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EZ-1100/EZ-1200/EZ-1300 Programmer's manual



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1. Commands

1-1. EZPL

The EZPL (EZ Programming Language) is high-level label definition and printer control language. The features are:

- ◆ The data fields are stored and processed until the printing instruction is received.
- ◆ All the data can be rotated.
- ◆ Images can be downloaded and stored.

There are three basic types of commands :

Control

Setup

Label format

- ◆ Control commands cause the printer to take action immediately, such as cleaning memory, feeding label.

Table 1.1 Control Commands

Description	Command	Page
1. Date and Time setup	~Dm, d, y, h, i, s	5
2. Graphic download memory	~Ea, name, length	5
3. Graphic mode	~G	5
4. Bit-Mapped font download	~Jn	5
5. Acknowledge form RS-232	~Kn	6
6. Delete specific file from printer memory	~MDELx, name	6
7. Display the memory state	~MDIR	6
8. Save the TXT. file to printer	~MSETT,name<CR>nnnnnnnn<data>	6
9. Read saved file	~MGETT,name<CR>	6
10. Print last label	~Px	7
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14. Printer head testing	~T	7
15. Print Self-Test page	~V	7
16. Print the available space and data name in the memory	~Xn	7
17. Reset Printer	~Z	7
18. Download dBase III to Printer	~L,DBASE,p1,p2	8
19. Analogue press FEED key	~S,FEED	8
20. Print database information in memory	~X7	8
21. Open database	FILEDB,OPEN,p1	8
22. Move data record	FILEDB,MOVE,p1	8
23. Searching	FILEDB,FIND,p1,p2	8
24. dBase data substitute Variable print	V#LINKDB,p1,p2	8

- ◆ **Setup commands contain the printer control instructions, configuration instructions and image downloading instructions.**

Table 1.2 Setup Commands		
Description	Command	Page
1. Printing Mode	^Ax	9
2. Set the backward length	^Bx	9
3. Set the forward length	^Mx	9
4. Stop position setting	^Ex	9
5. Number of copies per label	^Cx	9
6. Number of labels per cut	^Dx	9
7. Date offset function	^D+dddd.hh	9
8. Time offset function	^T+hhh.mm	9
9. Download label format	^Fname	10
10. See-through sensor setting	^Gx	10
11. Setting Print darkness	^Hx	10
12. Recall label format	^Kname	10
13. Label format begin sign	^L	10
14. Stripper sensor	^Ox	10
15. Number of pages printed	^Px	10
16. Auto Print	^PAn	11
17. limitless print	^PI	11
18. Label length setting	^Qx, y (,z±)	12
19. Row column adjustment	^Rx	12
20. Speed setting	^Sx	12
21. Label width setting	^Wxx	12
22. Return the configure status	^XGET,CONFIG	12
23. Set remind beep on/off	^XSET,BEEP,n	12
24. Select Code Page 850/852	^XSET,CODEPAGE,p1	13
25. Serial port translation setting	^Yp1, p2, p3, p4	13

- ◆ **Label formatting commands define field data, such as Line, Rectangle, Barcode, Text and Image.**

Table 1.3 Label Formatting Commands		
Description	Command	Page
1. Text	At, x, y, x_mul, y_mul, gap, rotation, data	14
2. Barcode	Bt, x, y, narrow, wide, height, rotation, readable, data	14
3. Serial number setting	Cx, ys±value, prompt	15
4. Define date layout	Daalbbllcc	15
5. Terminate label formatting mode and print label	E	15
6. Graphic command	Gwxxx	15
7. Table	Hx, y, row_count, row_width, line_width	16
8. Line command	La, x, y, x1, y1	16
9. Maxicode	Mx, y, sno, nos, mode, ccode, zip, class, rotation, message	16
10. PDF 417	Px, y, w, h, r, c, ec, len	16
11. DataMatrix Code	Xp1, p2, p3, data	16
12. Pattern command	Qx, y, width, height	17
13. Rectangle	Rx, y, x1, y1, lrw, ubw	17
14. Define time layout formatting	Thlmls	17
15. Downloading character sets to memory	Vt, x, y, x_mul, y_mul, gap, rotation, data	17
16. Define variable field	Vxx, length, prompt	17
17. Variable for left, center, right in length of appoint	Vxx,length,prompt,jnl	18
18. Variable Addition	V#OP+,p1,p2,p3	18
19. Variable Subtraction	V#OP-,p1,p2,p3	18
20. Variable Multiplication	V#OP*,p1,p2,p3	18

21.	Variable Division	V#OP/,p1,p2,p3	18
22.	Variable Remainder	V#OP%,p1,p2,p3	18
23.	Disable variable prompt	V#SET,UNPROMPT,p1	18
24.	Copy all of variable data	V#STRCPY,Vnn,Vmm	18
25.	Copy part of Variable value	V#STRSUB,Vnn,Vmm,first,length	19
26.	Add moduls 10 check code	V#ADDCHKSUM,Vnn	19
27.	Graphics	Yx, y, name	19

1-2. Language Description

Rules and syntax

EZPL commands have parameter strings associated with them. The command begins with a letter as ID for each function. The command (,) is the delimiter to separate each parameter. The "CR" Carriage Return. Control and Setup commands use the tilde (~) and caret (^) prefix. Label formatting commands has no prefix. Example: "~Ea,name,length","E" is an image download command, and (a,name,length) are three parameters.

Control commands

1. Date/Time setting

Syntax	~Dm, d, y, h, i, s
Parameter	m = month (01~12) d = date (01~31) y = year (last two digits of year) h = hour (00~23) i = minutes (00~59) s = seconds (00~59)
Description	The printer date and time setting. After setting, the printer will record the value even turn off the printer. If want to add the date/time in the label format, should combine with text command ^T and ^D.

2. Graphic download memory

Syntax	~Ea, name, length
Parameter	a = P or p : PCX file a = B or b : BMP file name : Name of image(up to 20 character) length : Length of image byte
Description	Download monochrome image onto memory. Printer will beep 1 time after completely downloaded. If you use the same file name, the printer will show "REPEAT FILE NAME", and the download will be not being accepted (refer page 25)

3. Graphic mode

Syntax	~G
Parameter	None
Description	Printer is in the image-receiving mode. Send the command ~G, the Image data is directly set from host to the printing buffer.

4. Bit-Mapped font download

Syntax	~Jn
Parameters	n = character, From a ~ z or A ~ Z; at least up to 26 characters.
Description	The command used for font loading. Printer will beep 1 time after completely downloaded. If use the same file name, the printer will show "E". The downloaded font are compatible with HP Laser Jet II Plus (PCL-4). Download the " HVR0OE1A.SFP" text file to memory. Use "A" to do the character code name.
Example	~JA COPY HVR0OE1A.SFP PRN/B Define A as HVR0OE1A.SFP Send the order with the DOS mode.

5. Acknowledge from RS-232

Syntax	~Kn
Parameter	n = 0, disable. n = 1, enable. °
Return value	Y
Description	Acknowledge a "Y (0D0A)" from RS-232 back to host each printing label.

6. Delete specific file from printer memory

Syntax	~MDELx, name
Parameter	x =G, Clear (Graphic) x =F, Clear (Label Format) x =E, Clear (Bit-Mapped font) x =A, Clear (Asia Font) x =T, Clear (Text) x =D, Clear (Database) name: The name of the graphic, form or Bit-Mapped font and the font ID of Asia font. 【 Notice 】 If send ~MDEL only (without x and name), all the contents of memory will be cleared (excluding Asia font).
Description	Able to delete individual files or erase entire flash memory.
Example	~MDELG,Bus The graphic "Bus" will be deleted. ~MDELD,customer The database "customer" will be deleted

7. Display the memory state

Syntax	~MDIR
Parameter	None
Description	Show the memory state
Example	

8. Save the TXT. file to printer

Syntax	~MSETT,name<CR>nnnnnnnn<data>
Parameter	name= the name of saved nnnnnnnn= data size (8 digits) data= data of saved
Description	Save the TXT. file to printer

9. Read saved file

Syntax	~MGETT,name<CR>
Parameter	name= the name of saved
Description	Read the saved file from printer
Example	Use "~MSETT,text1<CR>00000015Text file test2" to save data to printer. Then use "~MGETT,name<CR>" command to read saved data Example: ~MGETT,text1 Hyper Terminal will show: Text file test2

10. Print Last Label

Syntax	~Px
Parameter	X = 1 ~ 32767
Description	This command will repeatedly print the indicated copies of the last label format. And if the format is with serial no. setting, the No. will continue when new label is setting.

11. Row Offset Adjustment

Syntax	~Q±x
Parameter	x=-36 ~ +36
Description	Adjust the label row offset position

12. Rotate Printing

Syntax	~Rx
Parameter	x = label width; from 1 ~ 104 (mm)
Description	Rotate the label format 180-degrees when printing (refer page 27) . To return to the original print direction, set the x value greater than 104 (x > 104).

13. Immediate response command

Syntax	~S,CHECK	
Parameter	None	
Description	Response message: 00 – Ready 01 – Paper out 02 – Paper jam or miss gap 03 – Ribbon out 04 – Print head is up 05 – Rewinder full 06 – Memory is full 07 –filename can not be found 08 – filename is repeat 09 – Syntax error 50 – Printer is printing..	^XSET,IMMEDIATE,n (n:0 OFF, n:1 ON) (default: 1)

14. Printer head testing

Syntax	~T
Parameter	None
Description	Print a pattern for the user to determine if the print head is damaged (refer to page 29) .

15. Print Self-Test page

Syntax	~V
Parameter	None
Description	Print the Self-Test page.

16. Print the available space and data name in the memory

Syntax	~Xn
Parameter	n = 1, print label format names and available space in memory. n = 2, print graphic names and available space in memory. n = 3, print Bit-Mapped font names and available space in memory. n = 4, print the name of the label formats, graphics, fonts, and available space in memory. n = 5, print Asia font names and available space in memory.
Description	Print the available space in the memory card (unit:bytes)

17. Reset printer

Syntax	~Z
Parameter	None
Description	Reset the printer. LED will flash once.

18. Download dBase III to Printer

Syntax	~L,DBASE,p1,p2 data...
Parameter	p1: database name p2: database size (unit: byte)
Example	~L,DBASE,customer,364 ...(Data of customer.dbf)

19. Analogue press FEED key

Syntax	~S,FEED
Parameter	None

20. Print database information in memory

Syntax	~X7
Parameter	None
Description	Print database information in memory

21. Open database

Syntax	FILEDB,OPEN,p1
Parameter	P1:database name
Description	It could open only one database per label.
Example	FILEDB,OPEN,customer

22. Move data record

Syntax	FILEDB,MOVE,p1	
Parameter	p1:Move method Number, or (FIRST, LAST, NEXT, PRIOR)	
Description	It could use variable or counter to instead of P1	
Example	FILEDB,MOVE,3 FILEDB,MOVE,FIRST FILEDB,MOVE,NEXT	Move to third record Move to first record Move to next record

23. Searching

Syntax	FILEDB,FIND,p1,p2	
Parameter	P1:Filed name P2:Compare data	
Description	It could use variable to instead p2	
Example	FILEDB,FIND,NAME,John FILEDB,FIND,NAME,V01	Find John's data Use variable instead compare data

24. dBase data substitute Variable print

Syntax	V#LINKDB,p1,p2	
Parameter	P1:Field name P2:Variable	
Example	V#LINKDB,ADDR,V00 AC,22,25,1,1,0,0,^V00	Link V00 to ADDR field and print it out.

Setup commands

1. Printing mode

Syntax	^Ax	
Parameter	X = D or T	
Description	x = D , Direct thermal mode x = T , Thermal transfer mode	Direct Thermal mode Thermal Transfer mode, start the Ribbon Out function °

2. Set the backward length

Syntax	^Bx	
Parameter	x = backward length (mm)	
Description	Set the backward length of the paper.	

3. Set forward length

Syntax	^Mx	
Parameter	x = forward length (mm)	
Description	Set the forward length of the paper.	

4. Stop position setting

Syntax	^Ex	
Parameter	X = 0 ~ 40 (unit : mm)	
Description	Feed paper to desired stop position. When Turn on peel-off function, Setting x =10 is better ° Use the label with Gap, Setting x =12 ; With cutter, it depends.	

5. Number of copies per label

Syntax	^Cx	
Parameter	x = 0 ~ 32767	
Description	Number of copies of the same label (refer to page 30)	

6. Number of labels per cut

Syntax	^Dx	
Parameter	X = 0 , disable cutting X = 1 ~ 32767 , number of label per cut	
Description	Number of labels per cut (refer page27)	

7. Date offset function

Syntax	^D+dddd.hh	
Parameter	dddd is 4 digits offset days, hh is 2 digits offset hours	
Example	AC,132,230,1,1,0,0,^D+0005.12	After 5 days and 12 hours

8. Time offset function

Syntax	^T+hhh.mm	
Parameter	hhh is 3 digits offset hours, mm is 2 digits offset minutes	
Example	AC,410,230,1,1,0,0,^T+012.30	After 12 hours and 30 minutes

9. Download label format

Syntax	^Fname data
Parameter	Name = name of label format (up to 20 bytes) Data = the data containing the label formatting command for this stored format.
Description	Download label format into memory. After the download is finished, the printer will beep once. Same name inspection : If you use the same file name, the printer will print “REPEAT FILE NAME”, and the download will be not be accepted. (refer to page 27)

10. See-through sensor setting

Syntax	^Gx
Parameter	x = 0, see-through sensor disable (default setting) x = 1, see-through sensor enable
Description	The reflective sensor may not be able to detect the label gap on special label materials. For example, when printing on labels with thick liner, colored liner, or back graphics, the see-through sensor would need to be enabled, as the reflective sensor may not be of much use. * When the see-through sensor is enabled, the moveable sensor must be placed in the center of the printer.

11. Setting Print darkness

Syntax	^Hx
Parameter	x = 00 ~ 19
Description	Set printing darkness. The value is larger the temeperature is higher.

12. Recal label format

Syntax	^Kname
Parameter	Name =name of recall label format (up to 20 bytes) (, to page 29)
Description	Recall label format from external format. ^Kname : } data : : E : : } Control/Setup command [option] : ~Px

13. Label format begin sign

Syntax	^L
Parameter	None
Description	Set label begin sign

14. Stripper sensor

Syntax	^Ox
Parameter	x = 0 , stripper disable. x = 1 , Stripper enable
Description	Enable or disable the stripper sensor. When you use this command, it should be matched with ^Ex

15. Number of pages printed

Syntax	^Px
Parameter	x = 1 ~ 32767
Description	Set how many labels to print; and it will initiate the program.

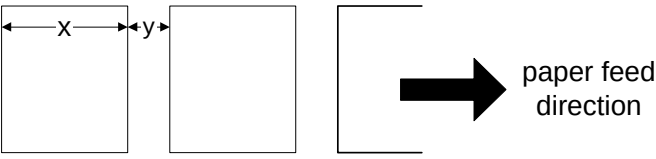
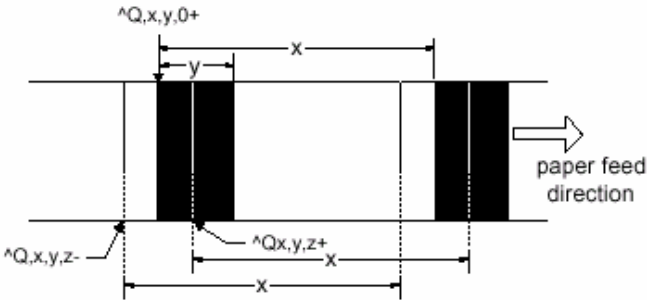
16. Auto Print

Syntax	^PAn	
Parameter	n=1~30000	
Description	After recall the label, printer will read variable and serial No and then auto print for set pieces	
	^Flabel1 ^Q40,0,0 ^PA3 ^L C0,0000001,+1,Counter V00,15,Variable AF,108,140,1,1,0,0,^C0 AE,122,278,1,1,0,0,^V00 E ^Klabel1 00001 Variable	Printer will auto print 3 pieces.

17. limitless print

Syntax	^PI	
Parameter	None	
Description	^Flabel2 ^Q40,0,0 ^PI ^L C0,0000001,+1,Counter V00,15,Variable AF,108,140,1,1,0,0,^C0 AE,122,278,1,1,0,0,^V00 E ^Klabel2 00001 Variable	Printer will print immediately, until press cancel or close printer.

18. Label length setting

Syntax	^Qx, y (,z±)	
Parameter	: x = label length (mm) y = Gap length (mm) Plain paper : x = label length (mm) y = 0 (constant) z = feed paper length (mm) Black mark label : x = Label length (mm) y = Black mark width(mm) z = Black line to top of form position. z+ : When the position is outside the black mark. z- : When the position is within the black mark.	
Description	Set label size (length, gap length, [plain paper feed length])	
1. Die Cut label: Command = ^Qx,y Example: ^Q25,3		
2. Black Mark label Command = ^Qx,y,z± Example: ^Q25,4,3+ (x= 25, y= 4, z= 3+)mm ^Q25,4,3- (x= 25, y= 4, z= 3-)mm		

19. Row column adjustment

Syntax	^Rx	
Parameter	x = 0 ~ 399 dots	
Response	None	
Description	Set left margin	

20. Speed setting

Syntax	^Sx	
Parameter	x=2 ~ 6 (inch/second)	
Description	Set printing speed	

21. Label width setting

Syntax	^Wx	
Parameter	x= label width (mm)	
Description	Setting label width	

22. Return the configure status

Syntax	^XGET,CONFIG	
Parameter	none	
Description	The printer will return configure status (the content is same as Self Test page) from RS232 or USB and display it on Hyper Terminal.	

23. Set remind beep on/off

Syntax	^XSET,BEEP,n	
Parameter	n:0 OFF, n:1 ON	
Description	Not including error beep	

24. Select Code Page 850/852

Syntax	^XSET, CODEPAGE, p1	
Parameter	p1: 0-code page 850. 1-code page 852	
Description	Can use command or select Keyboard Mode form LCD	

25. Serial Port translation setting

Syntax	^Yp1, p2, p3, p4	
Parameter	p1 : Baud Rate (48 or 96 or 19 or 38) p2 : Parity (N, O, E) p3 : Number of data bits (7 or 8) p4 : Number of stop bits (1 or 2)	48=4800bps; 96=9600bps; 19=19200bps; 38=38400bps; 57=57600 N=none parity; O=odd parity; E=even parity
Description	Serial Port translation setting.	

Label formatting commands

1. Text command

Syntax	At, x, y, x_mul, y_mul, gap, rotation, data		
Parameter	t : font(A~H for Code page 850 ; font I for ASCII)		
	Font	Points	Font style
	A	6	CG Triumvirate
	B	8	CG Triumvirate
	C	10	CG Triumvirate
	D	12	CG Triumvirate
	E	14	CG Triumvirate
	F	18	CG Triumvirate
	G	24	CG Triumvirate
	H	30	CG Triumvirate
	I	16x26 dots for US ASCII 8 bit	
	K	OCR-B font	
	L	OCR-A font	
	t = Z	Asia font; GN font, FN font, Korea, Japanes	
	x : Hori of left-bottom position of text (unit : dot, 1 mm = 8 dots) y : Vert of left-bottom position of text (unit : dot, 1 mm = 8 dots) x_mul : Horizontally magnified up to 8 times as large. y_mul : Vertically magnified up to 8 times as large. gap : Distance of the character (unit : dot, 1 mm = 8 dots) rotation : The rotation of ASCII text (0-3) 0) 0° 1) 90° 2) 180° 3) 270° data : Data String, including the followings.		
	1. Constant 2. Date information (^D) 3. Time information (^T)		4. Serial variable (^Cx) 5. Variable data (^Vxx)

2. Barcode

Syntax	Bt, x, y, narrow, wide, height, rotation, readable, data			
Parameter	t : bar-code type			
	A	CODE 39	O	Codabar
	A2	CODE 39	P	Code 93
	A3	CODE 39 STANDARD	Q	Code 128 (auto subset A/B/C)
	A4	CODE 39 STANDARD WITH C	Q2	Code 128 (subset A/B/C)
	B	EAN 8	R	UCC 128
	C	EAN 8 – Add ON 2	S	Post NET
	D	EAN 8 – Add ON 5	T	DUN 14 ONLY 90
	E	EAN 13	U	EAN 128
	F	EAN 13 – Add ON 2	V	RPS 128
	G	EAN 13 – Add ON 5	W	CHINA POSTAL
	H	UPC A	X	HIBC
	I	UPC A – Add ON 2	Y	PLESSEY
	J	UPC A – Add ON 5	Z	I 2 OF 5 with shipping bearer bars
	K	UPC E	1	UCC/EAN 128 K-MART
	L	UPC E – Add ON 2	2	UCC/EAN 128 Random Weight
	M	UPC E – Add ON 5	3	Telepen
	N	I 2 of 5	4	FIM
	N2	I 2 of 5 WITH C		
	x : Hori. Of left-bottom pos. of barcode (203DPI=8dot/mm ; 300DPI=12dot/mm) y : Vert. Of left-bottom pos. of barcode (203DPI=8dot/mm ; 300DPI=12dot/mm) narrow (x dimension): narrow bar from 1 ~ 10 dots (0.125 ~ 1.25 mm) ** DUN 14 narrow setting from 5 ~ 8 dots ; UPC/EAN narrow setting from 2 ~ 4 dots ** wide : wide bar from 2 ~ 30 dots (0.25 ~ 0.5 mm) ; ***CODE 39, 93, CODABAR & I 2 of 5-- height : height of barcode from 24 ~ 1200 dots. rotation : rotation of barcode (0 ~ 3) 0) 0° 1) 90° 2) 180° 3) 270° readable :			

	0 – label off 1 – below barcode, left. 2 – above barcode, left. 3 – below barcode, centered. 4 – above barcode, centered. data : bar-code data	
	1. Constant 2. Date (^D) 3. Time (^T)	4. Serial variable (^Cx) 5. Variable data (^Vxx)

3. Serial Number setting

Syntax	Cx, ys±alue, prompt	
Parameter	x : 0 to 9 (up to 10 group) , maximun combination up to 3 groups y : select the decimal y = 0~9, Decimal y = A, Hexadecimal y = C, 0~9, A~Z s: start value of serial variable (up to 13 digit) ±value : Inc./Dec. value of serial variable (up to 12 digit) prompt : prompt of serial variable, have to combine with KP-180 (up to 20 digit)	
Example	Programmer : C0,000,+1,AA C1,AEE,+1,BB C2,CZYY,+1,CC AC,5,5,1,1,1,0,^C0^C1^C2	Printting result: 000EEZYY 001EFZYZ 002F0ZZ0 003F1ZZ1 004F2ZZ2 :

4. Define date layout

Syntax	Daa bb cc
Parameter	aa = Year y2 : Year with two digits (such as 97) y4 : Year with four digits (such as 1997) bb = Month me : Month in letters (JAN, FEB,) mn : Month in numeric (01, 02,) cc = 2 digits day = Separator, can be any ASCII character between decimal 32 to 63.
Description	Define the date layout for print out (refer page 30)

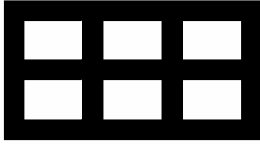
5. Terminate label formatting mode and print label

Syntax	E
Parameter	None
Description	End of formatting command; printer will print label after receiving this command.

6. Graphic command(sub-command of ~G)

Syntax	Gwxxx
Parameter	wxxx... w : byte number of image data xxx...: image data
Description	This command is a sub-command of ~G. It is sent by binary data. W is the digits number byte of image data. For example, if the image file is 50 bytes, the command is G2xxx. (2: ASCII is 50 decimal)

7. Table

Syntax	Hx,y,row_count,col_count,row_width,col_width,line_width	
Parameter	x : left-upper Hori .pos. (dots) y : left-upper Vert. Pos. (dots) row_count : numbe of rows col_count : number of columns row_width : row width col_width : column width line_width : line width	
Description	Draw a table in the label.	
Example	H20,20,2,3,30,20,10	

8. Line command

Syntax	La,x, y, x1, y1	
Parameter	A= o, overwrite line a = e, exclusive or line x : left-up; per horizontal(Hori.) pos. (dot; 1mm= 8dots) y : left-upper vertical (Vert.) pos. (dots) x1: right-bottom Hori. Pos. (dots) y1: right-bottom Vert. Pos. (dots)	
Description	Define a line to render in the label ** The diagonal line draw is not available **	

9. Maxicode

Syntax	Mx, y, sno, nos, mode, ccode, zip, class, rotation, message	
Parameter	x : Hori. of left-bottom pos. of barcode (unit: dots). y : Vert. of left-bottom pos. of barcode (unit: dots). sno : symbol number, in set of symbols : 1 ~ 8. nos : number of symbols in set of symbols : 1 ~ 8 sets. mode : mode of maxicode 2, 3, 4 or 6. ccode : 3 digits country code. zip : postal code 9 digits for US style postal code. If there is a 5 digits zip code, 4 zeros must be padded 6 digits alphanumeric zip code for non-US style postal code. class : service class, 3 digits numeric. rotation : rotation of barcode (0 : 0°). message : 1 ~ 84 characters.	

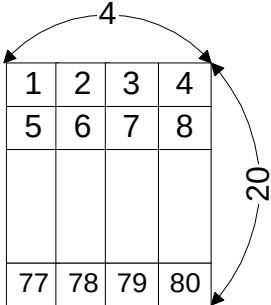
10. PDF 417

Syntax	Px,y,w,h,r,c,ec,len Data	
Parameters	x : Hori. of left-bottom pos. of barcode (unit : dots) y : Vert. of left-bottom pos. of barcode (unit : dots) w : Width (x dimension) of the narrowest element (bar or space) in the barcode. h : Height (y dimension) of each barcode row in the symbol. r : number of barcode rows, from 3 to 90. If you key in 0, printer will count all the rows. c : number of barcode columns, from 1 ~ 30. If you key in 0, printer will count the all columns. ec : error correction level: 0 ~ 8. len : number of encoded data bytes, including carriage returns ␣ and line feed. Data : data to be encoded(the length of the data is equal to len)	

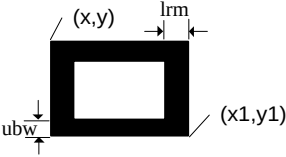
11. DataMatrix Code

Syntax	Xp1, p2, p3, data	
Parameters	p1 : Hori. of left-bottom pos. of barcode (unit : dots). p2 : Vert. of left-bottom pos. of barcode (unit: dots). p3 : Engrge the DataMatrix Code 8 times (horizontally and vertically). data : bar-code data (up to 500 characters).	

12. Pattern command

Syntax	Qx, y, width, height Data...	
Parameters	x = Hori. of left-bottom pos. (unit : dots). y = Vert. of left-bottom pos. (unit : dots). width = width of graphic (unit : byte) height = height of graphic (unit : dots) (data length = width x height)	
Description		Data send out 1 2 3 477 78 79 80 width = 4 ; height = 20 (data length : 4x20 = 80)

13. Rectangle

Syntax	Rx, y, x1,y1, lrw, ubw	
Parameter	x : left-upper Hori .pos. (dots) y : left-upper Vert. Pos. (dots) x1 : right-bottom Hori. Pos. (dots) y1 : right-bottom Vert. Pos. (dots) lrw : thickness of left, right border (dots) ubw : thickness of upper bottom border (dots)	
Description	Draw a rectangle in the label	

14. Define time layout formatting

Syntax	Th m s
Parameter	h = Hour format (2 digits, 00 ~ 23) m = Minute format (2 digits, 00 ~ 59) s = Second format (2 digits, 00 ~ 59) = Separator (It can be any separator between dec. 32 to 63 of ASCII).
Description	Define the time layout for internal real-time clock

15. Downloading character sets to memory

Syntax	Vt, x, y, x_mul, y_mul, gap, rotation, data	
Parameter	t: arbitrary name of font; from a ~ z (or A ~ Z)	
Description	Download Bit-Mapped font to memory. All the parameters are the same as the text command	
Example	VA,5,10,1,1,1,0,data	The arbitrary name of font "A"

16. Define variable field

Syntax	Vxx, length, prompt	
Parameters	xx = from 00 ~ 99 length = number of characters (up to 98characters). prompt = prompt of variable (maximum up to 20 characters,sould be used with KP-180)	
Description	The usage term for the variables is that the label formats must be saved onto the printer or the KP-180 keyboard. Variable entries can be inserted via KP-180, also through command "^Kname" to replace user defined variable field setting.	

17. Variable for left, center, right in length of appoint

Syntax	Vxx,length,prompt,jnl
Parameter	j=Justification option n=l(for left), c(for center), r(for right) l=the length of entire string in millimeters

18. Variable Addition

Syntax	V#OP+,p1,p2,p3
Parameters	p1,p2,p3=variable
Description	p1=p2+p3, Please refer to page 28
Example	V#OP+,V00,V01,V02 V00=V01+V02

19. Variable Subtraction

Syntax	V#OP-,p1,p2,p3
Parameters	p1,p2,p3=variable
Description	p1=p2-p3, Please refer to page 28
Example	V#OP-,V00,V01,V02 V00=V01-V02

20. Variable Multiplication

Syntax	V#OP*,p1,p2,p3
Parameters	p1,p2,p3=variable
Description	p1=p2*p3, Please refer page 28
Example	V#OP*,V00,V01,V02 V00=V01*V02

21. Variable Division

Syntax	V#OP/,p1,p2,p3
Parameters	p1,p2,p3=variable
Description	Please refer to page 28
Example	V#OP/,V00,V01,V02 V00=V01/V02

22. Variable Remainder

Syntax	V#OP%,p1,p2,p3
Parameters	p1,p2,p3=variable
Description	p1=p2/p3 reminde, Please refer to page 28
Example	V#OP/,V00,V01,V02 V00=V01%V02

23. Disable variable prompt

Syntax	V#SET,UNPROMPT,p1
Parameters	p1=disable variable prompt
Description	Please refer to page 28
Example	V#OP+,V00,V01,V02 V00 does not need input from user V#SET,UNPROMPT,V00

24. Copy all of variable data

Syntax	V#STRCPY,Vnn,Vmm
Parameters	Vnn=variable
Description	Copy all of Vmm data to Vnn
Example	V#STRCPY,V00,V01 Copy all of V00 data to V01

25. Copy part of Variable value

Syntax	V#STRSUB,Vnn,Vmm,first,length	
Parameters	Vnn,Vmm=variable first= copy first variable length= length of the variable	
Description	Copy part of Vmm value to Vnn	
Example	Copy year, month and day data form date variable. ~MDELF,test ^Ftest ^Q60,0,0 ^L V00,16,PromptV0 V01,16,PromptV1 V02,16,PromptV2 V03,16,PromptV2 V#STRSUB,V01,V00,5,2 V#STRSUB,V02,V00,8,2 V#STRSUB,V03,V00,0,4 V#SET,UNPROMPT,V01 V#SET,UNPROMPT,V02 V#SET,UNPROMPT,V03 AE,47,57,1,1,0,0,Date:^V00 AE,38,115,1,1,0,0,Month:^V01 AE,38,155,1,1,0,0,Day:^V02 AE,38,205,1,1,0,0,Year:^V03 E ^Ktest 2005/01/31 E ~P1	Print result: Date:2005/01/31 Month:01 Day:31 Year:2005

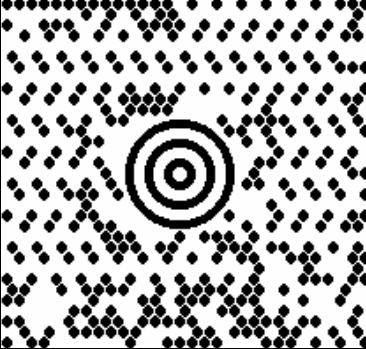
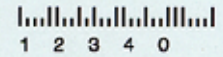
26. Add modulus 10 check code

Syntax	V#ADDCHKSUM,Vnn	
Parameters	Vnn=variable	
Description	Add modulus 10 check code to variable	
Example	Add ,pfi;id 10 check code to V00 ~MDELF,test ^Ftest ^Q60,0,0 ^L V00,16,PromptV00 V#ADDCHKSUM,v00 AE,47,57,1,1,0,0,Date:^V00 E ^Ktest 111222333 E ~P1	Print result Enter Variable value 111222333 Print result 1112223332

27. Graphics

Syntax	Yx, y, name	
Parameter	x : Hori. Pos. of left-upper of graphics (dots) y : Vert. Pos. of left-upper of graphics (dots) name : Name of graphics download	
Description	The command prints a graphic that has been previously stored in printer memory (refer page 25)	
Example:	A graphic in printer named "Graphic1", command Y20,40,Graphic1 ↵ will put this graphic into label at position (20,40).	

1-3. BARCODE

BARCODE TYPE	EXAMPLE	BARCODE TYPE	EXAMPLE
Code 39	 CODE39	UPC E Add on 2	
EAN 8		UPC E Add on 5	
EAN 8 Add on 2		I 2 of 5	
EAN 8 Add on 5		CODABAR	
EAN 13		Code 93	
EAN 13 Add on 2		Code 128	
EAN 13 Add on 5		EAN 128	
UPC A		MAXICODE	
UPC A Add on 2		PDF 417	
UPC A Add on 5		UPC E	
DataMatrix Code		UCC128	
Post ENT			

1-4. EXAMPLE

To create a label, it must be an order command combination.

Control command	
And	
Setup up command	
^L	^L is precedent for the beginning of label format Label format command must be included between the ^L and E command
Label format command	
E	E is ending of label format

** Control or setup commands to be used in the label command area will be ineffective.

Example:

The following program example is printing a label with EAN8. Program is a text file. No matter what language you use in programming, simply send out the text file of the contents and you can control what the EZ-Series prints.

Save the following contents (command file named: EX1.TXT).

Program command	Description
^Q25,3	Setting up the height 25mm, gap 3mm
^W32	Setting up the width 32mm
^H10	Setting up the darkness 10
^S6	Setting up the speed 6 inches per second
^P1	Setting up the number of printing 1
^E10	Setting up the paper advance length to 10 mm from the print head after printing. The label will move back 10 mm when the next label is printed.
^C1	Setting up the number of copies (start value is 1)
^O0	Setting up the auto stripper function to be turned OFF
^R0	Setting up the left margin 0 dot
^D0	Turning the cutting function off
^L	The label content of start symbol
BB,42,39,2,5,100,0,1,1234567	Select EAN8 label, data content is 1234567(See Charapter 2 section 2)
E	Label content of stop symbol

The label can be created by the following MS-DOS command:

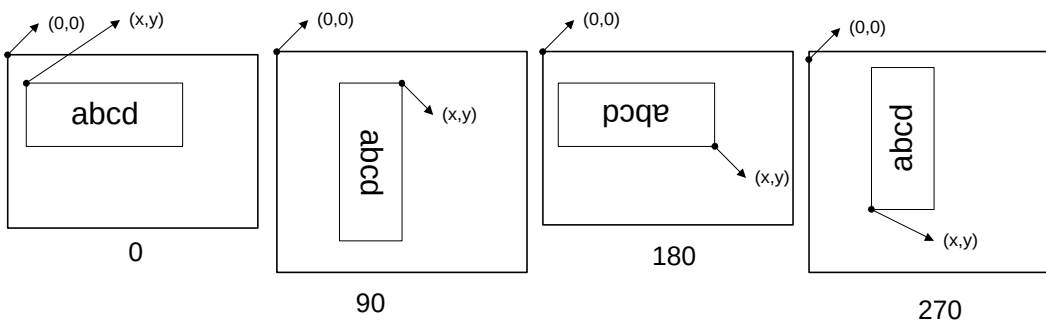
C:\>COPY EX1.TXT PRN.␣

To send the label to serial port by the following MS-DOS command:

C:\>MODE COM1 96,N,8,1

C:\>TYPE EX1.TXT >> COM1

Setting the x and y values:



TEXT

1. TEXT/DATE/TIME

EXAMPLE	RESULT
^Q50,0,2 ^W50 ^S6 ^H10 ^R10 ~D8,27,00,8,39,36 ^L AC,10,10,1,1,1,0,EZ-4206 PRINTER AC,10,50,1,1,1,0,^D AC,10,100,1,1,1,0,^T E	EZ-4206 PRINTER AUG/27/00 08:39:36

The data output is a default setting and user can change it with ~D command.

The time output format is a default setting and user can change it with T command

2. Serial No.

Example 1	Printing Result	Example 2	Result
^Q10,0,0 ^W30 ^S6 ^H10 ^P10 ^L C0,0000,+2,A1 AB,10,10,1,1,2,0,^C0 E	0000 0002 0004 0006 0008 0010 0012 0014 0016 0018	~P10 ; If you want to continue printing 10 more serial numbers starting from 0018, enter command ~P10.	0018 0020 0022 0024 0026 0028 0030 0032 0034 0036

Example 3	Result	Example 4	Result
^Q10,0,0 ^W30 ^S6 ^H10 ^P4 ^C2 ^L C0,0000,+2,A1 AB,10,10,1,1,2,0,^C0 E	0000 0000 0002 0002 0004 0004 0006 0006	^Q10,0,0 ^W30 ^S6 ^H10 ^P8 ^L C0,000,+2,A1 AB,10,10,1,1,2,0,abc^C0def E	abc0000def abc0002def abc0004def abc0006def abc0008def abc0010def abc0012def abc0014def

Adjusting the character spacing

Example	Result
^Q30,0,0 ^W50 ^S6 ^H10 ^L AC,10,10,1,1,10,0,EZ-4206 PRINTER AC,10,100,1,1,1,0,EZ-4206 PRINTER E	EZ-4206 PRINTER EZ-4206 PRINTER

Rotation

Example	Result
^Q50,0,0 ^W50 ^S6 ^H10 ^L AC,100,30,1,1,1,0,ROTATION 0 AC,40,20,1,1,1,1,ROTATION 90 AC,260,150,1,1,1,2,ROTATION 180 AC,290,220,1,1,1,3,ROTATION 270 E	ROTATION 90 ROTATION 0 ROTATION 270
^L AZ,100,12,1,1,0,4,中文 AZ,220,50,1,1,0,5,中文 AZ,75,83,1,1,0,6,中文 AZ,121,144,1,1,0,7,中文 E	中文 中文 中文

RTC Setting

Example	Result
^Q20,2 ^S6 ^W50 ^H10 ^P1 ~D6,26,00,9,47,00 ^L DY4-ME-DD Th:m:s AC,10,30,1,1,0,0,^D AC,10,70,1,1,0,0,^T E	2000-JUN-26 09:47:00 If the setting result can't be printed out, please send this command. Date Settomg Time Setting

Modification of Date and Specification Setting

Example	Result
Dy4-me-dd	2000-MAY-29
Dy4/mn/dd	2000/05/29
Dmn dd y4	05 29 2000
Dy4	2000
Dme	MAY
Ddd	29
Dy4,me	2000-MAY
Dme-dd	MAY-29

Barcode

Example	Result
^H9 ^S6 ^Q30,0,2 ^W60 ^L BG,20,100,3,3,100,0,1,12345678901234567 E	 34567

Barcode Rotation

Example	Result
^H9 ^W25 ^S6 ^Q30,0,2 ^L BE,100,20,2,4,80,1,1,123456789012 E	

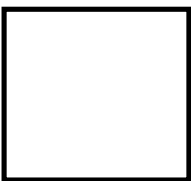
Barcode with serial number

Example	Result
^H10 ^S6 ^Q20,0,2 ^W50 ^P10 ^L C0,000,-1,A3 BE,40,20,3,3,100,0,1,111111^C0111 E	

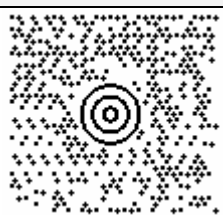
Line Printing

Example	Description	Result
^H10 ^S6 ^Q50,2 ^W60 ^L AB,50,60,1,1,1,1,PRINTER Le,10,10,60,200 AC,120,155,1,1,1,0,PRINTER Le,100,10,400,200 E	Darkness= 6 Speed = 6 inch/second Label height = 50mm, Gap= 2 mm Label width = 60mm (x,y)=(10,10), (x1,y1)=(60,200) (x,y)=(100,10), (x1,y1)=(400,200)	

Rectangle printing

Example	Description	Result
^H10 ^S6 ^Q25,2 ^W32 ^L R20,20,120,120,8,8 E	Darkness = 4 Speed = 2 inch/second Label height = 25mm, Gap = 2 mm Label width = 32mm (x,y) = (20,20), (x1,y1) = (120,120) lrw = 8 dots, ubw = 8 dots	

Maxicode

Example	Result
^Q30,0,0 ^W70 ^S6 ^H10 ^L M30,20,1,1,2,840,068107317,8,0,123456 E	

PDF417

Example	Result
^Q50,0,3 ^W90 ^S6 ^H10 ^L P30,20,3,3,3,3,1,100 123456789 123456789 123456789 123456789 123456789 123456789 123456789 123456789 123456789 123456789 123456789 123456789 E	

DataMatrix Code

Example	Result
^Q50,0,3 ^W90 ^S6 ^H10 ^L X30,20,5,1234567890 E	

Stripper Setting

Example	Result
^Q50,2 ^W50 ^S2 ^O1 ^E10 ^P1 ^H10 ^L AD,20,20,1,1,3,0,Stripper Function E	Label hight =50mm, Gap =2mm Label width=50mm Speed 2 inch/second Stripper enable Set stop position to 10 mm Printing one label Darkness 10 Label format begin sign Label format end and begin print

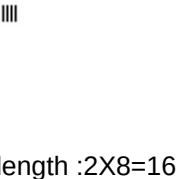
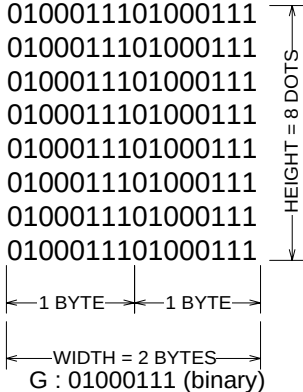
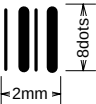
Download Graphic to printer's memory

Example	Description	Result
~Ep,chipmunk,2484	Download the Graphic to memory, file size:2484 bytes	
Copy chipmunk.pcx prn/b.␣	Send command In DOS mode	
^Q25,2 ^W50 ^S6 ^H10 ^L AB,50,10,1,1,1,0,EXTERNAL Y30,80, chipmunk E	Assign the location of Graphic	

Graphic driver format

Example	Description
^Q20,2	
^W50	
^R20	Left margin = 20 dots
~G	
G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA E	" (" = 40 bytes (ASCII) Total 14 lines, so the graphics height is 1.75mm (14 dots)
Result	
	

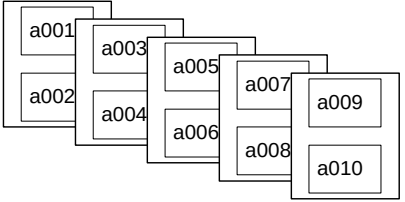
Pattern command setting

Example	Result
^Q20,0,0 ^W40 ^S6 ^D5 ^L Q40,10,2,8 GGGGGGGGGGGGGGGGGG E	 length :2X8=16
Description	
 G : 01000111 (binary)	

Rotate label format for printing

Example	Description	Result
^Q30,2 ^W50 ^S6 ^H10 ~R50 ^L AC,20,10,1,1,1,0,ROTATE BB,20,45,2,5,50,0,1,1234567 E	Label size: 30mm(h); 2mm gap Label size: 50mm(w) Rotate the label format 180° for printing	
~R105 ^L AC,20,10,1,1,1,0,ROTATE BB,20,45,2,5,50,0,1,1234567 E	Disable the rotate function	

Cutter Setting

Example	Description	Result
^Q15,0,0	Plain paper length 15mm,	
^W25	width:25mm	
^S6	Speed 6 inch/second	
^H10	Darkness = 10	
^P10	Print 10 labels	
^C1		
^D2	2 pcs/cut	
^L R10,10,170,100,2,2 C0,001,+1,A1 AE,50,30,1,1,1,0,A^C0 E		

Download label and variable settings

Example	Description
^Ftest ^Q50,0,15 ^W70 ^H10 ^S6 ^E12 ^L C0,0000,+1,serial no. V00,10,name V01,8,barcode V02,6,price AE,108,306,1,1,1,0,\$^V02 AC,39,27,1,1,1,0,S/N.^C0 AD,108,78,1,1,1,0,^V00 BA,108,135,2,5,100,0,1,^V01 E	Download label to memory card and the label name is "test" Setting serial number is C0 Setting three variables V00, V01, V02

Use variable settings

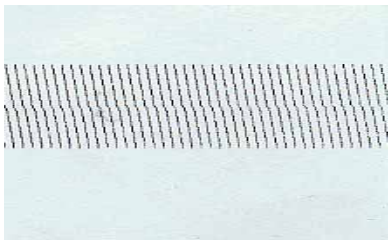
	Example	Result
1. User input unit price and amount. Printer calculates total price.	~MDELFF,test1 ^Ftest1 ^Q60,0,0 ^P1 ^L V00,10,Price V01,10,Amount V02,10,Total Price V#OP*,V02,V00,V01 V#SET,UNPROMPT,V02 AC,30,110,1,1,0,0,Price: ^V00 AC,30,189,1,1,0,0,Amount: ^V01 AE,30,273,1,1,0,0,Total Price: ^V02 E ^Ktest1 100 3 E ~P1	Price: 100 Amount: 3 Total Price: 300
2. Calculation sample	~MDELFF,test2 ^Ftest2 ^Q60,0,0 ^L V00,10,Input V00 V01,10,Input V01 V02,10,Input V02 V03,20,Input V03 V04,20,Input V05,20,Input V06,20,Input V#OP+,V02,V01,V00 V#OP-,V03,V01,V00 V#OP*,V04,V01,V00 V#OP/,V05,V01,V00 V#OP%,V06,V01,V00 V#SET,UNPROMPT,V02 V#SET,UNPROMPT,V03 V#SET,UNPROMPT,V04 V#SET,UNPROMPT,V05 V#SET,UNPROMPT,V06 AA,47,57,1,1,0,0,V00=^V00 AA,47,77,1,1,0,0,V01=^V01 AE,38,115,1,1,0,0,V1+V0=^V02 AE,38,165,1,1,0,0,V1-V0=^V03 AE,38,215,1,1,0,0,V1*V0=^V04 AE,38,265,1,1,0,0,V1/V0=^V05 AE,38,315,1,1,0,0,V1 MOD V0=^V06 E ^Ktest2 10 20 E ~P1	V00=10 V01=20 V1+V0=30 V1-V0=10 V1*V0=200 V1/V0=2 V1 MOD V0 = 0

Recall label format from memory

Example 1	Description	Result
^Ktest 0000 book 12345678 200.00 E ~P1	Recall label format without changing the label format C0 = 0000 V00 = book V01 = 12345678 V02 = 200.00	S/N.0000 book  * 12345678 * \$200.00
Example 2	Description	Result
^Ktest 1111 pencil 12345678 100.00 E ^Q35,0,0 ^S6 ^H10 ~P2	recall label format and change label format C0 = 1111 V00 = pencil V01 = 12345678 V02 = 100.00 Changing the size Changing speed 6"/sec Changing darkness to 10 Printing the last label twice	S/N.1111 Pencil  * 12345678 * \$100.00 S/N.1112 pencil  * 12345678 * \$100.00

Each time you change variable data or label format, repeat to send command from ^Kname to ~Px.

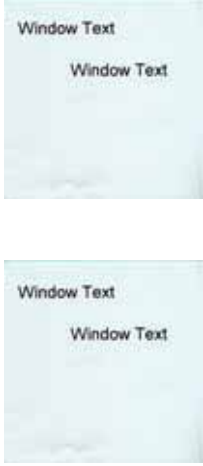
Print head text & Version list

Example 1	Description	Result
~T	Print out a sample test to check if the print head is damaged or not.	

Firmware version

Example 1	Description	Result
~V	Print out the f/w version of printer.	### EZ1300 ### ### VER. H1.000 ###

Copy setting

Example	Description	Result
^Q100,3 ^W102 ^E13 ^H15 ^P1 ^S2 ^C2 ^R0 ~Q+5 ^O0 ^D0 ~R200 ^L Dy2-me-dd Th:m:s E	Label hight 100mm, Gap 3mm Label width 102mm Stop position 12mm Darkness15 Print out one label Speed 2 inch/second Copy 2 pcs Position value not assigned The start of the upper margin +5 Stripper off Cutter off The begin and end symbols for label contents. Date/tTime setting End symbol	

Printer Date/Time setting

Example 1	Description	Result
~D6,16,03,13,52,17 ^Q100,3 ^W102 ^E12 ^H18 ^P1 ^S2 ^C1 ^R0 ~Q+0 ^O0 ^D0 ~R200 ^L Dy4-me-dd Th:m:s AF,254,100,1,1,0,0,^D AF,254,176,1,1,0,0,^T E	Setting month/Date/Year/Hour/Minute/Second Label hight 100mm, Gap 3mm Label width 102mm Stop position setting 13mm Darkness 18 Print out one label Speed 2inch/second Copy one Position value not assigned. The start of upper margin 0 Stripper on Cutter unable The begin and end symbols for label contents Date coordinates To,e cprdomates End symbol	

dBase III data setting

Example:

customer.dbf has following data

NAME	ADDRESS	PHONE
Tom	Address of Tom	11111111
Mary	Address of Mary	22222222
John	Address of John	33333333
Joe	Address of Joe	44444444
Bob	Address of Bob	55555555
Gilbert	Address of Gilbert	66666666

Example	Description	Result
^Q60,0,0 ^P1 ^L FILEDB,OPEN,customer V00,10,Prompt0 V#LINKDB,PHONE,V00 FILEDB,FIND,NAME,Mary AC,79,120,1,1,0,0, Mary's phone: ^V00 E	Print out Mary phone number	Marry's phone: 22222222
^Q60,0,0 ^P1 ^L FILEDB,OPEN,customer V00,10,Prompt0 V#LINKDB,ADDRESS,V00 FILEDB,FIND,NAME,John AC,79,120,1,1,0,0, ^V00 E	Print out John Address	Address of John
^Q60,0,0 ^P1 ^L FILEDB,OPEN,customer V00,10,Prompt V#LINKDB,NAME,V00 FILEDB,MOVE,LAST AC,79,120,1,1,0,0,Last Name is ^V00 E	Print out last person name	Last Name is Gilbert
^Q60,0,0 ^P1 ^L FILEDB,OPEN,customer V00,10,Prompt V#LINKDB,NAME,V00 FILEDB,MOVE,2 AC,79,120,1,1,0,0,Second Name is ^V00 E	4.Print second person name	Second Name is Mary

^Q60,0,0 ^P3 ^L FILEDB,OPEN,customer C0,1,+1,DB Move C V00,10,name V01,10,phone V#LINKDB,NAME,V00 V#LINKDB,PHONE,V01 FILEDB,MOVE,C0 AC,79,120,1,1,0,0,^V00 Phone is ^V01 E	Print first, second and third person phone number	Tom Phone is 11111111 Mary Phone is 22222222 John Phone is 33333333
---	--	---

Appendix

A. Barcode Details

1. Code 128

BQ2, X, Y, NARROW, WIDE, HEIGHT, ROTATION, READABLE, DATA

Subset A: Included the standard uppercase alphanumeric keyboard characters, control and special characters. To select Code 128 Subset A, place A before the data to be encoded.

Subset B: Included the standard uppercase, lowercase alphanumeric keyboard characters and special characters. To select Code 128 Subset B, place B before the data to be encoded.

Subset C: Used for double density encoding of numeric data (the set of 100 digit pairs from 00 through 99)
To select Code 128 Subset C, place C before the data to be encoded.

Example:

BQ2,8,8,2,5,40,0,0,AAPPLE	Subset A
BQ2,8,8,2,5,40,0,0,BAPPLE	Subset B
BQ2,8,8,2,5,40,0,0,C1234	Subset C
BQ2,8,8,2,5,40,0,0,Btest&D1234&FTEST	Subset A/B/C . the sequence is B, C,A.

The following is the compare chart.

ASCII	2 Character	Code A	Code B	Code C
96	&A	FNC3	FNC3	-NA-
97	&B	FNC3	FNC2	-NA-
98	&C	SHIFT	SHIFT	-NA-
99	&D	Code C	Code C	-NA-
100	&E	Code B	FNC	Code B
101	&F	FNC4	Code A	Code A
102	&G	FNC1	FNC1	FNC1