Honeywell

DPL Command Reference

for E-Class, I-Class, RL3e, RL4e, RP2, and RP4 Series Printers

User Guide

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DPL COMMAND REFERENCE

The Datamax Programming Language (DPL) is a feature-rich printer command language designed to print labels, tags and receipts. This Command Reference is for the version of DPL implemented in the printers listed below.

Supported Printers

Printer Model	Use Printer Firmware
E-Class Mark III	v9.04 or later
I-Class Mark II	v10.04 or later
RL3e	v18.06 or later
RL4e	v18.06 or later
RP2	v19.07 or later
RP4	v19.07 or later

This document contains:

- Configuration Commands
- Extended System Level Commands
- Font Loading Commands
- Format Record Commands
- Immediate Commands
- Label Formatting Commands
- System Level Commands
- Extended System Level Commands
- Symbol Sets

Control Code Command Functions

The printer requires a special "attention-getter" character in order to receive a command sequence, informing the printer that it is about to receive a command and the type of command it will be. Control Commands, System-Level Commands, and Font Loading Commands have their own unique attention-getter, followed by a command character that directs printer action.

Attention-Getters

The attention-getters (e.g., "SOH") are standard ASCII control labels that represent a one character control code (i.e., ^A or Ctrl A).

Attention Getter	ACSII Character	Decimal Value	HEX Value
Immediate Commands	SOH	1	01
System-Level Commands	STX	2	02
Front Loading Commands	ESC	27	1B

Easy Control Codes

DPL has been enhanced to accept a 3-character SOH and STX sequence. Easy Control Codes are always enabled, whether in Standard, Alternate, Alternate 2, or Custom Control Code Mode. Two types of sequences have been created to meet any application's requirements. Use these sequences where you normally would use a single SOH or STX character.

These sequences will not function when the printer input mode is selected to "auto".

Control Character	3 "%" Character Sequence	3 "^" Character Sequence	Command Type
SOH	%01	^01	Control
STX	%02	^02	System

Alternate Control Code Modes

For systems unable to transmit certain control codes, Alternate Control Code Modes are available. Configuring the printer to operate in an Alternate Control Code Mode (selected via the Setup Menu, the <STX>Kc command or, where applicable, the <STX>KD command) requires the substitution of Standard Control Characters with Alternate Control Characters in what is otherwise a normal data stream.

Control Character	Standard	Alternate	Alternate 2	Custom	Command Type
SOH	0x01	0x5E	0x5E	User Defined	Control
STX	0x02	0x7E	0x7E		System
CR	0x0D	0x0D	0x7C		Line Termination
ESC	0x1B	0x1B	0x1B		Front Loading
"Count By" *	0x5E	0x40	0x40		Label Formatting

* See the ^ Set Count by Amount label formatting command.

Note: Throughout this manual <SOH>, <STX>, <CR>, <ESC>, and ^ will be used to indicate control codes. The actual values will depend on whether standard or alternate control codes are enabled for the particular application.

Alternate Line Terminator Example: Alternate Control Codes provide for substitution of the line terminator, as well as the control characters listed above. For example using Alternate 2, the line terminator <CR> (0x0D) is replaced by | (0x7C). The following is a sample label format data stream for a printer configured for Alternate-2 Control Codes:

~L|1911A10001000101234560|X|~UT01ABCDE|~G|

Typical Data Flow Sequence

The typical data flow sequence is summarized in the following bullets and detailed in the table below. Printer Command data is transmitted to the printer as shown in the table from left to right, top to bottom.

- Status commands
- Configuration commands
- Download commands
- Label format
- Status commands
- Label reprint commands
- Memory cleanup

Typical commands used in the various stages shown above are listed in the tables that follow.

Status Commands

Commands are available for retrieving stored label formats, updating data, and adding new data. These techniques are used for increasing throughput; see STX G Print Last Label Format, r Recall Stored Label Format, and s Store Label Format in Module.

Printer Commands	Description	Notes
<SOH>A <STX>WG	"Status" commands: Get Status, Request Memory Module Storage Information...	Optional, bidirectional communication required for these commands.
<STX>O220 <STX>n <STX>V0	"Configuration" commands, download image...	See STX Kc Configuration Set to reduce configuration commands transferred.
<SOH>D <STX>IApImagename<CR> image data...data <CR>	"Download" commands, image, fonts...	RAM (temporary) or Flash (semi-permanent) memory.

Printer Commands	Description	Notes
<STX>L	Begin label	Existing label formats may be recalled. Label header records are not required.
D11	Label Header record	
131100000500050Typical text field 01	Label Formatting Data record – Object type, orientation, position, data	
Q0001	Label Quantity	
E	Label Terminate record	
<SOH>A	Status command	Optional, bidirectional communication required for these commands.
<STX>U01new data for field 01 <STX>E0005 <STX>G	Reprint with New Data Records	Used for fast reprints.
<STX>xImagename<CR> <STX>zA	Memory cleanup	Typically used for temporary storage.

Configuration Commands

The following table lists some commands useful in controlling printer configuration. These commands are generally effective only for the current power-up session; toggling power restores the default configuration. See STX Kc Configuration Set for changes to the default power-up configuration. Changing the default power-up configuration and saving objects in printer Flash memory can reduce the data transmitted for each label and therefore improve throughput.

Configuration Command	Name	Function
<STX>A	Set Date and Time	Sets Date and Time.
<STX>c	Set Continuous Paper Length	Must be 0000 for gap media; not used for reflective media.
<STX>e	Set Edge Sensor	Sets sensing for gap or registration hole type stock.
<STX>Kf	Set Present Distance	Determines label stop position, head relative. STX f Set Form Stop Position (Backfeed Command) edge sensor relative equivalent command, older models.

Configuration Command	Name	Function
<STX>Kc	Configuration Set	Determines default power-up configuration.
<STX>F	Send Form Feed	Sets the stop position of the printed label.
<STX>M	Set Maximum Label Length	Length to search for next gap or reflective mark; not used with continuous media.
<STX>m	Set to Metric Mode	Subsequent measurements interpreted in metric (most units, mm/10). Label equivalent command can be used.
<STX>n	Set to Inch Mode	Subsequent measurements interpreted in inches (most units in/100). Label equivalent command can be used.
<STX>S	Set Feed Rate	Sets blank label movement speed.
<STX>V	Software Switch	Enables optional hardware, cutter, and present sensor.

Download Commands

Download Command	Name	Function
<STX>I	Download Image	Downloads Image to selected memory module.
<STX>i	Download Scalable Font	Downloads Scalable Font to selected memory module.
<ESC>	Download Bitmapped Font	Downloads Bitmapped Font to selected memory module.

Label Header Commands

These commands determine how the label formatting occurs, the print quality and quantity. They are typically issued immediately following the <STX>L start of the label format. The Format Attribute (A) and the Offset (C, R) commands can be changed at any point between format records to achieve desired effects.

Label Header Command	Name
A	Set Format Attribute
C	Column Offset

Label Header Command	Name
D	Set Width and Dot Size
H	Set Heat Setting
M	Set Mirror Mode
P	Set Print Speed
P	Set Backup Speed
Q	Set Quantity
R	Set Row Offset
S	Set Feed Speed

CHAPTER

2

IMMEDIATE COMMANDS

When the printer receives an immediate command, its current operation will be momentarily interrupted to respond to the command. Immediate commands may be issued before or after system-level commands; however, they may not be issued among label formatting commands or during font or image downloading.

Immediate commands consist of:

- Attention-Getter, 0x01 or 0x5E (see Control Code Command Functions)
- Command Character

The following immediate commands are available:

- SOH # Reset
- SOH * Reset
- SOH A Send ASCII Status String
- SOH a Send ASCII Extended Status String
- SOH B Toggle Pause
- SOH C Stop/Cancel
- SOH D SOH Shutdown
- SOH E Send Batch Remaining Quantity
- SOH e Send Batch Printed Quantity
- SOH F Send Status Byte

SOH # Reset

Returns all settings to last-saved settings, purges all current print jobs and clears both the communications and print buffers. Also clears DRAM memory. This command does not cause the printer to restart.

Syntax

<SOH>#

Behavior

The printer will respond with a 'T' to all active communications channels in non-auto mode upon completion.

SOH * Reset

This command forces a soft reset of the microprocessor. The printer is initialized to the same state as a power cycle.

Syntax

<SOH>*

Behavior

The printer will reset with response to host printer:

- After restart printer sends an 'R' to all active communications channels in non-auto mode.

SOH A Send ASCII Status String

This command allows the host computer to check the current printer status. The printer returns a string of eight characters, followed by a carriage return. Each character (see below) indicates an associated condition, either true (Y) or false (N). Byte 1 is transmitted first. See SOH F Send Status Byte for alternative response.

Syntax

<SOH>A

Behavior

The printer response is:

- abcdefgh

Where:

Possible Values	Interpretation	Transmit Sequence
a – Y/N	Y = Interpreter busy	1
b – Y/N	Y = Paper out or fault	2
c – Y/N	Y = Ribbon out or fault	3
d – Y/N	Y = Printing batch	4
e – Y/N	Y = Busy printing	5

Possible Values	Interpretation	Transmit Sequence
f – Y/N	Y = Printer paused	6
g – Y/N	Y = Label presented	7
h – Y/N	Y = N (not used)	8

Limitations

For "Interpreter busy (imaging)", Honeywell behavior is not the same as CEE all the time. Honeywell printers will set it to Y during printing and reset it to N after printing.

SOH a Send ASCII Extended Status String

This command allows the host computer to check an extended current printer status. The printer returns a string of seventeen characters, followed by a carriage return. Most characters (see below) indicate an associated condition, either true (Y) or false (N). Byte 1 is transmitted first. See SOH F Send Status Byte.

Syntax

<SOH>a

Behavior

The printer response is:

- abcdefgh:ijklmnop:qrstuvwx

Where:

Possible Values	Interpretation	Transmit Sequence
a – Y/N	Y = Interpreter busy	1
b – Y/N	Y = Paper out or fault	2
c – Y/N	Y = Ribbon out or fault	3
d – Y/N	Y = Printing batch	4
e – Y/N	Y = Busy printing	5
f – Y/N	Y = Printer paused	6
g – Y/N	Y = Label presented	7
h – Y/N	Y = Rewinder out or fault	8
:	: = Always:	9
i – Y/N	Y = Cutter Fault	10

Possible Values	Interpretation	Transmit Sequence
j – Y/N	Y = Paper Out	11
k – Y/N	Y = Ribbon Saver Fault	12
l – Y/N	Y = Print Head Up	13
m – Y/N	Y = Top of Form Fault	14
n – Y/N	Y = Ribbon Low	15
o – Y/N	Y = N (reserved for future)	16
p – Y/N	Y = N (reserved for future)	17
:	: = Always:	18
q – Y/N	Ready (no data or signal)	19
r – Y/N	Waiting for Signal	20
s – Y/N	Waiting for Data	21
t – Y/N	Com1 has data not parsed	22
u – Y/N	Y = N (reserved for future)	23
v – Y/N	Y = N (reserved for future)	24
w – Y/N	Y = N (reserved for future)	25
x – Y/N	Y = N (reserved for future)	26

The printer response size may grow as new requirements are defined. The response will always be backward compatible and terminated with a <CR>. The user should not assume a fixed length response.

Limitations

For "Interpreter Busy" (imaging), Honeywell behavior is not the same as CEE all the time. Honeywell printers will set it to Y during printing and reset it to N after printing.

The following are not supported in Honeywell printers and are always 'N', except for q being always 'Y'.

- k – Y/N Y = Ribbon Saver Fault 12
- q – Y/N Y = Ready (no data or signal) 19
- r – Y/N Y = Waiting for Signal 20
- s – Y/N Y = Waiting for Data 21
- h – Y/N Y = Rewinder out or fault 8
- m – Y/N Y = Top of Form Fault 14

SOH B Toggle Pause

This command toggles the printer's paused state between "On" and "Off." (This is the same function achieved by pressing the PAUSE Key.)

Syntax

<SOH>B

Behavior

This command will illuminate the Paused/Stop Indicator and/or indicate PAUSED on the LCD or graphics display panel, suspend printing, and wait until one of the following occurs:

- The <SOH>B command is sent to the printer.
- The PAUSE Key is pressed.

Upon which the printer will turn the Paused/Stop Indicator "Off" and/or remove PAUSED from the LCD or graphics display, then resume operation from the point of interruption. (If the Receive Buffer is not full, an <XON> character will be transmitted from the printer.)

SOH C Stop/Cancel

This command performs the cancel print job function (same function as pressing the STOP/CANCEL key). The command clears the current format from the print buffer, pauses the printer, and illuminates the Paused/Stop Indicator. The pause condition is removed as described under <SOH>B.

Syntax

<SOH>C

Behavior

The print buffer is cleared and the Paused/Stop Indicator is illuminated (and/or PAUSED is displayed on the LCD or graphics display) as operations are suspended, until one of the following occurs:

- The <SOH>B command is sent to the printer; or
- The PAUSE Key is pressed.

Upon which the printer will turn the Paused/Stop Indicator "Off" and/or remove PAUSED from the LCD or graphics display. (If the Receive Buffer is not full, an <XON> character will be transmitted from the printer.)

SOH D SOH Shutdown

This command is ignored by the printer.

SOH E Send Batch Remaining Quantity

This command returns a four or five digit number indicating the quantity of labels that remain to be printed in the current batch, followed by a carriage return.

Returned values is four digits if specified quantity is <= 9998. Five digits for quantities specified > 9999. A value of 9999 is a special case and is to print forever and always returns 9999.

Communications latency may cause this value to be higher than actual on some printers.

Syntax

<SOH>E

Behavior

Printer response is:

- nnnn<CR> or nnnnn

Where: nnnn – Are four or five decimal digits, 0000–9999 or 00000–99999. Based on quantity specified.

SOH e Send Batch Printed Quantity

This command causes the printer to return a 5–digit number indicating the quantity of labels that have been printed in the current batch, followed by a carriage return.

Communications latency may cause this value to be lower than actual on some printers.

Syntax

<SOH>e

Behavior

Printer response is:

- nnnnn

Where: nnnnn – are five decimal digits, 00000 to 99999.

SOH F Send Status Byte

This command instructs the printer to send a single status byte where each bit (1 or 0) represents one of the printer's status flags, followed by a carriage return (see below). If an option is unavailable for the printer, the single bit will always be zero. See SOH A Send ASCII Status String.

Syntax

<SOH>F

Behavior

Printer response is:

- X

Where: "X" is a hex value byte of data 0x00 through 0xEF with bits as indicated in the "Condition" column below:

Bit*	Bit* Value	Condition
8	1 or 0	(Internal) Rewinder out or fault
7	1 or 0	Label presented
6	1 or 0	Printer paused
5	1 or 0	Busy printing
4	1 or 0	Printing batch
3	1 or 0	Ribbon out or fault
2	1 or 0	Paper out or fault
1	1 or 0	Interpreter busy (imaging)

*One is the least significant bit.

Limitations

For "Interpreter busy (imaging)", Honeywell behavior is not the same as CEE all the time. Honeywell printers will set it to Y during printing and reset it to N after printing.

SYSTEM LEVEL COMMANDS

The most commonly used commands are the System-Level Commands. These are used to load and store graphics information, in addition to printer control. System-Level Commands are used to override default parameter values (fixed and selectable) and may be used before or after Immediate Commands but cannot be issued among Label Formatting Commands.

System-Level Commands consist of:

- Attention-Getter, 0x02 or 0x7E (see Control Code Command Functions)
- Command Character
- Parameters (if any)

- STX A Set Time and Date
- STX a Enable Feedback Characters
- STX B Get Printer Time and Date Information
- STX c Set Continuous Paper Length
- STX E Set Quantity for Stored Label
- STX e Select Edge Sensor
- STX F Form Feed
- STX f Set Form Stop Position (Backfeed Command)
- STX G Print Last Label Format
- STX I Input Image Data
- STX i Scalable Font Downloading
- STX J Set Pause for Each Label
- STX k Test Communication Port
- STX L Enter Label Formatting Command Mode
- STX M Set Maximum Label Length
- STX m Set Printer to Metric Mode
- STX n Set Printer to Imperial Mode

- STX O Set Start of Print (SOP) Position
- STX o Cycle Cutter
- STX P Set Hex Dump Mode
- STX p Controlled Pause
- STX Q Clear All Modules
- STX q Clear Module
- STX R Ribbon Saver Control
- STX r Select Reflective Sensor
- STX S Set Feed Speed
- STX T Print Quality Label
- STX t Test DRAM Memory Module
- STX U Label Format String Replacement Field
- STX V Software Switch Settings
- STX v Request Firmware Version
- STX W Request Memory Module Information
- STX w Test Flash Memory Module
- STX X Set Default Module
- STX x Delete File from Module
- STX Y Output Sensor Values
- STX y Select Font Symbol Set
- STX Z Print Configuration Label
- STX z Pack Module

STX A Set Time and Date

This command sets the time and date. The initial setting of the date will be stored in the printer's internal inch counter. This date can be verified by printing a configuration label.

Syntax

<STX>AwmmddyyyyhhMMjjj

Parameters

Where:

- w – 1 digit for day of week; 1 = Monday; 7 = Sunday
- mm – 2 digits for month

- dd – 2 digits for day

- yyyy – 4 digits for year

- hh – 2 digits for hour in 24 hour format

- MM – 2 digits for minutes

- jjj – 3 digits for Julian date / constant

Sample

<STX>A1020319960855034

Result

Mon. Feb 3, 1996, 8:55AM, 034

Limitations

- When set to 000, the Julian date is automatically calculated; otherwise, the Julian date will print as entered, without daily increments. If factory defaults are restored, the actual Julian date will also be restored.

- Printers without the Real Time Clock option lose the set time/date when power is removed.

- Response format is variable. See STX T Print Time and Date.

STX a Enable Feedback Characters

Enables the feedback of ASCII hex data characters to be returned from the printer following specific events during data parsing and printing. The default value is "OFF".

Syntax

<STX>a

Behavior

Printer response:

Event	Return Characters
Invalid character	0x07 (BEL)
Label printed	0x1E (RS)
End of batch	0x1F (US)

See Reset Codes for error code information.

STX B Get Printer Time and Date Information

This command instructs the printer to retrieve its internal time and date information.

Syntax

<STX>B

Response

wmmddyyyyhhMMjjj<CR>

Where:

- w – 1 digit for day of week; 1 = Monday; 7 = Sunday
- mm – 2 digits for month
- dd – 2 digits for day
- yyyy – 4 digits for year
- hh – 2 digits for hour in 24 hour format
- MM – 2 digits for minutes
- jjj – 3 digits for Julian date / constant (see STX A Set Time and Date for details and restrictions)

Result

1020319960855034<CR>

STX c Set Continuous Paper Length

This command sets the label size for applications to using continuous media. It disables the top-of-form function performed by the Media Sensor. The sensor, however, continues to monitor paper-out conditions (see STX M Set Maximum Label Length).

Syntax

<STX>cnnnn

Parameters

Where:

- nnnn – Specifies the length of the media feed for each label format, in inches/100 or millimeters/10 (see STX m Set Printer to Metric Mode)

Sample

<STX>c0100

Result

The sample above sets in imperial mode a label length of 100, which equals 1.00 inch.

Limitations

This command must be reset to zero for edge or reflective sensing operation.

STX E Set Quantity for Stored Label

This command sets the number of labels for printing using the format currently in the print buffer. (The printer automatically stores the most recent format received in the buffer until the printer is reset or power is removed.) When used in conjunction with the <STX>G command, this will print the format.

Syntax

<STX>Ennnnn<CR>

Parameters

Where:

- nnnnn – A five-digit quantity, including leading zeros.
- <CR> – 0x0d terminates the name.

Sample

<STX>E00025
<STX>G

Result

Printer response: 25 labels of the current format in memory will be printed.

Limitations

- If no <CR> terminates the command, a four-digit quantity (nnnn) can be entered; and, specifying 9999 will cause continuous printing.

STX e Select Edge Sensor

This command enables the transmissive (see-through) sensing for top-of-form detection of die-cut and holed (notched) media. This sensor will detect a minimum gap of 0.1 inches (2.5 mm) between labels. This is the default setting.

Syntax

<STX>e

Limitations

This command is ignored when <STX>cnnnn is issued with a non-zero value for nnnn.

STX F Form Feed

This commands the printer to form feed to the next start of print.

Syntax

<STX>F

Behavior

The printer will form feed.

STX f Set Form Stop Position (Backfeed Command)

This command sets the stop position of the printed label, allowing the label to stop at a point past the start-of-print position. When the next label format is sent, the printer motor reverses direction to retract the media to the start-of-print position. If quantities of more than one label are requested, the printer will operate without backfeeding. Backfeed will then only occur when printing has stopped for a few seconds.

Syntax

<STX>fnnn

Parameters

Where:

- nnn – Is a three-digit distance from the Media Sensor, in inches/100 or mm/10. This distance is independent of the start-of-print position (<STX>O), yet it must be greater than the start-of-print position to take effect.

Sample

<STX>f230

The sample above sets a stop position distance of 230 (2.3 inches from the media sensor's eye).

STX G Print Last Label Format

This command prints a previously formatted label and restarts a canceled batch job following the last processed label. This is used when there is a label format in the buffer.

Syntax

<STX>G

Behavior

The <STX>E command is used to enter the quantity. (Without the <STX>E command, one label will print.)

STX I Input Image Data

This command downloads images to the printer. The data that immediately follows the command string will be image data.

Syntax

<STX>Iabfnn...n<CR>data

Parameters

Where:

- a – Memory Module Bank Select (see Memory Module Identifiers and Allocations).
- b – Data Type (optional):
  - 'A' – ASCII Characters 0-9, A-F, (7 bit)
- omitted – 00-FF, (8 bit)
- f – Format Designator Type:
  - 'F' – 7-bit Datamax-O'Neil image load file
  - 'B' – BMP 8-bit format, flipped, black and white (B&W)
  - b' – BMP 8-bit format, B&W
  - 'I' – IMG 8-bit format, flipped, B&W
  - 'i' – IMG 8-bit format, B&W
  - 'P' – PCX 8-bit format, flipped, B&W
  - 'p' – PCX 8-bit format, B&W
  - nn...n – Up to 16 characters used as an image name.
  - <CR> – 0x0d terminates the name.
  - data – Image data

Sample

<STX>IDpTest
data...data

Result

The sample above instructs the printer to (1) receive an 8-bit PCX image sent by the host in an 8-bit data format, (2) name the image "Test", and (3) store it in Module D

(with a .dim file extension).

Behavior

The native format for storing downloaded PCX and BMP images is RLE-2, which results in a better compression ratio for less module space usage when downloading gray-scale images and images with large black or white areas.

STX i Scalable Font Downloading

The command to download TrueType (.TTF) scalable fonts (files may be single-byte or double-byte character systems) to the printer.

Syntax

<STX>imtnnName<CR>xx...xdata...

Parameters

Where:

- m – The designator of the module where the font is to be saved (see Memory Module Identifiers and Allocations).
- t – Type of scalable font being downloaded:
    - T = TrueType
- nn – Two-digit font reference ID. Valid range is 03-99, 9A-9Z, 9a-9z (base 62 numbers).
- Name – The title, up to 15 characters, for this font.
- <CR> – 0x0d terminates the Name.
- xx...x – Eight-digit size of the font data, number of bytes, hexadecimal, padded with leading zeros.
- data – The scalable font data.

Sample

<STX>iDT52Tree Frog<CR>000087C2data...

Result

The sample above downloads a TrueType font to Module D, and assigns it the Font ID of 52 with the name "Tree Frog" and file extension .dtt. The size of the font data is 0x87C2 bytes long.

STX J Set Pause for Each Label

This command causes the printer to pause after printing each label. It is intended for use with the peel mechanism or tear bar when the Present Sensor option is not

installed.

Syntax

<STX>J

Behavior

After removing the printed label, the PAUSE Key must be pushed in order to print the next label. (The printer must be reset to clear the <STX>J command.)

STX k Test Communication Port

This command instructs the printer to transmit the Y character from the printer's port that received this command. (Failure to receive Y could indicate an interfacing problem.)

Syntax

<STX>k

Behavior

Printer response:

• Y

STX L Enter Label Formatting Command Mode

This command switches the printer to the Label Formatting Command Mode, where the printer expects to receive only Record Structures and Label Formatting Commands. Immediate, System–Level, and Font Loading commands will be ignored until the label formatting mode is terminated with E, s, or X, (see Label Formatting Commands for more information).

Syntax

<STX>L

STX M Set Maximum Label Length

This command instructs the printer move media this distance in search of the top–ofform (label edge, notch, black mark, etc.) before declaring a paper fault. A paper fault condition can occur if this setting is too close (within 0.1 inch [2.54 mm]) to the physical length of the label. Therefore, it is a good practice to set this command to 2.5 to 3 times the actual label length used. The minimum value should be at least 5" (127 mm).

Syntax

<STX>Mnnnn

Parameters

Where:

- nnnn – A four-digit length, 0000-9999, in/100 or mm/10. Maximum setting is 9999 (99.99 inches or 2540 mm). The default setting is 16 inches/ 406.4 mm.

Sample

<STX>M0500

Result

The sample above sets a maximum travel distance of 5 inches (unless the printer is in metric mode; see STX m Set Printer to Metric Mode).

STX m Set Printer to Metric Mode

This command sets the printer to interpret measurements as metric values (e.g., <STX>c0100 will equal 10.0 mm). The default is Imperial (see STX n Set Printer to Imperial Mode).

Syntax

<STX>m

STX n Set Printer to Imperial Mode

This command sets the printer to interpret measurements as inch values (e.g., <STX>c0100 will equal 1.00 inch), and is the default mode.

Syntax

<STX>n

STX O Set Start of Print (SOP) Position

This command sets the point to begin printing relative to the top-of-form (the label's edge as detected by the Media Sensor). The printer will feed from the top-of-form to the value specified in this command to begin printing.

This value operates independently of the <STX>f command.

It is not recommended to use the row adjust feature instead of this command. This is a legacy command.

Syntax

<STX>Onnnn

Parameters

Where:

- nnnn – Is a four-digit offset value in inches/100 or mm/10. The "zero" setting is the default value, and settings below 50 are adjusted back to the default value.

The default setting is "Off" and the printer assumes the natural SOP position.

Sample

<STX>O0210

The sample above will begin printing 0.1 inch closer to the leading edge of the label if the 220 (Allegro) SOP Emulation was selected, or 1.0 inch farther away from the leading edge if 110 (ProdPlus) SOP Emulation was selected.

STX o Cycle Cutter

This command causes the optional cutter mechanism to immediately perform a cut after all previously received commands are executed. The cutter must be installed, enabled and the interlock(s) closed for operation.

Syntax

<STX>o

STX P Set Hex Dump Mode

This command instructs the printer to assume Hex Dump Mode. Instead of a formatted product, data sent following this command will be printed in its raw ASCII format. To capture all data, labels should be at least four inches (102 mm) long and as wide as the maximum print width. This command has the same effect as turning "On" the printer while depressing the FEED Key (return normal operation by manual reset).

Syntax

<STX>P

Response

Printer response is data dependent (layout may vary).

STX p Controlled Pause

This command will cause the printer to pause only after all previously received commands are executed, often useful between label batches. (This command will not clear the pause condition; see SOH B Toggle Pause).

Syntax

<STX>p

STX Q Clear All Modules

This command instructs the printer to clear all Flash and DRAM modules; see the printer manual for module options. All stored data will be erased.

Syntax

<STX>Q

STX q Clear Module

This command clears the selected Flash or DRAM module. During normal operations if a module becomes corrupted (identifiable when the printer responds with a "No Modules Available" message to a <STX>W command) it must be cleared. All stored data will be destroyed.

Syntax

<STX>qa

Parameters

Where:

- a – Memory module designator (see Memory Module Identifiers and Allocations).

STX R Ribbon Saver Control

This command enables the operation of the optional Ribbon Saver. It is the only command used to control the Ribbon Saver. Its operation is continuous when enabled. The printer must be set to thermal transfer (ribbon) printing mode then, during operation, the Ribbon Saver engages automatically, lifting when the minimum amount of label white space is exceeded.

Syntax

<STX>Rx

Parameters

Where x is:

- Y – Enabled (Default = Menu selection)
- N – Disabled

Sample

<STX>RY

Result

The sample above will turn the ribbon saver on.

STX r Select Reflective Sensor

This command enables reflective (black mark) sensing for top-of-form detection of rolled butt-cut, and fan-fold or tag stocks with reflective marks on the underside. The Media Sensor will detect a minimum mark of 0.1 inches (2.54 mm) between labels (see the Operator's Manual for media requirements). The end of the black mark determines the top of form. Use the <STX>O command to adjust the print position.

Syntax

<STX>r

STX S Set Feed Speed

This command controls the output rate of the media when the FEED Key is pressed, or when feeding white space at the end of a label. See Speed Ranges for more information.

Syntax

<STX>Sn

Parameters

Where:

- n – Is a letter value starting with 'A' and representing the desired speed in one-half IPS increments

Behavior

This is not supported in Honeywell printers.

STX T Print Quality Label

This command instructs the printer to produce a Print Quality label, a format comprised of different patterns and barcodes useful in printer setup. To capture all printed information, use the labels as wide as the maximum print width and at least four inches (102 mm) long (see Print Resolutions and Maximum Width & Record Column Values).

Syntax

<STX>T

STX t Test DRAM Memory Module

This command is to perform a system DRAM Module memory test. The printer returns a one-line message stating the module condition (no message is returned if a module is unavailable).

Syntax

<STX>t

Parameters

None

Behavior

Printer must have "Feedback Characters" set to "Enable" and printer returns the Module tested, Module Size, and DRAM test results.

"MODULE D: 25600K Ram Tested Good".

STX U Label Format String Replacement Field

This command places new label data into format fields to build a label. Two options are available: Exact Length and Truncated Length.

To easily keep track of fields, place all of the fields to be updated with the command at the beginning of the label format. A maximum of 99 format fields can be updated. Fields are numbered consecutively 01 to 99 in the order received.

Exact Length Replacement Field Functions – The new data string must equal the original string length and contain valid data. When the dynamic data is shorter than the length of the originally defined data field, then field will be padded with blanks (or zero when the Format Record header specifies a numeric barcode).

Truncation Replacement Field Functions – A variant of the <STX>U command includes the truncate option "T", where dynamic data shorter than the originally defined field length will not be padded and the original maximum field length is maintained for subsequent replacements.

Syntax

<STX>UTnnss...s<CR>

Parameters

Where:

- T – truncation (optional)

- nn – Is the format field number, 2 digits.

- ss...s – Is the new string data, followed by a <CR>

Exact Length Sample

```
<STX>L
1A1100001000100data field 1
16110000110011Odata field 2
16110000120012Odata field 3
Q0001
E
<STX>U01123
<STX>U02New data F2
<STX>E0002
<STX>G
```

Result

The sample above produces three labels. The first is formatted with the commands between <STX>L and E. The next two labels print with the replacement data contained in the <STX>U commands (see STX E Set Quantity for Stored Label and STX G Print Last Label Format). The barcode is the same length: 3 digits and nine spaces.

Truncated Length Sample

```
<STX>L
1A1100001000100data field 1<CR>
16110000110011Odata field 2<CR>
16110000120012Odata field 3<CR>
Q0001
E
<STX>UT01123<CR>
<STX>U02New data F2<CR>
<STX>E0002
<STX>G
```

Result

The sample above produces three labels. The first is formatted with the commands between <STX>L and <STX>E. The next two labels print with the replacement data contained in the <STX>U commands (see <STX>E and <STX>G). The barcode is shortened; it only has three digits (and no spaces).

STX V Software Switch Settings

This command controls the printer options, where the appropriate value allows the option(s) to be "On" or "Off." Each option has a corresponding bit whose value is "1" when enabled. The tables below indicate the bit assignments and corresponding command value needed to enable the desired option(s). Printer options are set by

entering selections through the menu. The software setting command allows two of these option settings to be modified without returning to the menu.

Syntax

<STX>Vn

Parameters

Where:

- n – Is a single digit ASCII numeric value from 0-F. The value of n is used to override the power-up option settings. Reset or power-up returns the printer to the original settings.

Sample

<STX>V5

The sample above corresponds to setting bits 0 and 2, creating a command value of 5. When applied, this enables the Present Sensor and Cutter options.

Use the **Bit Assignment** table to determine the command value *n* in the **Command Values for Bits Assigned** table (e.g., the command value 5 sets the bits 0 and 2 to "1").

Bit Assignment	Printer Option
0	Cutter
1	N/A
2	Present Sensor
3	N/A

Command Values for Bits Assigned				
n Value	Bit			
	3	2	1	0
0	0	0	0	0
1	0	0	0	1
4	0	1	0	0
5	0	1	0	1

STX v Request Firmware Version

This command causes the printer to send its version string (same as printed on the configuration label). The version may be different from printer to printer.

Syntax

<STX>v

Sample Response

- VER: PC43d, K10.15.017249

STX W Request Memory Module Information

This command requests a memory module directory listing. Results may vary depending on printer class, model, or firmware version.

Syntax

<STX>W[b][c]a

Parameters

Where:

- b – s optional, list file size also
- c – e optional, list file extension also
- a – Data type:
- F – Downloaded fonts
- G – Graphics (Image)
- L – Label formats
- C – Configuration files
- X – Menu language files
- N – Plug-ins
- M – Miscellaneous type files
- f – Resident fonts
- p – Entire module content (Legacy and H, A and M Print Listing Command); not supported for I-Class and E-Class
- * – All types

Behavior

For Menu language files (WX) and Plug-ins (WN) responds with "Available Memory" but not expected to list any files in this phase.

For Entire module content (Wp), this will not be supported in Honeywell printers. There is no response to any Wp commands.

Sample response:

<STX>WF

Printer response:

MODULE: D
S50 92244ttf50
AVAILABLE BYTES: 945152
MODULE: G
AVAILABLE BYTES: 852480
MODULE: X
AVAILABLE BYTES: 852480
MODULE: Y
AVAILABLE BYTES: 852480

Additional Information

Sample response if size and extension are specified:

<STX>Wse*

Printer response:

- Module: D
- testmsc.msc,13923 BYTES
- Available Bytes: 22716K
- Module: G
- testfont1.dtt,95725 BYTES
- testfont2.dbm,109400 BYTES
- Available Bytes: 54912K

STX w Test Flash Memory Module

This command performs a system Flash Memory test. The time for each test will vary from 20 to 120 seconds, depending upon the size of the module. All stored data will be destroyed. If no module is present, there will be no printer response.

Syntax

<STX>wa

Parameters

Where:

- a – Module designator (see Memory Module Identifiers and Allocations).

Sample

<STX>wa

Result

Module A: xxxxK results

Where:

- A – Module tested.
- xxxx – Module size in Kbyte
- results – Test results given as "Good" or "Bad".

STX X Set Default Module

This command, typically used prior to the loading of HP/PCL-4 formatted bitmapped fonts (see Font Loading Commands), is designed to allow the user to select between modules when downloading information. The default module is one of the following:

1. The first alpha designator of the existing modules if item 2 has not occurred.
2. The module selected by this command.

Syntax

<STX>Xa

Parameters

Where:

- a – Module designator (see Memory Module Identifiers and Allocations).

Sample

<STX>XB

Result

The sample sets "B" as the default module.

STX x Delete File from Module

This command removes a specific file from the specified module. The file name is removed from the module directory and thus the file cannot be accessed.

Syntax

<STX>xmtnn...n<CR>

Parameters

Where:

- m – Module designator (see Memory Module Identifiers and Allocations)
- t – The file type identification code:
- G – Image file
- L – Label format file
- F – Downloaded bitmapped font file
- S – Downloaded scalable font file
- C – Configuration file
- X – Language file
- N – Plug-in file
- M – Miscellaneous file type
- U – Unknown type – must use extension if applicable
- nn...n – The file to delete, where:

  - Font (bitmapped), three character font identifier;
  - Font (scalable), two character font identifier;
  - Graphic name, up to sixteen case sensitive alphanumeric characters; or,
  - Label format name, up to sixteen case sensitive alphanumeric characters

Sample

<STX>xDS50

Result

The sample above deletes a downloaded scalable font with ID 50 from Module D.

STX Y Output Sensor Values

This command causes a sensor value response. When <STX>Y is received, the printer will respond with the digitally converted values of the internal analog sensors (see below). To repeat the display of values, send the printer a "SPACE" character (20 hexadecimal); or, send <ESC> to terminate this function.

The printer must have Feedback Characters enabled for this command to function. (Feedback Mode [Characters] can be enabled via command or menu setting; see the FM Feedback Mode command for additional information).

Syntax

<STX>Y

Response

Thermistor ADC: 0048 Reflective ADC: 0000 Transmissive ADC: 0000 24 Volt ADC: 0217 Contrast ADC: 0093 TOF Adjust ADC: 0170 Ribbon ADC: 0125 Battery Level: Good <CR>

Where Battery Level is:

- Good – Indicates a sufficient battery charge.
- Low – Indicates an insufficient charge.

Limitations

- Equipped sensors vary with printer, model, and options.
- Some readings require printer–controlled paper movement to produce a meaningful value.
- Media Sensor readings require the appropriate sensor selection, transmissive (<STX>e) or reflective (<STX>r), and label stock placed in the sensor.

STX y Select Font Symbol Set

This command selects the scalable font symbol set. The selected symbol set remains active until another symbol set is selected. Option dependent and not all symbol sets can be used with all fonts. See Symbol Sets and Single and Double Byte Character Font Mapping for more information.

Syntax

<STX>ySxx

Parameters

Where:

- S – Byte-size designation:
    - S – Single byte symbol set
    - U – Double byte symbol set
    - xx – Symbol set selection.

Sample

<STX>ySPM

Result

The sample above selects the PC–850 multilingual set.

STX Z Print Configuration Label

This command causes the printer to produce a Database Configuration Label. To capture all printed information, use the labels as wide as the maximum print width and at least four inches (102 mm) long (see Print Resolutions and Maximum Width & Record Column Values).

Syntax

<STX>Z

Behavior

The printed configuration in configuration label will include both Printer Configuration and DPL Configuration. The printer settings included in DPL Configuration are as follows:

- Default Module
- Single Byte Symbol Set
- Double Byte Symbol Set
- Font Emulation
- SCL Font Bold Factor
- Format Attributes
- Label Rotation
- DPI Emulation
- DPL Emulation
- Column DPI Emulation
- Row DPI Emulation
- SOP Emulation
- Label Store
- Units of Measure
- Column Adjust
- Row Offset
- Pause Mode
- Use British Lbs
- Feedback Characters
- Control Code Sets
- Custom SOH Char
- Custom STX Char

- Custom CR Char
- Custom CNTBY Char

Limitations

Printed information will vary according to printer, model, firmware version, and options.

STX z Pack Module

Ignored. This command causes the printer to reclaim all storage space associated with all deleted files on the specified module (see STX X Set Default Module and STX x Delete File from Module).

Syntax

<STX>zm

Parameters

Where:

- m – The module identification character (see Memory Module Identifiers and Allocations).

EXTENDED SYSTEM LEVEL COMMANDS

Extended System-Level Commands are extensions to the System-Level Commands and provide an extra level of printer control, some of which can be used to set the printer's default database values.

- STX K}E Empty Sensor Calibration
- STX K}M Manual Media Calibration
- STX K}Q Quick Media Calibration
- STX KaR Read Data from RFID Tag
- STX KaW Write Data to RFID Tag
- STX Kb Backfeed Time Delay
- STX KC Get Configuration
- STX Kc Configuration Set
- STX KD Database Configuration
- STX Kd Set File as Factory Default
- STX KE Character Encoding
- STX KF Select Factory Defaults
- STX Kf Set Present Distance
- STX KH Dot Check
- STX KI GPIO Input
- STX Kn NIC Reset
- STX KO GPIO Output
- STX Kp Module Protection
- STX Kr Resettable Counter Reset
- STX KtA Write Application Family Identifier (AFI) to Tag
- STX KtD Write Data Storage Format Identifier (DSFID) to Tag
- STX KtE Write Electronic Article Surveillance (EAS) Bit
- STX KtH Read and Feedback Tag Information to Host
- STX KtR Read Data from RFID Tag

- STX KtU Read Unique Serial Number from RFID Tag

- STX KtW Write Data to RFID Tag

- STX KuB Read Data from Gen2 Tag Section

- STX KuF Send RFID Device Firmware Version

- STX KuJ Write Data to Gen 2 Tag Section

- STX KuR Read Data from RFID Tag

- STX KuW Write Data to RFID Tag

- STX KV Verifier Enable/Disable

- STX Ky Download Plug-in File

- STX KZ Immediately Set Parameter

STX K}E Empty Sensor Calibration

This command causes the printer to determine and save the calibration value for an empty media sensor condition. This calibration function should be performed when no material is installed in the media sensor.

Depending upon the printer model, different front panel LED flash sequences and printer responses (below) will indicate calibration progress and outcome; see the corresponding printer operator manual for LED flash sequences details.

Printer Response	Alternate
REMOVE STOCK[CR]	N/A
ENTER TO CONTINUE[CR]	N/A
PASSED CALIBRATION[CR]	FAILED CALIBRATION[CR]

STX K}M Manual Media Calibration

This command causes the printer to save the sampled calibration values as an operator places different portions of label stock within the media sensor.

Depending upon the printer model, different front panel LED flash sequences and printer responses (below) will indicate calibration progress and outcome; see the corresponding printer operator manual for LED flash sequences details.

Sending <ESC> to the printer instead of <CR> will terminate the process and leave the TOF Sensor values unchanged.

Printer Response	Alternate
LOAD STOCK[CR] ENTER TO CONTINUE[CR]	N/A

Printer Response	Alternate
LOAD MARK[CR] ENTER TO CONTINUE[CR]	LOAD GAP[CR]
REMOVE STOCK[CR] ENTER TO CONTINUE[CR]	N/A
PASSED CALIBRATION[CR]	FAILED CALIBRATION[CR]

STX K}Q Quick Media Calibration

This command causes the printer to move media, sample, and then save sensor samples as calibration values. This calibration function should be performed with media installed over the TOF sensor in the printer.

Depending upon the printer model, different front panel LED flash sequences and printer responses (below) will indicate calibration progress and outcome; see the corresponding printer operator manual for LED flash sequences details.

Printer Response	Alternate
FAILED CALIBRATION[CR] ADJUST GAIN SETTING[CR]	N/A
PASSED CALIBRATION[CR]	FAILED CALIBRATION[CR]

STX KaR Read Data from RFID Tag

Direct Mode – Generic Read/Write Interface

This command instructs the RFID device to read data from the tag and then place that data into a replaceable field. It is expected that the tag transponder will be within the read / write distance of the RFID programming device; otherwise, "Void" will be printed in the text or barcode label field.

Syntax

<STX>KaRAaaabbbcdee<CR>

Parameters

Where:

- A – Optional, for data in the ASCII format.
- aaa – The number of bytes to read.
- bbb:
    - HF – Starting block number (000 – maximum block number, which is dependent upon the transponder manufacturer).

- UHF – Should be 000.
- c – Command 1. Reserved. Should be 0.
- d – Command 2. Reserved. Should be 0.
- ee – Field number in which to place the data (must be 01, 02, 03, etc.) matching the order of Label Formatting command U. The 00 value will send read data to the host with no printing.

Sample

<STX>L
1911A1802000010TEXT
U
X
<STX>KaR0000010001
<STX>G

Result

The sample above creates a replaceable text field (01), recalls data from the RFID tag block zero (reading only one block), and prints the data in the location specified by the replaceable field.

Since there are two digits per each hex value, replaceable fields should be twice as long than if using ASCII data (e.g., the character "A" would be returned as "41").

STX KaW Write Data to RFID Tag

Direct Mode – Generic Read/Write Interface

This command instructs the RFID device to write data to the tag. It is expected that the tag transponder will be within the read / write distance of the RFID programming device; otherwise, a warning will occur and a warning message (Read / Write Fail) will be displayed.

Syntax

<STX>KaWAaaabbbcdee…e<CR>

Parameters

Where:

- Aaaa – Optional – for data in the ASCII format, followed by the byte count (000–999).
- aaa – The number of bytes to read.
- bbb:
    - HF – Starting block number (000 – maximum block number, which is depend–ent upon the transponder manufacturer).
    - UHF – Should be 000.

- c – Command 1. Reserved. Should be 0.
- d – Command 2. Reserved. Should be 0.
- ee...e – Data to be encoded on RFID tag (HF – the last used block will be null-padded, if necessary). UHF ASCII formats must be 8 or 12 characters; and, UHF Hexadecimal formats must be 16 or 24 character pairs.

Sample

<STX>KaW0000054455354[CR]

Result

The sample above writes the data "TEST" at block zero.

STX Kb Backfeed Time Delay

This command controls the time a printed label is allowed to remain "presented" before being retracted to the start of print position.

Syntax

<STX>Kbnnn<CR>

Parameters

Where:

- nnn – Seconds/10 (0 to 255)

STX KC Get Configuration

This command returns the configuration of the printer. The form of the returned data is similar to that of a printed Configuration Label. This command should be parsed by KEYWORDS, not character positions. Each line is terminated by a CR (0x0d) & LF (0x0a).

Syntax

<STX>KC<CR>

Behavior

Responds with Printer Configuration and DPL configuration information.

Note: The format of the displayed information will vary with printer, model, firmware version, and equipped options.

STX Kc Configuration Set

This command specifies the Power-up Configuration parameter values for the printer and is equivalent to using other system commands followed by the <SOH>U. This command is intended for easily configuring a custom setup, but NOT for dynamic configuration changes. Configuration commands are examined for differences relative to the current configuration, and have no impact when no differences exist.

For details about the configuration parameters, see Configuration Commands.

Printers will reset upon completion of a command stream containing parameter value changes. In any case, no commands should be sent to the printer until this reset is complete. Other command highlights include the following:

- These parameter values are equivalent to changing the respective menu settings and do not affect the factory default settings of the printer.
- If separated by a semi-colon (;), multiple parameter values may be sent in a single command stream; see sample below.
- All values are stored in Flash memory and remain in effect until new values are received or until factory defaults are restored.
- If system commands are sent that override the Power-up Configuration value(s), the Power-up Configuration value(s) will be restored the next time the printer is powered "On" or is reset.
- These parameters are the same as those found in the Menu System (display equipped models). The respective functions are documented in the appropriate Operator's Manual. Not all commands are effective on all printers.

Note: Illegal or out of range parameter values may have unpredictable results. In addition, media sensing scaling values, TOF Bias, etc. may not be effective on other same-type printers due to hardware tolerances.

Syntax

<STX>Kcaa1val1[;aaIvalI][;aanvaln]<CR>

Parameters

Where:

- aa1, aaI, aan – Are two letter parameter names.
- val1, valI, valn – Are parameter values, with ranges appropriate for the associated parameter.

Sample

<STX>KcPA120;CL600;STC

Result

The sample above sets the Present Adjust to 120 dots, and the Sensor Type to Continuous with a label length of six inches.

The following tables lists the configuration set (<STX>Kc) commands that will be supported:

Parameter Name	Parameter	Value / Range	Units / Interpretation	Command Equivalent
Alignment Length	AL	0 – 999	1/100 inch	N/A
Alternate Gap Type (RL3e/RL4e only)	GA	E, D	E = Enabled, D = Disabled	N/A
Avalanche	AV	See AV command details.	See AV command details.	N/A
Backup After Print	BA	Y, N	Y = Enabled, N = Disabled	N/A
Backup Delay	BD	0 – 255	1/50 second	N/A
Backup Label	BL	0, 3, 4	0 = Disabled, 3 = Active Low, 4 = Active High	N/A
Backup (Reverse) Speed	BS or bS	Alpha character	Model specific ranges (see Speed Ranges).	pa
Blue Tooth	BT	See BTcommand details.	See BT command details.	N/A
British Pound	BP	Y, N	Y = Enabled, N = Disabled	N/A
Buzzer Enable	BZ	Y, N	Y = Enabled, N = Disabled	N/A

Parameter Name	Parameter	Value / Range	Units / Interpretation	Command Equivalent
Column Adjust Fine Tune	CF	+ / – dots	Resolution specific (see Column, Present, & Row Adjust Fine Tune Range).	N/A
Column Offset	CO	0 – 9999	1/100 in. or 1/10 mm	Cnnnn
Comm Heat Commands	CH	Y, N 1, 0	Y = Enabled, N = Disabled, 1 = Enabled, 0 = Disabled	N/A
Comm Speed Commands	CS	Y, N 1, 0	Y = Enabled, N = Disabled, 1 = Enabled, 0 = Disabled	N/A
Comm TOF Commands	CT	Y, N	Y = Enabled, N = Disabled	N/A
Configuration Upgrade Package Parameters	CU	See CU command details.	See CU command details.	N/A
Continuous Label Length	CL	0 – 9999	1/100 in. or 1/10 mm	<STX>c
Control Codes	CC	S, 1, 2	S = Standard, 1 = Alternate, 2 = Alternate-2	N/A
Cutter Equipped	CE	A/Y, E, N/D A, E/Y, N	A or Y = Auto, E = Enabled, N or D = Disabled, A = Auto, E or Y = Enabled, N = Disabled	<STX>V

DPL Command Reference

Parameter Name	Parameter	Value / Range	Units / Interpretation	Command Equivalent
Darkness	DK	1 – 64	N/A	N/A
Default Module	DM	D, G A, B	Module Letter	<STX>X
Delay Rate (Test Labels)	DR	0 – 120	Seconds	N/A
Disable Symbol Set Selection	NS	Y, N	Y = Enabled, N = Disabled	N/A
Display Mode	GD	S, E	S = Standard, E = Enhanced	N/A
Double Byte Symbol Set	DS	2–byte alpha character	AA – ZZ, printer resident symbol set	<STX>y, ySxx
DPI Emulation	DE	152, 200, 300, 400, 600	Dots per inch	N/A
Empty Sensor Level	EV	0 - 255	N/A	N/A
End Character	EN	D	N/A	N/A
End Of Print	EP	1, 2, 3, 4	1 = Low Pulse, 2 = High Pulse, 3 = Active Low, 4 = Active High	N/A
ESC Sequences	ES	Y, N	Y = Enabled, N = Disabled	N/A
Fault Handling	FH	L, D, R, B	See FH command details.	N/A
Feed Speed	SS or sS	Alpha character	Model specific ranges (see Speed Ranges).	Sa
Feedback Mode	FM	Y, N	Y = Enabled, N = Disabled	<STX>a

Parameter Name	Parameter	Value / Range	Units / Interpretation	Command Equivalent
Font Emulation	FE	0, 1, 2	0 = No Substitution, 1 = Sub CG Times SA0, 2 = Sub User S50	N/A
Format Attribute	FA	X, O, T	X = XOR, O = Opaque, T = Transparent	An
Gain Reflective Value	GR	0 – 31	N/A	N/A
Gap / Mark Value	GM	0 – 255	N/A	N/A
GPIO Equipped	GE	A, V, N, 2	A = Applicator, V = Verifier, N = Disabled, 2 = Applicator2	N/A
GPIO Error Pause	GP	E, D	E = Enabled, D = Disabled	N/A
GPIO Slew	GS	0 – 4	0 = Standard, 1 = Low Pulse, 2 = High Pulse, 3 = Active Low, 4 = Active High	N/A
Head Bias	HB	L, R, C	L = Leftmost dot is zero, R = Rightmost dot is zero, C = Center	N/A
Head Cleaning	HC	0 – 9999	Inches (or centimeters) multiplied by 1000	N/A
Heat	HE	0 – 30	N/A	Hnn
Host Timeout	HT	1 - 60	Seconds	N/A

Parameter Name	Parameter	Value / Range	Units / Interpretation	Command Equivalent
Ignore Control Codes	IC	Y, N 1, 0	Y = Enabled, N = Disabled, 1 = Enabled, 0 = Disabled	N/A
Ignore Distances	IE	1, 0	1 = Enabled, 0 = Disabled	N/A
Imaging Mode	IL	M, S	M = Multiple label, S = Single label	N/A
Input Mode	EM	0, 1, 3, 5, 7, 8, 9, 10, 11	0 = DPL, 1 = Line, 3 = PL-Z, 5 = PL-I, 7 = PL-B, 8 = PL-E, 9 = Auto, 10 = CPCL, 11 = EasyPrint	N/A
Internal Module	IM	100 – up to max. available (see Memory Module Identifiers and Allocations).	Kbytes	N/A
Label Alignment	LA	N, A, Y	See LA command details.	N/A
Label Rotation	LR	Y, N	Y = Rotate 180, N = None	N/A
Label Store	LM	F, S	F = Fields, S = States & Fields	N/A

Parameter Name	Parameter	Value / Range	Units / Interpretation	Command Equivalent
Label Width	LW	0075 – head width (see Print Resolutions and Maximum Width & Record Column Values).	1/100 inch	<STX>KW
Language Select	LS	String	Language Name	N/A
Legacy Emulation	LE	N, A, P, L, M, X	N = None, A = Allegro, P = Prodigy, L = Prodigy Plus, M = Prodigy Max, X = XL	N/A
Mark Value	MV	0 - 255	N/A	N/A
Maximum Length Ignore	SM	0, 1	0 = Normal processing, 1 = Ignore	N/A
Maximum Length	ML	0 – 9999	1/100 inch	<STX>M
Media Type	MT	D, T	D = Direct, T = Thermal Transfer	N/A
Menu Mode	MM	U, A	U = User, A = Advanced	N/A
Module Command	MCC	Z, G	See MCC command details.	N/A
Network Configuration	NE	See NE command details.	See NE command details.	N/A

DPL Command Reference

Parameter Name	Parameter	Value / Range	Units / Interpretation	Command Equivalent
No Reprint	NR	Y, N	Y = Enabled, N = Disabled	N/A
Option Feedback	OF	D, Rx, S	See OF command details.	N/A
Paper Empty	PO	0 – 9999	1/100 inch	N/A
Paper Value	PV	0 – 255	N/A	N/A
Parallel Direction	PP	X, Z	See PP command details.	N/A
Password Set	PW	A – Z, 0 – 9	Four characters (or, if security is enabled then eight characters).	N/A
Pause Mode	PM	Y, N	Y = Enabled, N = Disabled	<STX>J
Peel Mode	PE	Y, N	Y = Enabled, N = Disabled	N/A
Plug and Play ID Type	UN	Y, N	Y = Unique, N = Static	N/A
Present Adjust Fine Tune	PJ	+ / – dots	Dots, model specific (see Column, Present, & Row Adjust Fine Tune Range).	N/A
Present Distance	PD	0 – 400	1/100 inch	<STX>Kf
Present Sensor Equipped	PS	A/Y, E, N/D	A or Y = Auto, E = Enabled, N or D = Disabled	<STX>V
Print Contrast	PC	0 – 64	N/A	N/A
Printer Level	PL	000000 – FFFFFF	Hex Codes	N/A
Print Speed	pS	Alpha character	Model specific ranges (see Speed Ranges).	Pa

Parameter Name	Parameter	Value / Range	Units / Interpretation	Command Equivalent
Query Configuration	QQ	Q, K	N/A	N/A
Reflective Paper Value	RV	0 – 255	N/A	N/A
Retract Delay	RW	1 – 255	Specified value times ten milliseconds	N/A
Rewinder Adjust	RR	-xx, +yy	Applied torque, where –30 to +15 is the valid range.	N/A
Rewinder Equipped	RM	A/Y, E, N/D	A or Y = Auto, E = Enabled, N or D = Disabled	N/A
RFID Configuration	RI	See RI command details.	See RI command details.	N/A
Ribbon Low Diameter	RL	100 – 200	1/100 in.	N/A
Ribbon Low Pause	RP	Y, N	Y = Enabled, N = Disabled	N/A
Ribbon Low Signal	RS	3, 4	3 = Active Low, 4 = Active High	N/A
Ribbon Saver Equipped	RE	A, D, E, N, Y	See RE command details.	N/A
Row Adjust Fine Tune	RF	+ / – dots	Resolution specific (see Print Resolutions and Maximum Width & Record Column Values).	N/A
Row Offset	RO	0 – 9999	1/100 in.	Rnnnn
Save As Filename	SF	Alphanumeric string	Up to 16 characters	N/A
Scalable Font Bolding	FB	1 – 36	N/A	N/A

Parameter Name	Parameter	Value / Range	Units / Interpretation	Command Equivalent
Scalable Font Cache	SC	100 – 8192	Kbytes	N/A
Scanner Configuration	SN	B, C, D, H, M, V	See SN command details.	N/A
Security Lock	Sl	N, Y, T	See Sl command details.	N/A
Sensor Gain Value	SG	0 - 32	N/A	N/A
Sensor Type	ST	G, C, R	G = Gap (edge), C = Continuous, R = Reflective	<STX>e, <STX>r, <STX>c
Serial Port	SP	xyz	See SP command details.	N/A
Single Byte Symbol Set	AS	2-Byte alpha character	AA – ZZ, printer resident symbol set	<STX>y, ySxx
Slew Speed	FS	Alpha character	Model specific ranges (see Speed Ranges).	<STX>KZSx
SOP Adjust	SA	0 – 255 (128 nominal)	N/A	<STX>O
SOP Emulation	SE	A, L, P, D	A = Allegro, L = Prodigy Plus, P = Prodigy, D = Disable	N/A
Start of Print	EQ	3, 4	3 = Active Low, 4 = Active High	N/A
Stop Location	SL	A, H, P, C, T, N	N/A	N/A
Switch Settings	SV	Y, N	Y = Processed, N = Ignore	N/A
Tear Position	PT	0 - 255	N/A	N/A
TOF Precedence	TP	Y, N	Y = Enabled, N = Disabled	N/A

Parameter Name	Parameter	Value / Range	Units / Interpretation	Command Equivalent
Unit of Measure	UM	M, I	M = Metric, I = Imperial	<STX>m, <STX>n
User Label Mode	UD	Y, N	Y = Enabled, N = Disabled	N/A
User Terminator	UT	ON	N/A	N/A
Verifier Equipped	VE	A, D, E, N, Y	See VE command details.	N/A

STX KD Database Configuration

This command, stored in Flash memory for future power-ups, controls the printer's environment and operates as a pseudo DIP switch. The <STX>Kc command is recommended for use over <STX>KD.

Syntax

<STX>KDwxyz<CR>

Parameters

Where w, x, y, and z are binary values with respective bit settings as defined in the following table. (Bit 0 is least significant.)

<STX>KD Parameter	Bit Number	Function	Value(s)
w	0 – 2	BAUD Rate / Set Test Mode	0 = 9600, 1 = 600, 2 = 2400, 3 = 19200, 4 = 4800, 5 = 38400, 6 = 1200, 7 = 9600 Test Mode
	3	Word Length and Parity	0 = 8 bits, no parity; 1 = 7 bits, even parity
	4 – 5	Unused	Set to 0
	6	Always 1	Set to 1
	7	Always 0	Set to 0
x	0	Print Method	0 = direct thermal, 1 = thermal transfer
	1	Present Sensor	0 = not equipped, 1 = equipped
	2	Control Character[1]	0 = standard, 1 = Alternate characters
	3	Cutter	0 = disabled, 1 = enabled
	4	Ignore Host Distance[2]	0 = disabled, 1 = enabled
	5	Alt–2 Control Codes[1]	0 = disabled, 1 = Alternate-2 characters
	6	Always 1	Set to 1
	7	Always 0	Set to 0
y	0 – 1	Sensor Type	0 = gap, 1 = reflective, 2 = continuous
	2	Linerless	0 = not equipped, 1 = equipped
	3 – 5	Unused	Set to 0
	6	Always 1	Set to 1
	7	Always 0	Set to 0

<STX>KD Parameter	Bit Number	Function	Value(s)
z	0 - 1	Reserved	Set to 0
	2	Reserved	Set to 0
	3 - 5	Unused	Set to 0
	6	Always 1	Set to 0
	7	Always 0	Set to 0

[1] Selects the values of the control characters. See Control Code Command Functions for more information.

[2] Ignore Host Distance disregards <STX>O and <STX>f commands (in case host software sends values that may be inappropriate). Use the <STX>KD command or the Setup Menu to enable this feature.

Sample

<STX>KD@H@@<CR>

Result

The sample configures 9600 baud, 8-bit words, no parity, with direct thermal printing, gap sensing, standard control characters, and a cutter.

STX Kd Set File as Factory Default

This command selects the specified file name as the "factory default" configuration. After execution, subsequent "Select Factory Default" commands will configure the printer to this file's configuration using one of the following methods:

• <STX>KF command.

• Power-up the printer while pressing the PAUSE and CANCEL Keys.

• Via the menu SYSTEM SETTINGS / SET FACTORY DEFAULTS entry.

Syntax

<STX>KdName<CR>

Parameters

Where:

• Name – The name, up to 16 characters, of the file.

• <CR> – 0x0d terminates the name.

Sample

<STX>KdPlant1<CR>

Result

The sample selects the configuration file Plant1 as the default factory configuration.

STX KE Character Encoding

This command is provided primarily as a means for users of 7-bit communication and to embed control characters and extended ASCII characters in their data streams. Any character in the DPL data stream may be substituted with a delimited two-character ASCII hexadecimal numeric equivalent.

The command allows the delimiting character to be selected, and the encoding to be enabled or disabled. When character encoding is enabled, the printer will decode any ASCII hexadecimal numeric pairs following the delimiter as single-byte values. Character encoding is used where control characters cannot be transmitted or where control characters within data may prematurely terminate a label format record.

Although the delimiter may be changed at any time (except within a label format definition), there cannot be more than one defined delimiter, and character encoding must be disabled with <STX>KEN prior to re-enabling regardless of any change in the delimiter.

Syntax

<STX>KEex<CR>

Parameters

Where:

- e –
    - Y - character encoding enabled
    - N - character encoding disabled
- x - Delimiter: one ASCII character (Do not include when e = N)

Sample

<STX>KEN
<STX>KEY\
<STX>L
1u0000001200120[)>\1E\01\1D\...\04\
E

Result

The sample above disables, and then enables character encoding with the backslash (\) as the delimiter. A UPS MaxiCode will be formatted using a data string interpreted as follows: [)>R S01GS...EOT<CR> then formatting is terminated.

Character Encoding Syntax

This syntax requires at least two hexadecimal ASCII digits (0-9, A-F) delimited by the character specified in the <STX>KE command. The number of hexadecimal digits between the delimiter pair must be even.

Syntax

xaa[bbcc...nn]x

Parameters

Where:

- x – One byte delimiter, 0 to ff16, leading and trailing
- aa – 2 bytes, ASCII, hexadecimal encoded, range each character: 0 – 9, A – F
- bb – 2 bytes, ASCII, hexadecimal encoded, range each character: 0 – 9, A – F (optional)
- cc – 2 bytes, ASCII, hexadecimal encoded, range each character: 0 – 9, A – F (optional)
- nn – 2 bytes, ASCII, hexadecimal encoded, range each byte: 0 – 9, A – F (optional)

A delimiter pair with no ASCII hexadecimal pairs between (e.g., \\) will be interpreted as one byte whose value is that of the delimiting character, allowing the assigned delimiter to be interpreted as itself rather than as the delimiter.

A delimited string that contains either a non–valid hexadecimal character (e.g., FX) or an odd number of bytes will be treated as an illegal string and, therefore, not correctly decoded.

Character Encoding Examples

In the following partial datastreams it is assumed that character encoding is enabled and that the selected delimiter, a backslash (\), has been transmitted to the printer (i.e., <STX>KEY\). In each example, the printer has not received an unpaired delimiter prior the example.

Partial Sample Data Stream	Interpretation
AB\\CE	5 bytes AB\CE with values 41_{16}, 42_{16}, $5C_{16}$, 43_{16}, 44_{16}

Partial Sample Data Stream	Interpretation
\ABCDEF\	3 bytes with values AB_{16}, CD_{16}, and EF_{16}
1A\1A\1A	5 bytes 1A<SUB>1A with values 31_{16}, 41_{16}, $1A_{16}$, 31_{16}, 41_{16}. <SUB> represents a single-byte ASCII control character with value $1A_{16}$

Alternate Control Codes with an Alternate Line Terminator

Character Encoding can also be used with the Alternate Control Character set. Alternate Control Characters are enabled, depending upon the model, via a Setup Menu or the <STX>KD / <STX>Kc commands. See Control Code Command Functions for more information.

STX KF Select Factory Defaults

This command restores the configuration of the printer to the factory default settings. These settings may be default values or the values previously specified by a configuration file (see STX Kd Set File as Factory Default).

Syntax

<STX>KFn<CR>

Parameters

Where n is:

- A – restore firmware settings including emulations
- 1 – restore firmware settings including network, excluding emulations
- 2 – restores the factory settings (and, if saved, restoring the Factory Setting File)
- 3 – restores settings excluding network and emulations
- 4 – reserved
- 5 – reserved
- 6 – reserved
- 7 – restores network settings
- 8 – restores settings excluding calibrations, emulations and network
- 9 – restores calibration settings

Note: Calibration will be required.

STX Kf Set Present Distance

This command specifies an additional amount to advance the label after printing. This command has the same effect as the <STX>f command, but specifies a distance to advance relative to the start of print (<STX>O command) of the next label.

For display-equipped models, SOP emulation selection has no effect on this command.

Syntax

<STX>Kfnnnn<CR>

Parameters

Where:

nnnn - A four-digit present distance in inches/100 or mm/10.

Sample

<STX>Kf0100>

Result

The sample represents a one-inch label advance unless in metric mode (see STX m Set Printer to Metric Mode).

STX KH Dot Check

This command specifies dot check operations for the printhead elements.

Syntax

<STX>KHx<CR>

Parameters

Where x specifies the operation:

- P – Performs dot check
- A – Returns the most recent dot check and dot resistance results
- B – Returns the most recent dot check failed dot results.

Sample 1

STX>KHP<CR>

The sample performs dot check.

Sample 2

STX>KHA<CR>

The sample returns results from the last dot check for every element and its resistance up to 1350 ohms [with out of range (bad or suspect) values indicates as ******], the number of dots tested, the total number of bad or suspect dots detected, as well as the minimum, maximum, and average resistance and variance.

```
DOTCHECK RESULTS

DOTS TESTED GOOD 830 OF 832
DOT OHMS
0  1148
1  1148
2  1140
.
.
.
142  1199
143 *****
144 *****
145  1050
.
.
.
 830  1116
 831  1116
 832  1116

 TOTAL BAD DOTS:  2

 MIN  MAX AVG VAR
 921 1640 1125 719
```

Sample 3

<STX>KHB<CR>

The sample returns results from the last dot check for the number of elements tested, the number of the bad or suspect dot(s), the total number of bad or suspect dots, as well as the minimum, maximum, and average resistance and variance.

```
DOTCHECK RESULTS

DOTS TESTED GOOD 830 OF 832
BAD DOT LIST
 143
 144
```

```
   TOTAL BAD DOTS:  2

  MIN   MAX    AVG  VAR
  921  1640   1125 719
```

The process normally adds a few seconds to the power-up sequence; however, if the printhead is invalid or extremely damaged, it could take a minute to complete.

STX KI GPIO Input

Future – This command configures the GPIO input channels of the Applicator Interface Card. See General Purpose Input Output (GPIO) Port Applications for more information.

Syntax

<STX>KIffnspwww<CR>

Parameters

Where:

- ff – 2 character function name abbreviation (e.g., PS [Print Start], I1 [User Input 1], etc).
- n – Pin number, where 1 – 8 is the valid range.
- s – Signal type, where: L = Level; P = Positive Pulse; and N = Negative Pulse
- p – Polarity, where: 0 = Active Low; and 1 = Active High
- www – 3 character filter pulse width, in milliseconds.

STX Kn NIC Reset

This command resets the NIC to factory defaults.

Syntax

<STX>Knx

Parameters

Where x specifies the action:

- F – Returns the NIC to the factory default settings
- RH – Reports settings
- RP – Prints reports

Address	Default Values Wired Ethernet*	Default Values Wireless Ethernet
IP	192.168.010.026	192.168.010.001
Subnet Mask	255.255.255.000	255.255.255.000
Gateway	000.000.000.000	000.000.000.000

* Prior to introduction of the Wireless Ethernet, 192.0.0.192 was the IP default value and the Subnet Mask was 0.0.0.0.

STX KO GPIO Output

Future – This command configures the GPIO outputs of the Applicator Interface Card. See General Purpose Input Output (GPIO) Port Applications for more information.

Syntax

<STX>KOffnsptd0pw0td1pw1<CR>

Parameters

Where:

- ff – 2 character function name abbreviation (e.g., LC [Label Complete], LM [Label Movement], etc).
- n – Pin number, where 1 – 8 is the valid range.
- s – Signal type, where: L = Level; P = Positive Pulse; and N = Negative Pulse
- p – Polarity, where: 0 = Active Low; and 1 = Active High
- td0 – 3 character delay time from function condition "true" to output signal
- pw0 – 3 character pulse width corresponding to the function condition becoming "true" (Ignored for level-type signals)
- td0 – 3 character delay time from function condition "false" to output signal
- pw0 – 3 character pulse width corresponding to the function condition becoming "false" (Ignored for level-type signals)

STX Kp Module Protection

This command controls memory module protection. When "protected", a module will ignore format, downloads and delete commands. This command can be useful to add data to reserved modules (see Appendix K for a listing of the memory modules). There are two module types: RAM (volatile) and Flash (non-volatile).

- RAM – When protected and if power is cycled or if the printer is reset, the module state resets to unprotected.
- Flash – When protected, the module can be temporarily unprotected; however, if power is cycled or if the printer is reset, the module state resets to protected.

Syntax

<STX>Kpmf

Parameters

Where:

- m – Module ID, Range A to Z (see Memory Module Identifiers and Allocations).
- f – Flag specifying Enable or Disable protection: 0 = disable protection; 1 = enable protection

Sample

<STX>KpY0

Result

The sample disables protection for Module Y; graphics may now be downloaded to the module and, on subsequent resets, these graphics will be protected.

STX Kr Resettable Counter Reset

This command resets the internal counters. Follow this command with an <SOH>U command to retain the reset or the counters will revert to the previous values after cycling power.

Syntax

<STX>Kr<CR>

STX KtA Write Application Family Identifier (AFI) to Tag

Direct Mode – HF [13.56 MHz] ISO15693 Tag Interface

This command writes the AFI data to the tag.

Syntax

<STX>KtAabcc

Parameters

Where:

- a – The number of retry attempts, 0–9.
- b – Lock the Application Family Identifier (AFI) after writing: 0 = No Protection; 1 = Write Protect
- cc – Two character AFI value representing one byte.

Sample

<STX>KtA91C3[CR]

Result

The sample writes 0xC3 AFI byte, locking value, retrying nine times if necessary.

STX KtD Write Data Storage Format Identifier (DSFID) to Tag

Direct Mode – HF [13.56 MHz] ISO15693 Tag Interface

This command writes the DSFID data to the tag.

Syntax

<STX>KtDabcc

Parameters

Where:

- a – The number of retry attempts, 0-9
- b – Lock the Data Storage Format Identifier (DSFID) after writing: 0 = No Protection; 1 = Write Protect
- cc – Two character DFSID value representing one byte

Sample

<STX>KtD91C3[CR]

Result

The sample writes 0xC3 DSFID byte, locking value, retrying nine times if necessary.

STX KtE Write Electronic Article Surveillance (EAS) Bit

Direct Mode – HF [13.56 MHz] ISO15693 Tag Interface

This command writes the EAS bit for Philips ISO tags.

Syntax

<STX>KtEabcc

Parameters

Where:

- a – The number of retry attempts, 0-9
- b – Electronic Article Surveillance (EAS) option: 0 = Set EAS; 1 = Reset EAS; 2 = Test EAS
- cc – Two character Manufacturer's Code, representing one byte

Sample

<STX>KtE9004[CR]

Result

The sample writes the EAS bit for Philips (0x04), retrying nine times if necessary.

STX KtH Read and Feedback Tag Information to Host

Direct Mode – HF [13.56 MHz] ISO15693 Tag Interface

This command returns the tag info to host.

This command only works when the Data Flag for the tag is 0x0F (i.e., when the tag contains DSFID, AFI, VICC and IC data).

Syntax

<STX>KtH

Sample Feedback

DATA FLAG: 0x0F
TAG ID: E004010000751412
DSFID: 0xE3
AFI: 0x01
NUM BLK: 0x1B
BLK SIZ: 0x03 IC
REF: 0x01

STX KtR Read Data from RFID Tag

Direct Mode – HF [13.56 MHz] ISO15693 Tag Interface

This command instructs the RFID device to read data from the tag and then put that data into a replaceable field. It is expected that the tag transponder will be within the read / write distance of the RFID programming device; otherwise, "Void" will be printed in the text or barcode label field(s).

Syntax

<STX>KtRUn1…n16Haaabbbcdee<CR>

Parameters

Where:

- Un1...n16 - (Optional) Where n1...n16 is the Unique Identifier (UID) in hexadecimal format. Must be sixteen characters long.
- H - (Optional) Hexadecimal data – "H" may be added directly after "R" to return a two character hex value of the data. Since there are two digits per hex value, replaceable fields should be twice as long than if using ASCII data (e.g., the character "A" would be returned as "41").
- aaa - Starting block number (000 - maximum block number). Transponder dependent.
- bbb – The number of blocks to read (001 - maximum block number). Transponder dependent.
- c – The number of retry attempts, 0-9.
- d – Reserved. Should be 0.
- ee – Field number in which to place the data (must be 01, 02, 03, etc.) matching the order of Label Formatting command, U. A 00 value will send tag data to the host with no printing.

Sample

<STX>L
1911A1802000010TEXT
U
X
<STX>KtRUE00700ABCDEF1234H0000015001
<STX>G

Result

The sample creates a replaceable text field (01), recalls data from the RFID tag block zero (reading only one block, which is attempted nine times), and prints the data in the location specified by replaceable field.

Note: When using addressed commands and the tag with the specified UID cannot be found, a standard RFID read/write fault will be issued.

STX KtU Read Unique Serial Number from RFID Tag

Direct Mode – HF [13.56 MHz] ISO15693 Tag Interface

This command instructs the RFID device to read the unique serial number data from the tag and then place that data into a replaceable field. It is expected that the tag transponder will be within the read / write distance of the RFID programming device; otherwise, "Void" will be printed in the text or barcode label field(s).

This is a sixteen character alphanumeric value; the replaceable field must have an adequate length.

Syntax

<STX>KtUabcc<CR>

Parameters

- a - The number of retry attempts, 0-9.
- b - Reserved. Should be 0.
- cc - Field number in which to place the data (must be 01, 02, 03, etc.) matching the order of Label Formatting command, U. A 00 value will send the ID to the host with no printing.

STX KtW Write Data to RFID Tag

Direct Mode – HF [13.56 MHz] ISO15693 Tag Interface

This command instructs the RFID device to write data to the tag. It is expected that the tag transponder will be within the read / write distance of the RFID programming device; otherwise, a warning will occur and a warning message (Read / Write Fail) will be displayed.

Syntax

<STX>KtWUn1...n16Bncncncaaabcdee...e<CR>

Parameters

Where:

- Un1...n16 - (Optional) Where n1...n16 is the Unique Identifier (UID) in hexadecimal format, sixteen characters in length.
- Bncncnc - (Optional) Where ncncnc is the data byte count, to allow non-printable characters (i.e., characters with hex values less than 0x20) to be encoded.
- aaa - Starting block number (000 - maximum block number). Transponder dependent.
- b - The number of retry attempts, 0-9.
- c - Lock block after writing: 0 = No Protection; 1 = Write Protect.
- d - Reserved. Should be 0.
- ee...e - Data to be encoded on RFID tag.

Sample 1

<STX>KtWB004000900<0x00><0x01><0x02><0x03>[CR]

The sample programs the hex values 0x00, 0x01, 0x02, 0x03 in block zero.

Sample 2

<STX>KtWUE00700ABCDEF1234B004000510TEST[CR]

The sample programs the data "TEST" to the tag with UID "E00700ABCDEF1234" at block zero then write-protects block zero (attempting to write five additional times if necessary). When write protecting (locking) with UID, the separate lock command will also use the addressed mode and the supplied UID.

Note: When using addressed commands and the tag with the specified UID cannot be found, a standard RFID read/write fault will be issued.

STX KuB Read Data from Gen2 Tag Section

This command reads a specific block address of a Gen2 tag.

Syntax

<STX>KuBaaabbb

Parameters

Where:

- aaa – Block address number, where: 000 is kill/access section; 001 is EPC section; 002 is Tag ID; and, 003 is user memory.
- bbb – Data offset in word length.

Sample

<STX>KuB001002

Result

The sample reads the block address 1 at offset word 2, which is location of the EPC data.

STX KuF Send RFID Device Firmware Version

This command instructs the RFID device to return the firmware version.

Syntax

<STX>KuF<CR>

Printer Response

DEVICE VERSION: XXX.XXX.XXX[CR]

STX KuJ Write Data to Gen 2 Tag Section

This command writes a specific block address of a Gen2 tag.

Syntax

<STX>KuJaaabbb<data>

Parameters

Where:

- aaa – Block address number, where: 000 is kill/access section; 001 is EPC section; 002 is Tag ID; or, 003 is user memory.
- bbb – Data offset in word length.
- <data> – Hexadecimal data (length must be multiples of 4).

Sample

<STX>KuJ00100211223344556677 8899AABBCC

Result

The sample writes data "112233445566778899AABBCC" to block address 1 at offset word 2, which is the EPC data.

STX KuR Read Data from RFID Tag

Direct Mode – UHF Interface – Hexadecimal Data Only

This command instructs the RFID device to read data from the tag and then place that data into a replaceable field. It is expected that the tag transponder is within the read / write distance of the RFID programming device; otherwise, "Void" will be printed in the text or barcode label field(s).

Syntax

<STX>KuRaa<CR>

Parameters

- aa – Field number in which to place the data (must be 01, 02, 03, etc.) matching the order of Label Formatting command, U. A 00 value will send the ID to the host with no printing.

Sample

```
<STX>L
D11
1911A1801000100 xxxxxxxxxxxxxxx
U
1A31050002000200 xxxxxxxxxxxxxxx
U
X
<STX>KuR01
<STX>Kur02
<STX>G
```

Result

The sample creates a replaceable text field (01) and barcode field (02) and then recalls the data from the tag and places it into the specified fields.

Note: Data should be at least 16 or 24 characters in length.

STX KuW Write Data to RFID Tag

Direct Mode – UHF Interface – Hexadecimal Data Only

This command instructs the RFID device to write data to the tag. It is expected that the tag transponder will be within the read / write distance of the RFID programming device; otherwise, a warning will occur and a warning message (Read / Write Fail) will be displayed.

Syntax

<STX>KuWabcc...c<CR>

Parameters

Where:

- a – The number of attempts to locate, erase and program the tag (1 – 9).
- b – Reserved. Should be 0.
- cc...c – Data to be encoded in the ASCII format. Must be sixteen characters in length. The valid characters are 0-9, A-F. Must be 16 or 24 characters long.

Sample

<STX>KuW10ABCDEF0102030405[CR]

Result

The sample programs the data
<0xAB><0xCD><0xEF><0x01><0x02><0x03><0x04><0x05> to the tag, attempting to write one additional time if necessary.

STX KV Verifier Enable/Disable

This command allows a verifier to be enabled and disabled.

Syntax

<STX>KVa<CR>

Parameters:

Where a is:

- Y - verifier enable
- N - verifier disable

Note: This command will result in a system reset for the EX2.

STX Ky Download Plug-in File

This command allows to download a plug-in file to the specified module from the host to the printer. The data that immediately follows the command string will be plug-in data.

Syntax

<STX>KymNamedata

Parameters

Where:

- m - Valid Module ID – Range A to Z.
- Name - Up to 16 characters used as plug-in file name.
- data - Plug-in data.

Sample

<STX>KyXPlugin1data...data <CR>

Result

The sample instructs the printer to (1) receive Plug-in file data sent by the host, (2) name the image "Plugin1", and (3) store it in Module X (with a .dim file extension).

STX KZ Immediately Set Parameter

This command immediately sets the specified parameter.

Syntax

<STX>KZax<CR>

Parameters

Where:

- a - Valid parameter identifier, as follows:
  - F – Feed Speed
  - P – Print Speed

- S – Slew Speed

- H – Heat Setting

- x – Speed Parameter Range – A to e (see Speed Ranges).

- xx – Heat Parameter Range, a two-digit value (00–30). See the H Enter Heat Setting Label Formatting Command.

Sample

<STX>KZH22

Result

The sample above causes the file currently being executed to assume a Heat Value of 22.

CONFIGURATION COMMANDS

The configuration commands specify the Power-up Configuration parameter values for the printer and is equivalent to using other system commands followed by the <SOH>U. **These commands are intended for easily configuring a custom setup, but NOT for dynamic configuration changes**. Configuration commands are examined for differences relative to the current configuration, and have no impact when no differences exist.

These commands are implemented as parameters of the STX Kc Configuration Set extended system level command. Fore more information, see STX Kc Configuration Set.

Printers will reset upon completion of a command stream containing parameter value changes. In any case, no commands should be sent to the printer until this reset is complete. Other command highlights include the following:

• These parameter values are equivalent to changing the respective menu settings and do not affect the factory default settings of the printer.

• If separated by a semi-colon (;), multiple parameter values may be sent in a single command stream; see sample below.

• All values are stored in Flash memory and remain in effect until new values are received or until factory defaults are restored.

• If system commands are sent that override the Power-up Configuration value(s), the Power-up Configuration value(s) will be restored the next time the printer is powered "On" or is reset.

• These parameters are the same as those found in the Menu System (display equipped models). The respective functions are documented in the appropriate Operator's Manual. Not all commands are effective on all printers.

Note: Illegal or out of range parameter values may have unpredictable results. In addition, media sensing scaling values, TOF Bias, etc. may not be effective on other same-type printers due to hardware tolerances.

• AL Alignment Length

• AS Single Byte Symbol Set

• AV Avalanche Enabled Parameters

• BA Backup After Print

• BD Backup Delay

- GE GPIO Equipped
- GM Gap Mark Value
- GP GPIO Error Pause
- GR Gain Reflective Value
- GS GPIO Slew
- HC Head Cleaning
- HE Heat
- HT Host Timeout
- IC Ignore Control Codes
- IE Ignore Distances
- IL Imaging Mode
- IM Internal Module
- LE Legacy Emulation
- LM Label Store
- LR Label Rotation
- LS Language Select
- LW Label Width
- MCC Module Command
- ML Maximum (Label) Length
- MM Menu Mode
- MT Media Type
- MV Mark Value
- NE Network Configuration
- NR No Reprint
- NS Disable Symbol Set Selection
- OF Option Feedback Mode
- PC Print Contrast
- PD Present Distance
- PE Peel Mode
- PJ Present Adjust Fine Tune
- PL Printer Level
- PM Pause Mode
- PO Paper Empty

- PP Parallel Direction
- PS Present Sensor Equipped
- pS Print Speed
- PT Tear Position
- PV Paper Value
- PW Password Set
- QQ Query Configuration
- RE Ribbon Saver Equipped
- RF Row Adjust Fine Tune
- RI RFID Configuration
- RL Ribbon Low Diameter
- RM Rewinder Equipped
- RO Row Offset
- RP Ribbon Low Pause
- RR Rewinder Adjust
- RS Ribbon Low Signal
- RV Reflective Paper Value
- RW Retract Delay
- SC Scalable Cache
- SE SOP Emulation
- SF Save As Filename
- SG Sensor Gain Value
- Sl Security Lock
- SL Stop Location
- SM Maximum Length Ignore
- SN Scanner Configuration
- SP Serial Port
- SS or sS Feed Speed
- ST Sensor Type
- SV Switch Settings
- TP TOF Precedence
- UD User Label Mode
- UM Units of Measure

DPL Command Reference

- [UN Plug and Play ID Type](#)

- [UT User Terminator](#)

- [VE Verifier Equipped](#)

AL Alignment Length

This command, critical for small labels when Label Alignment is set to YES, allows a length (measured from leading edge to leading edge of two successive labels) to be entered. The measured length must be provided to the nearest hundredth of an inch.

For very small labels, errors of 0.01" can result in noticeable print variations on the labels between the media sensor and the print head. The number of labels that can be fit between the Media Sensor and the print head will magnify any error in label alignment length. Errors in measurement are more favorable on the low side rather than the high side.

Parameter	AL
Value / Range:	0 - 999
Units / Interpretation:	1/100 in.
Command Equivalent:	N/A

AS Single Byte Symbol Set

This command allows for a default single-byte symbol set.

Parameter	AS
Value / Range:	2 Byte Alpha Character
Units / Interpretation:	AA – ZZ, printer resident symbol set
Command Equivalent:	<STX>y, ySxx

AV Avalanche Enabled Parameters

This command allows the printer to be configured for the Avalanche utility.

Parameter	AV
Value / Range:	See Syntax below.
Units / Interpretation:	See Syntax below.
Command Equivalent:	N/A

Syntax

<stx>KcAV[nnn1,vvvv1:nnn2,vvvv2:...,nnnn,vvvvn:];

Parameters

Where:

- nnni,vvvvi: – Configuration Item, Value pairs
- nnni – Decimal Item Numbers from 1 to 9999
- , – Decimal Item Number Delimiter
- vvvvi – Item Value (syntax defined later)
- : – Item Value Delimited terminated

Avalanche Enabled Parameters are defined in the following table.

Item Number	Name	Available to User (Y/N)	Value Type	Description
1	Avalanche Enabler Active	Y	Unsigned short	Flag to indicate whether the Avalanche Enabler is running or not. 1: Avalanche Enabler is running. 0: Avalanche Enable is NOT running (default).
2	Agent IP Address	Y	String	The IP address of the Avalanche Agent.
3	Agent Port Number	Y	Unsigned short	The TCP/IP port number. Default value is 1777.

Item Number	Name	Available to User (Y/N)	Value Type	Description
4	Agent DNS Name (max 255 chars)	Y	String	The DNS name of the Avalanche Agent. Example: "AvaAgentName.DO.local". During the wireless update process, the Agent DNS Name will be used to resolve to the Agent IP address. If the printer fails to obtain the Agent IP address from the Agent DNS Name, the Agent IP Address (item number 2) will be used as target address for the printer to connect to the Avalanche Agent.
5	Connectivity Type	Y	Unsigned short	Type of connectivity from Avalanche Enabler (printer) to the Avalanche Agent. 0: None 1: TCP/IP (default)
6	Printer Name (max 63 chars)	Y	String	This is the printer name that will be displayed in the Wavelink Management Console to represent a printer.
7	Printer Model (max 15 chars)	Y	String	Model of a printer.

Item Number	Name	Available to User (Y/N)	Value Type	Description
8	Update Mode	Y	Unsigned short	Flag to indicate the Update Mode for the Avalanche Enabler: 'n': None, No update even Avalanched Enable Active is set. 's': Run the update process when the printer is startup. 'i': Run the update process for every Update Interval. 'b': Run the update process when the printer is started up and for every Update Interval after that.
9	Update Interval	Y	Unsigned short	The value for an Update Interval (in minutes). Default is 6 minutes. When the Update Method is set to 'i' (for interval) or 'b' (for both), the printer will contact the Avalanche Agent for every Update Interval (minutes) and execute the update software package.
10	Print Update Status Result	Y	Char	The printer will print the result of the software update process, such as "Avalanche Upgrade Status: Upgrade complete (<Name of the Update Software Package>). 'y': Print the status of the update result' 'n': Do not print the status of the update result (default)

BA Backup After Print

This command determines the timing of the label back up positioning when the present distance is set and the GPIO option or Present Sensor option (including Peel and Present) is enabled.

When enabled, the printer immediately backs up the label after the applicator-issued start of print signal is received or the label is removed, resulting in faster throughput.

If disabled, the printer will not initiate repositioning until the next label is ready to print (may help prevent the curling of the label edge).

Parameter	BA
Value / Range:	Y, N
Units / Interpretation:	Y = Enabled, N = Disabled
Command Equivalent:	N/A

BD Backup Delay

This command sets a time delay for the retraction of a presented label in one-fiftieth (1/50) of a second increments.

Parameter	BD
Value / Range:	0 – 255
Units / Interpretation:	1/50 second
Command Equivalent:	N/A

BL Backup Label

This command determines the timing of reverse label motion when the GPIO option is installed and enabled. See General Purpose Input Output (GPIO) Port Applications for more information.

Parameter	BL
Value / Range:	0, 3, 4
Units / Interpretation:	0 = Disabled, 3 = Active Low, 4 = Active High
Command Equivalent:	N/A

BP British Pound

This command, when enabled, will automatically switch from the Number symbol (#) found at 0x23 (default PC-850 Multilingual Symbol Set) to the British Pound symbol (£) at 0x9C.

Parameter:	BP
Value / Range:	Y, N
Units / Interpretation:	Y = Enabled, N = Disabled
Command Equivalent:	N/A

BS or bS Backup Speed

This command controls the rate of label movement during backup positioning for start of print, cutting or present distance.

Parameter	BS or bS
Value / Range:	Alpha character
Units / Interpretation:	Model specific ranges (see Speed Ranges).
Command Equivalent:	pa

BT Bluetooth Parameters

This command configures the Bluetooth Communication parameters.

Parameter	BT
Value / Range:	See table below.
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Syntax

<stx>KcBT[nnn1,vvvv1:nnn2,vvvv2:…,nnnn,vvvvn:];

Parameters

Where:

- nnni,vvvvi: – Configuration Item, Value pairs
- nnni – Decimal Item Numbers from 1 to 9999
- , – Decimal Item Number Delimiter
- vvvvi – Item Value (syntax defined later)
- : – Item Value Delimited terminated

Bluetooth parameters are defined in the following table.

Item Number	Name	Available to User (Y/N)	Value Type	Description
1	Bluetooth Name	Y	String	Bluetooth Device Name (Friendly Name) 1 to 32 characters. Default: 'Datamax-Oneil'.
2	Bluetooth Service Name	Y	String	Bluetooth Service name – 1 to 32 characters. Default: 'Datamax-Oneil'.
3	Discoverable or Not	Y	Boolean	Discoverable: Yes or No. Default: Yes. 0 = No 1 = Yes
4	Connectable or Not	Y	Boolean	Connectable : Yes or No. Default: No. 0 = No 1 = Yes
5	Bondable or Not	Y	Boolean	Bondable : Yes or No. Default: No. 0 = No 1 = Yes
6	Authentication On	Y	Boolean	Authentication: On or Off. Default: Off. 0 = No 1 = Yes
7	Encryption On	Y	Boolean	Encryption: On or Off. Default: Off. 0 = No 1 = Yes

Item Number	Name	Available to User (Y/N)	Value Type	Description
8	Passkey	Y	String	String up to 16 characters. Valid characters are alpha/numeric. Default: not used.
9	Inactive Disc Time	Y	Int	0 to 65535. Default is 60 (Read and Write).
10	Power Down Time	Y	Int	0 to 65535. Default is 60 (Read and Write).
11	Bluetooth Address	Y	String	12 hexadecimal characters (similar to MAC address) (Read Only)

BZ Buzzer Enable

This command controls the audible signaling device that acknowledges User Interface entries and, if enabled, sounds printer warning and fault conditions.

Parameter	BZ
Value / Range:	Y, N
Units / Interpretation:	Y = Enabled, N = Disabled
Command Equivalent:	N/A

CC Control Codes

This command, depending upon printer type, allows a change to the prefix of the software commands interpreted by the printer.

Parameter:	CC
Value / Range:	S, 1, 2
Units / Interpretation:	S = Standard, 1 = Alternate, 2 = Alternate-2
Command Equivalent:	N/A

Value	Units/Interpretation	Control Code Definition
S	Standard Codes	Hex 01 = SOH command Hex 02 = STX command count-by = ^ Hex 1B = ESC Hex 0x0D = Carriage Return
1	Alternate Codes	Hex 5E = SOH command Hex 7E = STX command count-by = @ Hex 1B = ESC Hex 0x0D = Carriage Return
2	Alternate Codes 2	Hex 5E = SOH command Hex 7E = STX command count-by = @ Hex 1B = ESC Hex 0x7C = Carriage Return

CE Cutter Equipped

This command allows the printer to sense the cutter option.

"A" – automatically senses device presence; if undetected, no error is generated.

"E" – enables the device, where its presence must be detected; otherwise, a fault is generated.

"N" – disables device detection.

One of these values is returned in response to <STX>KcQQQ. Note that alternate values are accepted for backward compatibility as follows: "Y" is equivalent to "A".

Parameter   CE
Value / Range: A, E, N
Units / Interpretation: A or Y = Auto, E = Enabled, N or D = Disabled
Command Equivalent: <STX>V

CF Column Adjust Fine Tune

This command fine-tunes the Column Offset setting by shifting both the horizontal start of print position and the Label Width termination point to the right in dots to compensate for slight mechanical differences sometimes evident when multiple printers share label formats.

Parameter:	CF
Value / Range:	+ / – dots
Units / Interpretation:	Resolution specific (see Print Resolutions and Maximum Width & Record Column Values).
Command Equivalent:	N/A

CH Communicated Heat Commands

This command causes the printer to ignore DPL Heat commands. Ignore by setting value to N. Process by setting value to Y (default). When set to ignore Heat commands values are controlled via the menu setting.

Parameter:	CH
Value / Range:	Y, N or 1, 0
Units / Interpretation:	Y = Enabled, N = Disabled; or 1 = Enabled, 0 = Disabled
Command Equivalent:	N/A

CL Continuous Label Length

See <STX>c for command details.

Parameter:	CL
Value / Range:	0 – 9999
Units / Interpretation:	1/100 in. or 1/10 mm
Command Equivalent:	<STX>c

CO Column Offset

See Cnnnn for command details.

Parameter:	CO
Value / Range:	0 – 9999
Units / Interpretation:	1/100 in. or 1/10 mm;
Command Equivalent:	Cnnnn

CS Communicated Speed Commands

This command causes the printer to ignore DPL speed commands. Ignore by setting value to N. Process by setting value to Y (default). When set to ignore speed values are controlled via the menu setting.

Parameter:	CS
Value / Range:	Y, N or 1, 0
Units / Interpretation:	Y = Enabled, N = Disabled; or 1 = Enabled, 0 = Disabled
Command Equivalent:	N/A

CT Communicated TOF Commands

This command causes the printer to ignore DPL TOF (Gap, Continuous, and Reflective) commands. Ignore by setting value to N. Process by setting value to Y (default). When set to DPL TOF values are controlled via the menu setting.

Parameter:	CT
Value / Range:	Y, N
Units / Interpretation:	Y = Enabled, N = Disabled
Command Equivalent:	N/A

CU Configuration Upgrade Package Parameters

This command allows an upgrade package to be created.

Parameter	CU
Value / Range:	See table below.
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Syntax

<stx>KcCU[nnn1,vvvv1:nnn2,vvvv2:…,nnnn,vvvvn:];

Parameters

Where:

- nnni,vvvvi: – Configuration Item, Value pairs
- nnni – Decimal Item Numbers from 1 to 9999
- , – Decimal Item Number Delimiter

- vvvvi – Item Value (syntax defined later)
- : – Item Value Delimited terminated

Configuration Upgrade Package parameters are defined in the following table.

Item Number	Name	Available to User (Y/N)	Value Type	Description
1	Wireless Upgrade Type	Y	Unsigned short	1 – TFTP 2 – Avalanche Wavelink 3 – MSP 255 – Disable
2	Configuration File	Y	String	Configuration file name (*.cfg) for an Upgrade Package, 256 chars max.
3	TFTP IP address	Y	String	IP address of TFTP server.
4	TFTP Port	Y	Unsigned short	Port Number of TFTP Server, default 69.
5	Upgrade Package Versiont	Y	String	Read only.
6	Wireless Upgrade Beeper	Y	Char	0: Off 1: On (Default)

DE DPI Emulation

This command allows printers with higher resolutions to emulate lower print resolutions.

Parameter	DE
Value / Range:	152, 200, 300, 400, 600
Units / Interpretation:	Dots per inch
Command Equivalent:	N/A

- 600 DPI can emulate 300 and 203 DPI resolutions.
- 400 DPI can emulate a 203 DPI resolution.
- 300 DPI can emulate a 152 DPI resolution.

DK Darkness

This command adjusts the length of the print head strobe to fine tune the HEAT setting.

Parameter:	DK
Value / Range:	1 – 64
Units / Interpretation:	N/A
Command Equivalent:	N/A

DM Default Module

See STX X Set Default Module for command details.

Parameter:	DM
Value / Range:	A, B, D, or G
Units / Interpretation:	Module Letter
Command Equivalent:	<STX>X

DR Delay Rate

This command sets the number of minutes to delay between multiple batch printings of Quick Test Labels. This command is provided as a diagnostic tool.

Parameter	DR
Value / Range:	0 – 120
Units / Interpretation:	Seconds
Command Equivalent:	N/A

DS Double Byte Symbol Set

See <STX>y or ySxx for command details.

Parameter:	DS
Value / Range:	2-byte alpha character
Units / Interpretation:	AA to ZZ printer resident symbol set ID
Command Equivalent:	<STX>y, ySxx

EM Input Mode

This command determines the data processing mode:

Parameter:	EM
Value / Range:	See table below.
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Value	Interpretation	Input Mode Interpretation
0	DPL	Character strings are parsed for standard DPL processing.
1	Line	No parsing occurs; instead, each carriage return (<CR>) terminated data line is printed according to a stored template (see RFID Overview).
3	PL-Z	Character strings are parsed for PL-Z processing, applicable only if the appropriate firmware is installed, as indicated by a "Z" in the version string. For RFID, the hardware option, tag type and size should be preselected, and a tag calibration performed. Also, if possible, driver/software options to use "Printer Defaults" should be chosen to minimize potential conflicts.
5	PL-I	
7	PL-B	Character strings are parsed for PL-B processing, applicable only if the appropriate firmware is installed, as indicated by a "B" in the version string.
8	PL-E	
9	Auto	Character strings are automatically parsed and processed according to the identified language. A clean file is required, where extra leading characters may cause the language to be unrecognizable; otherwise, the appropriate Input Mode must be selected.
10	CPCL	
11	O'Neil EZ Print	

EN End Character

This command terminates a <STX>Kc string.

Parameter:	EN
Value / Range:	D
Units / Interpretation:	N/A
Command Equivalent:	N/A

EP End of Print

This command defines the signal output used to signify the End of Print (EOP) process.

Parameter	EP
Value / Range:	See table below.
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Value	Units	End of Print Interpretation
1	Low Pulse	Outputs a low pulse (approximately 30 milliseconds long) following printing.
2	High Pulse	Outputs a high pulse (approximately 30 milliseconds long) following printing.
3	Active Low	Outputs a logic low (zero) following printing.
4	Active High	Outputs a logic high (one) following printing.

EQ Start of Print

This command defines the type of signal input required to control the Start of Print (SOP) process.

Parameter	EQ
Value / Range:	See table below.
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Value	Units	Start of Print Interpretation
3	Active Low	SOP signal must go low for at least 50 milliseconds to initiate printing.
4	Active High	SOP signal must go high for at least 50 milliseconds to initiate printing.

ES ESC Sequences

This command allows data containing invalid ESC control code sequences to be processed (helpful because some systems send a "banner" to the printer). When set to "Disabled," ESC sequences are ignored and the data is processed. Bitmapped font downloads are disabled in this mode.

Parameter:	ES
Value / Range:	Y, N
Units / Interpretation:	Y = Enabled, N = Disabled
Command Equivalent:	N/A

EV Empty Sensor Level

This command sets threshold value for the "Empty" media sensor parameter.

Parameter	EV
Value / Range:	0 – 255
Units / Interpretation:	N/A
Command Equivalent:	N/A

FA Format Attribute

See the "An" command for details.

Parameter:	FA
Value / Range:	X, O, T
Units / Interpretation:	X = XOR, O = Opaque, T = Transparent
Command Equivalent:	An

FB Scalable Font Bolding

This command sets a bolding factor to fine tune scalable fonts, where one causes the least amount of bolding and thirty-six the most (default value is 8).

Parameter	FB
Value / Range:	1 – 36
Units / Interpretation:	N/A
Command Equivalent:	N/A

FE Font Emulation

This command allows font substitution for all internal fonts, allowing a new default font to be defined without changing the host DPL data streams. Selecting a default font that supports a desired character set could match with third party software to print native characters without modifying the PC drivers.

In other words, match the PC font with the Printer Font then no interpretation would be required by driver or printer. Depending on host drivers, the user may have to disable Symbol Set commands and modify the Default Symbol set.

Parameter	FE
Value / Range:	0, 1, 2
Units / Interpretation:	0 = No Substitution 1 = Sub CG Times SA0 2 = Sub User S50
Command Equivalent:	N/A

FH Fault Handling

This command determines the level of user intervention and the disposition of the label being printed when a fault condition (ribbon out, media out, etc.) occurs.

Parameter:	FH
Value / Range:	L, D, R, B
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Value	Units/Interpretation	Selection/Definition
L	0 = No Reprint	Printing stops and a fault message is displayed. After the problem is corrected, the label in process is not reprinted.
	1 = Standard	The default behavior. Printing stops and a fault message is displayed. After the problem is corrected, the label in process is reprinted.
	2 = Void and Retry	Depending upon the RETRY COUNT, one of the following actions when faulted: • If the Retry Count has not been exceeded, "VOID" is printed on the label in process and reprinting occurs automatically; • If the Retry Count has been exceeded, printing stops and a fault message is displayed. After the problem is corrected, press the FEED key to clear the fault. The label in process is reprinted; or, • If the CANCEL key is pressed, the operator has the option of canceling the reprint. To allow reprinting, press the ESCAPE Key; or, to cancel reprinting, press the ENTER key (the entire label batch will be cancelled by pressing the ENTER key again). VOID will not be printed when insufficient text space exists (see VOID DISTANCE, below) or if the fault occurs after the label reaches its Present Distance at, or above, the TOF.
	3 = Delayed Scan Fault	Increases throughput when barcodes reside near the trailing edge of the label (in the direction of FEED). If unreadable, the fault will occur after the next label prints. The label immediately following a faulted label is not scanned for errors. VOID AND RETRY and REPRINT are automatically disabled; the job can only be cancelled.
	4 = Void Retry & Cont.	VOID is printed on a faulted label, with reprint attempts occurring automatically, until the RETRY COUNT has been exceeded and then that label will be skipped (discarded) and printing will continue to the next label in queue.
D	Void Distance (.10 - 2.00)	Sets the distance (.10 - 2.00) to backup the faulted label to print "VOID" on its trailing edge, which also indirectly establishes the font size of the void message.
R	Retry Count (0 – 3)	Establishes the number of times a reprint will be attempted when using the RFID or Scanner option; if the last label printed in this count has been voided, a fault will be declared.

Value	Units/Interpretation	Selection/Definition
B	Enable / Disable Y, N	Retract from presented distance prior to feed-clear motion. This option is intended for use with applicator equipment that may require certain GPIO signals for proper operation.

Sample

<STX>KcFHD112<CR>

Result

The example configures the printer to back up and print a one-inch tall "VOID" message on a faulted label; if two successive faults occur during the printing of that label, then the FEED Key must be pressed to clear the fault.

FM Feedback Mode

See <STX>a for command details.

Parameter:	FM
Value / Range:	Y, N
Units / Interpretation:	Y = Enabled, N = Disabled
Command Equivalent:	<STX>a

FS Slew Speed

This command controls the rate of label movement between printing areas when the GPIO port is used.

Parameter	FS
Value / Range:	Alpha character
Units / Interpretation:	Model specific ranges (see Speed Ranges).
Command Equivalent:	<STX>KZSx

GA Alternate Gap Type

This command selects one of two Gap Sensing algorithms. This parameter is valid for the RL3e /RL4e when Sensor Type is set to Gap. Defaults to Disabled or Alternate not selected.

Parameter	GA
Value / Range:	E, D
Units / Interpretation:	E = Enable, D = Disabled
Command Equivalent:	N/A

GD Display Mode

This command controls the size of displayed menu characters, where Enhanced makes them larger.

Parameter	GD
Value / Range:	S, E
Units / Interpretation:	S = Standard, E = Enhanced
Command Equivalent:	N/A

GE GPIO Equipped

This command is used to interface the printer to external controlling devices. See General Purpose Input Output (GPIO) Port Applications for more information.

Parameter	GE
Value / Range:	A, V, N, 2
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Value	Units / Interpretation	GPIO Enable Definition
A	Applicator	Enables the standard applicator mode, de-asserting DRDY as soon as last label starts printing, allowing FEED any time, and not de-asserting DRDY when PAUSED.
N	Disabled	Disables the GPIO Port.
V	Verifier	Enables the GPIO Port for a barcode verifier.
2	Applicator2	Enables the alternate applicator mode, where Data Ready (DRDY) is extended to overlap the End Of Print (EOP) signal by about 1 msec when printing the last label; and, where PAUSE or FAULT de-asserts the DRDY signal and inhibits the FEED operation.

GM Gap Mark Value

This command sets threshold value for the media sensor's "gap" or "mark" parameter.

Parameter	GM
Value / Range:	0 - 255
Units / Interpretation:	N/A
Command Equivalent:	N/A

GP GPIO Error Pause

This command enables or disables the printer from sending a service required fault to the GPIO output (Applicator Interface CCA, Type 2 only).

Parameter	GP
Value / Range:	E, D
Units / Interpretation:	E = Enabled, D = Disabled
Command Equivalent:	N/A

GR Gain Reflective Value

This command sets the sensitivity of the reflective media sensor.

Parameter	GR
Value / Range:	0 – 31
Units / Interpretation:	N/A
Command Equivalent:	N/A

GS GPIO Slew

This command sets the GPIO slew function and control.

Parameter	GS
Value / Range:	0 – 4
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Value	Slew Interpretation
0	Standard (Active Low)
1	Low Pulse *
2	High Pulse *
3	Slews while low (Active Low)
4	Slews while high (Active High)

* Pulse must be at least 60 milliseconds in length; functions as if pressing the Feed Key, clearing alarms and advancing media.

HC Head Cleaning

This command controls the print head cleaning routine. The entered value specifies the inch (or centimeter) count to reach before prompting a print head cleaning. If the

number specified is exceeded three times, the printer will fault until cleaning is
initiated.

Parameter:	HC
Value / Range:	0 - 9999; 0 disables this function
Units / Interpretation:	Inches (or centimeters) multiplied by 1000
Command Equivalent:	N/A

HE Heat

See Hnn for command details.

Parameter:	HE
Value / Range:	0 – 30
Units / Interpretation:	N/A
Command Equivalent:	Hnn

HT Host Timeout

This command controls the number of seconds a communications port must be idle
before the printer will process data from a different port or use a different parsing
method. The value is also used to "timeout" an image / label format download (i.e., if,
at any time, data flow stops before a complete label format is received, the data will be
ignored).

Parameter	HT
Value / Range:	1 - 60
Units / Interpretation:	Seconds
Command Equivalent:	N/A

IC Ignore Control Codes

This command allows the user to remove control codes (< 20 Hex) in the data field.
The selected line terminator is processed. When enabled, DPL Control Code (SOH,
STX, CR, ESC, and ^) characters are removed from the data string. (Note that some
fonts do have printable characters in this range and they will not be printed when
enabled.)

Parameter:	IC
Value / Range:	Y, N or 1, 0
Units / Interpretation:	Y = Enabled, N = Disabled; or 1 = Enabled, 0 = Disabled
Command Equivalent:	N/A

DPL Command Reference

IE Ignore Distances

This command, when enabled, prevents <STX>O processing that will change the start of print position.

Parameter	IE
Value / Range:	1, 0
Units / Interpretation:	1 = Enabled, 0 = Disabled
Command Equivalent:	N/A

IL Imaging Mode

This command instructs the printer whether to pre-image the label format.

Parameter	IL
Value / Range:	M, S
Units / Interpretation:	M = Multiple label, S = Single label
Command Equivalent:	N/A

Value	Units / Interpretation	Imaging Mode Definition
M	Multiple Label	The printer images multiple labels as memory permits, achieving the fastest throughput; however, if time-stamping, the time will reflect the moment the label is imaged rather than when actually printed.
S	Single Label	The printer images the next label only after the previous label has been successfully printed. Single processing provides time-stamps that are more accurate, but it slows label throughput time.

IM Internal Module

This command sets the number of 1K blocks allocated for Module D.

Parameter	IM
Value / Range:	100 – up to max. available
Units / Interpretation:	Kbytes
Command Equivalent:	N/A

LE Legacy Emulation

This command enables the <STX>O and <STX>f print positioning commands to allow backward compatibility with label formats that were designed for the Allegro® Prodigy®, and Prodigy Plus® (If the printer is Display-Equipped, also Prodigy Max® emulation).

This command causes the printer to ignore Label commands A, M, n, and T.

Parameter	LE
Value / Range:	N, A, P, L, M, X
Units / Interpretation:	N = None A = Allegro P = Prodigy L = Prodigy Plus M = Prodigy Max X = XL
Command Equivalent:	N/A

LM Label Store

This command selects the level of stored format recall to include the label-formatting command fields, or the label-formatting command fields and the printer state.

Parameter:	LM
Value / Range:	F, S
Units / Interpretation:	F = Fields, S = States & Fields
Command Equivalent:	N/A

LR Label Rotation

This command sets label rotation, allowing formats to be flipped 180 degrees.

Parameter:	LR
Value / Range:	Y, N
Units / Interpretation:	Y = Rotate 180, N = None
Command Equivalent:	N/A

LS Language Select

This command selects the language for the menu system messages and configuration label. Only languages that are resident will be available. (Language name limited to a twenty character maximum.)

Parameter:	LS
Value / Range:	String
Units / Interpretation:	Language Name
Command Equivalent:	N/A

LW Label Width

This command sets the maximum limit for the printable width. Objects extending beyond this limit will NOT print.

Parameter:	LW
Value / Range:	0075 – head width (see Print Resolutions and Maximum Width & Record Column Values).
Units / Interpretation:	1/100 in.
Command Equivalent:	<STX>KW

MCC Module Command

This command adjusts the size of Flash module on the optional Expansion Card according to the table below. See Memory Module Identifiers and Allocations for more information.

Parameter	MCC
Value / Range:	Z, G
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Value	Module Command Units / Interpretation	
Z*xx*	Where *xx* =	Size: 1 – 7 Mbytes. This is the amount to be allocated to Module Z; any remaining memory will be allocated to Module F.
G*xx*	Where *xx* =	Size: 1 – 56, in 128 Kbytes blocks. This is the amount to be allocated to Module G; any remaining memory will be allocated to Module X.

ML Maximum (Label) Length

See <STX>M for command details.

Parameter	ML
Value / Range:	0 – 9999

Units / Interpretation:	1/100 inch
Command Equivalent:	\<STX>M

MM Menu Mode

This command sets the menu access level of the printer – where User is a basic listing of menu settings and controls.

Parameter	MM
Value / Range:	U, A
Units / Interpretation:	U = User, A = Advanced
Command Equivalent:	N/A

MT Media Type

This command selects the printing method: Direct Thermal for use with heat sensitive media or Thermal Transfer for use with media requiring a ribbon to create an image.

Parameter:	CL
Value / Range:	D, T
Units / Interpretation:	D = Direct Thermal, T = Thermal Transfer
Command Equivalent:	N/A

MV Mark Value

This command sets threshold value for the reflective media sensor's "mark" parameter.

Parameter	MV
Value / Range:	0 – 255
Units / Interpretation:	N/A
Command Equivalent:	N/A

NE Network Configuration

The enhanced configuration two character identifier for the New Network Configuration Parameters will be 'NE' for Network Ethernet.

Parameter	NE
Value / Range:	See tables below.
Units / Interpretation:	See tables below.
Command Equivalent:	N/A

No Item-Value pairs will be defined for 'NE' but there will be the following Sub-Groups:

- General Network Configuration Parameters – Identifier 'G'
- 802.3 Wired Ethernet Configuration Parameters – Identifier 'EW'
- 802.11 Wireless Ethernet (WIFI) Configuration Parameters – Identifier 'WIFI[DO1'

The configuration data stream for the new network configuration parameters will thus have the following structure:

NE[G[...]EW[...]WIFI[DO1[...]]];

Sample

"KcNE[G[24,4:]WIFI[DO1
[21,N:22,'192.168.081.001':23,'255.255.000.000':24,'192.168.081.004':40,P:41,'MFG_
ENG_S2':42,2:47,'1234567890':]]];"

General Configuration Parameters – Identifier 'G'

The 'G' sub-group contains network configuration parameters that apply 'globally' or 'generally' to any ethernet interface used. No sub-groups are currently defined for the 'G' sub-group of configuration parameters, only item-value pairs. The 'Item-Value' pairs within the 'G' sub-group are defined by the following table:

#	Name	Value Type	Description
1	Primary Interface	Char	Indicates the primary or used ethernet interface type. Interface types are Wired Ethernet (802.3) and Wireless Ethernet (802.11). It is called 'Primary' since, in the future if multiple ethernet interfaces would be supported, it would be the PRIMARY interface used. 'E' = Wired Ethernet 'W' = WIFI 'B' = Bluetooth 'N' = None
2	Network Password	String	Provides the network password used for WEB and TELNET sessions.
3	SNMP Enable	Boolean	Enables or Disables the SNMP services.
4	Telnet Enable	Boolean	Enables or Disables the TELNET services.

#	Name	Value Type	Description
5	FTP Enable	Boolean	Enables or Disables the FTP Server.
6	HTTP Enable	Boolean	Enables or Disables the HTTP (WEB Pages) Server.
7	LPD Enable	Boolean	Enables or Disables the LPD (Line Printer Daemon) services.
8	NetBIOS Enable	Boolean	Enables or Disables the NetBIOS services.
9	Netcenter Enable	Boolean	Enables or Disables the Netcenter services.
10	Gratuitous ARP Period	Decimal	Value of the Gratuitous ARP Period in seconds. 0 = Disabled.
24	WIFI Type	Decimal	WIFI Module type DO1 = 4. Values are 0 – none or 4. Values 1, 2 & 3 are legacy values.

802.3 – Wired Ethernet Configuration Parameters – Identifier 'EW'

The 'WE' sub-group contains network configuration parameters that apply only to the Wired Ethernet (802.3 Specification) ethernet interface. No sub-groups are currently defined for the 'WE' sub-group of configuration parameters, only item-value pairs. The 'Item-Value' pairs within the 'WE' sub-group are defined by the following table:

#	Name	Value Type	Description
1	DHCP Enable	Char	Indicates if the DHCP Protocol is to be used to automatically obtain all required network addresses. Formally known as IP Discovery. 'N' = Static 'B' = BootP 'Y' = DHCP **Note:** For Wired Ethernet BootP is considered as same as DHCP.
2	Static Printer IP Address	String	Static IP Address for the Printer in dotted decimal notation.

#	Name	Value Type	Description
3	Static Printer Subnet Mask	String	Static Subnet Mask for the Printer in dotted decimal notation.
4	Static Printer Default Gateway or Router	String	Static Default Gateway (Router) IP Address in dotted decimal notation.
5	PHY Mode	String	Defines the ethernet PHY Mode (Auto, 10BaseT HD, etc.) Auto-Negotiate = 0 10BaseT Half Duplex = 1 10BaseT Full Duplex = 2 100BaseT Half Duplex = 3 100BaseT Full Duplex = 4
9	Printer TCP Port	Decimal	Value of the TCP Port for Print Services. Stationarey Printers - Default is 9100 Portable Printers – Default is 515
11	Static Primary WINS Server IP Address	String	Static Primary WINS Server IP Address in dotted decimal notation.
12	Static Secondary WINS Server IP Address	String	Static Secondary WINS Server IP Address in dotted decimal notation.
13	Static Primary DNS Server IP Address	String	Static Primary DNS Server IP Address in dotted decimal notation.

#	Name	Value Type	Description
14	Static Secondary DNS Server IP Address	String	Static Secondary DNS Server IP Address in dotted decimal notation.
15	SNMP TRAP IP Address	String	(future) SNMP TRAP IP Address in dotted decimal notation.
16	SNMP Server Address	String	(future) SNMP Server IP Address in dotted decimal notation.
17	NetBIOS Enable	Boolean	Enables or Disables the NetBIOS services.
18	NetBIOS Name	String	NetBIOS Name for the Printer.
20	UDP Port	String	UDP Port number to use for printing; default 515.
21	Inactivity Timeout	Value	Enter number of seconds of inactivity to wait before disconnect.
22	MAC Address (Read Only)	String	MAC address in '112233445566' format.

802.11 – Wireless Ethernet - WIFI Configuration Parameters – Identifier 'WIFI'

The 'WIFI' sub-group contains network configuration parameters that apply only to the Wireless Ethernet (802.11 Specification) ethernet interface. Four (4) sub-groups are currently defined for the 'WIFI' sub-group of configuration parameters and are as follows:

- DO Embedded – Identifier 'DO1'

The previous subgroups which are not supported:

- General WIFI Configuration Parameters – Identifier 'G'
- DPAC Version 1 – Identifier 'DV1'
- DPAC Version 2 (Veyron) – Identifier 'DV2'
- SILEX Version 1 – Identifier 'SV1'

D-O Embedded WIFI Configuration Parameters – Identifier 'DO1'

The 'DO1' WIFI sub-group contains the configuration parameters that are specific to the D-O WIFI solution that is based on the Green Hills / DeviceScape 802.11 software. The 'Item-Value' pairs within the 'DO1' sub-group of the 'WIFI' sub-group are defined by the following tables:

DNS Settings

#	Ezprint	Name	Value Type	Description
1	CTC:SDNS:Y|N	Enable Static DNS	String – 1 char long	Using Static DNS or not. Default value is "N".
2	CTC:DNS1:***.***.***.***	Preferred DNS Server	IP4 string format	IP address for preferred DNS server
3	CTC:DNS2:***.***.***.***	Secondary DNS Server	IP4 string format	IP address for secondary DNS server
4	CTC:DSUF:<DNS Suffix>	DNS Suffix	String	64 characters string + 1 NULL terminated character

Network Settings

#	Ezprint	Name	Value Type	Description
20	CTC:I2:<value>	Inactive Timeout	Unsigned short	Current connection will terminated if no network traffic after a specific interval. Default value is 30 seconds.
21	CTC:D:N|B|Y	IP address method	Unsigned short	N = use static IP address B = BootB enable Y = DHCP enable
22	CTC:I:xxx.xxx.xxx.xxx	Active IP address (READ ONLY)	String	This field is holding the value of the current active IP address. As the result of the query request: 1. If "IP address method" is set to "use static IP address", this field will hold the value of "Static IP address". 2. Otherwise, it will hold the value of the current active IP address. This field is using for reporting only. In order to set the value for static IP address, use item number 32.

#	Ezprint	Name	Value Type	Description
23	CTC:M:xxx.xxx.xxx.xxx	Active Subnet mask (READ ONLY)	String	This field is holding the value of current active Subnet mask address. As the result of the query request: 1. If "IP address method" is set to "use static Subnet mask address", this field will hold the value of "Static Subnet mask address". 2. Otherwise, it will hold the value of the current active Subnet mask address. This field is using for reporting only. In order to set the value for static Subnet mask address, use item number 33.
24	CTC:G:xxx.xxx.xxx.xxx	Active Gateway address (READ ONLY)	String	This field is holding the value of current active Gateway address. As the result of the query request: 1. If "IP address method" is set to "use static Subnet mask address", this field will hold the value of "Static Gateway address". 2. Otherwise, it will hold the value of the current active Gateway address. This field is using for reporting only. In order to set the value for static Gate address, use item number 34.
25	CTC:N:<value>	Printer DNS name	String	64 characters + 1 NULL terminated charater
26	CTC:RDNS:Y|N	Register To DNS	String – 1 char long	Register Printer Name (~ Station Name) to DNS server. Default value is "Y".

<p style="text-align:center">Network Settings</p>

#	Ezprint	Name	Value Type	Description
27	CTC:UDNS:Y|N	Use DNS Suffix	String – 1 char long	Using the DNS suffix for a fully qualification name when referring to the DNS name. Default value is "N".
28	CTC:P3:<value>	UDP port	Unsigned short	Default is 515.
29	CTC:P:<value>	TCP port	Unsigned short	TCP port number. Default is 515.
30	CTC:CR:N|Y	Enable Connection Status	Enable Connection Status	Y = enable of reporting connection status N = disable of reporting connection status
31	CTC:DOP:<value>	DHCP User Class Option	Binary Data	This is the data for the User Class Option for DHCP. Max. length is 257 bytes.
32		Static IP Address	String	Printer statics IP address. Use this field to set or get the value of printer static IP address.
33		Static Subnet mask	String	Printer statics Subnetmask address. Use this field to set or get the value of printer static Subnet mask address.
34		Static Gateway	String	Printer static gateway address. Use this field to set or get the value of printer static Gateway address.
35		LPD Port	Unsigned short	Default 515.
36		LPD Enable	Boolean	Enables or Disables the LPD (Line Printer Daemon) services.

<p style="text-align:center">WIFI Settings</p>

#	Ezprint	Name	Value Type	Description
40	CTC:T:H|P	Network Type	Unsigned char	H = AdHoc P = Infrastructure
41	CTC:E:<value>	ESSID	String	128 characters + 1 NULL terminated string

#	Ezprint	Name	Value Type	Description
42	CTC:NA:\<value\>	Network Authentication Type	Enumeration type or unsigned short	NET_AUTH_TYPE_NONE = 0 NET_AUTH_TYPE_LEAP = 1 NET_AUTH_TYPE_WPA_PSK = 2 (WPA Personal) NET_AUTH_TYPE_WPA = 3 (WPA Enterprise) NET_AUTH_TYPE_WPA_LEAP = 4 (obsolete) NET_AUTH_TYPE_WPA2_PSK = 5 (WPA2 Personal) NET_AUTH_TYPE_WPA2 = 6 (WPA2 Enterprise) NET_AUTH_TYPE_HO4OST_BASED_EAP = 7
43	CTC:ET:\<value\>	EAP Type	Unsigned char	EAP-LEAP (17) EAP-TTLS (21) EAP-PEAP (25) EAP-FAST (43)
44	CTC:P2M:\<value\>	Phase 2 Method	Unsigned char	Inner authentication: 0 = None EAP-GTC = 1 (Default) EAP-MSCHAPV2 = 2 EAP-MD5 = 3 GTC = 4 MSCHAPV2 = 5 MSCHAP = 6 CHAP = 7 EAP-TLS = 8

#	Ezprint	Name	Value Type	Description
45	CTC:LU:<value>	User Name	String	128 characters + 1 NULL terminated char; Write ONLY attribute!
46	CTC:LH:<value>	User Password	String	128 characters + 1 NULL terminated char; Write ONLY attribute!
47	CTC:LU2:<value>	Pass Phrase	String	63 characters + 1 NULL terminated char; Write ONLY attribute!
48	CTC:W:1|2	WEP data encryption	Unsigned char	1 = enable WEP data encryption 2 = allow WEP unencrypted traffic (Default)
49	CTC:S:0|5|13	WEP AP authentication	Unsigned char	Indicate the AP authentication method via WEP. The value specifies the WEP key length. 0 = open 5 = uses Shared Key 40- bit WEP key 13 = uses Shared Key 128-bit WEP key
50	CTC:K:1|2|3|4	WEP Key Selected	Unsigned char	Indicates which WEP key is currently selected for WEP AP authentication, if specified.
51	CTC:K1:<key value>	WEP Key1	String	10 hexadecimal for 40-bit WEP key or 26 hexadecimal for 128-bit WEP key. Upon on the returning from query, this field will contains "0", "5", or "13" to specify the length of WEP key.
52	CTC:K2:<key value>	WEP Key2	String	10 hexadecimal for 40-bit WEP key or 26 hexadecimal for 128-bit WEP key. Upon on the returning from query, this field will contains "0", "5", or "13" to specify the length of WEP key.
53	CTC:K3:<key value>	WEP Key3	String	10 hexadecimal for 40-bit WEP key or 26 hexadecimal for 128-bit WEP key. Upon on the returning from query, this field will contains "0", "5", or "13" to specify the length of WEP key.

#	Ezprint	Name	Value Type	Description
54	CTC:K4:<key value>	WEP Key4	String	10 hexadecimal for 40-bit WEP key or 26 hexadecimal for 128–bit WEP key. Upon on the returning from query, this field will contains "0", "5", or "13" to specify the length of WEP key.
55	CTC:Q:Y|N	Show Signal Strength	Unsigned char	Y = show signal strength N = do not show signal strength (Default)
56	CTC:P2:Y|N	Power Saving Mode	Unsigned char	Y = enable Power Save Mode (Default) N = disable Power Save Mode
57	CTC:GC:	Group Cipher	Unsigned short	For now, it sets as 4 as SWC_CIPHER_WEP104.
58		MAC Address	String	MAC address of the Radio Module, String in format "XX:XX:XX:XX:XX:XX"
59		Regulatory Domain	Unsigned short	Regulatory Domain Country Code for International Setting. Default = 0 (World Wide Roaming), per ISO 3166
60		Radio Physical Mode	Unsigned char	1 = 802.11 a only 2 = 802.11 b/g 3 = 802.11 a/b/g 4 = 802.11 b only 5 = 802.11 g only
61		LPD Enable	Boolean	Enables or Disables the LPD (Line Printer Daemon) services.

NR No Reprint

This command controls the label reprint function following the correction of a fault condition. Upon detection of a fault (ribbon out, paper out, etc.), printing stops and a fault indicator is illuminated. After the problem is corrected, the FEED Key must be pressed to clear the fault and resume normal operation. When enabled, the label in process is not reprinted.

Parameter	NR
Value / Range:	Y, N
Units / Interpretation:	Y = Enabled, N = Disabled
Command Equivalent:	N/A

NS Disable Symbol Set Selection

This command prevents the <STX>y and y commands from changing the default single-byte symbol set. When enabled, DPL Symbol Set commands are ignored.

Parameter:	NS
Value / Range:	Y, N
Units / Interpretation:	Y = Enabled, N = Disabled
Command Equivalent:	N/A

Limitations

When enabled, the only way to change the current symbol set is with the <STX>KcAS command.

OF Option Feedback Mode

This command configures the printer to output the status of the RFID or Scanner option to the active port.

Parameter	OF
Value / Range:	D, Rx, S
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Value	Option Feedback Mode Units / Interpretation
D	Disable
Rx	RFID Enable, where x is the response format: A = ASCII H = Hexadecimal
S	Scanner Enable

Response

Once enabled, the printer will report information about the results of the last label printed. One response per label is returned to the host (this includes each voided and

retried label). The format and contents of the returned information is as follows:

Response format:

        <A;B;C;D;E;F>[CR]

Value	Description
A	Device type: R = RFID S = Scanner
B	Resulting status: C = entire label complete F = faulted (failed) label U = unknown
C	The number of expected reads for barcodes or tags, given in two characters.
D	The number of good reads for barcodes or tags, given in two characters.
E	The printer's internal Job Identifier and Sub Job Identifier, given in four characters each.
F	The data read, delimited with semicolons (;) if multiple reads.

RFID response sample differences:

Since RFID commands vary in operation, the data returned also differs. Write commands return entire tag data; Write/Verify commands return the data written; and, Read commands return data and length requested in the specified format. See RFID Overview for more information.

Write response example:

        <R;C;00;00;0013:0001>[CR]

Write/Verify hexadecimal response example:

        <R;C;01;01;0012:0001;446174616D617820777269746 46573732052464944 42 062657374>[CR]

Read hexadecimal response example:

        <R;C;01;01;0013:0001;446174616D617820777269746 46573732052464944 42 062657374>[CR]

Write/Verify ASCII response example:

<R;C;01;01;0012:0001; Datamax writes RFID best >[CR]

Read ASCII response example:

<R;C;01;01;0013:0001; Datamax writes RFID best >[CR]

Scanner response samples:

A successfully read label:

<S;C;03;03;0002:0001;DATA1;DATA2;DATA3>[CR]

A failed label, successfully retried:

<S;F;02;01;0002:0001;DATA1>[CR]
<S;C;02;02;0002:0001;DATA1;DATA2>[CR]

PC Print Contrast

This command adjusts the relative print edge (gray) component of the print quality, which allows fine-tuning for specific media/ribbon mix.

Parameter:	PC
Value / Range:	0 – 64
Units / Interpretation:	N/A
Command Equivalent:	N/A

PD Present Distance

This command sets the label stop position past the start of print. When the next label format is received, the printer will automatically backfeed to the start position. If the present distance is set to zero, the printer will operate without reversing.

Parameter:	PD
Value / Range:	0 – 400
Units / Interpretation:	1/100 inch
Command Equivalent:	<STX>Kf

PE Peel Mode

This command prevents a Feed operation when the label is presented and not removed.

Parameter:	PE
Value / Range:	Y, N
Units / Interpretation:	Y = Enabled, N = Disabled
Command Equivalent:	N/A

PJ Present Adjust Fine Tune

This command fine-tunes the Present Distance setting in dots to compensate for slight mechanical differences sometimes evident if multiple printers share label formats.

Parameter:	PJ
Value / Range:	+ / − dots
Units / Interpretation:	Dots (model specific)
Command Equivalent:	N/A

PL Printer Level

This command is used to upgrade the software feature level of the printer.

Parameter	PL
Value / Range:	000000 – FFFFFF
Units / Interpretation:	Hex Codes
Command Equivalent:	N/A

PM Pause Mode

See <STX>J for command details.

Parameter:	PM
Value / Range:	Y, N
Units / Interpretation:	Y = Enabled, N = Disabled
Command Equivalent:	<STX>J

PO Paper Empty

This command sets the length of travel before an out of stock condition is declared.

Parameter	PO
Value / Range:	0 - 9999
Units / Interpretation:	1/100 inch
Command Equivalent:	N/A

PP Parallel Direction

This command controls the parallel port communications settings.

Parameter	PP
Value / Range:	X, Z
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Value	Parallel Direction Units / Interpretation
X	Port ID
Z	Direction: U – unidirectional, one-way communication B – bidirectional, IEEE 1284 back-channel operation

PS Present Sensor Equipped

This command allows the printer to sense the present sensor option. See STX V Software Switch Settings for command details.

Parameter	PS
Value / Range:	A, D, E, N, Y
Units / Interpretation:	A or Y = Auto, E = Enabled, N or D = Disabled
Command Equivalent:	<STX>V

- A or Y – automatically senses device presence; if undetected, no error will be generated.
- E – enables the device, where its presence must be detected; otherwise, a fault is generated.
- N or D – disables device detection.

pS Print Speed

See the P Set Print Speed command for details.

Parameter:	pS
Value / Range:	Alpha Character
Units / Interpretation:	Model specific ranges
Command Equivalent:	P

PT Tear Position

This command sets the label stopping location at the tear plate on the printer's cover.

Parameter	PT
Value / Range:	0 – 255
Units / Interpretation:	N/A
Command Equivalent:	N/A

PV Paper Value

This command sets threshold value for the media sensor's "paper" parameter.

Parameter	PV
Value / Range:	0 – 255
Units / Interpretation:	N/A
Command Equivalent:	N/A

PW Password Set

This command modifies the numeric password required to access the menu when security is enabled.

If security is enabled, enter the new password followed by the old password (with no spaces) in this form: XXXXXXXX.

Parameter	PW
Value / Range:	A – Z, 0 – 9
Units / Interpretation:	Four characters (eight characters if security is enabled).
Command Equivalent:	N/A

Note: To be activated, the default password (0000) must be changed.

QQ Query Configuration

This command requires a parameter of either K or Q.

K causes the printer to respond with the Printer Key, used for generating Upgrade Codes.

Q causes the printer to respond with the current configuration settings.

The <STX>Kc response command stream format is sent to the host computer via the same port as the query containing all parameters controlled by the <STX>Kc command, and may be used for restoring the printer's configuration or for configuring other printers.

Parameter:	QQ

Value / Range:	K, Q
Units / Interpretation:	N/A
Command Equivalent:	N/A

RE Ribbon Saver Equipped

This command allows the printer to sense the ribbon saver option. See STX R Ribbon Saver Control for command details.

Parameter	RE
Value / Range:	A, D, E, N, Y
Units / Interpretation:	See list below.
Command Equivalent:	N/A

- A or Y – automatically senses device presence; if undetected, no error is generated.
- E – enables the device, where its presence must be detected; otherwise, a fault is generated.
- N or D – disables device detection.

RF Row Adjust Fine Tune

This command shifts the vertical start of print position in dots upward or downward.

Parameter:	RF
Value / Range:	+ / – dots
Units / Interpretation:	Resolution specific (see Column, Present, & Row Adjust Fine Tune Range).
Command Equivalent:	N/A

RI RFID Configuration

This command configures the optional RFID interface module.

Parameter	RI
Value / Range:	See table below.
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Value	Units / Interpretation		RFID Configuration Definition / Function
AI*hh*	where *hh*:	2-Chararacter Hex ID	Sets the Application Family Identifier (AFI), HF only.

Value	Units / Interpretation		RFID Configuration Definition / Function
AL*n*	where *n*:	E = Enable D = Disable	Allows locking the AFI after writing (HF only).
Bn	where *n*:	D = Disable	Disables padding or truncating of data (EPC only). Nulls are represented as "00". For Hex EPC data a 96-bit tag size is 24 characters and 64-bit is 16. For ASCII EPC data a 96-bit tag size is 12 characters and 64-bit is 8.
		1 = Leading	If the data is less than the selected EPC tag data size, nulls will be added to the front (left); or, if too much data is given, the data will be cut.
		2 = Trailing	If the data is less than the selected EPC tag data size, nulls will be added to the back (right); or, if too much data is given, the data will be cut.
DI*hh*	where *hh*:	2-Chararacter Hex ID	Sets the Data Storage Format Identifier (DSFID), HF only.
DL*n*	where *n*:	E = Enable D = Disable	Allows locking the DSFID after writing (HF only).
E*n*	where *n*:	E = Enable D = Disable	Allows erasures of the tag on error (HF only).
L*hh*	where *hh*:	2-Chararacter Hex ID	Sets the Lock Code (Alien UHF only).
M*n*	where *n*:	D = Disable	Disables the RFID module. ("N" is also a valid disabler.)
		H = HF	Enables the RFID module for HF (Securakey).
		U = UHF	Enables the RFID module for UHF Class 1 (Alien).
		M = UHF	Enables the RFID module for UHF Multiprotocol.
N*n*	where *n*:	64 = 64-bit 96 = 96-bit	Sets the UHF tag data size (Multiprotocol UHF only).

Value	Units / Interpretation		RFID Configuration Definition / Function
P*xxx*	where *xxx*:	3-Digit Value	Sets the tag encoding position: A value of 0.00 causes the print position to be used. A value greater than 0 causes the present position to be used. (Subject to change.)
R*n*	where *n*:	0 – 9	Sets the number of retries for RFID functions.
S*hh*	where *hh*:	2-Chararacter Hex ID	Sets the Electronic Article Surveillance (EAS) set, representing the manufacturer's code (HF only).
T*n*	where *n*:	0 = ISO 15693 1 = Texas Instruments 2 = Philips 3 = ST Micro LRI 512 4 = ST Micro LRI 64	Establishes the tag type (HF only).
U*n*	where *n*:	0 = EPC 0 1 = EPC 0+ Matrics 2 = EPC 0+ Impinj 3 = EPC 1 6 = UCODE EPC 1.19 7 = EM 4022/4222 8 = Gen 2	Sets the UHF tag type (Multiprotocol UHF only).
V*n*	where *n*:	–4 to +4	Adjusts the power, in dBmn (Multiprotocol UHF only).
W*n*	where *n*:	E = Enable D = Disable	Allows locking the tag after writing.

Example

<STX>KcRIMH;RIA11E;RID22E;RISO4;RIR3;RIWE;RIEE;RIP000<CR>

The example sets the printer to HF, protect after write AFI 11, protect after write DFSID 22, set EAS Bit (Mfg. Code 0x04), allow 3 tries for each read or write attempt, lock after writing, erase the tag if there is an error, and use a position of 0.00.

RL Ribbon Low Diameter

This command sets the threshold for a low ribbon indication, where nnnn is the diameter in hundredths of inches.

Parameter:	RL
Value / Range:	100 – 200
Units / Interpretation:	1/100 in.
Command Equivalent:	N/A

RM Rewinder Equipped

This command allows the printer to sense the powered internal rewind option.

Parameter	RM
Value / Range:	A, D, E, N, Y
Units / Interpretation:	See list below.
Command Equivalent:	N/A

- A or Y – automatically senses device presence; if undetected, no error is generated.
- E – enables the device, where its presence must be detected; otherwise, a fault is generated.
- N or D – disables device detection.

RO Row Offset

See R Set Row Offset Amount for command details.

Parameter:	RO
Value / Range:	0 – 9999
Units / Interpretation:	1/100 in.
Command Equivalent:	R

RP Ribbon Low Pause

This command pauses the printer when a Ribbon Low Diameter warning is declared. The PAUSE Button must be pressed to continue printing.

Parameter	RP

Value / Range:	Y, N
Units / Interpretation:	Y = Enabled, N = Disabled
Command Equivalent:	N/A

RR Rewinder Adjust

This command changes the torque applied by the powered rewinder, in percentage points of the nominal force, to minimize TOF registration drift (sometimes evident when using small or narrow media).

Parameter	RR
Value / Range:	-xx, +yy
Units / Interpretation:	Applied torque, where -30 to +15 is the valid range.
Command Equivalent:	N/A

RS Ribbon Low Signal

This command sets the signal output type for the Ribbon Low Diameter condition when using the optional GPIO. See General Purpose Input Output (GPIO) Port Applications for more information.

Parameter	RS
Value / Range:	3, 4
Units / Interpretation:	3 = Active Low, 4 = Active High
Command Equivalent:	N/A

RV Reflective Paper Value

This command sets the threshold value for the reflective media sensor's paper parameter.

Parameter	RV
Value / Range:	0 – 255
Units / Interpretation:	N/A
Command Equivalent:	N/A

RW Retract Delay

This command sets a time delay for the retraction of a presented label, where the time specified is multiplied by ten milliseconds.

Parameter	RW

Value / Range:	1 - 255
Units / Interpretation:	Specified value multiplied by ten milliseconds.
Command Equivalent:	N/A

SA SOP Adjust

This command sets the start of print (SOP) location, relative to the top of form. See STX O Set Start of Print (SOP) Position for command details.

The EX2 accepts this command for backward compatibility only, limited in range (28–228).

Parameter	SA
Value / Range:	0 – 255 (128 nominal)
Units / Interpretation:	N/A
Command Equivalent:	<STX>O

SC Scalable Cache

This command sets the number of 1K blocks allocated for the scalable font engine. Available memory dependent upon model (see Memory Module Identifiers and Allocations).

Parameter	SC
Value / Range:	100 – 8192
Units / Interpretation:	Kbytes
Command Equivalent:	N/A

SE SOP Emulation

This command enables the <STX>O and <STX>f print positioning commands to allow backward compatibility with label formats designed for other printers.

Parameter	SE
Value / Range:	A, L, P, D
Units / Interpretation:	A = Allegro L = Prodigy Plus P = Prodigy D = Disable
Command Equivalent:	N/A

SF Save As Filename

This command, which may be sent separately or included as the last command in an <STX>Kc command string, saves the effective printer configuration to a file in Flash memory with a .dcm file extension.

Parameter:	SF
Value / Range:	Alphanumeric string
Units / Interpretation:	Up to 16 characters
Command Equivalent:	N/A

SG Sensor Gain Value

This command sets the control of the voltage to the LED emitter of the Media Sensor.

Parameter	SG
Value / Range:	0 - 32
Units / Interpretation:	N/A
Command Equivalent:	N/A

Sl Security Lock

This command provides the ability to password-protect the User Interface.

Parameter	SI
Value / Range:	N, Y, T
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Value	Security Function
N*xxxx*	Where *xxxx* is the current password, this disables Menu protection.
Y*xxxx*	Where *xxxx* is a new password, this enables Menu protection and sets a new password.
T*xxxx*	Where *xxxx* is a new password, this enables Menu protection, disables Test functions, and sets a new password.

Note: To be activated, the default password (0000) must be changed.

SL Stop Location

This command sets the label stopping (and in certain cases the starting) location.

Parameter:	SL
Value / Range:	A, H, P, C, T, N
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Value	Stop Location
A	Automatically sets the stop location. Installed options will be "auto-sensed" and the appropriate stop position will automatically be set. Host commands are ignored.
H	Sets stop position according to options installed. If no options are installed the printer sets stop location to the next label's start of print. Host commands will override. The stop location (present distance) may be controlled dynamically by the host using the <STX>f or <STX>Kf commands. This selection has the same effect as <STX>KD Ignore Host Distance bit value 0.
P	Sets the stop location at approximately two millimeters behind the peel bar edge, a nominal peel position. The Present Sensor status and this setting are independent.
C	Sets the stop location to a nominal cut position. For die-cut media, the position is just following the end of the label. The cutter status and this setting are independent.
T	Sets the stop location at the tear bar.
N	Sets the stop location to the start of the next label, equivalent to setting the <STX>KD Ignore Host Distance bit value 1.

SM Maximum Length Ignore

This command controls recognition of the <STX>M command.

Parameter:	SM
Value / Range:	0, 1
Units / Interpretation:	0 = Normal processing, 1 = Ignore
Command Equivalent:	N/A

SN Scanner Configuration

This command configures the linear scanner.

| Parameter | SN |
| Value / Range: | B, C, D, H, M, V |

Units / Interpretation: See table below.

Command Equivalent: N/A

Value	Scanner Configuration Range / Interpretation
B	Barcode Type – Specifies the barcode, using two digits, followed by "Y" (to enable) or "N" (to disable) the code, where: 01 = CODE 39 02 = IATA 03 = CODABAR 04 = INTERLEAVED 2 OF 5 05 = INDUSTRIAL 2 OF 5 06 = CODE 93 07 = CODE 128 08 = MSI/PLESSEY 09 = EAN(13/8) 10 = EAN(13/8)+2 11 = EAN(13/8)+5 12 = UPC(A/E) 13 = UPC(A/E)+2 14 = UPC(A/E)+5 **Note:** To maximize throughput and decoding integrity, enable only those symbologies that will be read.
C	Barcode Count – Specifies the number of codes to be read, where: 00 – 99 (00 = Auto [variable] mode, counting those codes present) **Note:** Do not use Auto Mode with bitmapped codes or codes with certain addendums. See Barcodes for more information.

Value	Scanner Configuration Range / Interpretation
H	Min Readable Height – Sets the vertical distance of the code that must have identical reads to pass, where: 1 = 1/16 2 = 2/16 3 = 3/16 4 = 1/4 5 = 1/2 0 = Disabled (defaults to Redundancy Level, 2x) **Note:** The specified distance should not exceed 50% of the measured barcode height.
M	Mode – Enables detection of the scanner by the printer, where: A = Auto (automatically senses presence); Y is also a valid enabler. E = Enabled (if not detected a fault is generated). D = Disabled (the scanner is disabled); (N is also a valid disabler.)

Value	Scanner Configuration Range / Interpretation
V	Redundancy Level – An alternative data integrity method, where the selected level sets the number of consecutive, identical decodes required to pass the barcode. If differing values are read, the count is restarted, where:
	0 = Auto Mode
	1 = read code 1X
	2 = read code 2X
	3 = read code 3X
	4 = read code 4X
	5 = read code 5X
	6 = read code 6X
	7 = read code 8X
	8 = read code 10X
	9 = read code 12X
	A = read code 15X
	B = read code 20X
	C = read code 25X
	D = read code 30X
	E = read code 35X
	F = read code 40X
	G = read code 45X
	Note: Depending upon the print speed, higher Redundancy Levels may cause erroneous failures when scanning multiple or small barcodes.

Example

<STX>KcSNC00H4MAB12YV0<CR>

The example sets the printer to sense the scanner automatically, to read a variable number of UPC barcodes, and to pass only those codes where a ¼ inch zone has identical reads.

SP Serial Port

This command configures the serial communication port(s).

Parameter:	SP
Value / Range:	xyz
Units / Interpretation:	See table below.
Command Equivalent:	N/A

Value	Serial Port Range / Interpretation		
xyz	x = Port Identifier	y = Function	z = Setting
	A. - Serial A B. - Serial B	P - Handshaking Protocol	B - both H - hardware N - none S - software
		P - Parity	E - even N - none O - odd
		D - Data Length	7 - eight bits 8 - seven bits
		S - Stop Bits	1 - one bit 2 - two bits
xyzz	x = Port Identifier	y = Function	zz = Setting
	A. - Serial A B. - Serial B	B - Baud Rate	12 - 1200 24 - 2400 48 - 4800 96 - 9600 19 - 19200 28 - 28800 38 - 38400 57 - 57600 15 - 115200

Example

<STX>KcSPAPB;SPApN;SPAD8;SPAS1;SPAB19<CR>

The example configures Serial Port A to use hardware and software handshaking, an eight-bit word, with no parity and one stop bit at 19,200 bits per second.

SS or sS Feed Speed

This command controls the rate of label movement between printing areas.

Parameter	SS or sS

Value / Range:	Alpha character
Units / Interpretation:	Model specific ranges (see Speed Ranges).
Command Equivalent:	Sa

ST Sensor Type

Sets sensor type.

Parameter:	ST
Value / Range:	G, C, R
Units / Interpretation:	G = Gap (edge), C = Continuous, R = Reflective
Command Equivalent:	<STX>e, <STX>r, <STX>c

SV Switch Settings

This command controls recognition of the software switch setting command <STX>V.

Parameter	SV
Value / Range:	Y, N
Units / Interpretation:	Y = Processed, N = Ignored
Command Equivalent:	N/A

TP TOF Precedence

This command instructs the firmware to stop printing at the first top of form mark it detects. The default ("No") prints all of the data (traversing the top of form as necessary) then slews to the next TOF.

Parameter:	TP
Value / Range:	Y, N
Units / Interpretation:	Y = Enabled, N = Disabled
Command Equivalent:	N/A

UD User Label Mode

This command places the printer in standalone operation, which provides menu-driven processes to print user defined files, including .dlb, .dpl, .prn, and .txt formats.

Parameter	UD
Value / Range:	Y, N
Units / Interpretation:	Y = Enable, N = Disable
Command Equivalent:	N/A

UM Units of Measure

See STX m Set Printer to Metric Mode or STX n Set Printer to Imperial Mode for command details.

Parameter:	UM
Value / Range:	M, I
Units / Interpretation:	M = Metric, I = Imperial
Command Equivalent:	<STX>m, <STX>n

UN Plug and Play ID Type

This command controls the type of Plug and Play ID supplied; where Y is for unique and N for static.

Parameter	UN
Value / Range:	Y, N
Units / Interpretation:	Y = Unique, N = Static
Command Equivalent:	N/A

UT User Terminator

This command allows word wrapping of long character strings of commands to the next line in a file, for the purposes of readability only.

In the <STX>Kc string, the command UTON must fall somewhere before the first line terminator.

The last command needs to be END, followed by a line terminator (see the EN End Character command for details).

Parameter	UT
Value / Range:	ON
Units / Interpretation:	N/A
Command Equivalent:	N/A

VE Verifier Equipped

This command enables the GPIO for a barcode verifier. See General Purpose Input Output (GPIO) Port Applications for more information.

Parameter	VE
Value / Range:	A, D, E, N, Y
Units / Interpretation:	See list below.

Command Equivalent: N/A

- A or Y – automatically senses device presence; if undetected, no error is generated.

- E – enables the device, where its presence must be detected; otherwise, a fault is generated.

- N or D – disables device detection.

LABEL FORMATTING COMMANDS

The <STX>L command switches the printer from the System-Level Processor to the Label Formatting Processor. All commands following the <STX>L are interpreted as label formatting commands, and can be used to override default parameter values. Selectable parameter value defaults may be also reassigned via the Setup Menu, as defined in the corresponding Operator's Manual. Label formats that contain no commands overriding printer default values will assume those defaults.

- : Set Cut by Amount
- A Set Format Attribute
- B Barcode Magnification
- C Set Column Offset Amount
- D Set Dot Size Width and Height
- E Terminate Label Formatting Mode and Print Label
- e Recall Printer Configuration
- F Advanced Format Attributes
- G Place Data in Global Register
- H Enter Heat Setting
- J Justification
- M Select Mirror Mode
- m Set Metric Mode
- n Set Inch (Imperial) Mode
- P Set Print Speed
- p Set Backfeed Speed
- Q Set Quantity of Labels to Print
- R Set Row Offset Amount
- r Recall Stored Label Format
- S Set Feed Speed
- s Store Label Format in Module
- T Set Field Data Line Terminator

- t Add or subtract date time from the printer date
- U Mark Previous Field as a String Replacement Field
- X Terminate Label Formatting Mode
- y Select Font Symbol Set
- z Zero (Ø) Conversion to "O"
- + | > | (Make Last Field entered an Increment Field
- – |< |) Make Last Field entered a Decrement Field
- ^ Set Count by Amount
- STX D Print adjusted date
- STX S Recall Global Data and Place in Field
- STX T Print Time and Date

: Set Cut by Amount

This command allows a predetermined number of labels to be printed before a cut is initiated. This feature is useful when it is necessary to print an uncut strip of labels. Between 1 and 9999 labels may be printed before a cut is made. The amount must be smaller than the quantity of labels printed.

Syntax

: nnnn

Parameters

Where:

- nnnn – Is a four digit decimal number indicating the number of labels to be printed before a cut is performed.

Sample

```
<STX>L<CR>
:0005<CR>
141100001000100SAMPLE LABEL<CR>
Q0021<CR>
E<CR>
```

Result

The sample above instructs the printer to make a cut after 5, 10, and 20 labels have been printed. Label 21 will be cut at the start of a subsequent label format (batch) unless a default (cut by amount) greater than one has been entered.

Limitations

The cutter must be enabled with all mechanism interlocks closed for operation.

A Set Format Attribute

This command specifies the type of format operation and remains in effect until another format command is specified or another label format has begun (<STX>L). Each label format defaults to Attribute 1 (XOR Mode).

Syntax

An

Parameters

Where:

- n – Is attribute mode 1, 2, 3, or 5; see table below. The default is 1.

n	Attribute	Description	Example
1	XOR Mode	In this mode, the region where text strings, images or barcodes intersect will not be printed. (An odd number of overlapping objects will print.)	
2	Transparent Mode	The intersecting regions of text strings, images, and barcodes will print, allowing the user to print fields atop one another.	
3	Opaque Mode	Intersecting text is obliterated by the text formatted last. Each character cell is treated as opaque. This mode is effective only in rotation 1. See Format Record Commands.	
5	Inverse Mode	This mode allows inverse (white on black) printing (e.g., a proportionally sized border and background are printed similar to photographic negative). If text or image fields overlap in this mode, the effect will be similar to the XOR mode.	

Sample

<STX>L
A3
141100001000100DATAMAX
141100001100110DATAMAX
E

Result

The sample above sets the printer to Opaque Mode and produces one label.

B Barcode Magnification

This command provides a mechanism to specify barcodes greater than 36 dots (0 – 9, A – Z in the field record). The value is reset to 1 at the start of every label and stays active for the entire label or set to a new value.

Syntax

Bnn

Parameters

Where:

- nn – Is a two digit decimal number indicating the magnification value.

Sample

```
<STX>L
D11
B01
1a9305000100030ABCD
B03
1a3105000700030ABCD
Q0001
E
```

Result

The sample above instructs the printer to print two barcodes, each 9 dots by 3 dots.

C Set Column Offset Amount

This command allows horizontal adjustment of the point where printing begins. The printer is instructed to print label formats nnnn units to the right of the position that the format specifies. This feature is useful when a single format is to be printed on labels containing preprinted information.

Syntax

Cnnnn

Parameters

Where:

- nnnn – Is a four-digit number for the column offset, inches/100 or mm/10. The default is 0.

Sample

```
<STX>L
C0050
```

14110000100010ODATAMAX

Result

The sample above shifts all format data 0.5 inches to the right, unless the printer is in metric mode (see Label Formatting Command m Set Metric Mode).

Limitations

If using preprinted labels where the placement of the preprint data varies from label to label, the printed information may overlap the preprinted data.

c Set Cut by Amount

This command is the same as the ":" command, except only a two-digit value can be entered. This command allows a predetermined number of labels to be printed before a cut is initiated. 1 to 99 labels may be printed before a cut is made.

Syntax

cnn

Parameters

Where:

* nn – Is a two-digit number indicating the number of labels to be printed before a cut is performed. The default is one.

Sample

```
<STX>L<CR>
c07<CR>
14110000100010OSAMPLE LABEL<CR>
Q0021<CR>
E
```

Result

The sample above instructs the printer to make cuts after labels 7, 14, and 21 have been printed. See Label Formatting Command : Set Cut by Amount.

Limitations

The cutter must be enabled and all mechanism interlocks closed for the cut operation.

D Set Dot Size Width and Height

This command is used to change the size of a printed dot, hence the print resolution – dots per inch (DPI) of the print head. By changing the height of a dot, the maximum

length of a label can be increased or decreased. See Print Resolutions and Maximum Width & Record Column Values for more information.

Syntax

Dwh

Parameters

Where:

- w – Is Dot Width multiplier 1 or 2.
- h – Is Dot Height multiplier 1, 2, or 3.

Limitations

D11 is the default value for 300, 400 and 600 DPI printer models, while D22 is the default value for all 203 DPI printer models.

E Terminate Label Formatting Mode and Print Label

This command causes the printer, when the processing Label Formatting commands, to terminate the Label Formatting Mode then generate, print, and feed a label. The label generated will be based on whatever data has been received to that point, even if no printable data has been received. (Other termination commands are "X" and "s".) Commands sent to the printer after the Terminate Label command must be of the Immediate, System-Level, or Font Download type.

Syntax

E

Sample

```
<STX>L<CR>
121100000000000Testing<CR>
E<CR>
```

Result

The sample above will print one label.

e Recall Printer Configuration

This command recalls a previously stored printer configuration. It is highly recommended that only one Recall Printer Configuration command be used per label, and that it be used at the beginning of the label; otherwise, unpredictable results will occur. (Printer configurations may be stored using the Extended System-Level Commands or via the printer's menu system.)

Syntax:

eName<CR>

Parameters:

Where:

Name – The name, up to 16 characters, of the configuration file.

<CR> – 0x0d terminates the name.

Behavior:

Sample:

<STX>L<CR>
ePlant1<CR>
1A2210001000000Testing<CR>
E<CR>

The sample above recalls the stored printer configuration, Plant1.

F Advanced Format Attributes

These commands extend the text presentation capabilities for Scalable Fonts. The format attribute allows a set of label format records to select bolding, italicizing, etc. Additional commands allow the specification of line rotation and font changes within a label field. See Advanced Format Attributes for more information.

Two different advanced formatting attributes extend the text presentation capabilities. The first format attribute allows a set of label format records to make a state change that modifies the font attributes of any following DPL text records. The second format attribute provides a means of inserting text and font formatting commands directly into the DPL data stream via a command delimiter structure. All label formats begin by default with attributes disabled. The table below represents the current list of font attributes available to the user. Note that these commands are delimited by the \<xxx> sequence (where xxx is from the list below).

Syntax:

Fa

Parameters:

Where:

Command	Units	Purpose	Notes
FB	+/-	Turns font boldfacing on or off	minus "-" is disable; or, plus "+" is enable
FI	+/-	Turns font italicization on or off	minus "-" is disable; or, plus "+" is enable

Command	Units	Purpose	Notes
FP*n*	Points	Specifies the vertical point size of the following text relative to the baseline.	
FS*n*	Points	Specifies the horizontal point size of the following text relative to the baseline.	

Behavior:

Sample:

```
<STX>L
D11
FA+
FB+
1911S0102600040P018P018New DPL World
FI+
1911S0102000040P018P018New DPL World
FI-B-
1911S0101400040P018P018New DPL World
FB+
1911S0100800040P018P018New DPL World
FB+I+
1911S0100200040P018P018New DPL World
FB-
E
```

Note: Note that if all format commands after the first FB+ were deleted the entire label would have been printed with bold scalable fonts. This is what is meant by a state change. Once invoked, that command is in affect until turned off or the label format is terminated with the "E" "s" or the "X" command.

G Place Data in Global Register

The "G" command saves the print data of a print format record in a global register (temporary storage). This data may be retrieved and copied to another record in the same label format using the special Label Formatting Command: <STX>S. Global registers are named in the order received, beginning with Register A, ending at Register Z, and incrementing with each instance of the G command use.

Syntax

G

Sample

```
<STX>L
121100000000000Testing
G
```

1A2210001000000<STX>SA
E

Result

The sample above stores, retrieves, and prints the data in global register A. One label is printed with "Testing" in two locations.

H Enter Heat Setting

This command changes the "on time" of elements of the print head. The default setting is 10 (except in the case of printers with a menu, where the default setting can be changed through the keypad). An increase or decrease in this value results in a change of heat applied by the print head to the media, lightening or darkening the print contrast accordingly. This is helpful when using different media types, each requiring a different amount of heat to properly image the media. The host device can send this command value to correct the heat setting per the application.

Syntax

Hnn

Parameters

Where:

- nn – Is a two-digit heat value (00-30).

Sample

<STX>L
H15
141100001000100SAMPLE LABEL
E

Result

The sample above sets the printer for a heat value of 15 and prints one label.

J Justification

This command changes the printing justification.

Syntax

Ja

Parameters

Where:

- a – Is a single–digit alpha character:
- L – left justified (default)
- R – right justified
- C – center justified

Sample

```
<STX>L
1911A1801001000TEST1
JR
1911A1801000100TEST2
JC
1911A1802000200TEST3
E
```

Result

The sample above prints "TEST1" one inch up and one inch over going right, "TEST2" one inch up and one inch over going left, and "TEST3" two inches up and over.

Limitations

Display–Equipped Models – This command is only valid for use with scalable fonts.

M Select Mirror Mode

This command instructs the printer to "mirror" all subsequent print field records, producing fields that are transposed visually.

Syntax

M

Behavior

Once set in a label format, Mirror Mode cannot be turned off until the end of the format.

m Set Metric Mode

This command sets the printer to measure in metric. When this command is sent, all measurements will be interpreted as metric values, (e.g., a column offset of 0010 will be interpreted as 1.0 mm).

Syntax

m

Sample

```
<STX>L
```

m
14110001000100SAMPLE LABEL
E

Result

The sample above prints the text (SAMPLE LABEL) starting at location coordinates 10.0 mm, 10.0 mm.

n Set Inch (Imperial) Mode

This command sets the printer to measure in inches. When this command is sent, all measurements will change to inches. Default mode and menu selectable.

Syntax

n

Sample

<STX>L
n
14110001000100SAMPLE LABEL
E

Result

The sample above prints the text (SAMPLE LABEL) starting at location coordinates 1.0 inch, 1.0 inch.

P Set Print Speed

This command sets a print speed for a label or batch of labels. See Speed Ranges.

Syntax

Pa

Parameters

Where:

- a – Is a single character representing a speed.

Sample

<STX>L
PC
14110001000100LABEL1
E
<STX>L
14110001000100LABEL2
E

Result

The sample above prints two labels, the first at a speed of 2 inches per second (51 mm per second) and the second at the default setting.

p Set Backfeed Speed

This command, typically used in conjunction with the Cut or Peel and Present operations, controls the rate at which the labels will reverse to align to the next start of print position. The setting remains in effect until another backfeed speed command is received or until the printer is reset. See Speed Ranges.

Syntax

pa

Parameters

Where:

- a – Is a single alpha character representing a speed.

Sample

<STX>L
pF

Result

The sample above sets the printer to a backup speed of 3.5 IPS.

Q Set Quantity of Labels to Print

This command sets the number of the label copies to be printed. A one to five digit value is allowed, if the command is delimited by a carriage return <CR>. This permits host applications to generate label quantity commands without the need to pad leading zeros. (A four-digit command value does not need to be <CR> terminated.)

Syntax

Qnnnnn

Parameters

Where:

- nnnnn – Is a one to five-digit delimited value setting for the number of labels to be printed. The default value is one.

Sample

<STX>L

121100000000000Testing<CR>
Q0020<CR>
E<CR>

Result

The sample will print a batch of 20 identical labels.

Limitations

Specifying 9999 as the four-digit quantity results in continuous printing.

R Set Row Offset Amount

This command allows vertical adjustment of the point where printing begins. The printer is instructed to print label formats nnnn units above the position that the format specifies. This feature is useful when a single format is to be printed on labels containing preprinted information.

Syntax

Rnnnn

Parameters

Where:

- nnnn – Is a four-digit number (0000-9999) for the row offset, in inches/100 or millimeters/10. The default is 0.

Sample

<STX>L
R0037
141100001000100SAMPLE LABEL
E

Result

The sample above prints a label with a row offset amount of .37 inches, unless in metric mode.

Limitations

If using preprinted labels where the placement of the preprint data varies from label to label, the printed information may overlap the preprinted data.

If printing near the TOF is important (i.e., on very small labels or in very tight formats), it may be necessary to use the ROW ADJUST setting to shift the vertical start of print position in the negative direction.

r Recall Stored Label Format

This command is used to retrieve label formats stored on a memory module. Embedding recalled labels, up to 6 levels of nesting, within a recall label is also possible.

Syntax

rnn...n

Parameters

Where:

* nn...n - Is a label name, up to 16 characters in length. The name is case-sensitive.

Sample

The following samples explain different ways to recall and print a label format. (Use <STX>W to view a memory module's directory.)

String Sent	Printer Interpretation

Sample 1:
 	
    \<STX>L\<CR>
    rTEST\<CR>
    Q0002\<CR>
    E\<CR>
	
	Begin label format
	Retrieve format named TEST
	Quantity requested = 2
	Terminate formatting and print

Sample 2:
 	
    \<STX>L\<CR>
    rTEST\<CR>
    X\<CR>
    \<STX>G\<CR>
	
	Begin label format
	Retrieve format named test
	Terminate formatting
	Print

Sample 3:
 	
    \<STX>L\<CR>
    D11\<CR>
    PO\<CR>
    SO\<CR>
    rTEST\<CR>
    E\<CR>
	
	Begin label format
	Dot size = 1x1
	Print speed O
	Feed speed O
	Retrieve format named test
	Terminate formatting and print

The following sample explains recall embedding.

String Sent	Printer Interpretation
\<STX>L rLABEL1 191111111111LABEL1FIELD1 sGLabel1	Store label 1

String Sent	Printer Interpretation
<STX>L rLABEL1 191111111111LABEL2FIELD1 sGLabel2	Store label 2
<STX>L rLabel2 19111111111LABEL3FIELD1 E	Print label 3 What gets printed: LABEL1 FIELD1 LABEL2 FIELD1 LABEL3 FIELD1

S Set Feed Speed

This command controls the rate at which the label is moved through non–printed areas. The setting remains unchanged unless another feed speed command is received or until the printer is reset. See Speed Ranges.

Syntax

Sa

Parameters

Where:

* a – Is a single alpha character representing a speed.

Sample

<STX>L
SE
141100001000100LABEL1<CR>
E
<STX>L
1411000010001000LABEL2<CR>
E

Result

The sample above sets a 3 IPS feed speed and prints two labels, with the same feed speed for both.

s Store Label Format in Module

This command stores a label format to a specified module as a .dlb file. Supplying the module name will store the label to that module; otherwise, using C will cause the

label format to be stored in the selected default module (see STX X Set Default Module). In addition, this command terminates the Label Formatting Command.

Syntax

sann...n

Parameters

Where:

- a – Is the module designator representing a single character module name (see Memory Module Identifiers and Allocations).
- nn...n – Represents the name of the label (maximum 16 characters). The name is case-sensitive.

Sample

```
<STX>L
D11
1911005010000000123456789012
19110050200000001234567
19110050000000000Sample
1X1100000000000B250250002002
Q0001
sATEST
```

Result

The sample above stores a format in Memory Module A and names it "TEST". (To recall a label format from the module use the "r" command.)

T Set Field Data Line Terminator

This command, intended for use with record types that accept binary data (e.g., PDF417), allows binary control codes (e.g., a carriage return) to be embedded in the printed data by setting an alternate data line terminator. Valid only for the next format record, the terminator then defaults back to the carriage return.

Syntax

Tnn

Parameters

Where:

- nn – Is an ASCII two-character representation of a HEX code to be used for the end of data terminator.

Sample

```
<STX>L
T00
191100200000000TEST<NULL>
141100001000100TERMINATOR
Q0001
E
```

Result

The sample above sets a NULL terminator (ASCII NULL: HEX 00) for the data line termination code. The terminator is immediately restored to a carriage return <CR>, as seen in the format record containing the text "TERMINATOR".

t Add or subtract date time from the printer date

This command allows the user to print an adjusted date of the printer. This date can be printed using the Special Label Formatting Command <STX>D. This command does not change the printer date.

Syntax

txnnnn<CR>

Parameters

Where x is:

- D – adjust by days
- W – adjust by weeks
- M – adjust by months
- Y – adjust by years

Where:

- nnnn – 4 digits to be added or subtracted. An optional '–' may precede the digits to indicate subtraction.

Sample 1

Assume the printer date is set to January 01, 2021.

```
<STX>L
tD0005
121100001000100 Expiration Date:<STX>D GHI PQ, RSTU
E
```

Sample 1 prints: Expiration Date: JAN 06, 2021

Sample 2

Assume the printer date is set to January 31, 2021.

```
<STX>L
tM0001
121100001000100 Expiration Date:<STX>D GHI PQ, RSTU
E
```

Sample 2 prints: Expiration Date: FEB 28, 2021

When advancing from a day at the end of the month with more days than the adjusted date, the printed date will not be greater than the maximum number of days of the adjusted month.

Sample 3

Assume the printer date is set to January 01, 2021.

```
<STX>L
tW-0001
121100001000100 Expiration Date:<STX>D GHI PQ, RSTU
E
```

Sample 3 prints: DEC 25, 2020

U Mark Previous Field as a String Replacement Field

This command controls the formatting of replacement data. Specifying a field as a string replacement for dynamic, not static, fields will optimize throughput. See STX U Label Format String Replacement Field.

Syntax

U

Sample

```
<STX>L
D11
1211000010000001234567890012
U
12110000200000001234567
U
16110000000000Sample
1X110000000000B250250002002
Q0001
E
<STX>U01ABCDEFGHIJKL
<STX>U0289O1234
<STX>G
```

Result

The sample above sets the format for register loading and prints two labels. The first two of four format records have been designated replacement fields. The second label is generated with System-Level field-replacement commands and printed.

The length of the original string sets the data string length of any replacement; both must be equal. The data being used when created must be valid for the font type being selected.

X Terminate Label Formatting Mode

This command causes the printer, when in label formatting mode, to immediately switch to the system command mode and generate a label format based on the data received at that point. However, unlike the "E" command, it will not print a label. (Other termination commands are the "E" and "s".)

Syntax

X

Sample

```
<STX>L
141100001000100SAMPLE
X
```

Result

The sample above will result in a label format, but no label will be printed.

y Select Font Symbol Set

This command, like the <STX>y, selects the scalable font symbol set. The selected symbol set remains active until another symbol set is selected. See STX y Select Font Symbol Set and Single and Double Byte Character Font Mapping for more information.

Syntax

ySxx

Parameters

Where:

- S – Byte-size designation:

  - S – Single byte symbol sets.
  - U – Double byte symbol sets.

- xx – Symbol set selection.

Sample

<STX>L
ySSW<CR>

Result

The sample selects the Swedish symbol set for use in format records using scalable fonts.

z Zero (Ø) Conversion to "0"

This command removes the slash zero in fonts 0 to 8, and in the human–readable field (if any) of the barcodes A to Z. The command applies only to format records containing those fonts and barcodes, and is effective only for the label format in which it appears.

Syntax

z

Sample

<STX>L
z
121100000000000Test0000
E

Result

None of the smooth fonts (i.e., Font 9) use the slash zero convention, and this command will have no effect on scalable fonts.

+ | > | (Make Last Field entered an Increment Field

This command is used to print sequenced labels. It causes the printer to automatically increment a field in a batch of labels. The numeric data in the field will increment by the value assigned after the plus sign (+) each time a label is produced [or the greater than symbol [>] can be substituted to make the field increment alphabetically, or the left parenthesis [(] can be substituted to make the field increment hexadecimal data (valid hexadecimal data is 0-9 or A–F, usually in pairs)]. This command is effective only on the label format record that it follows, and is intended to be used with the Q, <STX>E, or <STX>G commands.

Syntax

*pii

Parameters

Where:

- * – Is "+" for numeric increment, ">" for alphanumeric increment, or "(" for hexa-decimal increment.
- p – Is the fill character for the left–hand character of the field.
- ii – Is a mask for the amount by which to increment the field.

Sample

```
<STX>L
13220000000000012345
+01
Q0003
E
```

Result

The sample above will generate a single field label format that prints the initial label with a value of 12345, and then increments that number by one for the next two labels.

Embedding

Numeric strings for incrementing may also be embedded between alphabetic characters (e.g., when systems require alphanumeric barcodes with alphabetic prefixes or suffixes).

Sample

```
<STX>L
161100000100010AB0001CD
+ 100
Q0003
E
```

Result

The sample above will print three labels, incrementing 0001 by 1 on each label with AB and CD remaining untouched: AB0001CD, AB0002CD, AB0003CD. Note that the increment value has one leading blank and two trailing zeros, while the blank is a pad character and the trailing zeroes are placeholders that leave CD unchanged.

– |< |) Make Last Field entered a Decrement Field

This command is used to print sequenced labels. It causes the printer to automatically decrement a field in a batch of labels. The numeric data in the field will decrement by the value assigned after the minus (–) sign each time a label is produced. The less than character "<" can be substituted to make the field decrement

alphabetically, or the right parenthesis ")" character can be substituted to make the field decrement hexadecimal data (valid hexadecimal data is 0-9 or A-F, usually in pairs). This command is effective only on the label format record that it follows, and is intended to be used with the Q, <STX>E or <STX>G commands.

Syntax

*pii

Parameters

Where:

- * – Is "–" for numeric decrement, "<" for alphanumeric decrement, or ")" for hexa-decimal decrement.
- p – Is the fill character for the left-hand character of the field.
- ii – Is a mask for the amount by which to decrement the field.

Sample

<STX>L
132200000000000123AB
<01
Q0003
E

Result

The sample above will generate a single field label format that prints the initial label with a value of 123AB, and then decrements that number by one for the next two labels.

Embedding

Numeric strings for decrementing may also be embedded between alphabetic characters (e.g., when systems require alphanumeric barcodes with alphabetic prefixes or suffixes).

<STX>L
1611000001000101000CD
100
Q0003
E

Result

The sample above will print three labels: 1000CD, 999CD, and 998CD. Note that the pad character is a placeholder for digits removed from the left side in the subtraction process. When a fixed pitch font is used, the justification of the rightmost character is sustained regardless of the number of digits replaced by the pad character on the left side.

^ Set Count by Amount

This command allows applications using the increment / decrement field command to print more than one label with the same field value before the field data is updated. The default is 1.

Syntax

^nn

Parameters

Where:

- ^ – 0x5E or 0x40 if using Alternate or Alternate 2 Control Codes.
- nn – Is a two-digit value that specifies the number of labels to be generated before incrementing (or decrementing) the field value.

Behavior

This command can only be issued once per label format. In addition, when alternate Control Codes are enabled, the "^" character must be replaced by the "@" character (hexadecimal 0x40); see Control Code Command Functions.

Sample

```
<STX>L
13220000000000012345
-01
^02
Q0006
E
```

Result

The sample above prints two labels containing the same field value before decrementing the field. Six labels are printed.

Special Label Formatting Command Functions

Two Special Label Formatting Commands, the <STX>S and the <STX>T, are entered directly into the data field of label format records. (Do not confuse them with System-Level Commands because the same control character is used.) If alternate control codes are enabled the <STX> becomes "~" (hexadecimal 0x7E); see Control Code Command Functions.

Label Formatting Character	Command Description
<STX>D	Print adjusted date
<STX>S	Recall global data and place in field
<STX>T	Print time and date

STX D Print adjusted date

This command prints the adjusted date generated by the 't' label formatting command. Using string characters, allows the adjusted date data to be selected and printed. In addition, the <STX>D may be preceded by data to be printed/encoded, and/or the string may be terminated by an <STX> command followed by more data, then <CR> terminated. The string characters are not printed; instead, the label will show the corresponding print value.

Syntax

<STX>Dstring<CR>

Parameters

Where:

• string - Is any set of characters, A – Z and a - h; see the following table.

String Characters	Print Values	String Markers	Print Values
A	Week Day (Mon = 1, Sun = 7)	VW	24-hour time format
BCD	Day Name	XY	12-hour time format
EF	Month Number	Za	Minutes
GH...O	Month Name	gh	Seconds
PQ	Day	bc	AM or PM
RSTU	Year	def	Julian Date

Sample 1

Assume the printer date is set to January 01, 2021.

<STX>L
tD0005
121100001000100 Expiration Date:<STX>D GHI PQ, RSTU
E

Sample 1 prints: Expiration Date: JAN 06, 2021

Sample 2

Assume the printer date is set to January 01, 2021.

<STX>L
tD0005
121100001000100 Expiration Date:<STX>D GHI PQ,
RSTU<STX> <<<<
E

Sample 2 prints: Expiration Date: JAN 06, 2021

STX S Recall Global Data and Place in Field

This command, when in the format record data field, places data from a specified global register into the data field. See the G Place Data in Global Register command.

Syntax

<STX>Sn

Parameters

Where:

- n – Specifies the global register (A – P) that contains the data to place into the data field.

Sample

<STX>L
121100000000000DMX
G
1A2210001000000<STX>SA
E

Result

The sample above places the string "DMX" into the next available global register (A), and then line 4 is effectively replaced by the data from global register A.

STX T Print Time and Date

This command, using string characters and markers, allows time and date data to be selected and retrieved from the internal clock. In addition, the <STX>T may be preceded by data to be printed/encoded, and/or the string may be terminated by an <STX> command followed by more data then <CR> terminated. The string characters/markers are not printed; instead, the label will show the corresponding print value.

Syntax

<STX>Tstring<CR>

Parameters

Where:

- string – Is any set of characters, A – Z and a – h; see the table below.

String Characters	Print Values	String Markers	Print Values
A	Week Day (Mon = 1, Sun = 7)	VW	24-hour time format
BCD	Day Name	XY	12-hour time format
EF	Month Number	Za	Minutes
GH…O	Month Name	gh	Seconds
PQ	Day	bc	AM or PM
RSTU	Year	def	Julian Date

Sample 1

Assume the printer date is set to December 19, 2021.

<STX>L<CR>
121100001000100<STX>TBCD GHI PQ, TU<CR>
E<CR>

Sample 1 prints SUN DEC 19, 21.

Sample 2

Assume the printer date is set to December 19, 2021.

<STX>L<CR>
191100100100010<STX>TEF/PQ<CR>
E<CR>

Sample 2 prints 12/19.

Sample 3

Assume the printer date is set to December 19, 2021.

<STX>L<CR>
191100100100010ABC <STX>TEF/PQ<STX> DEF<CR>
E<CR>

Sample 3 prints ABC 12/19 DEF, and illustrates a method of embedding the time string, where the string must be terminated by <STX>.

FONT LOADING COMMANDS

These commands are utilized to send bitmap fonts to the printer. The assigned font ID number command must be sent to the printer before the font file. All Font Loading Commands begin with <ESC> (ASCII control character 27 [decimal]). The downloaded font will be stored in the default module (refer to the <STX>X command) as file type .dbm. The commands in the table below are listed in their order of appearance, top to bottom, during font downloading. The <SOH>D command must be sent prior to downloading a font.

- *c###D Assign Font ID Number
-)s###W Font Descriptor
- *c###E Character Code
- (s#W Character Download Data

*c###D Assign Font ID Number

This command is the first command required for downloading a font to either RAM or Flash Memory modules. ESC represents the ASCII control character 27.

Syntax

<ESC>*c###D

Parameters

Where:

- ### - Is the font ID numbers 100-999 (000 – 099 are reserved for resident fonts).

)s###W Font Descriptor

This command (typically first data in a font file) contains all of the information about the font contained in the file. Different font generation software will create different length header information, but the initial 64 bytes will remain consistent with the PCL-4 (HP LaserJet II) format.

Syntax

<ESC>)s###Wddd...d

Parameters

Where:

- *###* – Is the number of bytes of font descriptor data from 1 to 3 ASCII decimal digits.
- dd…d – Is the descriptor.

*c###E Character Code

This code is the ASCII decimal value corresponding to the next downloaded character.

Syntax

<ESC>*c*###E

Parameters

Where:

- *###* – Is the ASCII value of the character, three digits maximum, 0 to 999.

(s#W Character Download Data

This command contains all of the information for one downloaded character.

Syntax

<ESC>(s*###*Wnn…n

Parameters

Where:

- *###* – Is the number of bytes of bitmapped data, three digits maximum, from 1 to 999.
- nn…n – Is the bitmapped data.

FORMAT RECORD COMMANDS

A format record is a data string that contains the information to be printed on labels. Records are the building blocks of label formats.

Every record must end with a termination character (usually a carriage return, <CR>). Omitting termination characters will result in the concatenation of records. Omitting the carriage return that precedes the termination character E, which is necessary to complete the label formatting and begin printing, will cause the printer to continue interpreting all subsequent data as label print format records.

Generating Records

Every record is made of three parts:

1. A header that is *15 bytes in length,
2. The data to be printed, and
3. A termination character (e.g., <CR>) marking the end of the field.

The header is used to select the appearance of the data when printed by choosing rotation, font type, size, and position options. Every header contains similar information, but different types of records may use this information in different ways.

The six record types are:

1. Internal bitmap fonts
2. Smooth fonts
3. Scalable fonts
4. Barcodes
5. Images
6. Graphics (lines, boxes, etc.)

See Format Record Structure for definitions of how these records are constructed for each of the six field types.

- Internal Bitmapped Fonts
- Smooth Font, Font Modules, and Downloaded Bitmapped Fonts
- Scalable Fonts
- Images

- **Lines and Boxes**

- **Polygons**

- **Circles**

- **Fill Patterns**

- **Advanced Format Attributes**

- **Barcodes**

Format Record Structure

Format records (with spaces between fields added here for readability – the actual data stream cannot contain spaces between fields) conforms to the following fixed-length field format.

Identifying lower case letters have been placed below field values for reference in the following sections:

a b[b[b]] c d eee ffff gggg [hhhh iiii] jj…j Termination character

Location Within Record	Internal Bitmapped Font	Smooth Font	Scalable Font	Barcode	Images	Graphics
a	Rotation	Rotation	Rotation	Rotation	Rotation	1
b[b[b]]	Font ID	9	9	Barcode	Y	X
c	Width Multiplier	Width Multiplier	Width Multiplier	Wide Bar	Width Multiplier	1
d	Height Multiplier	Height Multiplier	Height Multiplier	Narrow Bar	Height Multiplier	1
eee	000	Font Size/ID	ID	Barcode Height	000	000
Ffff	Row Position	Row Position	Row Position	Row Position	Row Position	Row Position
gggg	Column Position	Column Position	Column Position	Column Position	Column Position	Column Position
hhhh	N/A	N/A	Font Height	N/A	N/A	N/A
iiii	N/A	N/A	Font Width	N/A	N/A	N/A
jj…j	Data String	Data String	Data String	Data String	Image Name	Graphics Specifier

The record structure is shown for each of the record types. The left-most column shows the locations of all characters in the record, and corresponds to the example above the table.

Each record structure interprets the characters of the record in its own way, though some of the interpretations of the characters are identical across all record types. For example, the characters ffff are interpreted as Row Position in all record types. While c is a Width Multiplier for Internal Bitmapped Font, Smooth Font, Scalable Font, and Image record types, it has other interpretations for Barcode and Graphics record types.

The table below defines the allowed values and their meanings for each field type.

Field Type	Allowed Values
a (Rotation)	1=0º, upright; 2=90º clockwise; 3=180º; 4=270º clockwise
b[b[b]] (Field Type)	See individual field types below for allowed values.
c (Width multiplier)	1=100% width; 2=200%; 3=300%; to a maximum of z=62x 100% width
d (Height multiplier)	Same as "c" for height.
eee	See individual field types below for allowed values.
ffff	Row position. Depends on system units value: If Imperial, 1/100ths of inches (1234 is 12.34 inches) If metric, 1/10ths of millimeters (1234 is 123.4mm)
gggg	Column position. Same as "ffff" for row position.
hhhh	See individual field types below for allowed values.
iiii	See individual field types below for allowed values.
data	Data to be printed; for Images the name of the graphic to be saved; for Graphics, a specifier.

Header Fields

Each of the fields in the record header is generally described below. Please reference the detailed descriptions under Record Structure Types for variations. The field name titles of the following paragraphs are preceded with a reference letter. All characters sent to the printer within the header fields are ASCII, alphanumeric.

a: Rotation

The first field of a header is a single ASCII character that selects the clockwise degree of rotation for the data to be printed on a label, where:

1 = 0º; 2 = 90º; 3 = 180º; and, 4 = 270º.

b: Fonts, Barcodes, Graphics, and Images

The second field (b) determines how the rest of the fields are interpreted, as shown in the table below.

- Values 0 through 9 select human-readable fonts. 0 through 8 will select standard printer fonts; value 9 selects the CG Triumvirate smooth scalable font (internal) or scalable fonts. When 9 is used to select a scalable font, the font size (font I.D. number) is chosen by entering a value in the height field eee.
- Values A through z select barcodes. Values A through T (uppercase) will print barcodes with human-readable interpretations. Values a through z (lowercase) will print barcodes only.
- Value W requires two additional characters to specify the Barcode/Font ID.
- A font field value X selects a drawing object (line, box, circle or polygon), and field value Y is used to print an image stored in a module.

b Font Field Value	Interpretation
0-9	Font
A-T	Barcode with human-readable text.
a-z	Barcode without human-readable text.
Wxx	Barcode/Font expansion
X	Line, box, polygon, circle
Y	Image

c: Width Multiplier

Values 1-9, A-Z, and a-z represent multiplication factors from 1 – 61, respectively. For human-readable fonts, the width multiplier represents the number of times the selected font dot tables are multiplied and has no effect on the character height. For barcodes, this character specifies the wide bar width or ratio at a resolution that is dependent upon the printer model. See Barcode Default Widths and Heights for default values.

d: Height Multiplier

The height multiplier has the same range and function as the width multiplier (c), but vertical. When used in the context of barcodes, this field is the ratio denominator, or the small bar (module) width. Values 1-9, A-Z, and a-z will give a narrow bar width of one dot (dot size = 1/printhead resolution) to dots. The narrow bar width resolution and range are dependent upon the print head resolution (see Print Resolutions and Maximum Width & Record Column Values). A "dot multiplier" command can also be used to change the printed dot size (see Label Formatting Command D Set Dot Size Width and Height).

DPL Command Reference

eee: Barcode Height (Font Size/Selection)

This field has interpretations dependent upon the value of the font b field, as shown below.

b Font Field Value	eee Field Range	eee Field Interpretation
0–8	000	Not used – Internal bitmapped font
9	000–999, A04–A72, S00–S9z, U00–U9z, u00–u9z	Font height; Font selection
A–T	000–999	Barcode height (with human–readable)
a–z	000–999	Barcode height
Wxx	000–999	Barcode height (with human–readable)
X, Y	000	Not used

ffff: Row Position

The lower left corner of a label is considered the "home position". The row position field is a <u>vertical</u> coordinate that determines how far above the home position the data is to be printed. Field data is interpreted in hundredths of an inch or tenths of millimeters.

gggg: Column Position

This field is a <u>horizontal</u> coordinate that determines how far to the right of "home position" the data will be printed.

hhhh: Optional Scalable Font Height

The height of a scalable font can be specified in two ways: points or dots. To specify the height in points the first character of the field is a "P" followed by the number of points, 004 to 999. To specify the size in dots, all four characters must be numeric. This field must be specified for scalable fonts. (See note below Optional Scalable Font Width.)

iiii: Optional Scalable Font Width

The width of a scalable font can be specified in two ways, points or dots. To specify the width in points, the first character of the field is a "P" followed by the number of points, 004 to 999 points. To specify the size in dots, all four characters must be numeric. This field must be specified for scalable fonts.

Note: To ensure that the data stream is portable to other printers, specify the font size in points. If the font is specified in dots, it will output differently on printers with different DPI/MMPI resolutions. There are 72.307 points per 1 inch (2.847 mm).

jj...j: Data Field

The final field contains the data that will actually be printed on the label. A string of data can be up to 255 characters in length (except when using the PDF417 barcode, which may be up to 3000 characters long), ending with a carriage return. Characters placed in the data field will be printed as long as they fall within the physical range of the print head (see Print Resolutions and Maximum Width & Record Column Values).

Format Record Example

Received label format data is processed by the printer sequentially, left to right and top to bottom.

String Sent	Interpretation
<STX>L<CR> D11<CR> 121100000050005Home Position<CR> 191100602000200ROTATION 1<CR> 291100602000200ROTATION 2<CR> 391100602000200ROTATION 3<CR> 491100602000200ROTATION 4<CR> 1A3104003000260123456<CR> 2A3104001400300123456<CR> 3A3104001000140123456<CR> 4A3104002600100123456<CR> 1X1100000000000B400400003003<CR> 1X1100002000000L400003<CR> 1X1100000000200L003400<CR> 121100004100010Printhead Location<CR> Q0001<CR> E<CR>	Begin label format Set dot size Format text Format text Format text Format text Format text Format barcode with text Format barcode with text Format barcode with text Format barcode with text Format box Format line Format line Format text Label quantity End formatting, begin printing

The first line in the example is the System-Level Command directing the printer to begin label formatting. (Other System-Level Commands may precede the <STX>L for printer setup.) Lines 2, 14, and 15 are Label Formatting Commands. Line 15 is the exit and print command. The remaining lines (3–13) are print format records.

The third line of the label format example consists of the following:

121100000050005HOME POSITION<CR>

This string comprises a complete record, shown below, divided into its three basic component parts.

Header	Data String	Termination Character
121100000050005	HOME POSITION	<CR>

The record (with spaces added for readability) conforms to the following fixed field format. Identifying lower case letters have been placed below field values for reference. For more information, see Format Record Structure.

```
1  2  1  1  000  0005  0005  HOME POSITION      <CR>
a  b  c  d  eee  ffff  gggg  [hhhh iiii] jj…j  Termination character
```

Internal Bitmapped Fonts

This record type is used for internal bitmapped fonts.

When a 0 through 8 is entered in field b, then the height field eee is not used. The bitmapped fonts include 8 different fonts (see Available Fonts – Sizes and References).

Syntax

abcd eee ffff gggg jj…j <CR>

Parameters

Where:

Field	Valid Inputs	Meaning
a	1, 2, 3 and 4	Rotation
b	0 to 8	Font
c	1 to 9, A to Z, and a to z	Width Multiplier
d	1 to 9, A to Z, and a to z	Height Multiplier
eee	000	N/A
ffff	0000 to 9999	Row
gggg	0000 to 9999 Dependent upon printer (see Print Resolutions and Maximum Width & Record Column Values).	Column
jj…j	Valid ASCII character string up to 255 characters, followed by a termination character.	Data

Smooth Font, Font Modules, and Downloaded Bitmapped Fonts

This record type is used for internal smooth fonts (CG Triumvirate) or a bitmapped font downloaded to a memory module; see Font Loading Commands.

When a 9 is entered in field b, then the height field eee determines the font. The internal smooth font has up to 13 font sizes (see Available Fonts – Sizes and References). Values 100 through 999 select individual fonts stored on DRAM, or Flash memory. These include downloaded bitmapped fonts. Use eee values of 096 – 099 for Kanji fonts, if equipped (see Single and Double Byte Character Font Mapping).

Syntax

abcd eee ffff gggg jj…j <CR>

Parameters

Where:

Field	Valid Inputs	Meaning
a	1, 2, 3 and 4	Rotation
b	9	Fixed Value
c	1 to 9, A to Z, and a to z	Width Multiplier
d	1 to 9, A to Z, and a to z	Height Multiplier
eee	000 to 999 (000 to 099 Reserved), A04 to A72, x04 – x72, where x is an upper case letter (see Single and Double Byte Character Font Mapping).	Font / Size
ffff	0000 to 9999	Row
gggg	0000 to 9999, dependent upon printer (see Print Resolutions and Maximum Width & Record Column Values).	Column
jj…j	Valid ASCII character string up to 255 characters, followed by a termination character.	Data

Scalable Fonts

The Smooth Scalable Font Technology is licensed from AGFA. Both Microtype and TrueType (.TTF) Scalable Font file formats are supported. The eee field identifies the scalable font, and data type – normal (binary) or Hex ASCII, uppercase S or U – binary, and lowercase u – Hex ASCII. Values S00 to S9z, and U00 to U9z (u00 to u9z), select a

scalable font. S00, S01 and SAx are used for the standard internal (resident) fonts. For more information, see Single and Double Byte Character Font Mapping.

Note: The actual scalable font available is dependent on your printer model and equipped options.

Syntax

abcd eee ffff gggg jj...j <CR>

Parameters

Where:

Field	Valid Inputs	Meaning
a	1, 2, 3 and 4	Rotation
b	9	Font
c	1 to 9, A to Z, and a to z	Width Multiplier
d	1 to 9, A to Z, and a to z	Height Multiplier
eee	S00 to Szz, U00-Uzz, u00-uzz	Font Data Type
ffff	0000 to 9999	Row
gggg	Dependent upon printer (see Print Resolutions and Maximum Width & Record Column Values).	Column
hhhh	P004-P999, 0016-4163*	Character Height; points, dots
iiii	P004-P999, 0014-4163*	Character Width; points, dots
jj...j	Valid ASCII character string up to 255 characters, followed by a termination character.	Data

* Character sizes are resolution dependent, as indicated in the following table.

Print head Resolution (DPI)	Character size (dots)	
	Width	Height
203	16-2817	16-2817

Print head Resolution (DPI)	Character size (dots)	
	Width	Height
300	14-4163	16-4163
400	22-5550	22-5550
600	33-8325	33-8325

Note: A scalable font cache must be allocated to print. Minimum cache size is 15. The double byte fonts require five units of additional cache.

Behavior

Single and Double Byte Character Font Mapping

Scalable Font 00: CG Triumvirate Bold Condensed (Resident)

CG Triumvirate Bold Condensed. Single Byte Scalable Font ID S00. This is a resident embedded Scalable Font. .

Scalable Font 01: CG Triumvirate (Resident)

CG Triumvirate: Single Byte Scalable Font ID S01. This is the default resident embedded Scalable Font.

Scalable Font A0: CG Times (Resident)

CG Times: Single Byte Scalable Font ID SA0. This font is resident.

Scalable Font A1: CG Times Italic (Resident)

CG Times Italic: Single Byte Scalable Font ID SA1. This font is resident.

Scalable Font A2: CG Times Bold (Resident)

CG Times Bold: Single Byte Scalable Font ID SA2. This font is resident.

Scalable Font A3: CG Times Bold Italic (Resident)

CG Times Bold Italic: Single Byte Scalable Font ID SA3. This font is resident.

User Downloaded Single Byte Scalable typeface (Binary ID's S50 – S5z..., S90 – S9z)

User Downloaded Single Byte (Binary) Scalable ID's S50 – S5z..., S90 – S9z

User–downloaded Double Byte Scalable Typeface (Binary ID's U50..., U5z..., U90...U9z)

User Downloadable Double Byte (Binary) Scalable ID's U50..., U5z..., U90...U9z

User Downloaded Double Byte Scalable typeface (Hex Ascii ID'su50…, u5z…, u90…u9z)

User Downloaded Double Byte (Hex ASCII) Scalable ID's u50…, u5z…, u90…u9z

DPL to FIJI font mapping

Scalable Font H0: Korean Hangul (Downloaded / Embedded)

Scalable Font 40: Gothic B Kanji (Downloaded / Embedded)

Scalable Fonts C0: Simplified GB Chinese (Downloaded /Embedded)

Scalable Font T0: Traditional Chinese (Downloaded / Embedded)

Images

An image record is used to print an image that is stored in a memory module. Images can be printed only in Rotation 1; see STX I Input Image Data.

Syntax

abcd eee ffff gggg jj…j <CR>

Parameters

Where:

Field	Valid Inputs	Meaning
a	1	Fixed Value
b	Y	Image
c	1 to 9, A to Z, and a to z	Width Multiplier
d	1 to 9, A to Z, and a to z	Height Multiplier
eee	000	Fixed Value
ffff	0000 to 9999	Row
gggg	Dependent upon printer (see Print Resolutions and Maximum Width & Record Column Values).	Column
jj…j	ASCII string, up to 16 characters followed by a termination character.	Image Name

Graphics

Using graphics, the printer can produce lines, boxes, polygons, and circles. This function is selected by entering an X in field b. The values entered in the data field determine the sizes and shapes of the objects to be drawn. Forms can be created using shaded boxes, complex logos, or even a simple diagonal line without the need to download a graphics file to the printer.

Lines and Boxes

Lines and boxes are drawn by values that determine column and row starting position, length, width, and wall thickness of the line or box. Depending on the printer's mode, all measurements are interpreted as inches/100 or millimeters/10 (see STX m Set Printer to Metric Mode). The data field jj…j is used to describe the line or box dimensions.

Syntax

abcd eee ffff gggg jj…j <CR>

Parameters

Where:

Segment	Valid Inputs	Meaning
a	1	Fixed Value
b	X	Line / Box
c	1	Fixed Value
d	1	Fixed Value
eee	000	Fixed Value
ffff	0000 to 9999	Row
gggg	0000 to 9999 (see Print Resolutions and Maximum Width & Record Column Values).	Column
jj…j	Lhhhvvv lhhhhvvvv Bhhhvvvbbbsss bhhhhvvvvbbbbssss	Line* Line** Box*** Box****

DPL Command Reference

Line*: Lhhhvvv

Where:

- L = "L" and specifies line drawing;
- hhh = horizontal width of line;
- vvv = vertical height of line.

Line**: lhhhhvvvv

Where:

- l = "l" and specifies line drawing;
- hhhh = horizontal width of line;
- vvvv = vertical height of line.

Box***: Bhhhvvvbbbsss

Where:

- B = "B" and specifies box drawing;
- hhh = horizontal width of box;
- vvv = vertical height of box;
- bbb = thickness of bottom and top box edges;
- sss = thickness of box sides.

Box****: bhhhhvvvvbbbbssss

Where: b ="b" and specifies box drawing;

- hhhh = horizontal width of box;
- vvvv = vertical height of box;
- bbbb = thickness of bottom and top box edges;
- ssss = thickness of box sides

Note: Boxes are hollow, while lines can be understood as filled-in boxes.

Sample

1 X 11 004 0010 0010 P 001 0001 0050 0010 0050 0200 0010 0200<CR>

Result

Produces a rectangle filled with pattern 4 (25% Black).

Polygons

Polygons are created by defining the positions of the corners, specifying a number of data points that represent the vertices of the object, which can range from a simple line (two points), or a triangle (three points), to any free-form outline. Polygons may be filled with a variety of different patterns. All row/column specifiers are interpreted as inches/100 or millimeters/10 depending on the printer mode (see see STX m Set Printer to Metric Mode).

Syntax

1 X 11 ppp rrrr cccc P ppp bbbb rrrr cccc rrrr cccc ... <CR>

Parameters

Where:

- 1 – Rotation (must be 1)
- X – Graphic field ID
- 1 – Multiplier (must be 1)
- 1 – Multiplier (must be 1)
- ppp – Fill pattern #
- rrrr – Row of point 1
- cccc – Column of point 1
- P – Polygon ID (Fixed Value)
- ppp – Fixed Value (001)
- bbbb – Fixed Value (0001)
- rrrr – Row of point 2
- cccc – Column of point 2
- rrrr – Row of point 3
- cccc – Column of point 3
- ... – Additional points
- <CR> – Termination character

Note: The points must be specified in the order to be drawn; the last point specified is automatically connected to the first point to close the polygon. If only two points are specified, a single line will be drawn. See A Set Format Attribute.

Sample

1 X 11 000 0010 0010 P 001 0001 0040 0025 0010 0040<CR>

DPL Command Reference

Result

Produces a triangle with no fill pattern.

Circles

A circle is created by defining by its center point and radius. Circles can be filled with a variety of different patterns. Row, column, and radius are interpreted as inches (100) or millimeters (10) depending on printer mode.

Syntax

1 X 11 fff rrrr cccc C ppp bbbb rrrr <CR>

Parameters

Where:

- 1 – Rotation (must be 1)
- X – Graphic field
- 1 – Multiplier (must be 1)
- 1 – Multiplier (must be 1)
- fff – Fill pattern number
- rrrr – Row of the center point
- cccc – Column of the center point
- C – Circle ID (Fixed Value)
- ppp – Fixed Value (001)
- bbbb – Fixed Value (0001)
- rrrr – Radius of the circle
- <CR> – Termination character

Sample 1

1 X 11 000 0100 0100 C 001 0001 0025<CR>

Result

Produces a circle centered at row 0100, column 0100 with a radius of 0025 and no fill pattern:
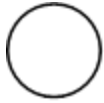
Sample 2

1 X 11 009 0100 0100 C 001 0001 0025<CR>

Result
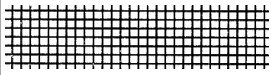
Produces a circle centered at row 0100, column 0100 with a radius of 0025 and filled with pattern 9 (right diagonal lines).

Fill Patterns

The following fill patterns for graphics are available.

Pattern Number	Description	Example
0	No Pattern	
1	Solid Black	
2	6% Black	
3	12% Black	
4	25% Black	
5	38% Black	
6	50% Black	
7	Diamonds	
8	Circles	
9	Right Diagonal Lines	

DPL Command Reference

Pattern Number	Description	Example
10	Left Diagonal Lines	
11	Grid	

Advanced Format Attributes

Two different advanced formatting attributes extend the text presentation capabilities. The first format attribute allows a set of label format records to make a state change that modifies the font attributes of any following DPL text records. The second format attribute provides a means of inserting text and font formatting commands directly into the DPL data stream via a command delimiter structure. All label formats begin by default with attributes disabled.

The table below represents the current list of font attributes available to the user. Note that these commands are delimited by the \<xxx> sequence (where xxx is from the list below).

Command	Units	Purpose
FB	+/-	Turns on or off font boldfacing. Minus "-" is disable; plus "+" is enable.
FI	+/-	Turns on or off font italicization. Minus "-" is disable; plus "+" is enable.
FU	+/-	Turns on or off underlining of string. Minus "-" is disable; plus "+" is enable.
FPn	Points	Specifies the vertical point size of the following text relative to the base line.
FSn	Points	Specifies the horizontal point size of the following text relative to the base line.
FR[+/-]n	Degrees	Specifies the rotation of the base line, relative to the original print direction of the record. If a + or − precedes the numeric value, then the direction is relative to the current print direction.

Note: These commands are only valid for scalable fonts, such as Internal Font 9, S00, S01, or downloaded TrueType scalable fonts. (Some models have limited standard font sets and capabilities; see the notes below for applicability of commands and consult the appropriate Operator's Manual for available standard and optional font sets.)

For example, the first format attribute command can be illustrated as follows. The text below and the resulting label are examples of a current DPL format:

<STX>L

```
D11
1911S0102600040P018P018Old DPL World
1911S0102000040P018P018Old DPL World
1911S0101400040P018P018Old DPL World
1911S0100800040P018P018Old DPL World
1911S0100200040P018P018Old DPL World
E
```


If the DPL format is modified as follows, the resulting label is printed.

```
<STX>L
D11
FA+
FB+
1911S0102600040P018P018New DPL World
FU+I+
1911S0102000040P018P018New DPL World
FI-U+B-
1911S0101400040P018P018New DPL World
FU-B+
1911S0100800040P018P018New DPL World
FB+I+U+
1911S0100200040P018P018New DPL World
FB-U-I-
E
```

Note that if all format commands after the first FB+ were deleted the entire label would have been printed with bold scalable fonts. This is what is meant by a state change. Once invoked, that command is in affect until turned off or the label format is terminated with the "E" "s" or the "X" command.

The second format attribute command is inserted into the text data stream and delimited by the angle brackets "<>" This structure takes the form of \<command>. An example of this command is as follows:

```
<STX>L
D11
A2
FA+
1911S0105000020P018P018DPL allows \<FP36FS36>FONT\<FS10FP10> sizes
\<FS8FP12>in the string
1911S0103500100P018P018\<FR80>D\<FR–5>P\<FR–5>L\<FR–5> \<FR–5>l\<FR–
5>e\<FR–>t\<FR–5>s\<FR–5> \<FR–5>y\<FR–5>o\<FR–5>u\<FR–5> \<FR–5>w\<FR–
5>r\<FR–5>i\<FR–5>t\<FR–5>e\<FR–5> \<FR–5>i\<FR–5>n\<FR–5> \<FR–5>c\<FR–
5>i\<FR–5>r\<FR–5>c\<FR–5>l\<FR–5>e\<FR–5>s\<FR–5> \<FR–5>t\<FR–5>o\<FR–
5>o\<FR–5>!
1911S0102400040P018P018\<FR+45>DPL allows \<FB+>Rotations\<FB–FR–90> in
the string
1911S0102000040P018P018DPL allows \<FB+>BOLD\<FB–> in the string
FU+
1911S0101400040P018P012DPL allows \<FI+>ITALICS\<FI–> in the string
FI+U–
1911S0101000040P018P012DPL allows \<FB+I+>COMBINATIONS\<FB–I–> in the
string
FB+I–
1911S0100600040P018P018DPL allows \<FB+>BOLD\<FB–> in the string
FU+I+
1911S0100200040P018P018DPL allows \<FB+>BOLD\<FB–> in the string
FB–U–I–
E
```
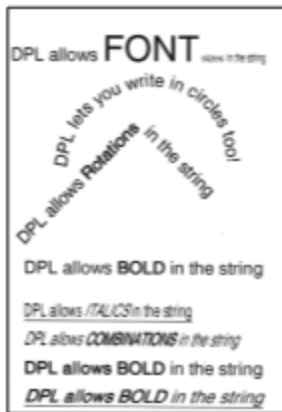

The graphic is an example of the output from this DPL command stream. The user has the ability to change the point and set size of the font within the DPL command record. In addition, the angle of the baseline may be specified relative to the current orientation of the record. (For example, the command \<FR+45> will rotate the baseline forty five degrees in the positive direction from the default print direction.)

Barcodes

Barcode Format Record commands (listed below) consist of all the data used to specify which barcode is to be formatted and the data to be encoded or printed. The Barcode IDs in the data have an alpha designator. Uppercase designators print barcodes with human-readable interpretations, if supported; lowercase specifies barcodes without. Place the ID in field b of the Format Record header to cause the printer to encode the data field using the associated symbology.

- Barcode Format Record Structure
- Barcode Summary Data
- Barcode Default Widths and Heights
- A/a Code 3 of 9 Barcode
- B/b UPC-A Barcode
- C/c UPC-E Barcode
- D/d Interleaved 2 of 5 (I 2 of 5) Barcode
- E/e Code 128 Barcode
- F/f EAN-13 Barcode
- G/g EAN-8 Barcode
- H/h Health Industry Barcode (HIBC)
- I/i Codabar Barcode
- J/j Interleaved 2 of 5 (with a Modulo 10 Checksum) Barcode
- K/k Plessey Barcode
- L/l Interleaved 2 of 5 (with a Modulo 10 Checksum and Bearer Bars) Barcode
- M/m 2-Digit UPC Addendum Barcode
- N/n 5-Digit UPC Addendum Barcode
- O/o Code 93 Barcode
- p Postnet Barcode
- Q/q UCC/EAN Code 128 Barcode
- R/r UCC/EAN Code128 K-MART NON EDI Barcode
- S/s UCC/EAN Code 128 Random Weight Barcode
- u UPS MaxiCode, Modes 2 & 3 Barcode
- U UPS MaxiCode, Modes 2 & 3 Barcode with Byte Count Specifier
- Z PDF-417 Barcode with Byte Count Specifier
- z PDF-417 Barcode
- W1c DataMatrix Barcode

- W1C DataMatrix Barcode with Byte Count Specifier
- W1d / W1D QR Code Barcode
- W1f / W1F Aztec Barcode
- W1g / W1G: USD-8 (Code 11) Barcode
- W1I EAN128 Barcode (with Auto Subset Switching)
- W1J Code 128 Barcode (with Auto Subset Switching)
- W1k GS1 DataBar Barcode
- W1L Planet Code Barcode
- W1m / W1M Australia Post 4-State Barcode
- W1N-W1n Industrial 2 of 5 Barcode
- W1p Intelligent Mail Barcode (IMB)
- W1q CODABLOCK Barcode
- W1R UCC/EAN Code 128 K-MART NON EDI Barcode
- W1s-W1S Standard 2 of 5 Barcode
- W1t TCIF Linked 3 of 9 (TLC39)
- W1Y-W1y Code 16K Barcode
- W1z MicroPDF417 Barcode
- W1Z Micro PDF417 Barcode with Byte Count Specifier

Barcode Format Record Structure

Valid inputs for the barcode field b are letters: uppercase letters will print a human-readable text below the barcode; lowercase letters will only print the barcode. For example, entering a "p" in the b field selects the Postnet barcode. Because the Postnet font does not provide human-readable data, the uppercase P is not valid. Other barcodes without a human-readable counterpart include u (MaxiCode) and z (PDF417). See Barcode Summary Data for additional model-specific restrictions.

For module-based barcodes, field d is the narrow bar width in dots (barcode module size). For consistent results in all rotations for barcodes of this type, field d and field c must have the same value. For ratio-based barcodes field c is the wide bar width in dots (the numerator); field d is the narrow bar width in dots (the denominator).

The eee height field represents the barcode (symbol) height. The valid range (001 to 999) translates to bar heights ranging from .01 inch (.254 mm) to 9.99 inches (253.7 mm). For barcodes that require additional specified parameters, use the jj...j data field as the location for these parameters.

Syntax

abcd eee ffff gggg jj...j <CR>

Parameters

Where:

Field	Valid Inputs	Meaning
a	1, 2, 3 and 4	Rotation
b[b[b]]	A to Z and a to z (except P, u, v, z), or Wna where n is 1 to 9 and a is A to S and a to s. No n is an implied 1.	Barcode Symbology Designator
c	1 to 9, A to Z, and a to z	Wide Bar
d	1 to 9, A to Z, and a to z	Narrow Bar
eee	001 to 999	Symbol Height
ffff	0000 to 9999	Row
gggg	Dependent upon printer (see Print Resolutions and Maximum Width & Record Column Values).	Column
jj...j	Valid ASCII character string up to 255 characters, followed by a termination character.	Data

Note: Placing 0 (zero) in both c and d will result in the default barcode ratio or module size. Placing 000 (zero) in the symbol height field will result in the default barcode height.

Barcode Summary Data

Barcode fonts have alpha names (left column, below). Uppercase alpha names will print barcodes with human-readable interpretations, if supported. Lowercase alpha names will print barcodes only. Place the ID in field b of the Format Record header to cause the printer to encode the data field using the associated symbology.

Barcode ID	Symbology	Length	Checksum	Valid ASCII Characters, decimal value representation	Linear Scanner Supported
A / a	Code 39	Varies	No	32, 36, 37, 42, 43, 45–57, 65–90	Yes
B / b	UPC-A	11	Yes	48-57 Numeric only. Option V used in the 6th & 7th position	Yes

Barcode ID	Symbology	Length	Checksum	Valid ASCII Characters, decimal value representation	Linear Scanner Supported
C / c	UPC–E	6	Yes	48-57 Numeric only	Yes
D / d	Interleaved 2 of 5 (I2 of 5)	Varies	No	48-57 Numeric only	Yes
E / e	Code 128	Varies	M-103	32-127	Yes
F / f	EAN-13	12	Yes	48-57 Numeric only. Option V used in 7th & 8th position	Yes
G / g	EAN-8	7	Yes	48-57 Numeric only	Yes
H / h	HIBC	Varies	M-43	32, 36–39, 42, 43, 45-57, 65-90	Yes
I / i	Codabar	Varies	No	36, 43, 45-58, 65-68	Yes
J / j ü	Interleaved 2 of 5 w/ a modulo 10 checksum	Varies	M-10	48-57 Numeric only	Yes
K / k	Plessey	Up to 14	M-10	48-57 Numeric only. Option + is last character for 2nd M-11 chksum	Yes
L / l	Interleaved 2 of 5 w/ modulo 10 checksum & bearer bars	13	M-10	48-57 Numeric only	Yes
M / m	2 digit UPC addendum	2	Yes	48-57 Numeric only	*
N / n	5 digit UPC addendum	5	Yes	48-57 Numeric only	*
O / o	Code 93	Varies	No	35-38, 42-58, 65-90, 97-122	Yes
p	Postnet	Varies	Yes	48-57 Numeric only	No
Q / q	UCC/EAN 128	19	Yes	48-57 Numeric only	Yes
R / r	UCC/EAN 128 K–Mart non–EDI	18	Yes	48-57 Numeric only	Yes

Barcode ID	Symbology	Length	Checksum	Valid ASCII Characters, decimal value representation	Linear Scanner Supported
S / s ü	UCC/EAN 128 Random Weight	34 +	Yes	48-57 Numeric only	Yes
T / t	Telepen	Varies	Yes	All ASCII characters	No
U	UPS MaxiCode	84	Yes	Alphanumeric	No
u	UPS MaxiCode w/ Byte Count	Specified	Yes	Alphanumeric	No
v	FIM	1	No	A, B, C, D	No
z	PDF417	Varies	Yes	All	No
Z	PDF417 w/ Byte Count	Specified	Yes	All	No
W1c	DataMatrix	Varies	Yes	All 8-bit values	No
W1C	DataMatrix w/ Byte Count	Specified	Yes	All 8-bit values	No
W1d	QR Code – Auto format	Varies	Yes	Alphanumeric	No
W1D	QR Code – Manual format	Varies	Yes	Single-byte or Kanji double-byte	No
W1f	Aztec	Varies	Yes	All 8-bit values	No
W1F	Aztec w/ Byte Count	Specified	Yes	All 8-bit values	No
W1G / W1g	USD-8 (Code 11)	Varies	Yes	45, 48-57	No
W1I	EAN 128 w/auto subset switching	Varies	Yes	32-127	Yes
W1J ü	Code 128 w/auto subset switching	Varies	Yes	32-127	Yes
W1k	GS1 DataBar (six types)	Varies	Yes	Numeric / Alphanumeric (type dependent)	No
W1L	Planet Code	Varies	Yes	48-57 Numeric only	No

Barcode ID	Symbology	Length	Checksum	Valid ASCII Characters, decimal value representation	Linear Scanner Supported
W1M / W1m	Australia Post 4-State Barcode	Varies	Yes	Numeric / Alphanumeric (type dependent)	No
W1N / W1n	Industrial 2 of 5	Varies	M-10	48-57 Numeric only	No
W1p	Intelligent Mail Barcode (IMB)	Varies	No	48-57 Numeric only	No
W1q	CODABLOCK	Varies	Yes	32, 36, 37, 42, 43, 45-57, 65-90 / All ASCII characters (type dependent)	No
W1R	UCC/EAN Code 128 K-MART NON EDI	18	Yes	48-57 Numeric only	No
W1S / W1s	Standard 2 of 5	Varies	M-10	48-57 Numeric only	No
W1t	TCIF Linked 3 of 9 (TLC39)	Varies	Yes	Alphanumeric	No
W1Y / W1y	Code 16K	Varies	Yes	All ASCII characters	No
W1z	MicroPDF417	Varies	Yes	All 8-bit values	No
W1Z	W1Z MicroPDF417 w/ Byte Count	Specified	Yes	All 8-bit values	No

* Readable when using "Barcode Count" method (see for details).

Barcode Default Widths and Heights

Note: Some barcodes will be sensitive to Label Command "D".

Font	203 DPI		300 DPI		400 DPI		600 DPI	
	Height (inches)	Ratio / Module Size	Height (inches)	Ratio / Module Size	Height (inches)	Ratio / Module Size	Height (inches)	Ratio / Module Size
A	.40	6:2	.40	9:4	.40	12:4	.40	18:6
B	.80	3	.80	4	.80	6	.80	9

Font	203 DPI		300 DPI		400 DPI		600 DPI	
	Height (inches)	Ratio / Module Size	Height (inches)	Ratio / Module Size	Height (inches)	Ratio / Module Size	Height (inches)	Ratio / Module Size
C	.80	3	.80	4	.80	6	.80	9
D	.40	5:2	.40	9:4	.40	10:4	.40	15:6
E	.40	2	.40	4	.40	4	.40	6
F	.80	3	.80	4	.80	6	.80	9
G	.80	3	.80	4	.80	6	.80	9
H	.40	6:2	.40	9:4	.40	12:4	.40	18:6
I	.40	6:3	.40	9:4	.40	12:6	.40	18:6
J	.40	5:2	.40	9:4	.40	10:4	.40	15:6
K	.40	5:2	.40	9:4	.40	10:4	.40	15:6
L	1.30	5:2	1.30	9:4	1.30	10:4	1.30	15:6
M	.90	3	.90	4	.90	6	.90	9
N	.80	3	.80	4	.80	6	.80	9
O	.40	6:3	.40	8:4	.40	12:6	.40	18:9
p	.08	N/A	.08	N/A	.08	N/A	.08	N/A
Q	1.40	2	1.40	4	1.40	4	1.40	6
R	1.40	2	1.40	4	1.40	4	1.40	6
S	1.40	2	1.40	3	1.40	4	1.40	6
T	.80	1	.80	1	.80	2	.80	3
U/u	1.00	N/A	1.00	N/A	1.00	N/A	1.00	N/A
v	.50	1	.50	1	.50	2	.50	3
z	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Z	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W1C/W1c	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W1D/W1d	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W1F/W1f	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W1G/W1g	0.50	5:2	0.50	7:3	.50	9:4	0.50	14:6
W1I	.40	2	.40	4	.40	4	.40	6
W1J	.40	2	.40	4	.40	4	.40	6

Font	203 DPI		300 DPI		400 DPI		600 DPI	
	Height (inches)	Ratio / Module Size	Height (inches)	Ratio / Module Size	Height (inches)	Ratio / Module Size	Height (inches)	Ratio / Module Size
W1k	N/A	2	N/A	3	N/A	4	N/A	6
W1L	.80	N/A	.80	N/A	.80	N/A	.80	N/A
W1M/W1m	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W1N/W1n	.40	6:2	.40	9:4	.40	12:4	.40	18:6
W1p	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W1q	.40	2	.40	4	.40	4	.40	6
W1R	1.40	2	1.40	4	1.40	4	1.40	6
W1S/W1s	.40	6:2	.40	9:4	.40	12:4	.40	18:6
W1t	.40	6:2	.40	9:4	.40	12:4	.40	18:6
W1Y/ W1y	.40	2	.40	4	.40	4	.40	6
W1Z/W1z	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

A/a Code 3 of 9 Barcode

Label format barcode ID to print a 3 of 9 Barcode with (A) or without (a) human-readable text.

Syntax

A or a

Parameters

Bar Size

Behavior

Valid Characters: 0-9, A-Z, – . * $ / + % and the space character.

- Variable Length.
- Valid bar widths: The expected ratio of wide to narrow bars can range from 2:1 to 3:1.

Sample<STX>L

```
D11<CR>
1A0000000150100012345678 9<CR>
12110000000000100Barcode A<CR>
E
```

Result

Prints a 3 of 9 barcode with a wide to narrow bar ratio of 3:1.

Barcode A

B/b UPC-A Barcode

Label format barcode ID to print a UPC-A barcode with (B) or without (b) human-readable text.

Syntax

B or b

Parameters

Bar Size

Behavior

Valid Characters: 0-9

* Length: 12 digits. If the user provides 11 digits, the printer will compute the check-sum. See UPC-A and EAN-13: Variable Price/Weight Barcodes for more information.
* If the user provides the checksum, the printer will check that it matches the expected checksum. If it does not match, the printer will print out all zeros and the expected checksum.
* Valid bar widths: The fourth character of record is the width of the narrow bar in dots.
* All other bars are a ratio of the narrow bar (2 times, 3 times, and 4 times the narrow bar width).

Sample

```
<STX>L
D11<CR>
1B0000000150100012345678901<CR>
12110000000100Barcode B<CR>
E
```

Result

Prints a UPC-A barcode.

Barcode B

C/c UPC-E Barcode

Label format barcode ID to print a UPC-E barcode with (C) or without (c) human-readable text.

Syntax

C or c

Parameters

Bar Size

Behavior

- Valid Characters: 0-9
- Length: Seven digits. If the user provides six digits, the printer will compute the checksum. If the user provides the checksum, the printer will check that it matches the expected checksum. If it does not match, the printer will print out all zeros and the expected checksum.
- Valid bar widths: The fourth character of record is the width of the narrow bar in dots.
- All other bars are a ratio of the narrow bar (2 times, 3 times, and 4 times the narrow bar width).

Sample

```
<STX>L
D11<CR>
1C0000000150100012345<CR>
121100000000100Barcode C<CR>
E
```

Result

Prints a UPC-E barcode.

Barcode C

D/d Interleaved 2 of 5 (I 2 of 5) Barcode

Label format barcode ID to print an Interleaved 2 of 5 (I 2 of 5) barcode with (D) or without (d) human-readable text.

Syntax

D or d

Parameters

Bar Size

Behavior

- Valid Characters: 0–9

- Variable Length.

- Valid bar widths: The expected ratio of wide to narrow bars can range from 2:1 to 3:1.

Sample

```
<STX>L
D11<CR>
1D00000001501000123456789O<CR>
121100000000100Barcode D<CR>
E
```

Result

Prints an Interleaved 2 of 5 barcode with a wide to narrow bar ratio of 3:1.

0123456790
Barcode D

E/e Code 128 Barcode

Label format barcode ID to print a Code 128 barcode with (E) or without (e) human-readable text.

Syntax

E or e

Parameters

Bar Size

Behavior

- Valid Characters: The entire 128 ASCII character set.
- Variable Length
- Valid bar widths: The fourth character of record is the width of the narrow bar in dots.
- All other bars are a ratio of the narrow bar (2 times the narrow bar width, 3 times the narrow bar width, and 4 times the narrow bar width).
- This printer supports the Code 128 subsets A, B, and C. The printer can be selected to start on any code subset and switch to another within the data stream. The default code subset is B; otherwise, the first character (A, B, C) of the data field determines the subset. Subset switching is only performed in response to code switch command. These commands are placed in the data to be encoded at appropriate locations.

Note: Using a B as the first character is recommended to prevent an A or C from changing the subset.

Subset A: Includes all of the standard uppercase alphanumeric keyboard characters plus the control and special characters. To select Code 128 Subset A, place an ASCII A (DEC 65, HEX 41) before the data to be encoded.

Subset B: Includes all of the standard uppercase alphanumeric keyboard characters plus the lowercase alphabetic and special characters. To select Code 128 Subset B, place an ASCII B (DEC 66, HEX 42) before the data to be encoded. If no start character is sent for the Code 128 font, Code 128 Subset B will be selected by default.

Subset C: Includes the set of 100 digit pairs from 00 through 99 inclusive, as well as special characters. Code 128 Subset C is used for double density encoding of numeric data. To select Code 128 Subset C, place an ASCII C (DEC 67, HEX 43) before the data to be encoded. Subset C can only encode an even number of numeric characters. When the data to be encoded includes an odd number of numeric characters, the last character causes the printer to automatically generate a "switch to subset B" and encode the last character appropriately in subset B.

Special Character Handling: Characters with an ASCII value greater than 95 are considered special characters. To access these values, a two-character reference table is built into the printer (see below).

For example, to encode FNC2 into a Code 128 Subset A barcode, send the ASCII "&" (DEC 38, HEX 26) followed by the ASCII "B" (DEC 66, HEX 41).

- Sample: ATEST&B123
- Encoded: TEST<FNC2>123

ASCII	2 CHAR	CODE A	CODE B	CODE C
96	&A	FNC3	FNC3	–NA–
97	&B	FNC2	FNC2	–NA–
98	&C	SHIFT	SHIFT	–NA–
99	&D	CODEC	CODEC	–NA–
100	&E	CODEB	FNC4	CODEB
101	&F	FNC4	CODEA	CODEA
102	&G	FNC1	FNC1	FNC1

Control Codes: By sending these control codes, control characters can be encoded into a Code 128 Subset A barcode (e.g., ABC{DE will be encoded as ABC<ESC>DE):

Control Code in the Barcode Data Stream	Encoded Control Character Result
`	NUL
a through z	1 – 26
{	ESC
|	FS
}	GS
~	RS
ASCII 127	US

Sample

```
<STX>L
D11<CR>
1E0000000150100012345678910<CR>
12110000000100Barcode E<CR>
E
```

Result

Prints a Code 128 barcode.

Barcode E

F/f EAN-13 Barcode

Label format barcode ID to print an EAN-13 barcode with (F) or without (f) human-readable text.

Syntax

F or f

Parameters

Bar Size

Behavior

- Valid Characters: 0-9
- Length: 13 digits. If the user provides 12 digits, the printer will compute the check-sum. See UPC-A and EAN-13: Variable Price/Weight Barcodes for more information.
- If the user provides the checksum, the printer will check that it matches the expected checksum. If it does not match, the printer will print all zeros and the expected checksum.
- Valid bar widths: The fourth character of record is the width of the narrow bar in dots. All other bars are a ratio of the narrow bar (2 times, 3 times, and 4 times the narrow bar width).

Sample

<STX>L
D11<CR>
1F0000000150100012345678901<CR>
121100000000100Barcode F<CR>
E

Result

Prints an EAN-13 barcode.

Barcode F

G/g EAN-8 Barcode

Label format barcode ID to print an EAN-8 barcode with (F) or without (f) human-readable text.

Syntax

G or g

Parameters

Bar Size

Behavior

- Valid Characters: 0-9

- Length: 8 digits. If the user provides 7 digits, the printer will compute the checksum. If the user provides the checksum, the printer will check that it matches the expected checksum. If it does not match, the printer will print all zeros and the expected checksum.

- Valid bar widths: The fourth character of record is the width of the narrow bar in dots.

- All other bars are a ratio of the narrow bar (2 times, 3 times, and 4 times the narrow bar width).

Sample

```
<STX>L
D11<CR>
1G0000000150100123456<CR>
121100000000100Barcode G<CR>
E
```

Result

Prints an EAN-8 barcode.

Barcode G

H/h Health Industry Barcode (HIBC)

Label format barcode ID to print a Health Industry barcode (HIBC) with (H) or without (h) human-readable text.

Syntax

H or h

Parameters

Bar Size

Behavior

- Valid Characters: 0–9, A–Z, –$ /. %

- Variable Length.

- Valid bar widths: The expected ratio of wide to narrow bars can range from 2:1 to 3:1.

- The host must supply leading "+"s.

Sample

```
<STX>L
D11<CR>
1H0000000150050+0123456789<CR>
121100000000100Barcode H<CR>
E
```

Result

Prints an HIBC barcode with a wide to narrow bar ratio of 3:1.

Barcode H

I/i Codabar Barcode

Label format barcode ID to print a Codabar barcode with (I) or without (i) human-readable text.

Syntax

I or i

Parameters

Bar Size

Behavior

- Valid Characters: 0–9, A–D, –, ., $, :, /, + (comma is not valid)

- Variable Length but requires at least three characters.
- Valid bar widths: The expected ratio of wide to narrow bars can range from 2:1 to 3:1.
- Valid Codabar symbols require start and stop characters (A–D). These characters should be placed in the data field along with other data to be included in the symbol.

Sample

```
<STX>L
D11<CR>
1I63040001501000A1234567890D<CR>
121100000000100Barcode I<CR>
E
```

Result

Prints a Codabar barcode with a wide to narrow bar ratio of 3:1.

J/j Interleaved 2 of 5 (with a Modulo 10 Checksum) Barcode

Label format barcode ID to print an Interleaved 2 of 5 (with a Modulo 10 Checksum) with (J) or without (j) human-readable text.

Syntax

J or j

Parameters

Bar Size

Behavior

- Valid Characters: 0-9
- Variable Length.
- Valid bar widths: The expected ratio of wide to narrow bars can range from 2:1 to 3:1.

Sample

```
<STX>L
D11<CR>
1J00000001501000123456789O<CR>
121100000000100Barcode J<CR>
E
```

Result

Prints an Interleaved 2 of 5 barcode with a modulo 10 checksum added and with a wide to narrow bar ratio of 3:1.

Barcode J

K/k Plessey Barcode

Label format barcode ID to print a Plessey barcode with (K) or without (k) human–readable text.

Syntax

K or k

Parameters

Bar Size

Behavior

- Valid Characters: 0-9

- Valid bar widths: The expected ratio of wide to narrow bars can range from 2:1 to 3:1.

- If a + character is the last data character, an additional MSI checksum will be added to the barcode in place of the + character.

Sample

```
<STX>L
D11<CR>
1K00000001501000123456789O<CR>
121100000000100Barcode K<CR>
E
```

Result

Prints a Plessey barcode with a wide to narrow bar ratio of 3:1.

Barcode K

L/l Interleaved 2 of 5 (with a Modulo 10 Checksum and Bearer Bars) Barcode

Label format barcode ID to print an Interleaved 2 of 5 Barcode (with a Modulo 10 Checksum and Bearer Bars) and with (L) or without (l) human-readable text.

Syntax

L or l

Parameters

Bar Size

Behavior

- Valid Characters: 0-9

- Variable Length: For the bearer bars to be printed, 13 characters are required.

- Valid bar widths: The expected ratio of wide to narrow bars can range from 2:1 to 3:1.

Sample

```
<STX>L
D11<CR>
1L00000001501000123456789012<CR>
121100000000100Barcode L<CR>
E
```

Result

Prints an Interleaved 2 of 5 barcode with a modulo 10 checksum with a wide to narrow bar ratio of 3:1 and bearer bars.

Barcode L

M/m 2-Digit UPC Addendum Barcode

Label format barcode ID to print a 2-Digit UPC Addendum barcode with (M) or without (m) human-readable text.

Syntax

M or m

Parameters

Bar Size

Behavior

- Valid Characters: 0-9

- Length: 2 digits.

- Valid bar widths: The fourth character of record is the width of the narrow bar in dots. All other bars are a ratio of the narrow bar (2 times, 3 times, and 4 times the narrow bar width). Human-readable characters for this barcode symbology are printed above the symbol.

Sample

<STX>L
D11<CR>
1M000000015010042<CR>
12110000000100Barcode M<CR>
E

Result

Prints a 2 digit UPC barcode addendum.

Barcode M

N/n 5-Digit UPC Addendum Barcode

Label format barcode ID to print a 5-Digit UPC Addendum barcode with (N) or without (n) human-readable text.

Syntax

N or n

Parameters

Bar Size

Behavior

- Valid Characters: 0-9
- Length: 5 digits.
- Valid bar widths: The width multiplier is the width of the narrow bar in dots. All other bars are a ratio of the narrow bar (2 times, 3 times, and 4 times the narrow bar width). Human-readable characters for this barcode symbology are printed above the symbol.

Sample

```
<STX>L
D11<CR>
1N000000015010001234<CR>
12110000000000100Barcode N<CR>
E
```

Result

Prints a 5 digit UPC barcode addendum.
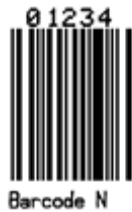
O/o Code 93 Barcode

Label format barcode ID to print a Code 93 barcode with (O) or without (o) human-readable text.

Syntax

O or o

Parameters

Bar Size

Behavior

- Valid Characters: 0-9, A-Z, -.$/+% and the space character.
- Variable Length.
- Valid bar widths: The width multiplier is the width of the narrow bar in dots. All other bars are a ratio of the narrow bar (2 times, 3 times, and 4 times the narrow bar width).

Sample

```
<STX>L
D11<CR>
1O0000000150100Datamax42<CR>
12110000000000100Barcode O<CR>
E
```

Result

Prints a Code 93 barcode.

Barcode O

p Postnet Barcode

Label format barcode ID to print a Postnet barcode.

Syntax

p

Parameters

Bar Size

Behavior

- Valid Characters: 0-9
- Length: 5, 9 or 11 digits
- Valid bar widths: The width and height multiplier values of 00 will produce a valid Postnet symbol.
- Usage: The barcode height field is ignored since the symbol height is United States Postal Service specific. This barcode is to display the zip code on a letter or package for the US Postal Service.

Sample

```
<STX>L
D11<CR>
1p000000015010032569<CR>
12110000000000100Barcode p<CR>
E
```

Result

Prints a Postnet barcode.

Barcode P

Q/q UCC/EAN Code 128 Barcode

Label format barcode ID to print a UCC/EAN Code 128 barcode with (Q) or without (q) human-readable text.

Syntax

Q or q

Parameters

Bar Size

Behavior

- Valid Characters: 0-9
- Length: 19 digits.
- Valid bar widths: The fourth character of record is the width of the narrow bar in dots. All other bars are a ratio of the narrow bar (2 times, 3 times, and 4 times the narrow bar width). Human-readable characters for this barcode symbology are printed above the symbol.
- The printer spreads a weighted module 103 check sum.

Sample

```
<STX>L
D11<CR>
1Q0000000150100012345678901234 5678<CR>
121100000000100Barcode Q<CR>
E
```

Result

Prints a UCC/EAN Code 128 barcode.

(01) 2 3456789 012345678 9

Barcode Q

R/r UCC/EAN Code128 K-MART NON EDI Barcode

Label format barcode ID to print an UCC/EAN Code128 K-MART NON EDI barcode with (R) or without (r) human-readable text.

Syntax

R or r

Parameters

Bar Size

Behavior

- Valid Characters: 0-9
- Length: 18 digits
- Valid bar widths: The fourth character of record is the width of the narrow bar in dots. All other bars are a ratio of the narrow bar (2 times, 3 times, and 4 times the narrow bar width). Human-readable characters for this barcode symbology are printed above the symbol. (See W1R UCC/EAN Code 128 K-MART NON EDI Barcode for an alternate.)
- This barcode is set up according to K-MART specifications.

Sample

```
<STX>L
D11<CR>
1R0000000150100012345678901234567<CR>
121100000000100Barcode R<CR>
E
```

Result

Prints a KMART barcode.
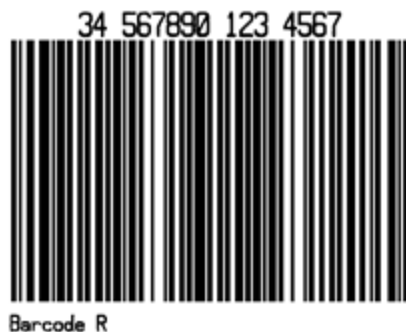
S/s UCC/EAN Code 128 Random Weight Barcode

Label format barcode ID to print an UCC/EAN Code 128 Random Weight barcode with (S) or without (s) human-readable text.

Syntax

S or s

Parameters

Bar Size

Behavior

- Valid Characters: 0-9
- Length: At least 34 digits.
- Valid bar widths: The fourth character of record is the width of the narrow bar in dots. All other bars are a ratio of the narrow bar (2 times, 3 times, and 4 times the narrow bar width).
- This barcode is commonly used by the food and grocery industry.

Sample

```
<STX>L
D11<CR>
1S00000001500500110073675029260119304203202001800211O123456<CR>
12110000000100Barcode S<CR>
E
```

Result

Prints a UCC/EAN Code 128 Random Weight barcode.

01 10073675029260 11 930420 3202 001800 21 10123456

T/t Telepen Barcode

Label format barcode ID to print a Telepen barcode with (T) or without (t) human–readable text.

Syntax

T or t

Parameters

Bar Size

Behavior

- Valid Characters: ASCII character set (0–127)

- Variable Length

- Valid bar widths: The fourth character of the record is the width of the narrow bar in dots. All other bars are a ratio of the narrow bar (2 times, 3 times, and 4 times the narrow bar width).

Sample

```
<STX>L
D11<CR>
1T0000000150100ABCDEF<CR>
121100000000100Barcode T<CR>
E
```

Result

Prints a Telepen barcode:

u UPS MaxiCode, Modes 2 & 3 Barcode

Label format barcode ID (u) to print a UPS MaxiCode, Modes 2 & 3 barcode.

Syntax

u

Behavior

The printer supports MaxiCode as defined in the AIM Technical Specification. The following examples illustrate various label format record message syntaxes for encoding data as MaxiCode. In the following examples, special formatting is used to denote special ASCII characters as shown:

Symbol	Hexadecimal Value
^{R}S	1E
^{G}S	1D
$^{E}O_{T}$	04

Note: Printer message syntax allows for $^{E}O_{T}$ to be substituted with <CR> or the use of both $^{E}O_{T}$ and <CR>.

UPS Modes 2 & 3 Explicit

The data stream can force Mode 2 or 3 encoding by placing #2 or #3, respectively, before the data, as shown in the example below. If this is not specified, the printer chooses the best mode.

Sample

1U0000001200120#3
[)>^{R}S01^{G}S96123456^{G}S068^{G}S001^{G}S1Z12345675^{G}SUPSN^{G}S12345E^{G}S089$^{G}S$$^{G}S$1/1$^{G}S10.1^{G}SY^{G}S$$^{G}S$$^{G}SUT^{R}S$$^{E}O_{T}$

Result

Encodes a MaxiCode symbol in Mode 3.

<STX>L
D11<CR>
1U0000001200120#3
[)>^{R}S01^{G}S96123456^{G}S068^{G}S001^{G}S1Z12345675^{G}SUPSN^{G}S12345E^{G}S089$^{G}S$$^{G}S$1/1$^{G}S10.1^{G}SY^{G}S$$^{G}S$$^{G}SUT^{R}S$$^{E}O_{T}$
121100000000100BARCODE U<CR>
E

Where:

- #3 – Forces Mode 3 encoding
- [)>^{R}S01^{G}S96 – Message Header
- 123456 – Maximum 9 alphanumeric ASCII, postal code (Primary Message)
- 068 – Country Code (Primary Message)
- 001 – Class (Primary Message)
- ^{G}S1Z1... ...T$^{R}S$$^{E}O_{T}$ – Secondary Message

Barcode u

Examples

In the UPS 3.0 protocol examples that follow, Primary Message control characters ^G_S will not be encoded in the MaxiCode symbol. All characters in the Secondary Message, with the exception of the leading ^G_S, are encoded.

Example 1

A UPS 3.0 zip + 4 with Message data format and message header:

1U0000001200120
[)>^R_S01^G_S96841706672^G_S840^G_S001^G_S1Z12345675^G_SUPSN^G_S12345E^G_S089$^G_S$$^G_S$1/1$^G_S10.1^G_SY^G_S$$^G_S$$^G_SUT^R_S$$^E_O_T$

Where:

- [)>^R_S01^G_S96 – Message Header

- 841706672 – Maximum 9 alphanumeric ASCII, postal code (Primary Message)

- 840 – Country Code (Primary Message)

- 001 – Class (Primary Message)

- ^G_S1Z1... ...T$^R_S$$^E_O_T$ – Secondary Message
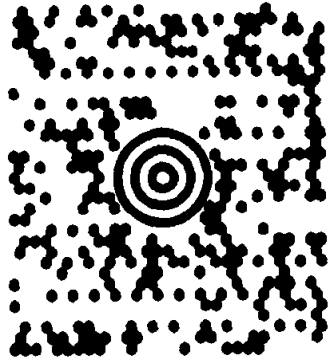
Example 2

A UPS 3.0 international postal "V6C3E2" with Message data format and message header:

1U0000001200120
[)>^R_S01^G_S96V6C3E2^G_S068^G_S001^G_S1Z12345675^G_SUPSN^G_S12345E^G_S089$^G_S$$^G_S$1/1$^G_S10.1^G_SY^G_S$$^G_S$$^G_SUT^R_S$$^E_O_T$

Where:

- [)>^R_S01^G_S96 – Message Header

- V6C3E2 – Maximum 6 alphanumeric ASCII, international zip code (Primary Message)

- 068 - Country Code (Primary Message)
- 001 - Class (Primary Message)
- ^G_S1Z1... ...T^R_SE$_O_T$ - Secondary Message

Example 3

A UPS 3.0 international zip "V6C3E2" without Message data format and message header:

1U0000001200120V6C3E2
^G_S068^G_S001^G_S1Z12345675^G_SUPSN^G_S12345E^G_S089$^G_S$$^G_S$1/1$^G_S10.1^G_SY^G_S$$^G_S$$^G_SUT^R_SE_O_T$

Where:

- V6C3E2 - Maximum 6 alphanumeric ASCII, international zip code (Primary Message)
- 068 - Country Code (Primary Message)
- 001 - Class (Primary Message)
- ^G_S1Z1... ...T^R_SE$_O_T$ - Secondary Message

Example 4

A UPS 3.0 zip + 4 "32707-3270" without Message data format and message header:

1U00000001200120327073270
^G_S068^G_S001^G_S1Z12345675^G_SUPSN^G_S12345E^G_S089$^G_S$$^G_S$1/1$^G_S10.1^G_SY^G_S$$^G_S$$^G_SUT^R_SE_O_T$

Where:

- 32707 - 5 digit ASCII, Zip code (Primary Message)
- 3270 - 4 digit ASCII, +4 Zip code, not required (Primary Message)
- 068 - Country Code (Primary Message)
- 001 - Class (Primary Message)
- ^G_S1Z1... ...T^R_SE$_O_T$ - Secondary Message

U UPS MaxiCode, Modes 2 & 3 Barcode with Byte Count Specifier

Label format barcode ID (U) to print a UPS Maxicode, Modes 2 & 3 with byte count specifier barcode.

Syntax

U

Parameters

Byte Count

Behavior

Specified Length – The upper case U identifies a UPS MaxiCode barcode with a 4-digit string length specifier. This allows values 0x00 through 0xFF to be included within the data strings without conflicting with the DPL format record terminators. The four-digit decimal data byte count immediately follows the 4-digit column position field. This value includes all of the data following the byte count field, but does not include itself.

Sample

<STX>L
D11<CR>
1U0000001000100005132789555584066this package<0x0D>is going to
Datamax<CR>
12110000000000100Barcode U<CR>
E

Result

Prints a Maxicode barcode that includes a Byte Count Specifier (the portion in bold), where 0051 equals the four-digit decimal data byte count and includes all bytes that follow until the end of the barcode data. Field termination is set by the byte count. <STX>, <CR>, and <0x0D> all represent single byte values of hexadecimal 02, 0D, and 0D, respectively. The UPS MaxiCode barcode produced encodes "327895555840666this package<CR>is going to Datamax", and prints a line of text: Barcode U.

1U0000001000100**0051**327895555840666this package<0x0D>is going to Datamax

v FIM Barcode

Label format barcode ID (v) to print an FIM barcode.

Syntax

v

Behavior

- Valid Characters: A, B, C, or D
- Length: 1 character

- Valid bar widths: The width and height multiplier works the same as for fonts on this barcode.

This barcode is used to display the Facing Identification Mark (FIM) that is carried on certain types of letter mail for the U S Postal Service:

- FIM A: Courtesy reply mail with Postnet.

- FIM B: Business reply, penalty or franked mail without Postnet.

- FIM C: Business reply, penalty or franked mail with Postnet.

- FIM D: OCR readable mail without Postnet (typically for envelopes with a courtesy reply window).

Sample

```
<STX>L D11<CR>
1v0000000150100A<CR>
12110000000100Barcode v<CR>
E
```

Result

Prints an FIM A barcode.

Barcode v

z PDF-417 Barcode

Label Format Barcode ID (z) to print a PDF-417 barcode.

Syntax

z

Parameters

See Behavior section for details.

Behavior

- Valid Characters: All ASCII characters.

- Variable Length – This two dimensional barcode holds large amounts of data in a small area, while providing a high level of redundancy and error checking, if spe–cified.

Sample

```
<STX>L
D11<CR>
1z0000000150100F1000000PDF417<CR>
12110000000100Barcode z<CR>
E
```

Result

Prints a normal, security level one, PDF-417 barcode with a 1:2 aspect ratio and best-fit rows and columns.

The (bolded) barcode's data stream 1z0000000150100**F1000000PDF417<CR>** decodes as follows:

Example Data	Explanation
F	1-character specifying a normal or truncated barcode (T to truncate, F for normal).
1	1-digit security level ranging from 0 to 8.
00	2-digit aspect ratio specified as a fraction, with the first digit being the numerator and the second digit the denominator. Use "00" for the default ratio of 1:2. Valid range is from "00" to "99."
00	2-digit number specifying the number of rows requested. Use "00" to let the printer find the best fit. Valid range is from "03" to "90". Row values less than 3 are set to 3, while row values greater than 90 are set to 90.
00	2-digit number specifying the number of columns requested. Use "00" to let the printer find the best fit. Valid range is from "01" to "30". Column values greater than 30 are set to 30.
PDF417	The data stream to be encoded.
<CR>	Terminates the data stream.

Note: Format record header fields c and d should both be zero.

Z PDF-417 Barcode with Byte Count Specifier

Label Format barcode ID (Z) to print a PDF-417 barcode.

Syntax

Z

Parameters

- Byte Count

- See Behavior section for details.

Behavior

Specified Length – The upper case Z identifies a PDF-417 barcode with a string 4-digit length specifier. This allows values 0x00 through 0xFF to be used within the data strings without conflicting with the DPL format record terminators. The four-digit decimal data byte count immediately follows the 4-digit column position field. This value includes all of the data following the byte count field, but does not include itself.

Sample

```
<STX>L
D11<CR>
1Z0000000150100015F1000000pdf<0x0D>417<CR>
121100000000100Barcode Z<CR>
E
```

Result

Prints a PDF-417 Barcode with Byte Count Specifier.

From the example above, the barcode's data stream (1Z000000015010000015F1000000pdf<CR>417) includes a Byte Count Specifier (the portion in bold), where 0015 equals the four-digit decimal data byte count and includes all bytes that follow until the end of the barcode data. Field termination is set by the byte count. <STX>, <CR>, and <0x0D> all represent single byte values of hexadecimal 02, 0D, and 0D, respectively. The PDF-417 barcode produced encodes "pdf<CR>417", and prints a line of text: Barcode Z.

W1c DataMatrix Barcode

Label format barcode ID (W1c) to print a DataMatrix barcode.

Syntax

W1c

Parameters

See Behavior section for details.

Behavior

- Variable Length

- DataMatrix is a two-dimensional matrix symbology, which is comprised of square modules arranged within a perimeter finder pattern. There are two basic types: ECC 000–140 and ECC 200.

ECC 000 – 140 symbols

These square symbols can be any odd size from 9x9 to 49x49, which may be specified in fields jjj and kkk. If an ECC 000–140 symbol is specified with even numbers of rows or columns, the next largest odd value will be used. Input values greater than 49 or less than 9 will cause the symbol to be automatically sized for the input character stream. The record format is shown here, expanded with spaces.

a W b[b] c d eee ffff gggg hhh i jjj kkk ll...l

Where:

Field	Valid Inputs	Meaning
a	1, 2, 3, and 4	Rotation
W	W	Fixed value, extended barcode set
b[b]	c, 1c	Selects the DataMatrix barcode – the two differing values have no other significance.
c	1 to 9, A to Z, and a to z	Module size horizontal multiplier
d	1 to 9, A to Z, and a to z	Module size vertical multiplier
eee	000 to 999	No effect; Must be numeric
ffff	0000 to 9999	Label position, row
gggg	0000 to 9999	Label position, column
hhh	000, 050, 080, 100, 140	A 3-digit convolutional error correction level. If any number other than one of these options is entered then the nearest lesser value from the valid entries is used. For example, selecting an ECC value of 099 will cause the actual ECC value of 080 to be used.

Field	Valid Inputs	Meaning
i	0 – 6	1-digit format identification: 0 - Automatically choose the encodation scheme based on the characters to be encoded. 1 - Numeric data. 2 - Upper-case alphabetic. 3 - Upper-case alphanumeric and punctuation characters (period, comma, hyphen, and slash). 4 - Upper-case alphanumeric. 5 - ASCII, the full 128 ASCII character set. 6 - Any 8-bit byte. If a format identifier is selected which will not encode the input character stream, then the barcode symbol will not be printed. Auto-encodation format identification is since it will select the best possible encodation scheme for the input stream.
jjj	9, 11, 13 … 49. ECC 140 minimum is 15.	A 3-digit odd number (or 000) of rows requested. 000 causes rows to be automatically determined. If the rows and columns do not match, the symbol will be sized to a square using the greater of the two values.
kkk	9, 11, 13 … 49. ECC 140 minimum is 15.	A 3-digit odd number (or 000) of columns requested. 000 causes columns to be automatically determined. If the rows and columns do not match, the symbol will be sized to a square using the greater of the two values.
ll…l	8-bit data, followed by a termination character.	Data to be encoded.

ECC 200 symbols

There are 24 square symbol sizes available, with both row and column dimensions, which may be specified in fields jjj and kkk, measured in modules as indicated in the following list - 10, 12, 14, 16, 18, 20, 22, 24, 26, 32, 36, 40, 44, 48, 52, 64, 72, 80, 88, 96, 104, 120, 132, and 144. If an ECC 200 symbol is specified with odd numbers of rows or columns, the next largest even value will be used. Input values greater than 144 or less than 10 will cause the symbol to be automatically sized for the input character stream. The record format is shown here, expanded with spaces.

a W b[b] c d eee ffff gggg hhh i jjj kkk ll…l

Where:

Field	Valid Inputs	Meaning
a	1, 2, 3, and 4	Rotation
W	W	Fixed value, extended barcode set
b[b]	c, 1c	Selects the DataMatrix barcode – the two differing values have no other significance.
c	1 to 9, A to Z, and a to z	Module size horizontal multiplier
d	1 to 9, A to Z, and a to z	Module size vertical multiplier
eee	000 to 999	No effect; Must be numeric
ffff	0000 to 9999	Label position, row
gggg	0000 to 9999	Label position, column
hhh	200	ECC 200 uses Reed-Solomon error correction.
i	0	Fixed value, not used
jjj	10, 12, 14, 16, 18, 20, 22, 24, 26, 32, 36, 40, 44, 48, 52, 64, 72, 80, 88, 96, 104, 120, 132, 144	A 3-digit even number (or 000) of rows requested. 000 causes rows to be automatically determined. The symbol will be sized to a square if the rows and columns do not match by taking the larger of the two values.
kkk	10, 12, 14, 16, 18, 20, 22, 24, 26, 32, 36, 40, 44, 48, 52, 64, 72, 80, 88, 96, 104, 120, 132, 144	A 3-digit even number (or 000) of columns requested. 000 causes columns to be automatically determined. The symbol will be sized to a square if the rows and columns do not match by taking the larger of the two values.
ll...l	8-bit data, followed by a termination character.	Data to be encoded.

Sample

<STX>L
D11<CR>
1W1c440000100010020000000000DATAMAX<CR>
121100000000100Barcode W1c<CR>
E

Result

Prints a W1c DataMatrix barcode.

W1C DataMatrix Barcode with Byte Count Specifier

Label format barcode ID (W1C) to print a DataMatrix with Byte Count Specifier barcode.

Syntax

W1C

Parameters

- Byte Count
- See Behavior section for details

Behavior

Specified Length – The upper case C identifies a DataMatrix barcode with a string 4–digit length specifier. This allows values 0x00 through 0xFF to be included within the data strings without conflicting with the DPL format record terminators. The four–digit decimal data byte count immediately follows the four–digit column position field. This value includes all of the data following the byte count field, but does not include itself.

Sample

<STX>L
D11<CR>
1W1C4400000100010000292000000000Datamax<0x0D>prints best<CR>
12110000000000100Barcode W1C<CR>
E

Result

Prints a W1c DataMatrix with Byte Count Specifier barcode.

From the example above, the barcode's data stream, 1W1C44000001000100**0029**2000000000 Datamax<0x0D>prints best, includes a Byte Count Specifier (the portion in bold), where 0029 equals the four-digit decimal data

byte count and includes all bytes that follow until the end of the barcode data. Field termination is set by the byte count. <STX>, <CR>, and <0x0D> all represent single byte values of hexadecimal 02, 0D, and 0D, respectively. The DataMatrix barcode produced encodes "Datamax<CR>prints best," and prints a line of text: Barcode W1C.

W1d / W1D QR Code Barcode

Label format barcode ID's for printing a QR Code barcode in Auto Format (W1d) or Manual Format (W1D) modes.

Syntax

a W1 b c d eee ffff gggg hh...h

Parameters

Where:

Field	Valid Inputs	Meaning
a	1, 2, 3, and 4	Rotation
W1	W1	Fixed value, extended barcode set
b	D and d	Selects the QR barcode formatting mode, where: D = Manual formatting. Allows the data string (hh...h) to be entered with a comma (,) as a field separator; fields are optional per QR Code specifications, and the first field indicates Model 1 or Model 2 QR Code (Model 2 is the default). d = Automatic formatting. Allows the data string (hh...h) to be data only.
c	1 to 9, A to Z, and a to z	Module size horizontal multiplier. Each cell in the barcode is square, therefore "c" and "d" must be equal. Depending on the conversion mode (<STX>n or <STX>m), each unit indicates a cell dimension of .01 inch or .1 mm.
d	1 to 9, A to Z, and a to z	Module size vertical multiplier
eee	000 to 999	No effect; must be numeric
ffff	0000 to 9999	Label position, row
gggg	0000 to 9999	Label position, column (see Column, Present, & Row Adjust Fine Tune Range).
hhh	Valid ASCII character string, followed by (a) termination character(s)	QR Code data string (see Generation Structure, below).

Behavior

- Valid Characters: Numeric Data, Alphanumeric Data, 8-bit byte data, and Kanji characters

- Variable Length: The two-dimensional barcode (as documented in AIM, Version 7.0).

Generation Structure

The data input structure (hh...h) is as follows:

Auto Format (W1d)

With barcode identifier "d", the data begins after the last character of the column position field, and does not include any command characters. The data string is terminated with a termination character, usually a 0x0d hex that occurs twice in succession. The barcode symbol will have the following characteristics:

1. Model 2

2. Error Correction Code Level = "M" (Standard Reliability Level)

3. Mask Selection = Automatic

4. Data Input Mode = Automatic[1]

Example

<STX>L
D11<CR>
1W1d4400000100010This is the data portion<CR><CR> [3]
121100000000100Barcode W1D<CR>
E

Note: 2 termination characters required.

Manual Formatting (W1D)

With barcode identifier "D", minor changes allow flexibility for data entry. (Spaces have been added for readability.)

[q,] [e [m] i,] cdata cdata cdata...cdata term[2]

Where:

Field	Valid Inputs	Meaning
q	1, 2	QR Code Model number, optional. Model 2 is the default.

Field	Valid Inputs	Meaning
e	H, Q, M, L	Error Correction Level (Reed–Solomon) – Four levels allowing recovery of the symbol code words: H = Ultra Reliability Level (30%) Q = High Reliability Level (25%) M = Standard Reliability Level (15%) L = High Density Level (7%)
m	0 – 8, none	Mask Number, optional: None = Automatic Selection 0-7 = Mask 0 to Mask 7 8 = No Mask
l	A, a, M, m	Data Input Mode: A = Automatic setting, ASCII [1] a = Automatic, hex-ASCII [1] M = Manual Setting, ASCII[2] m = manual, hex-ASCII[2]
cdata	N, A, B, K immediately followed by data	Character Mode: N = Numeric, N data A = Alphanumeric, A data B = Binary , Bnnnn data (where nnnn = data byte count, 4 decimal digits; byte-count /2 for hex– ASCII K = Kanji, K data
term	<CR>, <CR><CR>[3]	The data string is terminated with a termination character, generally a 0x0d hex, but can be changed by the operator. If the Data Input Mode is Automatic, the data string is terminated with two successive termination characters.

[1] When Data Input Mode = Automatic, Kanji data cannot be used; Manual data input required.

[2] When using manual formatting, commas are required between format fields and data types.

[3] <CR> represents the line termination character as defined by the current control code set or after use of Txx, line field terminator label format command.

If HEX/ASCII mode is selected in manual Data Input Mode, only the data for Kanji or Binary data types will be converted, therefore the other data types and all command characters must be entered in ASCII format. If HEX/ASCII is selected in automatic Data Input Mode, all of the data must be entered in HEX/ASCII format.

Data Append Mode String Format, Manual Formatting – Barcode W1D

D aa tt pp I

Where:

Field	Valid Inputs	Meaning
D	D	Data Append Mode String Format indicator
aa	00, 99	QR Code Number in Append Series, 2 decimal digits
tt		The total number of QR Codes in series, 2 decimal digits
pp		Value of Parity, 2 digits, 8 LSBs of data parity
e	H, Q, M, L	As above
m	0 – 8, none	As above
i	A, a, M, m	As above
cdata	N, A, B, K immediately followed by data	As above
term	<CR>, <CR><CR>	As above

Characteristics

Model 1 (original version), barcode versions 1 through 14:

- A. ECC Levels "H", "M", "Q", and "L"
- B. Mask Selection Automatic or 0 through 8
- C. Data Input Modes Automatic and Manual
- D. Data Append Mode

Model 2 (enhanced version), barcode versions 1 through 40

- A. ECC Levels "H", "M", "Q", and "L"
- B. Mask Selection Automatic or 0 through 8
- C. Data Input Modes Automatic and Manual
- D. Data Append Mode

Representation of data:

- Dark Cell = Binary 1
- Light Cell = Binary 0

Symbol Size (not including quiet zone, 4 cells on each of the 4 sides):

- Model 1: 21 X 21 cells to 73 X 73 cells (Versions 1 to 14, increase in steps of 4 cells per side)
- Model 2: 21 X 21 cells to 177 X 177 cells (Versions 1 to 40, increase in steps of 4cells per side)

Data Characters per symbol (maximum for symbol size):

Numeric Data:

- Model 1; Version 14; ECC = L: 1,167 characters
- Model 2; Version 40; ECC = L: 7,089 characters

Alphanumeric Data:

- Model 1; Version 14; ECC = L: 707 characters
- Model 2; Version 40; ECC = L: 4,296 characters

Binary Data:

- Model 1; Version 14; ECC = L: 486 characters
- Model 2; Version 40; ECC = L: 2,953 characters

Kanji Data:

- Model 1; Version 14; ECC = L: 299 characters
- Model 2; Version 40; ECC = L: 1,817 characters

Code Type: Matrix

Orientation Independence: Yes

Sample

```
<STX>L
D11<CR>
1W1D44000001000102HM,AThis is the data portion also with
binary,B0003<0xfe><0xca><0x83><0x0D>
121100000000100Barcode W1D<CR>
E
```

Result

Prints a W1D QR code barcode.

Where:

- Cell Size = 0.1 inch square,
- Positioned at X = . 1" and Y = .1",
- ECC = H,
- Mask = Automatic,
- Data Input Mode = Manual

Example 1

DPL field record, QR Code barcode, Cell Size = 0.04 inch square, positioned at X = .1" and Y = .1", ECC = H, Mask = 3, Data Input Mode = Manual:

1W1D4400000100010H3M,AThis is the data portion also with binary,B0003<0xfe><0xca><0x83><0x0D>

Example 2

DPL field record, QR Code barcode, Cell Size = 0.08 inch square, positioned at X = .1" and Y = .1", ECC = L, Mask = Automatic, Data Input Mode = Manual – Kanji:

1W1D88000001000102,LM,K<0x81><0x40><0x81><0x41><0x81><0x42><0x0D>

Example 3

DPL field record, QR Code barcode, Cell Size = 0.04 inch square, positioned at X = .1" and Y = .1", ECC = L, Mask = Automatic, Data Input Mode = Manual – Kanji (in Hex/ASCII format):

1W1D4400000100010L8m,K814081418142<0x0D>

Example 4

DPL field record, QR Code barcode, Cell Size = 0.01 inch square, positioned at X = .1" and Y = .1", ECC = M, Mask = Automatic, Data Input Mode = Automatic:

1W1d1100000100010Pallet 35FGA, Box 55367, Datamax Corp, Orlando, Florida 32707<0x0D><0x0D>

W1f / W1F Aztec Barcode

Label format barcode ID for printing an Aztec barcode in variable (W1f) and fixed length (W1F) modes.

Variable Length (W1f): This two dimensional barcode holds a large amount of data in a small area and can provide a high level of error checking.

Specified Length (W1F): With a string four-digit length specifier, values 0x00 through 0xFF to be included within the data strings without conflicting with the DPL format record terminators.

Syntax

a W1 b c d eee ffff gggg [hhhh] i jjj kk…k

Parameters

Where:

Field	Valid Inputs	Meaning
a	1, 2, 3, and 4	Rotation
W1	W1	Fixed value, extended barcode set
b	f and F	Lowercase selects the Aztec barcode, variable length. Uppercase selects the Aztec barcode with a Byte Count Specifier.
c	1 to 9, A to Z, and a to z	Module size horizontal multiplier, 0 = default size. The c/d module size parameters should be equal to produce a square symbol. When the label command (Dwh) is used to generate larger text, then c and d may be used to compensate and ensure a square symbol.
d	1 to 9, A to Z, and a to z	Module size vertical multiplier, 0 = default size (See explanation for "c", above.)
eee	000	No Effect
ffff	0000 to 9999	Label position, row
gggg	0000 to 9999	Label position, column
[hhhh]	0000 to 9999	Optional string length specifier. Field termination is set by this byte count. This decimal value includes all of the data following this byte count field, but does not include itself.
i	0, 1	Extended Channel Interpretation (ECI) mode; 0 = Disabled, 1 = Enabled

Field	Valid Inputs	Meaning
jjj	000 to 300	Error Correction (EC) / Amount (see table below), where: 000 – Default EC, approximately 23% 001 – 099 EC fixed value, expressed as a percent. 101 – 104 Compact core, 1 to 4 layers respectively. 201 – 232 Full size core, 1 to 32 layers respectively. 300 – Rune format, encodes three ASCII decimal digits 0-256; scanner decode output is decimal number 0-256
kk...k	8-bit data, followed by a termination character	Data to be encoded.

The error correction or size selection determines the symbol size and other characteristics of the symbol, as shown in the following table. Attempting to encode more data that has been made available will result in no symbol printed.

Error Correction (EC) / Size Implications

jjj	Symbol Size [1]	Symbol Format	Maximum [2] Binary Data Bytes	Maximum [2] Alphabetic Characters	Maximum [2] Numeric Characters
000	variable	data dependent	1914	3067	3832
001 to 099	variable	data and EC dependent	1914	3067	3832
101	15	compact	6	12	13
102	19	compact	19	33	40
103	23	compact	33	57	70
104	27	compact	53	89	110
201	19	full size	8	15	18
202	23	full size	24	40	49
203	27	full size	40	68	84
204	31	full size	62	104	128
205	37	full size	87	144	178

jjj	Symbol Size [1]	Symbol Format	Maximum [2] Binary Data Bytes	Maximum [2] Alphabetic Characters	Maximum [2] Numeric Characters
206	41	full size	114	187	232
207	45	full size	145	236	294
208	49	full size	179	291	362
209	53	full size	214	348	433
210	57	full size	256	414	516
211	61	full size	298	482	601
212	67	full size	343	554	691
213	71	full size	394	636	793
214	75	full size	446	718	896
215	79	full size	502	808	1008
216	83	full size	559	900	1123
217	87	full size	621	998	1246
218	91	full size	687	1104	1378
219	95	full size	753	1210	1511
220	101	full size	824	1324	1653
221	105	full size	898	1442	1801
222	109	full size	976	1566	1956
223	113	full size	1056	1694	2116
224	117	full size	1138	1826	2281
225	121	full size	1224	1963	2452
226	125	full size	1314	2107	2632
227	131	full size	1407	2256	2818
228	135	full size	1501	2407	3007
229	139	full size	1600	2565	3205
230	143	full size	1702	2728	3409
231	147	full size	1806	2894	3616
232	151	full size	1914	3067	3832
300	11	Rune	1	1	1

[1] Measured in module size x, assuming default module size (cd=00).

[2] Maximum sizes are approximate and data dependent, and may be less than indicated.

Error Correction

Size 001 to 099: This value specifies the percent of symbol code words to be used for error correction. Actual error correction word percentage will vary depending on data. The default value, approximately 23%, is recommended. Any other value may be selected to meet the user's needs. Some minimum–security code word may be generated depending on the data sent for encoding, particularly when the volume of that data is small. It the data capacity is exceeded no symbol is printed.

Size 101 to 104: Values 101 through 104 results in 1 through 4 layers (two modules thick) respectively, around the center finder pattern. Data volume constraints apply as indicated in the table above. Symbols will be of the compact form. All available code word will be used for error correction. It the data capacity is exceeded no symbol is printed.

Size 201 to 232: Values 201 through 232 result in 1 through 32 layers (two modules thick) respectively, around the center finder pattern. Data volume constraints apply as indicated in the table above. Symbols will be of the full–size form. All available code words will be used for error correction. It the data capacity is exceeded no symbol is printed.

Size 300: Value 300 informs the printer that the data, which follows will be used to encode one RUNE symbol. The data consists of one to three ASCII digits with value range of 0 to 256. The data may include leading zeros. Data streams longer than three digits or data that includes non–numeric characters may have unpredictable results.

Extended Channel Interpretation Mode

A value of 1 provides for extended channel code words to be inserted into the barcode symbol, using escape sequences in the data stream. This mode also provides for effective Code 128 and UCC/EAN 128 emulations, when used in with appropriately configured barcode readers. The valid values for escape sequences are of the form <ESC>n, where:

<ESC> – 1 byte with value 2710 = 1B16

n – 1 ASCII digit, range 0 through 6

These escape sequences are encoded as FLG(n) character pairs described in the International Symbology Specification – Aztec Code, AIM, 1997-11-05, and the meanings of the values for n are the same in both.

<ESC>0

Is encoded as FLG(0), and interpreted as FNC1 or <GS> depending on its location in the data stream. The printer does not validate <ESC>0 locations in the data stream.

When <ESC>0 is the leading data in the stream, it is interpreted as a FNC1 as used in the Code 128 symbology, and specifically for UCC/EAN 128 applications. For appropriately configured scanners this will be interpreted/transmitted as a]C1 symbology identifier preamble. The printer does not validate UCC/EAN 128 data syntax.

When <ESC>0 follows a single alphabetic or two numeric characters respectively, then it also interpreted as a FNC1. For appropriately configured scanners this would be interpreted/transmitted as a]C2 symbology identifier preamble, and the alpha or numeric characters preceding the FNC1 are Application Indicators assigned by AIM International. The printer does not check AI validity. When <ESC>0 is anywhere else in the data stream, a <GS> replaces it in the barcode symbol, as with UCC/EAN 128 field separators.

<ESC>n

Is encoded as FLG(n), and is interpreted as signaling Extended Channel Interpretation. When the value of n is from 1 to 6, it signals that the following n digits comprise an extended channel identifier for use with ECI compliant barcode scanners.

An erroneous barcode symbol may result from failing to follow <ESC>n with n digits. Any <ESC>0 following <ESC>n and not within the n digits will be encoded as FLG(0). In the context of a FLG(n), any backslash "\" (9210) will be interpreted by the scanner as two backslashes "\\".

Functions Not Supported

- Structured Append
- Reader Initialization Symbol Generation
- Module shaving

Behavior

Valid Characters: All ASCII characters, depending upon the selected options.

Variable Length (W1f): This two dimensional barcode holds a large amount of data in a small area and can provide a high level of error checking.

Specified Length (W1F): With a string four–digit length specifier, values 0x00 through 0xFF to be included within the data strings without conflicting with the DPL format record terminators.

Sample 1

```
<STX>L
D11<CR>
1W1f0000000015010000000AZTEC<CR>
12110000000100Barcode W1f<CR>
E
```

Result

The variable length example encodes "AZTEC" with no ECI input, and 23% error correction, and prints the barcode. A line of text is also printed.

Sample 2

```
<STX>L
D11
1W1F0000000015010000170000AZTEC<0x0D>barcode
121100000000100Barcode W1F
E
```

Result

The specified length example includes a byte count field for all bytes that follow until the end of the barcode data. The byte count is 17. The symbology encodes "AZTEC<CR>barcode", and prints the barcode. Notice that a <CR> does not terminate the barcode format record. A line of text is also printed.

W1g / W1G: USD-8 (Code 11) Barcode

Label format barcode ID to print a Telepen barcode with (W1G) or without (W1g) human-readable text.

Syntax

W1G or W1g

Parameters

Bar Size

Behavior

- Valid Characters: 0-9, –
- Barcode Data String Length: Variable, typical max 41 characters
- Human-readable: W1G; and, Non-human-readable: W1g

USD-8 (Code 11) is a barcode that encodes the ten digits and the dash (–) character. An additional character serves as the start and stop indicator. Each character has

three bars and two spaces for a total of five elements. Of these five elements, two are of medium width and three are narrow, except for the "0", "9", and "–" characters, which have only one wide element and four narrow elements.

The narrow bar size is specified in DPL by the narrow bar parameter, the medium is specified in DPL by the wide bar parameter and the wide bar is fixed at 2 times the medium bar minus the narrow bar.

DPL calculates two checksum characters, C and K, and automatically places them prior to the stop character.

Sample

```
<STX>L
D11
1W1G00000015001500123456789–<CR>
12110000000100Barcode W1G<CR>
E
```

Result

Prints a Code 11 barcode.

W1I EAN128 Barcode (with Auto Subset Switching)

Label format barcode ID (W1I) to print EAN128 (with Auto Subset Switching and human–readable text).

Syntax

W1I

Parameters

See Behavior Section below for details.

Behavior

Valid characters: The entire 128 ASCII character set.

Variable length, minimum 4 characters

Valid bar widths: The fourth character of record is the width of the narrow bar in dots. All other bars are a ratio of the narrow bar (2 times the narrow bar width, 3 times the narrow bar width, and 4 times the narrow bar width).

This printer supports the Code 128 subsets A, B, and C. If the data begins with at least four numeric characters the default start code is subset C. If there is a non-numeric in the first four characters then the default start code is subset B. The next character after start is always FNC1. Subset switching between B and C is performed based on rules as below:

1. If in subset C and there are an odd number of numeric digits, subset B will be set prior to the last digit.

2. If four or more numeric digits appear consecutively while in subset B, the character code C will be set prior to the digits.

3. When in subset C and a non-numeric occurs, subset B will be inserted prior to the character.

Note that there is no auto-switching from or to Subset A. Standard switches are still used (see table below).

Subset A: Includes all of the standard uppercase alphanumeric keyboard characters plus the control and special characters.

Subset B: Includes all of the standard uppercase alphanumeric keyboard characters plus the lowercase alphabetic and special characters.

Subset C: Includes the set of 100 digit pairs from 00 through 99 inclusive, as well as special characters. EAN128 Subset C is used for double density encoding of numeric data.

Special Character Handling: Characters with an ASCII value greater than 95 are considered special characters. To access these values, a two-character reference table is built into the printer; see table below. As an example, to encode FNC2 into an EAN128 Subset A barcode, send the ASCII & (DEC 38, HEX 26) followed by an ASCII B (DEC 66, HEX 41). Code FNC2 will be encoded.

ASCII	2 CHAR	CODE A	CODE B	CODE C
96	&A	FNC3	FNC3	N/A
97	&B	FNC2	FNC2	N/A
98	&C	SHIFT	SHIFT	N/A
99	&D	CODEC	N/A	N/A
100	&E	CODEB	FNC4	N/A
101	&F	FNC4	CODEA	CODEA
102	&G	FNC1	FNC1	FNC1

Control Codes: By sending these control codes, control characters can be encoded into a Code 128 Subset A barcode (e.g., ABC{DE will be encoded as ABC<ESC>DE):

Control Code in the Barcode Data Stream	Encoded Control Character Result
`	NUL
a through z	1 - 26
{	ESC
|	FS
}	GS
~	RS
ASCII 127	US

Sample

<STX>L
D11<CR>
1W1I000000025002512345&G1OZ2133021AK<CR>
12110000000100Barcode W1I<CR>
E

Result

Prints an EAN128 barcode.

When scanned this barcode will decode as follows:

[C][FNC1]1234[B]5[F1]1OZ[C]213302[B]1AK(81)

W1J Code 128 Barcode (with Auto Subset Switching)

Label format barcode ID (W1J) to print a Code 128 (with Auto Subset Switching) barcode.

Syntax

W1J

Parameters

See behavior section below for details.

Behavior

- Valid characters: The entire 128 ASCII character set.
- Variable length
- Valid bar widths: The fourth character of record is the width of the narrow bar in dots.
- All other bars are a ratio of the narrow bar (2 times the narrow bar width, 3 times the narrow bar width, and 4 times the narrow bar width).

This printer supports the Code 128 subsets A, B, and C. If the data begins with at least four numeric characters the default start code is subset C. If there is a non-numeric in the first four characters or there are less than four then the default start code is subset B. Subset switching between B and C is based on the following rules:

- If in subset C and there are an odd number of numeric digits, subset B will be set prior to the last digit.
- If four or more numeric digits appear consecutively while in subset B, the character code C will be set prior to the digits. If there is an odd number of numerics already in B, the first numeric will be placed in B with the others in C.
- When in subset C and a non-numeric occurs, subset B will be inserted prior to the character.

Note: There is no auto switching from, or to, subset A. Standard switches are still used. See table below.

Subset A: Includes all of the standard uppercase alphanumeric keyboard characters plus the control and special characters.

Subset B: Includes all of the standard uppercase alphanumeric keyboard characters plus the lowercase alphabetic and special characters.

Subset C: Includes the set of 100 digit pairs from 00 through 99 inclusive, as well as special characters. Code128 Subset C is used for double density encoding of numeric data.

Special Character Handling: Characters with an ASCII value greater than 95 are considered special characters. To access these values, a two-character reference table is built into the printer; see table below. As an example, to encode FNC2 into a Code128 Subset A barcode, send the ASCII & (DEC 38, HEX 26) followed by an ASCII B (DEC 66, HEX 41). Code FNC2 will be encoded.

ASCII	2 CHAR	CODE A	CODE B	CODE C
96	&A	FNC3	FNC3	N/A
97	&B	FNC2	FNC2	N/A
98	&C	SHIFT	SHIFT	N/A

ASCII	2 CHAR	CODE A	CODE B	CODE C
99	&D	CODEC	N/A	N/A
100	&E	CODEB	FNC4	N/A
101	&F	FNC4	CODEA	CODEA
102	&G	FNC1	FNC1	FNC1

Control Codes: By sending these control codes, control characters can be encoded into a Code 128 Subset A barcode (e.g., ABC{DE will be encoded as ABC<ESC>DE):

Control Code in the Barcode Data Stream	Encoded Control Character Result
`	NUL
a through z	1 - 26
{	ESC
		FS
}	GS
~	RS
ASCII 127	US

Sample

<STX>L
D11<CR>
1W1J0000000025002512345&G10Z2133021AK<CR>
121100000000100Barcode W1J<CR>
E

Result

Prints a Code128 Auto (with Auto Subset Switching) barcode.

When scanned this barcode will decode as follows:

[C]1234[B]5[F1]10Z2 [C]133021[B]AK(95)

W1k GS1 DataBar Barcode

Label format barcode ID (W1k) to print GS1 DataBar barcode. (Previously "Reduced Space Symbology RSS".)

Supports six types: GS1 DataBar, DataBar Truncated, DataBar Stacked, DataBar Stacked Omni-Directional, DataBar Limited, and DataBar Expanded.

Syntax

W1k

Parameters

See behavior section below.

Behavior

Valid Characters: Type dependent

Barcode Data String Length: Type dependent

GS1 DataBar is a continuous, linear symbology used for identification in EAN.UCC systems. There are six different types:

GS1 DataBar Type	Overview*
GS1 DataBar GS1 DataBar Truncated GS1 DataBar Stacked GS1 DataBar Stacked Omni-Directional	• Encodes a full 14-digit EAN.UCC item identification within a linear symbol that can be scanned omni-directionally. • The encodable character set is 0 through 9. • The maximum numeric data capacity is the application identifier plus 14-digit numeric item identification. • Error detection is mod 79 checksum.
GS1 DataBar Limited	• Encodes a 14-digit EAN.UCC item identification with indicator digits of zero or one within a linear symbol. • The encodable character set is 0 through 9. • The maximum numeric data capacity for is the application identifier plus 14-digit numeric item identification. • Data must begin with indicator 0 or 1. Any higher number results in discarded data. • Error detection is mod 89 checksum.

GS1 DataBar Type	Overview*
GS1 DataBar Expanded	• Encodes EAN.UCC item identification plus supplementary AI element strings. • The encodable character is a subset of ISO 646, consisting of upper and lower case letters, digits and 20 selected punctuation characters, plus the special function character FNC1, (#). • The maximum numeric data capacity is 74 numeric or 41 alphanumeric. • Error detection is mod 211 checksum.

*Additional data can be encoded in a two-dimensional composite as per specification (see AIM Spec ITS/99-001 for more details).

Syntax for GS1 DataBar:

(spaces added for readability)

a W1 k c d eee ffff gggg h i j m n...n | p...p

Field	Valid Inputs	Meaning
a	1, 2, 3, and 4	Rotation
W1	W1	Fixed value, extended barcode set
k	k	Selects GS1 barcode
c	1 to 9, A to Z, and a to z	Wide bar ratio, default = 2
d	1 to 9, A to Z, and a to z	Narrow bar ratio, default = 2
eee	000	No Effect
ffff	0000 to 9999	Label position, row
gggg	0000 to 9999	Label position, column
h	R, T, S, D, L	GS1 Type: R = GS1 DataBar Linear, T = GS1 DataBar Truncated, S = GS1 DataBar Stacked, D = GS1 DataBar Stacked Omni-Directional, L = GS1 DataBar Limited

Field	Valid Inputs	Meaning
i	1 to 9	Pixel Multiplier
j	0 to (i–1)	X pixels to undercut
m	0 to (i–1)	Y pixels to undercut
n…n	0 to 9	Numeric linear data, length 13 [1]
|	| (optional)	Vertical bar separates primary linear data from secondary 2-D data
p…p	2-D data (optional)	Additional 2-D data [2]

[1] The application identifier is not encoded in the symbol nor is the last check digit; the user should enter in a 13-digit value. The decoding system will display the application identifier and calculate the check digit.

[2] The separator row height for two-dimensional composite is fixed at one times the pixel multiplier.

Syntax for the GS1 DataBar Expanded barcode

(spaces added for readability):

a W1 k c d eee ffff gggg h i j m nn p…p | q…q

Field	Valid Inputs	Meaning
a	1, 2, 3, and 4	Rotation
W1	W1	Fixed value, extended barcode set
k	k	Selects GS1 barcode
c	1 to 9, A to Z, and a to z	Wide bar ratio, default = 2
d	1 to 9, A to Z, and a to z	Narrow bar ratio, default = 2
eee	000	No Effect
ffff	0000 to 9999	Label position, row
gggg	0000 to 9999	Label position, column
h	E	GS1 Type: E = GS1 DataBar Expanded
i	1 to 9	Pixel Multiplier
j	0 to (i–1)	X pixels to undercut
m	0 to (i–1)	Y pixels to undercut
nn	2-22, even only [2]	Segments per row
p…p	0 to 9	Subset of ISO646, including alphanumerics

Field	Valid Inputs	Meaning
I	I (optional)	Vertical bar separates primary linear data from secondary 2–D data
q...q	2-D data (optional)	Additional 2-D data [2]

[1] The application identifier is not encoded in the symbol nor is the last check digit; the user should enter in a 13-digit value. The decoding system will display the application identifier and calculate the check digit.

[2] When using additional 2-D composite data, the sequence width must be at least 4.

GS1 DataBar Barcode Sample

<STX>L
D11
1W1k0000001500150R1002001234567890
121100000000100Barcode W1k<CR>
E

Result

GS1 DataBar Barcode with 2–D Data Sample

<STX>L
D11
1W1k0000001500150R1002001234567890|123456-99/99/99
121100000000100Barcode W1k<CR>
E

Result

GS1 DataBar Truncated Barcode Sample

<STX>L
D11
1W1k0000001500150T1002001234567890
121100000000100Barcode W1k<CR>
E

Result

GS1 DataBar Stacked Barcode Sample

<STX>L

DPL Command Reference

D11
1W1k0000001500150S1002001234567890
121100000000100Barcode W1k<CR>
E

Result

GS1 DataBar Stacked Omni-Directional Barcode Sample

<STX>L
D11
1W1k0000001500150D1002001234567890
121100000000100Barcode W1k<CR>
E

Result

GS1 DataBar Limited Barcode Sample

<STX>L
D11
1W1k0000001500150L1001501234567890
121100000000100Barcode W1k<CR>
E

Result

GS1 DataBar Expanded Barcode Sample

<STX>L
D11
1W1k0000001500150E100022001234567890
121100000000100Barcode W1k<CR>
E

Result

W1L Planet Code Barcode

Label format barcode ID (W1L) to print a Planet Code barcode.

Syntax

W1L

Behavior

Valid Characters: 0-9

Variable length, minimum one digit

Sample

<STX>L
D11
1W1L440500100010012345678
E

Result

Prints a Planet Code barcode.

W1m / W1M Australia Post 4-State Barcode

Label format barcode ID to print an Australia Post System barcode with (W1M) or without (W1m) human-readable text.

Syntax

a W1 m c d eee ffff gggg hh iiiiiiii j...j

Parameters

Where:

Field	Valid Inputs	Meaning
a	1, 2, 3, and 4	Rotation
W1	W1	Fixed value, extended barcode set

Field	Valid Inputs	Meaning
m	m and M	Lowercase selects the Australia Post barcode, and uppercase selects the Australia Post barcode with a human-readable field.
c	0	Not used.
d	0	Not used.
eee	000	Not used.
ffff	0000 to 9999	Label position, row
gggg	0000 to 9999	Label position, column
hh	11, 87, 45, 92, 59, 62,44	Format Control Code (FCC) value and resulting format: 11 = Standard Customer Barcode 87 = Routing Barcode 45 = Reply Paid Barcode 92 = Redirection Barcode 59 = Customer Barcode 2 62 = Customer Barcode 3 44 = Reserved
iiiiiiii	00000000-99999999	8-digit Delivery Point Identifier (DPID)
j...j	0-9, a-z, A-Z, #, space	Optional – Customer information, Barcode 2 or 3 (Barcode 2 has a maximum of 8 digits or 5 alphanumeric characters, while Barcode 3 has a maximum of 15 digits or 10 alphanumeric characters), where if all numeric then data will be encoded in N-type; otherwise, C-type will be used.

Behavior

Length: 37, 52, or 67 bars

Usage: This symbol is used for processing mail in the Australia Post System. The symbol is 37, 52 or 67 bars in length, and the height and ratios are fixed according to the specification.

Sample 1

<STX>L
D11<CR>
1WM00000005000501139987520<CR>
E

Result

Prints a standard customer barcode using a DPID of "39987520".

11 39987520 50 25 52 50

Note that the human-readable shows the format control code, sorting code and the generated Reed Solomon error correction parity values.

Sample 2

<STX>L
D11<CR>
1Wm00000005001505932211324A124B<CR>
E

Result

Prints a customer barcode 2 using a DPID of "32211324" and customer information "A124B".

W1N-W1n Industrial 2 of 5 Barcode

Label format barcode ID to print: Industrial 2 of 5 barcode with (W1N) or without (W1n) human-readable text.

Syntax

W1N / W1n

Parameters

N/A

Behavior

Industrial 2 of 5 is a discrete, self-checking, continuous numeric barcode. All of the information is contained in the bars, either wide or narrow, typically in a 3:1 ratio. The

space is equal to the width of the narrow bar.

- Valid Characters: 0-9

- Variable length, minimum one digit

- Human-readable: W1N; and, Non-human-readable: W1n

Sample

<STX>L
D11
1W1N8305001000100123456
E

Result

Prints an Industrial 2 of 5 barcode.

W1p Intelligent Mail Barcode (IMB)

Label format barcode ID (W1p) to print an Intelligent Mail Barcode (IMB).

Syntax

W1p

Parameters

See Behavior section

Behavior

- Valid Characters: 0-9

- Length: 20, 25, 29, or 31 digits

- Valid bar widths: The width and height multiplier values of 00 will produce a valid IMB symbol.

The barcode height field is ignored since the symbol height is United States Postal Service specific. This barcode represents a 20 digit tracking code and a zero, five, nine, or eleven digit routing code on a letter or package for the USPS.

Sample

<STX>L
D11<CR>

1W1p0000000050005001234567094987654321012345678 91<CR>
E

Result

Prints an IMB barcode.

W1q CODABLOCK Barcode

Label format barcode ID (W1q) to print a CODABLOCK barcode.

Syntax

a W1q b c ddd eeee ffff g h ii jj k...k

Parameters

Field	Valid Inputs	Meaning
a	1, 2, 3, and 4	Rotation
W1	W1	Fixed value, extended barcode set, selects CODABLOCK.
b	1 to 9, A to Z, and a to z	Horizontal multiplier* (0 = default size)
c	1 to 9, A to Z, and a to z	Vertical multiplier* (0 = default size)
ddd	001 to 999	Individual row height
eeee	0000 to 9999	Label position, row
ffff	0000 to 9999	Label position, column
g	A, E, F	CODABLOCK Mode – A, E, or F
h	0, 1	Determines whether to generate and add a checksum.
ii	01 – 44	Number of rows to encode
jj	02 – 62	Number of characters per row
k...k	ASCII chars	Data

* Only CODABLOCK A supports variable ratios.

Behavior

- Valid Characters: CODABLOCK A: 0–9, A–Z, – . * $ / + % and the space character; and, CODABLOCK E and F: All ASCII characters.
- Variable length

CODABLOCK is a two-dimensional, multi-row, stacked barcode. CODABLOCK A uses the Code 39 character set and supports variable ratios. CODABLOCK E and F use the Code 128 character set and support only fixed ratios, while CODABLOCK E also adds FNC1 automatically to the beginning of the data.

Sample

<STX>L
D11
1W1q2202501000100E0040212345678
E

Result

Prints a CODABLOCK E barcode with 4 rows, 2 characters per row.
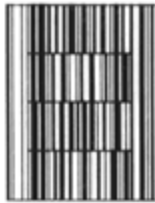
W1R UCC/EAN Code 128 K-MART NON EDI Barcode

Label format barcode ID (W1R) to print a Code 128 K-MART NON EDI barcode.

Syntax

W1R

Behavior

- Valid Characters: 0-9

- Length: 18 digits

- Valid bar widths: The fourth character of record is the width of the narrow bar in dots. All other bars are a ratio of the narrow bar (2, 3, or 4 times the narrow bar width). Human-readable characters for this barcode are printed above the symbol.

This barcode produces the same symbology as barcode ID "R", except that the human-readable field has been modified to print underneath the barcode.

Sample

<STX>L
D11<CR>
1W1R00000001501000123456789012345677<CR>
121100000000100Barcode W1R<CR>
E

Result

Prints a KMART barcode.

W1s-W1S Standard 2 of 5 Barcode

Label format barcode ID to print a Standard 2 of 5 Barcode with (W1S) and without (W1s) human-readable text.

Syntax

W1S / W1s

Behavior

- Valid Characters: 0-9

- Variable length, minimum one digit

- Human-eadable: W1S; and, non-human-readable: W1s

Standard 2 of 5 is a discrete, self-checking, continuous numeric barcode. All of the information is contained in the bars. Bars are either wide or narrow, typically in a 3:1 ratio. The space is equal to the width of the narrow bar.

Sample

```
<STX>L
D11
1W1S8305001000100123456
E
```

Result

Prints a Standard 2 of 5 barcode.

W1t TCIF Linked 3 of 9 (TLC39)

Label format barcode ID (W1t) for printing a TCIF Linked 3 of 9 (TLC39) barcode.

Syntax

(spaces added for readability)

a W1 t c d eee ffff gggg hhhhhh ; ii...i

Parameters

Field	Valid Inputs	Meaning
a	1, 2 ,3, and 4	Rotation
W1	W1	Fixed value, extended barcode set
t	t	Selects TLC39 barcode
c	1 to 9, A to Z, and a to z	Wide bar of Code 39, ratio of wide to narrow must be between 2:1 and 3:1.
d	1 to 9, A to Z, and a to z	Narrow bar of Code 39
eee	001 to 999	Height of Code 39
ffff	0000 to 9999	Label position, row
gggg	0000 to 9999	Label position, column
hhhhhh	ECI Data	Six-digit ECI number
;	Fixed	Parses data. (If the seventh character is not a semi colon then only a six-digit code 39 will print.)
i...i	S/N Data	Up to 25 alphanumeric serial number characters to be encoded in the MicroPDF417 symbol. This symbol is fixed at four columns. The number of rows is determined by the amount of data, as follows: **Character Count** **Row Count** 1-14 4 15-22 6 23-25 8

The link flag is the character "T" in Code 39 without a start/stop indicator. The flag location is based on the ECI code location, length, and height. The location of the MicroPDF417 symbol is based on the location of ECI barcode. The symbol's module width and height are fixed at the default.

Behavior

Valid Characters: All ASCII characters.

Variable Length: Encodes a 25-character alphanumeric number in MicroPDF417 symbol.

Specified Length: Encodes a six-digit sequence in a standard Code 39 followed by a link flag character in Code 3 of 9.

Sample

```
<STX>L
D11
1Wt0000001500150123456;ABCD12345678901234
1911A0801300170A1B2C3DAAA
12110000000100Barcode W1t<CR>
E
```

Result

Prints a TLC39 barcode.

A1B2C3DAAA

W1Y-W1y Code 16K Barcode

Label format barcode ID to print a Code 16K bar ccode with (W1Y) or without (W1y) human-readable text.

Syntax

W1Y / W1y

Behavior

- Valid Characters: All ASCII characters

- Variable length

- Human-readable: W1Y; and non-human-readable: W1y

Code 16K is a multi-row barcode.

Sample

```
<STX>L
D11
1W1Y3305001000100ABC123
E
```

Result

Prints a Code 16K barcode.

W1z MicroPDF417 Barcode

Label format barcode ID (W1z) to print a MicroPDF417 barcode. MicroPDF417 is a 2 dimensional barcode capable of holding large amounts of data in a small area. It provides a high level of redundancy and error checking.

Syntax

a W z c d eee ffff gggg h i j k 0 m...m

Parameters

Field	Valid Inputs	Meaning
a	1, 2, 3, and 4	Rotation
W1	W1	Fixed value, extended barcode set
z	z	Selects the MicroPDF417 barcode.
c	1 to 9, A to Z, and a to z	Module size horizontal multiplier, 0 – default size.
d	1 to 9, A to Z, and a to z	Module size vertical multiplier, 0 – default size.
eee	000	No effect
ffff	0000 to 9999	Label position, row
gggg	0000 to 9999	Label position, column
h	1 to 4	Number columns
i	0 to 9 and A	Row / Error Correction index

Field	Valid Inputs	Meaning
j	0, 1	Byte Compaction Mode, 1 – best binary data compression
k	0, 1	Macro Character Substitution, 1 – disable
0	0	Fixed ASCII digit 0. Reserved for future use.
m...m	8-bit data	Data to be encoded.

The number of columns (h) and row / error correction index (i) combine to form the selection index (hi), which determines other symbol characteristics as shown below:

hi	Columns	Rows	Max Errors Corrected [1]	Symbol Width [2]	Symbol Height [3]	Max Binary Data Bytes [3]	Max Alpha Characters [5]	Max Numeric Characters [5]
10	1	11	4	40	24	3	6	8
11	1	14	4	40	30	7	12	17
12	1	17	4	40	36	10	18	26
13	1	20	5	40	42	13	22	32
14	1	24	5	40	50	18	30	44
15	1	28	5	40	58	22	38	55
20	2	8	5	57	18	8	14	20
21	2	11	6	57	24	14	24	35
22	2	14	6	57	30	21	36	52
23	2	17	7	57	36	27	46	67
24	2	20	8	57	42	33	56	82
25	2	23	10	57	48	38	67	93
26	2	26	12	57	54	43	72	105
30	3	6	9	84	14	6	10	14
31	3	8	11	84	18	10	18	26
32	3	10	13	84	22	15	26	38
33	3	12	15	84	26	20	34	49

hi	Columns	Rows	Max Errors Corrected [1]	Symbol Width [2]	Symbol Height [3]	Max Binary Data Bytes [3]	Max Alpha Characters [5]	Max Numeric Characters [5]
34	3	15	18	84	32	27	46	67
35	3	20	23	84	42	39	66	96
36	3	26	29	84	54	54	90	132
37	3	32	35	84	66	68	114	167
38	3	38	41	84	48	82	138	202
39	3	44	47	84	90	97	162	237
40	4	4	5	101	10	8	14	20
41	4	6	8	101	14	13	22	32
42	4	8	11	101	18	20	34	449
43	4	10	13	101	22	27	46	67
44	4	12	15	101	26	34	58	85
45	4	15	18	101	32	45	76	111
46	4	20	23	101	42	63	106	155
47	4	26	29	101	54	85	142	208
48	4	32	35	101	66	106	178	261
49	4	38	41	101	48	128	214	313
4A	4	44	47	101	90	150	250	366

Note: In the table above, row/column/error correction selection index (hi) values increasingly large do not necessarily result in the ability to encode more data.

[1] Can be any combination of 1 erasures + 2 substitutions (e.g. 13 maximum number of errors corrected might include 7 erasures and 3 substitutions).

[2] Includes 1 module width of quiet zone on either side.

[3] Assumes the module height is 2 module width, and includes one module width quiet zones on top and bottom.

[4] Assumes Binary Compaction.

[5] Assumes Text Compaction.

Byte Compaction Mode (j = 1)

A value of 1 forces Byte Compaction. The compaction ratio is six 8-bit bytes of data compressed into a 5-symbol code word. See the table above for the maximum data allowed for any row/column/error correction selection index (hi).

Macro Character Substitution Disable (k=1)

By default Macro Character Substitution is enabled (k=0). When enabled, Byte Compaction has priority over Macro Character Substitution. When Macro Character Substitution is enabled, the data stream header and trailer are compacted when they conform to the following forms:

- [)>^R_S05^G_S data ^R_S ^{E}O$_T$, or

- [)>^R_S06^G_S data ^R_S ^{E}O$_T$

where:

- data may not contain adjacent bytes with values ^R_S or ^G_S

- (^R_S = 30_{10} , $1E_{16}$ and ^G_S = 29_{10} , $1D_{16}$ and ^{E}O$_T$ = 4_{10} ,4_{16})

Functions Not Supported

- General Purpose Extended Channel Interpretations, including Code-128 emulations
- Structured Append
- Reader Initialization Symbol Generation
- Module shaving

Behavior

- Valid Characters: All ASCII characters, depending on the selected options.
- Variable Length

Sample

```
<STX>L
D11<CR>
1W1z000000015010014000PDF417<CR>
12110000000100Barcode W1z<CR>
E
```

Result

Prints a MicroPDF417 barcode, default module size (cd = 00), with 1 column, 24 rows, error correction of 33%, no byte compaction, macro character substitution enabled.

W1Z Micro PDF417 Barcode with Byte Count Specifier

Label format barcode ID (W1Z) to print a MicroPDF417 barcode.

MicroPDF417 is a 2 dimensional barcode capable of holding large amounts of data in a small area. It provides a high level of redundancy and error checking. The Byte Count specifier allows for data values 0x00 through 0xFF to be included within the data strings without conflicting with the DPL format record terminators.

Syntax

W1Z

Parameters

See Behavior section below,

Behavior

Specified Length – The upper case Z identifies a Micro PDF417 barcode with a 4-digit string length specifier. This allows values 0x00 through 0xFF to be included within the data strings without conflicting with the DPL format record terminators. The four-digit decimal data byte count immediately follows the four-digit column position field. This value includes all of the data following the byte count field, but does not include itself.

Sample

```
<STX>L
D11<CR>
1W1Z0000000150100001214000pdf<0x0D>417
121100000000100Barcode W1Z<CR>
E
```

Result

From the example, the barcode's data stream, 1W1Z00000001501000**0012**14000PDF<0x0D>417, includes a Byte Count Specifier (the portion in bold), where 0012 equals the four-digit decimal data byte count and includes all bytes that follow until the end of the barcode data. Field termination is set by the byte count. <STX>, <CR>, and <0x0D> all represent single byte values of

hexadecimal 02, 0D, and 0D, respectively. The Micro PDF417 barcode produced encodes "pdf<CR>417", and prints a line of text: Barcode W1Z.

REFERENCE INFORMATION

- Available Fonts – Sizes and References
- Commands by Function
- General Purpose Input Output (GPIO) Port Applications
- Image Loading
- International Language Print Capability (ILPC) Programming Examples
- Line Mode
- Reset Codes
- RFID Overview
- Single and Double Byte Character Font Mapping
- Speed Ranges
- Symbol Sets
- UPC-A and EAN-13: Variable Price/Weight Barcodes

Available Fonts – Sizes and References

All character bitmapped fonts available on the printers are described in this section. Each font has a name (Font ID) associated with it for use in programming. Use the Font Number in field b of the Format Record header to cause the printer to use the corresponding font.

Font Numbers

Fonts 0 through 8 use the slash zero (Ø) conventions for distinguishing between the zero and the alphabetic O. The slash can be removed with the label formatting command z. These fonts are non-proportional (monospaced). Therefore, all of the characters take up the same amount of space when printed. This is helpful when using variable data in a fixed area. The sizes of these fonts are shown on the following pages.

The CG Triumvirate font number 9 is a proportional font. Each character will take up a different amount of space when printed. For example, the letter W will be wider than the letter I.

Font Number	Valid ASCII Characters (decimal)	Use with Record Structure Type
0	32-127, 255	Internal Bitmapped Fonts
1	32-168, 171, 172, 225, 255	
2	32-168, 171, 172, 225, 255	
3	32, 35-38, 40-58, 65-90, 128, 142-144, 146, 153, 154, 156, 157, 165, 168, 225, 255	
4	32, 35-38, 40-58, 65-90, 128, 142-144, 146, 153, 154, 156, 157, 165, 168, 225, 255	
5	32, 35-38, 40-58, 65-90, 128, 142-144, 146, 153, 154, 156, 157, 165, 168, 225, 255	
6	32, 35-38, 40-58, 65-90, 128, 142-144, 146, 153, 154, 156, 157, 165, 168, 225, 255	
7	32-126	
8	32, 48-57, 60, 62, 67, 69, 78, 83, 84, 88, 90	
9	Dependent upon selected symbol set (see Single and Double Byte Character Font Mapping).	Scalable Font

Font Sizes

Font sizes are dependent upon the print head resolution of the printer used. The tables below contain a listing of the font sizes by resolution with dimensions given in dots.

DPL Command Reference

203 DPI:

Font	Height	Width	Spacing	Point Size
Font 0	7	5	1	2.5
Font 1	13	7	2	4.6
Font 2	18	10	2	6.4
Font 3	27	14	2	9.6
Font 4	36	18	3	12.8
Font 5	52	18	3	18.4
Font 6	64	32	4	22.7
Font 7	32	15	5	11.3
Font 8	28	15	5	9.9

300 DPI:

Font	Height	Width	Spacing	Point Size
Font 0	10	7	1	2.4
Font 1	19	10	3	4.6
Font 2	27	15	3	6.5
Font 3	40	21	3	9.6
Font 4	53	27	4	12.7
Font 5	77	27	4	18.5
Font 6	95	47	6	22.8
Font 7	47	22	7	11.3
Font 8	41	22	7	9.8

400 DPI:

Font	Height	Width	Spacing	Point Size
Font 0	14	10	2	2.5
Font 1	26	14	4	4.6
Font 2	36	20	4	6.4
Font 3	54	28	4	9.6
Font 4	72	36	6	12.8

Font	Height	Width	Spacing	Point Size
Font 5	104	36	6	18.4
Font 6	128	64	8	22.7
Font 7	64	30	8	11.3
Font 8	56	30	10	9.9

600 DPI:

Font	Height	Width	Spacing	Point Size
Font 0	20	14	2	2.4
Font 1	38	20	6	4.6
Font 2	54	30	6	6.5
Font 3	80	42	6	9.6
Font 4	106	54	8	12.7
Font 5	154	54	8	18.5
Font 6	190	94	12	22.8
Font 7	94	44	14	11.3
Font 8	82	44	14	9.8

Internal Smooth Font 9 (Smooth Font) Point Size Specifiers

Label format records with font code 9 (in Format Record header field b) can specify any of the font sizes in the leftmost column of the table below. The corresponding specification in either column labeled Ann or 0nn is used in the font size/selection (eee height) field to select the desired font size.

Optional font sets may contain subsets of those described here. For an optional font set that generates these fonts via scalable font technology, the character mapping for this font is the selected scalable symbol set (see Symbol Sets).

In the sample format below, a 300 DPI printer will use 4-point smooth font to produce a printed label with the words "four point font". Sample format:

<STX>L<CR>
1911A0400100010four point font<CR>
E<CR>

Point Size	Ann 203 DPI Syntax	Ann 300, 600 DPI Syntax	0nn Syntax
4	–	A04	–

Point Size	Ann 203 DPI Syntax	Ann 300, 600 DPI Syntax	0nn Syntax
5	–	A05	000*
6	A06	A06	001
8	A08	A08	002
10	A10	A10	003
12	A12	A12	004
14	A14	A14	005
18	A18	A18	006
24	A24	A24	007
30	A30	A30	008
36	A36	A36	009
48	A48	A48	010
72	–	A72	–

* Available at 300 DPI and greater print resolutions only.

Column, Present, & Row Adjust Fine Tune Range

Printer Resolution (DPI)	Column Adjust Fine Tune Parameter Range (+/– dots)	Row & Present Adjust Fine Tune Parameter Range (+/– dots)
203	-100 – 100 dots	-100 – 2030 dots
300	-150 – 150 dots	-150 – 3000 dots
400	-200 – 200 dots	-200 – 4060 dots
600	-300 – 300 dots	-300 – 6000 dots

Commands by Function

Function	Command
Backup speed	pa
Batch quantity request	<SOH>E
Cancel	<SOH>C
Character bitmapped data	<ESC>(snnnWdata
Character code	<ESC>*cnnnE
Character dump mode	<STX>P
Column offset amount	Cnnnn
Configuration label and dot pattern print	<STX>Z
Configuration Set	<STX>Kc
Continuous paper length	<STX>cnnnn
Count by	^nn
Cut	<STX>o
Cut by	:nnnn
Cut by	cnn
Decrement alphanumerically	<fii
Decrement numerically	– fii
DIP switch, host controlled settings	<STX>Vn
Dot size height and width	Dwh
Edge sensor enable	<STX>e
Feed rate	<STX>Sa
Feedback characters enable	<STX>a
Field data line terminator	Tnn
File delete from module	<STX>xmfname
Firmware version request	<STX>v
Font descriptor	<ESC>)snnnW
Font ID number	<ESC>*cnnnD
Form feed	<STX>F
Set Present Distance	<STX>Kfnnnn

Function	Command
Format attribute	An
Graphics image download	<STX>Iabfnamecr
Heat setting	Hnn
Inches	<STX>n
Increment alphanumerically	>fii
Increment numerically	+fii
Label format field replacement	<STX>Unnstring
Label formatting start	<STX>L
Label length maximum	<STX>Mnnnn

General Purpose Input Output (GPIO) Port Applications

GPIO-equipped printers can interface with most external controlling devices. Operational preferences can be stored for subsequent power-ups using the printer menu, or via <STX>Kc commands. Functions and connections vary, as discussed below.

⚠️ Always wear a wrist strap and follow ESD prevention measures when handling the GPIO or Applicator Interface Card. For specification information, reference the printer's Maintenance Manual.

GPI/O I-Class Mark II

Four dedicated inputs are available for control of printer functions. These inputs require no external pull-ups, are designed to interface to open-collector outputs and accept totem pole outputs from +4.5 to + 26 VDC. Optical isolators are available to provide isolation. Two print control circuit examples are given below.

For direct inputs

Use the printer's +5VDC and Ground to supply the devices interfacing to the GPI/O A inputs.
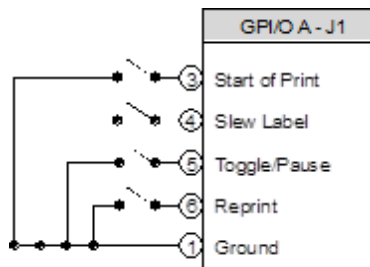
For isolated inputs

To provide galvanic isolation for the GPI/O A inputs, remove jumper JMP 9 then supply an external +5VDC source voltage to Pin 2, and remove jumper JMP 8 then supply an external Ground to Pin 1.
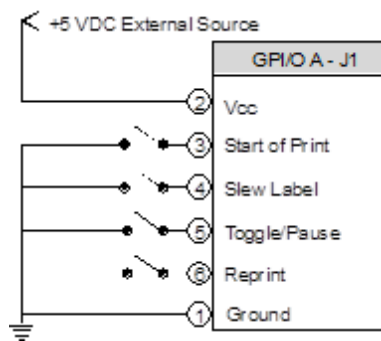
Seven dedicated outputs are available for control, warning, and error functions. These open–collector outputs are slew–limited. Optional 10K ohm pull-up resistors, tied to a common point for use at either +5 or +24 VDC, are available via jumper JMP 1.

Note: To avoid damage if external pull-up resistors are used (that is, without jumper JMP1 installed), ensure that the external voltage does not exceed +30VDC.

⚠ Failure to properly configure the GPIO Port can result in damage to the printer and / or connected devices.

The following table details the GPI/O A pin assignments, settings, and functions:

Pin Number	Signal Name	Signal Direction [1]	Jumper	Position	Function / Description
1	Ground	N/A	JMP 8	Installed	Printer chassis is used.
				Removed	Ground must be supplied.
2	+5 VDC		JMP 9	Installed	Printer +5VDC is used (.5 amp maximum). **Note:** Drawing more than .5 amps can cause unreliable printer operation.
				Removed	+5VDC must be supplied.
3	Start Of Print [2]	Input	N/A	N/A	Programmable
4	Slew Label				Programmable
5	Toggle / Pause				The printer pauses when the signal is taken LOW.
6	Reprint				The last label is reprinted exactly, with no increment or time stamp changes; recommended for use during error conditions. Keeping this signal LOW results in non–stop printing.
7	+24 VDC	N/A			Printer +24 VDC (1.5 amp maximum)
8	Ground				Printer chassis.

Pin Number	Signal Name	Signal Direction [1]	Jumper	Position	Function / Description
9	Ribbon Low	Output	JMP 1	When inactive, outputs will be pulled up to a voltage determined by this jumper setting, where: Pins 1 – 2 = +5VDC; Pins 2 – 3 = +24VDC; or, None = A common external voltage (not to exceed +30VDC) via external pull-ups (providing a 20K ohm feedback path through any two outputs).	Programmable [1]. Signifies a RIBBON LOW DIAMETER warning.
10	Service Required				Evoked by occurrences listed under "Fault Messages"[1]. Active LOW.
11	End Of Print				Programmable [1]. Signifies the End of Print (EOP) process.
12	Media Out				Evoked during an Out of Stock condition. Active LOW.
13	Ribbon Out				Evoked during an Out of Ribbon condition. Active LOW.
14	Data Ready				Evoked when a label is waiting to be printed. Then after the printer receives the Start of Print signal, printing will begin. For synchronization with the print cycle, the End Of Print signal indicates the completion of the print process. Active LOW.
15	Option Fault				Evoked during a Linear Scanner or RFID fault condition. Active LOW.

[1] Signal directions are given relative to the printer.

[2] If active with no current print job, "WAITING FOR DATA" will be displayed. Specifying a quantity of 9999 while keeping this signal "On" will cause non–stop label printing, except in single label "Imaging Mode", which will cause the printer to stop between labels

Image Loading

The printer will accept four types of image files: .BMP, .IMG, .PCX and a special Datamax 7-bit ASCII file (as defined in this section). Use of the Datamax 7-bit ASCII format will require at least twice as much data transmission time as the other formats, (see STX I Input Image Data). The Datamax ASCII image file format is made up of a set of records with identical formats, each representing a dot row of the image; a terminator follows the last of these records.

<div align="center">

Dot-row record

•
•
•
•

Dot-row record
Terminator

</div>
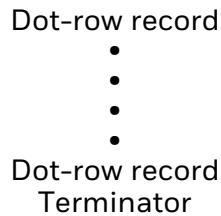
Each dot-row record has the following format:

80nndd...d<CR>

Where:

- nn – Is the number of character pairs in dd...d, represented in ASCII hex.
- dd...d – Is dot data, character pairs, ASCII hex, 00-FF.

Duplicate records may be encoded using a repeat data record, following the data record that needs duplicating. The repeat data record format is:

0000FFnn<CR>

Where:

- nn – Is the number of duplicates, ASCII hex, 00-FF.

The terminator, last record, at the image download is: FFFF<CR>.

```
^BqA(CR)
^BIAAFLOGO(CR)
8030FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF0000(CR)
8030FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF0000(CR)
8030FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF0000(CR)
8030FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF0000(CR)
8030FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF0000(CR)
8030FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF0000(CR)
8030FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF0000(CR)
8030FFC00000007FFC0003FFFFC001FC0001FC0003FFFFC0018000FFC001FF8000C0003FFFFE000000FFFFE0001FFFFF0000(CR)
8030FFC00000000FFC0003FFFFC001FC0001FC0003FFFFC0018000FFC001FF800040001FFFFE0000007FFFC0001FFFFF0000(CR)
8030FFC000000003FC0001FFFFC001FC0001FC0001FFFFC0018000FFC001FF800040001FFFFE0000003FFFC0001FFFFF0000(CR)
8030FFC000000000FC0001FFFFC001FE0001FE0001FFFFC00180007FC000FF800060001FFFFE0000003FFFC0003FFFFF0000(CR)
8030FFE0000000007E0001FFFFC001FE0001FE0001FFFFC00180007FC000FFC00060000FFFFE0000001FFFC0003FFFFF0000(CR)
8030FFE0000000003E0000FFFFC001FE0000FE0000FFFFC00180007FC0007FC00020000FFFFE0000001FFF80003FFFFF0000(CR)
8030FFE0000000001E0000FFFFC001FE0000FF0000FFFFC001C0007FC0007FC00030000FFFFE0010000FFF80003FFFFF0000(CR)
8030FFE0000000000F0000FFFFC001FE0000FF0000FFFFC001C0007FC0007FC00030000FFFFE00180007FF80007FFFFF0000(CR)
8030FFE00000000000700007FFFC001FF0000FF80007FFFC001C0007FC0003FC000380007FFFE00180007FF80007FFFFF0000(CR)
8030FFF00000000000380007FFFC001FF0000FF80007FFFC001C0003FC0003FE000380007FFFE001C0003FF80007FFFFF0000(CR)
```

8030FFF0000000000380007FFFC001FF0000FF80007FFFC001C0003FC0003FE000380007FFFE001E0003FF80007FFFFF0000(CR)
8030FFF0000000000180003FFFC001FF00007FC0003FFFC001C0003FC0001FE0001C0003FFFE001E0001FF0000FFFFFF0000(CR)
8030FFF00000000001C0003FFFC001FF00007FC0003FFFC001E0003FC0001FE0001C0003FFFE001F0000FF0000FFFFFF0000(CR)
8030FFF00007C00000C0003FFFC001FF00007FE0003FFFC001E0003FC0000FF0001E0003FFFE001F0000FF0000FFFFFF0000(CR)
8030FFF80007F80000E0001FFFC001FF80007FE0001FFFC001E0003FC0000FF0001E0001FFFE001F80007F0000FFFFFF0000(CR)
8030FFF80007FC0000E00000000001FF80007FE00000000001E0001FC0000FF0001E00000000001FC0007F0000FFFFFF0000(CR)
8030FFF80007FE00006000000000001FF80003FF00000000001E0001FC00007F0000F00000000001FC0003F0001FFFFFF0000(CR)
8030FFF80003FF00007000000000001FF80003FF00000000001F0001FC00007F0000F00000000001FE0001E0001FFFFFF0000(CR)
8030FFF80003FF00007000000000001FF80003FF00000000001F0001FC00007F8000F00000000001FE0001E0001FFFFFF0000(CR)
8030FFFC0001FFC0003C0000000001FFE0001FFE0000000001F8000FC00000FC0007E0000000001FFE00000003FFFFFF0000(CR)
8030FFFE0001FFC0001E0000000001FFE0001FFE0000000001F8000FC00000FC0007E0000000001FFF00000003FFFFFF0000(CR)
8030FFFE0001FFC0001E0000000001FFE0001FFE0000000001F8000FC00000FC0007F0000000001FFF00000007FFFFFF0000(CR)
8030FFFE0000FFC0001F0000000001FFE0000FFF000000001F8000FC000007C0003F0000000001FFF80000007FFFFFF0000(CR)
8030FFFE0000FFC0001F0000000001FFE0000FFF0000000001FC0007C000007E0003F0000000001FFF80000007FFFFFF0000(CR)
8030FFFE0000FFE0001F0001FFC001FFE0000FFF8001FFC001FC0007C000003E0003F8000FFE001FFFC0000007FFFFFF0000(CR)
8030FFFE0000FFE0000F8001FFC001FFF0000FFF8000FFC001FC0007C000003E0003F8000FFE001FFFE000000FFFFFFF0000(CR)
8030FFFF0000FFE0000F8000FFC001FFF0000FFF8000FFC001FC0007C000003E0003F8000FFE001FFFE000000FFFFFFF0000(CR)
8030FFFF0000FFE0000F8000FFC001FFF00007FFC000FFC001FC0007C000001F0001FC000FFE001FFFF000000FFFFFFF0000(CR)
8030FFFF00007FE0000FC000FFC001FFF00007FFC0007FC001FE0007C002001F0001FC0007FE001FFFF000000FFFFFFF0000(CR)
8030FFFF00007FF0000FC0007FC001FFF00007FFE0007FC001FE0003C002001F0001FE0007FE001FFFF800000FFFFFFF0000(CR)
8030FFFF00007FF0000FE0007FC001FFF80007FFE0007FC001FE0003C003000F0001FE0007FE001FFFFC00001FFFFFFF0000(CR)
8030FFFF80007FF00007E0007FC001FFF80007FFE0003FC001FE0003C003000F0001FE0003FE001FFFFC00001FFFFFFF0000(CR)
8030FFFF80007FF00007E0003FC001FFF80003FFF0003FC001FE0003C00300078001FF0003FE001FFFFE00001FFFFFFF0000(CR)
8030FFFF80003FF00007F0003FC001FFF80003FFF0003FC001FE0003C00380078000FF0003FE001FFFFE00001FFFFFFF0000(CR)
8030FFFF80003FF80007F0003FC001FFF80003FFF0001FC001FF0003C00380078000FF8001FE001FFFFE00001FFFFFFF0000(CR)
8030FFFF80003FF80007F0001FC001FFF80003FFF8001FC001FF0001C003C0038000FF8001FE001FFFFE00001FFFFFFF0000(CR)
8030FFFFFFFC0000000007FFC000001F80000000000FC000001FFF0000003FFE0000007FFC000001FFFC0003F80007FFF0000(CR)
8030FFFFFFFE000000000FFFC000001F80000000000FE000001FFF8000003FFE0000007FFE000001FFFC0003FC0003FFF0000(CR)
8030FFFFFFFF000000000FFFE000001F80000000000FE000001FFF8000003FFF0000007FFE000001FFFC0003FC0003FFF0000(CR)
8030FFFFFFFC00000000FFFE000001FC0000000000FE000001FFF8000003FFF0000007FFE000001FFFC0003FE0001FFF0000(CR)
8030FFFFFFFE00000000FFFE000001FC00000000007F000001FFF8000003FFF0000007FFF000001FFFC0003FE0001FFF0000(CR)
8030FFFFFFFF00000001FFFF000001FC00000000007F000001FFF8000003FFF8000007FFF000001FFF80003FF0000FFF0000(CR)
8030FFFFFFFFC0000001FFFF000001FC00000000007F000001FFF8000003FFF8000003FFF800001FFF80007FF0000FFF0000(CR)
8030FFFFFFFFE0000003FFFF800001FC00000000007F800001FFFC000003FFF8000003FFF800001FFF80007FF80007FF0000(CR)
8030FFFFFFFFFF0000007FFFF800001FC00000000007F800001FFFC000003FFFC000003FFF800001FFF80007FF80007FF0000(CR)
8030FFFFFFFFFF800000FFFFF800001FE00000000003FC00001FFFC000003FFFC000003FFFC00001FFF00007FFC0003FF0000(CR)
8030FFFFFFFFFE00001FFFFFC00001FE00000000003FC00001FFFC000003FFFE000003FFFC00001FFF00007FFC0003FF0000(CR)
8030FFFFFFFFFF00007FFFFFC00001FE00000000003FC00001FFFC000003FFFE000003FFFE00001FFF00007FFE0001FF0000(CR)
8030FFFFFFFFFF8003FFFFFC00001FE00000000003FE00001FFFC000003FFFF000003FFFE00001FFF00007FFE0001FF0000(CR)
8030FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF0000(CR)
8030FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF0000(CR)
8030FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF0000(CR)
8030FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF0000(CR)
8030FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF0000(CR)
8030FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF0000(CR)
8030FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF0000(CR)
FFFF(CR)
^BL(CR)
1Y1100000000000LOGO(CR)
E(CR)

International Language Print Capability (ILPC) Programming Examples

ILPC (if equipped) allows the printing of non-English character sets, available with European language support (CG TIMES), KANJI language support, Chinese language support (SIMPLIFIED GB) and Korean Hangul.

All of the features are embedded in the printer resident firmware and accessible through DPL thus eliminating excessive download time of bitmapped characters. Using scalable technology licensed from AGFA, this firmware allows users to print smooth characters in sizes from 4pt (1.4 mm) to 999pt (350 mm) in over 40 languages.

ILPC – CG® TIMES

The CG Times is a single–byte scalable font consisting of four typefaces in 38 Western European languages. This contains over 900 unique characters in each of the four typefaces from the CG Times typeface family, Normal, Italic, Bold, and Bold Italic. Single–byte scalable fonts are selected using a print format record. See Barcodes and Single and Double Byte Character Font Mapping for more details.

Scalable CG® TIMES Font Code ("eee" field)

SA0 - CG TIMES

SA1 - *CG TIMES ITALIC*

SA2 - **CG TIMES BOLD**

SA3 - ***CG TIMES BOLD ITALIC***

Sample DPL file (Greek) and resulting label:

```
<02>L<CR>
D11<CR>
ySWG<CR>
1911SA003600020P020P020(WG) Greek Characters from<CR>
1911SA003000085P020P020the internal Symbol Set,<CR>
1911SA002400085P020P020font code SA0<CR>
1911SA001500050P020P020<ca><e1><eb><f9><f3><ef><f1><df><f3><e1><f4><e5><20>
<d3><f5><ed><dd><e4><f1><e9><ef><20><CR>
1911SA001100100P020P020<f4><f9><e3><20><c5><f4><e1><df><f1><f9><e3><20><f4>
<e7><f2><CR>
1911SA000700140P020P020Datamax<CR>
1X1100000100020B365190005005<CR>
Q0002<CR>
E<CR>
```

(WG) Greek Characters from

the internal Symbol Set,

font code SA0
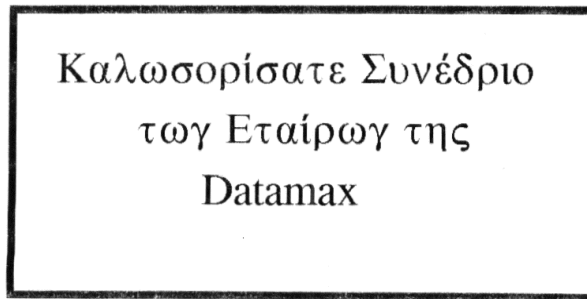
Καλωσορίσατε Συνέδριο
τωγ Εταίρωγ της
Datamax

Note: The notation "<xx>" in this DPL file should be interpreted by the reader as representing the hexadecimal value of the character sent to the printer.

ILPC – Chinese

The Chinese Option is a double byte scalable font supporting Simplified GB Chinese. In the double byte format the printer recalls one character printed from every two 8–bit bytes sent from the host. Double byte scalable fonts are selected using a print format record. See Barcodes and Single and Double Byte Character Font Mapping for more details.

DPL Big 5 Encoding Support

With the ILPC Chinese option, the printer firmware supports font files that are encoded for the GB Character Map and the Big 5 Character Map. The resident Asian font in the printer is encoded in the GB Character Map. To utilize the Big 5 Character Map, the user must download a font file that is Big 5 encoded. The font file downloaded must be of a size compatible with the internal module size available or of a size compatible with an external (plug in) module where applicable.

Printing characters from the Big 5 encoded font file is accomplished by:

1. Setting the character mapping with a System Command or Label Format Command (<STX>yUB5 or yUB5, respectively).
2. Setting the "b" field = "9" and "eee" field = "Unn", where "nn" is equal to the Font ID number selected for the Big 5 encoded font file downloaded.
3. Selecting string data corresponding to the Big 5 Character Map.

eee (Font Code)	Scalable Font Type	Font Name	Binary Addressing	Hex ASCII Addressing	Code Pages
UC0	Scalable Resident	Simplified GB Chinese	✓		GB
uc0	Scalable Resident	Simplified GB Chinese		✓	GB
U50 – U5z… U90 – U9z	Scalable Non–Resident (download)	Big 5	✓		B5
u50 – u5z… u90 – u9z	Scalable Non–Resident (download)	Big 5		✓	B5
U50 – U5z… U90 – U9z	Scalable Non–Resident (download)	User defined	✓		-
u50 – u5z… u90 – u9z	Scalable Non–Resident (download)	User defined		✓	-

Sample Simplified GB Chinese DPL file (binary addressing) and resulting label:

```
<02>L<CR>
D11<CR>
ySPM<CR>
1911S0003100010P020P015Scalable Chinese Available in GB Character Set<CR>
1B110000020017001234567890<CR>
yUGB<CR>
1X1100001900010b0392011000020002<CR>
112200002800030GB CHARACTER'S IN ALL 4 ROTATION'S<CR>
112200002600030Rotation 1<CR>
1911UC002650150P012P012<BD><D0>A1><A1><A1><A1><BD><D1><A1><A1><A1><A1><BD>
<D2><A1><A1>
<A1><A1><BD><D3><00><CR>
112200002400030Rotation 2<CR>
2911UC002600150P012P012<BD><D0><00><CR>
2911UC002600205P012P012<BD><D1><00><CR>
2911UC002600250P012P012<BD><D2><00><CR>
2911UC002600300P012P012<BD><D3><00><CR>
112200002200030Rotation 3<CR>
3911UC002330315P012P012<BD><D3><A1><A1><A1><A1><BD><D2><A1><A1><A1><A1><BD>
<D1><A1><A1><A1><A1><BD><D0><00><CR>
112200002000030Rotation 4<CR>
4911UC001950165P012P012<BD><D0><00><CR>
4911UC001950215P012P012<BD><D1><00><CR>
4911UC001950265P012P012<BD><D2><00><CR>
4911UC001950315P012P012<BD><D3><00><CR>
1X1100001100010b0392007500020002<CR>
112200001650030SCALING GB CHARACTER'S<CR>
1911UC001200020P010P020<BA><D0><00><CR>
1911UC001200050P020P020<BA><D0><00><CR>
1911UC001200080P030P020<BA><D0><00><CR>
1911UC001200110P040P020<BA><D0><00><CR>
1911UC001200145P040P030<BA><D0><00><CR>
1911UC001200190P040P040<BA><D0><00><CR>
1911UC001200250P040P050<BA><D0><00><CR>
```

```
1911UC001200320P040P060<BA><D0><00><CR>
112200000050010NORMAL INVERSE<CR>
112200000050245 NORMAL MIRROR<CR>
1911UC000250010P040P040<BD><E0><00><CR>
1911UC000250245P040P040<BD><E1><00><CR>
A5<CR>
1911UC000250090P040P040<BD><E0><00><CR>
A1<CR>
M<CR>
1911UC000250390P040P040<BD><E1><00><CR>
M<CR>
E<CR>
```

Note: The notation "<xx>" in this DPL file should be interpreted by the reader as representing the hexadecimal value of the byte sent to the printer.

ILPC - Kanji

The Kanji Option is a double byte scalable font supporting Kanji Gothic B. In the double byte format, the printer recalls one character printed from every two 8-bit bytes sent from the host. Double byte scalable fonts are selected using a print format record. See Barcodes and Single and Double Byte Character Font Mapping for more details.

eee (Font Code)	Scalable Font Type	Font Name	Binary Addressing	Hex ASCII Addressing	Code Pages
U40	Scalable Resident	HG-Gothic-B Kanji Scalable	✓		EUC, JIS, SJIS, UC
u40	Scalable Resident	HG-Gothic-B Kanji Scalable		✓	EUC, JIS, SJIS, UC
UK1	Scalable Resident	HG-Gothic-E Kanji Scalable	✓		EUC, JIS, SJIS

eee (Font Code)	Scalable Font Type	Font Name	Binary Addressing	Hex ASCII Addressing	Code Pages
uK1	Scalable Resident	HG-Gothic-E Kanji Scalable		✓	EUC, JIS, SJIS
u50 – u5z... u90 – u9z	Scalable Non–Resident (download)	User defined		✓	
U50 – U5z... U90 – U9z	Scalable Non–Resident (download)	User defined	✓		

Note: Not all fonts contain an entire compliment of character codes for a given character map.

Sample Kanji Gothic B DPL file (binary addressing) and the resulting label:

```
<02>L<CR>
D11<CR>
ySPM<CR>
1911S0003100010P020P015Scalable Kanji Gothic B Available<CR>
1B110000020017001234567890<CR>
yUJS<CR>
1X1100001900010b0392011000020002<CR>
112200002800030JIS CHARACTER'S IN ALL 4 ROTATION'S<CR>
112200002600030Rotation 1<CR>
1911U4002650150P012P012<4D><3F><21><21><21><21><4D><4F><21><21><21><21><4D>
<5F><21><21><21><21><4D><6F><00><CR>
112200002400030Rotation 2<CR>
2911U4002600150P012P012<4D><3F><00<CR>
2911U4002600205P012P012<4D><4F><00>CR>
2911U4002600250P012P012<4D><5F><00><CR>
2911U4002600300P012P012<4D><6F><00><CR>
112200002200030Rotation 3<CR>
3911U4002330315P012P012<4D><6F><21><21><21><21><4D><5F><21><21><21><21><4D>
<4F><21><21><21><21><4D><3F><00><CR>
112200002000030Rotation 4<CR>
4911U4001950165P012P012<4D><3F><00><CR>
4911U4001950215P012P012<4D><4F><00><CR>
4911U4001950265P012P012<4D><5F><00><CR>
4911U4001950315P012P012<4D><6F><00><CR>
1X1100001100010b0392007500020002<CR>
112200001650030SCALING JIS CHARACTER'S<CR>
1911U4001200020P010P020<21><6F><00><CR>
1911U4001200050P020P020<21><6F><00><CR>
1911U4001200080P030P020<21><6F><00><CR>
1911U4001200110P040P020<21><6F><00><CR>
1911U4001200145P040P030<21><6F><00><CR>
1911U4001200190P040P040<21><6F><00><CR>
1911U4001200250P040P050<21><6F><00><CR>
1911U4001200320P040P060<21><6F><00><CR>
112200000050010NORMAL INVERSE<CR>
112200000050245 NORMAL MIRROR<CR>
1911U4000250010P040P040<21><6F><00><CR>
1911U4000250245P040P040<4B><30><00><CR>
A5<CR>
1911U4000250090P040P040<21><6F><00><CR>
```

A1<CR>
M<CR>
1911U4000250390P040P040<4B><30><00><CR>
M<CR>
E<CR>
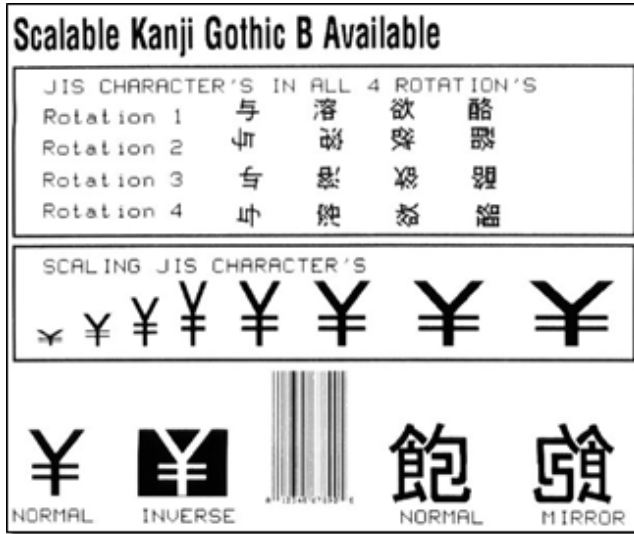
The notation "<xx>" in this DPL file should be interpreted by the reader as representing the hexadecimal value of the byte sent to the printer.

Sample Kanji Gothic E DPL file (Hex–ASCII addressing) and resulting label:

<02>L<CR>
D11<CR>
ySPM<CR>
1911S0003100010P020P015Scalable Kanji Gothic E Available<CR>
1B1100000200170012345678 90<CR>
yUJS<CR>
1X1100001900010b0392011000020002<CR>
112200002800030JIS CHARACTER'S IN ALL 4 ROTATION'S<CR>
112200002600030Rotation 1<CR>
1911uK102650150P012P0124D3F212121214D4F212121214D5F212121214D6F<CR>
112200002400030Rotation 2<CR>
2911uK102600150P012P0124D3F<CR>
2911uK102600205P012P0124D4F<CR>
2911uK102600250P012P0124D5F<CR>
2911uK102600300P012P0124D6F<CR>
112200002200030Rotation 3<CR>
3911uK102330315P012P0124D6F212121214D5F212121214D4F212121214D3F<CR>
112200002000030Rotation 4<CR>
4911uK101950165P012P0124D3F<CR>
4911uK101950215P012P0124D4F<CR>
4911uK101950265P012P0124D5F<CR>
4911uK101950315P012P0124D6F<CR>
1X1100001100010b0392007500020002<CR>
112200001650030SCALING JIS CHARACTER'S<CR>
1911uK101200020P010P020216F<CR>
1911uK101200050P020P020216F<CR>
1911uK101200080P030P020216F<CR>
1911uK101200110P040P020216F<CR>
1911uK101200145P040P030216F<CR>

```
1911uK101200190P040P040216F<CR>
1911uK101200250P040P050216F<CR>
1911uK101200320P040P060216F<CR>
11220000050010NORMAL INVERSE<CR>
11220000050245 NORMAL MIRROR<CR>
1911uK100250010P040P040216F<CR>
1911uK100250245P040P0404B30<CR>
A5<CR>
1911uK100250090P040P040216F<CR>
A1<CR>
M<CR>
1911uK100250390P040P0404B30<CR>
M<CR>
E<CR>
```
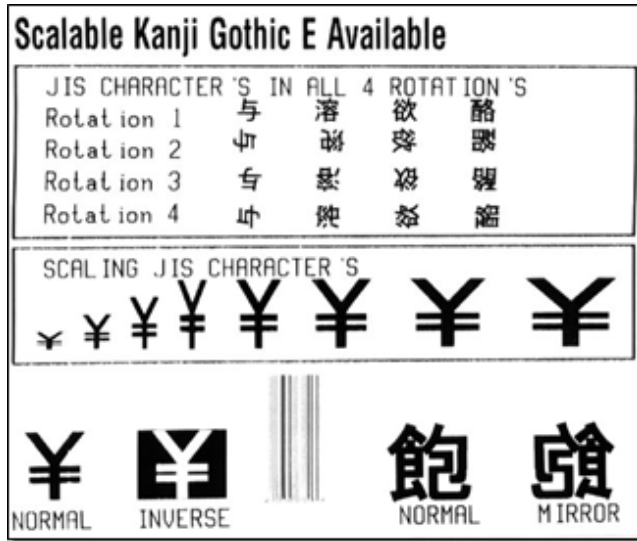

Note: The notation "<xx>" in this DPL file should be interpreted by the reader as representing the hexadecimal value of the byte sent to the printer.

ILPC - Korean

The Korean Option is a double-byte scalable font supporting Korean Hangul. In the double-byte format, the printer recalls one character printed from every two 8-bit bytes sent from the host. Double-byte scalable fonts are selected using a print format record. See Barcodes and Single and Double Byte Character Font Mapping for more details.

eee (Font Code)	Scalable Font Type	Font Name	Binary Addressing	Hex ASCII Addressing	Code Pages
UH0	Scalable Resident	Korean Hangul	✓		UC
uh0	Scalable Resident	Korean Hangul		✓	UC

eee (Font Code)	Scalable Font Type	Font Name	Binary Addressing	Hex ASCII Addressing	Code Pages
u50 – u5z… u90 – u9z	Scalable Non–Resident (download)	User defined		✓	
U50 – U5z… U90 – U9z	Scalable Non–Resident (download)	User defined	✓		

Note: Not all fonts contain an entire compliment of character codes for a given character map.

Sample Korean Hangul DPL file (binary addressing) and the resulting label:

```
<02>L<CR>
D11<CR>
ySPM<CR>
1911S0003100010P020P015Scalable Korean Available in UC Character Set<CR>
yUUC<CR>
1B11000002001700123456789O<CR>
1X1100001900010b0392011000020002<CR>
11220000280003OHANGUL CHARACTER'S IN ALL 4 ROTATIONS<CR>
112200002600030Rotation 1<CR>
1911UH002620150P012P012<AC><00><00><CR>
1911UH002620205P012P012<AC><65><00><CR>
1911UH002620250P012P012<AC><69><00><CR>
1911UH002620300P012P012<AC><DF><00><CR>
112200002400030Rotation 2<CR>
2911UH002550150P012P012<AC><00><00><CR>
2911UH002550205P012P012<AC><65><00><CR>
2911UH002550250P012P012<AC><69><00><CR>
2911UH002550300P012P012<AC><DF><00><CR>
112200002200030Rotation 3<CR>
3911UH002330165P012P012<AC><00><00><CR>
3911UH002330220P012P012<AC><65><00><CR>
3911UH002330265P012P012<AC><69><00><CR>
3911UH002330315P012P012<AC><DF><00><CR>
112200002000030Rotation 4<CR>
4911UH001950165P012P012<AC><00><00><CR>
4911UH001950215P012P012<AC><65><00><CR>
4911UH001950265P012P012<AC><69><00><CR>
4911UH001950315P012P012<AC><DF><00><CR>
1X1100001100010b0392007500020002<CR>
11220001650030SCALING HANGUL CHARACTERS<CR>
1911UH001200020P010P020<AC><AC><00><CR>
1911UH001200050P020P020<AC><AC><00><CR>
1911UH001200080P030P020<AC><AC><00><CR>
1911UH001200110P040P020<AC><AC><00><CR>
1911UH001200145P040P030<AC><AC><00><CR>
1911UH001200190P040P040<AC><AC><00><CR>
1911UH001200250P040P050<AC><AC><00><CR>
1911UH001200320P040P060<AC><AC><00><CR>
11220000020001ONORMAL INVERSE<CR>
112200000200245 NORMAL MIRROR<CR>
1911UH000450010P040P040<AC><4D><00><CR>
1911UH000450245P040P040<AC><15><00><CR>
A5<CR>
```

```
1911UH000450090P040P040<AC><4D><00><CR>
A1<CR>
M<CR>
1911UH000450390P040P040<AC><15><00><CR>
M<CR>
E<CR>
```


Scalable Korean Available in UC Character Set

Note: The notation "<xx>" in this DPL file should be interpreted by the reader as representing the hexadecimal value of the byte sent to the printer.

Line Mode

Line Mode allows the printer to respond to raw data from a device that may not be able to send a complete DPL file. In Line Mode raw data is directed into replaceable fields in formats or templates stored in the printer.

The printer can be placed in Line Mode via the front panel, as explained in the printer's Operating Manual, or by using the <STX>KcEM command (see Extended System Level Commands), where:

- <STX>KcEM0 will enter standard DPL Mode; and,

- <STX>KcEM1 will enter Line Mode.

Note: A reset will follow a change of mode. While in Line Mode, the printer will also respond to DPL commands; however, special download types (such as firmware updates) should only be sent when the printer is in DPL mode.

Line Mode Specifics

- Raw data sent to the printer must be terminated by a carriage return [0x0D].

- The host timeout setting (see HT Host Timeout) will determine the maximum waiting period between data sent. If the timeout value is reached, the label will print using the data received before timeout occurred.

- A form feed command [0x0C] may be sent to terminate processing and print the data that has been received.

- Issuing the <STX>Ennnn command (where nnnn represents the print count), allows quantities of the same label to be printed.

- The printer must have a template program loaded. A template is a standard DPL file that ends in a store format command, instead of the print command (E). The template name must be either DMXFRM or DMXFRMxx. Using DMXFRMxx, allows multiple templates to be available.

Sample Template 1

The following sample uses DMXFRM as the template name and stores it to the default module. (The default module is printer model dependent.)

```
<STX>L
PG
SG
D11
1511000016000109999999999999999999999999999999999
U
15110000120001OFIXED FIELD #1
1511000008000109999999999999999999999999999999999
U
15110000040001OFIXED FIELD #2
1511000000000109999999999999999999999999999999999
U
Q0001
```

sCDMXFRM

To print a label, the attached device now only has to send the data. Sample data in this example is as follows:

TEST DATA AAAAAAAAAAAAAAAAAAAAAAAAA[CR]
TEST DATA BBBBBBBBBBBBBBBBBBBBBBBBB[CR]
TEST DATA CCCCCCCCCCCCCCCCCCCCCCCCC[CR]

The sample data will print the following label (layout and font are approximations):

TEST DATA AAAAAAAAAAAAAAAAAAAAAAAAA

FIXED FIELD #1
TEST DATA BBBBBBBBBBBBBBBBBBBBBBBBB

FIXED FIELD #2
TEST DATA CCCCCCCCCCCCCCCCCCCCCCCCC

If multiple labels are needed, data for the labels can be sent at the same time. Sample data for two labels:

TEST DATA AAAAAAAAAAAAAAAAAAAAAAAAA[CR]
TEST DATA BBBBBBBBBBBBBBBBBBBBBBBBB[CR]
TEST DATA CCCCCCCCCCCCCCCCCCCCCCCCC[CR]
TEST DATA DDDDDDDDDDDDDDDDDDDDDDDDD[CR]
TEST DATA EEEEEEEEEEEEEEEEEEEEEEEEE[CR]
TEST DATA FFFFFFFFFFFFFFFFFFFFFFFFF[CR]

The sample data will print the following two labels (layout and typeface are approximations):

Label 1

TEST DATA AAAAAAAAAAAAAAAAAAAAAAAAA

FIXED FIELD #1
TEST DATA BBBBBBBBBBBBBBBBBBBBBBBBB

FIXED FIELD #2
TEST DATA CCCCCCCCCCCCCCCCCCCCCCCCC

Lable 2

TEST DATA DDDDDDDDDDDDDDDDDDDDDDDDD

FIXED FIELD #1
TEST DATA EEEEEEEEEEEEEEEEEEEEEEEEE

FIXED FIELD #2
TEST DATA FFFFFFFFFFFFFFFFFFFFFFFFF

Sample Template 2

If a template in the form of DMXFRMxx is used, the data must be preceded by the value of xx. Below is a sample template for DMXFRMxx:

<STX>L

PG
SG
D11
15110000160001099999999999999999999999999999999999
U
15110000120001OFIXED FIELD NUMBER ONE
15110000080001099999999999999999999999999999999999
U
15110000040001OFIXED FIELD NUMBER TWO
15110000000001099999999999999999999999999999999999
U
Q0001
sCDMXFRMA1

Sample data for DMXFRMxx type templates:

A1>TEST DATA AAAAAAAAAAAAAAAAAAAAAAAAAA[CR]
A1>TEST DATA BBBBBBBBBBBBBBBBBBBBBBBBBB[CR]
A1>TEST DATA CCCCCCCCCCCCCCCCCCCCCCCCCC[CR]

Maximum Field & Character Values

Printer	Maximum Format Fields [1]	Total Characters All Fields
All	700	32768

[1] When the product of the number of fields and characters in each field exceeds the available printer memory (the limiting factor), portions of the label may not print.

Memory Module Identifiers and Allocations

Module ID	Description	Printer					
		E-Class Mark III	I-Class Mark II	RL3e	RL4e	RP2	RP4
D	DRAM (default 1MB), configurable.	X	X	X	X	X	X
F	SDIO (as equipped)		X				
G	Main CCA	X	X	X	X	X	X
H	USB Host Ports (as equipped)	X	X				
I	USB Host Ports (as equipped)		X				
X	MB Flash – Option ILPC – protected Main CCA	X	X	X	X	X	X
Y	KB Flash – Menu / EFIGS – protected Main CCA	X	X	X	X	X	X

DPL Command Reference

Plug and Play IDs

Syntax

MFG; CMD; MDL; CLS; DES

Parameters

Where:

- MFG – DatamaxONeil (E-Class Mark III, I-Class Mark II, RL3e, RL4e), Honeywell (RP2, RP4)
- CMD – Fixed string: "DPL"
- MDL – Model (Valid designations are: E-4204B Mark III, E-4304B Mark III, E-4305A Mark III, E-4205A Mark III, E-4206P Mark III, E-4305P Mark III, E-4206L Mark III, E-4305L Mark III, I-4212e MarkII, I-4310e MarkII, I-4606e MarkII, RL3e, RL4e, RP2, RP4)
- CLS – Fixed string: "PRINTER"
- DES – Description (subject to change with the application [firmware] revision and printer model)

Example

DatamaxOneil I-4212e MarkII Printer Version 10.4 07/09/2021

Print Resolutions and Maximum Width & Record Column Values

Model	Print Resolution		Dot Dimensions (nominal)		Maximum Print Width		Maximum "gggg" Value	
	DPI	DPMM	Inches	Millimeters	Dots	Millimeters	Inch	Metric
E-Class Mark III (203DPI)	203	8.0	.0043 x .0052	.11 x .13	864	108.0	425	1080
E-Class Mark III (300 DPI)	300	11.8	.0027 x .0043	.07 x .11	1248	105.7	416	1046
RL4e	203	8.0	.0043 x .0052	.11 x .13	864	108.0	425	1080
I-Class Mark II (203DPI)	203	8.0	.0043 x .0052	.11 x .13	832	104.1	410	1041
I-Class Mark II (300 DPI)	300	11.8	.0027 x .0043	.07 x .11	1248	105.7	416	1046
I-Class Mark II (600 DPI)	600	23.6	.0008 x .0015	.02 x .04	2496	105.7	416	1057

Reset Codes

The most common transmitted error codes are:

Uppercase "R"

This code is sent every time the printer is turned "On," signaling a hardware reset.

Uppercase "T"

This code signals a software reset. A software reset is made by sending the command sequence to the printer or by performing a reset using the front panel keys.

RFID Overview

The printer has two different operational modes for the programming of RFID tags: Direct, and Label Formatting.

The RFID programming data can be entered in one of two formats: ASCII, or Hexadecimal. Data in the ASCII format is entered conventionally, while data in the hexadecimal format is entered as the hexadecimal–pairs equivalent of the ASCII character(s). For example, to program the word "TEST" in the ASCII format, the data is entered as TEST; alternately, in the hexadecimal format the word is entered as 54455354.

The other important consideration is the data format byte count. Compared to the ASCII format, hexadecimal formats use twice the number of bytes. Returning to the example above, in the ASCII format "TEST" has a byte count of four, while the hexadecimal format equivalent has a byte count of eight.

To send information about the results of tag printing back to the host, refer to the OF Option Feedback Mode command for option feedback.

Direct Mode

Direct Mode allows the user (host) to directly control the reading and writing of RFID tags. This mode contains both a generic Read / Write Interface and a high level HF / UHF Tag Interface. In Direct Mode, each RFID tag is individually processed with status and data responses. Typically these commands are used for diagnostics or custom applications.

Generic Read/Write Interface

The Generic Read/Write Interface allows the Host Application to send generic commands for RFID operations by utilizing the printer's database for specific parameters. Requiring no knowledge of the tag types being used (except the data format), these commands consist of simple read and write operations. See the STX KaR Read Data from RFID Tag and STX KaW Write Data to RFID Tag commands for details.

HF (13.56 MHz) ISO15693 Tag Interface

The ISO15693 Tag Interface allows the Host Application to perform specific operations pertaining to HF-type (13.56 MHz) tags. Since these commands override the printer's database by interfacing directly to the tag module, knowledge of HF tags and their operation is required. See the STX KtA Write Application Family Identifier (AFI) to Tag, STX KtD Write Data Storage Format Identifier (DSFID) to Tag, STX KtE Write Electronic Article Surveillance (EAS) Bit, STX KtH Read and Feedback Tag Information to Host, STX KtR Read Data from RFID Tag, STX KtU Read Unique Serial Number from RFID Tag, and STX KtW Write Data to RFID Tag commands for details.

UHF Interface

This interface allows the Host Application to perform specific operations pertaining to UHF-type tags. Since these commands override the printer's database by interfacing directly to the tag module, knowledge of UHF protocols and their operation is required. See the STX KuR Read Data from RFID Tag and STX KuW Write Data to RFID Tag commands for details.

Label Formatting Mode

Label Formatting Mode utilizes the current printer configuration to process all reading, writing, and exception processing for each tag printed. (For exception processing and fault handling; see the FH Fault Handling command.) The specification for RFID programming is contained in the data fields of the DPL label format, which instructs the printer to write and read data. Two Label Formatting Modes for RFID are available. While each supports auto increment and decrement commands for numeric (+/-), alphanumeric (>/<), or hexadecimal ((/)) data, they differ when a byte count specifier is added.

Note: Up to six RFID operations per label are allowed.

Wx / W1x: RFID

Syntax

a bbb c d eee ffff gggg jj...j

Parameters

Field	Valid Inputs	Meaning
a	1, 2, and 3	Operation to perform, where: 1 = Read (report to host) 2 = Write 3 = Write w/ Read back and Verify
bbb	Wnx	RFID Hexadecimal Operation, where no "n" is an implied 1.
c	0	Not Used, should be 0
d	0	Not Used, should be 0

Field	Valid Inputs	Meaning
eee	xyy	HF: Lock after write, where: x = 0 – Use printer setup to determine if lock is performed. x = 1 – Lock after write. yy = Not Used
		UHF EPC Gen2: Lock after write, where: x = 0 – Use printer setup to determine if lock is performed. x = 1 – Lock after write. yy = Lock state where "01"is permalock, "10" is pwd-write lock, and "11" is both states
		UHF other tag types: Not Used, should be 000
ffff	0000 – 9998	HF: Starting block number to write.
		UHF EPC Gen2: Block address where "0001" is EPC data, "0002" is Tag ID or "0003" is user memory. Using "0000" is for EPC data also (for backwards compatibility).
		UHF other tag types: Not Used, should be 0000
gggg	0000	HF: Not Used, should be 0000
		UHF EPC Gen2: Data word offset – currently only used for read operation
		UHF other tag types: Not Used, should be 0000
jj...j	Valid hexadecimal pairs per character followed by a termination character.	Data to write to the tag. UHF data length must be 16 or 24 for EPC. 16 for Tag ID or multiples of four for user memory sections.

Example 1

The following example encodes an HF tag, starting at block 001, with "Datamax writes RFID best".

```
<STX>L
D11<CR>
2W1x00000
00010000446174616D61782077726974657320524649442062657374<CR>
E
```

Example 2

The following format encodes a UHF Gen2 tag with EPC data "112233445566778899AABBCC" and user memory data "1111222233334444".

```
<STX>L
```

D11
2W1x00000**0001**000011223345566778899AABBCC
2W1x0000**00003**00001111222233334444
E

Example 3

The following format reads a UHF Gen2 tag with data from address 1, offset 2nd word (EPC data), Tag ID from address 2, and user data from address 3. Note that the length of the data in the record determines how much data is read.

<STX>L
D11
1W1x00000**00010002**xxxxxxxxxxxxxxxxxxxxxxxxx
1W1x00000**00020000**xxxxxxxxxxxxxxxx
1W1x00000**00030000**xxxxxxxxxxxxxxx
E

With Option Feedback enabled, the format above would return data, such as:

<R;C;03;03;0002:0001;112233445566778899AABBCC;E20060010128FF33;111122 2233334444>

Where, "112233445566778899AABBCC" is the EPC data, "E20060010128FF33" is the Tag ID and "1111222233334444" is the user memory data. See OF Option Feedback Mode for more information on the response format.

WX / W1X: RFID with Byte Count Specifier

Specified Length

The upper case X identifies an RFID data string with a string 4-digit length specifier. The length specifier allows values 0x00 through 0xFF to be included within the data strings without conflicting with the DPL format record terminators. The four-digit decimal data byte count immediately follows the four-digit column position field. This value includes all of the data following the byte count field, but does not include itself.

Syntax

a bbb c d eee ffff gggg hhhh jj...j

Parameters

Field	Valid Inputs	Meaning
a	1, 2, and 3	Operation to perform, where: 1 = Read (report to host) 2 = Write 3 = Write / Verify

Field	Valid Inputs	Meaning
bbb	Wnx	RFID Hexadecimal Operation, where no "n" is an implied 1.
c	0	Not Used, should be 0.
d	0	Not Used, should be 0.
eee	xyy	HF: Lock after write, where: x = 0 – Use printer setup to determine if lock is performed. x = 1 – Lock after write. yy = Not Used
		UHF EPC Gen2: Lock after write, where: x = 0 – Use printer setup to determine if lock is performed. x = 1 – Lock after write. yy = Lock state where "01"is for permalock, "10" for pwd- write lock or "11" for both states
		UHF other tag types: Not Used, should be 000.
ffff	0000 – 9998	HF: Starting block number to write.
		UHF EPC Gen2: Block address where "0001" is EPC data, "0002" is Tag ID or "0003" is user memory. Using "0000" is for EPC data also (for backwards compatibility).
		UHF other tag types: Not Used, should be 0000.
gggg	0000	HF: Not Used, should be 0000.
		UHF EPC Gen2: Data word offset – currently only used for read operation
		UHF other tag types: Not Used, should be 0000.
hhhh	Four-digit decimal data byte count.	Number of bytes to follow (to include all bytes that follow until the end of the data).
		UHF data length must be 8 or 12 for EPC, 8 for Tag ID or multiples of 2 for user memory sections.
jj...j	Valid ASCII character string followed by a termination character.	Data to write to the tag.
		UHF data length must be 8 or 12 for EPC, 8 for Tag ID or multiples of 2 for user memory sections.

Example 1

The following example encodes a HF tag, starting at block 001, with "Datamax <CR> writes RFID best." It includes a Byte Count Specifier (the portion in bold), where 0024

equals a four–digit decimal data byte count and includes all bytes that follow until the end of the data. Field termination is set by the byte count.

```
<STX>L
D11<CR>
2W1X000000001000000024Datamax<CR>
writes RFID best<CR>
E
```

Example 2

The following format encodes a tag with EPC data "1122334455667788" with byte count shown in bold. Note that the field data is entered as the hex value for the ASCII character.

```
<STX>L
D11
2W1x0000000000000000008<0x11><0x22><0x33><0x44><0x55><0x66><0x77><0x88>
E
```

GEN2 Kill/Access Passwords

Gen2 tags are capable of storing a 4–byte kill password and a 4–byte access password. The kill password is stored at address 0, word offset 0 and access password is stored at address 0, word offset 2. The default for these passwords is typically 0.

To write these to the tag it is necessary to store the desired password value in the printer database:

- To write the database for the kill password the command is <STX>KcRIKnnnnnnnn, where nnnnnnnn represents the 4–byte value in hexadecimal pairs; and,

- To write the database for the access password the command is <STX>KcRICn–nnnnnnnn, where nnnnnnnn represents the 4–byte value in hexadecimal pairs.

These can also be viewed or modified via the printer's display under RFID OPTIONS / UHF SETTINGS. If the stored value for either or both of these passwords is non–zero and a label formatting command to write EPC data is issued, then these passwords will be written also.

GEN2 Lock States

Gen2 supports a lock state of permalock, pwd–lock or both for any of the data sections of the tag. This includes access/kill passwords, EPC data, Tag ID or user memory.

To store these states in the printer database the command is <STX>KcRIGn, where: 1 is permalock; 2 is pwd–lock; 3 is both; and, 0 is none (default). When a section of the tag is written via label formatting command and the stored lock state and lock after write are enabled, the section will be locked.

Sample Programs

Examples of DPL used with languages such as "C" and Visual Basic.

"C" Language Program

The following sample "C" program produces output that is displayed in the image below.

```
/* DMX SERIES Sample C program */
# include <stdio.h>
main ()
{
char *pcs = "590";
char *desc = "10K OHM 1/4 WATT";
    fputs ("DMX Printer Test Program\n", stdout);
    fputs ("\x02L\n", stdaux); /* STX L – Enter Label
    Formatting */
    fputs ("H07\n" stdaux); /* Enter Heat Setting of 7*/
    fputs ("D11\n", stdaux); /* Set Width and Height Dot
    Size */
    fprintf (stdaux, "191108010000025%s\n",desc);/* Select smooth Font
    */
    fprintf (stdaux, "1a6210000000050%sPCS\n", pcs);/* Select Barcode
    type 'a' */
    fputs ("E\n", stdaux); /* End Label format mode and print*/

}
```
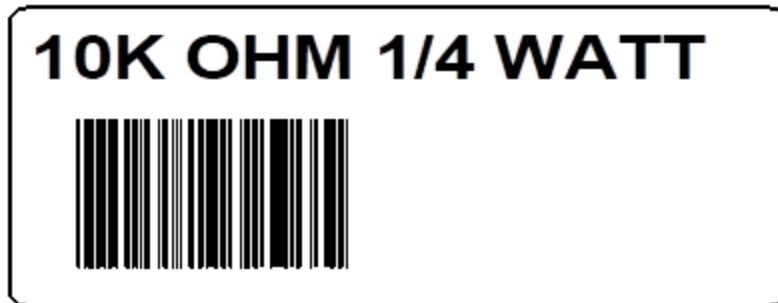

ASCII text file

The following ASCII sample produces output that is displayed in the image below.

```
^BL
H07
D11
19110080100002510K OHM 1/4 WATT<CR>
1a621000000050590PCS<CR>
E<CR>
```
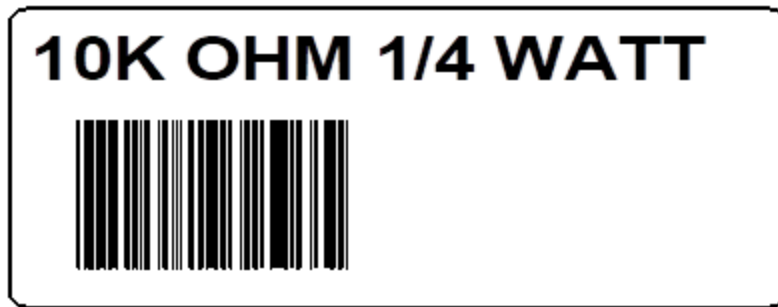
VB Application Generating DPL

The following sample is a Visual Basic program that displays a database record on the screen. A user can scroll through the records and then print a selected record. Five barcodes are printed along with data fields and headings.

```
    'Printer DPL Controls
Dim CharSet As String          '<STX> byte
Const StartLabel = "L"
Const EndLabel = "E"
Const PrintDensity = "D11"

'Printer DPL Data to position dynamic information on label
Const OrderTxt = "191100704150010"          'font 9, 24 pt
Const OrderBC = "1a6205004200120"
Const CustomerTxt = "191100603600010"

Const Item1NO = "191100403250010"
Const Item1BC = "1a6204002870010"
Const Item1Txt = "191100402690010"
Const Item1Qty = "191100603070260"

'DPL Fixed Items on label
Const Itm1 = "191100303400010Item #"

Const Qty1 = "191100303400250Quantity"

Const Boxsize = "B065035002002"
Const BoxPos1 = "1X1100003050240"
Const Image1 = "1Y3300004750010SLANT1"

Dim Fixed As String

'Item Variables
Dim Item1 As String
Dim PrintLabel As String
Dim OrderData As String
```

```
'Print label by clicking print button with the mouse
Private Sub cmdPrint_Click()

'Concatenate all the dynamic data fields with the constant header
strings,  terminated with <cr> Chr$(13)
    OrderData = OrderTxt & txtOrderNo.Text & Chr$(13) & OrderBC & txtOrderNo.Text &
Chr$(13) & CustomerTxt & txtCustomer.Text

    Item1 = Item1NO & txtItem1.Text & Chr$(13) & Item1BC & txtItem1.Text & Chr$(13) &
Item1Txt & txtItem1Desc.Text & Chr$(13) & Item1Qty & txtItem1Qty.Text

'Concatinate entire label format and send out serial port
    PrintLabel = CharSet & MaxLength & Chr$(13) & CharSet & StartLabel & Chr$(13) &
PrintDensity & Chr$(13) & Image1 & Chr$(13) & OrderData & Chr$(13) & Item1 & Chr$(13)
& Fixed & Chr$(13) & EndLabel
    Comm1.Output = PrintLabel     End Sub

'Display the record form on the screen
Private Sub Form_Load()
    Fixed = Itm1 & Chr$(13) & Chr$(13) & Qty1 & Chr$(13) & Chr$(13) & BoxPos1 & Box-
size & Chr$(13)
    CharSet = Chr$(126)      'Alternate <stx> character ~
    MComm.PortOpen = 1     'Open the serial port
End Sub

'Exit the program by clicking Exit button with the mouse
 Private Sub cmdExit_Click()
    Comm1.PortOpen = 0     'Close down the serial port
    End
End Sub
```

VB Application interfacing via Windows Driver

Create a form similar to the following image.
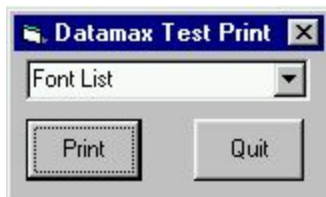

```
VERSION 5.00
Begin VB.Form Form1
    Caption         =   "Datamax Test Print"
```

```
      ClientHeight    =    1065
      ClientLeft      =    60
      ClientTop       =    345
      ClientWidth     =    2325
      LinkTopic       =    "Form1"
      MaxButton       =    0    'False
      MinButton       =    0    'False
      ScaleHeight     =    1065
      ScaleWidth      =    2325
      StartUpPosition =    3  'Windows Default
      Begin VB.ComboBox cmboFonts
         Height          =    315
         Left            =    90
         TabIndex        =    2
         Text            =    "Font List"
         Top             =    45
         Width           =    2130
      End
      Begin VB.CommandButton cmdExit
         Caption         =    "Quit"
         Height          =    465
         Left            =    1350
         TabIndex        =    1
         Top             =    495
         Width           =    825
      End
      Begin VB.CommandButton cmdPrint
         Caption         =    "Print"
         Height          =    465
         Left            =    90
         TabIndex        =    0
         Top             =    495
         Width           =    870
      End
   End
Attribute VB_Name = "Form1"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False

'Print label by clicking print button with the mouse
Private Sub cmdPrint_Click()
'font name as seen in application font list box
'if not found, driver will inform GDI to generate an
'image that will be downloaded
    Printer.FontName = cmboFonts.Text

'1,440 twips equals one inch
    Printer.Height = 6480        '4.5 inches in twips
```

```
     Printer.Width = 5760        '4 inches in twips
     Printer.CurrentX = 1440     '1 inch (column position)
     Printer.CurrentY = 2160     '2 inches (row position)
     Printer.Print "0123456789"
     Printer.EndDoc
End Sub
Private Sub Form_Load()
Dim X As Printer
Dim I As Integer 'Used for the font list
' search for printer queue name / driver name
     For Each X In Printers
     If X.DeviceName = "Datamax I-4206" Then 'printer found
' Set printer as system default.
        Set Printer = X
            For I = 0 To Printer.FontCount - 1  ' Determine number of fonts.
                cmboFonts.AddItem Printer.Fonts(I)    ' Put each font into list box.
            Next I
        Exit For
     End If
     Next
End Sub
'Exit the program and shut down the serial port
'by clicking Exit button with the mouse
Private Sub cmdExit_Click()
     End
End Sub
```

When the program is run, the combo box should be populated with the available fonts as shown below.
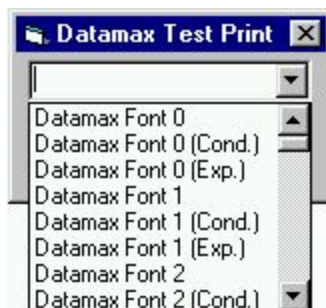
VB Application to Send Raw Data via Printer Driver

This is a sample Visual Basic program that checks for any printer driver attached to "LPT1". If one is installed, then a DPL file can be printed via the print driver. DPL is created by the application and sent to LPT1.

Note: The driver does not need to be a Datamax–O'Neil DPL print driver.

To begin, a global variable called SelPrinter must be defined as a string. Then use the
following code to create a .frm file.

```
VERSION 5.00
Object = "{F9043C88-F6F2-101A-A3C9-08002B2F49FB}#1.2#0"; "comdlg32.ocx"
Begin VB.Form Form1
   Caption          =    "Form1"
   ClientHeight     =    1290
   ClientLeft       =    165
   ClientTop        =    735
   ClientWidth      =    3750
   LinkTopic        =    "Form1"
   MaxButton        =    0    'False
   MinButton        =    0    'False
   ScaleHeight      =    1290
   ScaleWidth       =    3750
   StartUpPosition =    3    'Windows Default
   Begin MSComDlg.CommonDialog CommonDialog1
      Left            =    1635
      Top             =    765
      _ExtentX        =    847
      _ExtentY        =    847
      _Version        =    393216
   End
   Begin VB.CommandButton cmdClose
      Cancel          =    -1   'True
      Caption         =    "Close"
      Height          =    372
      Left            =    2400
      TabIndex        =    3
      Top             =    735
      Width           =    972
   End
   Begin VB.CommandButton cmdStoreImage
      Caption         =    "Print"
      Default         =    -1   'True
      Height          =    372
      Left            =    240
      TabIndex        =    2
      Top             =    735
      Width           =    972
   End
   Begin VB.TextBox txtFile
      Height          =    288
      Left            =    120
      TabIndex        =    1
      Top             =    360
      Width           =    3492
   End
```

```
   Begin VB.Label Label1
      Caption         =    "File Name"
      Height          =    255
Left               =    120
      TabIndex        =    0
      Top             =    135
      Width           =    1455
   End
   Begin VB.Menu File
      Caption         =    "&File"
      Begin VB.Menu open
         Caption      =    "&Open"
      End
      Begin VB.Menu exit
         Caption      =    "&Exit"
         Shortcut     =    ^Q
      End
   End
End
Attribute VB_Name = "Form1"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
Option Explicit
'********************************
#If Win32 Then
Private Type DOC_INFO_1
    pDocName As String
    pOutputFile As String
    pDatatype As String
End Type

#End If 'WIN32 Types

'********************************
'**  Function Declarations:

#If Win32 Then
Private Declare Function OpenPrinter& Lib "winspool.drv" Alias "OpenPrinterA" (ByVal
pPrinterName As String, phPrinter As Long, ByVal pDefault As Long) ' Third param
changed to long
Private Declare Function StartDocPrinter& Lib "winspool.drv" Alias "StartDocPrinterA"
(ByVal hPrinter As Long, ByVal Level As Long, pDocInfo As DOC_INFO_1)
Private Declare Function StartPagePrinter& Lib "winspool.drv" (ByVal hPrinter As
Long)
Private Declare Function WritePrinter& Lib "winspool.drv" (ByVal hPrinter As Long,
pBuf As Any, ByVal cdBuf As Long, pcWritten As Long)
Private Declare Function EndDocPrinter& Lib "winspool.drv" (ByVal hPrinter As Long)
```

```
    Private Declare Function EndPagePrinter& Lib "winspool.drv" (ByVal hPrinter As Long)
    Private Declare Function ClosePrinter& Lib "winspool.drv" (ByVal hPrinter As Long)
    #End If 'WIN32

    Dim ch As String * 1, f1 As Integer, loadfile As String
    Private Sub cmdOpenFile_Click()
        On Error GoTo ErrHandler
        ' Set Filters
        CommonDialog1.Filter = "All Files (*.*)|*.*"
        'Specify Default Filter
        CommonDialog1.FilterIndex = 1
        'Display Open dialog box
        CommonDialog1.ShowOpen
        loadfile = CommonDialog1.FileName
        Label2.Caption = loadfile
        Exit Sub

    ErrHandler:
        Exit Sub
    End Sub
    Private Sub cmdStoreImage_Click()
    Dim hPrinter&
    Dim jobid&
    Dim res&
    Dim written&
    Dim printdata$
    Dim docinfo As DOC_INFO_1

        loadfile = Form1.txtFile.Text
        If loadfile = "" Then
            MsgBox "You must Open a file to send", vbExclamation
            Exit Sub
        End If

        ' Open file.
        f1 = FreeFile
        Open loadfile For Binary As f1

        ' Open printer for printing
        res& = OpenPrinter(SelPrinter, hPrinter, 0)
        If res = 0 Then
            MsgBox "Unable to open the printer"
            Exit Sub
        End If
        docinfo.pDocName = "MyDoc"
        docinfo.pOutputFile = vbNullString
        docinfo.pDatatype = vbNullString
        jobid = StartDocPrinter(hPrinter, 1, docinfo)
        Call StartPagePrinter(hPrinter)
```

```
        Call WritePrinter(hPrinter, ByVal printdata$, Len(printdata$), written)
        While Not EOF(1)
            Get #f1, , ch
            printdata$ = ch
            Call WritePrinter(hPrinter, ByVal printdata$, Len(printdata$), written)
        Wend
        Call EndPagePrinter(hPrinter)
        Call EndDocPrinter(hPrinter)
        Call ClosePrinter(hPrinter) ' Close when done

        ' Close file
        Close #1
        MsgBox "File sent to print spooler.", vbExclamation
End Sub
Private Sub cmdClose_Click()
        Unload Me
End Sub

Private Sub exit_Click()
        End
End Sub

Private Sub Form_Load()
Dim X As Printer
' search for printer queue name / driver name
        For Each X In Printers
            If X.Port = "LPT1:" Then 'printer found
            ' Set printer as system default.
                SelPrinter = X.DeviceName
                Exit For
            End If
        Next
End Sub

Private Sub lpt2_Click()

End Sub

Private Sub open_Click()
        CommonDialog1.ShowOpen
        loadfile = CommonDialog1.FileName
        txtFile.Text = loadfile
End Sub

Private Sub Printer_Click()
        CommonDialog1.ShowPrinter
End Sub
```
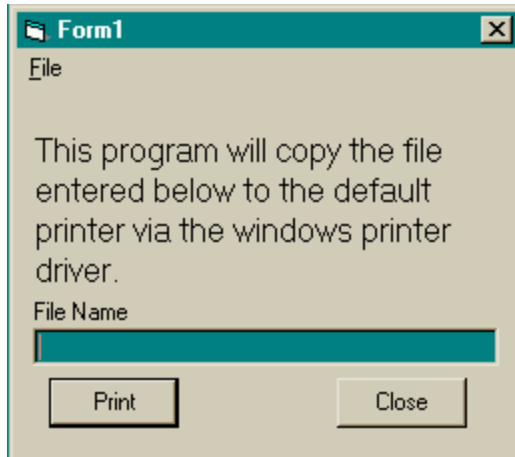
This syntax will create the following form:

Note: It may be necessary to remove and reinsert the common dialog control due to Windows® registry issues.

Single and Double Byte Character Font Mapping

Label format records with font code 9 in the b field of the Format Record header can specify any of the following bitmapped or scalable fonts with the associated specification in the font size/selection (eee height) field, as shown in the tables in this section.

Example: 1911u4000100010A0215134<CR>

The example above will produce a printed string consisting of the two Kanji characters referenced by the two HEX ASCII pairs A0, 21, and 51, 34, on appropriately equipped printers.

Example: 1911U4001000100P012P012<0x38><0x77><0x00>

The example above will produce a printed string consisting of the one 12 point Kanji character referenced by the byte pair with hex values 38 and 77 on appropriately equipped printers.

Note: Double byte hex representation character strings terminate with two null bytes and a <CR>, i.e., 0x 00 00 0D. The Hex-ASCII representation is terminated with <CR>.

The alphanumeric portion (nn) of the scalable font specifiers, Snn, Unn, unn, numbering system is a base 62 numbering system, 0, 1, 2...8, 9, A, B, C...X, Y, Z, a, b, c...x, y, z. For scalable fonts the S designation signifies single byte characters and U designates double byte. The lower case U counterpart signifies that print data in the label format record is in a hex-ASCII format.

Fonts that have been downloaded with designators of the form nn, where nn are alphanumeric, as seen in the font size specifier (eee height) column below, may be referenced in label format records by their upper or lower case specifiers as available. However, fonts created for double-byte access cannot be accessed using Snn as the font designator, and vice versa, single-byte fonts cannot be accessed using Unn or unn.

Note: Downloading scalable fonts require specifying the font ID, a two character alphanumeric. The S, or U, u used in referencing the font within label format records is not used in the download specification. Attempting to utilize a scalable font with an inappropriate byte-size designation (e.g. S on double byte or U, u on single byte) will have unpredictable results.

Font Name	Character Mapping	Font Size Specifier (eee Height)	Point Size
Font 9 Bitmapped Downloaded Fonts			
User-downloaded typeface	Single Byte	100 – 999	user defined
Font 9 Scalable Resident Fonts Specifications			

Font Name	Character Mapping	Font Size Specifier (eee Height)	Point Size
CG Triumvirate Bold Condensed	Single Byte	S00	scalable
CG Triumvirate	Single Byte	S01	scalable
Font 9 Scalable Resident Fonts Specifications (optional)			
CG Times	Single Byte	SA0	scalable
CG Times Italic	Single Byte	SA1	scalable
CG Times Bold	Single Byte	SA2	scalable
CG Times Bold Italic	Single Byte	SA3	scalable
Gothic B Kanji	Double Byte (Binary)	U40	scalable
Gothic B Kanji	Double Byte (Hex ASCII)	u40	scalable
GB Simplified Chinese	Double Byte (Binary)	UC0	scalable
GB Simplified Chinese	Double Byte (Hex ASCII)	uC0	scalable
Korean Hangul	Double Byte (Binary)	UH0	scalable
Korean Hangul	Double Byte (Hex ASCII)	uH0	scalable
Font 9 Scalable Downloaded Fonts			
User-downloaded typeface	Single Byte (Binary)	S50 – S5z..., S90 – S9z	scalable
User-downloaded typeface	Double Byte (Binary)	U50...,U5z..., U90...U9z	scalable
User-downloaded typeface	Double Byte (Hex ASCII)	u50...,u5z..., u90...u9z	scalable

Speed Ranges

Printer Speed Command*	Speed Value:	
	Inches per Second	Millimeters per Second
A	1.0	25
B	1.5	38
C	2.0	51
D	2.5	63
E	3.0	76
F	3.5	89
G	4.0	102
H	4.5	114
I	5.0	127
J	5.5	140
K	6.0	152
L	6.5	165
M	7.0	178
N	7.5	191
O	8.0	203
P	8.5	216
Q	9.0	227
R	9.5	241
S	10.0	254
T	10.5	267
U	11.0	279
V	11.5	292
W	12.0	305
X	13.0	330
Y	14.0	356
Z	15.0	381
a	16.0	406

| Printer Speed Command* | Speed Value: | |
	Inches per Second	Millimeters per Second
b	17.0	432
c	18.0	457
d	19.0	483
e	20.0	508

*Applicable speed values are printer dependent. See the table below.

| Model | Print Speed | | Feed Speed | | Reverse Speed | | Slew Speed | |
	Range	Default	Range	Default	Range	Default	Range	Default
IM2–4212	C – W	O	C – W	O	C – I	G	C – a	O
IM2–4310	C – S	O	C – W	O	C – I	G	C – a	O
IM2–Future (400dpi)	C – O	K	C – S	K	C – I	G	C – a	K
IM2–4606	C – K	G	C – O	G	C – I	G	C – a	G
RL3e	A – G	E	A – G	G	C	C	N/A	N/A
RL4e	A – I	G	A – I	G	C	C	N/A	N/A
E–Class Mark III (Basic)	C – G	G	C – G	G	C	C	G	G
E–Class Mark III (Advanced)	C – I	G	C – I	G	C	C	G	G
E–Class Mark III (Pro)	C – K	G	C – K	G	C	C	G	G
E–Class Mark III (Pro 300DPI)	C – I	G	C– I	G	C	C	G	G

Symbol Sets

Scalable fonts are mapped through a symbol set sometimes referred to as a "code page". This mapping allows the host application to select a variety of characters to match the application. For example in the code page (CP), character code 0xE4 causes character φ to be printed. In CP E7, the character code 0xE4 causes δ to be printed.

Each of the CPs allows the host application to "emulate" a character set for their application. Datamax-O'Neil printers that support scalable fonts contain either a standard or an enhanced group of CPs as defined below. The CP (symbol set) is selected using a DPL Command, <STX>ySxx, where xx is the two letter CP Identifier.

Use the symbol set commands to select the symbol sets (code pages) for your specific language needs.

- Double Byte Symbol Sets
- Single Byte Symbol Sets

Double Byte Symbol Sets

Double byte scalable fonts are mapped through a "character map". This mapping allows the host application to select a variety of characters to match the application. Each of the code pages allows the host application to emulate a character set for the application

Double Byte Character Map		
Character Map ID	TrueType Font	Description
B5	✓	BIG 5 (Taiwan) Encoded
EU	✓	EUC (Extended UNIX Code)
GB	✓	Government Bureau Industry Standard; Chinese (PRC); default
JS	✓	JIS (Japanese Industry Standard); default
SJ	✓	Shift JIS
UC	✓	Unicode (including Korean)

The double byte symbol set is selected using the <STX>yUxx command. The single–byte symbol set is selected using the same command, <STX>ySxx. Each affects an independent database selection and has no impact on the other.

Single Byte Symbol Sets

In the following table, the checkmark symbol (✓) is used to indicate a full compliment of characters, while "Part" indicates a partial compliment of characters and "X" indicates an absence of characters for the given code page.

Code Page Identifier		Font Format		True Type	Description
		MicroType			
Datamax-O'Neil	HP (PCL)	CG Triumvirate	CG Times		
AR	8V	X	✓	✓	Arabic-8
CP	3R	Part	✓	✓	PC Cyrillic
D1	11L	X	X		ITC Zapf Dingbats/100
D2	12L	X	X		ITC Zapf Dingbats/200
D3	13L	X	X		ITC Zapf Dingbats/300
DN	0D	Part	Part	✓	ISO 60 Danish / Norwegian
DS	10L	X	X		PS ITC Zapf Dingbats
DT	7J	✓	✓	✓	DeskTop
E1	0N	✓	✓	✓	ISO 8859/1 Latin 1
E2	2N	✓	✓	✓	ISO 8859/2 Latin 2
E5	5N	✓	✓	✓	ISO 8859/9 Latin 5
E6	6N	✓	✓	✓	ISO 8859/10 Latin 6
E7	12N	X	X	✓	ISO 8859/7 Latin/Greek
E9	9N	✓	✓	✓	ISO 8859/15 Latin 9
EG	12N	Part	✓	✓	ISO 8859/7 Latin/Greek
EH	7H	Part	✓	✓	ISO 8859/8 Latin/Hebrew
ER	10N	Part	✓	✓	ISO 8859/5 Latin/Cyrillic

Code Page Identifier		Font Format			Description
		MicroType		True Type	
Datamax-O'Neil	HP (PCL)	CG Triumvirate	CG Times		
FR	1F	Part	Part	✓	ISO 69: French
G8	8G	Part	✓	✓	Greek-8
GK	12G	Part	✓	✓	PC-8 Greek
GR	1G	Part	Part	✓	ISO 21: German
H0	0H	Part	✓	✓	Hebrew-7
H8	8H	Part	✓	✓	Hebrew-8
IT	0I	✓	✓	✓	ISO 15: Italian
L$ [1]	14L	X	X	✓	HP4000 ITC Zapf Dingbats
LG	1U	✓	✓	✓	Legal
M8	8M	✓	✓	✓	Math-8
MC	12J	✓ [1]	✓	✓ [1]	Macintosh
MS	5M	✓	✓ [1]	✓ [1]	PS Math
P9[1]	13U	✓	✓ [1]	✓ [1]	PC-858 Multilingual
PB	6J	Part	Part	✓	Microsoft Publishing
PC	10U	✓	✓	✓	PC-8, Code Page 437
PD	11U	✓	✓	✓	PC-8 D/N, Code Page 437N
PE	17U	✓	✓	✓	PC-852 Latin 2
PG	10G	Part	✓	✓	PC-851 Latin/Greek
PH	15H	✓	✓	✓	PC-862 Latin/Hebrew
PI	15U	Part	Part	✓	Pi Font
PM	12U	✓ [1]	✓ [1]	✓ [1]	PC-850 Multilingual
PR	10V	✓	✓	✓	PC-864 Latin/Arabic
PT	9T	✓	✓	✓	PC-8 TK, Code Page 437T

Code Page Identifier		Font Format			Description
		MicroType		True Type	
Datamax-O'Neil	HP (PCL)	CG Triumvirate	CG Times		
PU	9J	✓	✓	✓	PC-1004
PV	26U	✓	✓	✓	PC-775 Baltic
PX	12U	X	X		PTXT3000
PY	3Y	X	X	✓	Non-UGL, Generic Pi Font
R8	8U	✓	✓	✓	Roman-8
R9[1]	4U	✓	✓ [1]	✓ [1]	Roman-9
SP	2S	✓	✓	✓	ISO 17: Spanish
SW	0S	✓	✓	✓	ISO 11: Swedish
SY	19M	X	X	✓	Symbol
TK	8T	X	X		Turkish-8
TS	10J	✓	✓	✓	PS Text
UK	1E	✓	✓	✓	ISO 4: United Kingdom
US	0U	✓	✓	✓	ISO 6: ASCII
U8	-	✓	✓	✓	UTF8
VI	13J	✓	✓	✓	Ventura International
VM	6M	✓	✓	✓	Ventura Math
VU	14J	Part	Part	✓	Ventura US
W1[1]	19U	✓	✓	✓	Windows 3.1 Latin 1
WA	9V	✓	✓	✓	Windows Latin/Arabic
WD	579L	X	X	✓	Wingdings
WE[1]	9E	✓	✓	✓	Windows 3.1 Latin 2
WG[1]	9G	Part	✓	✓	Windows Latin/Greek
WL[1]	19L	✓	✓	✓	Windows 3.1 Baltic (Latv, Lith)

Code Page Identifier		Font Format			Description
		MicroType		True Type	
Datamax-O'Neil	HP (PCL)	CG Triumvirate	CG Times		
WN	9U	X	X		Windows
WO	9U	✓ [1]	✓ [1]	✓ [1]	Windows 3.0 Latin 1
WR[1]	9R	✓ [1]	✓	✓	Windows Latin/Cyrillic
WT[1]	5T	✓	✓	✓	Windows 3.1 Latin 5

[1] Contains the Euro currency symbol (€).

UPC-A and EAN-13: Variable Price/Weight Barcodes

The EAN/UPC standard allows for an additional checksum to be generated in the middle of the barcode based on the data. This is used when the price or weight of an item is embedded into the barcode data (commonly used in the food industry).

For the printer to generate this checksum, a "V" must be placed in the data stream in the position the checksum is requested. If the "V" is placed in the 6th position for UPC-A or the 7th position for EAN-13, a checksum will be generated using the next five digits in the data stream. If the "V" is placed in the 7th position for UPC-A or the 8th position for EAN-13, a checksum will be generated using the next four digits in the data stream. The checksum is generated per the EAN/UPC barcode standard.

Example 1

1B1100000200020012345V01199

Prints the UPC-A barcode with the variable price checksum in the sixth position.

Example 2

1B1100002000200123456V0150

Prints the UPC-A barcode with the variable price checksum in the seventh position.

Example 3

1F1100002000200123456V01199

Prints the EAN-13 barcode with the variable price checksum in the seventh position.

Example 4

1F1100002000200123456V0150

Prints the EAN-13 barcode with the variable price checksum in the eighth position.

Honeywell
855 S. Mint Street
Charlotte, NC 28202

sps.honeywell.com