PROGRAMMER'S MANUAL

PDPL language for

D4 102

D4 202

D4 302-K

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PDPL PROGRAMER'S MANUAL

Table of Contents

1. INTRODUCTION

This manual describes command syntax of PDPL (Printer D Programming Language).
All commands can be sent from PC to your label printer through the USB deviceor seri
al (RS232) ports.
In this section, there are six categories to introduce basic concept of PDPL language.

- Command Conventions
- Basic command syntax
- Coordinate Description
- Control Code

1.1. Command Conventions

This manual uses the following typographic conventions to describe commands.

Convention	Description
XX_H	Present hexadecimal value. For example: 31_H is a hexadecimal value, decimal value is 49.
<>	Strings placed between <> in this manual represent the character of the same ASCII name, and are single-byte hexadecimal values (e.g., <STX>, <CR>, and <0x0D> equal 02_H, $0D_H$, and $0D_H$, respectively).
<CR>	($0D_H$) Identify the line termination character.
v1,v2…	Required parameters.
Square brackets ([ ])	Indicate that the item is optional parameters.(e.g., [v1] , [v2] , [p3])

1.2. Basic Command Syntax

This section offers basic command syntax to reference following examples.

● Command with single alpha character.

n<CR>	
n	Command character
<CR>	Termination character

● Command with two alpha characters.

<SOH>#<CR>	
<SOH>	Control character
#	Command character
<CR>	Termination character

● Commands with required parameters.

<STX>Ev1<CR>	
<SOH>	Control character
E	Command character
v1	Parameter
<CR>	Termination character

● Commands with required parameter and optional parameters.

<STX>Iv1[v2]v3v4<CR>v5<CR>	
<SOH>	Control character
I	Command character
v1,v3,v4 and v5	Parameter
[v2]	Optional parameter
<CR>	Termination character

1.3. Coordinate Description

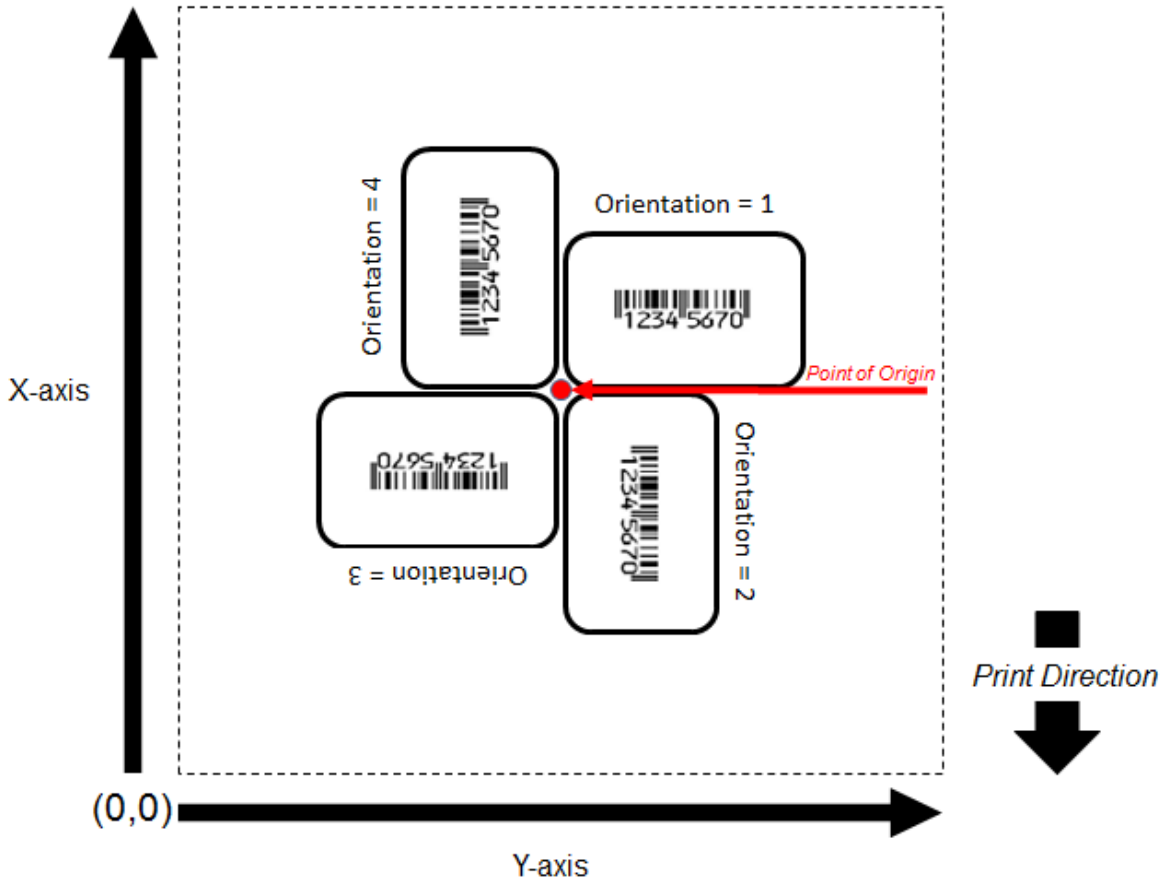

Figure: Coordinate description.

- The point of origin (0, 0) for 0 degree object is the lower left corner.
- All coordinate value is positive.
- If an object rotates, the point of origin rotates with the object.
- The measurement of coordinate value is in inchmm.

1.4. Control Code

The printer requires a special 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. Immediate Commands, System Commands, and Font Loading Commands have their own unique character, followed by a command character that directs printer action. As follow:

Command Type	ASCII Character	Decimal Value	HEX Value
Immediate Commands	<SOH>	1	01_H
System Commands	<STX>	2	02_H
Font Loading Commands	<ESC>	27	$1B_H$

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.
Refer to <STX>KI; — Set Control Code.
.

2. COMMAND REFERENCE

This section contains a complete listing of all PDPL commands, according to functions can be categorized into the following seven types.

- Immediate Command
- System Command
- Extended System Command
- Label Formatting Command
- Special Label Formatting Command
- Font Loading Command
- Generating Label Formats Command

2.1. Immediate Command

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.

<SOH># — Reset Printer

Description	This command is used to reset printer. If objects are (like form, graphic orsoft Font) stored in RAM, these objects will be cleared. Since this command will delay communication for one second, if not necessary, the user is advised to send other alternative system level command instead of this one.
Syntax	<SOH>#
Response	The printer sends <XOFF>, suspending the data input. The printer sends <XON> and 'T'(54_H), ready to resume work.
Example	

<SOH>A — Send ASCII Status String

Description	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).
Syntax	<SOH>A
Response	r1r2r3r4r5r6r7r8<CR>
Example	

	Description	
	Y	**N**
r1	Firmware parser is busy.	Firmware parser is idling.
r2	Paper out or fault.	Paper installed.
r3	Ribbon out or fault.	Ribbon installed.
r4	Printing batch file.	Printing is not batch file.
r5	Busy printing.	Not at printing
r6	Printer paused	Printer is not paused.
r7	Label presented	Label is not presented
r8		Always 'N'

<SOH>B — Toggle Pause

Description	This command toggles the printer's paused state between on and off. This is the same function achieved by pressing the PAUSE Key on the printer. Byte 6 generated from <SOH>A will reflect the change of the status.
Syntax	<SOH>B
Response	None
Example	

<SOH>D — SOH Shutdown

Description	Interaction commands will be ignored after this command is sent. This command must be sent prior to loading graphic images or fonts, since some graphic images or fonts may contain data sequences that can be misinterpreted as commands by the printer.
Syntax	<SOH>D
Response	None
Example	

<SOH>E — Send Batch Remaining Quantity

Description	This command causes the printer to return a four-digit number (0000 ~ 9999) indicating the quantity of labels that remain to be printed in the current batch.
Syntax	<SOH>E
Response	r1<CR> **Parameter** | **Description** r1 | 4decimal digits.
Example	(There are still 15 labels left in printer buffer waiting to be printed.) Send to Printer: <SOH>D<CR> Response from Printer: 0015<CR>

<SOH>F — Send Status Byte

Description	This command instructs the printer to send a single byte where each bit(1 or0) represents one of the printer's status flags, followed by a <CR>.
Syntax	<SOH>F
Response	r1<CR>
Example	

bit for r1	Description	
	1	**0**
1	Firmware parser is busy.	Firmware parser is idling.
2	Paper out or fault.	Paper installed.
3	Ribbon out or fault.	Ribbon installed.
4	Printing batch file.	Printing is not batch file.
5	Busy printing.	Not at printing
6	Printer paused	Printer is not paused.
7	Label presented	Label is not presented
8		Always '0'

2.2. System Command

These are used to load and store graphics information, in addition to printer control. System 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 Commands consist of:
1. Attention-Getter, 02_H or $7E_H$, see Control Codes.
2. Command Character
3. Parameters (if any).

<STX>A — Set Date and Time

Description	This command is used to set date and time of printer's real time clock (RTC). It takes effect only contain RTC function printers.
Syntax	<STX>Av1v2v3v4v5v6v7<CR>

Parameter	Description	Range
v1	1-digitdecimal for Day of Week. 1 for Monday.	1 ~ 7
v2	2-digitdecimalfor Month. 01 for January.	01 ~ 12
v3	3-digitdecimalfor Day.	01 ~ 31
v4	4-digitdecimalfor Year.	2000 ~ 2050
v5	2-digitdecimalfor Hour in 24 hour format.	00 ~ 23
v6	2-digitdecimalfor Minutes.	00 ~ 59
v7	3-digitdecimalfor Julian date. (numerical day of the year) Just only set to 000 for automatically calculated.	000

Response	None
Example	Set date and time to 2016/09/06 23:59. Send to Printer: <STX>A2090620162359000<CR>

<STX>a — Enables Label Echo Character

Description	This command enables the printer to send the control code of <RS> ($1E_H$) the host through the serial port after each label is being printed. when status is end of batched, the printer to send the control code of <US>($1F_H$) the host
Syntax	<STX>a<CR>
Response	<RS>
Example	

<STX>B — Get Printer Date and Time Information

Description	This command instructs the printer to retrieve its internal date and time information. It takes effect only contain RTC function printers.
Syntax	<STX>B<CR>
Response	r1r2r3r4r5r6r7<CR>

	Description	Range
r1	1-digitdecimal for Day of Week. 1 for Monday.	1 ~ 7
r2	2-digitdecimalfor Month. 01 for January.	01 ~ 12
r3	3-digitdecimalfor Day.	01 ~ 31
r4	4-digitdecimalfor Year.	2000 ~ 2050
r5	2-digitdecimalfor Hour in 24 hour format.	00 ~ 23
r6	2-digitdecimalfor Minutes.	00 ~ 59
r7	3-digitdecimalfor Julian date (numerical day of the year)	001 ~ 366

Example	

<STX>c — Set Continuous Label Length

Description	This command sets the label size for applications using continuous media. It disables the top-of-form function performed by the Media Sensor. This command will overwrite <STX>e and <STX>r commands, which are in conflict with it. The label length means the distance between the start printing positions to the stop printing position.
Syntax	<STX>cv1<CR>

Parameter	Description	Default
v1	4-digit decimal used to set paper length. Specifies the length of the media feed for each label format, in inches/100 or millimeters/10. (Maximum value: 99.99 inches / 999.9mm)	0000

Response	None
Example	This sample sets a label length of 300, which equals 3.00 inch (assuming Imperial Mode is selected). Send to Printer: <STX>n<CR> <STX>c0300<CR>

<STX>E — Set Quantity for Stored Label

Description	This command should be sent in conjunction with <STX>G, as both commands are related to label storage. The stored label format is the last printed format, kept in the print buffer.
Syntax	<STX>Ev1<CR> **Parameter** | **Description** | **Default** v1 | A 4-digit quantity, including leading zeros. | 0001
Response	None
Example	5 labels of the current format in memory will be printed. Send to Printer: <STX>E0005<CR> <STX>G<CR>

<STX>e — Selects See-through sensor for gap

Description	This command is used for see-through media. It sets the printer to sense the gap between labels. Once received this command, the printer will ignore the previous command for continuous label(<STX>cv1<CR>).
Syntax	<STX>e<CR>
Response	None.
Example	

<STX>F — Form Feed

Description	This commands the printer to form feed to the next start of print. This command will feed a label till where the gap is being detected, when the paper type is set to non-continuous. The media paper will be fed for certain length, when the paper type is set to continuous.
Syntax	<STX>F<CR>
Response	None.
Example	

<STX>f — Set Stop Position

Description	This sets the stop position of the printed label, allowing the label to stop at a point past the start-of-print position. Under multi-copy or continuous printing, this command is valid only for the first label and last labels.
Syntax	<STX>fv1<CR> **Parameter** / **Description** / **Default** v1 — A 3-digit distance from the Media Sensor, in inches/100 or mm/10. — 220
Response	None.
Example	Sets a stop position distance of 300 (3.0 inches from the Media Sensor). Send to Printer: <STX>f300<CR>

<STX>G — Print Last Label Format

Description	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. This command should be used in conjunction with <STX>E.
Syntax	<STX>G<CR>
Response	None.
Example	Print the last label format 3 times. Send to Printer: <STX>L<CR> 121100000200100Label Format Test<CR> E<CR> <STX>E0002<CR> <STX>G<CR>

<STX>I — Download Image file

<table>
<tr><td>Description</td><td>This command must precede image downloading from a host computer to the printer. The data that immediately follows the command string will be image data. If any of the 8-bit input formats are to be used, it is necessary to disable the Immediate Command interpreter by executing an <SOH>D command before issuing the <STX>I command. See Appendix J for more information. To print an image, see Generating Label Formats.</td></tr>
<tr><td>Syntax</td><td><STX>Iv1v2v3<CR>v4<CR>

<table>
<tr><th>Parameter</th><th>Description</th><th>Range</th></tr>
<tr><td>v1</td><td>Memory Identifier.</td><td>See Appendix B.</td></tr>
<tr><td>v2</td><td>Graphics Format Identifier.
Supports PCX, BMP and HEX formats.
BMP supports 1bit(black and white), 4bit(16 Color) and 8bit(256 color).
PCX just support black and white color.</td><td>F：HEX 7-bit format.
B：BMP 8-bit format, flipped.
b：BMP 8-bit format.
P：PCX 8-bit format, flipped.
p：PCX 8-bit format.</td></tr>
<tr><td>v3</td><td>File Name.</td><td>Maximum 16 characters.</td></tr>
<tr><td>v4</td><td>Image Data.</td><td>See ~~Appendix J~~.</td></tr>
</table></td></tr>
<tr><td>Response</td><td>None.</td></tr>
<tr><td>Example</td><td>@</td></tr>
</table>

<STX>J — Set Pause for Each Label Mode

Description	This command will pause the printer each time after a label is printed. The printer will resume working only after the 'PAUSE' button is pressed. When the printer is at pause state, the READY LED will keep blinking. The printer must be reset or used <STX>j to cancel.
Syntax	<STX>J<CR>
Response	None.
Example	

<STX>j — Cancel Pause for Each Label Mode

Description	This command cancels the pause for each label mode (<STX>j).
Syntax	<STX>j<CR>
Response	None.
Example	

<STX>K — Extended System Commands

Description	This is an expansion of the System-Level Command structure.
Syntax	Refer to 2.3. Extended System Commands for more information.
Response	None
Example	

<STX>k — RS-232 Port Test

Description	This command instructs the printer to transmit the Y character from the printer's RS-232 port.
Syntax	<STX>k<CR>
Response	Y
Example	

<STX>L — Enter Label Formatting Mode

Description	This command switches the printer into the label-formatting mode. The printer will process the label formatting commands until it receives the E, s, or X command to exit from this mode. Immediate, System-Level, and Font Loading commands will be ignored until the label formatting mode is terminated.
Syntax	<STX>L<CR>
Response	None
Example	@

<STX>M — Set Maximum Label Length

Description	This command sets the maximum label length and the printer will search for gap or mark within the specified length accordingly. The default length is 20 inches.
Syntax	<STX>Mv1<CR> **Parameter** | **Description** | **Range** | **Default** v1 | A 4-digit decimal distance for maximum label length, in inches/100 or mm/10. | 0500 ~8000 | 2000
Response	None
Example	Sets a maximum Label Length distance of 10 inches for search gap or mark. Send to Printer: <STX>M1000<CR>

<STX>m — Set Printer to Metric Mode

Description	This command sets the printer to interpret measurements as metric values.
Syntax	<STX>m<CR>
Response	None
Example	Sets a maximum Label Length distance of 30mm. Send to Printer: <STX>m<CR> <STX>M0300<CR>

<STX>n — Set Printer to Imperial Mode

Description	This command sets the printer to interpret measurements as inch values.
Syntax	<STX>n<CR>
Response	None
Example	Sets a maximum Label Length distance of 3.0inches. Send to Printer: <STX>n<CR> <STX>M0300<CR>

<STX>O — Set Start of Print Position

Description

This command sets the offset value for start print position.
This value operates independently of the <STX>f command.
This parameter will be ignored if continuous label command is sent. (<STX>cxxxx).

Syntax

<STX>Ov1<CR>

Parameter	Description	Range	Default
v1	A 4-digit offset value in inches/100 or mm/10. The"0000" setting is the default value.	0000 ~ 9999	0220

Response

None

Example

Sets a start of print position of 4.0 inches
Send to Printer：
<STX>n<CR>
<STX>O0400<CR>

Sets a start of print position of 40 mm
Send to Printer：
<STX>m<CR>
<STX>O0400<CR>

<STX>o — Cutter Operation

Description	This command will cause 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<CR>
Response	None
Example	

<STX>P — Dump Mode

Description	This command instructs the printer to assume Hex Dump Mode. To return to normal operation the printer must be manually reset.
Syntax	<STX>P<CR>
Response	None
Example	

<STX>Q — Clear All Memory

Description	This command instructs the printer to clear all of the Flash and RAM.
Syntax	<STX>Q<CR>
Response	None
Example	

<STX>q — Clear Selected Memory

Description	This command instructs the printer to clears the selected Flash and RAM.
Syntax	<STX>qv1<CR> **Parameter** | **Description** | **Range** v1 | Memory Identifier. | See **Appendix B**.
Response	None
Example	

<STX>r — Select Reflective Sensor

Description	This command enables reflective sensor.
Syntax	<STX>r<CR>
Response	None
Example	

<STX>T — Print Quality Test Pattern

Description	This command is used for testing the printout quality or checking the print head for debugging or maintenance purpose.
Syntax	<STX>T<CR>
Response	None
Example	

<STX>U — Label Format String Replacement

Description	This command places new data into format fields.
Syntax	<STX>U[v1]v2v3<CR>

Parameter	Description	Range
v1	Truncated Length Command	'T'
v2	2 digits field number.	01 ~ 99
v3	New string data, followed by a <CR>.	—

Response	None
Example	Send to Printer： <STX>L<CR> m<CR> D11<CR> 1A4203600500100DATA 1<CR> 161100002100110data 2<CR> 161100003200120data 3<CR> 1A4203604300120DATA 4<CR> Q0001<CR> E<CR> <STX>U01123<CR> <STX>U02New data F2<CR> <STX>U03New3<CR> <STX>UT04123<CR> <STX>E0002<CR> <STX>G

<STX>V — Cutter and Peeler Configuration

Description	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.
Syntax	<STX>Vv1<CR>

bit for v1	Description	Range
1	Cutter	0：Cutter disable 1：Cutter enable
2	—	—
3	Dispenser	0：Peeler disable 1：Peeler enable
4	—	—
5	—	—
6	—	—
7	—	—
8	—	—

Response	None
Example	Disable Cutter and Peeler, Send to Printer： <STX>V0<CR> Enable Cutter function, Send to Printer： <STX>V1<CR> Enable Peeler function, Send to Printer： <STX>V4<CR>

<STX>v — Inquires Firmware Version

Description	This command causes the printer to send its version string.
Syntax	<STX>v<CR>
Response	Printer response firmware Version information.
Example	Send to Printer： <STX>v<CR> Printer Response： Ver: 3.0.01 16/10/12<CR>

<STX>W — Inquires Memory Status

Description	This command inquires a memory status listing.
Syntax	<STX>Wv1<CR> Parameter / Description / Range v1 / Data type / F : show fonts and memory status. G : show graphics and memory status. L : show stored labels and memory status.
Response	Printer response memory status listing.
Example	

<STX>X — Set Default Used Memory

Description	This command is set default used memory.
Syntax	<STX>Xv1<CR> **Parameter** / **Description** / **Range** v1 / Memory Identifier / See **Appendix B**.
Response	None
Example	

<STX>x — Delete File from Memory

Description	This command deletes the file from the memory.
Syntax	<STX>xv1v2v3<CR>

Parameter	Description	Range
v1	Memory Identifier	See **Appendix B**.
v2	File type identification code.	F: fonts. G: Image.
v3	File name	maximum 16 characters.

Response	None
Example	@

<STX>Z — Print Configuration Label

Description	This command causes print configuration label for this printer.
Syntax	<STX>Z<CR>
Response	None
Example	@

<ESC>@0 — Clear Flash Memory

Description	This command clears the flash memory that is used for soft fonts, forms or graphics. All objects in the flash memory will be deleted after this command is sent.
Syntax	<ESC>@0<CR>
Response	None
Example	

2.3. Extended System Command

Issued in the same context as System-Level Commands, the Extended System-Level Commands expand certain System-Level Commands to provide extra degree of printer control.

<STX>KI7 — Set Transfer type

<table>
<tr><td>Description</td><td>This command used to set the printer transfer type.
This command should comply with other settings for printer configuration. In case that the setting is not correct, the printer may hang to work. For instance, if the setting is thermal transfer and the ribbon is not installed, the printer will hang to work and show ribbon out.</td></tr>
<tr><td>Syntax</td><td><STX>KI7v1<CR>
<table><tr><th>Parameter</th><th>Description</th><th>Range</th></tr><tr><td>v1</td><td>Transfer type</td><td>0：Direct thermal
1：Thermal transfer</td></tr></table></td></tr>
<tr><td>Response</td><td>None</td></tr>
<tr><td>Example</td><td></td></tr>
</table>

<STX>KI8 — Set Baud Rate for RS232Communication

<table>
<tr><td>Description</td><td>This command is used to set Baud Rate for RS232 communication.
It becomes effective after the printer is being restarted.</td></tr>
<tr><td>Syntax</td><td><STX>KI8v1<CR>

<table><tr><th>Parameter</th><th>Description</th><th>Range</th></tr><tr><td>v1</td><td>Baud Rate</td><td>0：9600
2：2400
3：19200
4：4800
5：38400
6：1200
7：9600
8：57600
9：115200</td></tr></table></td></tr>
<tr><td>Response</td><td>None</td></tr>
<tr><td>Example</td><td></td></tr>
</table>

<STX>KI9 — Set Transfer Format for RS232 Communication

<table>
<tr><td>Description</td><td>This command is used to set Transfer Format for RS232 communication.
It becomes effective after the printer is being restarted.</td></tr>
<tr><td>Syntax</td><td><STX>KI9v1v2v3<CR>

<table>
<tr><th>Parameter</th><th>Description</th><th>Range</th></tr>
<tr><td>v1</td><td>Baud Rate</td><td>0：9600
2：2400
3：19200
4：4800
5：38400
6：1200
7：9600
8：57600
9：115200</td></tr>
<tr><td>v2</td><td>Data Length</td><td>7：7-bit data.
8：8-bit data.</td></tr>
<tr><td>v3</td><td>Parity</td><td>N：None parity,
E：Even parity,
O：Odd parity.</td></tr>
<tr><td>v4</td><td>Stop bit no.</td><td>1：1 stop bit.
2：2 stop bits.</td></tr>
</table></td></tr>
<tr><td>Response</td><td>None</td></tr>
<tr><td>Example</td><td></td></tr>
</table>

<STX>KI0 — Set Cut Mode

<table>
<tr><td>Description</td><td>This command is used to set cut mode.
If set to mode 1 (<STX>KI01), ensure to comply with the following conditions:
- The label length must exceed 1.5 inches.
- The last label of a batch job cannot be cut until next label data is sent to the printer.</td></tr>
<tr><td>Syntax</td><td><STX>KI0v1<CR>

<table><tr><th>Parameter</th><th>Description</th><th>Range</th></tr><tr><td>v1</td><td>Cut Mode</td><td>0：Normal mode. (Cut and back-feed for the next label).
1：Cut without back-feed.</td></tr></table></td></tr>
<tr><td>Response</td><td>None</td></tr>
<tr><td>Example</td><td></td></tr>
</table>

<STX>KI; — Set Control Code

Description

This command is used to set control code.
To exit from the alternative mode, just reset the menu on the printer panel or send the command of "!KI;1".

Syntax

<STX>KI;v1<CR>

Parameter	Description	Range	Default
v1	Mode	0：Standard control codes. 1：Alternative control codes. 2：Alternative control codes 2.	0

Control Code List

Standard		Alternative		Alternative 2	
Control code	Hexadecimal value	Control code	Hexadecimal value	Control code	Hexadecimal value
<SOH>	01_H	<SOH>	01_H	^	$5E_H$
<STX>	02_H	!	21_H	~	$7E_H$
<ESC>	$1B_H$	[	$5B_H$	<ESC>	$1B_H$
^	$5E_H$	^	$5E_H$	@	40_H
<CR>	$0D_H$	\	$5C_H$	<CR>	$0D_H$

Response

None

Example

<STX>KI: — Set Horizontal Shift

Description	This command is used to shift the image print position in the X coordinate.
Syntax	<STX>KI:v1<CR> **Parameter** / **Description** / **Range** v1 / Signed byte for shift in terms of pixels. / 00_H ~ $7F_H$: +0 ~ +127 80_H~ FF_H : -0 ~ -127
Response	None
Example	

<STX>KQ — Inquires system configuration

Description	This command drives the printer to send the memory configuration including standard, expansion and available memory sizes to the host through the RS232C..
Syntax	<STX>KQ<CR>
Response	None
Example	Send to Printer: <STX>KQ<CR>

2.4. Label Formatting Command

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.

A — Set Format Attribute

Description

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).

Syntax

Av1<CR>

Parameter	Description	Range	Default
v1	Attribute mode.	1：XOR Mode 2：OR Mode 5：Inverse Mode	1

Response

None

Example

Sets the printer to XOR Mode
Send to Printer：
<STX>L<CR>
A1<CR>
141100001000100CUSTOM<CR>
141100001100110CUSTOM<CR>
E<CR>

Sets the printer to OR Mode
Send to Printer：
<STX>L<CR>
A2<CR>
141100001000100CUSTOM<CR>
141100001100110CUSTOM<CR>
E<CR>

Sets the printer to Inverse Mode
Send to Printer：
<STX>L<CR>
A5<CR>
141100001000100CUSTOM<CR>
141100001100110CUSTOM<CR>
E<CR>

C — Set Column Offset Amount

Description	This command allows horizontal adjustment of the point where printing begins. Different margin value makes image shift to the left or right.
Syntax	Cv1<CR> **Parameter** / **Description** / **Range** / **Default** v1 / 4-digit decimal number to indicating the column offset, inches/100 ormm/10. / 0000 ~ 9999 / 0000
Response	None
Example	Shifts all format data 0.5 inches to the right. Send to Printer： <STX>L<CR> C0050<CR> 141100001000100 Column Offset<CR>

c — Set Cut By Amount

Description	This command is the same as the ':' command except only a two-digit value can be entered. The amount must be smaller than the quantity of labels printed. The cutter must be enabled and all mechanism interlocks closed for operation.
Syntax	cv1<CR> **Parameter** / **Description** / **Range** / **Default** v1 / 2-digit decimal number indicating the number of labels to be printed before a cut is performed. / 01 ~ 99 / 01
Response	None
Example	Enable the cutter to cut every3 labels have been printed. Send to Printer： <STX>V1<CR> <STX>L<CR> 131100002000050Set Cut By Amount Test<CR> Q0010<CR> c03<CR> E<CR>

D — Set Dot Magnification

Description	This command is used to change the size of a printed dot.
Syntax	Dv1v2<CR> **Parameter** / **Description** / **Range** / **Default** v1 / Dot Width / 1~2 / 2 v2 / Dot Height / 1~3 / 2
Response	None
Example	@

E — End Formatting Mode and Print Label

Description	This command causes terminate the Label Formatting Mode then print. Even if no printable data has been received, the printer will generate and feed a label. Commands sent to the printer after the 'E' command must be of the Immediate, System-Level, or Font Download type.
Syntax	E<CR>
Response	None
Example	Print one label. Send to Printer： <STX>L<CR> 121100000000000Testing<CR> E<CR>

G — Stores Data to Global Register

Description	This command saves the print data of a print format record to global register. This data may be using <STX>S command retrieved it to print. This command may be used more than one time and the global registers are named in the order created, beginning with register 'A' and ending at register 'P'.
Syntax	G<CR>
Response	None
Example	Stores, retrieves and prints the data. Send to Printer： STX>L<CR> D11<CR> 140000000800050Stores Data A<CR> G<CR> 140000000800050Stores Data B<CR> G<CR> 140000001000000<STX>SA<CR> 140000001300000<STX>SB<CR> 140000001600000<STX>SA<CR> E<CR>

H — Print Darkness Setting

Description	Use the command to set print darkness.
Syntax	Hv1<CR>

Parameter	Description	Range	Default
v1	2-digit Darkness value.	00 ~ 30	16

Response	None
Example	Sets the printer for a Darkness value of 15 and prints one label. Send to Printer： <STX>L<CR> H15<CR> 141100001000100SAMPLE LABEL<CR> E<CR>

m — Sets Measurement in Metric

Description	This command sets the printer to measure in metric. All printers default to inch mode.
Syntax	m<CR>
Response	None
Example	Prints the text starting at location coordinates 10.0 mm, 10.0 mm. Send to Printer： <STX>L<CR> m<CR> 141100001000100SAMPLE LABEL<CR> E<CR>

n — Sets measurement in inch

Description	This command sets the printer to measure in inch. All printers default to inch mode.
Syntax	n<CR>
Response	None
Example	Prints the text starting at location coordinates 1.0 inch, 1.0 inch. Send to Printer： <STX>L<CR> n<CR> 141100001000100SAMPLE LABEL<CR> E<CR>

P — Set Print Speed

Description	This command is used to select the print speed.
Syntax	Pv1<CR> **Parameter** | **Description** | **Range** v1 | Single character representing a speed. | See Appendix C
Response	None
Example	Prints two labels, the first at a speed of 2 ips and the second at the printer default. Send to Printer： <STX>L PC<CR> 141100001000100LABEL1<CR> E<CR> <STX>L 141100001000100LABEL2<CR> E<CR>

Q — Set Quantity of Labels to Print

Description	This command sets the number of the label copies to be printed.
Syntax	Qv1<CR> **Parameter** | **Description** | **Range** | **Default** v1 | 4-digit delimited value setting for the copies number. | 0001 ~ 9999 | 0001
Response	None
Example	Print a batch of 2 identical labels. Send to Printer： <STX>L 121100000000000Copy Testing<CR> Q0002<CR> E<CR>

R — Set Vertical Offset Amount

Description	This command allows vertical adjustment of the point where printing begins.
Syntax	Rv1<CR> **Parameter** / **Description** / **Range** / **Default** v1 / 4-digit digit number for vertical offset, in inches/100 or millimeters/10. / 0000 ~ 9999 / 0000
Response	None
Example	Prints a label with a vertical offset amount of 1.0 inches. Send to Printer： <STX>L R0100<CR> 141100002000200Vertical Test<CR> E<CR>

r — Recall Stored Label Format

Description	This command is used to retrieve label formats stored on a memory.
Syntax	rv1<CR> **Parameter** / **Description** / **Range** v1 / Label name / Maximum 16 characters.
Response	None
Example	Recall label format and print. (Stores a label format to memory use the 's' command.) Send to Printer： <STX>L<CR> rTEST<CR> E<CR>

s — Store Label Format

Description	This command stores a label format to a memory.
Syntax	sv1v2<CR> **Parameter** / **Description** / **Range** v1 / Memory Identifier. / See **Appendix B**. v2 / Label name / Maximum 16 characters.
Response	None
Example	Stores a format in memory. (Recall a label format from the memory use the 'r' command.) Send to Printer： <STX>L<CR> D11<CR> 191100501000000123456789012<CR> 19110050200000001234567<CR> 191100500000000Sample<CR> 1X1100000000000B250250002002<CR> Q0001<CR> sATEST<CR>

T — Set End-of-Line Code

Description	Use this command to changes the end-of-line code.
Syntax	Tv1<CR> **Parameter** / **Description** / **Range** v1 / End-of-Line Code ASCII two-character representation of a HEX code. / 00 ~ FF
Response	None
Example	Changes the end-of-line code from <CR> to '@'(40_H) Send to Printer： <STX>L<CR> D11<CR> T40<CR> 130000000200100ABC@E<CR>

z — Zero (Ø) Conversion to "0"

Description	Use this command to changes slash zero (Ø) to normal (0). Default is slash zero (Ø). Only Internal Font 1~6 support.
Syntax	z<CR>
Response	None
Example	Changes slash zero (Ø) to normal (0) Send to Printer： <STX>L z<CR> 121100000000000Test0000<CR> E<CR>

+ (>)(() — Makes auto increment

<table>
<tr><td>Description</td><td>This command can increment field on each label printed to save the time used in communication and data processing between the host and the printer.</td></tr>
<tr><td>Syntax</td><td>For numeric increment：
+v1<CR>
For alphanumeric increment：
>v1<CR>
For hexadecimal increment：
(v1<CR>
<table><tr><th>Parameter</th><th>Description</th><th>Range</th></tr><tr><td>v1</td><td>2-digit value to specify amount by which to increment the field.</td><td></td></tr></table></td></tr>
<tr><td>Response</td><td>None</td></tr>
<tr><td>Example</td><td>@</td></tr>
</table>

– (<)()) — Makes auto decrement

<table>
<tr><td>Description</td><td>This command can decrement the field on each label printed to save the time use in communication and data processing between the host and the printer.</td></tr>
<tr><td>Syntax</td><td>For numeric decrement：
-v1<CR>
For alphanumeric decrement：
<v1<CR>
For hexadecimal decrement：
)v1<CR>
<table><tr><th>Parameter</th><th>Description</th><th>Range</th></tr><tr><td>v1</td><td>2-digit value to specify amount by which to decrement the field.</td><td></td></tr></table></td></tr>
<tr><td>Response</td><td>None</td></tr>
<tr><td>Example</td><td>@</td></tr>
</table>

^ — Set Count By Amount

Description	An application using incrementing or decrementing fields will occasionally require that more than one label be printed with the same values before the field data is updated. This command can be applied in this situation, but it can only be sent once per label format. If control code set to Alternative 2, the head character will be change from '^'($5E_H$) to '@'(40_H).
Syntax	^v1<CR>

Parameter	Description	Range	Default
v1	2-digit value that specifies the number of labels to be generated before incrementing (or decrementing) the field value.	01~99	01

Response	None
Example	@

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. All printers default to 1.

Note: 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 Codes.

Syntax: ***^nn***

Where: ^ - May be 0x55 or 0x40; see Control Codes.

nn - Is a two-digit value that specifies the number of labels to be generated before incrementing (or decrementing) the field value.

Sample: <STX>L<CR>
1322000000000012345<CR>
-01<CR>
^02<CR>
Q0006<CR>
E<CR>

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

2.5. Special Label Formatting Command

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 '~' ($7E_H$); see Control Codes.

<STX>S — Recall Global Data and Place in Field

Description	This command, when in the format record data field, places data from a specified global register into the data field. See the G command.
Syntax	<STX>Sv1<CR> **Parameter** / **Description** / **Range** v1 / Global register / A ~P
Response	None
Example	Stores, retrieves and prints the data. Send to Printer： STX>L<CR> D11<CR> 140000000800050Stores Data A<CR> G<CR> 140000000800050Stores Data B<CR> G<CR> 140000001000000<STX>SA<CR> 140000001300000<STX>SB<CR> 140000001600000<STX>SA<CR> E<CR>

<STX>T — Print Time and Date

Description

This command allows time and date data to be selected and retrieved from RTC.
This command may be preceded by data to be printed/encoded, and/or the string may now be terminated by an <STX> command and then followed by more data terminated by a <CR>.
The string characters/markers are not printed; instead, the printed label will show a corresponding print value.
When using substitution, you must ensure the converted string produces valid characters for the selected bar code / font.

Syntax

<STX>Tv1<CR>

Parameter	Description	Range
v1	Any set of characters.	

String Characters	Print Values
A	Day of the week (Mon = 1, Sun = 7)
BCD	Day of the week name
EF	Month number
GHIJKLMNO	Month name
PQ	Day
RSTU	Year
VW	Hour in 24 hour format
XY	Hour in 12 hour format
Za	Minutes
bc	AM or PM
def	Julian date
gh	Seconds

Response

None

Example

Prints SUN DEC 21, 98. , 12/21 , ABC 12/21 DEF, and illustrates a method of embedding the time string on a label.
Send to Printer：

```
<STX>L<CR>
121100001000010<STX>TBCD GHI PQ, TU<CR>
191100100100060<STX>TEF/PQ<CR>
191100100100110ABC<STX>TEF/PQ<STX> DEF<CR>
E<CR>
```

2.5 Font Loading Command

The commands used for font loading are usually generated by font creation software; however, the assigned font ID number command must be sent to the printer before the font file. All Font Loading Commands begin with <ESC> ($1B_H$).
The downloaded font will be stored in the default module (refer to the <STX>X command). 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.

<ESC>*c###D — Assign Font ID Number

Description	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 **Parameter** / **Description** / **Range** ### / Font ID numbers / 100-999
Response	None

<ESC>)s###W — Font Descriptor

Description	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 **Parameter** / **Description** / **Range** ### / Number of bytes of font descriptor data from 1 to 3 ASCII decimal digits. / 1 ~ 999 ddd…d / Descriptor /
Response	None

<ESC>*c###E — Character Code

Description	This code is the ASCII decimal value corresponding to the next downloaded character.
Syntax	<ESC>*c###E **Parameter** / **Description** / **Range** ### / Is the ASCII value of the character, three digits maximum / 000 ~ 999
Response	None

<ESC>(s###W — Character Download Data

<table>
<tr><td>Description</td><td>This command contains all of the information for one downloaded character.</td></tr>
<tr><td>Syntax</td><td><ESC>(s*###Wddd…d

<table><tr><th>Parameter</th><th>Description</th><th>Range</th></tr><tr><td>###</td><td>Number of bytes of bitmapped data</td><td>1 ~ 999</td></tr><tr><td>ddd…d</td><td>Bitmapped data</td><td></td></tr></table></td></tr>
<tr><td>Response</td><td>None</td></tr>
</table>

2.6. Generating Label Formats Command

This section explains the use of the different fields in a print format record.

Every record is made of three parts:
(1) A header that is 15 bytes in length
(2) The data to be printed
(3) A termination character (e.g., <CR>) marking the end of the field.

The basic structure of the record is described below.
This string comprises a complete record, shown below, divided into its three basic component parts.
The record (with spaces added for readability) conforms to the following fixed field format. Identifying parameters (v1 ~ v8) have been placed below field values for reference in the following sections:

Head							Data	Termination
v1	**v2**	**v3**	**v4**	**v5**	**v6**	**v7**	**v8**	
1	2	1	1	000	0005	0005	CUSTOM Test	<CR>

The header is used to select the appearance of the data when printed by choosing Orientation, Type, Size, and Position options. Every header contains similar information, but different types of records may use this information in different ways.
The four types are:
1. Font
2. Bar code
3. Graphics
4. Image

Font

<table>
<tr><td>Description</td><td>This record type is used for fonts include Internal font, Smooth font, Soft font and Courier font.</td></tr>
<tr><td>Syntax</td><td>v1v2v3v4v5v6v7v8<CR>

<table>
<tr><th>Parameter</th><th>Description</th><th>Range</th></tr>
<tr><td>v1</td><td>1-digit value for Orientation</td><td>1 ~ 4</td></tr>
<tr><td>v2</td><td>Font ID.</td><td>1~8 are Internal font 0 ~ 8.
9 is Smooth font / Soft font.
：is Courier font.</td></tr>
<tr><td>v3</td><td>Horizontal scale</td><td>0~9 and A ~O for 10 ~ 24.</td></tr>
<tr><td>v4</td><td>Vertical scale</td><td>0~9 and A ~O for 10 ~ 24.</td></tr>
<tr><td>v5</td><td>3-digit value for Sub font type</td><td>Internal font：
Fix 000.

Smooth font：
000 : 4 points
001 : 6 points
002 : 8 points
003 : 10 points
004 : 12 points
005 : 14 points
006 : 18 points

Soft font：
100 ~ 999
Refer to section 2.6.</td></tr>
<tr><td>v6</td><td>4-digit value for Y coordinate</td><td>0000~9999</td></tr>
<tr><td>v7</td><td>4-digit value for X coordinate</td><td>0000~9999</td></tr>
<tr><td>v8</td><td>Data string</td><td>A string of printable data with maximum 255 characters in length.</td></tr>
</table>
</td></tr>
<tr><td>Response</td><td>None</td></tr>
</table>

Example	@

Barcode

<table>
<tr><td>Description</td><td>This record type is used for Bar code.</td></tr>
<tr><td>Syntax</td><td>v1v2v3v4v5v6v7v8<CR>

<table>
<tr><th>Parameter</th><th>Description</th><th>Range</th></tr>
<tr><td>v1</td><td>1-digit value for Orientation</td><td>1 ~ 4</td></tr>
<tr><td>v2</td><td>Bar code ID.</td><td>Refer to Appendix A.</td></tr>
<tr><td>v3</td><td>Wide bar width in dots.</td><td>0~9 and A ~O for 10 ~ 24.</td></tr>
<tr><td>v4</td><td>Narrow bar width in dots.</td><td>0~9 and A ~O for 10 ~ 24.</td></tr>
<tr><td>v5</td><td>3-digit value for bar code height</td><td>000 ~ 999
000 for default height.</td></tr>
<tr><td>v6</td><td>4-digit value for Y coordinate</td><td>0000~9999</td></tr>
<tr><td>v7</td><td>4-digit value for X coordinate</td><td>0000~9999</td></tr>
<tr><td>v8</td><td>Data string</td><td>A string of printable data.
Refer to Appendix A.</td></tr>
</table></td></tr>
<tr><td>Response</td><td>None</td></tr>
<tr><td>Example</td><td>@</td></tr>
</table>

Graphics

Description

This record type is used for Graphics.

Syntax

1X11000v6v7v8<CR>

Parameter	Description	Range
v6	4-digit value for Y coordinate.	0000~9999
v7	4-digit value for X coordinate.	0000~9999
v8	Graphics Specifier.	Refer to Graphics Specifier.

Graphics Specifier for Line：

Lp1p2
lq1q2

Graphics Specifier for Box：

Bp1p2p3p4
bq1q2q3q4

Parameter	Description	Range
p1	3-digit value for horizontal width.	001 ~ 999
p2	3-digit value for vertical height.	001 ~ 999
p3	3-digit value for thickness of bottom and top box edges.	001 ~999
p4	3-digit value for thickness of box sides.	001 ~ 999
q1	4-digit value for horizontal width.	0001 ~9999
q2	4-digit value for vertical height.	0001 ~9999
q3	4-digit value for thickness of bottom and top box edges.	0001 ~9999
q4	4-digit value for thickness of box sides.	0001 ~9999

Response

None

Example

@

Images

<table>
<tr><td>Description</td><td>This record type is used for Images.</td></tr>
<tr><td>Syntax</td><td>1Y11000v6v7v8<CR>

<table><tr><th>Parameter</th><th>Description</th><th>Range</th></tr><tr><td>v6</td><td>4-digit value for Y coordinate.</td><td>0000~9999</td></tr><tr><td>v7</td><td>4-digit value for X coordinate.</td><td>0000~9999</td></tr><tr><td>v8</td><td>Image name.</td><td>This image name was downloaded (Maximum 16 characters).</td></tr></table></td></tr>
<tr><td>Response</td><td>None</td></tr>
<tr><td>Example</td><td>@</td></tr>
</table>

Appendix A — Barcode Summary Data

Bar code format

Barcode Type	ID		Length	Checksum	Valid codes	Bar ratio
	readable	non-readable				
Code 3 of 9	A	a	Variable	No	0 ~ 9, A ~ Z, $%*+-./ and space	2 : 1 ~ 3 : 1
UPC-A	B	b	12 digits	Yes	0 ~ 9	2 : 3 : 4
UPC-E	C	c	7 digits	Yes	0 ~ 9	2 : 3 : 4
Interleaved 2 of 5	D	d	Variable	No	0 ~ 9	2 : 1 ~ 3 : 1
Code 128 including subset A, B and C	E	e	Variable	Yes	00_H ~ $7F_H$	2 : 3 : 4
EAN-13	F	f	13 digits	Yes	0 ~ 9	2 : 3 : 4
EAN-8	G	g	8 digits	Yes	0 ~ 9	2 : 3 : 4
Coda bar	I	i	Variable	No	0 ~ 9, A ~ D, $+-. And /	2 : 1 ~ 3 : 1
Interleaved 2 of 5 with a modulo 10 checksum	J	j	Variable	Yes	0 ~ 9	2 : 1 ~ 3 : 1
Interleaved 2 of 5 with a modulo 10 checksum and shipping bearer bars	L	l	Variable	Yes	0 ~ 9	2 : 1 ~ 3 : 1
UPC2	M	m	2 digits	No	0 ~ 9	2 : 3 : 4
UPC5	N	n	5 digits	No	0 ~ 9	2 : 3 : 4
Code 93	O	o	Variable	Yes	0 ~ 9, A ~ Z, $%*+-./ and space	2 : 3 : 4
UCC/EAN Code 128	Q	q	20 digits	Yes	0 ~ 9	2 : 3 : 4
UPS MaxiCode w/Byte Count		u	Specified	Yes	Alphanumeric	
PDF-417 w/Byte Count	Z		Specified	Yes	All	
DataMatrix w/Byte Count (Only ECC 200)		W1C	Variable	Yes	All 8-bit values	
DataMatrix (Only ECC 200)		W1c	Variable	Yes	All 8-bit values	

Barcdoe Type	ID		Length	Checksum	Valid codes	Bar ratio
	readable	non-readable				
QR Code (Manual format)		W1D	Variable	Yes	Single-byte or Kanji double-byte	
QR Code (Auto format)		W1d	Variable	Yes	Alphanumeric	
USD-8 (Code 11)	W1G	W1g	Variable	Yes	$2D_H$, 0 ~ 9	2 : 1 ~ 3 : 1
EAN 128 w/auto subset switching(2)	W1I		Variable	Yes	20_H ~ $7F_H$	
Code 128 w/auto subset switching	W1J		Variable	Yes	20_H ~ $7F_H$	

A: Code 3 of 9

Barcode ID: 'A' for readable or 'a' for non-readable.
Valid Characters: 0-9, A-Z, - . * $ / + % and the space character.
Length: Variable Length.
Valid bar widths: The expected ratio of wide to narrow bars can range from 2:1 to 3:1.
The following example prints 3 of 9 bar code:

<STX>L<CR>
m<CR>
D11<CR>
H16<CR>
PG<CR>
191100307200010Code39 Test<CR>
1A84036001002501234 56<CR>
1a93050007502701234 56<CR>
1A63036013003401234 56<CR>
1A42036019004101234 56<CR>
1A21036025004501234 56<CR>
2A84036065000201234 56<CR>
2A93036063000901234 56<CR>
2a63063056001601234 56<CR>
2A42050050002351234 56<CR>
2A21036046003201234 56<CR>
3A84036072007401234 56<CR>
3A93036066007201234 56<CR>
3a63036058006801234 56<CR>
3A42025053006301234 56<CR>
3A21036047005801234 56<CR>
4A84076011009901234 56<CR>
4a93036013008801234 56<CR>
4A63036021008201234 56<CR>
4A42036026507601234 56<CR>
4A21036030006901234 56<CR>
E<CR>

B: UPC-A

Barcode ID: 'B' for readable or 'b' for non-readable.
Valid Characters: 0-9
Length: 12 digits. If the user provides 11 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).
The following example prints UPC-A bar code:

<STX>L<CR>
m<CR>
D11<CR>
H16<CR>
PG<CR>
191100307200010UPC-A Test<CR>
1BA50250010020012345678901<CR>
1b840500075020512345678901<CR>
1m840400075071512<CR>
1B630250135021012345678901<CR>
1N630300145061012345<CR>
1B420250200038012345678901<CR>
2BA50250700002012345678901<CR>
2B840250705009012345678901<CR>
2M840250185011012<CR>
2b630630570016012345678901<CR>
2B420200600023512345678901<CR>
2n420200320025512345<CR>
3BA50250720082012345678901<CR>
3B840250660076012345678901<CR>
3b630250580068012345678901<CR>
3B420250530071012345678901<CR>
3n420250510043012345<CR>
4BA50400080099012345678901<CR>
4b840250080091012345678901<CR>
4M840250600091012<CR>
4B630250200087012345678901<CR>
4B420200200081012345678901<CR>
4N420250480080012345<CR>
E<CR>

C: UPC-E

Barcode ID: 'C' for readable or 'c' for non-readable.
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).
The following example prints UPC-E bar code:

<STX>L<CR>
m<CR>
D11<CR>
H16<CR>
PG<CR>
191100307200010UPC-E Test<CR>
1CC602500100290123456<CR>
1cA505000750270123456<CR>
1mA50400075063012<CR>
1C84025013002501234 56<CR>
1N840300145056012345<CR>
1C4202502000380123456<CR>
2CC602506000020123456<CR>
2CA502506300090123456<CR>
2MA50250260011012<CR>
2c84063053001601234 56<CR>
2C4202005500235123456<CR>
2n420200380025512345<CR>
3CC602507200720123456<CR>
3CA502506600750123456<CR>
3MA50250640039012<CR>
3c84025058006401234 56<CR>
3C4202505300650123456<CR>
3n420250510048012345<CR>
4CC604001800990123456<CR>
4cA502501800910123456<CR>
4MA50250540091012<CR>
4C84025025008701234 56<CR>
4C4202002400810123456<CR>
4N420250430080012345<CR>
E<CR>

D / d: Interleaved 2 of 5

Barcode ID: 'D' for readable or 'd' for non-readable.

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.

The following example prints Interleaved 2 of 5 bar code:

<STX>L<CR>

m<CR>

D11<CR>

H16<CR>

PG<CR>

191100307200150Interleaved 2 of 5 Test<CR>

1d6304001300310012345678901 23<CR>

1D3103002600410012345678901 23<CR>

2d6304005700120012345678901 23<CR>

2D3103004700250012345678901 23<CR>

3d6304006100710012345678901 23<CR>

3D3103004800600012345678901 23<CR>

4d6304001700880012345678901 23<CR>

4D3103002900750012345678901 23<CR>

E

E: Code 128

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. See following table.

Symbol Character Value	2 CHAR	Code Set A	Code Set B	Code Set C
96	&A	FNC3	FNC3	NONE
97	&B	FNC2	FNC2	NONE
98	&C	SHIFT	SHIFT	NONE
99	&D	CODE C	CODE C	NONE
100	&E	CODE B	FNC4	CODE B
101	&F	FNC4	CODE A	CODE A
102	&G	FNC1	FNC1	FNC1

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 <41_H> 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 <42_H> 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 <43_H> 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 bar code, send the ASCII "&" <26_H> followed by the ASCII "B" <41_H>.

Sample: ATEST&B123 Encoded: TEST<FNC2>123

F / f: EAN-13

Valid Characters: 0-9
Length: 13 digits.

G / g: EAN-8

Valid Characters: 0-9
Length: 8 digits.

I/ i: Codabar

Valid Characters: 0-9, A-D, -, ., $, :, /, +
Variable length. Requires at least 3 characters.

J / j: Interleaved 2 of 5 (modulo 10 checksum)

Valid Characters: 0-9
Variable length.

L / l: Interleaved 2 of 5 (modulo 10 checksum, and bearer bars)

Valid Characters: 0-9
Variable length.

M / m: 2-Digits UPC Extension

Valid Characters: 0-9
Length: 2 digits.

N / n: 5-Digits UPC Extension

Valid Characters: 0-9
Length: 5 digits.

O / o: Code 93

Valid Characters: 0-9, A-Z, -.$/+% and <SPACE>.
Variable length.

Q / q: UCC / EAN Code 128

Valid Characters: 0-9

Length: 19 digits.

z: PDF-417

Valid Characters: All ASCII.
Variable length.

W1c: DataMatrix ECC 200

Valid Characters: Any 8-bit byte data.
Variable length.

W1D / W1d: QR Code

Valid Characters: Numeric, Alphanumeric, 8-bit byte data, and Kanji.
Variable length.

W1G / W1g: Code 11

Valid Characters: 0-9, -.
Variable length. Maximum 41 characters.

Appendix B — Memory Identifiers

Memory ID	Description
A	DRAM
B	FLASH ROM
C	Default

Appendix C — Speed Ranges

Parameter	Speed (IPS)	Applicable models
A	1	All models
B	1.5	
C	2	All models
D	2.5	
E	3	All models
F	3.5	
G	4	All models
H	4.5	
I	5	High speed 4” Desktop models
J	5.5	
K	6	High speed 4” Desktop models
L	6.5	
M	7	
N	7.5	
O	8	
P	8.5	
Q	9	
R	9.5	
S	10	
T	10.5	
U	11	
V	11.5	
W	12	
X	13	
Y	14	
Z	15	

Code : 0577200M000057 Rev. 1.00

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