of "?" if:

- the printer setting does not exist (usually due to incorrect spelling of the printer setting)
- it has not been configured yet

Important • The printer settings and attributes must be specified in lower case.

do Command

Do commands:

- are used to instruct the printer to perform predefined actions

- must be terminated by a space character or a CR/LF (0x0D, 0x0A)

Some Do commands require additional settings which must be enclosed in double quotes.

! **Important •** The values must be specified in lower case.

Command Structure

It is important to understand the structure of the command and its components. A command structure illustration is provided for each command in this guide.

Example • This is an example of a command structure illustration:

```
! U1 setvar  "ip.addr"  "value"
      1          2          3
```

1	Command—always preceded with an exclamation point (!) and must be specified in lower case. A space resides between the **!** and **U1** and between **U1** and the command (**setvar** or **getvar**).
2	Attribute—always in double quotes and must be specified in lower case.
3	Chosen value—always in double quotes. Only applicable for **setvar** and **do**.

This command must be terminated by a space character or a CR/ LF (0x0D, 0x0A).

Note • Some RF cards do not support all of the SGD commands.

How to Send Multiple SGD Commands

For any getvar, setvar, or do command, if you issue the syntax without the "1" and use the END command followed by a space, multiple SGD commands are sent simultaneously.

Example • This syntax shows how you can send multiple getvar commands:

```
1 ──────────▶  ! U getvar "ip.telnet.enable"

               getvar "ip.dhcp.enable"
2 ──────────▶
               getvar "ip.dhcp.cid_prefix"

3 ──────────▶  END
```

1	The command portion of the string does not use the "1" after the "! U".
2	Commands issued after the first command do not require the "! U".
3	The string of commands is terminated by the word "END" with a space after the word, and by a carriage return/ line feed.

card.inserted

Description This command indicates whether the wireless radio card is or is not inserted.

Type getvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
getvar	This command instructs the printer to respond with the wireless radio card status. It's inserted or it's not inserted.
	Format: ! U1 getvar "card.inserted"

Example • In this example, the getvar result is "Inserted".

```
! U1 getvar "card.inserted"
```

card.mac_addr

Description This command retrieves the MAC address of the wireless radio card.

Type `getvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the MAC address. *Format:* `! U1 getvar "card.mac_addr"`

Example • In this example, the `getvar` result is the MAC address for the wireless radio card.

```
! U1 getvar "card.mac_addr"
```

ip.addr

Description This command allows you to get or set the printer's IP address.

Type getvar; setvar

Important • For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with its current IP address. *Format:* ! U1 getvar "ip.addr"
setvar	This command instructs the printer to change its current IP address upon powering the printer on. *Format:* ! U1 setvar "ip.addr" "value" *Values:* any valid IP address *Default:* "0.0.0.0"

Note • The setvar value of this command can be affected by the ip.dhcp.enable command.

Example • This setvar example shows the value set to "10.14.4.235".

```
! U1 setvar "ip.addr" "10.14.4.235"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "10.14.4.235".

ip.arp_interval

Description This printer setting allows you to specify the ARP (Address Resolution Protocol) interval or the ARP cache time out.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the ARP interval or the ARP cache time out value in seconds.
	Format: ! U1 getvar "ip.arp_interval"
setvar	This command instructs the printer to change the ARP interval or the ARP cache time out.
	Format: ! U1 setvar "ip.arp_interval" "value"
	Values: 0 - 30
	Default: "0"

Example • This setvar example shows the value set to "0".

```
! U1 setvar "ip.arp_interval" "0"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "0".

ip.bootp.enable

Description This printer setting turns BOOTP on or off. BOOTP is a method for acquiring an IP address, netmask, and gateway automatically on printer power-up. It requires a BOOTP server on the local network.

Type getvar; setvar

Note • If you are using static IP addressing, the IP protocol must be set to permanent.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the current BOOTP setting. *Format:* ! U1 getvar "ip.bootp.enable"
setvar	This command instructs the printer to turn BOOTP on or off. *Format:* ! U1 setvar "ip.bootp.enable" "value" *Values:* "off" = printer does not use BOOTP to get the IP address "on" = printer uses BOOTP to get the IP address *Default:* "on"

Example • This setvar example shows the value set to "on".

    ! U1 setvar "ip.bootp.enable" "on"

When the setvar value is set to "on", the getvar result is "on".

ip.dhcp.cid_all

Description This printer setting defines the entire client identifier (DHCP option 61) if the DHCP is enabled and `"ip.dhcp.cid_type"` is set to `"0"`, or `"2"`. The MAC address is used if the type is set to `"1"`.

Type `getvar; setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier prefix and suffix. *Format:* `! U1 getvar "ip.dhcp.cid_all"`
setvar	This command instructs the printer to change the CID prefix and suffix. *Format:* `! U1 setvar "ip.dhcp.cid_all" "value"` *Values:* A maximum length of 60 characters if the CID type is ASCII, or 120 characters if the CID type is hexadecimal. *Default Value:* `""`

Example • This `setvar` example shows the value set to `"printer"`.

```
! U1 setvar "ip.dhcp.cid_all" "printer"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"printer"`.

ip.dhcp.cid_enable

Description This command determines if DHCP (option 61) is turned on or off.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the status of the client identifier.
	Format: ! U1 getvar "ip.dhcp.cid_enable"
setvar	This command instructs the printer to set the status of the client identifier.
	Format: ! U1 setvar "ip.dhcp.cid_enable" "value"
	Values:
	"off" = client identifier is turned off
	"on" = client identifier is turned on
	Default: "off"

Example • This setvar example shows the value set to "off".

```
! U1 setvar "ip.dhcp.cid_enable" "off"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "off".

ip.dhcp.cid_prefix

Description This printer setting defines the prefix to be prepended to the DHCP client identifier (option 61) when DHCP is enabled and `"ip.dhcp.cid_type"` is set to `"0"`or `"2"`.

Type `getvar; setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier prefix. *Format:* `! U1 getvar "ip.dhcp.cid_prefix"`
setvar	This command instructs the printer to change the CID prefix. *Format:* `! U1 setvar "ip.dhcp.cid_prefix" "value"` *Values:* Any text string up to 10 characters if the CID type is ASCII, or 20 characters if the CID type is hexadecimal. *Default Value:* `""`

Example • This `setvar` example shows the value set to `"PRT001"`.

```
! U1 setvar "ip.dhcp.cid_prefix" "PRT001"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"PRT001"`.

ip.dhcp.cid_suffix

Description This printer setting defines the unique suffix to be used as the client identifier (DHCP option 61) if DHCP is enabled and `"ip.dhcp.cid_type"` is set to `"0"` or `"2"`.

Type `getvar; setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier suffix. *Format:* `! U1 getvar "ip.dhcp.cid_suffix"`
setvar	This command instructs the printer to change the CID value. *Format:* `! U1 setvar "ip.dhcp.cid_suffix" "value"` *Values:* The maximum length of a value allowed is 60 ASCII characters when the CID type is ASCII, or 120 hexadecimal values when the CID type is hexadecimal. *Default Value:* `""`

Example • This `setvar` example shows the value set to `"printer"`.

```
! U1 setvar "ip.dhcp.cid_suffix" "printer"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"printer"`.

ip.dhcp.cid_type

Description This printer setting defines the type of client identifier (DHCP option 61) that will be sent if DHCP is enabled. A value of `"1"` means the type of "Ethernet" and the printer's MAC address will be used. A value of `"0"` or `"2"` means the client identifier sent will be `"ip.dhcp.cid_prefix"` concatenated with `"ip.dhcp.cid_suffix"`.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier type. *Format:* ! U1 getvar "ip.dhcp.cid_type"
setvar	This command instructs the printer to enable "synthetic" Client Identifier. *Format:* ! U1 setvar "ip.dhcp.cid_type" "value" *Values:* `"0"` = ASCII string `"1"` = wireless radio card's MAC address `"2"` = HEX value *Default Value:* `"1"`

Example • This setvar example shows the value set to `"1"`.

```
! U1 setvar "ip.dhcp.cid_type" "1"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is `"1"`.

ip.dhcp.enable

Definition This printer setting turns DHCP on or off. DHCP is a method for acquiring an IP address, netmask, and gateway automatically on printer power-up. It requires a DHCP server on the local network.

Type getvar; setvar

Note • If you are using static IP addressing, the IP protocol must be set to permanent.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the DHCP status.
	Format: ! U1 getvar "ip.dhcp.enable"
setvar	This command instructs the printer to turn DHCP on or off.
	Format: ! U1 setvar "ip.dhcp.enable" "value"
	Values:
	"off" = printer does not use DHCP to get the IP address
	"on" = printer uses DHCP to get the IP address
	Default: "on"

Example • This setvar example shows the value set to "on".

```
! U1 setvar "ip.dhcp.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

ip.gateway

Description This command instructs the printer to change the gateway address.

Type `getvar`; `setvar`

Note • This setting refers to the gateway address. A set value is ignored if the IP protocol is not set to permanent.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the gateway address. *Format:* `! U1 getvar "ip.gateway"`
`setvar`	This command instructs the printer to change the gateway address. *Format:* `! U1 setvar "ip.gateway" "value"` *Values:* Any valid gateway address *Default:* `"0.0.0.0"`

Example • This `setvar` example shows the value set to `"10.3.5.1"`.

```
! U1 setvar "ip.gateway" "10.3.5.1"
```

When the `setvar` value is set to `"10.3.5.1"`, the `getvar` result is `"10.3.5.1"`.

ip.netmask

Description This setting refers to the subnet mask address. This value is ignored if the IP protocol is not set to permanent.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with subnet mask.
	Format: ! U1 getvar "ip.netmask"
setvar	This command instructs the printer to change the subnet mask.
	Format: ! U1 setvar "ip.netmask" "value"
	Values: Any valid subnet mask.
	Default: "255.255.255.0"

Example • This setvar example shows the value set to "255.255.255.0".

    ! U1 setvar "ip.netmask" "255.255.255.0"

When the setvar value is set to "255.255.255.0", the getvar result is "255.255.255.0".

ip.port

Description This printer setting refers to the port number that the TCP print service is listening on. Normal TCP communications from the host should be directed to this port.

Type `getvar; setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the TCP/UDP port number. *Format:* `! U1 getvar "ip.port"`
`setvar`	This command instructs the printer to set the TCP/UDP port number. *Format:* `! U1 setvar "ip.port" "value"` *Values:* 1 - 65535 (excluding any ports currently used by other services, such as 21, 23, 80, and 515). *Default:* `"9100"`

Example • This `setvar` example shows the value set to `"9100"`.

```
! U1 setvar "ip.port" "9100"
```

When the `setvar` value is set to `"9100"`, the `getvar` result is `"9100"`.

wlan.adhocautomode

Description This printer setting refers to enabling or disabling the adhoc auto mode.

Type getvar;setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the adhoc auto mode status.
	Format: ! U1 getvar "wlan.adhocautomode"
setvar	This command instructs the printer to set the adhoc auto mode.
	Format: ! U1 setvar "wlan.adhocautomode" "value"
	Values:
	"on" = adhoc auto mode enabled
	"off" = adhoc auto mode disabled
	Default: "off"

Example • This setvar example shows the value set to "on".

    ! U1 setvar "wlan.adhocautomode" "on"

When the setvar value is set to "on", the getvar result is "on".

wlan.adhocchannel

Description This printer setting refers to specifying the wireless channel for adhoc channel.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the wireless channel for adhoc channel mode.
	Format: ! U1 getvar "wlan.adhocchannel"
setvar	This command instructs the printer to set the wireless channel for adhoc channel mode.
	Format: ! U1 setvar "wlan.adhocchannel" "value"
	Values: Decimal value between 1 and 16 inclusive
	Default: "1"

Example • This setvar example shows the value set to "1".

```
! U1 setvar "wlan.adhocchannel" "1"
```

When the setvar value is set to "1", the getvar result is "1".

wlan.associated

Description This command refers to if the printer is or is not associated with an access point (AP).

Type getvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with yes or no, which identifies if it is associated with the AP. *Format:* ! U1 getvar "wlan.associated"

Example • In this example, the getvar result is "yes".

```
! U1 getvar "wlan.associated"
```

wlan.channel_mask

Description This printer setting refers to specifying the wireless channel masks to enable and disable various channels.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the wireless channel mask value. *Format:* ! U1 getvar "wlan.channel_mask"
setvar	This command instructs the printer to set the wireless channel mask value. *Format:* ! U1 setvar "wlan.channel_mask" "value" *Values:* 4 Hexadecimal digits preceded by "0x" (0x0000 to 0xFFFF). For commonly used channel masks, see Table 6 on page 264. *Default:* "0x7FF"

Table 6 • Channel Mask Settings

Region	Channel Mask
United States, Canada, Latin America	0x7FF
Europe, Middle East, Africa, other	0x1FFF
Japan	0x3FFF

Example • This setvar example shows the value set to "0x7FF".

    ! U1 setvar "wlan.channel_mask" "0x7FF"

When the setvar value is set to "0x7FF", the getvar result is "0x7FF".

`wlan.essid`

Description This printer setting refers to the printer's stored ESSID. Setting the ESSID to ""
will set the printer in a `"broadcast"` mode.

Type `getvar; setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the stored ESSID value. *Format:* `! U1 getvar "wlan.essid"`
`setvar`	This command instructs the printer to change the ESSID. *Format:* `! U1 setvar "wlan.essid" "value"` *Values:* 32 character alphanumeric string *Default:* `"125"`

Example • This `setvar` example shows the value set to `"125"`.

```
! U1 setvar "wlan.essid" "125"
```

When the `setvar` value is set to `"125"`, the `getvar` result is `"125"`.

wlan.firmware_version

Description This command refers to the firmware version of the wireless radio card.

Type getvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the current version of the wireless radio card firmware.
	Format: ! U1 getvar "wlan.firmware_version"

Example • In this example, the getvar result is the version of Symbol 4137 card (for example, "F3.91-69").

```
! U1 getvar "wlan.firmware_version"
```

wlan.ip.addr

Description This command allows you to get or set the wireless print servers's IP address. This command is supported only on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar; setvar

Important • For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with its current wireless print server IP address. *Format:* ! U1 getvar "wlan.ip.addr"
setvar	This command instructs the printer to change its current wireless print server IP address upon powering the printer on. *Format:* ! U1 setvar "wlan.ip.addr" "value" *Values:* any valid IP address *Default:* "0.0.0.0"

Note • The setvar value of this command can be affected by the wlan.ip.dhcp.enable command.

Example • This setvar example shows the value set to "10.14.4.235".

    ! U1 setvar "wlan.ip.addr" "10.14.4.235"

What the setvar value is set to is the getvar result. In this example, the getvar result is "10.14.4.235".

wlan.ip.arp_interval

Description This print server setting allows you to specify the ARP (Address Resolution Protocol) interval or the ARP cache time out for the wireless print server. This command is supported only on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar; setvar

Important • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the ARP interval or the ARP cache time out value (in seconds) for the wireless print server. *Format:* ! U1 getvar "wlan.ip.arp_interval"
setvar	This command instructs the printer to change the ARP interval or the ARP cache time out for the wireless print server. *Format:* ! U1 setvar "wlan.ip.arp_interval" "value" *Values:* 0 - 30 *Default:* "0"

Example • This setvar example shows the value set to "0".

```
! U1 setvar "wlan.ip.arp_interval" "0"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "0".

wlan.ip.default_addr.enable

Description This command allows you to default the wireless print server's IP address. This command is only supported on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar; setvar

Important • For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to show the status of the setting of the wireless print server's default IP address feature. *Format:* `! U1 getvar "wlan.ip.default_addr.enable"`
setvar	This command tells the printer to use it's default address, if no address is provided through DHCP or BOOTP. If you do not assign an IP address after 2 minutes, the 10/100 Internal PS defaults to IP address 192.168.254.254. *Format:* `! U1 setvar "wlan.ip.default_addr.enable" "value"` *Values:* `"on"` = enabled `"off"` = disabled *Default:* `"on"`

Example • This setvar example shows the value set to `"on"`.

```
! U1 setvar "wlan.ip.default_addr.enable" "on"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is `"on"`.

wlan.ip.dhcp.cid_all

Description This printer setting defines the entire client identifier (DHCP option 61) if DHCP is enabled on the wireless print server and `"wlan.ip.dhcp.cid_type"` is set to `"0"`, or `"2"`. The MAC address is used if the type is set to `"1"`. This command is supported only on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier prefix and suffix of the wireless print server.
	Format:
	! U1 getvar "wlan.ip.dhcp.cid_all"
setvar	This command instructs the printer to change the client identifer prefix and suffix of the wireless print server. The prefix gets cleared and the suffix contains the entire client identifer.
	Format:
	! U1 setvar "wlan.ip.dhcp.cid_all" "value"
	Values: A maximum length of 60 characters if the CID type is ASCII, or 120 characters if the CID type is hexadecimal.
	Default Value: ""

Example • This setvar example shows the value set to `"printer"`.

```
! U1 setvar "wlan.ip.dhcp.cid_all" "printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is `"printer"`.

wlan.ip.dhcp.cid_enable

Description This command determines if DHCP (option 61) is turned on or off of the wireless print server. This command is supported only on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the status of the client identifier of the wireless print server. *Format:* ! U1 getvar "wlan.ip.dhcp.cid_enable"
setvar	This command instructs the printer to set the status of the client identifier of the wireless print server. *Format:* ! U1 setvar "wlan.ip.dhcp.cid_enable" "value" *Values:* "off" = client identifier is turned off "on" = client identifier is turned on *Default:* "off"

Example • This setvar example shows the value set to "off".

  ! U1 setvar "wlan.ip.dhcp.cid_enable" "off"

What the setvar value is set to is the getvar result. In this example, the getvar result is "off".

wlan.ip.dhcp.cid_prefix

Description This printer setting defines the prefix to be prepended to the DHCP client identifier (option 61) when DHCP is enabled on the wireless print server and `"wlan.ip.dhcp.cid_type"` is set to `"0"` or `"2"`. This command is supported only on Zebra ZM400/ZM600™ and S4M™ printers.

Type `getvar; setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier prefix of the wireless print server. *Format:* `! U1 getvar "wlan.ip.dhcp.cid_prefix"`
setvar	This command instructs the printer to change the CID prefix of the wireless print server. *Format:* `! U1 setvar "wlan.ip.dhcp.cid_prefix" "value"` *Values:* Any text string up to 10 characters if the CID type is ASCII, or 20 characters if the CID type is hexadecimal. *Default Value:* `""`

Example • This `setvar` example shows the value set to `"PRT001"`.

```
! U1 setvar "wlan.ip.dhcp.cid_prefix" "PRT001"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"PRT001"`.

wlan.ip.dhcp.cid_suffix

Description This printer setting defines the unique suffix to be used as the client identifier (DHCP option 61) if DHCP is enabled on the wireless print server and `"wlan.ip.dhcp.cid_type"` is set to `"0"` or `"2"`.

Type `getvar; setvar`

Important • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier suffix on the wireless print server. *Format:* `! U1 getvar "wlan.ip.dhcp.cid_suffix"`
setvar	This command instructs the printer to change the client identifier suffix value on the wireless print server. *Format:* `! U1 setvar "wlan.ip.dhcp.cid_suffix" "value"` *Values:* The maximum length of a value allowed is 60 ASCII characters when the CID type is ASCII, or 120 hexadecimal values when the CID type is hexadecimal. *Default Value:* `""`

Example • This `setvar` example shows the value set to `"printer"`.

```
! U1 setvar "wlan.ip.dhcp.cid_suffix" "printer"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"printer"`.

wlan.ip.dhcp.cid_type

Description This printer setting defines the type of client identifier (DHCP option 61) that will be sent if DHCP is enabled on the wireless print server. A value of `"1"` means the type of "Ethernet" and the printer's MAC address will be used. A value of `"0"` or `"2"` means the client identifier sent will be `"wlan.ip.dhcp.cid_prefix"` concatenated with `"wlan.ip.dhcp.cid_suffix"`. This command is supported only on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier type for the wireless print server. *Format:* `! U1 getvar "wlan.ip.dhcp.cid_type"`
setvar	This command instructs the printer to enable "synthetic" client identifier for the wireless print server. *Format:* `! U1 setvar "wlan.ip.dhcp.cid_type" "value"` *Values:* `"0"` = ASCII string `"1"` = wireless radio card's MAC address `"2"` = HEX value *Default Value:* `"1"`

Example • This setvar example shows the value set to `"1"`.

```
! U1 setvar "wlan.ip.dhcp.cid_type" "1"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is `"1"`.

wlan.ip.gateway

Description This command instructs the printer to change the wireless print server's gateway address. This command is supported only on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar; setvar

Note • This setting refers to the gateway address. A set value is ignored if the IP protocol is not set to permanent.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the wireless printer server's gateway address. *Format:* `! U1 getvar "wlan.ip.gateway"`
setvar	This command instructs the printer to change the wireless printer server's gateway address. *Format:* `! U1 setvar "wlan.ip.gateway" "value"` *Values:* Any valid gateway address *Default:* `"0.0.0.0"`

Example • This setvar example shows the value set to `"10.3.5.1"`.

    ! U1 setvar "wlan.ip.gateway" "10.3.5.1"

When the setvar value is set to `"10.3.5.1"`, the getvar result is `"10.3.5.1"`.

wlan.ip.netmask

Description This setting refers to the wireless print server's subnet mask address. This value is ignored if the IP protocol is not set to permanent. This command is supported only on Zebra ZM400/ZM600™ and S4M™ printers.

Type `getvar; setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with wireless print server's subnet mask. *Format:* `! U1 getvar "wlan.ip.netmask"`
`setvar`	This command instructs the printer to change the wireless print servers's subnet mask. *Format:* `! U1 setvar "wlan.ip.netmask" "value"` *Values:* Any valid subnet mask. *Default:* `"255.255.255.0"`

Example • This `setvar` example shows the value set to `"255.255.255.0"`.

```
! U1 setvar "wlan.ip.netmask" "255.255.255.0"
```

When the `setvar` value is set to `"255.255.255.0"`, the `getvar` result is `"255.255.255.0"`.

wlan.ip.port

Description This printer setting refers to the wireless print server's port number that the TCP print service is listening on. Normal TCP communications from the host should be directed to this port.This command is supported only on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar;setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the wireless printer server's TCP/UDP port number. *Format:* ! U1 getvar "wlan.ip.port"
setvar	This command instructs the printer to set the wireless print server's TCP/UDP port number. *Format:* ! U1 setvar "wlan.ip.port" "value" *Values:* 1 - 65535 (excluding any ports currently used by other services, such as 21, 23, 80, and 515). *Default:* "9100"

Example • This setvar example shows the value set to "9100".

```
! U1 setvar "wlan.ip.port" "9100"
```

When the setvar value is set to "9100", the getvar result is "9100".

`wlan.ip.protocol`

Description This command configures the IP addressing method used by the wireless print server. This command is supported only on Zebra ZM400/ZM600™ and S4M™ printers.

Type `getvar; setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
`getvar`	This command returns the value of the currently selected IP protocol used by the wireless print server. *Format:* `! U1 getvar "wlan.ip.protocol"`
`setvar`	This command instructs the printer to configure the IP addressing method used by the wireless print server. *Format:* `! U1 setvar "wlan.ip.protocol" "value"` *Values:* `"bootp"` = uses the standard bootp addressing method to obtain an IP address and configuration `"dhcp"` = uses the standard dhcp addressing method to obtain an IP address and configuration for a server specified period of time `"rarp"` = uses the standard rarp addressing method to obtain an IP address `"glean"` = uses the IP address from a PING packet that is sent to its hardware address (unicast address) `"permanent"` = uses static values assigned through other commands `"all"` = tries all of the dynamic addressing methods, not permanent, to obtain an IP address *Default:* `"all"`

Example • In this example, the `setvar` result is the current programming language that the printer is using.

```
! U1 setvar "wlan.ip.protocol" "bootp"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"bootp"`.

wlan.ip.timeout.enable

Description This network setting refers to enabling the connection timeout on the wireless print server. For this to take effect, the print server must be reset. This command is supported only on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to return whether the timeout checking is enabled on the wireless print server. *Format:* ! U1 getvar "wlan.ip.timeout.enable"
setvar	This command instructs the printer to enable or disable the timeout checking on the wireless print server. *Format:* ! U1 setvar "wlan.ip.timeout.enable" "value" *Values:* "off" = turns off the connection checking "on" = turns on the connection checking *Default:* "on"

Example • This setvar example shows the value set to "on".

```
! U1 setvar "wlan.ip.timeout.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

wlan.ip.timeout.value

Description This network setting refers to the number of seconds before the connection times out for the wireless print server. For this to take effect, the print server must be reset. This command is supported only on Zebra ZM400/ZM600™ and S4M™ printers.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the time, in seconds, before the connection times out. *Format:* ! U1 getvar "wlan.ip.timeout.value"
setvar	This command instructs the printer to set the the time value of the wireless print server, in seconds, before the connection times out. *Format:* ! U1 setvar "wlan.ip.timeout.value" "value" *Values:* "0" through "3600" *Default:* "300"

Example • This setvar example shows the value set to "300".

    ! U1 setvar "wlan.ip.timeout.value" "300"

When the setvar value is set to "300", the getvar result is "300".

wlan.keep_alive.enable

Description This setting controls the printers ability to send a LSAP (link service access point) packet to the access point on an user controllable interval. This feature is included to accommodate access points that require a regular confirmation that wireless clients are still active.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the wlan.keep_alive.enable setting.
	Format: ! U1 getvar "wlan.keep_alive.enable"
setvar	This command instructs the printer to send a LSAP (link service access point) packet to the access point on an user controllable interval.
	Format: ! U1 setvar "wlan.keep_alive.enable" "value"
	Values:
	"on" = turns on keep_alive
	"off" = turns off keep_alive
	Default: "on"

Example • This setvar example shows the value set to "on".

```
! U1 setvar "wlan.keep_alive.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

wlan.keep_alive.timeout

Description This printer setting manages the interval at which the LSAP (link service access point) packet is sent.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the wlan.keep_alive.timeout interval value. *Format:* ! U1 getvar "wlan.keep_alive.timeout"
setvar	This command instructs the printer to configure the frequency at which the printer sends the wlan.keep_alive packet. *Format:* ! U1 setvar "wlan.keep_alive.timeout" "value" *Values:* 5 to 300 seconds *Default:* "15"

Example • This setvar example shows the value set to "15".

```
! U1 setvar "wlan.keep_alive.timeout" "15"
```

When the setvar value is set to "15", the getvar result is "15".

`wlan.kerberos.kdc`

Description This printer setting refers to the Kerberos Key Distribution Center (KDC). The KDC is a trusted server which maintains a database with account information for all security principals (users) for a particular site or administrative domain (realm).

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the current Kerberos KDC. *Format:* ! U1 getvar "wlan.kerberos.kdc"
setvar	This command instructs the printer to change the Kerberos KDC. *Format:* ! U1 setvar "wlan.kerberos.kdc" "value" *Values:* 0-32 ASCII characters *Default:* "krbtgt"

Example • This setvar example shows the value set to "krbtgt".

```
! U1 setvar "wlan.kerberos.kdc" "krbtgt"
```

When the setvar value is set to "krbtgt", the getvar result is "krbtgt".

wlan.kerberos.password

Description This printer setting refers to the Kerberos password. The password must correspond to a user profile established on the Kerberos KDC server in use.

Type `getvar;setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the current Kerberos password. *Format:* `! U1 getvar "wlan.kerberos.password"` For protection a single `"*"` prints.
`setvar`	This command instructs the printer to set the Kerberos password. *Format:* `! U1 setvar "wlan.kerberos.password" "value"` *Values:* 0-32 alphanumeric characters *Default:* `"password"`

Example • This `setvar` example shows the value set to `"password"`.

```
! U1 setvar "wlan.kerberos.password" "password"
```

When the `setvar` value is set to `"password"`, the `getvar` result is `"*"`.

wlan.kerberos.realm

Description This printer setting refers to the Kerberos realm, an administrative domain with its own Kerberos server (KDC).

Type getvar; setvar

Important • If you are using a Windows 2000 Server the realm must be all upper-case. For details, see the Windows 2000 Server example below.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the current Kerberos realm. *Format:* ! U1 getvar "wlan.kerberos.realm"
setvar	This command instructs the printer to change the Kerberos realm. *Format:* ! U1 setvar "wlan.kerberos.realm" "value" *Values:* 0-64 alphanumeric characters *Default:* "kerberos"

Example • This setvar example shows the value set to "zebra".

    ! U1 setvar "wlan.kerberos.realm" "zebra"

When the setvar value is set to "zebra", the getvar result is "zebra".

Example • This setvar example shows the value set to "ZEBRA" on a Windows 2000 server.

    ! U1 setvar "wlan.kerberos.realm" "ZEBRA"

When the setvar value is set to "ZEBRA", the getvar result is "ZEBRA".

wlan.kerberos.username

Description This printer setting refers to the Kerberos user name. The user name must correspond to a user profile established on the Kerberos KDC server in use.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the current Kerberos user name. *Format:* ! U1 getvar "wlan.kerberos.username"
setvar	This command instructs the printer to change the Kerberos user name. *Format:* ! U1 setvar "wlan.kerberos.username" "value" *Values:* 0-32 alphanumeric characters *Default:* "user"

Example • This setvar example shows the value set to "user".

```
! U1 setvar "wlan.kerberos.username" "user"
```

When the setvar value is set to "user", the getvar result is "user".

wlan.mac_addr

Description This command retrieves the MAC address of the wireless print server. This command is supported only on Zebra ZM400/ZM600™ printers.

Type getvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
getvar	This command instructs the printer to respond with the MAC address of the wireless print server. *Format:* ! U1 getvar "wlan.mac_addr"

Example • In this example, the getvar result is the MAC address for the wireless print server.

```
! U1 getvar "wlan.mac_addr"
```

wlan.operating_mode

Description This printer setting refers to the network operating mode. Infrastructure mode means that the printer will try to associate with an access point. Ad hoc mode means that the printer will try to associate with a device other than an access point and join a standalone network.

Type `getvar; setvar`

To use "ad hoc" mode configure the printer as follows:

- Set the ESSID to the new network's ESSID.
- Turn off the DHCP and assign an IP Address to the printer.
- Set the subnet mask on the printer to the new network's subnet mask.
- Change the operating mode on the printer to "ad hoc".

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the network-mode value. *Format:* `! U1 getvar "wlan.operating_mode"`
setvar	This command instructs the printer to set the network operating mode. *Format:* `! U1 setvar "wlan.operating_mode" "value"` *Values:* `"adhoc"` = printer will try to associate with a network device `"infrastructure"` = printer will try to associate with an access point *Default:* `"infrastructure"`

Example • This `setvar` example shows the value set to `"infrastructure"`.

```
! U1 setvar "wlan.operating_mode" "infrastructure"
```

When the `setvar` value is set to `"infrastructure"`, the `getvar` result is `"infrastructure"`.

wlan.password

Description This printer setting refers to the generic password that is used by the wireless securities that need a password.

Type getvar; setvar

Important • Kerberos has its own password field

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with a generic password for wireless securities.
	Format: ! U1 getvar "wlan.password"
	For protection a single "*" prints.
setvar	This command instructs the printer to set a generic password for the wireless securities that need a password.
	Format: ! U1 setvar "wlan.password" "value"
	Values: A maximum of 32 alphanumeric characters.
	Default: "password"

Example • This setvar example shows the value set to "password".

```
! U1 setvar "wlan.password" "password"
```

When the setvar value is set to "password", the getvar result is "*".

wlan.preamble

Description This printer setting selects the radio preamble length to be used.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the current preamble length. *Format:* ! U1 getvar "wlan.preamble"
setvar	This command instructs the printer to set the preamble length. *Format:* ! U1 setvar "wlan.preamble" "value" *Values:* "long" = enables long preamble "short" = enables short preamble *Default:* "long"

Example • This setvar example shows the value set to "long".

    ! U1 setvar "wlan.preamble" "long"

When the setvar value is set to "long", the getvar result is "long".

wlan.private_key_password

Description This printer setting allows the setting of the optional private key password.

Type `getvar`; `setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the value of the private key password. *Format:* `! U1 getvar "wlan.private_key_password"` For protection a single `"*"` prints.
`setvar`	This command instructs the printer to set the private key password. *Format:* `! U1 setvar "wlan.private_key_password"` `"value"` *Values:* A maximum of 32 alphanumeric characters *Default:* `""`

Example • This `setvar` example shows the value set to `"password"`.

```
! U1 setvar "wlan.private_key_password" "password"
```

When the `setvar` value is set to `"password"`, the `getvar` result is `"*"`.

`wlan.roam.interval`

Description This printer setting refers to specifying the wireless roam interval.

Type `getvar; setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the specified roam interval. *Format:* `! U1 getvar "wlan.roam.interval"`
`setvar`	This command instructs the printer to set the wireless roam interval. *Format:* `! U1 setvar "wlan.roam.interval" "value"` *Values:* Decimal values between 5 and 255 inclusive *Default:* `"20"`

Example • This `setvar` example shows the value set to `"20"`.

```
! U1 setvar "wlan.roam.interval" "20"
```

When the `setvar` value is set to `"20"`, the `getvar` result is `"20"`.

wlan.roam.signal

Description This printer setting refers to specifying the wireless roam signal.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the specified wireless roam signal.
	Format: ! U1 getvar "wlan.roam.signal"
setvar	This command instructs the printer to set the wireless roam signal.
	Format: ! U1 setvar "wlan.roam.signal" "value"
	Values: Decimal values between 1 and 75 inclusive.
	Default: "50"

Example • This setvar example shows the value set to "50".

```
! U1 setvar "wlan.roam.signal" "50"
```

When the setvar value is set to "50", the getvar result is "50".

`wlan.security`

Description This printer setting allows you to specify both the wireless encryption type and authentication type in one command.

Type `getvar;setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

Note • When using certificate files, Zebra printers support:

- using Privacy Enhanced Mail (PEM) formatted certificate files.

- using the client certificate and private key as two files, each downloaded separately.

- using exportable PAC files for EAP-FAST.

These certificate files can only be sent using ZPL, not SGD. The ZPL command to use when sending these certificate files is the `~DY` command.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to return the name and not the type. If an invalid security mode is entered the printer returns Invalid Mode.
	Format: ! U1 getvar "wlan.security" "value"
setvar	This command instructs the printer to set the wireless security value.
	Format: ! U1 setvar "wlan.security" "value"
	Values:
	"1" = No Security or "none"
	"2" = WEP 40-bit or "wep 40-bit"
	"3" = WEP 128-bit or "wep 128-bit"
	"4" = EAP-TLS or "eap-tls"
	"5" = EAP-TTLS or "eap-ttls"
	"6" = EAP-FAST or "eap-fast"
	"7" = PEAP or "peap"
	"8" = LEAP or "leap"
	"9" = WPA PSK or "wpa psk"
	"10" = WPA EAP-TLS or "wpa eap-tls"
	"11" = WPA EAP-TTLS or "wpa eap-ttls"
	"12" = WPA EAP-FAST or "wpa eap-fast"
	"13" = WPA PEAP or "wpa peap"
	"14" = WPA LEAP or "wpa leap"
	Default: "1"

Example • This setvar example shows the value set to "1".

```
! U1 setvar "wlan.security" "1"
```

When the setvar value is set to "1", the getvar result is "none".

wlan.signal_noise

Description This command returns the signal noise on the wireless network. Values above 40% represent a very a very significant noise, and radio communication is not reliable.

Type getvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support on page 311*.

This table identifies the command for this format:

Commands	Details
getvar	This command instructs the printer to return the current signal noise on the wireless network. *Format:* ! U1 getvar "wlan.signal_noise"

Example • In this example, the getvar result is the current signal_noise value.

```
! U1 getvar "wlan.signal_noise"
```

wlan.signal_quality

Description This command instructs the printer to return the current signal quality of the wireless network. Values below 40% represent a poor signal quality, and radio communication is not reliable.

Type getvar

Note • .These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
getvar	This command instructs the printer to return the current signal quality of the wireless network.
	Format: ! U1 getvar "wlan.signal_quality"

Example • In this example, the getvar result is the current signal_quality value.

```
! U1 getvar "wlan.signal_quality"
```

wlan.signal_strength

Description This command returns the signal strength of the connection to the access point as a percentage value between zero (not connected) and 100 (strongest signal). Values below 40% represent a very poor signal and radio communication is not reliable.

Type getvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the command for this format:

Commands	Details
getvar	This command instructs the printer to respond with the current signal strength. *Format:* ! U1 getvar "wlan.signal_strength"

Example • In this example, the getvar result is "93".

```
! U1 getvar "wlan.signal_strength"
```

`wlan.station_name`

Description This printer setting refers to the station name.

Type `setvar;getvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the station name value.
	Format: `! U1 getvar "wlan.station_name"`
`setvar`	This command instructs the printer to set the station name.
	Format: `! U1 setvar "wlan.station_name" "value"`
	Values: A maximum of 32 alphanumeric characters
	Default: `"ZEBRA"`

Example • This `setvar` example shows the value set to `"ZEBRA"`.

```
! U1 setvar "wlan.station_name" "ZEBRA"
```

When the `setvar` value is set to `"ZEBRA"`, the `getvar` result is `"ZEBRA"`.

wlan.tx_power

Description This printer setting refers to specifying the wireless transmit power.

Type `getvar;setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the wireless transmit power. *Format:* `! U1 getvar "wlan.tx_power"`
`setvar`	This command instructs the printer to set the wireless transmit power. *Format:* `! U1 setvar "wlan.tx_power" "value"` *Values:* Decimal values of 1, 5, 20, 30, 50, 100 *Default:* `"100"`

Example • This `setvar` example shows the value set to `"100"`.

```
! U1 setvar "wlan.tx_power" "100"
```

When the `setvar` value is set to `"100"`, the `getvar` result is `"100"`.

wlan.tx_rate

Description This printer setting refers to specifying the wireless transmit rate.

Type `getvar; setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the wireless transmit rate. *Format:* `! U1 getvar "wlan.tx_rate"`
`setvar`	This command instructs the printer to set the wireless transmit rate. *Format:* `! U1 setvar "wlan.tx_rate" "value"` *Values:* 1, 2, 5.5, 11, all *Default:* `"all"`

Example • This `setvar` example shows the value set to `"all"`.

```
! U1 setvar "wlan.tx_rate" "all"
```

When the `setvar` value is set to `"all"`, the `getvar` result is `"all"`.

wlan.username

Description This printer setting refers to the generic user name that is used by the wireless securities that need a user name.

Type getvar; setvar

Important • Kerberos has its own user name field.

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with a generic user name for the wireless securities that need a user name. *Format:* ! U1 getvar "wlan.username"
setvar	This command instructs the printer to set a generic user name for wireless securities that need a user name. *Format:* ! U1 setvar "wlan.username" "value" *Values:* A maximum of 32 alphanumeric characters *Default:* "user"

Example • This setvar example shows the value set to "user".

    ! U1 setvar "wlan.username" "user"

When the setvar value is set to "user", the getvar result is "user".

wlan.wep.auth_type

Description For the WEP security type, this printer setting selects the authentication type to be used between the printer and the access point. The authentication types are open system and shared key.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to retrieve the current WEP authentication type. *Format:* ! U1 getvar "wlan.wep.auth_type"

setvar	This command instructs the printer to set the WEP authentication type.
	 Format: ! U1 setvar "wlan.wep.auth_type" "value"
	 Values:
	     "open" = enables the open authentication type
	     "shared" = enables the shared authentication type
	 Default: "open"

Example • This setvar example shows the value set to "open".

```
! U1 setvar "wlan.wep.auth_type" "open"
```

When the setvar value is set to "open", the getvar result is "open".

wlan.wep.index

Description This printer setting refers to the WEP (Wired Equivalent Privacy) encryption key index. This printer setting determines which one of the four encryption keys is to be used by the client (printer).

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the encryption key index. *Format:* ! U1 getvar "wlan.wep.index"

setvar	This command instructs the printer to set the encryption key index.
	 Format: ! U1 setvar "wlan.wep.index" "value"
	 Values:
	    "1" = enables encryption key 1
	    "2" = enables encryption key 2
	    "3" = enables encryption key 3
	    "4" = enables encryption key 4
	 Default: "1"

Example • This setvar example shows the value set to "1".

```
! U1 setvar "wlan.wep.index" "1"
```

When the setvar value is set to "1", the getvar result is "1".

wlan.wep.key1

Description This printer setting refers to the first indexed WEP encryption key. The WEP encryption key is a hexadecimal or string value. This key should match the wireless network WEP encryption key 1.

Type `getvar; setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the encryption key. *Format:* `! U1 getvar "wlan.wep.key1"` For protection a single `"*"` prints.
`setvar`	This command instructs the printer to set the encryption key. *Format:* `! U1 setvar "wlan.wep.key1" "value"` *Values:* 10 hexadecimal characters for 40-bit encryption 26 hexadecimal characters for 128-bit encryption *Default:* All zeros

Example • This `setvar` example shows the value set to `"A1B2C3D4F5"`.

```
! U1 setvar "wlan.wep.key1" "A1B2C3D4F5"
```

When the `setvar` value is set to `"A1B2C3D4F5"`, the `getvar` result is `"*"`.

wlan.wep.key2

Description This printer setting refers to the second indexed WEP encryption key. The WEP encryption key is a hexadecimal string value. This key should match the wireless network WEP encryption key 2.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer respond with the encryption key. *Format:* ! U1 getvar "wlan.wep.key2" For protection a single "*" prints.
setvar	This command instructs the printer to set the encryption key. *Format:* ! U1 setvar "wlan.wep.key2" "value" *Values:* 10 hexadecimal characters for 40-bit encryption 26 hexadecimal characters for 128-bit encryption *Default:* All zeros

Example • This setvar example shows the value set to "A1B2C3D4F5".

```
! U1 setvar "wlan.wep.key2" "A1B2C3D4F5"
```

When the setvar value is set to "A1B2C3D4F5", the getvar result is "*".

wlan.wep.key3

Description This printer setting refers to the third indexed WEP encryption key. The WEP encryption key is a hexadecimal string value. This key should match the wireless network WEP encryption key 3.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the encryption key.
	Format: ! U1 getvar "wlan.wep.key3"
	Format: For protection a single "*" prints.
setvar	This command instructs the printer to set the encryption key.
	Format: ! U1 setvar "wlan.wep.key3" "value"
	Values:
	10 hexadecimal characters for 40-bit encryption
	26 hexadecimal characters for 128-bit encryption
	Default: All zeros

Example • This setvar example shows the value set to "A1B2C3D4F5".

```
! U1 setvar "wlan.wep.key3" "A1B2C3D4F5"
```

When the setvar value is set to "A1B2C3D4F5", the getvar result is "*".

wlan.wep.key4

Description This printer setting refers to the fourth indexed WEP encryption key. The WEP encryption key is a hexadecimal string value. This key should match the wireless network WEP encryption key 4.

Type getvar; setvar

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.

- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer respond with the encryption key.
	Format: ! U1 getvar "wlan.wep.key4"
	For protection a single "*" prints.
setvar	This command instructs the printer to set the encryption key.
	Format: ! U1 setvar "wlan.wep.key4" "value"
	Values:
	10 hexadecimal characters for 40-bit encryption
	26 hexadecimal characters for 128-bit encryption
	Default: All zeros

Example • This setvar example shows the value set to "A1B2C3D4F5".

    ! U1 setvar "wlan.wep.key4" "A1B2C3D4F5"

When the setvar value is set to "A1B2C3D4F5", the getvar result is "*".

wlan.wep.key_format

Description This printer setting specifies the format for the WEP key.

Type `getvar;setvar`

! **Important •** This printer setting should proceed any of the `wep.key` settings if you select a non-default value.

📖 **Note •** These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the WEP key format. *Format:* `! U1 getvar "wep.key_format"`
`setvar`	This command instructs the printer to set the WEP key format. *Format:* `! U1 setvar "wlan.wep.key_format" "value"` *Values:* `"ascii"` = WEP key is set by ASCII string `"hex"` = WEP key is a Hex string *Default:* `"hex"`

➡ **Example •** This `setvar` example shows the value set to `"ascii"`.

```
! U1 setvar "wlan.wep.key_format" "ascii"
```

When the `setvar` value is set to `"ascii"`, the `getvar` result is `"ascii"`.

wlan.wpa.psk

Description This printer setting specifies the pre-shared key (PSK) value to use when the WPA authentication is set to PSK.

Type `getvar;setvar`

Note • These are key reference links for this command:

- For details on SGD command structure, see *Command Structure* on page 246.
- For details on the syntax and use of SGD commands, see *SGD Command Support* on page 311.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the pre-shared key. *Format:* `! U1 getvar "wlan.wpa.psk"` For protection a single `"*"` prints.
`setvar`	This command instructs the printer to set the pre-shared key. *Format:* `! U1 setvar "wlan.wpa.psk" "value"` *Values:* 64 hexadecimal digits *Default:* `64 zeros (00000000...)`

Example • This `setvar` example shows the value set to `"00000000..."`.

```
! U1 setvar "wlan.wpa.psk" "00000000..."
```

When the `setvar` value is set to `"00000000..."`, the `getvar` result is `"*"`.

A

SGD Command Support

This appendix provides you with details identifying which SGD commands can be used with the wired and wireless print server interfaces.

Printer and Firmware Compatibility

Table 7 identifies the supported printer model, firmware version, and command type (internal wired, external wired, or wireless) for all SGD commands. In order to set and get configurations, the noted supported SGD commands can also be used through the serial, parallel, and USB interfaces.

> **!** **Important •** All the firmware versions noted in Table 7, refer to minimum firmware version required.

Table 7 • SGD Command Syntax

Key: Internal Wired = ♦ External Wired = ■ Wireless = ⟋	
SGD Commands	**S4M / ZM400 / ZM600**
appl.bootblock	♦■⟋ E53.15.0
appl.name	♦■⟋ E53.15.0
card.inserted	⟋ E53.15.0
card.mac_addr	⟋ E53.15.0
device.languages	♦■⟋ E53.15.0
external_wired.ip.addr	■ E53.15.0
external_wired.ip.arp_interval	■ E53.15.0
external_wired.ip.default_addr.enable	■ E53.15.0
external_wired.ip.dhcp.cid_all	■ E53.15.0
external_wired.ip.dhcp.cid_enable	■ E53.15.0
external_wired.ip.dhcp.cid_prefix	■ E53.15.0
external_wired.ip.dhcp.cid_suffix	■ E53.15.0
external_wired.ip.dhcp.cid_type	■ E53.15.0
external_wired.ip.gateway	■ E53.15.0
external_wired.ip.netmask	■ E53.15.0
external_wired.ip.port	■ E53.15.0
external_wired.ip.protocol	■ E53.15.0
external_wired.ip.timeout.enable	■ E53.15.0
external_wired.ip.timeout.value	■ E53.15.0
external_wired.mac_addr	■ E53.15.0
internal_wired.ip.addr	♦ E53.15.0
internal_wired.ip.arp_interval	♦ E53.15.0
internal_wired.ip.default_addr.enable	♦ E53.15.0
internal_wired.ip.dhcp.cid_all	♦ E53.15.0
internal_wired.ip.dhcp.cid_enable	♦ E53.15.0

Table 7 • SGD Command Syntax

SGD Commands	S4M / ZM400 / ZM600
Key: Internal Wired = ♦ External Wired = ■ Wireless = ✗	
internal_wired.ip.dhcp.cid_prefix	♦ E53.15.0
internal_wired.ip.dhcp.cid_suffix	♦ E53.15.0
internal_wired.ip.dhcp.cid_type	♦ E53.15.0
internal_wired.ip.gateway	♦ E53.15.0
internal_wired.ip.netmask	♦ E53.15.0
internal_wired.ip.port	♦ E53.15.0
internal_wired.ip.protocol	♦ E53.15.0
internal_wired.ip.timeout.enable	♦ E53.15.0
internal_wired.ip.timeout.value	♦ E53.15.0
internal_wired.mac_addr	♦ E53.15.0
ip.active_network	♦■✗ E53.15.0
ip.addr	✗ E53.15.0
ip.arp_interval	♦✗ E53.15.0
ip.bootp.enable	♦■✗ E53.15.0
ip.dhcp.cid_all	♦✗ E53.15.0
ip.dhcp.cid_enable	♦✗ E53.15.0
ip.dhcp.cid_prefix	♦✗ E53.15.0
ip.dhcp.cid_suffix	♦✗ E53.15.0
ip.dhcp.cid_type	♦✗ E53.15.0
ip.dhcp.enable	♦■✗ E53.15.0
ip.ftp.enable	♦■✗ E53.15.0
ip.gateway	♦✗ E53.15.0
ip.http.enable	♦■✗ E53.15.0
ip.lpd.enable	♦■✗ E53.15.0
ip.netmask	✗ E53.15.0
ip.pop3.enable	♦■✗ E53.15.0
ip.pop3.password	♦■✗ E53.15.0
ip.pop3.poll	♦■✗ E53.15.0
ip.pop3.server_addr	♦■✗ E53.15.0
ip.pop3.username	♦■✗ E53.15.0
ip.port	✗ E53.15.0
ip.primary_network	✗ E53.15.0

Table 7 • SGD Command Syntax

SGD Commands	S4M / ZM400 / ZM600
Key: Internal Wired = ♦ External Wired = ■ Wireless = ∕	
ip.smtp.domain	♦ ■ ∕ E53.15.0
ip.smtp.enable	♦ ■ ∕ E53.15.0
ip.smtp.server_addr	♦ ■ ∕ E53.15.0
ip.snmp.enable	♦ ■ ∕ E53.15.0
ip.snmp.get_community_name	♦ ■ ∕ E53.15.0
ip.snmp.set_community_name	♦ ■ ∕ E53.15.0
ip.tcp.enable	♦ ■ ∕ E53.15.0
ip.telnet.enable	♦ ■ ∕ E53.15.0
ip.udp.enable	♦ ■ ∕ E53.15.0
media.printmode	♦ ■ ∕ E53.15.0
odometer.headclean	♦ ■ ∕ E53.15.0
odometer.headnew	♦ ■ ∕ E53.15.0
odometer.label_dot_length	♦ ■ ∕ E53.15.0
odometer.media_marker_count1	♦ ■ ∕ E53.15.0
odometer.media_marker_count2	♦ ■ ∕ E53.15.0
odometer.total_print_length	♦ ■ ∕ E53.15.0
wlan.adhocautomode	∕ E53.15.0
wlan.adhocchannel	∕ E53.15.0
wlan.associated	∕ E53.15.0
wlan.channel_mask	∕ E53.15.0
wlan.essid	∕ E53.15.0
wlan.firmware_version	∕ E53.15.0
wlan.ip.addr	∕ E53.15.0
wlan.ip.arp_interval	∕ E53.15.0
wlan.ip.default_addr.enable	∕ E53.15.0
wlan.ip.dhcp.cid_all	∕ E53.15.0
wlan.ip.dhcp.cid_enable	∕ E53.15.0
wlan.ip.dhcp.cid_prefix	∕ E53.15.0
wlan.ip.dhcp.cid_suffix	∕ E53.15.0
wlan.ip.dhcp.cid_type	∕ E53.15.0
wlan.ip.gateway	∕ E53.15.0
wlan.ip.netmask	∕ E53.15.0

Table 7 • SGD Command Syntax

Key:	Internal Wired = ♦ External Wired = ■ Wireless = ✗

SGD Commands	S4M / ZM400 / ZM600
wlan.ip.port	✗ E53.15.0
wlan.ip.protocol	✗ E53.15.0
wlan.ip.timeout.enable	✗ E53.15.0
wlan.ip.timeout.value	✗ E53.15.0
wlan.keep_alive.enable	✗ E53.15.0
wlan.keep_alive.timeout	✗ E53.15.0
wlan.kerberos.kdc	✗ E53.15.0
wlan.kerberos.password	✗ E53.15.0
wlan.kerberos.realm	✗ E53.15.0
wlan.kerberos.username	✗ E53.15.0
wlan.mac_addr	✗ E53.15.0
wlan.operating_mode	✗ E53.15.0
wlan.password	✗ E53.15.0
wlan.preamble	✗ E53.15.0
wlan.private_key_password	✗ E53.15.0
wlan.roam.interval	✗ E53.15.0
wlan.roam.signal	✗ E53.15.0
wlan.security	✗ E53.15.0
wlan.signal_noise	✗ E53.15.0
wlan.signal_quality	✗ E53.15.0
wlan.signal_strength	✗ E53.15.0
wlan.station_name	✗ E53.15.0
wlan.tx_power	✗ E53.15.0
wlan.tx_rate	✗ E53.15.0
wlan.username	✗ E53.15.0
wlan.wep.auth_type	✗ E53.15.0
wlan.wep.index	✗ E53.15.0
wlan.wep.key_format	✗ E53.15.0
wlan.wep.key1	✗ E53.15.0
wlan.wep.key2	✗ E53.15.0
wlan.wep.key3	✗ E53.15.0

Table 7 • SGD Command Syntax

Key: Internal Wired = ♦ External Wired = ■ Wireless = ⁄	
SGD Commands	**S4M / ZM400 / ZM600**
wlan.wep.key4	⁄ E53.15.0
wlan.wpa.psk	⁄ E53.15.0

Character References

This section has character references.

Resident Fonts 1-5

Page Mode supports 5 different font sizes, numbered 1-5. Each font can be expanded both horizontally and vertically. All fonts are non-proportional, mono-spaced. The ASCII value of each character is dependent on the I command character set (code page) selection.

Figure 7 • Resident Fonts Example

```
1. ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
   0123456789 !@#$%^&*()_+<>?[]:;

2. ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
   0123456789 !@#$%^&*()_+<>?[]:;

3. ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
   0123456789 !@#$%^&*()_+<>?[]:;

4. ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrst
   0123456789 !@#$%^&*()_+<>?[]:;

5. ABCDEFGHIJKLMNOPQRST
   0123456789    #$% &
```

Default Character Map Code Page 437

Fonts 1-4 are represented by the shaded and unshaded cells and Font 5 only supports shaded cells. See the. The electronic manual version on the user's CD includes links to the individual code pages.

Figure 8 • Code Page 437

Euro Character

Page mode printing supports the Euro character with a character substitution command, the oR command. The Font 5 character set does not support the typical implementation of the Euro character position at 213 decimal (D5 hexadecimal).

Dump Mode Character Map

The printer's Dump Mode is used to troubleshoot programming. The printer will print all data as sent in Dump Mode Characters, shown below.

Figure 9 • Dump Mode Character Map

Notes • _____

_____

_____

_____

_____

_____

_____

_____

_____

C

2746e Print Odometer

The 2746e printer includes additional hardware for a print odometer to assist with printer maintenance and maintenance scheduling. The print head, as a consumable item, wears out and may need periodic replacement to maintain print quality. The printer also needs regular cleaning and print head conditioning to maximize the service life of the printer and it's print head. The print odometer can assist with printer maintenance and scheduling.

The printer has the ability to report serial number, distance printed by the print head and total distance printed by the printer.

The Real Time Clock (RTC) option adds the ability to record the date with the print odometer data.

The printer has the ability to report when the properly maintained print head has reached the end its usable life cycle. By default, this feature is disabled and must be activated with EPL2 programming commands. The end of print head life message can also be customized to add service contact information.

ELP2 Odometer Commands

The print odometer data is accessed and controlled via EPL2 Page Mode programming commands. The odometer commands are:

URH command - Prints or reports via serial or USB interfaces a print head history report for up to ten print heads.

URL command - Prints or reports via serial or USB interfaces the current print head or total print distance of media run on the printer.

URR command - Prints or reports via serial or USB interfaces a Print Head Life Reminder status report. The report may include a custom message stored by the `oL` command, to be displayed when a reminder is issued (default is PRINTHEAD LIFE EXCEEDED), the distance needed to activate print head life reminder (warning) label, and the frequency of reminder labels after the reminder is on and in effect.

oL, oLn and oLy commands - Set and control the print head life (exceeded) reminder label's parameters and reporting status. See the `URR` command description, above.

oL

Print Head Life Reminder Control

Description   Use this command to customize the print head life reminder report. See the URR command to check the settings and status.

Syntax   oL[p_1,p_2,$p_{3]}$

Parameters   This table identifies the parameters for this format:

Parameters	Details
No parameters	Resets the parameters to their default values for print head life reminder reporting.
p_1 = Reminder Threshold	Sets the distance to be printed before a reminder label warning can be issued. Omitting or setting the value to 0will reset it to the default value of 50 kilometers.
	Default Value: 50 kilometers
	Accepted Values: 1–255; 1 = 1 kilometer
p_2 = Frequency of Reminder	Sets the number of labels to be printed prior to issuing another reminder label.
	Omitting the parameter will reset it to the default. The 0 value causes the printer with the reminder enabled and in effect, to report a Reminder Message at power-up, error recovery, after a media out condition, a reset or after Cancel has been pressed on the printer.
	Default Value: 0 labels
	Accepted Values: 1–255; 1 = 1 label printed
p_3 = Message "DATA"	*Default Value:* PRINTHEAD LIFE EXCEEDED
	Represents a fixed data field for a message of 39 characters or less. The message "DATA" is bound by quotes. See the EPL2 programming ASCII Text (A) and the Character Set Selection commands for details on printing text.

Example •

```
oL40              ; Sets the threshold to 40km, frequency and message are default

oL,5              ; Sets the frequency to 5 labels, threshold and message are default

oL,,"Replace the print head"
                  ; Sets the message to Replace the print head, threshold and
                  ; frequency are default
```

oLn

Disable Print Head Life Reminder

Description   Use this command to deactivate the print head life reminder reporting. Use the
URR command to check the Print Head Life Reminder settings.

Syntax   oLn

Parameters   There are no parameters for this format.

oLy

Enable Print Head Life Reminder

Description   Use this command to activate the print head life reminder reporting. Use the URR command to check the Print Head Life Reminder settings.

Syntax   oLy

Parameters   There are no parameters for this format.

URH

Print Head History Report

Description   Use this command to print or report (via the serial or USB interface) a print head history report of the distance printed by the last twenty (20) recorded print heads or the last ten (10) recorded print heads if the RTC is in use.

Syntax   URH [p_1, p_2]

Parameters   This table identifies the parameters for this format. Parameters are optional and maybe entered and any order.

Parameters	Details
p_1 = Report Method (device)	Sends information back to the host via the serial port and the last active bi-directional interface. p = Printer s = Serial *Default Value:* s
p_2 = Units	m = Millimeters i = Inches

Example • (default)

```
HEAD LIFE HISTORY  FOR S/N XXXXXXXXXX
***** SERIAL NUMBER MISMATCH *****

 #   DISTANCE
001 XXX,XXX,XXX"  [XXX days]
002 XXX,XXX,XXX"  [XXX days]
003 XXX,XXX,XXX"  [XXX days]
004 XXX,XXX,XXX"
```

For units with the RTC option installed: The **SERIAL NUMBER MISMATCH ** line prints when the serial number stored in the RTC does not match the serial number stored on the printer's main PCBA. One or both the PCBA or RTC has been changed in this unit and the odometer data does not accurately represent printer usage.

The last print head record does not include the number of days in service.

URL

Read Print Odometers

Description   Use this command to print or report (via the serial or USB interface) latest active print odometer data stored in printer memory. Report printer usage for one or both of the following:

- The current distance printed by the presently installed print head.

- The total distance printed by the printer.

Syntax   URL[p_1,p_2,p_3]

Parameters   This table identifies the parameters for this format. Parameters are optional and maybe entered and any order.

Parameters	Details
No parameters	This is the default value. Prints both Head Life and Total Print Distance report data strings.
p_1 = Report Method (device)	Sends information back to the host via the serial port and the last active bi-directional interface. p = Printer s = Serial *Default Value:* s
p_2 = Units	m = Millimeters i = Inches
p_3 = Read Meter	h = Head Life (distance) t = Total Print Distance **!** **Important** • Do not use both the p_3 parameters, h and t. None = Default. Prints both head Life and Total Print Distance report data strings. Do not use both the p_3 parameters, h and t.

Example • (default)

```
HEAD  usage = XXX,XXX,XXX "  [XXX days]
TOTAL usage = XXX,XXX,XXX "  [XXX days]
```

For units with the RTC option installed: The **SERIAL NUMBER MISMATCH ** line prints when the serial number stored in the RTC does not match the serial number stored on the printer's main PCBA. One or both the PCBA or RTC has been changed in this unit and the odometer data does not accurately represent printer usage.

The last print head record does not include the number of days in service.

URR

Print Odometer Status Reporting

Description   Use this command to print or report (via the serial or USB interface) the status and settings for the print head life reminder label.

Syntax   URRp₁

Parameters   This table identifies the parameters for this format. Parameters are optional and maybe entered and any order.

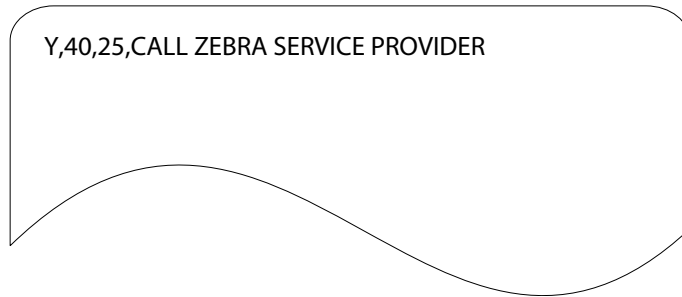| Parameters	Details
p₁ = Report Method (device)	Sends information back to the host via the serial port and the last active bi-directional interface. p = Printer s = Serial *Default Value:* s

Example 1 • Printout Example for **oL** Command Default Settings

N,0,0,

Example 2 • Activated Print Head Reminder (**oLy**) and the Parameters Customized

Y,40,25,CALL ZEBRA SERVICE PROVIDER

oLy   ; Activates Print Head Life Reminder

oL40,25,"CALL ZEBRA SERVICE PROVIDER"

                        ; Sets Threshold: 40 kilometers,

                        ; Frequency: 25 labels,

                        ; Message: "CALL ZEBRA SERVICE PROVIDER"

URRp   ; Prints Print Odometer Status label (see example above)

Zebra Technologies Corporation

333 Corporate Woods Parkway
Vernon Hills, Illinois 60061.3109 U.S.A.
Telephone: +1 847 793 2600
Facsimile: +1 847 913 8766

Zebra Technologies Europe Limited

Zebra House
The Valley Centre, Gordon Road
High Wycombe
Buckinghamshire HP13 6EQ, UK
Telephone: +44 (0) 1494 472872
Facsimile: +44 (0) 1494 450103

Zebra Technologies Asia Pacific, LLC

16 New Industrial Road
#05-03 Hudson TechnoCentre
Singapore 536204
Telephone: +65 6858 0722
Facsimile: +65 6885 0838