COMMANDS MANUAL

K80

CUSTOM®

CUSTOM S.p.A.
Via Berettine 2/B
43010 Fontevivo (PARMA) - Italy
Tel. : +39 0521-680111
Fax : +39 0521-610701
http: www.custom.biz

Customer Service Department:
Email : support@custom.it

THE IMAGES USED IN THIS MANUAL ARE USED AS AN ILLUSTRATIVE EXAMPLES. THEY COULDN'T REPRODUCE THE DESCRIBED MODEL FAITHFULLY.

UNLESS OTHERWISE SPECIFIED, THE INFORMATION GIVEN IN THIS MANUAL ARE REFERRED TO ALL MODELS IN PRODUCTION AT THE ISSUE DATE OF THIS DOCUMENT.

GENERAL INSTRUCTIONS

CUSTOM S.p.A. declines all responsibility for accidents or damage to persons or property occurring as a result of tampering, structural or functional modifications, unsuitable or incorrect installations, environments not in keeping with the equipment's protection degree or with the required temperature and humidity conditions, failure to carry out maintenance and periodical inspections and poor repair work.

GENERAL SAFETY INFORMATION

Your attention is drawn to the following actions that could compromise the characteristics of the product:

- Read and retain the instructions which follow.
- Follow all indications and instructions given on the device.
- Make sure that the surface on which the device rests is stable. If it is not, the device could fall, seriously damaging it.
- Make sure that the device rests on a hard (non-padded) surface and that there is sufficient ventilation.
- Do not fix indissolubly the device or its accessories such as power supplies unless specifically provided in this manual.
- When positioning the device, make sure cables do not get damaged.
- [Only OEM equipment] The equipment must be installed in a kiosk or system that provides mechanical, electrical and fire protection.
- The mains power supply must comply with the rules in force in the Country where you intend to install the equipment.
- Make sure that there is an easily-accessible outlet with a capacity of no less than 10A closely to where the device is to be installed.
- Make sure the power cable provided with the appliance, or that you intend to use is suitable with the wall socket available in the system.
- Make sure the electrical system that supplies power to the device is equipped with a ground wire and is protected by a differential switch.
- Before any type of work is done on the machine, disconnect the power supply.
- Use the type of electrical power supply indicated on the device label.
- These devices are intended to be powered by a separately certified power module having an SELV, non-energy hazardous output. (IEC60950-1 second edition).
- [Only POS equipment] The energy to the equipment must be provided by power supply approved by CUSTOM S.p.A.
- Take care the operating temperature range of equipment and its ancillary components.
- Do not block the ventilation openings.
- Do not insert objects inside the device as this could cause short-circuiting or damage components that could jeopardize printer functioning.
- Do not carry out repairs on the device yourself, except for the normal maintenance operations given in the user manual.
- The equipment must be accessible on these components only to trained, authorized personnel.
- Periodically perform scheduled maintenance on the device to avoid dirt build-up that could compromise the correct, safe operation of the unit.
- Do not touch the head heating line with bare hands or metal objects. Do not perform any operation inside the printer immediately after printing because the head and motor tend to become very hot.
- Use consumables approved by CUSTOM S.p.A.

CE

THE CE MARK AFFIXED TO THE PRODUCT CERTIFY THAT THE PRODUCT SATISFIES THE BASIC SAFETY REQUIREMENTS.

The device is in conformity with the essential Electromagnetic Compatibility and Electric Safety requirements laid down in Directives 2006/95/CE and 2004/108/CE inasmuch as it was designed in conformity with the provisions laid down in the following Standards:

- EN 55022 Class B *(Limits and methods of measurements of radio disturbance characteristics of Information Technology Equipment)*
- EN 55024 *(Information Technology Equipment – Immunity characteristics – Limits and methods of measurement)*
- EN 60950-1 *(Safety of information equipment including electrical business equipment)*

The device is in conformity with the essential requirements laid down in Directives 1999/05/CE about devices equipped with intentional radiators
The Declaration of Conformity and other available certifications can be request to support@custom.it please providing the correct part number shown on product label or in the invoice.

GUIDELINES FOR THE DISPOSAL OF THE PRODUCT

The crossed-out rubbish bin logo means that used electrical and electronic products shall NOT be mixed with unsorted municipal waste. For more detailed information about recycling of this product, refer to the instructions of your country for the disposal of these products.

- Do not dispose of this equipment as miscellaneous solid municipal waste, but arrange to have it collected separately.
- The re-use or correct recycling of the electronic and electrical equipment (EEE) is important in order to protect the environment and the wellbeing of humans.
- In accordance with European Directive WEEE 2002/96/EC, special collection points are available to which to deliver waste electrical and electronic equipment and the equipment can also be handed over to a distributor at the moment of purchasing a new equivalent type.
- The public administration and producers of electrical and electronic equipment are involved in facilitating the processes of the re-use and recovery of waste electrical and electronic equipment through the organisation of collection activities and the use of appropriate planning arrangements.
- Unauthorised disposal of waste electrical and electronic equipment is punishable by law with the appropriate penalties.

The format used for this manual improves use of natural resources reducing the quantity of necessary paper to print this copy.

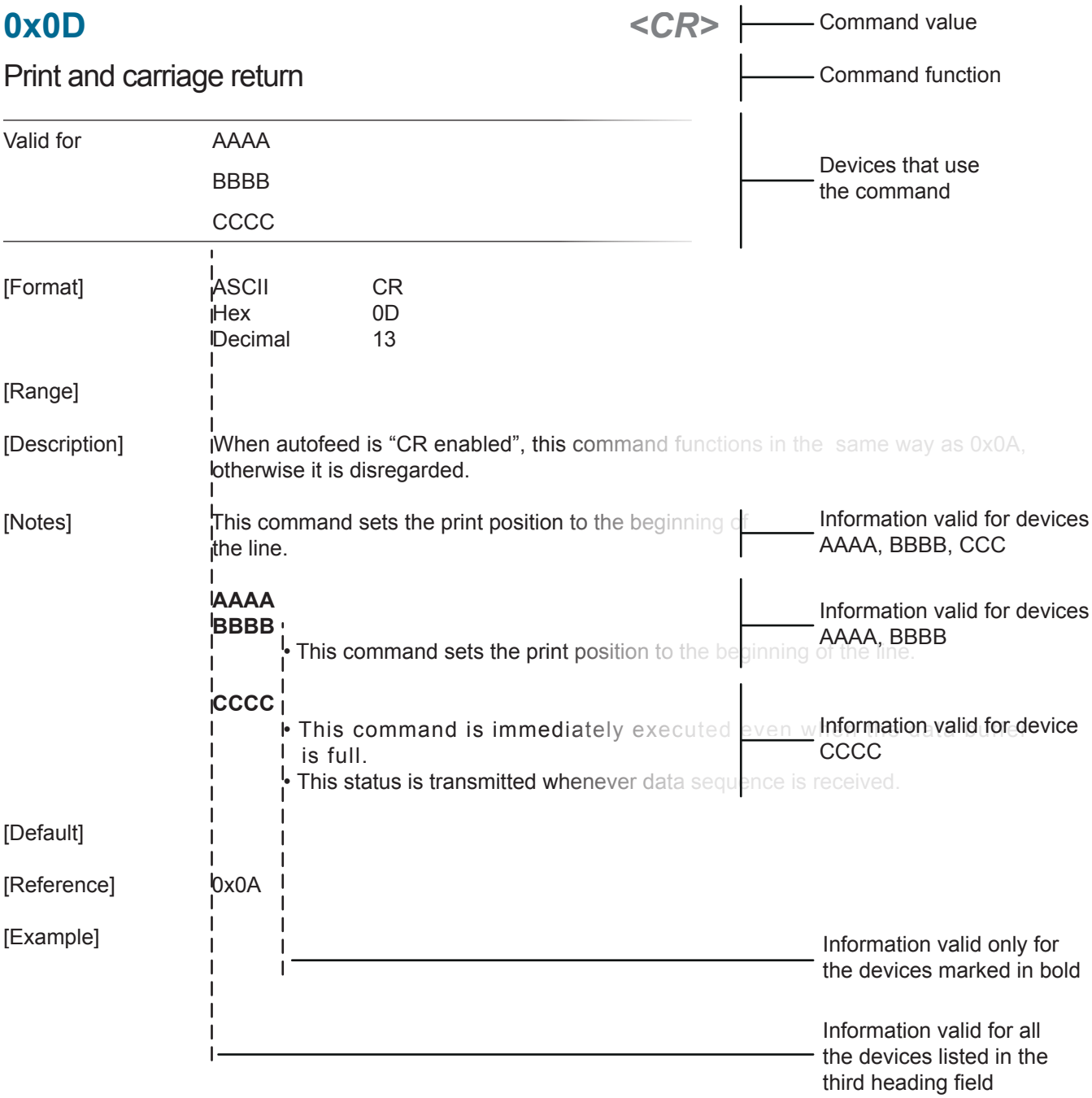
INTRODUCTION 

CUSTOM/POS EMULATION 

ALIGNMENT 

INTRODUCTION

Each command reported in this manual is described as shown in the following picture. In the first heading field is reported the hexadecimal command value and the ASCII command value. In the second heading field reported the command function. In the third heading field are listed the devices on which it is possible to use the command (for example, device AAAA).



The fields shown in the scheme of the previous figure have the following meaning:

[Format]	ASCII, hexadecimal and decimal command value.
[Range]	Limits of the values the command and its variables can take
[Description]	Description of command function
[Notes]	Additional information about command use and settings .
[Default]	Default value of the command and its variables.
[Reference]	Pertaining commands related to described command.
[Example]	Example of using the command

Listed below are the meanings of some of symbols that may be found in the command description:

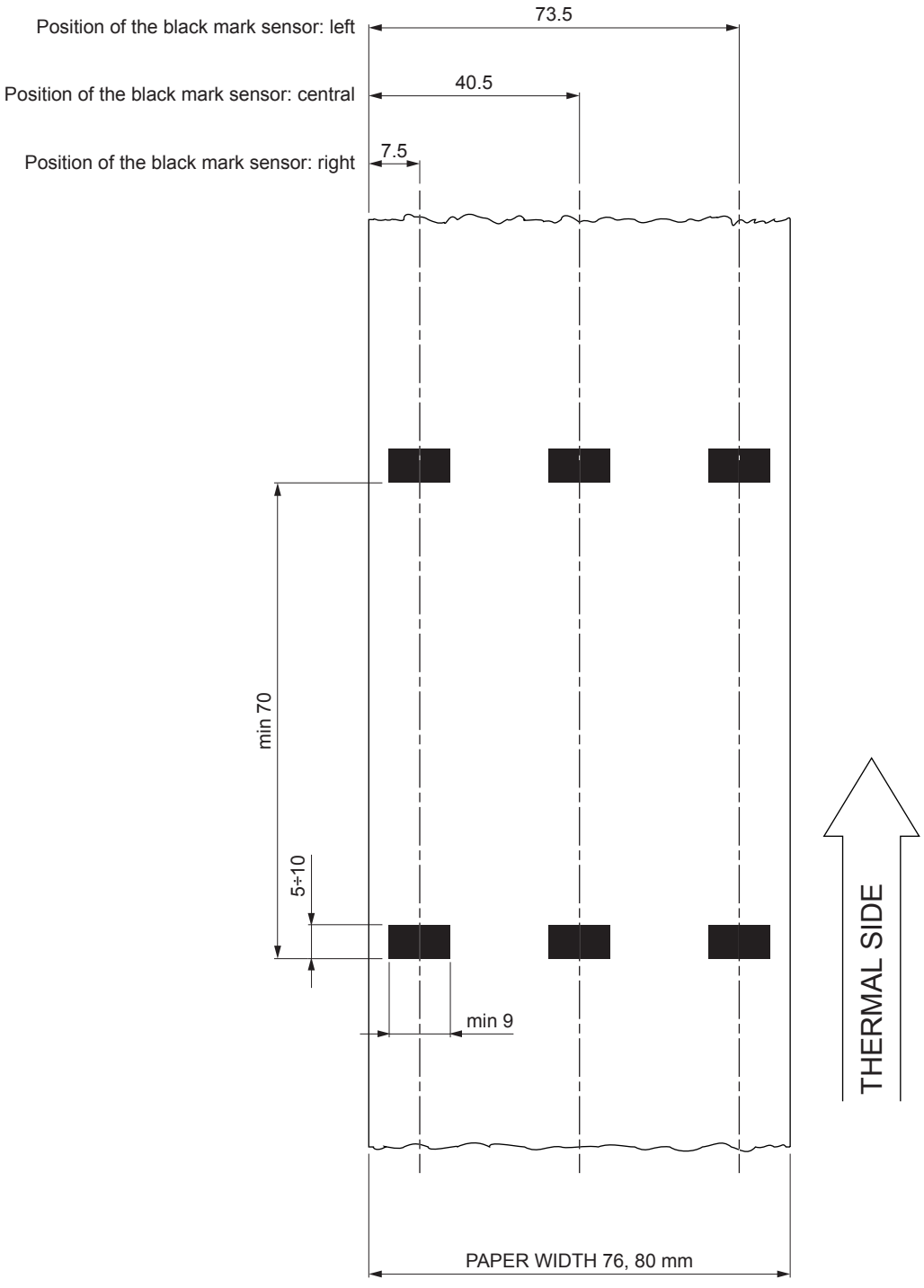
0x	indicates the representation of the command hexadecimal value (for example 0x40 means HEX 40).
n, m, t, x, y	are optional parameters that can have different values.

PAPER SPECIFICATIONS

Paper with black mark on the thermal side

ATTENTION: Requires the assembly of the black mark sensor kit (optional).

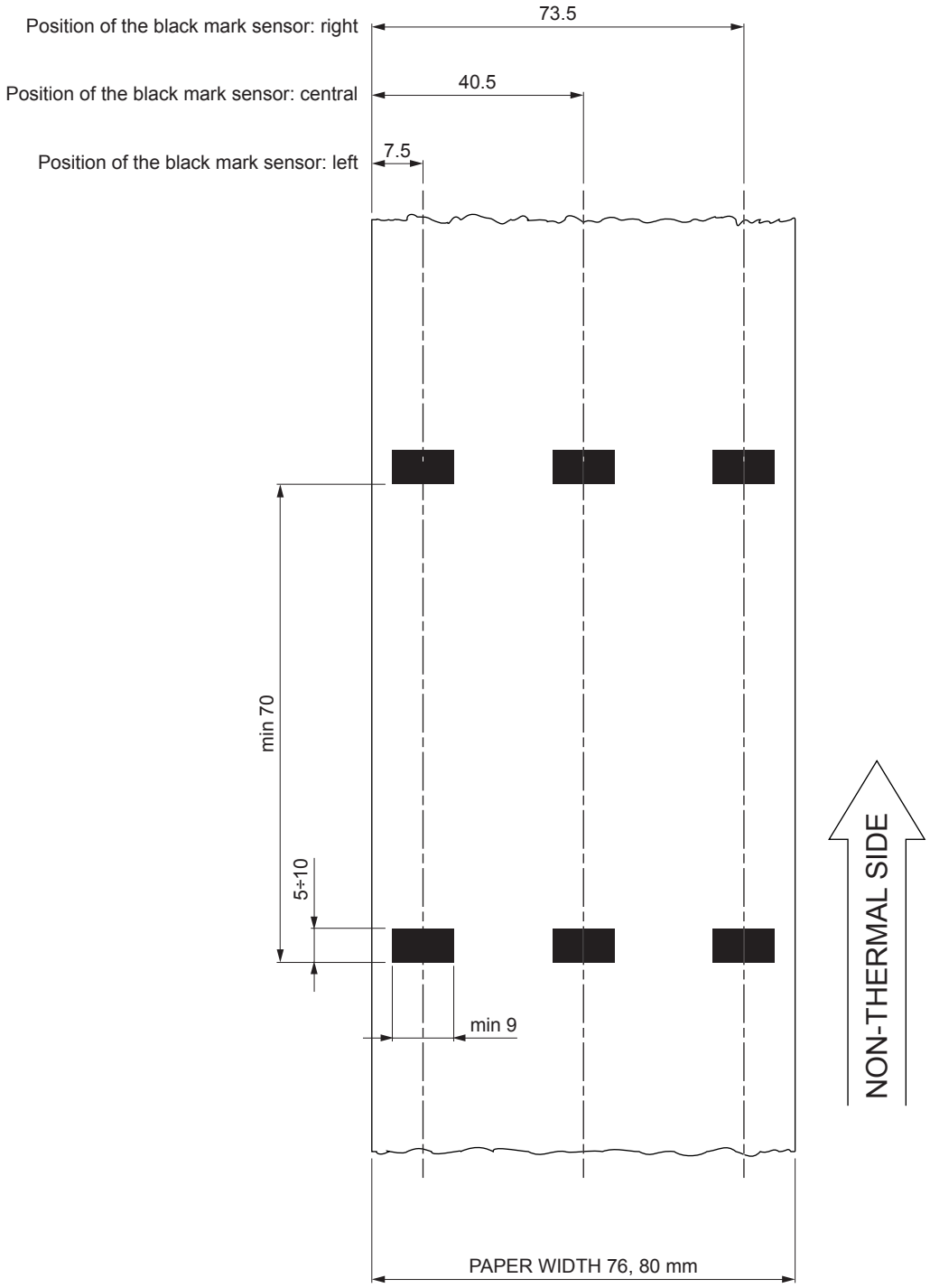
NOTE: All the dimensions shown in following figures are in millimetres.



Paper with black mark on the non-thermal side

ATTENTION: Requires the assembly of the black mark sensor kit (optional).

NOTE: All the dimensions shown in following figures are in millimetres.



CUSTOM/POS EMULATION

COMMANDS LISTED IN ALPHANUMERIC ORDER

COMMANDS LISTED BY FUNCTION

BARCODE COMMANDS

CHARACTER COMMANDS

LINE SPACING COMMANDS

PRINT COMMANDS

STATUS COMMAND

BIT IMAGE COMMANDS

PRINT POSITION COMMAND

MACRO FUNCTIONS

MECHANISM CONTROL

MISCELLANEOUS COMMAND

ALIGNMENT COMMANDS

0x1D 0x28 0x6B

<GS (>

Print two-dimensional barcode

Valid for	K80

[Format]

ASCII	GS	(	k	pL	pH	cn	fn
Hex	1D	28	6B	pL	pH	cn	fn
Decimal	29	40	107	pL	pH	cn	fn

[Range]

[Description]

Processes the data concerning two-dimensional barcode.

- Barcode type is specified by *cn*
- Function is specified by *fn*

cn	fn	FUNCTION	
49	65	Function 065	QRcode: Specify encoding scheme
49	66	Function 066	QRcode: Specify dot size of the module
49	67	Function 067	QRcode: Specify size of barcode
49	69	Function 069	QRcode: Specify the error correction level
49	80	Function 080	QRcode: Store the received data in the barcode save area
49	81	Function 081	QRcode: Print the barcode data

[Notes]

[Default]

[Reference]

[Example]

0x1D 0x28 0x6B [fn 065]

<GS (>

Specify encoding scheme of QRcode barcode

Valid for	K80

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	pL	pH	cn	fn	n
Decimal	29	40	107	pL	pH	cn	fn	n

[Range]

(pL+pH × 256) = 3 (pL = 3, pH = 0)
cn = 49
fn = 65
0 ≤ n ≤ 1

[Description]

Specifies encoding type of QRcode barcode.

n	ENCODING SCHEME
0	QRcode
1	MicroQR

[Notes]

• QRcode: Encode all extended ASCII characters data up to a maximum length of 7089 numeric digits, 4296 alphabetic characters or 2953 bytes of data.
• pL and pH specify the number of successive bytes to be sent
• MicroQR (a miniature version of the QRcode barcode for short message): Encode all numbers from 0 to 9 up to a maximum length of 35 characters.

[Default]

n = 0

[Reference]

[Example]

0x1D 0x28 0x6B [fn 066]

<GS (>

Specify dot size of the module of the QRcode barcode

Valid for	K80

[Format]									
	ASCII	GS	(	k	pL	pH	cn	fn	n
	Hex	1D	28	6B	pL	pH	cn	fn	n
	Decimal	29	40	107	pL	pH	cn	fn	n

[Range] (pL+pH × 256) = 3 (pL = 3, pH = 0)
cn = 49
fn = 66
2 ≤ n ≤ 24

[Description] Specifies numbers of dot for each pixel of QRcode barcode.

[Notes] pL and pH specify the number of successive bytes to be sent

[Default] n = 6

[Reference]

[Example]

0x1D 0x28 0x6B [fn 067]

Specify QRcode barcode size

Valid for	K80

[Format]									
	ASCII	GS	(	k	pL	pH	cn	fn	n
	Hex	1D	28	6B	pL	pH	cn	fn	n
	Decimal	29	40	107	pL	pH	cn	fn	n

[Range] (pL+pH × 256) = 3 (pL = 3, pH = 0)
cn = 49
fn = 67
0 ≤ n ≤ 40

[Description] Specifies QRcode barcode eversion, as follows:

n	VERSION	n	VERSION	n	VERSION
0	AUTO	14	V14	28	V28
1	V1	15	V15	29	V29
2	V2	16	V16	30	V30
3	V3	17	V17	31	V31
4	V4	18	V18	32	V32
5	V5	19	V19	33	V33
6	V6	20	V20	34	V34
7	V7	21	V21	35	V35
8	V8	22	V22	36	V36
9	V9	23	V23	37	V37
10	V10	24	V24	38	V38
11	V11	25	V25	39	V39
12	V12	26	V26	40	V40
13	V13	27	V27		

[Notes] pL and pH specify the number of successive bytes to be sent

[Default] n = 0

[Reference]

[Example]

0x1D 0x28 0x6B [fn 069]

<GS (>

Specify the error correction level of the QRcode barcode

Valid for	K80

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	pL	pH	cn	fn	n
Decimal	29	40	107	pL	pH	cn	fn	n

[Range]

(pL+pH × 256) = 3 (pL = 3, pH = 0)
cn = 49
fn = 69
0 ≤ n ≤ 4

[Description]

Specifies the ECC level (Error Correction Capacity) of QRcode barcode.

n	ECC level	
0	AUTO	
1	ECC = approx 20% of barcode	Recovery Capacity = approx 7%
2	ECC = approx 37% of barcode	Recovery Capacity = approx 15%
3	ECC = approx 50% of barcode	Recovery Capacity = approx 25%
4	ECC = approx 65% of barcode	Recovery Capacity = approx 30%

[Notes]

pL and pH specify the number of successive bytes to be sent

[Default]

n = 0

[Reference]

[Example]

0x1D 0x28 0x6B [fn 080]

<GS (>

Store the QRcode barcode data in the barcode save area

Valid for	K80

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m	d1...dk
Hex	1D	28	6B	pL	pH	cn	fn	m	d1...dk
Decimal	29	40	107	pL	pH	cn	fn	m	d1...dk

[Range]

cn = 49
fn = 80
m = 49
0 ≤ d ≤ 255
k = (pL + pH × 256) - 3
• QRcode barcode only with binary characters (8 bit):
4 ≤ (pL + pH × 256) ≤ 2957 (0 ≤ pL ≤ 255, 0≤ pH ≤ 11)
• QRcode barcode only with alphanumeric characters:
4 ≤ (pL + pH × 256) ≤ 4300 (0 ≤ pL ≤ 255, 0≤ pH ≤ 16)
• QRcode barcode only with numeric characters:
4 ≤ (pL + pH × 256) ≤ 7093 (0 ≤ pL ≤ 255, 0≤ pH ≤ 27)

[Description]

Store the QRcode barcode data (d1...dk) in the barcode save area.

[Notes]

• Data stored in the barcode save area by this function are processed by Function 081. The data in the barcode save area are reserved after processing Function 081.
• pL and pH specify the number of successive bytes to be sent
• k bytes of d1...dk are processed as barcode data.
• Specify only the data code word of the barcode with this function.

[Default]

[Reference]

[Example]

0x1D 0x28 0x6B [fn 081]

<GS (>

Prints the QRcode barcode data

Valid for	K80								
[Format]	ASCII	GS	(	k	pL	pH	cn	fn	m
	Hex	1D	28	6B	pL	pH	cn	fn	m
	Decimal	29	40	107	pL	pH	cn	fn	m
[Range]	(pL+pH × 256) = 3 (pL = 3, pH = 0) cn = 49 fn = 81 m = 49								
[Description]	Prints the QRcode barcode in the current position.								
[Notes]	pL and pH specify the number of successive bytes to be sent								
[Default]									
[Reference]									
[Example]									

0x1D 0x48 <GS H>

Select printing position of Human Readable Interpretation (HRI) characters

Valid for	K80

[Format]

ASCII	GS	H	n
Hex	1D	48	n
Decimal	29	72	n

[Range]

0 ≤ n ≤ 3
48 ≤ n ≤ 51

[Description]

Selects the printing position of HRI characters when printing barcodes. n selects the printing positions as follows:

n	FUNCTION
0, 48	Not printed
1, 49	Above the barcode
2, 50	Below the barcode
3, 51	Both above and below the barcode

[Notes]

[Default]

n = 0

[Reference]

0x1D 0x6B

[Example]

0x1D 0x66

<GS f>

Select font for HRI characters

Valid for	K80

[Format]

ASCII	GS	f	n
Hex	1D	66	n
Decimal	29	102	n

[Range] n = 0, 1, 48, 49

[Description] Selects a font for the HRI characters used when printing a barcode. n selects a font from the following table:

n	FONT
0, 48	Font A
1, 49	Font B

[Notes] HRI characters are printed at the position specified by 0x1D 0x48.

[Default] n = 0

[Reference] 0x1D 0x48, 0x1D 0x6B

[Example]

0x1D 0x68 <GS h>

Set barcode height

Valid for	K80

[Format]	ASCII	GS	h	n
	Hex	1D	68	n
	Decimal	29	104	n

[Range] 1 ≤ n ≤ 255

[Description] Sets the height of the barcode.
n specifies the number of vertical dots.

[Notes]

[Default] n = 162 (20.25 mm)

[Reference] 0x1D 0x6B

[Example]

0x1D 0x6B

<GS k>

Print barcode

Valid for	K80					
[Format 1]	ASCII	GS	k	m	NUL	[d1..dk]
	Hex	1D	6B	m	00	[d1..dk]
	Decimal	29	107	m	0	[d1..dk]
[Format 2]	ASCII	GS	k	m	n	[d1..dn]
	Hex	1D	6B	m	n	[d1..dn]
	Decimal	29	107	m	n	[d1..dn]
[Range]	Format 1:	0 ≤ m ≤ 8 m = 20				
	Format 2:	65 ≤ m ≤73 m = 90				

[Description] Select a barcode system and prints the barcode. m selects a barcode system as follows:

Format 1:

m	BARCODE SYSTEM	NUMBER OF CHARACTERS	REMARKS
0	UPC-A	11≤ k ≤12	48≤ d ≤ 57
1	UPC-E	11≤ k ≤12	48≤ d ≤ 57
2	EAN13 (JAN)	12≤ k ≤13	48≤ d ≤ 57
3	EAN8 (JAN)	7≤ k ≤8	48≤ d ≤ 57
4	CODE39	1≤ k	48 ≤ d ≤ 57, 65 ≤ d ≤ 90, 32, 36, 37, 43, 45, 46, 47
5	ITF	1≤ k (even number)	48 ≤ d ≤ 57
6	CODABAR	1≤ k	48 ≤ d ≤ 57, 65 ≤ d1 ≤ 68, 36,43, 45, 46, 47, 58
7	CODE93	1≤ k ≤255	1≤ d ≤ 127
8	CODE128	2≤ k ≤255	1≤ d ≤ 127
20	CODE32	8≤ k ≤9	48≤ d ≤ 57

Format 2:

m	BARCODE SYSTEM	NUMBER OF CHARACTERS	REMARKS
65	UPC-A	11≤ n ≤12	48≤ d ≤ 57
66	UPC-E	11≤ n ≤12	48≤ d ≤ 57
67	EAN13 (JAN)	12≤ n ≤13	48≤ d ≤ 57
68	EAN8 (JAN)	7≤ n ≤8	48≤ d ≤ 57
69	CODE39	1≤ n ≤ 255	48 ≤ d ≤ 57, 65 ≤ d ≤ 90, 32, 36, 37, 43, 45, 46, 47
70	ITF	1≤ n ≤255	48≤ d ≤ 57
71	CODABAR	1≤ n ≤ 255	48 ≤ d ≤ 57, 65 ≤ d1 ≤ 68, 36, 43, 45, 46, 47, 58
72	CODE93	1≤ n ≤255	0≤ d ≤ 127
73	CODE128	2≤ n ≤255	0≤ d ≤ 127
90	CODE32	8≤ n ≤9	48≤ d ≤ 57

[Notes]

• If d is outside of the specified range, the printer prints the following message: “BARCODE GENERATOR IS NOT OK!” and processes the data which follows as normal data.
• If the horizontal size exceeds the printing area, the printer only feeds the paper.
• This command feeds as much paper as is required to print the barcode, regardless of the line spacing specified by 0x1B 0x32 or 0x1B 0x33.
• After printing the barcode, this command sets the print position to the beginning of the line.
• This command is not affected by print modes (emphasized, double-strike, underline or character size), except for upside-down and justification mode.

Format 1:

• This command ends with a NUL code.
• When the barcode system used is UPC-A or UPC-E, the printer prints the barcode data after receiving 11 (without check digit) or 12 (with check digit) bytes barcode data.
• When the barcode system used is EAN13, the printer prints the barcode data after receiving 12 (without check digit) or 13 (with check digit) bytes barcode data.
• When the barcode system used is EAN8, the printer prints the barcode data after receiving 7 (without check digit) or 8 (with check digit) bytes barcode data.
• The number of data for ITF barcode must be even numbers. When an odd number of data is input, the printer ignores the last received data.

Format 2:

• If n is outside of the specified range, the printer stops command processing and processes the following data as normal data.
When CODE93 is used the printer:
• prints an HRI character (o) as a start character at the beginning of the HRI character string
• prints an HRI character (o) as a stop character at the end of the HRI character string.
• The printer prints an HRI character (n) as a control character (0x00 to 0x1F and 0x7F).

When CODE128 is used:

• When using CODE128 in this printer, please note the following regarding data transmission:

• The top part of the barcode data string must be a code set selection character (CODE A, CODE B or CODE C) which selects the first code set.

• Special characters are defined by combining two characters “{“ and one character. ASCII character “{” is defined by transmitting “{“ twice, consecutively.

SPECIFIC CHARACTER	DATA TRANSMISSION		
	ASCII	HEX	DECIMAL
SHIFT	{S	7B, 53	123, 83
CODE A	{A	7B, 41	123, 65
CODE B	{B	7B, 42	123, 66
CODE C	{C	7B, 43	123, 67
FNC1	{1	7B, 31	123, 49
FNC2	{2	7B, 32	123, 50
FNC3	{3	7B, 33	123, 51
FNC4	{4	7B, 34	123, 52
‘{‘	{{	7B, 7B	123, 123

When UPC-E is used, introducing the barcode characters, the printer prints:

TRANSMITTED DATA											PRINTED DATA					
d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	d11						
0	0-9	0-9	0	0	0	0	0	0-9	0-9	0-9	d2	d3	d9	d10	d11	0
0	0-9	0-9	1	0	0	0	0	0-9	0-9	0-9	d2	d3	d9	d10	d11	1
0	0-9	0-9	2	0	0	0	0	0-9	0-9	0-9	d2	d3	d9	d10	d11	2
0	0-9	0-9	3-9	0	0	0	0	0	0-9	0-9	d2	d3	d4	d10	d11	3
0	0-9	0-9	0-9	1-9	0	0	0	0	0	0-9	d2	d3	d4	d5	d11	4
0	0-9	0-9	0-9	0-9	1-9	0	0	0	0	5-9	d2	d3	d4	d5	d6	d11

[Default]

[Reference] 0x1D 0x48, 0x1D 0x66, 0x1D 0x68, 0x1D 0x77

[Example] Format 1: Example of Barcode 39 printing
1D 6B 04 54 45 53 54 00

Format 2: Example of Barcode 39 printing
1D 6B 45 04 54 45 53 54

0x1D 0x77

<GS w>

Set barcode width

Valid for	K80

[Format]

ASCII	GS	w	n
Hex	1D	77	n
Decimal	29	119	n

[Range]

0x1 ≤ n ≤ 0x6
0x81 ≤ n ≤ 0x86

[Description]

Sets the horizontal size of the barcode. n specifies the barcode width (referred to the narrow bar) as follows:

n	MODULE WIDTH (mm)
0x1, 0x81	0.125
0x2, 0x82	0.25
0x3, 0x83	0.375
0x4, 0x84	0.5
0x5, 0x85	0.625
0x6, 0x86	0.75

If barcode CODE128 the wide and narrow bar ratio is the following:

n		WIDE/NARROW BAR RATIO
If n < 0x80	0x1, 0x2, 0x3, 0x4, 0x5, 0x6	3:1
If n > 0x80	0x81	3:1
	0x82	2,5:1
	0x83	2,33:1
	0x84	2,25:1
	0x85	3:1
	0x86	3:1

[Notes]

[Default]

n = 3

[Reference]

0x1D 0x6B

[Example]

0x1B 0x20 <ESC SP>

Set right-side character spacing

Valid for	K80			
[Format]	ASCII	ESC	SP	n
	Hex	1B	20	n
	Decimal	27	32	n
[Range]	0 ≤ n ≤ 255			
[Description]	Sets the character spacing for the right side of the character to [n x horizontal or vertical motion units].			
[Notes]	• The right character spacing for double-width mode is twice the normal value. When the characters are enlarged, the right side character spacing is m (2 or 8) times the normal value. • The horizontal and vertical motion units are specified by 0x1D 0x50. Changing the horizontal or vertical motion units does not affect the current right side spacing. • The 0x1D 0x50 command can change the horizontal (and vertical) motion unit. However, the value cannot be less than the minimum horizontal movement amount. • The maximum right side character spacing is 32 mm. • In standard mode, the horizontal motion unit is used.			
[Default]	n = 0			
[Reference]	0x1D 0x50			
[Example]				

0x1B 0x21

Set printing mode

Valid for	K80

[Format]

ASCII	ESC	!	n
Hex	1B	21	n
Decimal	27	33	n

[Range] 0 ≤ n ≤ 255

[Description] Selects printing mode using n (see tables below):

BIT	OFF/ON	HEX	DECIMAL	FUNCTION	13/17 cpi	17/22 cpi
0	Off	00	0	Character font A selected	16 x 24	12 x 24
	On	01	1	Character font B selected	12 x 24	9 x 24
1	-	-	-	Undefined		
2	-	-	-	Undefined		
3	Off	00	0	Expanded mode not selected		
	On	08	8	Expanded mode selected		
4	Off	00	0	Double-height mode not selected		
	On	10	16	Double-height mode selected		
5	Off	00	0	Double-width mode not selected		
	On	20	32	Double-width mode selected		
6	Off	00	0	Italic mode not selected		
	On	40	64	Italic mode selected		
7	Off	00	0	Underline mode not selected		
	On	80	128	Underline mode selected		

[Notes]

- The printer can underline all characters, but cannot underline the spaces set by 0x09, 0x1B 0x24, 0x1B 0x5C and 90°/270° rotated characters.
- This command resets the left and right margin at default value (see 0x1D 0x4C, 0x1D 0x57).
- 0x1B 0x45 can also be used to turn the emphasized mode on/off. However, the last-received setting command is the effective one.
- 0x1B 0x2D can also be used to turn the underlining mode on/off. However, the last-received setting command is the effective one.
- 0x1D 0x21 can also be used to select character height/width. However, the last-received setting command is the effective one.

[Default] n = 0

[Reference] 0x1B 0x2D, 0x1B 0x45, 0x1D 0x21

[Example]

0x1B 0x26

<ESC &>

Defines user-defined characters

Valid for	K80						
[Format]	ASCII	ESC	&	y	c1	c2	[x1 d1 ... d(y × x1)] ... [xk d1... d(y × x1)]
	Hex	1B	26	y	c1	c2	[x1 d1 ... d(y × x1)] ... [xk d1... d(y × x1)]
	Decimal	27	37	y	c1	c2	[x1 d1 ... d(y × x1)] ... [xk d1... d(y × x1)]

[Range]

y = 3
32 ≤ c1 ≤ c2 ≤ 126
0 ≤ x ≤ 13 (Font (16 x 24))
0 ≤ x ≤ 17 (Font (12 x 24))
0 ≤ x ≤ 22 (Font 9 x 24)
0 ≤ d1 … d (y × xk) ≤ 255
k = c2 – c1 + 1

[Description]

Defines user-defined characters.
Y specifies the number of bytes in the vertical direction.
C1 specifies the beginning character code for the definition, and C2 specifies the final code.
X specifies the number of dots in the horizontal direction.

[Notes]

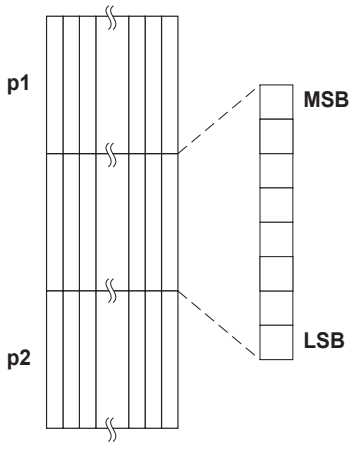
• The allowable character code range is from ASCII 0x20 (32) to 0x7E (126) (95 characters).
• It is possible to define multiple characters for consecutive character codes.
If only one character is desired, use c1 = c2.
• if c2 < c1, the command is not executed.
• d is the dot data for the characters. The dot pattern is in the horizontal direction starting from the left. Any remaining dots on the right remain blank.
• The data to define a user-defined character is (X × Y) bytes.
• To print a dot, set the corresponding bit to 1; to not have it print, set to 0.
• This command can define different user-defined character patterns for each font. To select the font, use 0x1B 0x21.
• The user-defined character definitions are cleared when:
0x1B 0x40 or 0x1D 0x2A are executed or the printer is reset or the power shut off.

[Default]

Internal character set.

[Example]

16 dots (13 cpi)
12 dots (17 cpi)



0x1B 0x2D

Turn underline mode on/off

Valid for	K80			
[Format]	ASCII	ESC	-	n
	Hex	1B	2D	n
	Decimal	27	45	n
[Range]	0 ≤ n ≤ 2 48 ≤ n ≤ 50			
[Description]	Turns underline mode on or off, based on the following values of n:			
	n = 0, 48	Turns off underline mode		
	n = 1, 49	Turns on underline mode (1-dot thick)		
	n = 2, 50	Turns on underline mode (2-dot thick)		
[Notes]	• The printer can underline all characters, but cannot underline the space and right-side character spacing (command 0x09). • The printer cannot underline 90°/270° rotated characters and white/black inverted characters. • When underline mode is turned off by setting the value of n to 0 or 48, the data which follows is not underlined. • Underline mode can also be turned on or off by using 0x1B 0x21. Note, however, that the last received command is the effective one.			
[Default]	n = 0			
[Reference]	0x1B 0x21			
[Example]				

0x1B 0x34 <ESC 4>

Set/reset italic mode

Valid for	K80

[Format]

ASCII	ESC	4	n
Hex	1B	34	n
Decimal	27	52	n

[Range]

0 ≤ n ≤ 1
48 ≤ n ≤ 49

[Description]

Turns italic mode on or off, based on the following values of n:

n	FUNCTON
0, 48	Turns off italic mode
1, 49	Turns on italic mode

[Notes]

- The printer can print any character in italic mode.
- When italic mode is turned off by setting the value of n to 0 or 48, the data which follows is printed in normal mode.
- Italic mode can also be turned on or off using 0x1B 0x21.
- Note, however, that the last received command is the effective one.

[Default]

n = 0

[Reference]

0x1B 0x21

[Example]

0x1B 0x3F

Cancel user-defined characters

Valid for	K80

[Format]

ASCII	ESC	?	n
Hex	1B	3F	n
Decimal	27	63	n

[Range] 32 ≤ n ≤ 126

[Description] Cancels user-defined characters.

[Notes]

- This command cancels the pattern defined for the character code specified by n.
- This command deletes the pattern defined for the specified character code in the font selected by 0x1B 0x21.
- If the user-defined character has not been defined for the specified character code, the printer ignores this command.

[Default]

[Reference] 0x1B 0x25, 0x1B 0x26

[Example]

0x1B 0x45 <ESC E>

Turn emphasized mode on/off

Valid for	K80			
[Format]	ASCII	ESC	E	n
	Hex	1B	45	n
	Decimal	27	69	n
[Range]	0 ≤ n ≤ 255			
[Description]	Turns expanded mode on/off. • When the LSB of n is 0, the expanded mode is off. • When the LSB of n is 1, the expanded mode is on.			
[Notes]	• Only the LSB of n is effective. • 0x1B 0x21 also turns on and off the expanded mode. However, the last received command is the effective one.			
[Default]	n = 0			
[Reference]	0x1B 0x21			
[Example]				

0x1B 0x47 <ESC G>

Turn double-strike mode on/off

Valid for	K80			
[Format]	ASCII	ESC	G	n
	Hex	1B	47	n
	Decimal	27	71	n
[Range]	0 ≤ n ≤ 255			
[Description]	Turns double-strike mode on or off. • When the LSB of n is 0, the double-strike mode is off. • When the LSB of n is 1, the double-strike mode is on.			
[Notes]	• Only the LSB of n is effective. • Printer output is the same in double-strike and emphasized mode.			
[Default]	n = 0			
[Reference]	0x1B 0x45			
[Example]				

0x1B 0x4D

Select character font

Valid for	K80

[Format]

ASCII	ESC	M	n
Hex	1B	4D	n
Decimal	27	77	n

[Range] n = 0, 1, 48, 49

[Description] Selects characters font depending of cpi value set (Char/Inch) as follows:

CHAR /INCH	n	FUNCTION
A = 13 cpi B = 17 cpi	0, 48	Font 13 cpi (16x24)
	1, 49	Font 17 cpi (12x24)
A = 17 cpi B = 22 cpi	0, 48	Font 17 cpi (12x24)
	1, 49	Font 22 cpi (9x24)

[Notes]

[Reference] 0x1B 0xC1

[Example]

0x1B 0x52 <ESC R>

Select international character set

Valid for	K80

[Format]

ASCII	ESC	R	n
Hex	1B	52	n
Decimal	27	82	n

[Range] 0 ≤ n ≤ 10

[Description] Select the international character set n according to the table below:

	HEX	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
n	CHARACTER SET												
0	U.S.A.	#	$	@	[	\	]	^	`	{	|	}	~
1	France	#	$	à	°	ç	§	^	`	é	ù	è	“
2	Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	b
3	United Kingdom	£	$	@	[	\	]	^	`	{	|	}	~
4	Denmark I	#	$	@	Æ	Æ	Å	^	`	æ	f	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	$	@	i	Ñ	¿	^	`	“	ñ	}	~
8	Japan	#	$	@	[	¥	]	^	`	{	|	}	~
9	Norwey	#	¤	É	Æ	Æ	Å	Ü	é	æ	f	å	ü
10	Denmark II	#	$	É	Æ	Æ	Å	Ü	é	æ	f	å	ü

[Notes]

[Default] n = 0

[Reference]

[Example]

0x1B 0x56 <ESC V>

Set 90° rotated print mode

Valid for	K80

[Format]

ASCII	ESC	V	n
Hex	1B	56	n
Decimal	27	86	n

[Range]

0 ≤ n ≤ 1
48 ≤ n ≤ 49

[Description]

Turns 90° rotation mode on/off. n is used as follows:

n	FUNCTION
0, 48	Disable 90° rotation mode
1, 49	Enable 90° rotation mode

[Notes]

• When underlined mode is turned on, the printer does not underline 90° rotated characters. All the same it's possible select the underline mode.
• Double-width and double-height commands in 90° rotation mode enlarge characters in the opposite directions from double-height and double-width commands in normal mode.

[Default]

n = 0

[Reference]

0x1B 0x21, 0x1B 0x2D

[Example]

0x1B 0x74 <ESC t>

Select characters code table

Valid for	K80

[Format]	ASCII	ESC	t	n
	Hex	1B	74	n
	Decimal	27	116	n

[Range] 1 ≤ n ≤ 53, n = 255

[Description] Select a page n from the character code table, as follows:

n	PAGE	
0	PC437 - U.S.A., Standard Europe	
1	Katakana	
2	PC850 - Multilingual	
3	PC860 - Portuguese	
4	PC863 - Canadian/French	
5	PC865 - Nordic	
11	PC851 - Greek	on request
12	PC853 - Turkish	on request
13	PC857 - Turkish	on request
14	PC737 - Greek	on request
15	ISO8859-7 - Greek	on request
16	WPC1252	
17	PC866 - Cyrillic 2	
18	PC852 - Latin 2	on request
19	PC858 for Euro symbol at position 213	
20	KU42 - Thai	on request
21	TIS11 - Thai	on request
26	TIS18 - Thai	on request
30	TCVN_3 - Vientamese	on request
31	TCVN_3 - Vientamese	on request
32	PC720 - Arabic	on request
33	WPC775 - Baltic Rim	on request
34	PC855 - Cyrillic	on request
35	PC861 - Icelandic	on request
36	PC862 - Hebrew	
37	PC864 - Arabic	

n	PAGE	
38	PC869 - Greek	on request
39	ISO8859-2 - Latin 2	on request
40	ISO8859-15 - Latin 9	on request
41	PC1098 - Farci	on request
42	PC1118 - Lithuanian	on request
43	PC1119 - Lithuanian	on request
44	PC1125 - Ukranian	on request
45	WPC1250 - Latin 2	
46	WPC1251 - Cyrillic	
47	WPC1253 - Greek	
48	WPC1254 - Turkish	
49	WPC1255 - Hebrew	
50	WPC1256 - Arabic	
51	WPC1257 - Baltic Rim	
52	WPC1258 - Vientamese	
53	KZ1048 - Kazakhstan	on request
255	Space page	

[Notes] • The tables are selectable only if the code pages are present on the machine. By selecting a code page not present on the machine, the code page remains the one currently in use.
• Make sure to select the font type “INTERNATIONAL” with the command 0x1C 0x25 or with the parameter “FONT TYPE” in the setup.

[Default] n = 0

[Reference] 0x1C 0x25

[Example] For printing Euro symbol (€), the command sequence is: 0x1B, 0x74, 0x13, 0xD5

0x1B 0x7B

Set / cancel upside-down character printing

Valid for	K80

[Format]

ASCII	ESC	{	n
Hex	1B	7B	n
Decimal	27	123	n

[Range] 0 ≤ n ≤ 255

[Description] Turns upside-down printing mode on or off.
- When the LSB of n is 0, the upside-down printing mode is off.
- When the LSB of n is 1, the upside-down printing mode is on.

[Notes]
- Only the LSB of n is effective.
- This command is valid only if entered at the beginning of a line.
- In upside-down printing mode, the printer rotates the line to be printed 180° and then prints it.

[Default] n = 0

[Reference]

[Example]

Upside-down printing Off

ABCDEFG
123456

Upside-down printing On

123456
ABCDEFG

Printing direction

0x1B 0xC1

Set / cancel cpi mode

Valid for	K80

[Format]

ASCII	ESC	0xC1	n
Hex	1B	C1	n
Decimal	27	193	n

[Range]

0 ≤ n ≤ 1
48 ≤ n ≤ 49

[Description] Sets cpi mode based on the following values of n:

n	FUNCTION	
0, 48	Font A = 13 cpi	Font B = 17cpi
1, 49	Font A = 17 cpi	Font B = 22 cpi

[Notes]

[Default] n = 0

[Reference] 0x1B 0x21

[Example]

0x1C 0x25

<FS %>

Select the font type

Valid for	K80

[Format]

ASCII	FS	%	n
Hex	1C	25	n
Decimal	28	37	n

[Range] n= 0, 1, 2

[Description] Select the font type.

n	FONT TYPE
0	International
1	Chinese GB18030
2	Korean PC949

[Notes]

- This command can be used only for the models with Extended Chinese (GB18030-2000) or Korean (PC949).
- The selection made by this command is stored in the RAM memory. Turn off the machine reverts to the default value, that can be set with the parameter “FONT TYPE” in the setup.
- After selecting the font type “INTERNATIONAL” it must be selected the desired character code table using the command 0x1B 0x74.

[Default]

[Reference] 0x1B 0x74, See the command manual “Chinese fonts management”.

[Example]

0x1D 0x21

<GS !>

Select character size

Valid for	K80

[Format]

ASCII	GS	!	n
Hex	1D	21	n
Decimal	29	33	n

[Range]

0 ≤ n ≤ 7
16 ≤ n ≤ 23
32 ≤ n ≤ 39
48 ≤ n ≤ 55
64 ≤ n ≤ 71
80 ≤ n ≤ 87
96 ≤ n ≤ 103
112 ≤ n ≤ 119

[Description]

Selects character height and width, as follows:
• Bits 0 to 3: to select character height (see table 2).
• Bits 4 to 7: to select character width (see table 1).

Table 1 Select character width

HEX	DECIMAL	WIDTH
00	0	1 (normal)
10	16	2 (width = 2x)
20	32	3 (width = 3x)
30	48	4 (width = 4x)
40	64	5 (width = 5x)
50	80	6 (width = 6x)
60	96	7 (width = 7x)
70	112	8 (width = 8x)

Table 2 Select character height

HEX	DECIMAL	HEIGHT
00	0	1 (normal)
01	1	2 (height = 2x)
02	2	3 (height = 3x)
03	3	4 (height = 4x)
04	4	5 (height = 5x)
05	5	6 (height = 6x)
06	6	7 (height = 7x)
07	7	8 (height = 8x)

[Notes]

• If n falls outside the defined range, this command is ignored.
• 0x1B 0x21 can also be used to select character size. However, the setting of the last received command is the effective one.

[Default]

n = 0

[Reference]

0x1B 0x21

[Example]

0x1D 0x42 <GS B>

Turn white/black reverse printing mode on/off

Valid for	K80			
[Format]	ASCII	GS	B	n
	Hex	1D	42	n
	Decimal	29	66	n
[Range]	0 ≤ n ≤ 255			
[Description]	Turns white/black reverse printing mode on or off. • When the LSB of n is 0, white/black reverse printing is turned off. • When the LSB of n is 1, white/black reverse printing is turned on.			
[Notes]	• Only the LSB di n is effective. • This command is available for both built-in and user-defined characters. • This command does not affect bit image, downloaded bit image, barcode, HRI characters and spacing skipped by 0x09, 0x1B 0x24 and 0x1B 0x5C. • This command does not affect white space between lines. • White/black reverse mode has a higher priority than underline mode. Even if underline mode is on, it will be disabled (but not cancelled) when white/black reverse mode is selected.			
[Default]	n = 0			
[Reference]				
[Example]				

LINE SPACING COMMANDS

0x1B 0x30 *<ESC 0>*

Select 1/8-inch line spacing

Valid for	K80		
[Format]	ASCII	ESC	0
	Hex	1B	30
	Decimal	27	48
[Range]			
[Description]	Selects 1/8-inch line spacing.		
[Notes]			
[Default]			
[Reference]	0x1B 0x32, 0x1B 0x33		
[Example]			

0x1B 0x32

Select 1/6-inch line spacing

Valid for	K80		
[Format]	ASCII	ESC	2
	Hex	1B	32
	Decimal	27	50
[Range]			
[Description]	Selects 1/6-inch line spacing.		
[Notes]			
[Default]			
[Reference]	0x1B 0x30, 0x1B 0x33		
[Example]			

0x1B 0x33 <ESC 3>

Set line spacing using minimum units

Valid for	K80			
[Format]	ASCII	ESC	3	n
	Hex	1B	33	n
	Decimal	27	51	n
[Range]	0 ≤ n ≤ 255			
[Description]	Sets line spacing to [n * (vertical or horizontal motion unit)] inches.			
[Notes]	• The horizontal and vertical motion unit are specified by 0x1D 0x50. Changing the horizontal or vertical motion unit does not affect the current line spacing. • The 0x1D 0x50 command can change the horizontal (and vertical) motion unit. However, the value cannot be less than the minimum vertical movement amount. • In standard mode, the vertical motion unit is used. • The maximum spacing is 32 mm.			
[Default]	n = 64 (1/6 inch)			
[Reference]	0x1B 0x32, 0x1D 0x50			
[Example]				

0x0A <LF>

Print and line feed

Valid for	K80	
[Format]	ASCII	LF
	Hex	0A
	Decimal	10
[Range]		
[Description]	Prints the data in the buffer and feeds one line based on the current line spacing.	
[Notes]	• Sets the print position to the beginning of the line. • If the buffer is empty, the printing feeds of (character height + spacing gap) dot. (default 32 dot).	
[Default]		
[Reference]	0x1B 0x32, 0x1B 0x33, 0x0D	
[Example]		

0x0D

<CR>

Print and carriage return

Valid for	K80	
[Format]	ASCII	CR
	Hex	0D
	Decimal	13
[Range]		
[Description]	When autofeed is “CR enabled”, this command functions in the same way as 0x0A, otherwise it is disregarded.	
[Notes]	Sets the print position to the beginning of the line.	
[Default]	See “Autofeed in setup” parameter.	
[Reference]	0x0A	
[Example]		

0x1B 0x4A

Print and paper feed

Valid for	K80			
[Format]	ASCII	ESC	J	n
	Hex	1B	4A	n
	Decimal	27	74	n
[Range]	0 ≤ n ≤ 255			
[Description]	Prints the data in the print buffer and feeds the paper [n * (vertical or horizontal motion unit)] inches.			
[Notes]	• After printing has been completed, this command sets the print starting position to the beginning of the line. • The paper feed amount set by this command does not affect the values set by 0x1B 0x32 or 0x1B 0x33. • The horizontal and vertical motion units are specified by 0x1D 0x50. • 0x1D 0x50 can change the vertical (and horizontal) motion unit. However, the value cannot be less than the minimum vertical movement amount. • In standard mode, the vertical motion unit is used. • The maximum paper feed amount is 500 mm.			
[Default]				
[Reference]	0x1D 0x50			
[Example]				

0x1B 0x64 <ESC d>

Print and feed paper n lines

Valid for	K80

[Format]

ASCII	ESC	d	n
Hex	1B	64	n
Decimal	27	100	n

[Range] 0 ≤ n ≤ 255

[Description] Prints the data in the print buffer and feeds the paper n rows.

[Notes]
- n rows paper feed is equivalent to (n x char height + line spacing set).
- Sets the print starting position at the beginning of the line.
- This command does not affect the line spacing set by 0x1B 0x32 or 0x1B 0x33.
- The maximum paper feed amount is 254 rows. Even if a paper feed amount of more than 254 rows is set, the printer feeds the paper only 254 rows.

[Default]

[Reference] 0x1B 0x32, 0x1B 0x33

[Example]

0x1B 0xFF

Receive the graphic page from the communication port

Valid for	K80

[Format]

ASCII	ESC	0xFF	n	nL	nH
Hex	1B	FF	n	nL	nH
Decimal	27	255	n	nL	nH

[Range]

n = 1
0 ≤ nL
nH ≤ 255

[Description]

Receive [nL + (nH × 256)] word from the communication port and save them in the flash bank specified by n as shown in the following table:

n	FUNCTION
1	Save logo in the flash bank 1

[Notes]

- For serial communication, set parameter “RS232 handshaking” to “Hardware”.
- The number of received data bytes is [nL + (nH × 256)] × 2.
- Every word is received first as MSByte and then as LSByte.
- In the horizontal dotline there are 40 words.
- If [nL + (nH × 256)] is more than 32720, the following data are processed as normal data.
- The flash bank for graphic print dimensions are: 640 horizontal dots (56 bytes/line) × 409 vertical dots (32720 bytes).

[Default]

[Reference]

[Example]

STATUS COMMAND

0x10 0x04 <DLE EOT>

Real-time status transmission

Valid for	K80

[Format]

ASCII	DLE	EOT	n
Hex	10	04	n
Decimal	16	4	n

[Range] 1 ≤ n ≤ 4 ; n = 20

[Description] Transmits the selected printer status specified by n in real time according to the following parameters:

n = 1	transmit printer status
n = 2	transmit off-line status
n = 3	transmit error status
n = 4	transmit paper roll sensor status
n = 20	transmit full status

[Notes] Immediately executed even when the data buffer is full.
This status is transmitted whenever data sequence 0x10 0x04 n (1 ≤ n ≤ 4) is received.

[Default]

[Reference]

[Example]

n=1: Printer status

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0	Off	00	0	Not used. Fixed to Off
1	On	02	2	Not used. Fixed to On
2	Off	00	0	Not used. Fixed to Off
3	Off	00	0	On-line
	On	08	8	Off-line
4	On	10	16	Not used. Fixed to On
5	-	-	-	Undefined
6	Off	00	0	Key realised
	On	40	64	Key pressed
7	Off	00	0	Not used. Fixed to Off

n=2: Off-line status

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0	Off	00	0	Not used. Fixed to Off
1	On	02	2	Not used. Fixed to On
2	Off	00	0	Not used. Fixed to Off
3	Off	00	0	Paper is not being fed by FEED key
	On	08	8	Paper is being fed by FEED key
4	On	10	16	Not used. Fixed to On
5	Off	00	0	No paper end stop
	On	20	32	Printing stops due to paper end
6	Off	00	0	No error
	On	40	64	Error
7	Off	00	0	Not used. Fixed to Off

n=3: Error status

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0	Off	00	0	Not used. Fixed to Off
1	On	02	2	Not used. Fixed to On
2	Off	00	0	Not used. Fixed to Off
3	Off	00	0	Not used. Fixed to Off
4	On	10	16	Not used. Fixed to On
5	Off	00	0	Not used. Fixed to Off
6	Off	00	0	No auto-recoverable error
	On	40	64	Auto-recoverable error (over-temperature, parity, wrong command)
7	Off	00	0	Not used. Fixed to Off

n=4: Paper roll sensor status

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0	Off	00	0	Not used. Fixed to Off
1	On	02	2	Not used. Fixed to On
2	Off	00	0	Not used. Fixed to Off
3	Off	00	0	Not used. Fixed to Off
4	On	10	16	Not used. Fixed to On
5, 6	Off	00	0	Paper present
	On	60	96	Paper not present
7	Off	00	0	Not used. Fixed to Off

n=20: FULL status (6 bytes)

1° Byte = 0x10 (DLE),

2° Byte = 0x0F,

3° Byte = paper status

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0	Off	00	0	Paper present
	On	01	1	Paper not present
1	-	-	-	RESERVED
2	Off	00	0	Paper present
	On	04	4	Near paper end
3	-	-	-	RESERVED
4	-	-	-	RESERVED
5	Off	00	0	Ticket not present in output
	On	20	32	Ticket present in output
6	-	-	-	RESERVED
7	Off	00	0	The black mark is placed over the sensor
	On	80	128	The black mark is not placed over the sensor

4° Byte = User status

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0	Off	00	0	Print head down
	On	01	1	Print head up / paper jam
1	Off	00	0	Cover closed
	On	02	2	Cover opened
2	Off	00	0	No spooling
	On	04	4	Spooling
3	Off	00	0	Drag paper motor off
	On	08	8	Drag paper motor on
4	-	-	-	RESERVED
5	Off	00	0	FEED key released
	On	20	32	FEED key pressed
6	-	-	-	Undefined
7	-	-	-	RESERVED

5° Byte = Error status recoverable

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0	Off	00	0	Head temperature ok
	On	01	1	Head temperature error
1	Off	00	0	No COM error
	On	02	2	RS232 COM error
2	-	-	-	RESERVED
3	Off	00	0	Power supply voltage ok
	On	08	8	Power supply voltage error
4	-	-	-	RESERVED
5	Off	00	0	Acknowledge command
	On	20	32	Not acknowledge command error
6	-	-	-	RESERVED
7	-	-	-	Undefined

6°Byte = Error status unrecoverable

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0	Off	00	0	Cutter ok
	On	01	1	Cutter error
1	-	-	-	RESERVED
2	-	-	-	Undefined
3	-	-	-	Undefined
4	-	-	-	RESERVED
5	-	-	-	RESERVED
6	-	-	-	Undefined
7	-	-	-	RESERVED

0x1B 0x76 <ESC v>

Transmit paper sensor status

Valid for	K80

[Format]

ASCII	ESC	v
Hex	1B	76
Decimal	27	118

[Range]

[Description] When this command is received, transmit the current status of the paper sensor.
The status to be transmitted is shown in the table below:

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0, 1	Off	00	0	Near paper end sensor: paper present
	On	03	3	Near paper end sensor: paper not present
2,3	Off	00	0	Paper end sensor: paper present
	On	0C	12	Paper end sensor: paper not present
4	Off	00	0	Not used. Fixed to Off
5	-	-	-	Undefined
6	-	-	-	Undefined
7	Off	00	0	Not used. Fixed to Off

[Notes] This command is executed immediately, even when the data buffer is full (Busy).

[Default]

[Reference] 0x10 0x04

[Example]

0x1D 0x72

<GS r>

Transmit status

Valid for	K80

[Format]

ASCII	GS	r	n
Hex	1D	72	n
Decimal	29	114	n

[Range] n = 1, 49

[Description] Transmit the status specified by n as follows:

n	FUNCTION
1, 49	Transmit paper sensor status (as for 0x1B 0x76)

Paper sensor status (n = 1, 49)

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0, 1	Off	00	0	Near paper end sensor: paper present
	On	03	3	Near paper end sensor: paper not present
2,3	Off	00	0	Paper end sensor: paper present
	On	0C	12	Paper end sensor: paper not present
4	Off	00	0	Not used. Fix to Off
5	-	-	-	Undefined
6	-	-	-	Undefined
7	Off	00	0	Not used. Fix to Off

[Notes] This command is executed when the data is processed in the data buffer. Therefore, there may be a time lag between receiving the command and transmitting the status, depending on data buffer status.

[Default]

[Reference] 0x10 0x04, 0x1B 0x76

[Example]

0x1D 0xE0

Enable / Disable automatic FULL STATUS BACK

Valid for	K80

[Format]

ASCII	GS	0xE0	n
Hex	1D	E0	n
Decimal	29	224	n

[Range] 0 ≤ n ≤ 255

[Description] Enable / disable automatic full status back. n specifies the composition of FULL STATUS as follows:

BIT	OFF/ON	HEX	Decimal	FUNCTION
0	Off	00	0	Disable Paper status
	On	01	1	Enable Paper status
1	Off	00	0	Disable User status
	On	02	2	Enable User status
2	Off	00	0	Disable Recoverable Error Status
	On	04	4	Enable Recoverable Error Status
3	Off	00	0	Disable Unrecoverable Error Status
	On	08	8	Enable Unrecoverable Error Status
4	-	-	-	RESERVED
5	-	-	-	RESERVED
6	-	-	-	RESERVED
7	-	-	-	RESERVED

[Notes] Once enable at least one byte of the FULL STATUS, for each change of at least one of the bits which compose the required status, the status sent in automatic from the printer will be so composed as follows:
1st Byte = 0x10 (DLE)
2nd Byte = n
Next bytes (depends how many bits are active in n)

[Default]

[Reference] 0x10 0x04

[Example]

BIT IMAGE COMMANDS

0x1B 0x2A

*<ESC *>*

Select image print mode

Valid for	K80

[Format]

ASCII	ESC	*	m	nL	nH	d1...dk
Hex	1B	2A	m	nL	nH	d1...dk
Decimal	27	42	m	nL	nH	d1...dk

[Range]

m = 0, 1, 32, 33
0 ≤ nL ≤ 255
0 ≤ nH ≤ 3
0 ≤ d ≤ 255

[Description]

Selects a bit image mode using m for the number of dots specified by nL and nH, as follows:

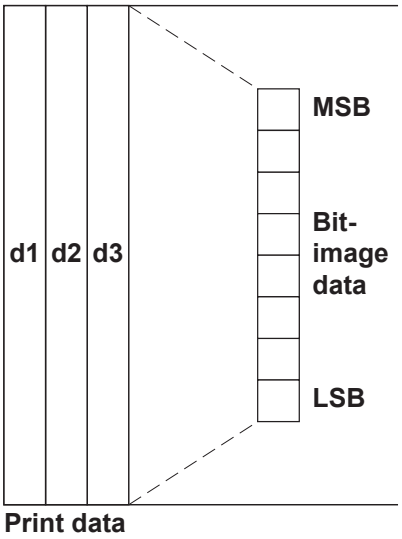
m	MODE	VERTICAL DIRECTION		HORIZONTAL DIRECTION (*1)	
		N. DOTS	DPI	DPI	N. DATA (k)
0	8 dot single density	8	67	100	nL + nH x 256
1	8 dot double density	8	67	200	nL + nH x 256
32	24 dot single density	24	200	100	(nL + nH x 256) x 3
33	24 dot double density	24	200	200	(nL + nH x 256) x 3

[Notes]

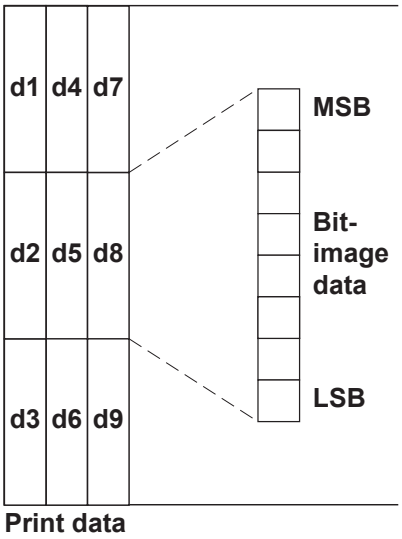
• The nL and nH commands indicate the number of dots of the bit image in the horizontal direction. The number of dots is calculated using: nL + nH * 256.
• If the bit image data input exceeds the number of dots to be printed on a line, the excess data is ignored.
• d indicates the bit image data. Set a corresponding bit to 1 to print a dot, or to 0 to not print the dot.
• If the value of m is outside the specified range, nL and data following it are processed as normal data.
• If the width of the printing area set by 0x1D 0x4C and 0x1D 0x57 is less than the width required by the data set using 0x1B 0x2A , the excess data are ignored.
• To print the bit image use 0x0A 0x0D, 0x1B 0x4A or 0x1B 0x64.
• After printing a bit image, the printer returns to normal data processing mode.
• This command is not affected by the emphasized, double-strike, underline (etc.) print modes, except for the upside-down mode.

• The relationship between the image data and the dots to be printed is as follows:

8-dot bit image



24-dot bit image



[Default]

[Reference]

[Example]

0x1C 0x70

<FS p>

Print NV bit image

Valid for	K80

[Format]

ASCII	FS	p	n	m
Hex	1C	70	n	m
Decimal	28	112	n	m

[Range]

1 ≤ n ≤ 255
0 ≤ m ≤ 3
48 ≤ m ≤ 51

[Description]

Print a NV bit image n using the mode specified by m:

m	MODE
0,48	Normal
1, 49	Double width
2, 50	Double heigth
3, 51	Quadruple

• n is the number of the NV bit image (defined using the 0x1C 0x71 command).
• m specifies the bit image mode.

[Notes]

• NV bit image means a bit image which is defined in a non-volatile memory by 0x1C 0x71 and printed by 0x1C 0x70.
• This command is not effective when the specified NV bit image has not been defined.
• In standard mode, this command is effective only when there is no data in the print buffer.
• In page mode, this command is not effective.
• This command is not affected by print modes (emphasized, underline, character size, white/black reverse printing, etc.), except upside-down printing mode.
• If the printing area width set by 0x1D 0x4C and 0x1D 0x57 for the NV bit image is less than one vertical line, the following processing is executed only on the line in question. However, in NV bit image mode, one vertical line means 1 dot in normal mode (m = 0, 48) and in double-height mode (m = 2, 50), and it means 2 dots in double-width mode (m = 1, 49) and in quadruple mode (m = 3, 51).
1) The printing area width is extended to the right in NV bit image mode up to one line vertically. In this case, printing does not exceed the printable area.
2) If the printing area width cannot be extended by one line vertically, the left margin is reduced to accommodate one line vertically.
• If the downloaded bit image to be printed exceeds one line, the excess data is not printed.
• This command feeds dots (for the height n of the NV bit image) in normal and double-width modes, and (for the height n x 2 of the VN bit image) in double-height and quadruple modes, regardless of the line spacing specified by 0x1B 0x32 or 0x1B 0x33.
• After printing the bit image, this command sets the print position to the beginning of the line and processes the data that follows as normal data.

[Default]

[Reference] 0x1C 0x71

[Example]

0x1C 0x71 <FS q>

Define NV bit image

Valid for	K80			
[Format]	ASCII	FS	q	n [xL xH yL yH d1...dk] 1...[xL xH yL yH d1...dk] n
	Hex	1C	71	n [xL xH yL yH d1...dk] 1...[xL xH yL yH d1...dk] n
	Decimal	28	113	n [xL xH yL yH d1...dk] 1...[xL xH yL yH d1...dk] n

[Range]

1 ≤ n ≤ 255
0 ≤ xL ≤ 255
0 ≤ xH ≤ 3 (when 1 ≤ (xL + xH × 256) ≤ 1023
0 ≤ yL ≤ 1 (when 1 ≤ (yL + yH ×256) ≤ 288
0 ≤ d ≤ 255
k = (xL + xH × 256) × (yL + yH × 256) × 8
Total defined data area = 3 Mbits (384 Kbytes)

[Description]

Define the NV bit image specified by n.
• n specifies the number of the defined NV bit image.
• xL, xH specifies (xL + xH × 256) × 8 dots in the horizontal direction for the NV bit image you are defining.
• yL, yH specifies (yL + yH × 256) × 8 dots in the vertical direction for the NV bit image you are defining.

[Notes]

• Frequent write command execution may cause damage the NV memory. Therefore, it is recommended to write the NV memory 10 times or less a day.
• The printer executes a hardware reset after the procedure to place the image into the non-volatile memory. Therefore, user-defined characters, downloaded bit images, and macros should be defined only after completing this command. The printer clears the receive and print buffers and resets the mode to the mode that was in effect at power on.
• During processing this command, the printer is in BUSY when writing the data to the user NV memory and stops receiving data. Therefore it is prohibitted to transmit the data including the real-time commands during the execution of this command.
• This command cancels all NV bit images that have already been defined by this command. The printer can not redefine only one of several data definitions previously defined. In this case, all data needs to be sent again.
• From the beginning of the processing of this command till the finish of hardware reset, mechanical operations (including initializing the position of the printer head when the cover is open, paper feeding by using the PAPER FEED button, etc.) cannot be executed.
• NV bit image means a bit image which is defined in a non-volatile memory by 0x1C 0x71 and printed by 0x1C 0x70.
• In standard mode, this command is effective only when processed at the beginning of the line.
• In page mode, this command is not effective.
• This command is effective when 7 bytes <FS~yH> is processed as a normal value.
• When the amount of data exceeds the capacity left in the range defined by xL, xH, yL, yH, the printer processes xL, xH, yL, yH out of the defined range.
• In the first group of NV bit images, when any of the parameters xL, xH, yL, yH is out of the definition range, this command is disabled.

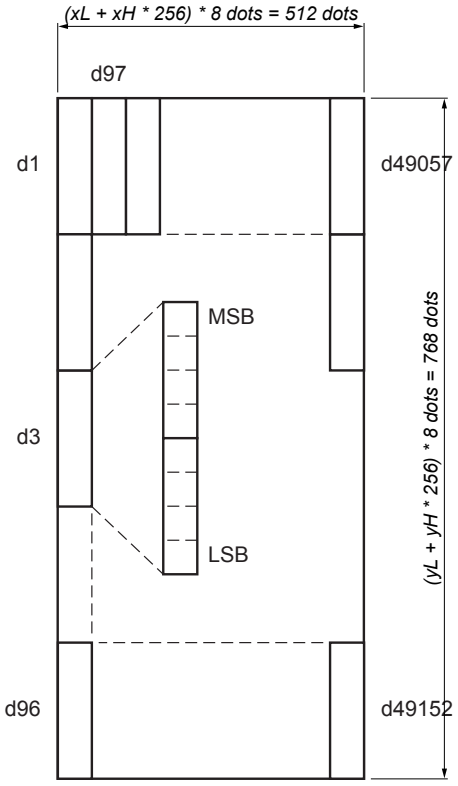
• In groups of NV bit images other than the first one, when the printer processes xL, xH, yL, yH out of the defined range, it stops processing this command and starts writing into the non-volatile images. At this time, NV bit images that haven't been defined are disabled (undefined), but any NV bit images before that are enabled.
• The d indicates the definition data. In data (d) a 1 bit specifies a dot to be printed and a 0 bit specifies a dot not to be printed.
• This command defines n as the number of a NV bit image. Numbers rise in order from NV bit image 01H. Therefore, the first data group [xL xH yL yH d1...dk] is NV bit image 01H, and the last data group [xL xH yL yH d1...dk] is NV bit image n. The total agrees with the number of NV bit images specified by command 0x1C 0x70.
• A definition data of a NV bit image consists of [xL xH yL yH d1...dk]. Thefore, when only one NV bit image is defined, n=1.
• The printer processes a data group [xL xH yL yH d1...dk] once.
• The printer uses ([data: (xL + xH × 256) × (yL + yH × 256) × 8] + [header :4]) bytes of non-volatile memory.
• The definition area in this printer is a maximum of 3M bits (384K bytes). This command can define several NV bit images, but cannot define a bit image data whose total capacity [bit image data + header] exceeds 3M bytes (384K bytes).
• The printer is busy immediately before writing into non-volatile memory.
• When this command is received during macro definition, the printer ends macro definition, and begins executing this command.
• Once a NV bit image is defined, it is not erased by executing 0x1B 0x40, reset, and power off.
• This command executes only definition of a NV bit image and does not execute printing. Printing of the NV bit image is executed by the 0x1C 0x70 command.

[Default]

[Reference] 0x1C 0x70

[Example]

When xL = 64, xH = 0,
yL = 96, yH = 0



0x1D 0x2A

<GS *>

Define downloaded bit image

Valid for	K80

[Format]						
	ASCII	GS	*	x	y	d1...d(x × y × 8)
	Hex	1D	2A	x	y	d1...d(x × y × 8)
	Decimal	29	42	x	y	d1...d(x × y × 8)

[Range]

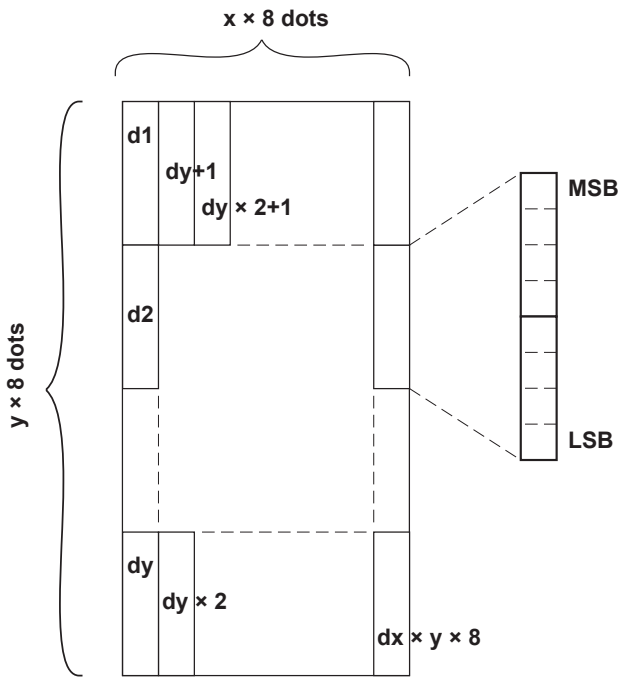
1 ≤ x ≤ 255
1 ≤ y ≤ 48
x × y ≤ 1536
0 ≤ d ≤ 255

[Description]

Defines a downloaded bit image using the number of dots specified by x and y.
• x specifies the number of dots in the horizontal direction.
• y specifies the number of dots in the vertical direction.

[Notes]

• The number of dots in the horizontal direction is x × 8, in the vertical direction it is y × 8.
• If x × y is out of the specified range, this command is disabled.
• The d indicates bit-image data. Data (d) specifies a bit printed to 1 and not printed to 0.
• The downloaded bit image definition is cleared when:
1) 0x1B 0x40 is executed.
2) 0x1B 0x26 is executed.
3) Printer is reset or the power is turned off.
• The following figure shows the relationship between the downloaded bit image and the printed data.



[Reference]

[Example]

0x1D 0x2F

<GS />

Print downloaded bit image

Valid for	K80

[Format]

ASCII	GS	/	m
Hex	1D	2F	m
Decimal	29	47	m

[Range]

[Description] Prints a downloaded bit image using the mode specified by m. m selects a mode from the table below:

m	MODE
0,48	Normal
1, 49	Double width
2, 50	Double height
3, 51	Quadruple

[Notes]

• This command is ignored if a downloaded bit image has not been defined.
• In standard mode, this command is effective only when there is no data in the print buffer.
• This command has no effect in the print modes (emphasized, underline, character size, or white/black reverse printing), except for upside-down printing mode.
• If the downloaded bit-image to be printed exceeds the printable area, the excess data is not printed
• If the printing area width set by 0x1D 0x4C and 0x1D 0x57 is less than one line in vertical, the following processing is performed only on the line in question:
1) The printing area width is extended to the right up to one line in vertical. In this case, printing does not exceed the printable area.
2) If the printing area width cannot be extended by one line in vertical, the left margin is reduced to accommodate one line in vertical.

[Default]

[Reference] 0x1D 0x2A

[Example]

0x1D 0x76 0x30

<GS v 0>

Print raster image

Valid for	K80

[Format]										
	ASCII	GS	v	0	m	xL	xH	yL	yH	d1...dk
	Hex	1D	76	30	m	xL	xH	yL	yH	d1...dk
	Decimal	29	118	48	m	xL	xH	yL	yH	d1...dk

[Range]

0 ≤ m ≤ 3, 48 ≤ m ≤ 51
0 ≤ xL ≤ 255
0 ≤ xH ≤ 255 (1 ≤ xL + xH × 256 ≤ 65535)
0 ≤ yL ≤ 255
0 ≤ yH ≤ 8 (1 ≤ yL + yH × 256 ≤ 2047)
0 ≤ d ≤ 255
k = (xL + xH ≤ 256) + (yL + yH ≤ 256)
(except for k = 0)

[Description]

Selects raster bit image mode. The value of m selects the mode as follows:

m	MODE
0,48	Normal
1, 49	Double width
2, 50	Double height
3, 51	Quadruple

• xL, xH selects the number of data bits (xL + xH × 256) in the horizontal direction for the bit image.
• yL, yH selects the number of data bits (yL + yH × 256) in the vertical direction for the bit image.
• k shows the number of data of the image. It's an explanation parameter so it isn't necessary to transmit it.
• d shows the data of the image.

[Notes]

• In standard mode for receipt paper, this command is effective only when there is no data in the print buffer.
• The data (d) identify as 1 a printed bit and as 0 a non printed bit.
• If a raster bit image is longer than one line, the surplus data aren't printed.
• This command has no effect in all print modes (character size, emphasized, upside-down, underline, white/black reverse printing, etc.) for raster bit image, except the reverse mode (90° anticlockwise rotation).
• This command feed the paper as much as is necessary to print the raster bit image, though the spacing set by 0x1B 0x32 or 0x1B 0x33.
• Don't use this command during a macro execution because it can't be included in a macro.
• After the printing, the printing position moves to the beginning of the line.

• The following table shows the report between the image data and the printing result:

d1	d2	. . .	dx
dX+1	dX+2	. . .	dX x 2
:	:	. . .	:
. . .	dk-2	dk-1	d

[Default]

[Reference]

[Example]

PRINT POSITION COMMAND

0x09 <HT>

Horizontal tab

Valid for	K80	
[Format]	ASCII	HT
	Hex	09
	Decimal	9
[Range]		
[Description]	Moves the print position to the next horizontal tab position.	
[Notes]	• Ignored unless the next horizontal tab position has been set. • If the command is received when the printing position is at the right margin, the printer executes print buffer full printing and horizontal tab processing from the beginning of the next line. • Horizontal tab positions are set using 0x1B 0x44.	
[Default]		
[Reference]	0x1B 0x44	
[Example]		

0x1B 0x24 <ESC $>

Set absolute printing position

Valid for	K80				
[Format]	ASCII	ESC	$	nL	nH
	Hex	1B	24	nL	nH
	Decimal	27	36	nL	nH

[Range]
0 ≤ nL ≤ 255
0 ≤ nH ≤ 255

[Description]
Sets the distance from the beginning of the line to the position at which subsequent characters are to be printed.
The distance from the beginning of the line to the print position is [(nL + nH * 256) * (vertical or horizontal motion unit)] inches.

[Notes]
• Settings outside the specified printable area are ignored.
• The horizontal and vertical motion unit are specified by 0x1D 0x50.
• 0x1D 0x50 can change the horizontal (and vertical) motion unit. However, the value cannot be less than the minimum horizontal movement amount.
• In standard mode, the horizontal motion unit (x) is used.
• If the setting is outside the printing area width, it sets the absolute print position, but the left or right margin is set at default value.

[Default]

[Reference]
0x1B 0x5C, 0x1D 0x50

[Example]

0x1B 0x28 0x76

Set relative vertical print position

Valid for	K80

[Format]						
	ASCII	ESC	(	v	nL	nH
	Hex	1B	28	76	nL	nH
	Decimal	27	40	118	nL	nH

[Range]

0 ≤ nL ≤ 255
0 ≤ nH ≤ 255

[Description]

Sets the print vertical position based on the current position by using the horizontal or vertical motion unit. This command sets the distance from the current position to [(*nL* + *nH* × 256) × (horizontal or vertical motion unit)].

[Notes]

• When the starting position is specified by N motion unit to the bottom: *nL* + *nH* × 256 = N
• When the starting position is specified by N motion unit to the top (negative direction), use the complement of 65536: *nL* + *nH* × 256 = 65536 - N
• The horizontal and vertical motion unit are specified by 0x1D 0x50.
• The 0x1D 0x50 command can change the horizontal (and vertical) motion unit. However, the value cannot be less than the minimum horizontal movement amount.
• In standard mode, the vertical motion unit is used.

[Default]

[Reference]

0x1D 0x50

[Example]

0x1B 0x44 <ESC D>

Set horizontal tab position

Valid for	K80				
[Format]	ASCII	ESC	D	n1...nk	NUL
	Hex	1B	44	n1...nk	00
	Decimal	27	68	n1...nk	0

[Range]
1 ≤ n ≤ 255
0 ≤ k ≤ 32

[Description]
Sets horizontal tab positions
• n specifies the column number for setting a horizontal tab position calculated from the beginning of the line.
• k indicates the total number of horizontal tab positions to be set.

[Notes]
• The horizontal tab position is stored as a value of [character width x n] measured from the beginning of the line. The character width includes the right-side character spacing and double-width characters are set with twice the width of normal characters.
• This command cancels previous tab settings.
• When setting n = 8, the print position is moved to column 9 sending 0x09.
• Up to 32 tab positions (k = 32) can be set. Data exceeding 32 tab positions is processed as normal data.
• Send [n] k in ascending order and place a 0 NUL code at the end. When [n] k is less than or equal to the preceding value [n] k-1, the setting is complete and the data which follows is processed as normal data.
• 0x1B 0x44 0x00 cancels all horizontal tab positions.
• The previously specified horizontal tab position does not change, even if the character width is modified.

[Default]
Default tab positions are set at intervals of 8 characters (columns 9, 17, 25, …) for Font A when the right-side character spacing is 0.

[Reference]
0x09

[Example]

0x1B 0x5C

Set relative printing position

Valid for	K80

[Format]

ASCII	ESC	\	nL	nH
Hex	1B	5C	nL	nH
Decimal	27	92	nL	nH

[Range]

0 ≤ nL ≤ 255
0 ≤ nH ≤ 255

[Description]

Sets the print starting position based on the current position by using the horizontal or vertical motion unit.
Sets the distance from the current position to [(nL+ nH * 256) * (horizontal or vertical motion unit)].

[Notes]

• It's possible to print further on the right margin set for every font. In this case the printing continues up to the maximum border of the printer mechanism and then begins a new row.

• When the starting position is specified by N motion units to the right:
nL + nH * 256 = N

When the starting position is specified by n motion units to the left (negative direction), use the complement of 65536:
nL + nH * 256 = 65536 – N

• If setting exceeds the printing area width, the left or right margin is set to the default value.
• The horizontal and vertical motion unit are specified by 0x1D 0x50.
• 0x1D 0x50 can change the horizontal (and vertical) motion units. However, the value cannot be less than the minimum horizontal movement amount.
• In standard mode, the horizontal motion unit is used.
• Setting the right value, it's possible to print characters over the right edge.

[Default]

[Reference]

0x1B 0x24, 0x1D 0x50

[Example]

0x1B 0x61 <ESC a>

Select justification

Valid for	K80

[Format]

ASCII	ESC	a	n
Hex	1B	61	n
Decimal	27	97	n

[Range]

0 ≤ n ≤ 2
48 ≤ n ≤ 50

[Description]

Aligns all data in one line to the specified position. n selects the type of justification as follows:

n	JUSTIFICATION
0, 48	Flush left
1, 49	Centered
2, 50	Flush right

[Notes]

- This command is only enabled when inserted at the beginning of a line.
- Lines are justified within the specified printing area.
- Spaces set by 0x09, 0x1B 0x24 and 0x1B 0x5C will be justified according to the previously-entered mode.

[Default]

n = 0

[Reference]

[Example]

Flush left	Centered	Flush right
ABC ABCD ABCDE	ABC ABCD ABCDE	ABC ABCD ABCDE

0x1D 0x4C

Set left margin

Valid for	K80

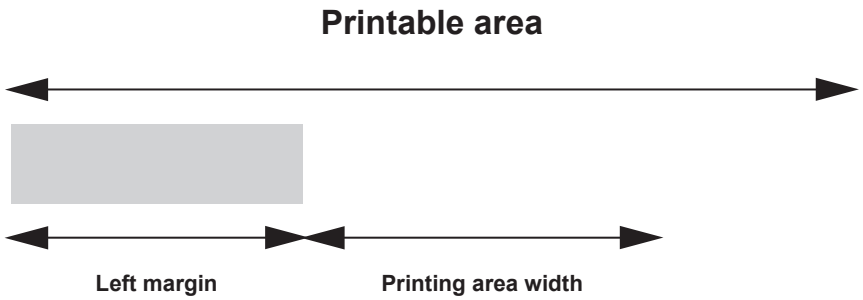
[Format]

ASCII	GS	L	nL	nH
Hex	1D	4C	nL	nH
Decimal	29	76	nL	nH

[Range] 0 ≤ nL, nH ≤ 255

[Description] Sets the left margin.

The left margin is set to [(nL + nH × 256) × (horizontal motion unit)] inches.



[Notes]

- This command is enabled only if set at the beginning of the line.
- If the setting exceeds the printable area, the maximum value of the printable area is used.
- If the left margin + printing area width is greater than the printable area, the printing area width is set at maximum value.
- The horizontal and vertical motion unit are specified by 0x1D 0x50. Changing the horizontal or vertical motion unit does not affect the current left margin.
- The 0x1D 0x50 command can change the horizontal (and vertical) motion unit.
- However, the value cannot be less than the minimum horizontal movement amount and it must be in even units of the minimum horizontal movement amount.

[Default]

[Reference] 0x1D 0x50, 0x1D 0x57

[Example]

0x1D 0x57

<GS W>

Set printing area width

Valid for	K80

[Format]

ASCII	GS	W	nL	nH
Hex	1D	57	nL	nH
Decimal	29	87	nL	nH

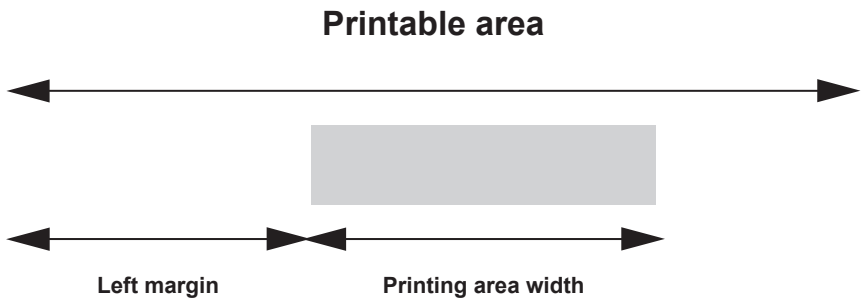
[Range]

0 ≤ nL, nH ≤ 255
0 ≤ nL + nH × 256) ≤ 384

[Description]

Sets the printing area width to the area specified by nL and nH.

The left margin is set to [(nL + nH × 256) × (horizontal motion unit)] inches.



[Notes]

- This command is only enabled if set at the beginning of the line.
- If the right margin is greater than the printable area, the printing area width is set at maximum value.
- If the printing area width = 0, it is set at the maximum value.
- The horizontal and vertical motion units are specified by 0x1D 0x50. Changing the horizontal or vertical motion unit does not affect the current left margin.
- The 0x1D 0x50 command can change the horizontal (and vertical) motion unit.
- However, the value cannot be less than the minimum horizontal movement amount and it must be in even units of the minimum horizontal movement amount.

[Default]

[Reference]

0x1D 0x4C, 0x1D 0x50

[Example]

0x1D 0x3A <GS :>

Set start/end of macro definition

Valid for	K80		
[Format]	ASCII	GS	:
	Hex	1D	3A
	Decimal	29	58
[Range]			
[Description]	Starts or ends macro definition.		
[Notes]	• Macro definition starts when this command is received during normal operation. • When 0x1D 0x5E is received during macro definition, the printer ends macro definition and clears all definitions. • Macros are not defined when power is turned on to the machine. • Macro content is not cancelled by the 0x1B 0x40 command. Therefore, 0x1B 0x40 may be included in the content of macro definitions. • If the printer receives 0x1D 0x3A a second time after previously receiving 0x1D 0x3A, the printer remains in macro undefined status. • The contents of the macro can be defined up to 2048 bytes. If the macro definition exceeds 2048 bytes, excess data is not stored.		
[Default]			
[Reference]	0x1D 0x5E		
[Example]			

0x1D 0x5E

<GS ^>

Execute macro

Valid for	K80					
[Format]	ASCII	GS	^	r	t	m
	Hex	1D	5E	r	t	m
	Decimal	29	94	r	t	m
[Range]	0 ≤ r, t ≤ 255 0 ≤ m ≤ 1					
[Description]	Executes a macro. • r specifies the number of times to execute the macro. • t specifies the waiting time for executing the macro. The waiting time is t × 100 msec. for each macro execution. • m specifies macro executing mode: When the LSB of m = 0, the macro is executed r times continuously at the interval specified by t. When the LSB of m = 1, after waiting for the period specifi ed by t, the LED indicator blinks and the printer waits for the FEED button to be pressed. After the button is pressed, the printer executes the macro once. The printer repeats the operation r times.					
[Notes]	• This command has an interval of (t × 100 msec.) after a macro is executed by t. • If this command is received while a macro is being defined, the macro definition is aborted and the definition is cleared. • If the macro is not defined or if r is 0, nothing is executed. • When the macro is executed by pressing the FEED button (m=1), the paper cannot be fed using the FEED button.					
[Default]						
[Reference]	0x1D 0x3A					
[Example]						

0x1B 0x69 <ESC i>

Total cut

Valid for	K80		
[Format]	ASCII	ESC	i
	Hex	1B	69
	Decimal	27	105
[Range]			
[Description]	This command enables cutter operation. If there is no cutter, a disabling flag is set and any subsequent cut commands will be ignored.		
[Notes]	The printer waits to complete all paper movement commands before it executes a total cut.		
[Default]			
[Reference]			
[Example]			

0x1B 0x6D

<ESC m>

Partial cut

Valid for	K80		
[Format]	ASCII	ESC	m
	Hex	1B	6D
	Decimal	27	109
[Range]			
[Description]	This command enables partial cutter operation.		
[Notes]	The printer waits to complete all paper movement commands before it executes a partial cut.		
[Default]			
[Reference]			
[Example]			

0x1D 0x56

<GS V>

Select cut mode

Valid for	K80				
[Format 1]	ASCII	GS	V	m	
	Hex	1D	56	m	
	Decimal	29	86	m	
[Format 2]	ASCII	GS	V	m	n
	Hex	1D	56	m	n
	Decimal	29	86	m	n
[Range]	Format 1:	m = 0x30, 0x31			
	Format 2:	m = 0x42 0 ≤ n ≤ 255			

[Description] Selects cut mode and executes the cut command.
m selects cut mode as follows:

n	FUNCTION
0x30	Total cut
0x31	Partial cut
0x42	Form feed (cut position + [n x vertical motion unit]) and partial cut

[Notes]
- This command is only enabled if set at the beginning of the line.
- The horizontal and vertical motion units are specified by 0x1D 0x50.

[Default]

[Reference] 0x1B 0x69

[Example]

MISCELLANEOUS COMMAND

0x1B 0x3D

<ESC =>

Select peripherals device

Valid for	K80			
[Format]	ASCII	ESC	=	n
	Hex	1B	3D	n
	Decimal	27	61	n
[Range]	1 ≤ n ≤ 3			
[Description]	Select the device to which the host computer sends data, using n as follows:			
	n = 1, n = 3	Printer Enable		
	n = 2	Printer Disabled		
[Notes]	• When the printer is disabled, it ignores all transmitted data until the printer is enabled through this command. • When the pass-trough function is enabled, all transmitted data are send to the second serial port.			
[Default]	n = 1			
[Reference]				
[Example]				

0x1B 0x40

Initialize printer

Valid for	K80

[Format]

ASCII	ESC	@
Hex	1B	40
Decimal	27	64

[Range]

[Description] Clears the data in the print buffer and resets the printer mode to that in effect when power was turned on.

[Notes]
- The data in the receiver buffer is not cleared.
- The macro definitions are not cleared.

[Default]

[Reference]

[Example]

0x1B 0x63 0x35 <ESC c 5>

Enable/disable panel key

Valid for	K80

[Format]

ASCII	ESC	c	5	n
Hex	1B	63	35	n
Decimal	27	99	53	n

[Range] n = 0, 1

[Description] Enables/disables the keys of the front panel:

n	FUNCTION
0	Disables front panel keys
1	Enables front panel keys

[Notes] When the panel button is disabled, the button may only be used after the printer has been reset.

[Default] n = 1

[Reference]

[Example]

0x1B 0xFA

Print graphic (640x409)

Valid for	K80

[Format]

ASCII	ESC	0xFA	n	xH	xL	yH	yL
Hex	1B	FA	n	xH	xL	yH	yL
Decimal	27	250	n	xH	xL	yH	yL

[Range]

0 ≤ n ≤ 1
0 ≤ xH, xL, yH, yL ≤ 255

[Description]

Prints graphic logo from flash or current graphic page located in ram. n selects the graphic source as follows:

n	FUNCTION
0	Print graphic page from ram (used at the moment)
1	Print logo 1 from flash

Printable maximum vertical dimension is 409.
xL + xH × 256 specifies the starting dotline (1 ÷ 409).
yL + yH × 256 specifies the number of lines to print.

[Notes]

• If (xL + (xH × 256)) > 409 the printer does not execute the command.
• If (xL + (xH × 256) + yL +(yH × 256))> 409 the printer prints only 409 - xL + (xH × 256) +1 dotline.

[Default]

[Reference]

[Example]

0x1B 0xFD

Receive graphic page from communication port

Valid for	K80				
[Format]	ASCII	ESC	0xFD	nL	nH
	Hex	1B	FD	nL	nH
	Decimal	27	253	nL	nH
[Range]	0 ≤ nL, nH ≤ 255				
[Description]	Receives [nL + (nH × 256)] words from the port and puts them into the ram bank.				
[Notes]	• The number of data bytes received is [nL + (nH × 256)] × 2. • Each word is first received as MSByte and then as LSByte. • If [nL + (nH × 256)] is greater than 32720, the data which follows is processed as normal data. •The flash bank dimensions for the graphic print are 640 horizontal dots (80 bytes/dot line) × 409 verticals dots (32720 bytes).				
[Default]					
[Reference]	0x1B 0xFA, 0x1B 0xFC, 0x1B 0xFE				
[Example]					

0x1D 0x43 0x30

<GS C 0>

Select counter print mode

Valid for	K80

[Format]

ASCII	GS	C	0	n	m
Hex	1D	43	30	n	m
Decimal	29	67	48	n	m

[Range]

0 ≤ n ≤ 5
m = 0, 1, 2, 48, 49, 50

[Description]

Selects a print mode for the serial number counter.
• n specifies the number of digits to be printed as follows:
when n = 0, the printer prints the actual digits indicated by the numeric value.
when n = 1 to 5, the command sets the number of digits to be printed.
• m specifies the printing position within the entire range of printed digits as follows:

m	Printing position	Processing of digits less than those specified
0, 48	Flush right	Adds spaces to the left
1, 49	Flush right	Adds a ‘0’ to the left
2, 50	Flush left	Adds spaces to the right

[Notes]

• If n or m is out of the defined range, the previously set print mode is not changed.
• If n = 0, m is not applicable.

[Default]

n = 0, m = 0

[Reference]

0x1D 0x43 0x31, 0x1D 0x43 0x32, 0x1D 0x43 0x3B, 0x1D 0x63

[Example]

n = 3,m = 0	n = 3, m = 1	n = 3, m=2
□ □ 1	001	1 □ □

□ indicates a space

0x1D 0x43 0x31 <GS C 1>

Select count mode (A)

Valid for	K80

[Format]

ASCII	GS	C	1	aL	aH	bL	bH	n	r
Hex	1D	43	31	aL	aH	bL	bH	n	r
Decimal	29	67	49	aL	aH	bL	bH	n	r

[Range]

0 ≤ aL, aH ≤ 255
0 ≤ bL, bH ≤ 255
0 ≤ n, r ≤ 255

[Description]

Selects a count mode for the serial number counter.
• aL, aH or bL, bH specify the counter range.
• n indicates the unit amount when counting up or down.
• indicates the repetition number when the counter value is fixed.

[Notes]

• Count-up mode is specified when:
[aL + (aH x 256)] < [bL + (bH x 256)] and n ≠ 0 and r ≠ 0
• Count-down mode is specified when:
[aL + (aH x 256)] > [bL + (bH x 256)] and n ≠ 0 and r ≠ 0
• Counting stops when:
[aL + (aH x 256)] = [bL + (bH x 256)] o n = 0 o r = 0
• Setting the count-up mode, the minimum counter value is [aL + (aH x 256)] and the maximum value is [bL + (bH x 256)]. If the counting up reaches a value that exceeds the maximum, it resets to the minimum value.
• Setting the count-down mode, the maximum counter value is [aL + (aH x 256)] and the minimum value is [bL + (bH x 256)]. If the counting down reaches a value less than the minimum, it resets to the maximum value.
• When this command is executed, the internal count that indicates the repetition number specified by r is cleared.

[Default]

aL = 1, aH = 0, bL = 255, bH = 255, n = 1, r = 1

[Reference]

0x1D 0x43 0x30, 0x1D 0x43 0x32, 0x1D 0x43 0x3B, 0x1D 0x63

[Example]

Send the command:

0x1D	0x43	0x31	0x01	0x00	0x0A	0x00	0x01	0x02
			↓	↓	↓	↓	↓	↓
			aL	*aH*	*bL*	*bH*	*n*	*r*

The counter is set from 1 [aL + (aH x 256)] to 10 [bL + (bH x 256)]).
The counter is incremented by 1 (n) repeating the same value of 2 times (r).

0x1D 0x43 0x32

<GS C 2>

Set counter

Valid for	K80

[Format]						
	ASCII	GS	C	2	nL	nH
	Hex	1D	43	32	nL	nH
	Decimal	29	67	50	nL	nH

[Range] 0 ≤ nL, nH ≤ 255

[Description] Sets the serial number counter value.
• nL and nH determine the value of the serial number counter set by [nL + (nH x 256)].

[Notes] • In count-up mode, if the counter value specified by this command goes out of the counter operation range specified by 0x1D 0x43 0x31 or 0x1D 0x43 0x3B, it is forced to convert to the minimum value through 0x1D 0x63.
• In count-down mode, if the counter value specifi ed by this command goes out of the counter operation range specified by 0x1D 0x43 0x31 or 0x1D 0x43 0x3B, it is forced to convert to the maximum value through 0x1D 0x63.

[Default] nL = 1, nH = 0

[Reference] 0x1D 0x43 0x30, 0x1D 0x43 0x32, 0x1D 0x43 0x3B, 0x1D 0x63

[Example]

Send the command:

0x1D	0x43	0x32	0x05	0x00
			↓ *nL*	↓ *nH*

The counter is set starting from 5 [nL + (nH x 256)].

0x1D 0x43 0x3B

<GS C ;>

Select count mode (B)

Valid for	K80

[Format]												
	ASCII	GS	C	;	sb	;	sn	;	sr	;	sc	;
	Hex	1D	43	3B	sb	3B	sn	3B	sr	3B	sc	3B
	Decimal	29	67	59	sb	59	sn	59	sr	59	sc	59

[Range]

0 ≤ sa, sb, sc ≤ 65535
0 ≤ sn, sr ≤ 255

[Description]

Selects a count mode for the serial number counter and specifies the value of the counter.
• sa, sb, sn, sr e sc are all displayed as ASCII characters using codes from ‘0’ to ‘9’.
• sa e sb specify the counter range.
• sn indicates the unit amount for counting up or down.
• sr indicates the repetition number when the counter value is fixed.
• sc indicates the counter value.

[Notes]

• Count-up mode is specified when: sa < sb and sn ≠ 0 and sr ≠ 0
• Count-down mode is specifi ed when: sa > sb and sn ≠ 0 and sr ≠ 0
• Counting stops when:
sa = sb o sn = 0 or sr = 0
• In setting count-up mode, the minimum value of the counter is sa and the maximum value is sb. If counting up reaches a value exceeding the maximum, it resets to the minimum value. If the counter value set by sc is outside the counter operation range, the counter value is forced to convert to the minimum value by executing 0x1D 0x63.
• In setting count-down mode, the maximum value of the counter is sa and the minimum value is sb. If counting down reaches a value less than the minimum, it resets to the maximum value. If the counter value set by sc is outside the counter operation range, the counter value is forced to convert to the maximum value by executing 0x1D 0x63.
• Parameters sa to sc can be omitted. If omitted, they remain unchanged.
• Parameters sa to sc cannot contain characters other than ‘0’ to ‘9’.

[Default]

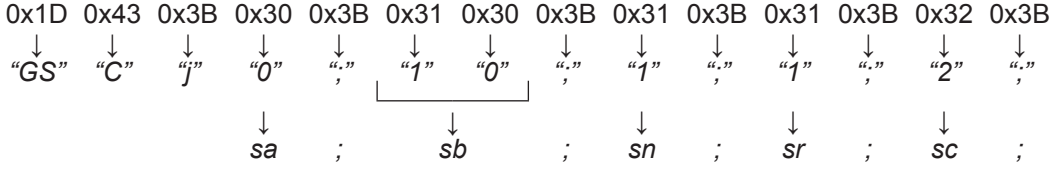
sa = 1, sb = 65535, sn = 1, sr = 1, sc = 1

[Reference]

0x1D 0x43 0x30, 0x1D 0x43 0x31, 0x1D 0x43 0x32, 0x1D 0x63

[Example]

Send the command:



The counter is set from 0 (sa) to 10 (sb) starting from 2 (sc).
The counter is incremented by 1 (sn) repeating the same value of 1 time (sr).

0x1D 0x49 <GS I>

Transmit printer ID

Valid for	K80

[Format]

ASCII	GS	I	n
Hex	1D	49	n
Decimal	29	73	n

[Range]

1 ≤ n ≤ 3
49 ≤ n ≤ 51
n = 255

[Description]

Transmits the printer ID specified by n follows:

n	PRINTER ID	SPECIFICATION
1, 49	Printer model ID	0xFF (resend the command with n=255)
2, 50	Type ID	See table below
3, 51	ROM version ID	Depends on ROM version (4 character)
255	Printer model ID (2 bytes)	0x02 0x37

[Notes]

This command is executed when the data is processed in the data buffer. Therefore, there could be a time lag between command reception and data transmission, depending on data buffer status.

[Default]

[Reference]

[Example]

0x1D 0x50 <GS P>

Set horizontal and vertical motion units

Valid for	K80				
[Format]	ASCII	GS	P	x	y
	Hex	1D	50	x	y
	Decimal	29	80	x	y
[Range]	0 ≤ x, y ≤ 255				
[Description]	Sets the horizontal and vertical motion units to 1/x inch and 1/y inch respectively. When x is set to 0, the default setting value is used. When y is set to 0, the default setting value is used.				
[Notes]	• The horizontal direction is perpendicular to the paper feed direction. • In standard mode, the following commands use x or y, regardless of character rotation (upside-down or 90° clockwise rotation): Commands using x: 0x1B 0x20, 0x1B 0x24, 0x1B 0x5C, 0x1D 0x4C, 0x1D 0x57. Commands using y: 0x1B 0x33, 0x1B 0x4A. • This command does not affect the previously specified values. • The calculated result from combining this command with others is truncated to the minimum value of the mechanical pitch or an exact multiple of that value.				
[Default]	x = 204, y = 408				
[Reference]	0x1B 0x20, 0x1B 0x24, 0x1B 0x5C, 0x1B 0x33, 0x1B 0x4A, 0x1D 0x4C, 0x1D 0x57				
[Example]					

0x1D 0x63 <GS c>

Print counter

Valid for	K80		
[Format]	ASCII	GS	c
	Hex	1D	63
	Decimal	29	102
[Range]			
[Description]	Sets the serial counter value in the print buffer and increments or decrements the counter value.		
[Notes]	• After setting the current counter value in the print buffer as print data (a character string),the printer counts up or down based on the count mode set. The counter value in the print buffer is printed when the printer receives a print command or the buffer is full. • The counter print mode is set using 0x1D 0x43 0x30. • The counter mode is set using 0x1D 0x43 0x31 or 0x1D 0x43 0x3B. • In count-up mode, if the counter value set by this command goes out of the counter operation range set by 0x1D 0x43 0x31 or 0x1D 0x43 0x3B, it is forced to revert to the minimum value. • In count-down mode, if the counter value set by this command goes out of the counter operation range set by 0x1D 0x43 0x31 or 0x1D 0x43 0x3B, it is forced to revert to the maximum value.		
[Default]			
[Reference]	0x1D 0x43 0x30, 0x1D 0x43 0x31, 0x1D 0x43 0x32, 0x1D 0x43 0x3B		
[Example]			

0x1D 0x7C

Set printing density

Valid for	K80

[Format]

ASCII	GS	0x7C	n
Hex	1D	7C	n
Decimal	29	124	n

[Range]

2 ≤ n ≤ 6
50 ≤ n ≤ 54

[Description] Sets printing density. n specifies printing density as follows:

n	PRINTING DENSITY
2, 50	- 25%
3, 51	- 12.5%
4, 52	0%
5, 53	+ 12.5%
6, 54	+ 25%

[Notes]

- Printing density reverts to the default value when the printer is reset or turned off.

[Default] n = 4

[Reference]

[Example]

0x1D 0xE8

Setting minimum ticket length

Valid for	K80				
[Format]	ASCII	GS	0xE8	nH	nL
	Hex	1D	E8	nH	nL
	Decimal	29	232	nH	nL
[Range]	0 ≤ nL, nH ≤ 255				
[Description]	This command set the minimum ticket length as (nH * 256) + nL.				
[Notes]	Set values between 60mm and 199mm. Values lower or higher than those specified are ignored.				
[Default]	60 mm				
[Reference]					
[Example]	To set the minimum ticket legth at 80 mm, the command sequence will be: 0x1D 0xE8 0x00 0x50				

0x1D 0xF0

Set printing speed

Valid for	K80

[Format]

ASCII	GS	0xF0	n
Hex	1D	F0	n
Decimal	29	240	n

[Range] 0 ≤ n ≤ 1

[Description] Sets printing speed. n specifies the printing speed as follows:

n	PRINTING SPEED
0	High quality
1	Normal

[Notes] Printing speed reverts to the default value when the printer is reset or turned off.

[Default] n = 1

[Reference]

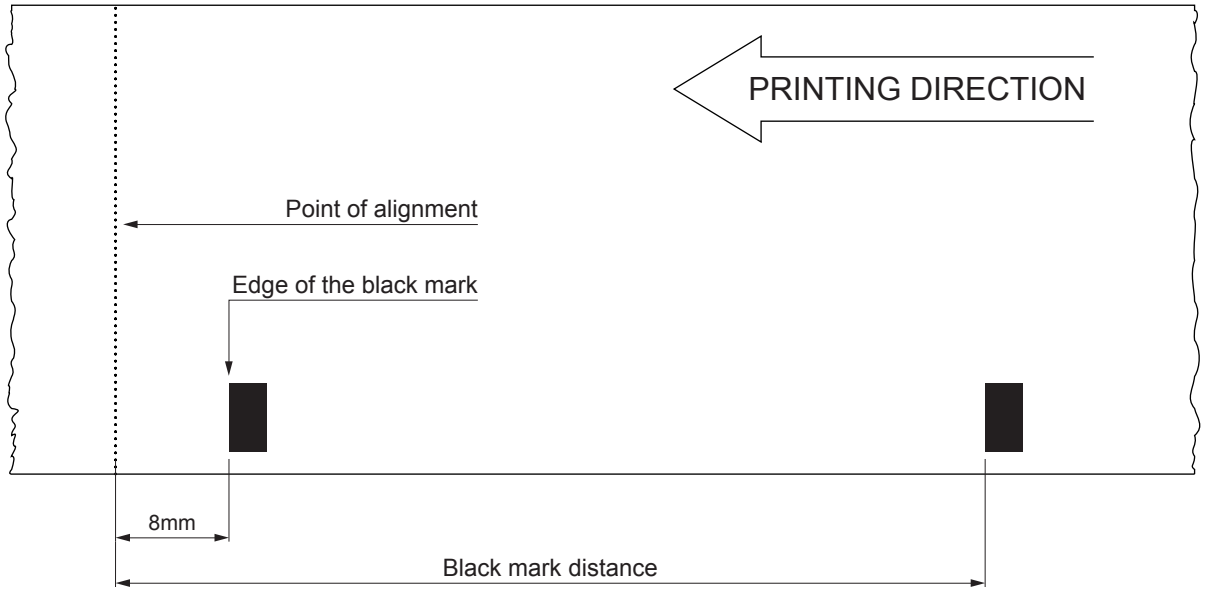
[Example]

0x1D 0xE7

Set blackmark distance

Valid for	K80				
[Format]	ASCII	GS	0xE7	nH	nL
	Hex	1D	E7	nH	nL
	Decimal	29	231	nH	nL
[Range]	0 ≤ nH ≤ 255 0 ≤ nL ≤ 255				
[Description]	Sets the distance in tenths of a mm of alignment point from the edge of the black mark.				
[Notes]	• This value is expressed as [(nH x 256)+nL] • The range is from -90mm to 23mm. • nH specifies the type of distance (positive if ≤ 0x7F, negative > 0x7F) • nL specifies the distance in tenths of millimeter. • The setting are saved in the EEPROM to keep the value when the printer is turned off. • The distance defined by this command is the same that can be set with the value of the “Black Mark Distance” during the setup of the printer.				
[Default]	nH = 0x00 nL = 0x00				
[Reference]					
[Example]	to set a distance of 20mm send the command: 0x1D 0xE7 0x00 0xC8 where: 0x00 sign + 0xC8 distance equal to 200 tenths of mm = 20mm to set a distance of -20mm send the command: 0x1D 0xE7 0x80 0xC8 where: 0x80 sign - 0xC8 distance equal to 200 tenths of mm = 20mm				

The following image shows a ticket with “Alignment Point” positioned at 8 mm from the black mark.



0x1D 0xF6

Align the ticket

Valid for	K80

[Format]

ASCII	GS	0xF6
Hex	1D	F6
Decimal	29	246

[Descrizione] This command aligns the edge of the black mark at the point of alignment (see chapter Alignment for further explanation).

[Notes]
- Use the command 0x1D 0xE7 to set an offset between the black mark and the point of alignment
- To work properly, the “Black Mark Alignment” parameter must be enabled during the Setup procedure (see the User Manual of each device).

[Default] 0

[Reference] 0x1D 0xE7, 0x1D 0xF8

[Example]

EXAMPLE OF CONSECUTIVE PRINTS WITHOUT CUTTING

0x1D 0xF6	*Positioning ticket*
<print ticket>	
0x1D 0xF6	*Positioning ticket*
<print ticket>	
...	
...	
...	

EXAMPLE OF PRINTS WITH ALIGNMENT AND CUT

0x1D 0xF6	*Positioning ticket*
<print ticket>	
0x1D 0xF8	*Align ticket*
0x1B 0x69	*Total cut*

0x1D 0xF8

Align at cut

Valid for	K80		
[Format]	ASCII	GS	0xF8
	Hex	1D	F8
	Decimal	29	248
[Range]			
[Description]	This command aligns the edge of the black mark at the point of alignment (see chapter Alignment for further explanation).		
[Notes]	• Use the command 0x1D 0xE7 to set an offset between the black mark and the point of alignment • To work properly, the “Black Mark Alignment” parameter must be enabled during the Setup procedure (see the User Manual of each device). • To work properly, you must send this command just before the cut command.		
[Default]			
[Reference]	0x1D 0xE7, 0x1D 0xF6		

[Example]

0x1D 0xF6	*Positioning ticket*
<print ticket>	
0x1D 0xF8	*Align ticket*
0x1B 0x69	*Total cut*

ALIGNMENT

ALIGNMENT COMMANDS

The devices are equipped with a sensor that allows the use of alignment black mark to handle rolls of tickets with pre-printed and fixed length fields;

For further information, refer to the User Manual of each device.

The commands available for managing the alignment of the ticket are the following:

- 0x1D 0xE7: sets the distance between the point of alignment and the black mark (value of parameter “Black Mark Distance”)
- 0x1D 0xF6 and 0x1D 0xF8: perform the ticket alignment, which is advanced to align the first point of alignment available under the sensor.

Print a ticket with alignment requires the following sequence of commands:

1. General settings of the ticket: character formatting, print density, margins etc..
2. Alignment command: 0x1D 0xF6.
3. Ticket printout: printing text, logos or any graphic.
4. Alignment command: 0x1D 0xF8.
5. Cut command.

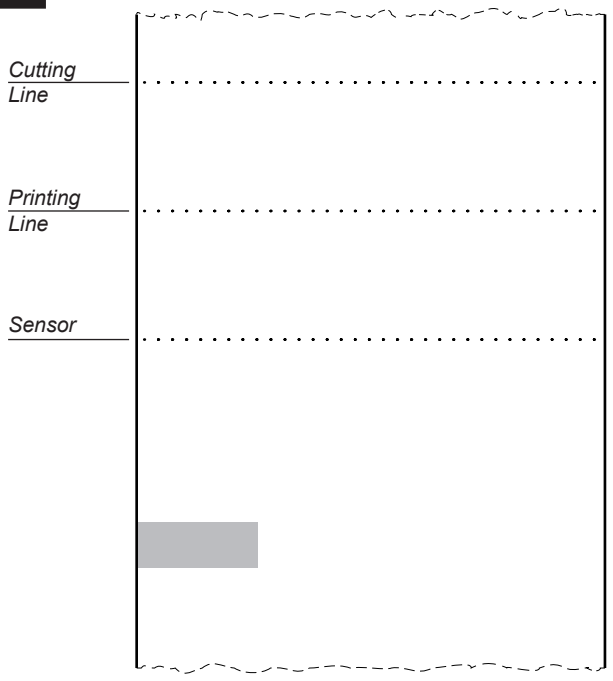
NOTE: The settings take effect from next ticket to the one already in the printer.

In the following examples, are described some sequences of commands to manage the alignment.

EXAMPLE 1

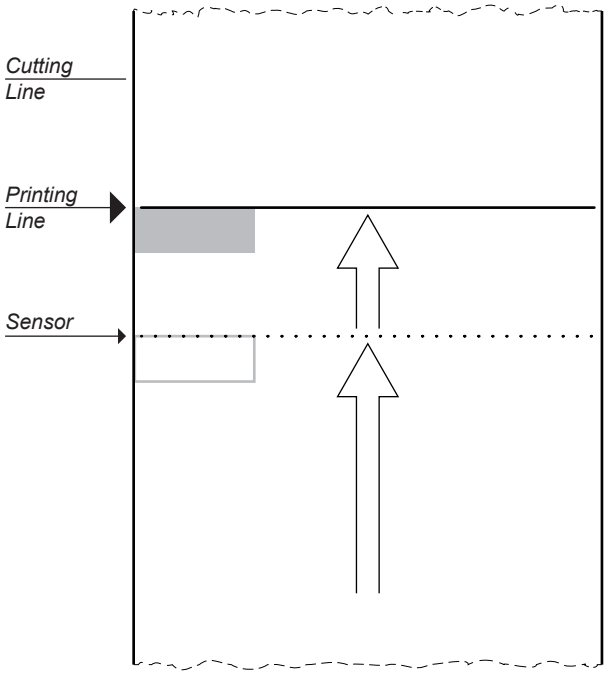
Commands sequence to print tickets with “alignment point” over the edge of the black mark (Black Mark Distance = 0mm set from SETUP).

1



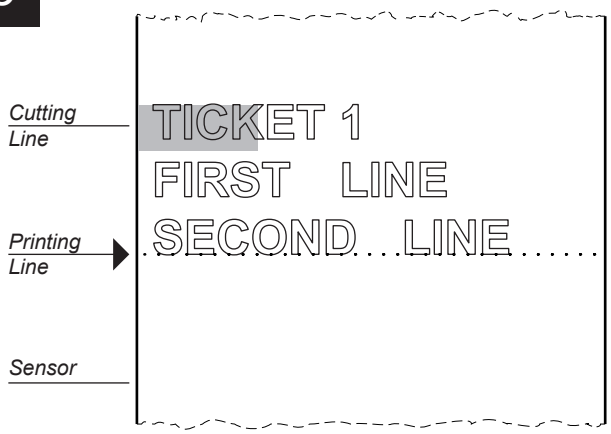
Start
Paper with black mark not aligned

2



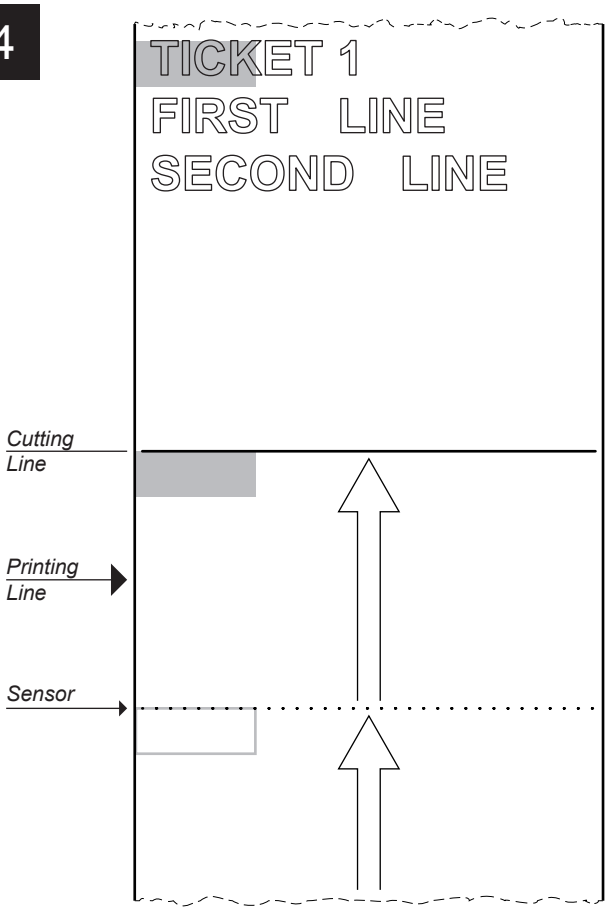
Alignment command 0x1D 0xF6
Paper is fed. The black mark is recognized by the sensor and aligned under the printing line

3



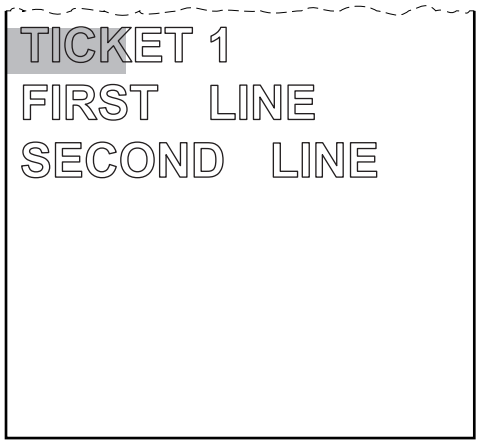
Command for text printing
‘TICKET 1’, 0x0A,’FIRST LINE’, 0x0A,
’SECOND LINE’, 0x0A

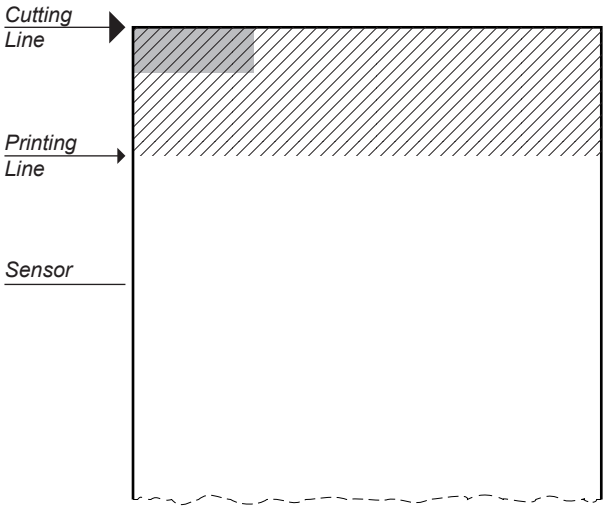
4



Alignment command 0x1D 0xF8
Paper is fed. The next black mark is recognized by the sensor and aligned under the cutting line

5



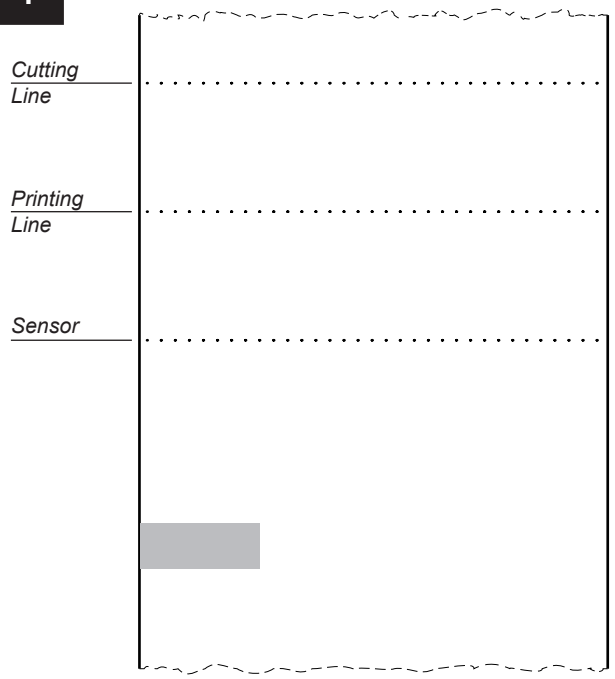


Cut command 0x1B 0x69
The paper is cut.
The portion of the paper between the cutting line and the printing line can not be recovered, the paper is ready for printing.

EXAMPLE 2

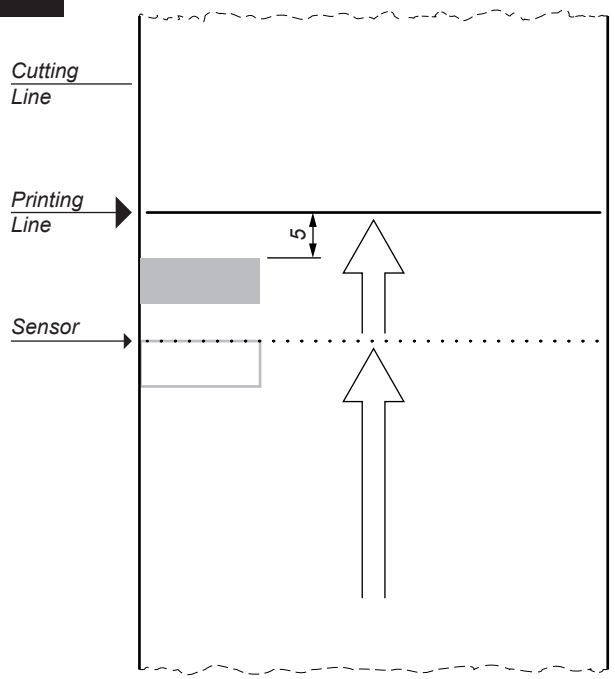
Commands sequence to print tickets with “alignment point” moved 5mm compared to the edge of the black mark (Black Mark Distance = 5mm set from SETUP).

1



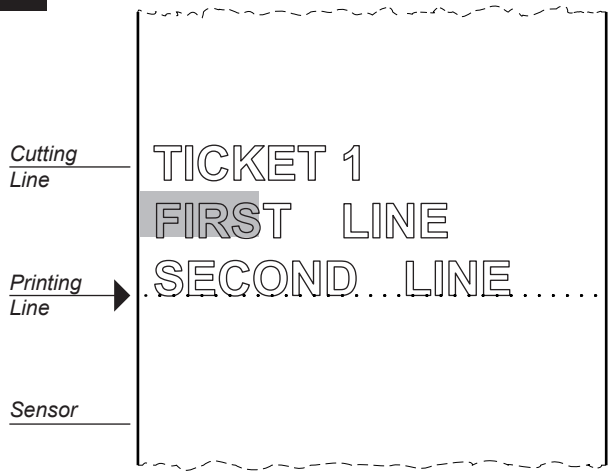
Start
Paper with black mark not aligned

2



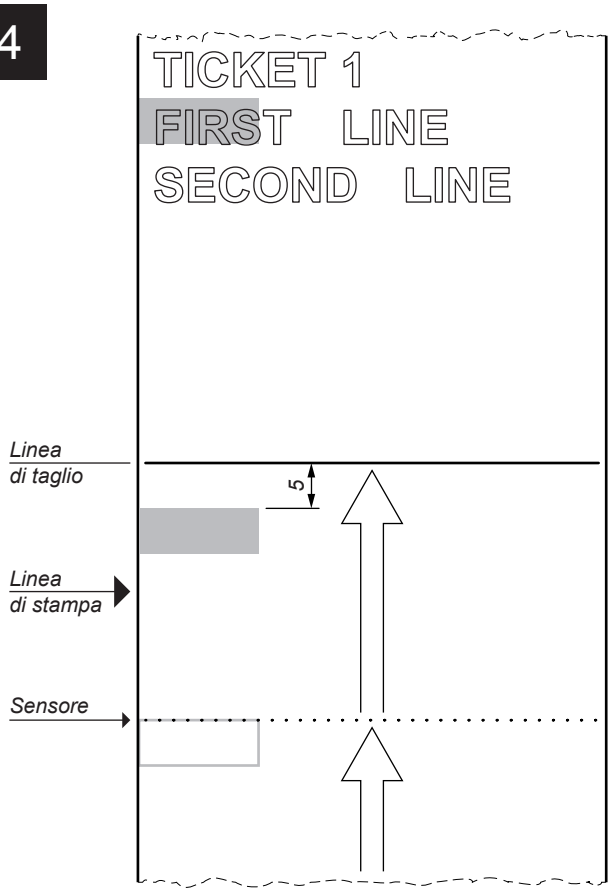
Alignment command 0x1D 0xF6
Paper is fed. The black mark is recognized by the sensor and aligned at a distance of 5mm (notch distance) from the printing line

3



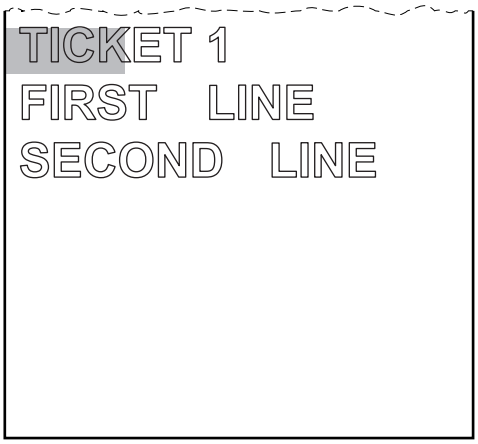
Command for text printing
‘TICKET 1’, 0x0A,’FIRST LINE’, 0x0A,
’SECOND LINE’, 0x0A

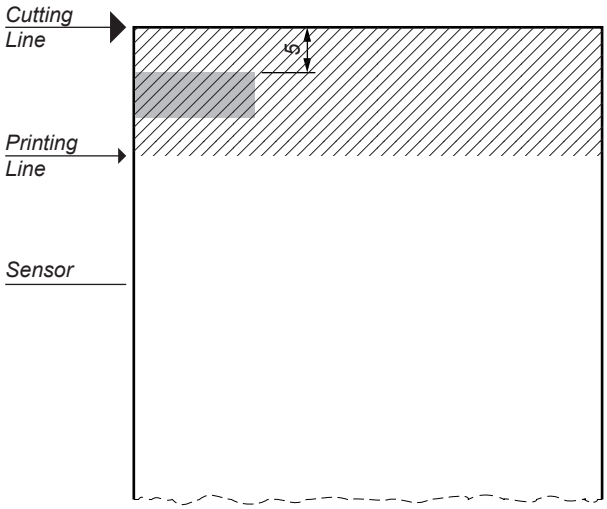
4



Alignment command 0x1D 0xF8
Paper is fed. The next black mark is recognized by the sensor and aligned at a distance of 5mm (notch distance) from the cutting line

5





Cut command 0x1B 0x69
The paper is cut.
The portion of the paper between the cutting line
and the printing line can not be recovered,
the paper is ready for printing.

Part Number : 77200000003300 Rev. 1.00

CUSTOM S.p.A.
World Headquarters
Via Berettine, 2/B - 43010 Fontevivo, Parma ITALY
Tel. +39 0521 680111 - Fax +39 0521 610701
info@custom.biz - www.custom.biz