

B1. COORDINATE SYSTEM

The PPLB coordinates system is depicted in Figure B1-1.

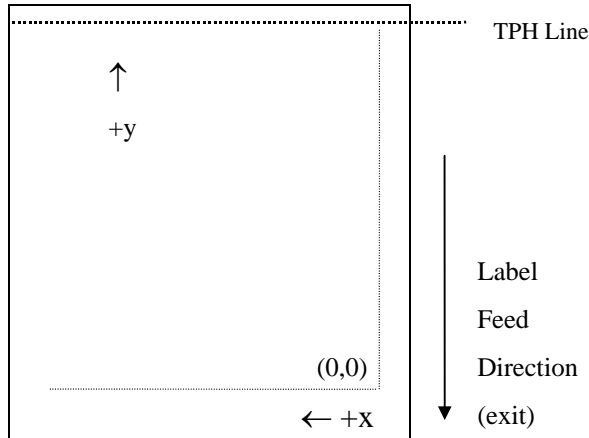


Fig. B1-1 Default Coordinate system

The origin point (0,0) of the coordinates system is at the bottom right corner under default condition (ZT). The origin point remains unchanged, while the texts, bar codes or other objects are being rotated. Negative coordinate value is not accepted. The ranges of X and Y coordinates are:

	Minimum	Maximum
X coordinate	0	It depends on printer models.
Y coordinate	0	It depends on printer models.

The measurements of the X- and Y-axis of the coordinates system are by pixels or scanned lines.

B2. COMMAND SYNTAX

All the commands of PPLB consist of one or two alpha characters to identify the specific function and some of them may require one or more additional parameters to supply the printer with sufficient information to complete the command. Each command line must be terminated with a LF (0AH) control code and no space is allowed within it, except in the section of the data string.

Basic Command Syntax

- Syntax I: commands with no parameters

Leading characters	Description
A<LF>	Command with single alpha character
AB<LF>	Command with two alpha characters

- Syntax II: commands with fixed number of parameters

Leading characters	Description
Ap ₁ ,p ₂ ,p ₃ ,...,p _n <LF>	Command with single leading alpha character
ABp ₁ ,p ₂ ,p ₃ ,...,p _n <LF>	Command with two leading alpha characters

- Syntax III: commands with optional parameters

A[p₁,p₂,p₃,...,p_n]<LF>

String

This printer language uses data string under the following conditions.

Name for graphics, soft fonts and forms
Data for fonts and barcodes
Prompt An ASCII text that can be transmitted to the KDU
(Keyboard Device Unit) or LCD display for X series.

The data string is led and ended by the character (“). The back slash character (\) designates that the character following is a literal and will encode into the data field.

Refer to the following examples:

<u>To print</u>	<u>Enter into Data Field</u>
-----------------	------------------------------

“	\“
\	\\

Notes:

1. The printer ignores <CR> and ctrl-Z (1AH) control codes. Many non-document editors on PC based system send CR and LF when the enter key is pressed. The carriage return (CR) code cannot be used in place of LF.
2. All commands and alpha character command, parameters are case sensitive.

B3. FONTS

This printer language defines three types of fonts according to their stored media.

- Internal Fonts
- Soft Fonts
- Cartridge Fonts

Internal Fonts

Five internal fonts are resident in the printer’s ROM and each of them has a unique ID number. Different from the soft fonts, these fonts cannot be deleted.

<i>ID number</i>	<i>Font Size</i>	<i>Remark</i>
1	20 pitches, 6 points.	
2	17 pitches, 7 points.	
3	14.5 pitches, 10 points.	
4	13 pitches, 12 points.	
5	5.6 pitches, 24 points.	Upper case characters only

Soft Fonts

The soft fonts can be downloaded from the host by means of some utility or application software. Once the internal fonts cannot fulfill your requirements, soft fonts may be good solutions.

The advantages of using soft fonts:

- Save memory space (Graphics occupies more memory.)
- Have better performance (They can be called repeatedly.)
- Enable the auto increment and decrement function
- Same as internal fonts, they can be scaled, rotated or reversed.
- They can be saved into either RAM or flash memory (permanent memory).
- They can be deleted, if no use or the memory space is full.

You can download the numbers of characters as many as you need.

Each soft font also has a unique ID number. By the ID number, the soft font can be downloaded, selected or deleted.

The soft font ID number may range from 'a' to 'z'.

Cartridge Fonts

The font board or font cartridge is an optional item. The ID numbers reserved for extension cartridge fonts are 7 ~ 12. 7 and 8 are for Chinese fonts. 9 and 10 are for Korean fonts. 11 and 12 are for Japanese fonts. Details regarding the soft font ID and sizes, please refer to page 90 (Appendix BB: How to select a font from font board).

Symbol Set

The code map (table) can be redefined to another symbol set or code page. Please refer to the user's manual for the code tables, defined by this printer language. Details regarding symbol set settings, please refer to page 42: I command (Select Symbol Set).

	<i>8-bit Character</i>	<i>7-bit Character</i>
<i>Symbol sets</i>	Code page: 437, 737, 850, 851, 852, 855, 857, 860, 861, 862, 863, 865, 866, 869, 1250, 1251, 1252, 1253, 1254, 1255,	USASCII, British, Danish, French, German, Italian, Spanish, Swedish and Swiss

B4. COMMAND SET

The PPLB command sets can be categorized into the following four groups, according to functions and memory allocations.

- Setting commands
- Label formatting commands
- Interaction commands (through RS232)
- Object Downloading commands

Quick Reference

Command	Description	Command	Description
A	Print Text	q	Set Label Width**
B	Print Bar Code	R	Set Origin Point**
b	Print 2D Bar Code	S	Set Print Speed**
C	Counter	TD	Define Date Format
C	Immediate Cut###	TS	Set Real Time Clock
D	Heat Setting**	TT	Define Time Format
EI	Print Soft Font List	U	Print Configuration
EK	Delete Soft Font	UA	Enable Clear Print Buffer When Media-out/Ribbon-out Occurred###
ES	Download Soft Font	UB	Disable Clear Print Buffer When Media-out/Ribbon-out Occurred###
FE	End Form Store	UE	Soft Fonts Info Through RS232###
FI	Print Form List	UF	Forms Info Through RS232###
FK	Delete Form	UG	Graphics Info Through RS232###

Command	Description	Command	Description
FR	Execute Form	UI	Current Codepage Info Through RS232
FS	Store Form	UM	Memory Allocation and Codepage Info Through RS232
f	Adjust Cutting Position###	UP	Memory Allocation, Codepage Info Through RS232 Port And Print Configuration###
GG	Print Graphics	UQ	Printer Configuration Through RS232###
GI	Print Graphic List	US	Enable Error Report**
GK	Delete Graphics	UN	Disable Error Report**
GM	Store Graphics	V	Define Variable
GW	Print Immediate Graphics	X	Draw Box
I	Select Symbol Set**	xa	Auto Calibration###
JB	Disable Back Feed**	Y	Set Serial Port**
JF	Enable Back Feed**	Z	Set Print Direction
LE	Line Draw by Exclusive	ZS	Enable Store-to-Flash
LO	Line Draw by OR	ZN	Disable Store-to-Flash
LW	Draw White Line	?	Download Variables And Counters
N	Clear Image Buffer	^@	Reset Printer###
O	Select Options**	^ee	Immediate Error Report###
P	Print Label		
PA	Print Automatically		
Q	Set Label and Gap Length**		

Notes:

** The parameter can be saved into permanent memory E²PROM, that is, it will

remain after the printer is restarted, until it is replaced by different parameter through command.

++ The command is not valid for X series.

The command is not valid for 300 DPI printers.

B5. COMMAND REFERENCE

This section lists all of the commands and their descriptions in alphabetical order.

A	Print Text
----------	-------------------

Syntax $A_{p_1,p_2,p_3,p_4,p_5,p_6,p_7}$, "DATA" \leftarrow
 $A_{p_1,p_2,p_3,p_4,p_5,p_6,p_7,C_n}$ \leftarrow
 $A_{p_1,p_2,p_3,p_4,p_5,p_6,p_7,V_n}$ \leftarrow
 $A_{p_1,p_2,p_3,p_4,p_5,p_6,p_7}$, "DATA" C_n \leftarrow
 $A_{p_1,p_2,p_3,p_4,p_5,p_6,p_7}$, "DATA" V_n \leftarrow

Description Prints a text string, counter or variable.

Parameters p_1 : X coordinate in dots. p_2 : Y coordinate in dots.
 p_3 : Orientation or Print Direction.

<i>P₃ value</i>	<i>Description</i>
0	No rotation (portrait)
1	90° rotation
2	180° rotation
3	270° rotation

p_4 : ID number for font selection

<i>P₄ value</i>	<i>Description</i>
1~5	Selects resident fonts, font number 1 ~ 5. Refer to the startup self-test printout to see the font list.

a ~ z	Downloaded soft fonts, a ~ z. Before selecting a soft font, first download it.
-------	--

p₅: Horizontal scale factor.

p₆: Vertical scale factor.

The acceptable values for both p₅ and p₆ are from 1 to 24.

p₇: N for normal text or R for reverse text image.

“DATA”: A text string

Cn: A counter value. Refer to C command.

Vn: A variable string. Refer to V command.

Example

```
N␣
A50,30,0,1,1,1,N,"This is font 1."␣
A50,70,0,2,1,1,N,"This is font 2."␣
A50,110,0,3,1,1,N,"This is font 3."␣
A50,150,0,4,1,1,N,"This is font 4."␣
A50,200,0,5,1,1,R,"FONT 5"␣
P1␣
```

Output

```
This is font 1.
This is font 2.
This is font 3.
This is font 4.
FONT 5
```

Fig. B5-1

Notes :

1. The resident font 5 does not support lower case characters.
2. The sub-string of counter and variable can be applied to the A command.

Syntax Vn[st,len]␣

Cn[st,len]␣

Parameters n is the counter or variable ID.

st is the start location (the first location is 0),

len is the length of the sub-string.

Example FK"TEST"␣

FS"TEST"␣

V00,10,N,""␣

C0,10,N,+1,""␣

A100,100,0,3,1,1,N,V00[2,4]␣

A100,150,0,3,1,1,N,C0[2,3]␣

FE␣

FR"TEST"␣

?␣

ABCDEF␣

12345␣

P3␣

Output

CDEF

345

CDEF

346

CDEF

347

Fig B5-2

B	Print Bar Code
----------	-----------------------

Syntax

$B_{p_1, p_2, p_3, p_4, p_5, p_6, p_7, p_8, "DATA"} \downarrow$
 $B_{p_1, p_2, p_3, p_4, p_5, p_6, p_7, p_8, C_n} \downarrow$
 $B_{p_1, p_2, p_3, p_4, p_5, p_6, p_7, p_8, V_n} \downarrow$
 $B_{p_1, p_2, p_3, p_4, p_5, p_6, p_7, p_8, "DATA"} C_n \downarrow$
 $B_{p_1, p_2, p_3, p_4, p_5, p_6, p_7, p_8, "DATA"} V_n \downarrow$

Description Prints a specific bar code.

Parameters

p_1 : X coordinate in dots. p_2 : Y coordinate in dots.
 p_3 : Orientation or print direction.

<i>p₃ value</i>	<i>Description</i>
0	No rotation (portrait)
1	90° rotation
2	180° rotation
3	270° rotation

p_4 : Bar code selection

<i>p₄ Value</i>	<i>Bar Code Type</i>
0	Code 128 UCC (shipping container code)
1	Code 128 auto
1A	Code 128 subset A
1B	Code 128 subset B
1C	Code 128 subset C
1E	UCC/EAN
2	Interleaved 2 of 5
2C	Interleaved 2 of 5 with check sum digit

2D	Interleaved 2 of 5 with human readable check digit
2G	German Postcode
2M	Matrix 2 of 5
2U	UPC Interleaved 2 of 5
3	Code 3 of 9
3C	Code 3 of 9 with check sum digit
9	Code 93
E30	EAN-13
E32	EAN-13 2 digit add-on
E35	EAN-13 5 digit add-on
E80	EAN-8
E82	EAN-8 2 digit add-on
E85	EAN-8 5 digit add-on
K	Codabar
P	Postnet
UA0	UPC-A
UA2	UPC-A 2 digit add-on
UA5	UPC-A 5 digit add-on
UE0	UPC-E
UE2	UPC-E 2 digit add-on
UE5	UPC-E 5 digit add-on

p_5 : Narrow bar width in pixels. ⁺⁺

p_6 : Wide bar width in pixels. ⁺⁺

p_7 : Bar code height in pixels.

p_8 : N - No text is printed or B – The human readable text is printed.

“DATA”: A text string.

Cn: A counter value. Refer to C command.

Vn: A variable string. Refer to V command.

Notes: ⁺⁺According to the bar ratio, the bar codes can be classified into two categories.

Type	Ratio	Narrow vs Wide (p5 vs p6)	Bar code
B2	1:2 ~ 1:3	narrow < wide	Code 3 of 9, Codabar, Interleaved 2 of 5, Matrix 2 of 5, Postnet and German Postcode.
B3	2 : 3 : 4	narrow=wide. 2 x narrow, 3 x narrow and 4 x narrow.	Code 93, Code 128, EAN8, EAN 13, UPC-A, UPC-E, UCC/EAN and Code 28UCC.

Example

```
N↓
B20,20,0,E80,3,3,41,B,"0123459"↓
B20,120,0,K,3,5,61,B,"A0B1C2D3"↓
B190,300,2,1,2,2,51,B,"0123456789"↓
B20,330,0,UA0,2,2,41,B,"13579024680"↓
P1↓
```

Output



Fig. B5-3

Notes:

The sub-string of counter and variable can be applied to the B command.

Syntax Vn[st,len]
 Cn[st,len]

Parameters **n** is the counter or variable ID.
st is the start location (the first location is 0).
len is the length of the sub-string.

Example FK"TEST"↓
 FS"TEST"↓
 V00,10,N,""↓
 C0,10,N,+1,""↓
 B100,100,3,2,4,51,B,V00[2,4]↓
 A100,200,3,2,4,51,B,C0[2,3]↓
 FE↓

FR"TEST" ↵

? ↵

ABCDEF ↵

12345 ↵

P3 ↵

Output



Fig. B5-4

b	Print 2D Bar Code
----------	--------------------------

Syntax bp₁,p₂,p₃,[specific parameters and data]↵

Description Prints a specific 2D bar code.

Parameters p₁: X coordinate in dots. p₂: Y coordinate in dots.
p₃: 2D bar code type.

p ₃ Value	Bar Code
M	Maxi Code
P	PDF-417
D	Data Matrix

Maxi Code ["CL,CC,PC,Data"]
CL: Class code, 3 digits.
CC: Country code. 3 digits.
PC: Post code, 4 or 5 digits for USA and 6 characters for other countries.
Data: Up to 84 characters.

Example N↵
B80,80,M,"003,840,547017051,ARGOXINFO"↵
A120,300,0,4,1,1,N,"ARGOXINFO"↵
P1↵

Output

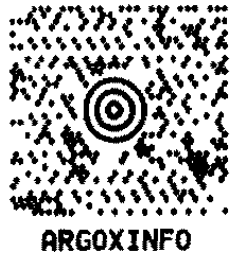


Fig. B5-5

PDF-417

[w,h,s,c,p,f,x,y,r,l,t,o], "Data"

w: Maximum print width in dots.

h: Maximum print height in dots.

s: Error correction level, 0 ~ 8.

c: Data compression level, 0 or 1. The default value is 0.

p(xxx,yyy,mm): Print human readable.

xxx: horizontal start location.

yyy: vertical start location.

mm: maximum characters per line.

f: Bar code origin point. 0= Upper left corner of barcode.

1= Center of barcode (default).

x: Module width, 2 ~ 9 in dots.

y: Module height, 4 ~ 99 in dots.

r: Maximum row count.

l: Maximum column count.

t: Truncation flag, 0=normal and 1=truncated.

o: Rotation. 0-0°, 1-90°, 2-180° and 3-270°.

Example

N↓

b80,80,P,p180,320,10,f1,x2,y10,r60,110,

→t0,o0,"ARGOXINFO"↓

A200,360,0,4,1,1,N,"PDF417"↓

P1↓

Output



ARGOXINFO

PDF417

Fig. B5-6

Data Matrix

[c,r,h,v], "Data"

c: Number of columns.

r: Number of rows.

h: Minimum square data module size, 1~40.

The default value is 5.

v: Inverse image of barcode.

Example

N↓

b120,100,D,h15,"ARGOXINFO"↓

A120,50,0,4,1,1,N,"ARGOXINFO"↓

P1↓

Output

ARGOXINFO

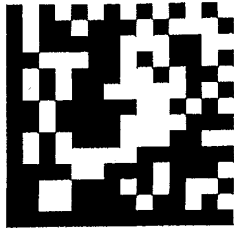


Fig. B5-7

Notes:

1. *The specifications of PDF-417, Maxi Code and Data Matrix are released by AIM International, Inc..*
2. *Only G4 and OS-214plus support Data Matrix bar code.*

C	Counter
---	---------

Syntax C_{p1,p2,p3,p4},"MSG"↵

Description This command defines a counter variable. It is useful in printing the labels numbered in sequence. In general, it will be used together with the Form function.

To print the contents of the counter, you may use A (print text) or B (print bar code) commands.

Parameters p₁: Counter ID. Acceptable value ranges from 00 to 99.
p₂: Maximum digit number. Acceptable values are from 1 to 29.
p₃: Justification code. L for left justification, R for right justification, N for no justification and C for centralization.
p₄: Amount to increment or decrement the field by. There should be a + or - sign before the step value.
"MSG": A text string that will be sent to KDU or host.

Example N↵
FK"TEST"↵
FS"TEST"↵
C0,6,N,+1,"Enter Code:"↵
A100,100,0,4,1,1,N,"Label:"↵
A300,100,0,4,1,1,N,C0↵
FE↵

Above example stores a form to the printer. If you retrieve this form and enter the counter value like the following way, the printer will print two labels by the input counter value.

```
FR "TEST" ↵
? ↵
1000↵
P2↵
```

Output

Label: 1000

Label: 1001

Fig. B5-8

C	Immediate Cut
----------	----------------------

Syntax C↵

Description This command is used to rotate cutter once to immediately cut the media. Also, it can be use to immediately cut without media installed to adjust and clean the cutter blade.

Parameters None.

Example C↵

Notes:

1. *This command can not be used inside a form.
Within a form, character C represents counter command function.*
2. *The cutter must be installed.*

D	Set Darkness
----------	---------------------

Syntax $Dp_1 \downarrow$

Description This command is used to set the print darkness. In general, the proper darkness value is depending on the media, print-out pattern and speed.

Parameters p_1 : Darkness. Acceptable values ranges from 0 to 15. The default darkness value is 8.

Example $N \downarrow$
 $D10 \downarrow$
 $A100,100,0,3,1,1,N,"DARKNESS=10" \downarrow$
 $P1 \downarrow$

EI	Print Soft Font List
-----------	-----------------------------

Syntax $EI \downarrow$

Description This command causes the printer to print the list of soft fonts that have been downloaded to RAM or flash memory from the host.

Parameters None

Example $EI \downarrow$

Output If no soft font exists, the output will be

Soft Font Information:
No Soft Font Stored

Fig. B5-9

If soft fonts with ID C, D, E, F and G are stored in the printer, the output will be

Soft Font Information:
C
D
E
F
G

Fig. B5-10

EK	Delete Soft Font
-----------	-------------------------

Syntax EK"ID"␣
EK"*"␣

Description This command causes the printer to delete the soft fonts that are currently stored in RAM or flash memory.

Once a soft font is deleted, it cannot be selected or printed out, unless downloaded again.

Parameters ID Font ID, a ~ z.
* All fonts will be deleted from RAM or flash memory.

Example EK"b"␣
This causes printer to delete a soft font with ID b.

ES	Download Soft Font
-----------	---------------------------

Syntax ES"ID"......

Description This command is used to download a soft font and store it in RAM or flash memory. The soft font can be deleted by EK command. If it is stored in RAM, it will be automatically cleared when the printer is turned off. The soft fonts can be kept, if they are stored in the flash memory.

Refer to the A command for selecting a soft font and printing it.

Parameters ID One upper case letter from a to z.
......

The basic format of a soft font is

Font Descriptor
Character 0
...
Character N-1

Font Descriptor

Byte 0	0
Byte 1	No. of characters to be downloaded
Byte 2	0
Byte 3	Image height, IV
Byte 4	Width in pixels for space code
Byte 5	0
Byte 6 ~ 0FH	0

Character Parameters and Image

Byte 0	Movement in pixel
Byte 1	Character width in bytes, BW
Byte 2 ~	Image data, the length is BW*IV

Note: No line separator (LF) is required.

Example

```
EK"a" ↵
ES"a"...
N↵
A50,30,0,a,1,1,N,"SOFT FONT a" ↵
P1↵
```

FE	End Form Store
-----------	-----------------------

Syntax FE↵

Description This command is used to end a form store sequence. Once the printer receives such command, it will save the form data into RAM or flash memory. The form data is started by FS command and ended by FE command.

Parameters None.

Example FS"FORMA" ↵
...
FE↵

FI	Print Form List
-----------	------------------------

Syntax FI ↵

Description This command causes the printer to print the list of forms that have been downloaded to RAM or flash memory from the host.

Parameters None

Example FI ↵

Output If no form exists the output will be

```
Form Information:
No Form Stored
```

Fig. B5-11

If the forms with names FORMA, FORMB and FORMC are stored in printer the output will be

```
Form Information:
FORMA
FORMB
FORMC
```

Fig. B5-12

FK	Delete Form
-----------	--------------------

Syntax FK "FORMNAME" ↵
FK "*" ↵

Description This command causes the printer to delete forms currently stored in RAM or flash memory.

Once a form is deleted it can not be retrieved and printed except it is reloaded again.

Parameters FORMNAME: Form name with a maximum of 9 characters.
*: All forms will be deleted from RAM or flash memory.

Example FK " * " ↵
This causes the printer to delete all forms stored in RAM or flash memory.

FR	Execute Form
-----------	---------------------

Syntax FR"FORMNAME"↵

Description This command is used to retrieve a form that is currently saved in printer and execute it.

The major advantage of using form is that you may retrieve and execute at any time as long as it exists in printer.

Parameters FORMNAME Form name with a maximum of 9 characters.

Example

```
FK"FRMA"↵           ; delete form "FRMA"
FS"FRMA"↵           ; start loading a new form
A50,30,0,4,1,1,N,"THIS IS FRMA." ↵
FE↵                 ; end form store

FR"FRMA"↵           ; retrieve and execute
P1↵                 ; a copy of form "FRMA"
```

Output

THIS IS FRMA.

Fig. B5-13

FS	Store Form
-----------	-------------------

Syntax FS"FORMNAME"↵

Description This command begins a form store sequence until the FE command is received.

The destination of storing depends on ZS or ZN command. If flash memory is enabled (ZS) the form will be saved to flash memory, otherwise it is saved to RAM.

Parameters FORMNAME Form name with a maximum of 9 characters.

Notes:

1. *When updating a form with the same form name, use the FK command to delete the old one before storing the new one.*
2. *Refer to the example at FR command for the whole form related commands.*

GI	Print Graphic List
-----------	---------------------------

Syntax	GI↵
Description	This command causes the printer to print the list of graphics that had been download to RAM or flash memory from host.
Parameters	None.
Example	GI↵
Output	If no PCX graphics exist the output will be

```
Graphics Information:
No Graphics Stored.
```

Fig. B5-14

If the graphics with names GRAPH A, GRAPH B and are stored in printer the output will be

```
Graphics Information:
GRAPH A
GRAPH B
```

Fig. B5-15

GK	Delete Graphics
-----------	------------------------

Syntax	GK"GNAME"↵ GK"*"↵
Description	This command causes the printer to delete graphics currently stored in RAM or flash memory. Once a graphic is deleted it can not be retrieved and printed except it is reloaded again.
Parameters	GNAME: Graphic name with a maximum of 8 characters. *: All graphics will be deleted from RAM or flash memory.
Example	GK " * " ↵ This causes printer to delete all graphics stored in RAM or flash memory.

GM	Store Graphics
-----------	-----------------------

Syntax GM"GNAME"p1↵
PCX file

Description This command causes the printer to store graphics object in RAM or flash memory.

The destination of storing depends on ZS or ZN command.
If flash memory is enabled(ZS) the graphics will be saved to flash memory, otherwise it is saved to RAM.

Note: To verify that the graphic was successfully stored you may send a GI command after downloading.

Parameters GNAME: Graphic name with a maximum of 8 characters.
p1: The size (decimal) in bytes of PCX files.
PCX file: The graphics should be in PCX format. Refer to the Appendix BA for the specification of PCX graphics.

Example GK"PCXA"↵ ; delete a graphic name PCXA
GM"PCXA"3858↵ ; store a graphic name PCXA
with size 3858 bytes

...[PCX file for PCXA graphics]...

N↵
A30,30,0,4,1,1,R,"PCXA..." ↵

```
GG30,100,"PCXA"↵ ; print the graphic name PCXA
P1↵
GK"*"↵
```

First delete PCXA graphics, download a new one, print some texts and the PCXA. After printing, delete all graphics stored in printer.

Output



Fig. B5-16

Notes:

- The example of storing and recalling PCX graphics under Dos prompt is as below:

copy/b head+PCXA.pcx+tail LPT1: ; send this three files to the printer

```
ZS
GK"PCXA"↵
GM"PCXA"3858↵
[ Any *.pcx graphics ]
N↵
A30,30,0,4,1,1,R,"PCXA..."↵
GG30,100,"PCXA"↵
P1↵
```

} head
→ PCXA.pcx
} tail

GW	Print Immediate Graphics
-----------	---------------------------------

Syntax GW_{p₁,p₂, p₃,p₄}[...raster image...]-␣

Description This command is used to print a graphic with binary format. Note that the graphic format is not a PCX one. You should send row by row without compression. The '1' represents blank pixel and '0' for black pixel.

After being printed the graphic image will be cleared immediately. You can not recall or reprint it again.

Parameters p₁: X coordinate in dots.
p₂: Y coordinate in dots.
p₃: Graphic width in bytes.
p₄: Height in pixels.

I	Select Symbol Set
----------	--------------------------

Syntax Ip_{1,p₂,p₃}-␣

Description This command is used to select the proper symbol set. The factory default symbol set is Code page 437 (English).

Parameters p₁: data bit number. 8 for 8-bit data and 7 for 7-bit data.
p₂: Symbol set.
p₃: KDU country code.

8 bit data (p ₁ =8)	Symbol Set (Code page)	7 bit data (p ₁ =7)	Symbol set
0	English (437)	0	USASCII
1	Latin 1 (850)	1	British
2	Slavic (852)	2	German
3	Portugal (860)	3	French
4	Canadian/French (863)	4	Danish
5	Nordic (865)	5	Italian
6	Turkish (857)	6	Spanish
7	Icelandic (861)	7	Swedish
8	Hebrew (862)	8	Swiss
9	Cyrillic (855)		
10	Cyrillic CIS 1(866)		
11	Greek (737)		
12	Greek 1 (851)		
13	Greek 2 (869)		

8 bit data (p ₁ =8)	Symbol Set (Code page)	7 bit data (p ₁ =7)
A	Latin 1 (1252)	
B	Latin 2 (1250)	
C	Cyrillic (1251)	
D	Greek (1253)	
E	Turkish (1254)	
F	Hebrew (1255)	

Note: See the code table list in the User's manual for additional information, symbols and codes.

Example

```
N␣
I7,5,001␣
A50,30,0,3,1,1,N,"£100"␣
P1␣
```

This example selects 7 bit data, Italian symbol set.

Output

£100

Fig. B5-17

JB/JF	Disable OR Enable Back Feed
-------	-----------------------------

Syntax

Disable back feed:

JB␣

Enable back feed:

JF␣

Description

This command is used to adjust the stop position. The back feed action is disabled at factory settings. After JF the printer will feed about one more inch so that the user can see the whole label.

Parameters

None.

LE	Line Draw by Exclusive OR Operation
-----------	--

Syntax LEp₁,p₂,p₃,p₄↵

Description This command is used to draw a line by an “exclusive OR” operation.

Parameters p₁: X coordinate in dots.
p₂: Y coordinate in dots.
p₃: Horizontal length in dots.
p₄: Vertical height in dots.

Example N↵
LE50,30,100,10↵
LE100,20,5,110↵
P1↵

Output



Fig. B5-18

LO	Line Draw by OR Operation
-----------	----------------------------------

Syntax LOp₁,p₂,p₃,p₄↵

Description This command is used to draw a line by an “OR” operation.

Parameters p₁: X coordinate in dots.
p₂: Y coordinate in dots.
p₃: Horizontal length in dots.
p₄: Vertical height in dots.

Example N↵
LO50,30,100,10↵
LO100,20,5,110↵
P1↵

Output



Fig. B5-19

LW	Draw White Line
-----------	------------------------

Syntax LW_{p₁,p₂,p₃,p₄}␣

Description This command is used to draw a white line, so it may erase previous image.

Parameters p₁: X coordinate in dots.
p₂: Y coordinate in dots.
p₃: Horizontal length in dots.
p₄: Vertical height in dots.

Example N␣
LE50,30,100,10␣
LE50,60,100,10␣
LE50,90,100,10␣
LE50,120,100,10␣
LW100,20,5,110␣
P1␣

Output



Fig. B5-20

N	Clear Image Buffer
----------	---------------------------

Syntax N␣

Description This command is used to clear the image buffer before filling any image.

Parameters None.

Note: Since this printer automatically clears the image buffer after a P command is execute, the N command may not be necessary. But for other compatible printers, this command can be accepted to clear the image buffer.

O	Select Options
----------	-----------------------

Syntax O[D,C,N,L]↵

Description This command is used to select various printer options. In general, it depends on the configuration of your printer.

Parameters

D: Enable direct thermal (without ribbon).

C[p₁]: Enable cutter.
 p₁ sets the number of labels to print prior to cut.
 If the lowercase b is specified for p₁, the batch function is enabled. The printer will end off print-out with cutting the label once.

N: Enable dispenser.

L: On demand mode. The printer will print the next label out when pressing the feed button.

Every time when the printer is started up, the defaults are cutter disabled, and dispenser disabled.

Example

O↵ ; thermal transfer, disables cutter
 and dispenser

OD↵ ; direct thermal, disables cutter and
 ; dispenser

OC↵ ; thermal transfer, enables cutter and
 ; disables dispenser

Notes:

1. *The cutter and dispenser cannot be enabled at the same time.*
2. *OL command (on demand mode) is not valid when cutter or dispenser was enabled. OL command is also not valid for 300 DPI printers.*
3. *Once the options are incorrectly selected, the LEDs at panel may become blinking after printing. Please refer to the trouble-shooting section to correct the errors.*
4. *For X2000+ and X3000+, the thermal transfer and direct thermal are set via DIP switches, not by this command. For G4, the thermal transfer and direct thermal are set via panel.*

P	Print Label
----------	--------------------

Output

Syntax Pp₁[,p₂]
↓

Description This command is used to output the contents of the image buffer.

Parameters p₁: Number of label sets, 1 ~ 65535.
p₂: Number of copies per label, 1 ~ 65535.

Example FK"TEST"
↓
FS"TEST"
↓
C0,6,N,+1,"Enter Start No.:"
↓
A20,50,0,4,1,1,N,"Label: "
↓
A120,50,0,4,1,1,N,C0
↓
FE
↓

N
↓

Q20,0
↓

FR"TEST"
↓

?
↓

100
↓

P2,3
↓

This example downloads a form and prints 2 label sets with 3 pieces per set.

Label: 100

Label: 100

Label: 100

Label: 101

Label: 101

Label: 101

Fig. B5-21

PA	Print Automatically
-----------	----------------------------

Output

Syntax PAp₁[,p₂]
↓

Description This command is used for form application. It prints the form, as soon as all variable data have been input.

Parameters p₁: Number of label sets, 1 ~ 65535.
p₂: Number of copies per label, 1 ~ 65535.

Example

```
FK "TEST1 " ↓
FS "TEST1 " ↓
C0,6,N,+1,"Enter Start No.:" ↓
A20,50,0,4,1,1,N,"Label: " ↓
A120,50,0,4,1,1,N,C0 ↓
PA2 ↓
FE ↓

N ↓
Q20,0 ↓
FR "TEST1 " ↓
? ↓
100 ↓
```

Label: 100

Label: 101

Fig. B5-22

Q	Set Label and Gap Length
----------	---------------------------------

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

Description This command is used to set the label and gap length measured in dots.

Parameters

p_1 : For label with gap, p_1 is to set the label length. For continuous media, p_1 is to set the feed distance after the last image line.

p_2 : Gap length. For continuous media (without gap), this parameter should be set to 0. For black line media, p_2 should be set to B plus black line thickness in dots.

$\pm p_3$: For gap and continuous media, this parameter is to set positive vertical offset length. For black line media, this parameter is to set the length between black line and perforation line.

Example

```
N↓
Q100,20↓
A20,30,0,2,1,1,N,"Q command:" ↓
A20,60,0,2,1,1,N,"Label with gap"↓
A20,90,0,2,1,1,N,"Gap length: 20 dots"↓
P1↓

N↓
Q100,0↓
A20,30,0,2,1,1,N,"Q command:" ↓
A20,60,0,2,1,1,N,"Continuous Label"↓
P1↓
```

```
N↓
Q496,B24-40↓
A20,30,0,2,1,1,N,"Q command:" ↓
A20,60,0,2,1,1,N,"Black Line Media"↓
A20,90,0,2,1,1,N,"With Perforation"↓
P1↓
```

Note: If the label size is not properly set, the printer may print off the edge of the label or tag and onto the backing or platen roller, while showing error message.

q	Set Label Width
----------	------------------------

Syntax q p₁ ↵

Description This command sets the label width. This command is an alternative to sending the R command for center labels that are narrower than the print head.

Parameters p₁: Label width in dots.

Example N ↵
 q 250 ↵
 A 20,30,0,2,1,1,N,"q command:" ↵
 A 20,60,0,2,1,1,N,"Label width: 250 dots" ↵
 P 1 ↵

Note: This command will automatically set the left margin. The incorrect label width will cause the image shift to the left or right, even lost.

R	Set Origin Point
----------	-------------------------

Syntax R p₁,p₂ ↵

Description This command moves the origin point for the X and Y axes. After this command is sent, all coordinates are set according to the new origin.

Parameters p₁: Horizontal margin measured in dots.
 p₂: Vertical margin measured in dots.

The print direction commands (ZB and ZT) will affect the location of the origin point. Refer to the Z command for details.

S	Set Print Speed
----------	------------------------

Syntax Sp₁↵

Description This command is used to set a particular speed for a label or batch of labels to be printed.

Parameters p₁: A single character (0 to 6) representing a particular speed setting. The range depends on your printer model.

p ₁ Value	Speed
0 or 1	1 ips (25 mmps)
2	2 ips (50 mmps)
3	3 ips (75 mmps)
4	4 ips (100 mmps)
5	5 ips (125 mmps)
6	6 ips (150 mmps)
7	7 ips (175 mmps)

Only X2000+, X3000+ and G4 support 7 ips.

Example S2↵

The sample above sets the printer to a speed of 2 ips.

TD	Define Date Format
-----------	---------------------------

Syntax TD[p₁][p₂][p₃][+n]↵

Description This command defines the date format for printing. You may define special characters as separators.

Parameters p₁: y2 (year displayed as 2 numerals).
y4 (year displayed as 4 numerals).
p₂: me (month displayed as 3 letters).
mn (month displayed as 2 numerals).
p₃: dd (day).
[+n]: n (date offset range from 1 to 255 days).

Example TDdd-me-y2↵
A100,100,0,4,1,2,N,TD↵ ; 06-JAN-06
A100,200,0,4,1,2,N,TD+7↵ ; 13-JAN-06

TDdd,mn,y4↵
A100,100,0,4,1,2,N,TD↵ ; 06,01,2006
A100,200,0,4,1,2,N,TD+7 ; 13,01,2006

TT	Define Time Format
-----------	---------------------------

Syntax TT[p1][p2][p3]↵

Description This command defines the time format for printing. You may define special characters as separators.

Parameters p1 : h (hours). If a '+' exists the hour is in 12 hour format and 'PM' or 'AM' will be printed.
p2 : m (minutes).
p3 : s (seconds).

Example

```
TTTh:m:s↵ ; 13:30:20
TTTh/m↵ ; 13/30
TTTh:m:s+↵ ; 01:30:20PM
TT+ h:m↵ ; PM 01:30
```

TS	Set Real Time Clock
-----------	----------------------------

Syntax TS p1,p2,p3,p4,p5,p6↵

Description This command is used to set the RTC if it is installed.

Parameters p1 : Month, 01 ~ 12.
p2 : Day, 01 ~ 30.
p3 : Year, 00 ~ 99.
p4 : Hour in 24 hour format. 00 ~ 23.
p5 : Minutes, 00 ~ 59.
p6 : Seconds, 00 ~ 59.

Example

```
TS10,06,00,12,30,00↵ ; Sets the time to
; Oct. 6, 00
; 12:30:00 PM
```

U	Print Configuration
---	---------------------

Syntax U┘

Description This command is used to print the printer configuration including settings, firmware version, accessories, etc..

Parameters None.

Example U┘

Output

```
Label Printer with Firmware PPLB 53B0-1.00 072498 13
STANDARD RAM: 524288 BYTES      7 bit data: Italian
EXPANSION RAM: 0 BYTES
AVAILABLE RAM: 357248 BYTES
DIRECT THERMAL
NO. OF DL SOFT FONTS : 0
H. POSITION ADJUST.: 0000
R5232: B, N, 1P, 9600
CHECKSUM: 0000 0000
```

This is internal font 1. 0123456789 ABCabcXyz

This is internal font 2. 0123456789 ABCabcXyz

This is internal font 3. 0123456789 ABCabcXyz

This is internal font 4. 0123456789 ABCXYZ

THIS IS INTERNAL FONT 5

Fig. B5-23 Printout from OS Series (The printout depends on the models)

```
Label Printer with Firmware PPLB X2B0-0.5 071898
STANDARD RAM: 2097152 BYTES  8 bit data:
AVAILABLE RAM: 1942080 BYTES Code Page 437
LABEL COUNT: 106
FLASH MEMORY: NONE
H. POSITION ADJUST.: 0000
CHECKSUM: 0000
LAB LEN(TOP TO TOP): 41 mm.  2
MEDIA SENSOR LEVEL: 5
```

DIP SWITCH CONFIGURATION:

BIT	ON..OFF	DESCRIPTION
1	X	DIRECT THERMAL
2	X	EURO MARK DISABLED
3	X	WITHOUT CUTTER
4	X	WITH NORMAL GAP OR CONT.
5	X	RESERVED
6	X	9600: N, 8, 1P. SCANNER
7	X	
8	X	

This is internal font 1. 0123456789 ABCabcXyz

This is internal font 2. 0123456789 ABCabcXyz

This is internal font 3. 0123456789 ABCabcXyz

This is internal font 4. 0123456789 ABCXYZ

THIS IS INTERNAL FNT5

Fig. B5-24 Printout from X Series (The printout depends on the models)

UA	Enable Clear Print Buffer When Media Out/ Ribbon Out Occurred
-----------	--

Syntax UA␣

Description This command is used to clear the print buffer when media-out or media-out occurred. After this command is sent, the remained copies of label will not be printed if a media out condition is detected.

Parameters None.

Example UA␣

Note:

1. The command is not valid for 300 DPI printers.

UB	Disable Clear Print Buffer When Media Out Or Ribbon Out Occurred
-----------	---

Syntax UB␣

Description This command is used to clear the UA command and restore the default setting to allow the printer to resume the printing job after supplying new label roll (or ribbon roll).

Parameters None.

Example UB␣

Note:

1. The command is not valid for 300 DPI printers.

UE	Soft Fonts Information Through RS232
-----------	---

Syntax UE␣

Description This command is used to inquire the stored soft fonts in printer. After this command is sent, the printer will send the information of soft fonts stored in the printer back to the host through the RS232 port.

Parameters None.

Example UE␣

Output Soft Font Information:
B
A

Note:

1. The command is not valid for 300 DPI printers.

UF	Forms Information Through RS232
-----------	--

Syntax UF␣

Description This command allows printer to send the information of forms currently stored in the printer back to the host through RS232 port.

Parameters None.

Example UF␣

Output Form Information:
form3
form2
form1

Note:

1. The command is not valid for 300 DPI printers.

UG	Graphics Information Through RS232
-----------	---

Syntax	UG␣
Description	This command allows printer to send the information of graphics currently stored in the printer back to the host through RS232 port.
Parameters	None.
Example	UG␣
Output	Graphics Information: No Graphics Stored.

Note:

1. The command is not valid for 300 DPI printers.

UI	Current Codepage Information Through RS232
-----------	---

Syntax	UI␣
Description	This command causes printer to send the information about current selected codepage back to the host through RS232 port. The printer will send feedback in the following format: <pre>UI p₁,p₂,p₃ p₁: data bit number. p₂: symbol set p₃: country code</pre>

Parameters None.

Example UI␣

Output UI8,0,001

Notes:

1. See I command for additional information.
2. The command is not valid for 300 DPI printers.

UM	Memory Allocation And Codepage Information Through RS232
-----------	---

Syntax UM↓

Description This command causes printer to send memory status and current selected codepage back to the host through RS232 port. The printer will send feedback to the host in the following format:

UM p₁,p₂,p₃, p₄,p₅,p₆, p₇,p₈

p₁: Image buffer size in KBytes

p₂: Form memory allocation size in KBytes

p₃: Free memory for form in KBytes

p₄: Graphic memory allocation size in KBytes

p₅: Free memory for graphics in KBytes

p₆: Soft font memory allocation size in KBytes

p₇: Free memory for soft font in KBytes

p₈: The same data format with UI command

Parameters None.

Example UM↓

Output UM925,0,987,0,987,0,987
UI8,0,001

Notes:

1. See I, UI commands for additional information.
2. The command is not valid for 300 DPI printers.

UP	Memory Information, Current Codepage Through RS232 And Print Configuration
-----------	---

Syntax UP↓

Description This command causes printer to send the information about current selected codepage and memory allocation back to the host through RS232 port and print printer configuration on labels.

Parameters None.

Example UP↓

Output UM925,0,987,0,987,0,987
UI8,0,001

Notes:

1. The printer will print configuration on labels.
2. See I, UM, UI, and U commands for additional information.
3. The command is not valid for 300 DPI printers.

UQ	Printer Configuration Through RS232
-----------	--

Syntax UQ↵

Description This command causes printer to send its configuration information back to the host through RS232 port.

Parameters None.

Example UQ↵

Output

```
Label Printer with Firmware PPLB R2B0-3.07 111505
RS232: 9600, N, 8, 1P
STANDARD RAM: 2097152 BYTES
AVAILABLE RAM: 1003264 BYTES
Code Page 437
THERMAL TRANSFER
REFLCT. SENSOR
LABEL COUNT: 156 (11 M)
FLASH ON BOARD: 512K free
CHECKSUM: 0000
H. POSITION ADJUST.: 0000
LAB LEN(TOP TO TOP): 355 mm.
MEDIA SENSOR LEVEL: 1
```

Note:

1. The command is not valid for 300 DPI printers.

UN/US	Disable/Enable Error Reporting
--------------	---------------------------------------

Syntax UN↵
US↵

Description This command is used to disable/enable the feedback from the printer. The printer sends its feedback through the RS232 port. The default is disabled.

Parameters None.

Example US↵

If an error occurs the printer will send a NACK(15H), followed by the error number to the host. If no error, the printer will echo an ACK(06H), after a P command is received. For major problems, e.g. media out, the LEDs on the panel of the printer will blink.

Error Code	Description
01	Command parser error
03	Data error for bar code
04	Memory overflow
07	Media or ribbon out error
09	Object error (include soft font, form, graphics not found)
10	Data error (not in data entry mode)
81	Cutter fail

V	Define Variable
----------	------------------------

Syntax V_{p1,p2,p3},"MSG"↓

Description This command defines the variable in forms. This command is useful to print labels numbered in sequence.

To print the contents of the variable, you may use A (print text) or B (print bar code) commands.

Parameters p₁: Variable ID. Acceptable values from 00 to 99.
p₂: Maximum digit number for the variable. Acceptable value ranges from 1 to 99. If you use KDU, the length should be limited under 16.
p₃: Justification code. L for left justification, R for right justification, N for no justification and C for center alignment.
"MSG": A text string that will be sent to KDU or host.

Example N↓
FK"TEST2"↓
FS"TEST2"↓
V0,16,L,"Enter Title:" ↓
C0,6,N,+1,"Enter Code:" ↓
A100,100,0,4,1,1,N,V0↓
A355,100,0,4,1,1,N,C0↓
A100,150,0,4,1,1,N,V00C0↓
A100,200,0,4,1,1,N,"Test"V00"Argox"C0↓
FE↓

This example stores a form to the printer, if you retrieve the form and enter the counter and variable with following procedure, the printer will print two labels with the input data.

```
Q050,0↓
FR"TEST2"↓
?↓
Part Number:↓
1234↓
P2,1↓
```

Output

```
Part Number:      1234
Part Number:      1234
TestPart Number:      Argox1234
```

```
Part Number:      1235
Part Number:      1235
TestPart Number:      Argox1235
```

Fig. B5-25

X	Draw Box
----------	-----------------

Syntax Xp₁,p₂,p₃,p₄,p₅↵

Description This command is used to draw a box by an “OR” operation.

Parameters p₁: X coordinate of start point in dots.
p₂: Y coordinate of start point in dots.
p₃: Thickness of four edges.
p₄: X coordinate of end point in dots.
p₅: Y coordinate of end point in dots.

Example N↵
A50,30,0,4,1,1,R,"BOXES"↵
X50,120,5,250,150↵
X120,100,3,180,280↵
P1↵

Output

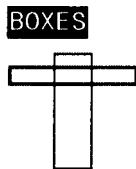


Fig. B5-26

xa	Auto Calibration
-----------	-------------------------

Syntax xa↵

Description This command is used to have the printer automatically perform the calibration. The printer will feed label stock for certain length to detect the label characteristics and gap length.

Parameters None.

Example xa↵

Note:

1. The command is not valid for 300 DPI printers.

Y	Set Serial Port
----------	------------------------

Syntax Yp₁,p₂,p₃,p₄␣

Description This command is used to setup the serial port on the printer for matching with the host. The protocol between the host and the printer should be same otherwise unpredictable results will occur.

Parameters p₁: Baud rate. Acceptable values are:

p ₁ Value	Speed
11	115,200 baud**
57	57,600 baud**
38	38,400 baud
19	19,200 baud
96	9,600 baud
48	4,800 baud
24	2,400 baud

** Baud rate 57,600 and 115,200 are only for G4 and OS214 plus.

p₂: Parity. O - odd parity, E - even parity and N - none parity.

p₃: Data bit number, 7 or 8.

p₄: Stop bit number, 1 or 2.

Notes:

1. *For some printers, p₂, p₃ and p₄ are ignored. The data format for such printers is always 8 bit data, none parity and 1 stop bit.*
2. *The factory defaults for RS232 are 9600 baud, 8 data bits, none parity and 1 stop bit.*

3. *This command is not used for those models with DIP switches. For X2000+/X3000+, you can set baud rate via DIP switches on the rear of the printer For G4, you can set baud rate via panel.*

Example Y19,N,8,1␣

Z	Set Print Direction
----------	----------------------------

Syntax Zp1↵

Description This command is used to set the print direction for all graphics, texts, bar codes, lines and boxes.

Parameters p1: Direction. Acceptable values are B or T.
 B: Print from the bottom of image. The graphics, images or texts etc. that are sent from the top are diagonally symmetrical with those sent from the bottom.
 T: Print from the top of image. The default value is T.

Example N↵
 ZT↵
 A50,30,0,4,1,1,R,"ZT"↵
 P1↵

 N↵
 ZB↵
 A50,30,0,4,1,1,R,"ZB"↵
 P1↵

Output

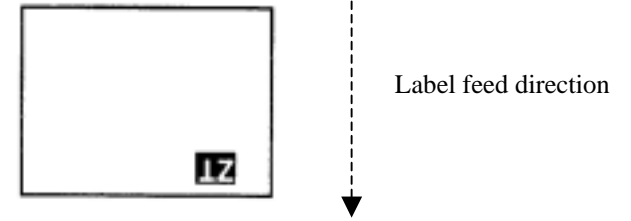


Fig. B5-27

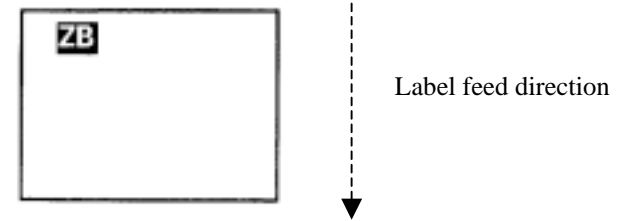


Fig. B5-28

ZN/ZS	Disable/Enable Flash Memory
-------	-----------------------------

Syntax ZN↵
 ZS↵

Description This command is used to disable/enable the flash memory. Every time when the printer is turned on, the flash memory is disabled. Following models require installing flash memory card when enable the flash memory: OS-203DT, OS-204DT, OS-214TT, OS314TT, X-1000+, A-50, A-150, R-200/200K.

All PCX graphics, soft fonts and forms can be stored to RAM or flash memory. But the objects that are stored in RAM will be cleared after the printer is turned off.

Example ZS↵
 FK "TEST3"↵
 FS "TEST3"↵
 A100,100,0,4,1,1,N,"Test Flash"↵
 FE↵

If the flash memory is installed and you send the example file, then restart the printer and retrieve the form. The printer will print out the correct result.

FR "TEST3"↵
P1↵

?	Download Variables and Counters
---	---------------------------------

Syntax ?↵

Description This command is used to inform the printer that the data following are input variables or counter values.

This command is used to send data variables or counters to the printer after a form is stored. The amount of data following the question mark and LF must exactly match with the total number and order of variables and counters in that specific form.

Refer to the C and V commands for examples.

^@	Reset Printer
----	----------------------

Syntax ^@↵

Description This command is used to restart the printer. Forms, soft fonts and graphics that were stored in flash memory will not be cleared after this command is sent.

Parameters None.

Example ^@↵

Notes:

1. This command is unavailable while the printer is in dump mode.
2. The command is not valid for 300 DPI printers.

^ee	Immediate Error Report
-----	-------------------------------

Syntax ^ee↵

Description This command is used to get printer error and status report immediately via RS232 port.

Parameters None.

Example ^ee↵

Error Code	Description
00	No error
01	Command parser error
03	Data error for bar code
04	Media overflow
07	Media or ribbon empty error
09	Object error (include soft font, form, graphics not found)
10	Data error (not in data entry mode)
81	Cutter fail

Note:

1. The command is not valid for OS203 and 300 DPI printers.

APPENDIX BA: PCX SPECIFICATION

This section contains the basic PCX format that will be accepted by your printer. The raster image data at PCX file are compressed. It reduces the file size and saves the time for communication between the host and the printer.

Note that all of the word (16 bits) or long word (32 bits) data are in Intel formats, i.e. the most significant byte is at highest address.

PCX Header (128 bytes)
First raster line
...
Last raster line

Header

The header includes 128 byte data.

Location	Contents
0H	0AH, PCX mark
1H	Version
2H	0
3H	Bits per pixel, this should be 1.
4H ~ 5H	X coordinate at upper left point, 0.
6H ~ 7H	Y coordinate at upper left point, 0.
8H ~ 9H	X coordinate at lower right point
0AH ~ 0BH	Y coordinate at lower right point

0CH ~ 0DH	Horizontal resolution. Ignored.
0EH ~ 0FH	Vertical resolution. Ignored.
10H ~ 3FH	All 0s
40H	0
41H	Plane no., this should be 1.
42H ~ 43H	Bytes per raster line
44H ~ 45H	0
46H ~ 47H	Horizontal pixel count - 1
48H ~ 49H	Vertical pixel count - 1
4AH ~ 7FH	All 0

Note: The alignment of word or long word for PCX file is at Intel format. That is the most significant bytes is located at highest location and least significant byte is located at lowest location.

Raster Data

There are two types of raster data.

- CC, pattern0
- pattern1

The control byte must be greater than C0H and pattern1 is less than C0H.

rep=CC & 3FH

rep represents the repeat count of pattern0 after expansion. For example, a raster line data,

3AH, C0H, C1H, 41H, 41H, 41H, 41H, 41H

After compression, they become

3AH, **C1H**, C0H, **C1H**, C1H, **C5H**, 41H

1 at pattern byte stands for white pixel and 0 for black pixel. If the width in pixels is not a multiple of 8, the bits of "1" must be filled at the end of each row to form an integral part of bytes.

APPENDIX BB: HOW TO SELECT A FONT FROM FONT BOARD

The font IDs for fonts at font board are 7 ~ 12. 7 and 8 are for Chinese fonts. 9 and 10 are for Korean fonts. 11 and 12 are for Japanese fonts.

Font type	Command	200 dpi font size	300 dpi font size
Traditional Chinese font	'7'	24x24	24x24
Chinese font	'7'	24x24	24x24
Korean font	'9'	24x24	32x32
	'10'	16x16	24x24
Japanese font	'11'	24x24	32x32
	'12'	16x16	24x24

Example:

A50,30,0,7,1,1,N,"FONT AT FONT BOARD." ↵

Note: For two-byte language, like Chinese a character is composed of two bytes.

APPENDIX BC: HOW TO MAKE A FORM

In general a form contains texts, bar codes and graphics. Some of the fields are fixed, while the others are subject to change. While making a form, you may need to perform some of the following tasks:

- Download graphics
- Download a form
- Define variables and counters
- Set positions for texts, bad codes and graphics
- Retrieve and execute a form

Download graphics

GK"LOGO"↓ ; delete the previous one if it exists
GM"LOGO"1024↓ ; start pcx graphics. 1024 is the total
size of the graphics
...graphics... ; 1024 does not include LF code, ↓.

Refer to the appendix BA for the PCX specification.

Download a Form

FK"TICKET"↓ ; delete the previous one if it exists
FS"TICKET"↓ ; start the form store sequence of the
form "TICKET"
FE↓ ; end a form sequence

Define Variables and Counters

V00,15,N,"Start From"↓ ; variable 00 with a maximum length of 15
V01,15,N,"Destination"↓ ; variable 01 for destination
C0,6,N,+1,"Ticket no."↓ ; counter 0, stepped by +1

Set Positions

The positions are depending on the label dimension and the output format.

q700↓ ; set label width
ZT↓ ; set print direction
GG50,100,"LOGO"↓ ; place "LOGO" to position x=50, y=100
A100,150,0,4,1,1,N,"From"↓ ; fixed text at x=100, y=150, font 4
A350,150,0,4,1,1,N,"to"↓ ; fixed text at x=250, y=150, font 4
A200,150,0,3,1,1,N,V00↓ ; variable at x=200, y=150, font 3
A415,150,0,3,1,1,N,V01↓ ; variable at x=415, y=150, font 3
B250,200,0,1,3,3,96,B,C0↓ ; counter using code 128 with bar code
height 96, and print readable digits

Retrieve and Execute

FR"TICKET"↓ ; retrieve form "TICKET"
?↓ ; start download of variables and counter
New York↓ ; V00 value
Mexico↓ ; V01 value
100200↓ ; C0 value
P3,1↓ ; print 3 label sets, 1 copy of each label

Once a form or graphics is stored, you can print labels just by sending a few commands.

Program List

GK"LOGO"↵
 GM"LOGO"1024↵
 ...graphics...
 FK"TICKET"↵
 FS"TICKET"↵

V00,15,N,"Start From"↵
 V01,15,N,"Destination"↵
 C0,6,N,+1,"Ticket no."↵

q700↵
 ZT↵
 GG50,100,"LOGO"↵
 A100,150,0,4,1,1,N,"From"↵
 A350,150,0,4,1,1,N,"to"↵
 A200,150,0,3,1,1,N,V00↵
 A415,150,0,3,1,1,N,V01↵
 B250,200,0,1,3,3,96,B,C0↵
 FE↵

FR"TICKET"↵
 ?↵
 New York↵
 Mexico↵
 100200↵
 P3,1↵

APPENDIX BD: ADDITIONAL COMMANDS

There are some extra PPLB commands for special functions on OS, A, R, X and G series printers. Their characteristics are

- They can be saved in the printer permanently, unless to be changed or reset via the panel.
- Once the emulation is changed, you had better reset them to factory defaults via the panel.
- They are pseudo commands.
- They are not defined in all printer models. You can set them via panel or DIP switches on X2000+/X3000+ printers.

Command	Description	Models
d1,[±]m ↵	Horizontal shift. m: number of pixels for shift. '+' or without sign mark cause right shift. '-' causes left shift. E.g. d1,-100↵	For all models.** Default: d1,0↵
d8,m ↵	See through sensor enabled. The sensor type will be switched immediately after d8,m command received. m: 1 for see through sensor. 0 for reflective sensor.	A200/X2000+/X3000+/G4

Command	Description	Models
<ESC>!	Resets printer to factory default.	For all models
<ESC>@0	Clear the flash memory that contains forms, soft fonts or graphics.	For all models.
<ESC>KI;m	Cutter or peeler offset. m: A signed byte and in term of pixels. E.g. <ESC>KI;3␣ <33H> Cutter offsets 51 dots.	For all models, except X3000+. Default: <ESC>KI; <00H>
<ESC>KIIm	JIS / SHIFT JIS setting. m: 1 for SHIFT JIS code with Japanese font. 0 for JIS code with Japanese font.	For all models. Default: <ESC>KIJO␣
<ESC>KIIm	Cash draw function enabled. m: Enable/ disable cash draw function.	OS203 ⁺⁺
<ESC>pmt ₁ t ₂	Set Cash Draw Pulse On/Off Time. m: Select Drawer. t ₁ : Pulse on time. t ₂ : Pulse off time.	OS203 ⁺⁺
<ESC>p2	Cash Drawer Status.	OS203 ⁺⁺

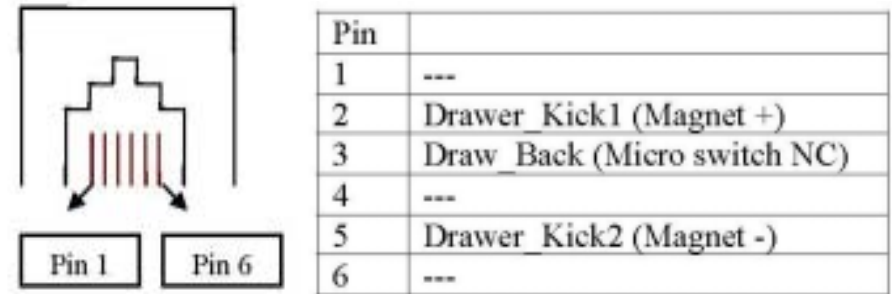
Notes:

^{**} *The parameter can be saved into permanent memory E²PROM, that is, it will remain after the printer is restarted, until it is replaced by different parameter through command.*

⁺⁺ *Refer to the Appendix BE.*

APPENDIX BE: HOW TO SELECT CASH DRAW FUNCTION OF OS-203 PRINTER

The Cash Drawer Kicker is connected with printer OS-203 via RJ11 connector. The figure below displays the pin assignments for the printer's cash drawer interface.



To trigger the cash drawer and set its on/off time, please refer to the command below.

<ESC>KI1m	Enable Cash Draw Function
-----------	---------------------------

Syntax <ESC>KI1m,↓

Description This command is used to enable the cash draw function. After this command is sent, the printer will generate a drawer kicker pulse before print the label.

Parameters m: Select drawer.

m	Description
0	Disable cash draw function.
2	Enable cash draw function. The pulse is sent to drawer kick-out connector pin 2.
5	Enable cash draw function. The pulse is sent to drawer kick-out connector pin 5.

Example <ESC>KI12,↓

<ESC>pmt ₁ t ₂	Set Cash Draw Pulse On/Off Time
--------------------------------------	---------------------------------

Syntax <ESC>pmt₁t₂,↓

Description This command is used to send a pulse and set the pulse on/off time to the specified connector pin. After this command is sent, the printer will generate a drawer kicker pulse.

Parameters m: Select drawer.

m	Description
0	Enable cash draw function. The pulse is sent to drawer kick-out connector pin 2.
1	Enable cash draw function. The pulse is sent to drawer kick-out connector pin 5.

t₁: The pulse on time setting. On time= t₁ × 2 milliseconds. Ranges from 00 to FF hex.

t₂: The pulse off time setting. Off time= t₂ × 2 milliseconds. Ranges from 00 to FF hex.

Example <ESC>p000,↓

<ESC>p2	Cash Drawer Status
---------	--------------------

Syntax <ESC>p2↵

Description This command is used to get the cash drawer status. After this command is sent, the printer will send the feedback to the host through RS232 port in the following format:

00 hex: cash drawer open.

01 hex: cash drawer closed.

Parameters None

Example <ESC>p2↵

Output 01

Note:

** *The RS232 is needed.*

APPENDIX BF: HOW TO SEND THE COMMANDS TO THE PRINTER

If you are using a PC system to edit a command file under MS-DOS, at final stage, you may send it to the printer to get the printout. However, the way that you send the revised file is varied from the computer environment.

1. Suppose you connect the serial cable to COM1:

- Set the baud rate and data format (the default baud rate under DOS is 2400)
- Copy the command file to COM1 port

```
>MODE COM1:9600,N,8,1,P
```

```
>COPY/B CMDFILE COM1:
```

2. Suppose you connect the Centronics cable to LPT1:

- Just copy the command file to LPT1: port

```
>COPY/B CMDFILE LPT1:
```

3. Suppose you connect the serial cable to COM1: and use Quick Basic

- Open a device file and set related parameters
- Run your Basic program

Basic program example:

```
10 OPEN "LPT1" FOR RANDOM AS #1
20 PRINT #1, "q480" ' Label width
30 PRINT #1, "Q40,30" ' Label with gap
40 PRINT #1, "N"
50 PRINT #1, "D8" ' Darkness
60 PRINT #1, "B55,80,0,2,3,7,50,N,"; ' Barcode I25
70 PRINT #1, CHR$(34)+"000851802807"+CHR$(34)
75 ' bar code data="000851802807"
80 PRINT #1, "A110,140,0,3,1,1,N,"; ' Text="0008"
90 PRINT #1, CHR$(34)+"0008"+CHR$(34)
100 PRINT #1, "A220,140,0,3,1,1,N,"; ' Text="518028"
110 PRINT #1, CHR$(34)+"518028"+CHR$(34)
120 PRINT #1, "A50,10,0,4,1,1,R,"; ' Text="Printout:"
130 PRINT #1, CHR$(34)+"Printout:"+CHR$(34)
140 PRINT #1, "P1" ' Single copy
150 END
```

Printout:



APPENDIX BG : FONTS AND BAR CODES FOR PPLB

Internal Fonts

There are 5 internal fonts for the PPLB emulation. Each has 20 eight-bit and 9 seven-bit symbol sets. Font 5 supports upper case characters, 0~9, #,%&+,-.:/\, and space only.

Font 1

ABCDEFGHIJKLMNPOQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Font 2

ABCDEFGHIJKLMNPOQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Font 3

ABCDEFGHIJKLMNPOQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Font 4

ABCDEFGHIJKLMNPOQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Font 5

ABCDEFGHIJKLM
NOPQRSTUVWXYZ

USASCII

20H-3FH: !"#\$%&'()*+,-./0123456789:;<=>?
40H-5FH: @ABCDEFGHIJKLMNopqrstuvwxyz[\]^_
60H-7FH: 'abcdefghijklmnopqrstuvwxyzM:O
80H-9FH: ÇÜëkääâçèéëïíîËÄåæ×fðóôûýöÜçË¥ f
A0H-BFH: áíóúñÑñ²ç %¼i
C0H-DFH:
E0H-FFH: αβΓπΣσµτθΘΩ øε ° ' .

BRITISH

20H-3FH: !"£\$%&'()*+,-./0123456789:;<=>?
40H-5FH: @ABCDEFGHIJKLMNopqrstuvwxyz[\]^_
60H-7FH: 'abcdefghijklmnopqrstuvwxyzM:O
80H-9FH: ÇÜëkääâçèéëïíîËÄåæ×fðóôûýöÜçË¥ f
A0H-BFH: áíóúñÑñ²ç %¼i
C0H-DFH:
E0H-FFH: αβΓπΣσµτθΘΩ øε ° ' .

GERMAN

20H-3FH: !"#\$%&'()*+,-./0123456789:;<=>?
40H-5FH: \$ABCDEFGHIJKLMNopqrstuvwxyzÄÖÜ^
60H-7FH: 'abcdefghijklmnopqrstuvwxyzäöüß
80H-9FH: k %¼i
A0H-BFH: !"£\$%&'()*+,-./0123456789:;<=>?
C0H-DFH: äABCDEGHIJKLMMNOPQRSTUVWXYZ°ç\$^_
E0H-FFH: 'abcdefghijklmnopqrstuvwxyzéüë"

FRENCH

20H-3FH: !"£\$%&'()*+,-./0123456789:;<=>?
40H-5FH: äABCDEFGHIJKLMNopqrstuvwxyz°ç\$^_
60H-7FH: 'abcdefghijklmnopqrstuvwxyzéüë"
80H-9FH: k %¼i
A0H-BFH: !"£\$%&'()*+,-./0123456789:;<=>?
C0H-DFH: @ABCDEFGHIJKLMMNOPQRSTUVWXYZæøÅÜ_
E0H-FFH: 'abcdefghijklmnopqrstuvwxyzæøåü

DANISH

20H-3FH: !"#\$%&'()*+,-./0123456789:;<=>?
40H-5FH: @ABCDEFGHIJKLMNopqrstuvwxyzæøÅÜ_
60H-7FH: 'abcdefghijklmnopqrstuvwxyzæøåü
80H-9FH: k %¼i
A0H-BFH: !"£\$%&'()*+,-./0123456789:;<=>?
C0H-DFH: \$ABCDEFGHIJKLMMNOPQRSTUVWXYZ°çé^_
E0H-FFH: üabcdefghijklmnopqrstuvwxyzäöëï

ITALIAN

20H-3FH: !"£\$%&'()*+,-./0123456789:;<=>?
40H-5FH: \$ABCDEFGHIJKLMNopqrstuvwxyz°çé^_
60H-7FH: üabcdefghijklmnopqrstuvwxyzäöëï
80H-9FH: k %¼i
A0H-BFH: !"£\$%&'()*+,-./0123456789:;<=>?
C0H-DFH: iABCDEFGHIJKLMMNOPQRSTUVWXYZññü_
E0H-FFH: áabcdefghijklmnopqrstuvwxyzéíóü

SPANISH

20H-3FH: !" |\$%&'()*+,-./0123456789:;<=>?
40H-5FH: iABCDEFGHIJKLMNopqrstuvwxyzññü_
60H-7FH: áabcdefghijklmnopqrstuvwxyzéíóü
80H-9FH: k %¼i
A0H-BFH: !"#\$%&'()*+,-./0123456789:;<=>?
C0H-DFH: éABCDEFGHIJKLMMNOPQRSTUVWXYZäöäü_
E0H-FFH: éabcdefghijklmnopqrstuvwxyzäöäü

SWEDISH

20H-3FH: !"#\$%&'()*+,-./0123456789:;<=>?
40H-5FH: éABCDEFGHIJKLMNopqrstuvwxyzÄÖÅÜ_
60H-7FH: éabcdefghijklmnopqrstuvwxyzäöäü
80H-9FH: k %¼i
A0H-BFH: !"£\$%&'()*+,-./0123456789:;<=>?
C0H-DFH: \$ABCDEFGHIJKLMMNOPQRSTUVWXYZäçé^_
E0H-FFH: 'abcdefghijklmnopqrstuvwxyzäöüé

SWISS

20H-3FH: !"£\$%&'()*+,-./0123456789:;<=>?
40H-5FH: \$ABCDEFGHIJKLMNopqrstuvwxyzäçé^_
60H-7FH: 'abcdefghijklmnopqrstuvwxyzäöüé
80H-9FH: k %¼i
A0H-BFH: !"#\$%&'()*+,-./0123456789:;<=>?
C0H-DFH: @ABCDEFGHIJKLMMNOPQRSTUVWXYZ[\]^_
E0H-FFH: 'abcdefghijklmnopqrstuvwxyzM:O

Internal Bar Codes

The PPLB supports 26 one-dimensional bar codes and 2 two-dimensional bar codes. (G4 supports 3 two-dimensional bar codes.)

** Code 39 ** ** Code 93 **



C39



ARGOX

** Code 128UCC shipping container **



(A2) 3 4567890 123456788 3

** Code 128 **



0123456789

** Codabar **



ABCD

** EAN-8 **



01234596

** EAN-8 2 add-on **



12345670 89

** EAN-8 5 add-on **



93891
98398126

** EAN-13 **



0123456789012

** EAN-13 2 add-on **



98
7676798787909

** EAN-13 5 add-on **



29838
7219192929294

** German postcode **



01234.567.891.23 1

** Int 2 of 5 **



0123456789

** Postnet **



** UCC/EAN **



(12)3456789

** UPC-A **



1 35790 24680 9

** UPC-A 2 add-on **



6 76908 93489 3 59

** UPC-A 5 add-on **



5 98676 12761 4 83754

** UPC-E **



0 438959 0

** UPC-E 2 add-on **



0 432328 0 32

** UPC-E 5 add-on **



0 438959 0 09274

** UPC I25 **



1 23 45678 90122 4

** Maxi Code **



** PDF-417 **



** Data Matrix **



APPENDIX BH: COMMAND QUICK REFERENCE CHART

This reference chart is a summary of PPLB commands. A symbol “*” represents the printer supports such function. A character “S” indicates that this function can be set via DIP switches. A character “P” indicates that this function can be set via Panel.

Command	Description	OS203	OS204	OS214	OS204 plus	OS214 plus	OS314	A50	A150	A200	R200	R400	R600	X1000 +	X2000 +	X3000 +	G4
A	Print Test	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
B	Print Bar Code	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
b	Print 2D Bar Code	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
C	Counter	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
C	Immediate Cut	*	*	*	*	*		*	*	*	*	*		*	*		*P
D	Heat Setting	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
EI	Print Soft Font List	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
EK	Delete Soft Font	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ES	Download Soft Font	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
FE	End Form Store	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
FI	Print Form List	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
FK	Delete Form	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
FR	Execute Form	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
FS	Store Form	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
f	Adjust Cutting Position	*	*	*	*	*		*	*	*	*	*		*	*P		*P
GG	Print Graphics	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
GI	Print Graphics List	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
GK	Delete Graphics	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
GM	Store Graphics	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
GW	Print Immediate Graphics	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
I	Selete Symbol Set	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
JB	Disable Back Feed	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
JF	Enable Back Feed	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Command	Description	OS203	OS204	OS214	OS204 plus	OS214 plus	OS314	A50	A150	A200	R200	R400	R600	X1000 +	X2000 +	X3000 +	G4
LE	Line Draw by Exclusive	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
LO	Line Draw by OR	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
LW	Draw White Line	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
N	Clear Frame Buffer	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
O	Thermal Transfer	*		*		*	*		*	*	*	*	*	*	*	*	*
OC	Enalbe Cutter	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
OD	Direct Thermal	*	*	*	*	*	*	*	*	*	*	*	*	*	S	S	P
OL	On Demand Mode	*	*	*	*	*		*	*	*	*	*		*	*		*
ON	Enable Dispenser	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
P	Print Label	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
PA	Prints Automatically	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Q	Set Label and Gap Length	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
q	Set Label Width	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
R	Set Origin Point	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
S	Set Print Speed	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
TD	Define Date Formate	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
TS	Set Real Time Clock	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
TT	Define Time Formate	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
U	Print Configuration	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
UA	Enalbe Clear Print Buffer When Media-out or Ribbon-out Occurred	*	*	*	*	*		*	*	*	*	*		*	*		*

Command	Description	OS203	OS204	OS214	OS204 plus	OS214 plus	OS314	A50	A150	A200	R200	R400	R600	X1000 +	X2000 +	X3000 +	G4
UB	Disalbe Clear Print Buffer When Media-out or Ribbon-out Occurred	*	*	*	*	*		*	*	*	*	*		*	*		*
UE	Soft Fonts Info Thorough RS232	*	*	*	*	*		*	*	*	*	*		*	*		*
UF	Forms Info Thorough RS232	*	*	*	*	*		*	*	*	*	*		*	*		*
UG	Graphics Info Through RS232	*	*	*	*	*		*	*	*	*	*		*	*		*
UI	Current Codepage Info Through RS232	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
UM	Memory Allocation And Codepage Info Through RS232	*	*	*	*	*	*	*	*	*	*	*	*	*	*		*
UP	Memory Allocation, Codepage Info Through RS232 And Print Configuration	*	*	*	*	*		*	*	*	*	*		*	*		*
UQ	Printer Configuration Info Through RS232	*	*	*	*	*		*	*	*	*	*		*	*		*
US	Enable Error Report	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
UN	Disable Error Report	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
V	Define Variable	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
X	Draw Box	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
xa	Auto Calibration	*	*	*	*	*		*	*	*	*	*		*	*		*
Y	Setup Serial Port	*	*	*	*	*	*	*	*	*	*	*	*	*	S	S	P
Z	Set Print Direction	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Command	Description	OS203	OS204	OS214	OS204 plus	OS214 plus	OS314	A50	A150	A200	R200	R400	R600	X1000 +	X2000 +	X3000 +	G4
ZS	Enable Stroe-to-Flash	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ZN	Disable Store-to-Flash	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
?	Download Variables And Counters	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
^@	Reset Printer	*	*	*	*	*		*	*	*	*	*		*	*		*
^ee	Immediate Error Report		*	*	*	*		*	*	*	*	*		*	*		*
d1	Horizontal shift	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
d8	Enable See Through Sensor									*					*P	*P	*P
<ESC>!	Reset Printer To Factory Default	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<ESC>@0	Clear Flash Memory	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<ESC>KI;	Cutter or Peeler Offset	*	*	*	*	*	*	*	*	*	*	*	*	*	*		*
<ESC>KIJ	JIS/SHIFT JIS Setting	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<ESC>KI1	Enable Cash Draw Function	*															
<ESC>p	Cash Draw Pulse Setting	*															
<ESC>p2	Cash Draw Status	*															