

Command Reference Manual



EP-700



EP-2000



DK1-21



DK1-31

ESC/POS Thermal Printers

EP-700, EP-2000, DK1-21, DK1-31

We wish you a pleasant work With Our Thermal Printers!



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Diagnostic information, Dump mode, Firmware updating

Hold FEED button while power ON for ~0.5 sec and release it after 1st beep .	Short SELF TEST print.
Hold FEED button while power ON for ~2.5 sec and release it after 2nd beep .	It starts Hex Dump mode. All input data is printed hexadecimal and as text.
Hold FEED button while power ON for ~4.5 sec and release it after 3rd beep .	Long SELF TEST print.
Hold FEED button while power ON for ~6.5 sec and release it after the 2 short beeps .	Enter hardware setup mode .
Hold FEED button while power ON for more than 8.5 sec and release it after the 4-tone beep .	Program mode for loading the printer firmware.

Serial interface

Baud rates	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Serial port parameters	1 start bit, 8 data bits, 1 stop bit, no parity
Signal characteristics	RS232C Mark – logical 1 (-3V ... -12V) Space – logical 0 (+3V ... +12V)

Input-output signals

Pin	Name	Description
2	RXD	Serial input data signal
3	TXD	Serial output data signal
4	DTR	Dataflow control signal - OUT
5	GND	Ground
6	DSR	Dataflow control signal - IN

Signal description

Start bit	One “space” level bit. Indicates the beginning of data byte.
Data bits	Eight consequent bits. First is the least significant bit.
Stop bit	One “Mark” level bit. Indicates the end of the byte.

Dataflow control

If a hardware flow control is selected the host could send data only at “space” level on the DTR line. Data reception is disabled when the buffer is near to its upper limit. Reception is re-enabled when the number of bytes in the buffer is below a certain threshold.

Warning!

Turn off the printer before attaching the cable. After connecting the connectors, screw the two screws.

Protocol mode

Protocol mode is active when memory switch **11** is **ON**. The purpose of this mode is to give full control over the optional peripherals (MC and smart card reader) and a stronger real time access to the printer.

All input data is send in packets as described below. The printer returns an answer to the packet immediately.

Host packet format	Channel	Command	LenHi	LenLo	Data
Printer packet format	Channel	Status	LenHi	LenLo	Data

Channel	Bits 0 – 6 Channel number (device type) Bit 7 0:send data 1:response																											
Command	Possible values: 2: send data 3: request data 4: application specific																											
Status	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">0</th> <th style="width: 25%; text-align: center;">1</th> </tr> </thead> <tbody> <tr> <td>Bit 0</td> <td>No error</td> <td>Error occurred</td> </tr> <tr> <td>Bit 1</td> <td>Packet accepted</td> <td>Packet not accepted</td> </tr> <tr> <td>Bit 2</td> <td>Channel and command OK</td> <td>Wrong channel or command</td> </tr> <tr> <td>Bit 3</td> <td>Battery OK</td> <td>Low battery</td> </tr> <tr> <td>Bit 4</td> <td>Printing head OK</td> <td>Printer head too hot</td> </tr> <tr> <td>Bit 5</td> <td>Paper OK</td> <td>Out of paper</td> </tr> <tr> <td>Bit 6</td> <td colspan="2" style="text-align: center;">Not defined</td> </tr> <tr> <td>Bit 7</td> <td>Printer ready</td> <td>Printer busy</td> </tr> </tbody> </table> <p>Bit 7 is set if:</p> <ul style="list-style-type: none"> -There are unprinted lines in the print buffer. -There are bytes in the print buffer. -The printer is executing a macro. -The printer is executing a self-test. -The button <LF> is pressed-feeding paper. 		0	1	Bit 0	No error	Error occurred	Bit 1	Packet accepted	Packet not accepted	Bit 2	Channel and command OK	Wrong channel or command	Bit 3	Battery OK	Low battery	Bit 4	Printing head OK	Printer head too hot	Bit 5	Paper OK	Out of paper	Bit 6	Not defined		Bit 7	Printer ready	Printer busy
	0	1																										
Bit 0	No error	Error occurred																										
Bit 1	Packet accepted	Packet not accepted																										
Bit 2	Channel and command OK	Wrong channel or command																										
Bit 3	Battery OK	Low battery																										
Bit 4	Printing head OK	Printer head too hot																										
Bit 5	Paper OK	Out of paper																										
Bit 6	Not defined																											
Bit 7	Printer ready	Printer busy																										
LenHi	High byte of data length. From 00h to 08h .																											
LenLo	Low byte of data length. From 00h to FFh .																											
Data	256* LenHi + LenLo data bytes.																											

The maximum packet length is **2048** bytes.

The answer differs from the command by **bit 7 (MSB)** in the channel number. If **bit 7** is “0” then it is a command, if it is “1” – it is a response. Bit “0” in the **status** byte shows if there was an error accepting or processing the data block. If this bit is “1” the other bits show the type of the error. The printer never issues a transmission by itself. It always responds as an answer to a command.

The communication goes like this:

Host-command; Printer-answer; Host-command; Printer-answer; etc.

Commands for the printer **channel 1**:

Command 2	Send data Data is copied into the printer's print buffer. If there's not enough space, the packet is rejected, and a status byte with value 3 is returned in the answer.
Command 3	Receive data If there is data to be transmitted from the printer to the host, it is transmitted in the data field of the packet, otherwise an empty packet is received. The application must take care to get the data fast enough from the output buffer or the data may be corrupt
Command 4	Get printer status 5 data bytes returned in response: BufferHi High byte of the count of free bytes in input buffer. BufferLo Low byte of the count of free bytes in input buffer. If free bytes in input buffer are more than 65535 (FFFFh) then FFFFh is returned. PrStatus Printer status defined with the following bits: Bit 0 - Battery low Bit 1 - Too hot Bit 2 - No paper Volt The battery voltage in units 0.1V . Temperature The head temperature in degrees Celsius .

Communication **example** (bytes are in hexadecimal)

Send data	>>> 01 02 00 05 11 22 33 44 55 <<< 81 00 00 00
Send data with error	>>> 01 02 00 05 11 22 33 44 55 <<< 81 01 00 00 >>> 01 02 00 05 11 22 33 44 55 <<< 81 01 00 00 >>> 01 02 00 05 11 22 33 44 55 <<< 81 00 00 00
Receive data	>>> 01 03 00 00 <<< 81 00 00 00 >>> 01 03 00 00 <<< 81 00 00 04 11 22 33 44 55 >>> 01 03 00 00 <<< 81 00 00 00
Get status	>>> 01 04 00 00 <<< 81 00 00 05 3F F8 01 49 27

Page mode

Thermal Printer supports page mode. This mode needs larger RAM, so it is possible, that some of the older printers will not support it. You can check this using command **ESC Z** (bit 29.6 will be set if page mode is supported).

New 13 commands are added in page mode, most of the old commands work differently. In standard mode the device prints the data after receiving new line command (**LF** or **CR** depending on memory switches) or when the line is wider than the defined print area.

In page mode the result of incoming commands is forwarded to a reserved memory area (page). The page place and size is defined using command **ESC W**. Command **GS T** selects the print direction in this page. At the end the collected information is printed using one of the commands, provided for this. Commands **ESC FF** and **GS FF** print only the currently defined page, but command **ESC Z** prints the area between the first and last line containing at least one black dot. All commands except **GS L** and **GS W** work in page mode. The centering and right alignment (command **ESC a**) is working in the currently defined page width.

Ruled lines

New commands are added to make printing tables in standard and page mode easier.

The printer has two line buffers with size the maximum printing width (paper width in standard mode or the selected page width in page mode). When ruled lines are active, then every horizontal line of the text line is combined with the selected ruled line buffer. Bit "1" in the ruled line buffer is a black dot in OR mode and inverts the color of the dot in XOR mode. Two commands allow the ruled line buffers to be printed without combining with a text line.

When pressing the **FEED** button, no ruled lines buffer is applied. All ruled lines commands start with symbol **DC3** (ASCII code 13h).

Please see also command **DC2 =**.

Warning!

*The ruled lines print position depends not on **GS L** and **GS W** (left margin and line width) and is always at the beginning of the line (or at the beginning of the printable area in page mode). The printed text and graphic change their position according these commands.*

*When printing 180 degrees rotated lines (command **ESC f**) ruled lines buffers are not rotated!*

LIST OF COMMANDS FOR ESC/POS MODE

N	Command	Description	page
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Command Details

1. (BEL) Sounds the buzzer

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[07h]			
Description	By executing this command the buzzer will beep.			

2. (HT) Horizontal Tab command

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[09h]			
Description	Shifts the printing position to the next horizontal tab position. The horizontal tab position is set by ESC D . By default the horizontal tab position is at each 8 th character (in 9 th , 17 th , 25 th column) for FONT A .			

3. (LF) Printing a line and Paper Feeding command

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[0Ah]			
Description	Prints data stored in input buffer and feeds paper with one line (the height of a line that has been set).			

4. (FF) Printing and paper feeding to the black mark position

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[0Ch]			
Description	This command prints all data in the printer buffer and searches for black mark. It is ignored if black mark mode is not enabled.			
<i>Notes for Black Mark Function</i>	<p>1.Error detection in black mark mode: Paper end is not checked during printing and also black mark is not checked. After receiving FF command, printer checks black mark and paper end. Once black is detected and white is detected again within 6 mm paper feed, it is determined as a black mark. If the white is not detected within 6 mm paper feed, it is determined as paper end. After receiving FF command, if printer cannot detect black mark by feeding paper for 360 mm, printer recognizes it as black mark detection error. And the result is the same as detecting paper end. To release the error, it is necessary to put correct paper and press LF switch long (for more than 1 sec.)</p> <p>2.LF switch operation in black mark mode: Pressing short: Feeds one line Pressing for>1sec: Feeds paper to find next black mark (the same as sending FF command)</p>			
<i>Remark for programming</i>	As it is possible to print on the black marks, user program must handle this situation if it is undesired.			
<i>Remark on handling</i>	If the paper cover is open in black mark mode, there is a possibility to detect it as a black mark.			

5. (CR) The operation of the command depends on the state of the configuration flags 2, 3 and 4

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[0Dh]			
Description	This command is ignored or its action is the same as LF depending on the state of the memory switches set with the last GS command.			

6. (DC2 =) Image LSB/MSB select

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[12h] + [3Dh] + n			
Description	This command selects whether the left edge of the print image is LSB or MSB for commands GS * , DC3 F and DC3 v .			
	n is from 0 to FFh , but only least significant bit is checked			
	0	LSB is the left edge		
	1	MSB is the left edge		
The default value is 1.				
This command is supported in firmware version 1.51 or higher.				

7. (DC3 () DC3 (ruled line) command sequence start

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[13h] + [28h]			
Description	Following this command the printer receives DC3 commands without DC3 symbol at the beginning. The symbol ')' ends the sequence. All commands which are not DC3 command, are ignored.			
This command is supported in firmware version 1.51 or higher.				

8. (DC3 +) Set the ruled line ON

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[13h] + [2Bh]			
Description	After receiving this command every printed line is combined with the selected ruled line buffer. This happens when command LF , ESC J , ESC d , DC3 P , DC3 p are executed. Depending on last command DC3 M executed the ruled line buffer is combined with the text using OR (if there is a bit '1' in ruled line buffer, a black dot is printed) or XOR (if there is a bit '1' in ruled line buffer, then the corresponding dot is inverted) All DC3 commands except DC3 P and DC3 p are executed when ruled line mode is off, too. So, the ruled line buffers can be cleared or set before this command. DC3 - command sets ruled lines off . In page mode nothing is printed outside the selected by ESC W area. This command does not clear ruled line buffers. By default ruled lines are disabled .			
This command is supported in firmware version 1.51 or higher.				

9. (DC3 -) Set the ruled line OFF

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[13h] + [2Dh]			
Description	<p>This command disables ruled line mode.</p> <p>All DC3 commands except DC3 P and DC3 p are executed when ruled line mode is off, too. So, the ruled line buffers can be cleared or set before this command.</p> <p>DC3 + command sets ruled lines on.</p> <p>This command does not clear ruled line buffers.</p> <p>By default ruled lines are disabled.</p>			
This command is supported in firmware version 1.51 or higher.				

10. (DC3 A) Selects ruled line buffer A

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[13h] + [41h]			
Description	<p>Makes ruled line buffer A active.</p> <p>All DC3 commands for clearing or setting data use the active ruled line buffer. When ruled line is enabled, then printing a line and commands DC3 P and DC3 p use this buffer.</p> <p>By default buffer A is selected.</p>			
This command is supported in firmware version 2.00 or higher.				

11. (DC3 B) Selects ruled line buffer B

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[13h] + [42h]			
Description	<p>Makes ruled line buffer B active.</p> <p>All DC3 commands for clearing or setting data use the active ruled line buffer. When ruled line is enabled, then printing a line and commands DC3 P and DC3 p use this buffer.</p>			
This command is supported in firmware version 1.51 or higher.				

12. (DC3 C) Clears selected ruled line buffer

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[13h] + [43h]			
Description	<p>Clears selected ruled line buffer (Sets all bit to 0).</p> <p>After power on or command ESC @ both buffers are clear.</p> <p>Entering or leaving ruled line mode (DC3 + and DC3 -) does not clear ruled line buffers.</p>			
This command is supported in firmware version 1.51 or higher.				

13. (DC3 D) Sets a single dot in selected ruled line buffer

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[13h] + [44h] + nL + nH			
Description	<p>Set to '1' one bit of the active ruled line buffer.</p> <p>The dot coordinates are nL+256*nH.</p> <p>Coordinates outside the printable area are ignored.</p>			
This command is supported in firmware version 1.51 or higher.				

14. (DC3 F) Ruled line pattern set

Applicable		EP-700	EP-2000	DK1-21	DK1-31
Code	[13h] + [46h] + n1 + n2				
Description	The command fills the selected ruled line buffer with the data sequence n1, n2 . Permitted values: 0-FFh. Every byte sets 8 dots , last executed command DC2 = determines whether the MSB is the left or the right side. The existing data in the buffer are replaced with the new data. Dots outside the printable area are ignored.				
This command is supported in firmware version 1.51 or higher.					

15. (DC3 L) Ruled line line set

Applicable		EP-700	EP-2000	DK1-21	DK1-31
Code	[13h] + [42h] + mL + mH + nL + nH				
Description	The command sets to '1' the bits between the specified coordinates in the selected ruled line buffer. The coordinates are mL+256*mH and nL+256*nH . The part of the line outside the printable area is ignored.				
This command is supported in firmware version 1.51 or higher.					

16. (DC3 M) Selects ruled line combine mode

Applicable		EP-700	EP-2000	DK1-21	DK1-31
Code	[13h] + [4Dh] + n				
Description	This command selects the logical operation between the selected ruled line buffer and the print buffer when ruled line is enabled.				
	n is from 1 to FFh, but only the LBS is used:				
	0	OR operation – bit '1' in ruled line buffer sets a black dot on paper			
	1	XOR operation – bit '1' in ruled line buffer inverts the dot			
For commands DC3 P, DC3 p and when printing an empty line the logical operation doesn't matter. Logical operation XOR is useful to invert the whole height of a text line (white letters on black background). By default OR mode is selected (value 0).					
This command is supported in firmware version 1.51 or higher.					

17. (DC3 P) Ruled line one dot line print

Applicable		EP-700	EP-2000	DK1-21	DK1-31
Code	[13h] + [50h]				
Description	The active ruled line buffer is printed as a single line (0.125 mm high). If ruled line is off, then paper is moved one line (0.125 mm) without printing. If there are graphic or text data in the line, they are ignored (erased). The same effect will have command ESC 3 [01h] without text or graphic data in the line.				
Warning	Because of the characteristics of thermal printing it is possible, that the quality of single horizontal line on the paper is not good.				
This command is supported in firmware version 1.51 or higher.					

18. (DC3 p) Ruled line n dot line print

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[13h] + [70h] + nL + nH			
Description	<p>The selected ruled line buffer is repeated on nL+ 256nH lines.</p> <p>If ruled line is off, then the paper is moved nL+256*nH dots without printing.</p> <p>If there are graphic or text data in the line, they are ignored (erased).</p> <p>The same effect will have command ESC 3 n without text or graphic data in the line (the difference is, that the possible line height is up to 255 dots).</p>			
This command is supported in firmware version 1.51 or higher.				

19. (DC3 v) Ruled line image write

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[13h] + [76h] + nL + nH + D1 + ...			
Description	<p>The command fills the selected ruled line buffer with nL+256*nH data bytes.</p> <p>Possible values of data bytes: 0-FFh.</p> <p>Every byte defines 8 dots, last executed DC2 = determines whether MSB is left or right side.</p> <p>Selected ruled line buffer is erased and new data is written.</p> <p>Dots outside the printable area are ignored.</p>			
This command is supported in firmware version 1.51 or higher.				

20. (CAN) Canceling print data in page mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[18h]			
Description	<p>The command clears the currently selected page area and sets current print position to coordinates (0, 0) in the current page (depending on the currently selected print direction with command GS T).</p> <p>The command is not valid in standard mode.</p>			
This command is supported in firmware version 1.51 or higher.				

21. (ESC FF) Printing data in page mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [0Ch]			
Description	<p>Executes a batch printout of the data, mapped in the currently selected page. The printer continues to work in page mode and data is not destroyed, so the command may be executed many times.</p> <p>This command is not valid in standard mode.</p>			
This command is supported in firmware version 1.51 or higher.				

22. (ESC RS) Sounds the buzzer

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [1Eh]			
Description	By executing this command the buzzer will beep.			
This command is supported in firmware version 1.51 or higher.				

23. (ESC SP) Setting character spacing

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [20h] + n			
Description	The rightward space amount is set in dot unit (1/203 inch unit). The initial value is n=0. When the font size is doubled the space between characters is also doubled. Possible values: from 0 to 63 dots.			
	[0 <= n < 40h]			

24. (ESC #) Setting EURO symbol position

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [23h] + n			
Description	This command forces the EURO symbol to appear at the selected ASCII code. So when a code table without EURO symbol is selected, the user can use this symbol at the desired place. The original character with this ASCII code becomes inaccessible until redefinition using the same command. ASCII codes from 00H to 1FH disable EURO substitution and the selected code table is printed unchanged. Default value is 00H (EURO substitution disabled)			
	0 <= n <= FFh	The ASCII code of EURO symbol.		

25. (ESC \$) Specifying the absolute horizontal position of printing

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [23h] + n1 + n2			
Description	The shifting is n1+256*n2 dots. Specifying beyond the line end is ignored.			
	0 <= n1 <= FFh	Horizontal shifting in dots (least significant byte LSB)		
	0 <= n2 < 02h	Horizontal shifting in dots (most significant byte MSB)		

26. (ESC %) Selecting/Canceling the printing of downloaded user character sets

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [25h] + n			
Description	Character set is defined by the command ESC & . The chosen character set is kept even if printer is switched off.			
	n can be from 0 to 255 , but only the least significant bit (LSB) is important:			
	0	Cancel selection of user characters (default characters set is chosen)		
	1	Loaded user character set is chosen		

27. (ESC &) Selecting user character set

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [26h] + a + n + m + D₁ + ... + D_(m - n + 1)_k [1Bh] + [26h] + a + c₁ + c₂ + D₁ + ... + D_k (For Japanese version only)			
Description	a	Number of the sub-command and can be: 0 or ' 0 ': Copies internal character set A over user character set A . All parameters after the number of the sub-command are omitted. 1 or ' 1 ': Copies internal character set B over user character set B . All parameters after the number of the sub-command are omitted. 2 or ' 2 ': Defines a sequence of characters for font A (12x24) . 3 or ' 3 ': Defines a sequence of characters for font B (9x16) . 4 or ' 4 ': Defines a sequence of characters for font B (9x16) . 5 or ' 5 ': Clears user defined Kanji characters (Both large and small). All parameters after the number of the sub-command are omitted. 6 or ' 6 ': Define one Kanji character (large font). 7 or ' 7 ': Define one Kanji character (small font).		
	20h <= n <= m <= FFh			
	n m	The ASCII code of the first of (m-n+1) consecutive characters. The ASCII code of the last of (m-n+1) consecutive characters. When only one symbol is defined m=n .		
	c₁ c₂	The first byte of Kanji character. The second byte of Kanji character.	Possible values: c₁=77h, c₂=21h-2Fh or c₁=ECh, c₂=40h-4Eh	
	D_i_k	Data for the characters. Each character from Font A is defined with 48 bytes . Each character from Font B is defined with 16 bytes for sub-command 3 (the 9th horizontal bit is always white) and with 32 bytes for sub-command 4 (2 bytes for each horizontal row, only the most significant bit of the second byte is used). The data for character set (font) A is composed from left to right and from top to bottom with two bytes for each horizontal line. From the second byte only the first nibble (the most significant 4 bits) is valid. Each bit defines one dot, 1 is for black, starting from the most significant bit. Japanese version only: Data is sent horizontally, MSB first. For large font Kanji character D₁-D₇₂ are data bytes, 3 bytes per row, 24 rows. For small font Kanji character D₁-D₃₂ are data bytes, 2 bytes per row, 16 rows.		
Warning	Downloaded characters are valid even after switching off the printer. Starting with version 1.29, new sub-commands added for downloaded Kanji characters support (For Japanese version only).			

28. (ESC !) Specifying printing mode of text data

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [21h] + n			
Description	Data is given in binary code. Each bit indicates the following:			
	Bit	Function	Value 0	Value 0
	0	Character Font	A(12x24)	B(9x16)
	1		Undefined	
	2		Undefined	
	3	Highlighting	Canceled	Specified
	4	Double Height	Canceled	Specified
	5	Double Width	Canceled	Specified
	6		Undefined	
	7	Underline	Canceled	Specified

	<p>An underline is attached to the full character width, which however is not attached to the part that had been skipped by the horizontal tab.</p> <p>Neither is attached to 90 ° right turned characters.</p> <p>The underline width is specified by ESC-.</p> <p>The default setting is 1 dot width.</p>
	<p>Highlighting is valid for character font A(12x24) and font B(9x16). It is not recommended to be used for font B because text becomes unreadable. If at the same time are specified Double Height and/or Double Width and 90 ° right turning of character, then the sequence of execution is as follows:</p> <ul style="list-style-type: none"> -Character is doubled in the direction indicated. -Character is turned at 90° right angle.

29. (ESC *) Printing graphical data

Applicable	EP-700	EP-2000	DK1-21	DK1-31			
Code	[1Bh] + [2Ah] + m + n1 + n2 + D1 + ... + Dk						
Description	m (0, 1, 20h or 21h)	Graphics mode					
				Vertical Direction		Horizontal Direction	
		m	Mode	Dots	Dot density	Dot density	Max.dots
		0	8 dots Single density	8	67 DPI	101 DPI	204/288
		1	8 dots double density	8	67 DPI	203 DPI	408/576
		20h	24 dots Single density	24	203 DPI	101 DPI	204/288
		21h	24 dots double density	24	203 DPI	203 DPI	408/576
	0 <= n1 <= FFh	Specifies the number of dots in horizontal line (LSB)					
	0 <= n2 <= 09h	Specifies the number of dots in horizontal line (MSB)					
	Di (i from 1 to k)	Bit image data					
	<p>The number of dots in horizontal direction is n1+n2*256.</p> <p>Number of data bytes k is: n1+n2*256 for mode 0 or 1 (n1+256*n2)*3 for mode 20h or 21h</p> <p>The bits subject to printing are taken as '1' and those not as '0'.</p> <p>Bit image data is send starting from the top to bottom and from the left to right (vertical columns scanning). In modes m=0 and 1 only one byte per column is send and in mode m=20h, 21h – 3 bytes for each column are send.</p>						
<i>Warning</i>	<p>When the value set in m or n2 are out of the above range, the data is processed as normal printing data.</p> <p>If some part of the graphic or the entire graphic is outside the printable area, then graphics data are accepted, but only the needed part of them are printed.</p> <p>In page mode and rotated by 90 degrees page the max number of dots is larger than the numbers in the table above.</p>						

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This command has one version with 3 new modes:

Code	[1Bh] + [2Ah] + m + n + { a + [00h] } + D1 + ... + Dk	
Description	Designates a bit image of n*8 dots horizontal and by 24 or a dots vertical. Depending on m there is a compression of data. All 3 modes are with high dot density (203x203 dpi).	
	m can be:	
	10h	Not compressed data with height 24 lines. Byte a and byte 00h are not send.
	11h	Compressed data with height 24 lines. Byte a and byte 00h are not send.
	12h	Compressed data with height a lines.
	Di	Bit image data
<p>Their number is n*24 bytes for mode 10h. The compressed data in mode 11h must give the same number of bytes, but after the decompression. The number of data bytes for mode 12h must be a*n (after decompression).</p> <p>Decompression in modes 11h and 12h is similar to the one used in PCX monochrome graphics. If the 2 most significant bits of a byte are 1, the next bits define a counter of iterations from 0 to 63, and the next byte contains the data that has to be repeated.</p> <p>If at least one of the 2 most significant bits is 0, the byte contains data which is directly used. If the data for printer contains a byte with two most significant bits 1, it has to be send as 2 bytes with counter 1.</p> <p>Data for both modes is send horizontally, from left to right and from top to bottom. Each byte contains 8 points, the '1'-s are black starting from the most significant bit.</p>		

A new mode for printing vertical lines added

Code	[1Bh] + [2Ah] + [18h] + L + n + R	
Description	L	Offset (white dots) before the vertical line. From 0 to 255
	n	Vertical line thickness in dots. From 0 to 255
	R	Offset (white dots) after the vertical line. From 0 to 255
<p>This command prints a vertical black line with thickness n and height – the whole height of the line (including the space between the lines set with commands ESC 2, ESC 3 or ESC J). The printer adds L dots to the current X coordinate, draws the line and adds R dots to the X coordinate after the line. The purpose of this command is to draw tables independent of the type or of the printed symbols between the vertical lines.</p>		

New modes for printing graphics are added

Code	[1Bh] + [2Ah] + [13h] + n1 + n2 + a + D1 + ... + Dk or [1Bh] + [2Ah] + [14h] + n1 + n2 + a + D1 + ... + Dk	
Description	n1	Lower part of bytes count in horizontal direction. From 0 to 255
	n2	Higher part of bytes count in horizontal direction. From 0 to 1
	a	Vertical size of the image in dots. From 0 to 24
<p>For command ESC * [13h] data for a bit image with size (n1+256*n2)*8 dots horizontally and a dots vertically is sent with data compression (exactly as in command ESC * [12h]). The graphic mode is double density (203x203 dots/inch). Data bytes count is a*(n1+256n2) after decompression.</p> <p>For command ESC * [14h] data is without compression like ESC * [10h] command.</p> <p>These commands are added to make printing in page mode easier – in page mode with height more than 2030 dots and print direction 90 or 270 degrees it is not possible to fill the whole page height using only one of the older commands for compressed graphics (ESC * [11h] and ESC * [12h]).</p>		

30. (ESC -) Selecting/Canceling underlining

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [2Dh] + n			
Description	An underline is attached to the full character width. It is however, not attached to the part skipped by horizontal tab command.			
	An underline is not attached to a 90° right turned characters.			
	The following values of n are possible:			
	0 or 30h	Cancel an underline		
	1 or 31h	Specify an underline for 1-dot width.		
	2 or 32h	Specify an underline for 2-dots width.		
<i>Warning</i>	This command only selects the underline thickness. For specifying/canceling the Underline mode command ESC ! ([1Bh] + [21h]) must be used.			

31. (ESC .) Printing Self Test/diagnostic information

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [2Eh]			
Description	Prints test page and self-diagnostic information. The self-diagnostic information includes print density, print head temperature, battery voltage, baud rate and others.			

32. (ESC 2) Specifying 1/6-inch line feed rate

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [32h]			
Description	If in the line there are symbols that will not fit in the defined size, the line automatically is set to be of the necessary height so they fit.			

33. (ESC 3) Specifying line feed rate n/203 inches

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [33h] + n			
Description	n is from 0 to 255. Default value is n=22h (1/6 inches).			

34. (ESC 8) Push Settings

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [38h]			
Description	Temporary save current settings.			

35. (ESC 9) Pop Settings

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [39h]			
Description	Restore temporary saved settings.			

36. (ESC <) Change print direction to opposite

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [3Ch]			
Description	This command changes current print direction. It is needed when using Hebrew and Arabic code tables, but is working for all code others. Default print direction is from right to left for code tables 19, 21,22,23,24 and from left to right for all others.			
This command is supported in firmware version 1.51 or higher				

37. (ESC =) Data input control

Applicable	EP-700	EP-2000
Code	[1Bh] + [3Dh] + n	
Description	This command is used to select a peripheral device, which will receive incoming data. n can be from 0 to 255 , but only the LSB is significant. Value 1 or '1' : a printer is selected only. Value 0 or '0' , 2 or '2' : a customer display is selected only. Value 3 or '3' : a printer and a customer display are selected. When a customer display is selected only (n=2), all data, except this command and the real-time commands, are ignored. When turning the printer on, selected peripheral device is specified by memory switch 13 , as well as when command ESC @ is executed and n was last set to 3 or '3' .	

38. (ESC >) Selecting print direction

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [3Eh] + n			
Description	Possible values for n			
	0 or '0' 1 or '1' 2 or '2'	Default direction for the selected code table. Left to right direction forced. Right to left direction forced.		
This command sets the print direction. It is needed when using Hebrew and Arabic code tables, but is working for all others. Default print direction is from right to left for code tables 19, 21,22,23,24 and from left to right for all others. Commands ESC < and ESC > work together. The sequence, which selects the direction, is as follows: <ul style="list-style-type: none"> - print direction is set according to the currently selected code table. - if command ESC > with argument > 0 was executed since the last ESC u command, then this is the print direction. - if command ESC < was executed after this, print direction is changed to the opposite. 				
This command is supported in firmware version 1.51 or higher				

39. (ESC @) Initializing the printer

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [40h]			
Description	Clears data stored in print buffer and brings various settings to the initial state (default state). Data (items) in serial buffer are not cleared.			

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40. (ESC D) Setting horizontal tab position

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [44h] + n₁ + ... + n_k + [00h]			
Description	<p>n_i indicates the number of the column from the beginning to the horizontal tab position minus 1. For example, to set the position at 9th column, n=8 is to be specified. n_i is from 0 to 255.</p> <p>Tab position is set at position where it is “character width, multiplied by ni” from the line beginning. The character width, at this time includes the rightward space amount. In double wide characters, it is made double of the ordinary case. Tab positions that can be specified are maximum 32. ESC D [00h] clears all the set tab positions. Following clearing, horizontal tab command is ignored.</p>			

41. (ESC E) Specifying/Canceling highlighting

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [45h] + n			
Description	<p>n can be from 0 to 255, but only the least significant bit is significant. Value 0: Cancel highlighting. Value 1: Highlighting is specified.</p>			
Warning	This command is effective for font A (12x24) and font B(9x16) , but it is not recommended to be used for font B because text is not readable .			

42. (ESC F) Filling or inverting the page area in page mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31						
Code	[1Bh] + [46h] + n									
Description	<p>Allowed values for n</p> <table border="1"> <tr> <td>0 or '0'</td> <td>The area is cleared (white)</td> </tr> <tr> <td>1 or '1'</td> <td>The area is filled (black)</td> </tr> <tr> <td>2 or '2'</td> <td>The area is inverted.</td> </tr> </table> <p>This command fills the selected with ESC W page with the desired color or inverts it. It is not valid in standard mode.</p>				0 or ' 0 '	The area is cleared (white)	1 or ' 1 '	The area is filled (black)	2 or ' 2 '	The area is inverted.
0 or ' 0 '	The area is cleared (white)									
1 or ' 1 '	The area is filled (black)									
2 or ' 2 '	The area is inverted.									
This command is supported in firmware version 1.51 or higher.										

43. (ESC G) Specifying/Canceling highlighting

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [47h] + n			
Description	The same as command ESC E			

44. (ESC I) Specifying/Canceling Italic Print

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [49h] + n			
Description	<p>n can be from 0 to 255, but only the least significant bit is of significance. Value 0: Normal print Value 1: <i>Italic</i> print</p>			

45. (ESC J) Printing and paper feed n/203 inches

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [4Ah] + n			
Description	Prints data in print buffer and feeds paper by n/203 inch. n can be from 0 to 255 . This function is temporary and does not affect the feed operation thereafter. When n=0 the paper is fed by 1/203 inch.			

46. (ESC L) Selecting page mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [4Ch]			
Description	This command switches from standard mode to page mode. In this mode printing is not immediate, but is accumulated in a reserved for this purpose memory area. The resulting image is printed using one of the commands ESC FF , GS FF or GS Z . Page area is maximum (576x2432 dots for wide paper or 408x2432 dots for narrow) or the result of the last executed command ESC W . Print direction is the default (left to right) or the result of the last executed command GS T . Current print position is (0, 0) depending on the selected print direction. This command is not valid in page mode.			
This command is supported in firmware version 1.51 or higher.				

47. (ESC N) Reading programmed serial number

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [4Eh]			
Description	This command returns the programmed serial number of the printer as an ASCII string. Number length is 13 characters. If no serial number is programmed, then only one symbol is returned 00h .			
This command is supported in firmware version 1.51 or higher.				

48. (ESC R) Selecting country

Applicable	EP-700	EP-2000	DK1-21	DK1-31									
Code	[1Bh] + [52h] + n												
Description	n can be from 0 to 13 and has the following meaning:												
n	Character Set	Changed Characters											
		23h	24h	40h	5Bh	5Ch	5Dh	5Eh	60h	7Bh	7Ch	7Dh	7Eh
0	U.S.A.	#	\$	@	[\]	^	'	{		}	~
1	France	#	\$	à	°	¢	§	^	'	é	ù	è	"
2	Germany	#	\$	§	Ä	Ö	Ü	^	'	ä	ö	ü	ß
3	U.K.	£	\$	@	[\]	^	'	{		}	~
4	Denmark I	#	\$	@	Æ	Ø	Å	^	'	æ	ø	å	~
5	Sweden	#	\$	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
6	Italy	#	\$	@	°	\	é	^	ù	à	ò	è	ì
7	Spain I	Pt	\$	@	ì	Ñ	¿	^	'	"	ñ	}	~
8	Japan	#	\$	@	[¥]	^	'	{		}	~
9	Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
10	Denmark II	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11	Spain II	#	\$	á	ì	Ñ	¿	é	'	í	ñ	ó	ú

12	Latin America	#	\$	á	i	Ñ	¿	é	ü	í	ñ	ó	ú
13	Korea	#	\$	@	[₩]	^	'	{		}	~

49. (ESC S) Specifying speed (bps) of the serial port

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [53h] + n			
Description	Set new communication speed for the serial interface. Possible values of parameter n:			
	0 or ' 0 '	1200 bps		
	1 or ' 1 '	2400 bps		
	2 or ' 2 '	4800 bps		
	3 or ' 3 '	9600 bps		
	4 or ' 4 '	19200 bps		
	5 or ' 5 '	57600 bps		
	6 or ' 6 '	115200 bps		
	7 or ' 7 '	38400 bps		
	The command is valid only when the printer is connected through a serial cable. The last setting is valid after switching OFF and ON the printer. Default value is 6 (115200 bps).			

50. (ESC T) Printing short self test

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [54h]			
Description	Prints current printer parameters, including intensity, temperature of the print head, battery voltage, speed in case of serial connection, etc.			

51. (ESC U) Selecting/Canceling underlined printing

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [55h] + n			
Description	Possible values for n:			
	0 or ' 0 '	Cancel underlined characters.		
	1 or ' 1 '	Specify underlined characters.		
<i>Warning</i>	No underlines are attached to 90° right turned characters.			

52. (ESC V) Selecting/Canceling printing 90° right turned characters

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [56h] + n			
Description	n can be from 0 to 255 , but only the least significant bit is of significance: Value 0: Cancel 90° right turned characters. Value 1: Specify 90° right turned characters.			

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53. (ESC W) Defining the print area in page mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [57h] + xL + xH + yL + yH + dxL + dxH + dyL + dyH			
Description	Allowed values for n			
	xL and xH yL and yH dxL and dxH dyL and dyH	Low and high byte of the horizontal offset of the relative top left corner of the page. Low and high byte of the vertical offset of the relative top left corner of the page. Low and high byte of the width of the page. Low and high byte of the height of the page.		
<p>This command defines the relative position and size of the page. In page mode the new values are active immediately, in standard mode they are memorized and used after entering page mode. Print position has coordinates (0, 0) depending on the currently selected print direction (command GS T). If the relative position is invalid, the command is not accepted. If only a part of the selected page is in the printable area (current paper width and maximal height of 2432 dots), this area is used as page area.</p> <p>The default page size is 576x2432 dots in wide paper mode or 408x2432 dots in narrow paper mode.</p>				
This command is supported in firmware version 1.51 or higher.				

54. (ESC X) Specifying max printing speed

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [58h] + n			
Description	n is between 0 and 3 or between '0' and '3'			
	0 or '0' 1 or '1' 2 or '2' 3 or '3'	220 mm/s (8.8 inch/s) 150 mm/s (6.0 inch/s) 100 mm/s (4.0 inch/s) 50 mm/s (2.0 inch/s)		
Default value is 0 (220 mm/s)				
<i>Warning</i>	The defined speed is recommended and can be achieved with not very cold printing head and comparatively little data to print in the line (less black).			

55. (ESC Y) Selecting intensity level

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [59h] + n			
Description	n is between 0 and 6 or between '0' and '6'			
	0 or '0' 1 or '1' 2 or '2' 3 or '3' 4 or '4' 5 or '5' 6 or '6'	Intensity 60% Intensity 75% Intensity 90% Intensity 100% Intensity 120% Intensity 140% Intensity 160%		
Default value is 3 (100%).				
<i>Warning</i>	Higher intensity causes decrease in printing speed.			

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56. (ESC Z) Returning diagnostic information

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [5Ah]			
Description	Printer will return 32 bytes of information with the following structure:			
	1-22	Printer name (up to 22 characters)		
	23-25	Firmware version (3 digits)		
	26-27	Language version, described by two characters .		
	28-32	5 bytes with flags. When the corresponding bit is 1 , the function is supported and when 0 , the function is not supported.		
	Bits are listed below:			
	Bit	Meaning		
	28.0	Support IrDA mode.		
	28.1	Mag-stripe reader support.		
	28.2	Supports reading of all 3 tracks on magnetic card.		
	28.3	Katakana support, ASCII codes above 127 contain Katakana characters.		
	28.4	JIS and Shift-JIS support.		
	28.5	Prints in command ESC. and ESC T and in command ESC ' returns temperature in ° Fahrenheit.		
	28.6	Bluetooth support.		
	28.7	Reserved – always is 1.		
	29.0	Update via firmware interface.		
	29.1	Korean characters support.		
	29.2	BLACK MARK mode support.		
	29.3	Barcode reader support.		
	29.4	USB support.		
	29.5	Not in use.		
	29.6	Page mode support.		
	29.7	Reserved – always is 1.		
	30.0	GB2312 (Simplified Chinese) support.		
	30.1	BIG (Traditional Chinese) support.		
	30.2	Not in use.		
	30.3	Not in use.		
	30.4	Not in use.		
	30.5	Not in use.		
	30.6	Not in use.		
	30.7	Reserved – always is 1.		
	31.0	State of flag 1 – determined in command GS)		
	31.1	State of flag 2 – determined in command GS)		
31.2	State of flag 3 – determined in command GS)			
31.3	State of flag 4 – determined in command GS)			
31.4	State of flag 5 – determined in command GS)			
31.5	State of flag 6 – determined in command GS)			

	31.6	Not in use.
	31.7	Reserved – always is 1.
	32.0	State of flag 8 – determined in command GS)
	32.1	State of flag 9 – determined in command GS)
	32.2	State of flag 10 – determined in command GS)
	32.3	State of flag 11 – determined in command GS)
	32.4	State of flag 12 – determined in command GS)
	32.5	State of flag 13 – determined in command GS)
	32.6	Not in use.
	32.7	Reserved – always is 1.

57. (ESC \) Specifying relative horizontal position

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [5Ch] + n1 + n2			
	0 <= n1 <= FFh	Specify number of dots from current position in horizontal (LSB).		
	0 <= n2 <= FFh	Specify number of dots from current position in horizontal (MSB).		
	Printing start position is specified with n1+256*n2 dots. Position exceeding the top of line or the end of line is ignored. Specifying dots in minus (left) direction from the current one, is the complement of N with 65536 (N_=65536-N) .			

58. (ESC]) Loading the default settings stored in Flash memory

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [5Dh]			
Description	The following parameters are read from flash memory and become active: Speed of communication in serial port Configuration “switches” Max printing speed Print density Height of printing line Country Code table Height of barcode Width of barcode single line Font of the text (HRI characters) corresponding to the barcode Position of the HRI characters			

59. (ESC ^) Saving current settings in Flash memory

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [5Eh]			
Description	The values of the following settings are stored in flash memory: Speed of communication in serial port Configuration “switches” Max printing speed Print density Height of printing line Country Code table Height of barcode Width of barcode single line Font of the text (HRI characters) corresponding to the barcode Position of the HRI characters			
	These setting become default settings.			

60. (ESC _) Loading factory settings

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [5Fh]			
Description	<p>This command sets printer in default state with the following settings: All printing attributes like underline, rotating etc. are cleared. Internal font A (12x24) is selected. Pitch between lines is 1/6 inch. Barcode height is 80 dots, and barcode width is 3. All downloaded fonts and bit images are cleared. Printing speed is set as fast as possible. Print density is 100%. Communication speed is set to 115200 bps. Code table becomes 437 (US), end country 0 (US). For Japanese version default values are code table Katakana and country Japan.</p>			

61. (ESC ') Returning voltage and printer head temperature

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [60h]			
Description	Returns 2 bytes of information. The first one is voltage returned in the format: voltage x 10 + 20H and the second is head temperature in the format: head temperature + 20H .			

62. (ESC a) Aligning the characters

Applicable	EP-700	EP-2000	DK1-21	DK1-31						
Code	[1Bh] + [61h] + n									
Description	<p>n is between 0 and 2 or between '0' and '2'</p> <table border="1"> <tr> <td>0 or '0'</td> <td>Left end alignment.</td> </tr> <tr> <td>1 or '1'</td> <td>Centered</td> </tr> <tr> <td>2 or '2'</td> <td>Right end alignment.</td> </tr> </table> <p>Default value is 0.</p> <p>After printing of the line the alignment becomes automatically left-justified.</p>				0 or '0'	Left end alignment.	1 or '1'	Centered	2 or '2'	Right end alignment.
0 or '0'	Left end alignment.									
1 or '1'	Centered									
2 or '2'	Right end alignment.									

63. (ESC b) Increasing text line height

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [62h] + n			
Description	<p>This command adds n dots to current text line height. n is from 0 to 255.</p> <p>After receiving every symbol for printing, printer checks its size (depending on double height attributes, rotation, etc.) and sets current line height, so that the whole letter is printed. The command adds additional dots to the calculated line height.</p> <p>The maximum line height is 48 dots above base line (the line, at which the bottom of most Latin letters is, for example the letter 'A'). If adding n to the current height is larger than maximum height (48), then 48 is set as height.</p> <p>If no text or graphic data in line, the command is not executed.</p> <p>The difference between line height in commands LF, ESC 2, ESC 3 and ESC J is that the height is increased above the letters. The command is useful when inverting a text line in XOR ruled lines mode.</p>			
This command is supported in firmware version 1.51 or higher.				

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64. (ESC c5) Enabling/Disabling the function of LF button

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [63h] + [35h] + n			
Description	n can be from 0 to 255 , but only the least significant bit is of significance. Value 0: Button LF is valid. Value 1: Button LF is invalid. Default value is 0.			

65. (ESC c9) Enabling/Disabling presenter operation

Applicable	DK1-21	DK1-31
Code	[1Bh] + [63h] + [39h] + n	
Description	n selects if the automatic release and retract mode is enabled or disabled. Its values are listed below:	
	Value 5:	Automatic release and retract mode is enabled.
	Value 6:	Presenter operation is disabled.
The automatic release allows to release paper synchronized with the cutter operation. The automatic retract allows to retract paper synchronized with the user specified timeout. Default value is n=6. The default value is restored upon power on.		
This command is supported in firmware version 2.14 or higher.		

66. (ESC d) Printing and feeding paper by n-lines

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [64h] + n			
Description	n can be from 0 to 255 . Prints data inside the buffer and feeds paper by n lines. The beginning of the line is to be considered as the next printing start position. When n=0 paper is fed with 1 line.			

67. (ESC f) Select symbol '0' printing style

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [66h] + [31h] + n			
Description	Possible values for n : 0 or ' 0 ' Slash zero is printed 1 or ' 1 ' Non-slash zero is printed Default value is 0 for all versions except Japanese.			
<i>Warning</i>	Selected value is stored in flash-memory, so this command should to be send only if necessary.			
This command is supported in firmware version 1.51 or higher.				

68. (ESC i) Feeding paper backwards

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [69h]			
Description	If paper has been fed forward with command ESC o , then it returns back. The feed is exactly the same as it was defined in command ESC o , but in reverse direction. If paper has not been fed forward then this command is ignored.			

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69 (ESC j) Moving paper reverse

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [6Ah] + n			
Description	n can be from 0 to 255. Feed paper in reverse direction with the defined number of steps n (1/8 mm).			

70. (ESC o) Temporarily feeding paper forward

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [6Fh] + n			
Description	n can be from 0 to 255. This command temporarily feeds paper forward with the defined number of step n (1/8 mm). After command (ESC i) or after first printing command the paper feeds backwards.			

71. (ESC p) Generating a drawer pulse

Applicable	EP-700	EP-2000
Code	[1Bh] + [70h] + m + t1 + t2	
Description	m	One byte and its value is not significant.
	t1	One byte pulse ON time [t1x2ms]
	t2	One byte pulse OFF time [t2x2ms]
OFF time (t2) must be 4 times longer than ON time (t1): (t1x4) <= t2		

72. (ESC r) Full command for buzzer

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [72h] + Data			
Description	This command is used for making (beeping) a sequence of sounds with a certain frequency and duration. Data is in format, similar to the one used for writing notes and can be of any length. The first invalid character cancels the command.			
	Data format:			
	Notes:	Latin letter of value from 'A' to 'G'		
		'C'	Do	
		'D'	Re	
		'E'	Mi	
		'F'	Fa	
		'G'	Sol	
		'A'	La	
		'B'	Si	
	If immediately after the note comes character '#', then the note is higher in pitch by a semitone (sharp).			
	If immediately after the note comes character '&', then the note is lower in pitch by a semitone (flat).			
	Pause:	Character space (ASCII 20h).		
		After a note or a pause there can be one or a few bytes, which specify the duration. Valid are characters from '0' to '5', they have the following meaning:		
	'0'	Basic duration of a note/pause.		
	'1'	Basic duration * 2.		
	'2'	Basic duration * 4.		

		'3'	Basic duration * 8.
		'4'	Basic duration * 16.
		'5'	Basic duration * 32.
	If there are few durations one after another they are summed up.		
	Going to higher scale:	Character '+'	
	Going to lower scale:	Character '-'	
	Specifying tempo:	Character '^'	
	The character '^' must be followed by number. The number specifies the percentage: duration of notes and intervals to basic duration.		
	Values:	'1'	200%
		'2'	175%
		'3'	140%
		'4'	120%
		'5'	100%
		'6'	80%
		'7'	60%
		'8'	50%
		'9'	40%
	Return to scale 1 (it is default).		Character '@'
	Tone 'La' in it is 440 Hz .		
<i>Warning</i>	It is recommended that the data ends with ASCII code 03h , although any other non-printing character will also stop the command.		

73. (ESC r0) Manual retractive operation

Applicable	DK1-21	DK1-31
Code	[1Bh] + [7Bh] + [30h] + [00h]	
Description	This command is used to retract printer paper. It is valid only if presenter operation is enabled with command (ESC c9).	
This command is supported in firmware version 2.14 or higher.		

74. (ESC r1) Setting the timeout for the retractive operation

Applicable	DK1-21	DK1-31
Code	[1Bh] + [7Bh] + [31h] + n	
Description	0 <= n <= 61	Specify n seconds of time-out If n=0 auto retract is OFF .
	The default value is n=4.	
This command is supported in firmware version 2.14 or higher.		

75. (ESC s) Reading printer settings

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [73h] + n			
Description	This command returns current settings or loaded data in printer. Possible values for n:			
	0 or '0'	Current settings from flash memory are returned in following order: -memory switches – 13 digits 0 or 1 . -serial port speed (bauds) – an integer. -country number (from command ESC R) – an integer -current character table (from command ESC u) – an integer -print density (from command ESC Y) – an integer -print speed (from command ESC X) – an integer -EURO symbol position (from command ESC #) – an integer from 0 to 255. Field separator is ','.		
	1 or '1'	Current settings from printer RAM are returned.		

		The format of data is the same as for subcommand 0 .
	2 or '2'	The currently loaded graphic logo is returned in format: w h D_j , where: w Graphics width in bytes (pixels*8). h Graphics height in pixels. D_j Graphics data – 2*w*h bytes in the sequence as command GS * . Data is in hexadecimal format (each byte send as two hexadecimal symbols).
	4 or '4'	LAN: Format of Data: T1 + D1 + T2 + D2 + ... + [00h] T_i is one byte, selecting the data type, which follows. Possible values: 01h IP Address: 8 ASCII hexadecimal symbols. 02h Subnet Mask: 8 ASCII hexadecimal symbols. 03h Default Gateway: 8 ASCII hexadecimal symbols. 04h Port: 4 ASCII hexadecimal symbols. 05h MAC Address: 12 ASCII hexadecimal symbols. 06h DHCP: 1 ASCII symbol '0' or '1'. 07h DNS: 8 ASCII hexadecimal symbols. 08h Server IP: 8 ASCII hexadecimal symbols. 09h Server Port: 4 ASCII hexadecimal symbols. 0Ah DHCP Target Name: up to 32 ASCII symbols and 0
This command is supported in firmware version 1.42 or higher.		

76. (ESC u) Selecting code table

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [75h] + n			
Description	Values for n:			
	0	English (437)		
	1	Latin 1 (850)		
	2	Portuguese (860)		
	3	Lithuanian		
	4	Latin 2 (852)		
	5	Polish		
	6	Turkish (857)		
	7	Baltic (775)		
	8	Bulgarian (856)		
	9	Russian (866)		
	10	Latvian (857)		
	11	Greek (737)		
	12	Hebrew (862)		
	13	Western (1252)		
	14	CE (1250)		
	15	Turkish (1254)		
	16	Baltic (1257)		
	17	Cirillic (1251)		
	18	Greek (1253)		
	19	Hebrew (1255)		
	20	Katakana		
	21	Arabic		
	22	Arabic (1256)		
	23	Arabic (1256 with Arabic digits and punctuation)		
24	Arabic (1256 with Farsi Arabic digits and punctuation)			

<i>Warning</i>	When printer is switched ON the default code table which is stored in flash-memory is loaded.
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Addition information about Arabic code tables:

When selected, the default print direction is from right to left (the same for code table **19 - Hebrew**). Print direction can be changed by commands **ESC >** and **ESC <**.

Arabic symbols are larger than the symbols in the other code tables (**16 dots** for font **A** and **12 dots** for font **B**).

Depending on the position of the letter in a word, Arabic letters may have **up to 4 different forms** – single letter, right form, middle form and left form.

Code table **21** includes all forms of every letter, so the user program has to select the correct ASCII code. When using code table **22, 23 and 24**, the printer automatically selects the correct letter form dependent on its neighbors. If it is needed to print directly a form of the letter when one of pages **22, 23 or 24** is selected, ASCII code 7Fh is send to the printer – the first symbol after it is taken directly from code table **21**.

Code table 23 differs from **22** by that the digits and some of the punctuation marks are changed with Arabic. Table **24** differs from **23** by that the Arabic digits are Farsi variant (3 of them are different).

For Japanese and Chinese version of the printer only:

When one of the Arabic code tables is selected, then two-byte Asian letters are not accessible – a non-Arabic code page must be selected to print them.

77. (ESC v) Transmitting the printer status

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [76h]			
Description	Printer returns one byte whose bits have the following meaning:			
	Bit	Value 0	Value 1	
	0	Not in use		
	1	There is paper in the presenter.	There is no paper in the presenter.	
	2	There is paper and paper cover is closed.	There is no paper or paper cover is opened	
	3	Printing head is with normal temperature	The printing head is overheated.	
	4	Not in use		
	5	No auto cutter error.	Auto cutter is blocked.	
	6	There is no paper near end.	Paper near end.	
	7	Not in use		

78. (ESC y LAN) Programming LAN settings

Applicable	EP-700	EP-2000
Code	[1Bh] + [79h] + [4Ch] + [41h] + [4Eh] + [3Ah] + Data	
	Format for Data: T₁ + D₁ + T₂ + D₂ + ... + [00h]	
	T_i	Parameter type
	D_i	Parameter data
	For T_i :	
	01h IP Address:	8 ASCII hexadecimal symbols.
02h Subnet Mask:	8 ASCII hexadecimal symbols.	
03h Default Gateway:	8 ASCII hexadecimal symbols.	
04h Port:	4 ASCII hexadecimal symbols.	
06h DHCP:	1 ASCII symbol '0' or '1'.	
07h DNS:	8 ASCII hexadecimal symbols.	
08h Server IP:	8 ASCII hexadecimal symbols.	
09h Server Port:	4 ASCII hexadecimal symbols.	
0Ah DHCP Target Name:	up to 32 ASCII symbols and 0	

79. (ESC {) Enabling/Canceling printing of 180° turned characters

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Bh] + [7Bh] + n			
Description	<p>n can be from 0 to 255, but only the least significant bit is of significance. Value 0: Cancel printing of 180° turned characters. Value 1: Enable printing of 180° turned characters. The whole line is turned. Default value is 0.</p>			

80. (GS FF) Printing in page mode and return to standard mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [0Ch]			
Description	<p>This command prints the image in the currently defined page and leaves page mode. All the page memory is erased.</p>			
This command is supported in firmware version 1.51 or higher.				

81. (GS \$) Specifying the absolute vertical position in page mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [24h] + nL + nH			
Description	nL	Lower byte of the new vertical position.		
	nH	Higher byte of the new vertical position.		
<p>This command sets new vertical print position. If the position is outside the currently active page, the command is not accepted. The real new coordinates depend on the print direction (selected using GS T). Command is invalid in standard mode. Horizontal position is changed with commands ESC \$ and ESC \ - they work both in page and standard mode.</p>				
This command is supported in firmware version 1.51 or higher.				

82. (GS)) Setting printer flags (memory switches)

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [29h] + f₁ + f₂ + ... + f₁₃			
Description	<p>With this command 13 printer flags (memory switches) can be switched ON or OFF. Memory switch setting is retained even after power off. These flags are like virtual switches defining the state of the printer.</p>			
	<p>f_i is the flag that has to be switched ON or OFF. All flags must be set. Possible values are:</p>			
	'0'	Flag is OFF.		
	'1'	Flag is ON.		
	'.'	Flag stays unchanged.		
Meaning of different flags:				
Flag	OFF		ON	
1	Power on/off sound disabled		Power on/off sound enabled	
2	CR (ASCII code 13) is not executed		CR is executed as LF (ASCII code 10)	
3	LF (ASCII code 10) is executed		LF (ASCII code 10) is not executed	
4	LF immediately after CR as selected by flag3		LF immediately after CR is not executed	
5	Default is font A (12x24)		Default is font B (9x16)	
6	78 mm paper roll		58 mm paper roll	
7	Continuous paper mode		Label/Black mark mode	
8	Hardware flow control		Xon/Xoff flow control	
9	USB interface disabled		USB interface enabled	
10	Not Used			
11	Normal operation mode		Protocol mode	
12	Cutter enabled		Cutter disabled	
13	Default select printer		Default select customer display	

83. (GS *) Defining a Downloaded Bit Image (logo)

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [2Ah] + n₁ + n₂ + D₁ + ... + D_n			
Description	n₁	Between 0 and 127 . It defines the horizontal size of the downloaded image.		
	n₂	Between 0 and 248 . It defines the vertical size of the downloaded image.		
	D_i	Data for the bit image. This data consist of n₁*n₂ bytes, from left to right and from top to bottom, but n₁ bytes in each horizontal line (n₁*8 dots) and n₂ lines. Each bit defines a dot, 1 corresponds to black. Total number of bytes cannot be more than 16 kB.		
	This command defines a bit image that contains number of dots, defined by n₁ and n₂ . Image is stored and after printer is switched off. Selecting value 0 for n₁ and/or n₂ deactivates (deletes) the logo. By default there is no logo image in printer memory. The defined bit image is printed with command GS I .			

84. (GS /) Printing a Downloaded Bit Image

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [2Fh] + m			
Description	m defines the printing mode and can be:			
	m	Mode	Vertical dots	Horizontal dots
	0	Normal	203 DPI	203 DPI
	1	Double width	203 DPI	101 DPI
	2	Double height	101 DPI	203 DPI
	3	Double height and Double width	101 DPI	101 DPI
<i>Warning</i>	When a downloaded bit image has not been defined, this command is ignored. Command ESC @ (initialization of the printer) does not clear downloaded bit image. A portion of a bit image exceeding one line length is not printed.			

85. (GS :) Starting/ending macro definitions

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [3Ah]			
Description	Specifies the start or end of macro definitions. Maximum content available for macro definition is 4094 bytes. After the last byte of data, the command is send once again to define the end. Even with ESC @ (initialization of the printer) having been executed, defined content is not cleared. Therefore, it is possible to include ESC @ into the content of macro definition. Normal printing operation is carried out even while in macro definition.			

86. (GS B) Enabling/Disabling inverse printing (white on black)

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [42h] + n			
Description	n is from 0 to 255 , but only the least significant bit is checked. Value 0: Disable inverse printing. Value 1: Enable inverse printing. Default value: 0.			

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87. (GS C) Read the Real Time Clock

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [43h]			
Description	This command returns the current value of the RTC as a string. Returned data format (21 bytes): YY MM DD WW hh mm ss [00h]			
	YY	Year without century (00-99)		
	MM	Month (01-12)		
	DD	Day (01-31)		
	WW	Day of the week (01-07)		
	hh	Hour (00-23)		
	mm	Minutes (00-59)		
	ss	Seconds (00-59)		
Field separator is space symbol (ASCII 32h). Data are terminated with ASCII 00h.				
This command is supported in firmware version 1.51 or higher.				

88. (GS H) Selecting printing position of HRI Code

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [48h] + n			
Description	Selecting printing position of HRI code when printing barcodes. n is between 0 and 3 or between '0' and '3':			
	Value:	Printing position:		
	0	No printing		
	1	Above the barcode		
	2	Below the barcode		
3	Both above and below the barcode			

89. (GS L) Setting left margin

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [4Ch] + n1 + n2			
Description	This command sets the position in dots (1/203 inches), from which begins printing of each line. It only works when it is entered at the beginning of line. The value of the left margin is n1+256*n2 dots. Default value is 0.			
	This command is valid in standard mode.			

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90. (GS Q) Printing 2-D barcode

Applicable	EP-700	EP-2000	DK1-21	DK1-31	
Code	[1Dh] + [51h] + n + ...				
Description	n selects the type of barcode				
	2 or '2' : PDF417				
	6 or '6' : QR Code				
	PDF417				
	Code: [1Dh] + [51h] + n + Type + EncMode + ECCL + Size + nl + nh + Data_j				
	Type (PDF417 type)	0: Standard 1: Truncated			
	EncMode (encoding mode)	0: Automatic most suitable 1: Binary encoding			
	ECCL (error correction control level)	Possible values 0 to 9 . ECCL=9 automatically selects correction level dependent on data length.			
	Size	Specify one from the table below: (X: bar width, Y: row height)			
		0	X=2, Y=4	8	X=12, Y=9
		1	X=2, Y=9	9	X=12, Y=9
		2	X=2, Y=15	10	X=12, Y=15
		3	X=2, Y=20	11	X=12, Y=20
		4	X=7, Y=4	12	X=20, Y=4
		5	X=7, Y=9	13	X=20, Y=9
		6	X=7, Y=15	14	X=20, Y=15
7		X=7, Y=20	15	X=20, Y=20	
nl, nh	Specify low and high byte of data size value (1 to 384).				
Data_j	Data bytes				
QR Code					
Code: [1Dh] + [51h] + n + Size + ECCL + nl + nh + Data_j					
Size	Size of symbol. Possible values: 1, 4, 6, 8, 10, 12, 14				
ECCL (error correction control level)	1:	L (7%)			
	2:	M(15%)			
	3:	Q(25%)			
	4:	H (30%)			
nl, nh	Specify low and high byte of data size value (1 to 384).				
Data_j	Data bytes				

91. (GS R) Filling or inverting a rectangle in page mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [52h] + xL + xH + yL + yH + dxL + dxH+ dyL + dyH + n			
Description	xL and xH	Low and high byte of the horizontal position of the top left corner of the rectangle in the active page.		
	yL and yH	Low and high byte of the vertical position of the top left corner of the rectangle in the active page.		
	dxL and dxH	Low and high byte of the width of the rectangle.		
	dyL and dyH	Low and high byte of the height of the rectangle.		
	n	Filling mode: 0 or '0' : Rectangle area is cleared (white). 1 or '1' : Rectangle area is filled (black). 2 or '2' : Rectangle area is inverted.		
Description	The coordinates are relative to the left corner of the page, defined using ESC W (print direction doesn't matter). If some part of the rectangle is outside the page, only the part inside the page is filled. The command is invalid in standard mode.			
This command is supported in firmware version 1.51 or higher.				

92. (GS S) Selecting 2-D barcode cell size

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [53h] + n			
Description	This command sets the sell size for two dimensional barcode QR Code . Possible values for n : 0 or '0' : Sell size 3. 1 or '1' : Sell size 4.			

93. (GS T) Selecting the print direction in page mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [54h] + n			
Description	This command selects the current print direction and set starting point to (0,0) according to this direction. Accepted values of n :			
	0 or '0'	Printing from left to right, feed to bottom. Starting point in left top corner of the page.		
	1 or '1'	Printing from bottom to top, feed to right. Starting point in left bottom corner of the page.		
	2 or '2'	Printing from right to left, feed to top. Starting point in right bottom corner of the page.		
	3 or '3'	Printing from top to bottom, feed to left. Starting point in right top corner of the page		
Warning	In page mode this command changes immediately the print direction. In standard mode the new value is stored and used after entering page mode.			
This command is supported in firmware version 1.51 or higher.				

94. (GS U) Selecting standard mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [55h]			
Description	This command switches from page mode to standard mode. The whole memory area of page mode is cleared. The command is invalid in standard mode.			
This command is supported in firmware version 1.51 or higher.				

95. (GS V) Paper cutting

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [56h] + m [1Dh] + [56h] + m + n			
Description	<p>n is one byte and its use depends on m. m is one byte and specifies cut mode. Possible values of m: 1 or '1' :direct paper cut, n – not used 66 : feeds receipt paper to cutting position and n more steps (n x 0.125 mm), then cuts receipt. 104 : feeds receipt paper to cutting position and n more steps (n x 0.125 mm), then cuts receipt and feeds it back to print position.</p>			

96. (GS W) Setting the print area width

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [57h] + n1 + n2			
Description	<p>This command sets the print area width in dots (1/203 inches). This command only works when it is entered at the beginning of a line. The defined value of print area width is n1+256*n2 dots. The default value depends on the mode 58 mm /78 mm paper roll and is 408 or 576 dots.</p>			
This command is valid in standard mode only.				

97. (GS X) Drawing a rectangular box with selected thickness in page mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [58h] + xL + xH + yL + yH + dxL + dxH+ dyL + dyH + d			
	xL and xH	Low and high byte of the horizontal position of the top left corner of the box in the active page.		
	yL and yH	Low and high byte of the vertical position of the top left corner of the box in the active page.		
	dxL and dxH	Low and high byte of the width of the box.		
	dyL and dyH	Low and high byte of the height of the box.		
	n	Filling mode: 0 or '0' : Area under the box is cleared (white). 1 or '1' : Area under the box is filled (black). 2 or '2' : Area under the box is inverted.		
m	Box thickness (from 1 to 64).			
Description	<p>The coordinates are relative to the left corner of the page, defined using ESC W (print direction doesn't matter). If some part of the rectangle is outside of the page, only the part inside the page is filled. The box is always to the inner side of the rectangle. The command is invalid in standard mode.</p>			
This command is supported in firmware version 1.51 or higher.				

98. (GS Z) Printing only the non-blank area in page mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [5Ah]			
Description	<p>This command checks the whole memory of the page mode. The area from the first horizontal line with at least 1 black dot to the last such line is printed. The printer does not leave page mode, current page start position and size are not changed. The printed width is 576 or 408 dots depending on the selected paper width. The command is invalid in standard mode.</p>			
This command is supported in firmware version 1.51 or higher.				

99. (GS \) Specifying the relative vertical position in page mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [5ch] + nL + nH			
	nL	Lower byte of the new vertical position.		
	nH	Higher byte of the new vertical position.		
Description	<p>This command sets vertical print position relative to the current one. The relative vertical offset is nL + 256*nH dots. Offsets in negative direction are given as complement of 65536 (n_ = 65536-n). If the position is outside the currently active page, the command is not accepted.</p> <p>The new coordinates depend on the print direction (selected using GS T).</p> <p>The command is invalid in standard mode.</p> <p>The horizontal position is changed with commands ESC \$ and ESC \ - they work both in page and standard mode.</p>			
This command is supported in firmware version 1.51 or higher.				

100. (GS ^) Executing macro

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [5Eh] + n1 + n2 + n3			
Description	n1	The number of times the macro executes. Between 1 and 255.		
	n2	Waiting time on macro execution. Waiting time of n2 x 100 msec is given for every execution. Between 1 and 255.		
	n3	<p>Macro execution mode. Possible values are:</p> <p>0: Continuous execution: The Macro is executed n1 times continuously at the time intervals specified by n2.</p> <p>1: Execution by LF switch: When LF switch is pressed, the macro is executed once.</p>		

101. (GS c) Setting the Real Time Clock

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [63h] + YY MM DD WW hh mm[00h]			
Description	YY	Year without century (00-99)		
	MM	Month (01-12)		
	DD	Day (01-31)		
	WW	Day of the week (01-07)		
	hh	Hour (00-23)		
	mm	Minutes (00-59)		
	Field separator is space symbol (ASCII 32h). Data is terminated with ASCII 00h .			
Warning	This command exist in printer versions 1.51 or newer . The command clears the seconds!			

102. (GS f) Setting the font of HRI characters of the barcode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [66h] + n			
Description	n is one of the following values:			
	0	Font A		
	1	Font B		

103. (GS h) Setting the height of the barcode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [68h] + n			
Description	n is between 1 and 255 and it defines the height of the barcode in dots (1/203 inches). Default value: n=162.			

104. (GS k) Printing a barcode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	(1) [1Dh] + [6Bh] + m + D_i + [00h] or (2) [1Dh] + [6Bh] + m + n + D_i or (3) [1Dh] + [6Bh] + m + c + n1 + n2 + D_i			
	D_i	Data for the barcode. The number and possible characters depend on the type of the barcode and are defined underneath.		
	n	It defines the length of the data when $65 \leq m \leq 73$.		
	For 2-D barcode PDF417:			
	n1 and n2	They define the length of the data: N=n1+256*n2. Max value is 1000.		
	c	It defines whether the barcode data is compressed. Possible values are 0 or 1.		
	m	It defines the type of the barcode and may be:		
	m (1)	Type of barcode	Length	Possible characters
	0	UPC-A	11	$48 \leq D_i \leq 57$
	1	UPC-E	11	$48 \leq D_i \leq 57$
	2	EAN13 (JAN13)	12	$48 \leq D_i \leq 57$
	3	EAN8 (JAN8)	7	$48 \leq D_i \leq 57$
	4	CODE 39	-	$48 \leq D_i \leq 57, 65 \leq D_i \leq 90, 32, 36, 37, 43, 45, 46, 47$
	5	ITF	-	$48 \leq D_i \leq 57$
	6	CODABAR (NW-7)	-	$48 \leq D_i \leq 57, 65 \leq D_i \leq 68, 36, 43, 45, 46, 47, 58$
	m (2)	Type of barcode	Length	Possible characters
	65	UPC-A	11	$48 \leq D_i \leq 57$
	66	UPC-E	11	$48 \leq D_i \leq 57$
	67	EAN13 (JAN13)	12	$48 \leq D_i \leq 57$
	68	EAN8 (JAN8)	7	$48 \leq D_i \leq 57$
	69	CODE 39	-	$48 \leq D_i \leq 57, 65 \leq D_i \leq 90, 32, 36, 37, 43, 45, 46, 47$
	70	ITF	-	$48 \leq D_i \leq 57$
	71	CODABAR (NW-7)	-	$48 \leq D_i \leq 57, 65 \leq D_i \leq 68, 36, 43, 45, 46, 47, 58$
	72	CODE 93	-	$0 \leq D_i \leq 127$
	73	CODE 128	-	$0 \leq D_i \leq 127$
	75	CODE 128 (Auto)	-	$0 \leq D_i \leq 127$
	76	EAN128	-	$0 \leq D_i \leq 127$
	m (3)	EAN8 (JAN8)	Length	Possible characters
	74	PDF417	-	$0 \leq D_i \leq 255$
Warning	If the barcode is wider than the print area for one line, the barcode is not printed.			

Additional information for Code 128:

Code 128 covers the range of ASCII codes from 0 to 127 with the help of 3 code sets A, B and C, which can be used in one and the same barcode.

Code set A:

Consists of characters with ASCII codes from 0 to 95 and function characters FNC1, FNC2, FNC23, FNC4, SHIFT, CODEA, CODEC.

Code set B:

Consists of characters with ASCII codes from 32 to 127 and function characters FNC1, FNC2, FNC23, FNC4, SHIFT, CODEB, CODEC.

Code set C:

It is used for coding sections of the barcode which consist only of digits. Each character defines 2 digits, which are coded with ASCII codes from 0 to 99. Also possible are function characters FNC1, CODEA, CODEB.

The barcode always begins with one of the characters **CODEA, CODEB or CODEC**, which defines the code set that will be used. If necessary the code set can be changed by inserting one of these characters in the barcode. The character following **SHIFT** is treated as a character of code set **B** if the current code set is **A**, and as a character of code set **A** if the current code set is **B**. If a character unacceptable for the current code set is given then barcode is not printed.

Function characters are defined with 2 bytes as follows:

Character	Coding		
	Decimal	Hexadecimal	Text
FNC1	123, 49	7B, 31	{1
FNC2	123, 50	7B, 32	{2
FNC3	123, 51	7B, 33	{3
FNC4	123, 52	7B, 34	{4
CODEA	123, 65	7B, 41	{A
CODEA	123, 66	7B, 42	{B
CODEA	123, 67	7B, 43	{C
SHIFT	123, 83	7B, 53	{S
{	123, 123	7B, 7B	{{

Code 128 Auto uses the same code sets, but the printer tests the data and automatically switches between the code sets, trying to print a minimum width barcode. **D_i** contains only the real data to be printed.

EAN 128 uses Code 128 set, but puts an FNC1 code in the beginning, and if human readable text is enabled, the text is separated in fields (Application identifiers). If any of the fields contains invalid data, the barcode is not printed. Code sets are switched automatically like **Code 128 Auto**.

105. (GS p) Settings for 2D barcode PDF417

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [70h] + e + c + r			
Description	e	Sets an error correction level for barcode PDF417 . At a value bigger than 8 the printer chooses automatically the appropriate level depending on the quantity of the coded data, else the defined value is used.		
	c	Sets the max number of columns, which the printer uses for printing the barcode.		
	r	Sets the max number of rows, which the printer uses for printing the barcode.		

106. (GS q) Selecting the height of the module of 2D barcode PDF417

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [71h] + n			
Description	n	n is between 4 and 32 including and is the height of one line from the barcode. By default n=18.		

107. (GS w) Selecting the horizontal size (Scale factor) of the barcode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Dh] + [77h] + n			
Description	n	n is between 2 and 4 including and is the number of dots in barcode's fine element width. By default n=3.		

108. (GS x) Direct text print in page mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31	
Code	[1Dh] + [78h] + xL + xH + yL + yH + sX + sY+ Attr + D _i + [00h]				
Description	This command prints a text string in page mode. It allows larger multiplication of the symbol in comparison with the normal text printing (more than 2).				
	xL and xH	X coordinate of upper left corner of first letter.			
	yL and yH	Y coordinate of upper left corner of first letter.			
	sX	Size (multiplication) in horizontal direction. From 1 to 16.			
	sY	Size (multiplication) in vertical direction. From 1 to 16.			
	Attr	Print attributes. One byte from 0 to 255. Each bit of Attr indicates the following:			
		Bit	Function	Value 0	Value 1
		0	Font size	A (12x24 or 24x24)	B (9x16 or 16x16)
		1	Not used		
		2	Not used		
3		Bold	Enabled	Disabled	
4		Not used			
5		Not used			
6	Not used				
7	Not used				
D _i	Data. Bytes with ASCII codes below 20h are ignored.				
X and Y coordinates are xL+256*xH and yL+256*yH					
The currently active page direction, country and code table are used. From all print attributes only Bold is used. After every printed X coordinate is automatically increased by symbol width + character space, multiplied by sX If some part of the symbol is not in the selected page area, the symbol is not printed. The command is executed in page mode only.					
This command is supported in firmware version 1.51 or higher.					

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Asian Languages Support (Option)

109. (FS !) Specifying printing mode of two-byte text data

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Ch] + [21h] + n			
Description	Data is given in binary code. Each n bit indicates the following:			
	Bit	Function	Value 0	Value 1
	0	Font size	24x24	16x16
	1	Undefined		
	2	Undefined		
	3	Double Height	Canceled	Specified
	4	Double Width	Canceled	Specified
	5	Undefined		
	6	Undefined		
	7	Underline	Canceled	Specified
<p>An underline is attached to the full character width, which, however, is not attached to the part having been skipped by the horizontal tab. Neither is attached to 90° right turned characters. The underline width is as specified by (FS-).</p> <p>The default setting is 1 dot width.</p> <p>If at the same time are given Double Height and/or Double Width and 90° right turning of characters, then the sequence of execution is as follows: Character is doubled in the direction indicated. Character is turned at 90° right angle.</p>				

110. (FS \$) Selecting two-byte text mode JIS or GB2312

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Ch] + [26h]			
Description	This command selects two-byte characters mode. Depending on the version of the printer, this may be:			
	Japanese version: JIS character table			
	First byte is between 20h and 7Fh , second byte between 00h and 7Fh .			
	If outside this range, one byte ASCII characters are printed.			
	Chinese version: GB2312 (Simplified Chinese)			
First and second bytes are between A0h and FFh .				
If outside this range, one-byte ASCII characters are printed.				

111. (FS -) Selecting/Canceling underline for two-byte text mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Ch] + [2Dh] + n			
Description	An underline is attached to the full character width. It is, however, not attached to the part having been skipped by horizontal tab command.			
	An underline is not attached to 90° right turned characters.			
	The following values of n are possible:			
	0 or 30h	Cancel underline.		
1 or 31h	Specify an underline of 1-dot width.			
2 or 32h	Specify an underline of 2-dot width.			

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112. (FS .) Canceling two-byte text mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Ch] + [2Eh] + n			
Description	<p>The command cancels two-byte characters mode. (JIS or GB2312 depending on the version). For Japanese version only: If Shift-JIS character mode was selected before using FS C command, then the printer returns to Shift-JIS mode instead to one byte ASCII text mode.</p>			

113. (FS 2) Defining one custom Kanji character

Applicable	EP-700	EP-2000	DK1-21	DK1-31
Code	[1Ch] + [32h] + c₁ + c₂ + D₁ + ... + D_k			
Description	<p>c₁=77h, c₂=21h-2Fh (JIS) or c₁=ECh, c₂=40h-4Eh (Shift-JIS) D₁ – D_k are data bytes.</p> <p>Character data is send starting from the top to bottom and from the left to right (vertical columns scanning), 3 bytes per column for large 24x24 font and 2 bytes per column for small 16x16 font, MSB first, bit '1' is black. 72 data bytes expected for large font, 32 bytes for small font.</p> <p>When large font is selected, then one 24x24 character is defined, otherwise one 16x16 character is defined.</p> <p>Downloaded characters are valid even after switching off the printer.</p> <p>Kanji characters can be downloaded using command ESC &, too. In this case data are send horizontally, like the ASCII characters.</p>			
This command is supported in firmware version 1.29 or higher.				

114. (FS C) Selecting Shift-JIS mode (Japanese version only)

Applicable	EP-700	EP-2000	DK1-21	DK1-31				
Code	[1Ch] + [43h] + n							
Description	<p>This command selects/cancels two-byte characters mode Shift-JIS. It is supported only in Japanese version of the printer. First byte is between 80h and 9Fh or between E0h and 9Fh, second byte between 40h and FFh. If outside this range, one-byte ASCII characters are printed.</p> <p>If both JIS and Shift-JIS modes are selected, the Shift-JIS mode is active. The following values of n are possible:</p> <table border="1"> <tr> <td>0 or 30h</td> <td>Cancel two-byte Shift-JIS mode.</td> </tr> <tr> <td>1 or 31h</td> <td>Specify two-byte Shift-JIS mode.</td> </tr> </table>				0 or 30h	Cancel two-byte Shift-JIS mode.	1 or 31h	Specify two-byte Shift-JIS mode.
0 or 30h	Cancel two-byte Shift-JIS mode.							
1 or 31h	Specify two-byte Shift-JIS mode.							

115. (FS S) Specifying character spacing for two-byte text mode

Applicable	EP-700	EP-2000	DK1-21	DK1-31				
Code	[1Ch] + [53h] + n1 + n2							
Description	<p>This command sets the leftward and rightward space amount for two-byte character mode.</p> <table border="1"> <tr> <td>n1</td> <td>Specifies leftward space.</td> </tr> <tr> <td>n2</td> <td>Specifies rightward space.</td> </tr> </table> <p>The space amount is set in dot unit (1/203 inch unit). The initial values are n1=0 and n2=0. When the font size is doubled the space between characters is also doubled. Possible values are from 0 to 63 dots.</p>				n1	Specifies leftward space.	n2	Specifies rightward space.
n1	Specifies leftward space.							
n2	Specifies rightward space.							

116. (FS W) Selecting double size characters for two-byte text mode

Applicable		EP-700	EP-2000	DK1-21	DK1-31
Code	[1Ch] + [57h] + n				
Description	The following values of n are possible:				
	0 or 30h	Cancel double size characters.			
	1 or 31h	Specify double size characters.			

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