

## COMMANDS MANUAL

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# K3

**CUSTOM<sup>®</sup>**

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



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

## 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.
- When positioning the device, make sure cables do not get damaged.
- Use the type of electrical power supply indicated on the device label. If uncertain, contact your dealer.
- Make sure the electrical system that supplies power to the device is equipped with a ground wire and is protected by a differential switch.
- 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.
- 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.
- Periodically perform scheduled maintenance on the device to avoid dirt build-up that could compromise the correct, safe operation of the unit.
- Before any type of work is done on the machine, disconnect the power supply.
- 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.

## 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.



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*)



**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.

INTRODUCTION



ESC/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).

0x0D

Print and carriage return

Valid for

AAAA

BBBB

CCCC

[Format]

ASCII

Hex

Decimal

CR

0D

13

[Range]

[Description]

When autofeed is "CR enabled", this command functions in the same way as 0x0A, otherwise it is disregarded.

[Notes]

This command sets the print position to the beginning of the line.

AAAA

BBBB

CCCC

This command sets the print position to the beginning of the line.

This command is immediately executed even when the data buffer is full.

This status is transmitted whenever data sequence is received.

[Default]

[Reference]

0x0A

[Example]

<CR>

Command value

Command function

Devices that use the command

Information valid for devices AAAA, BBBB, CCC

Information valid for devices AAAA, BBBB

Information valid for device CCCC

Information valid only for the devices marked in bold

Information valid for all the devices listed in the third heading field

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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:

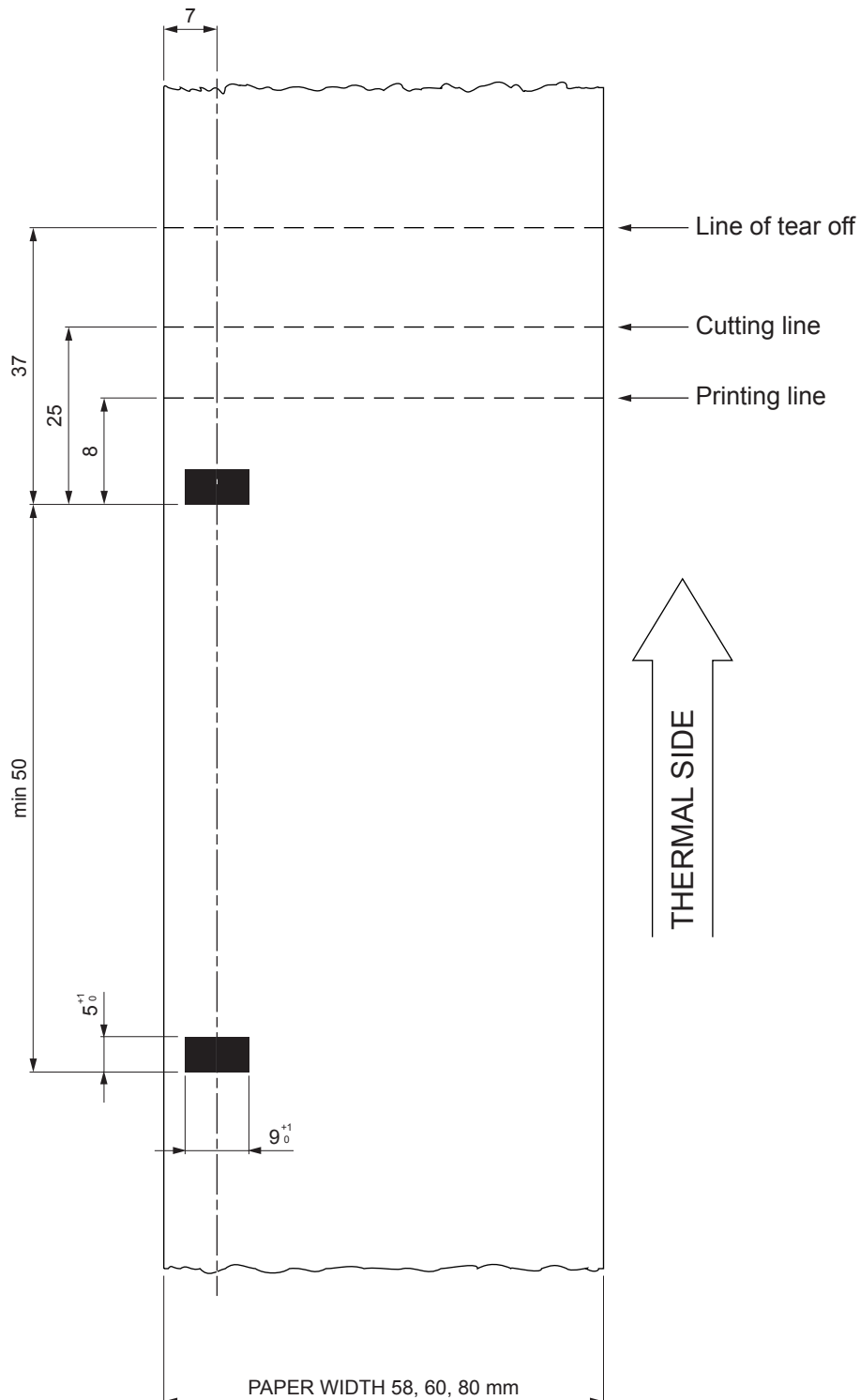
0x	indicates the representation of the command hexadecimal value (for example 0x40 means HEX 40).
n, m, t, x, y	are optional parameters that can have different values.

# PAPER SPECIFICATIONS

## Paper with black mark for fixed sensor

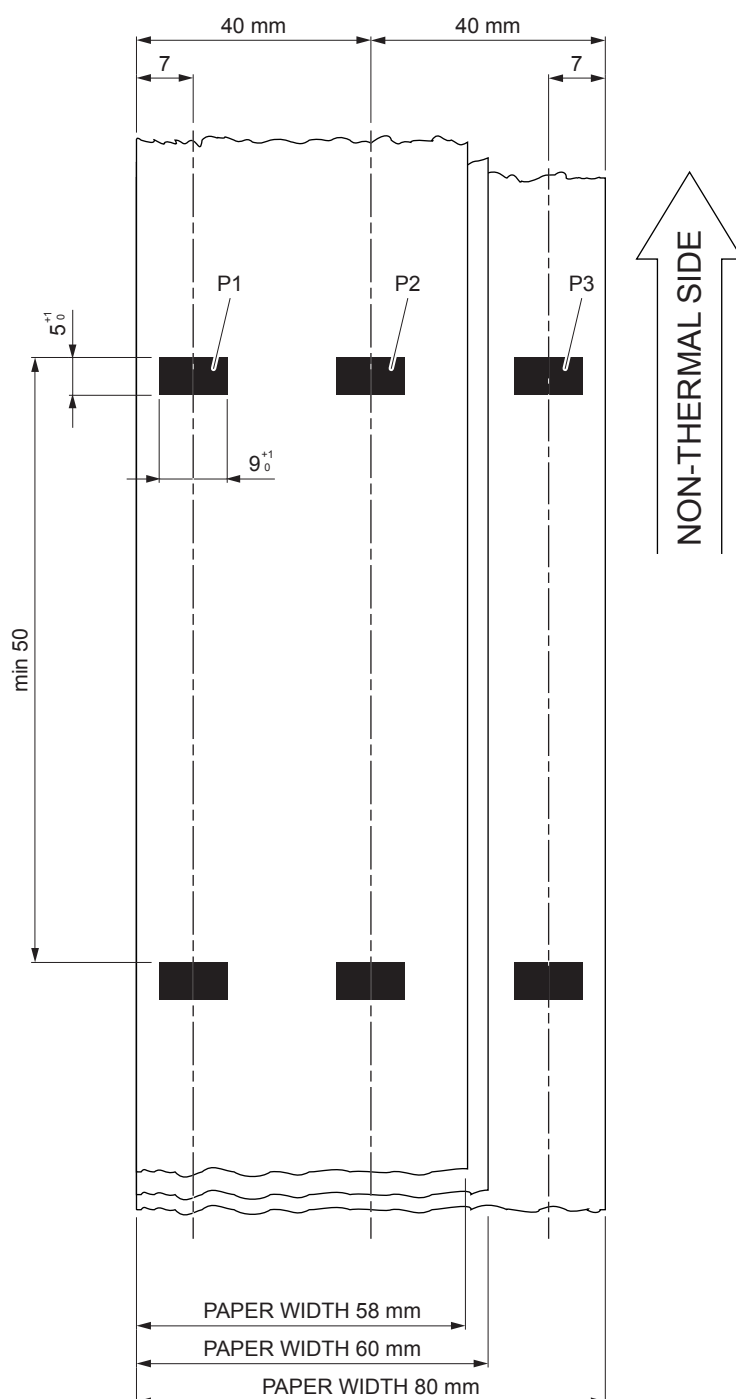
The following image shows the placement of the black mark on the thermal side of the paper.

All the dimensions shown in following figures are in millimetres.



The following image shows the placement of the black mark on the non-thermal side of the paper. The black mark can be placed either in the position P1 or P2 (paper width 58 or 60mm) or even as a P3 (paper width 80mm).

All the dimensions shown in following figures are in millimetres.

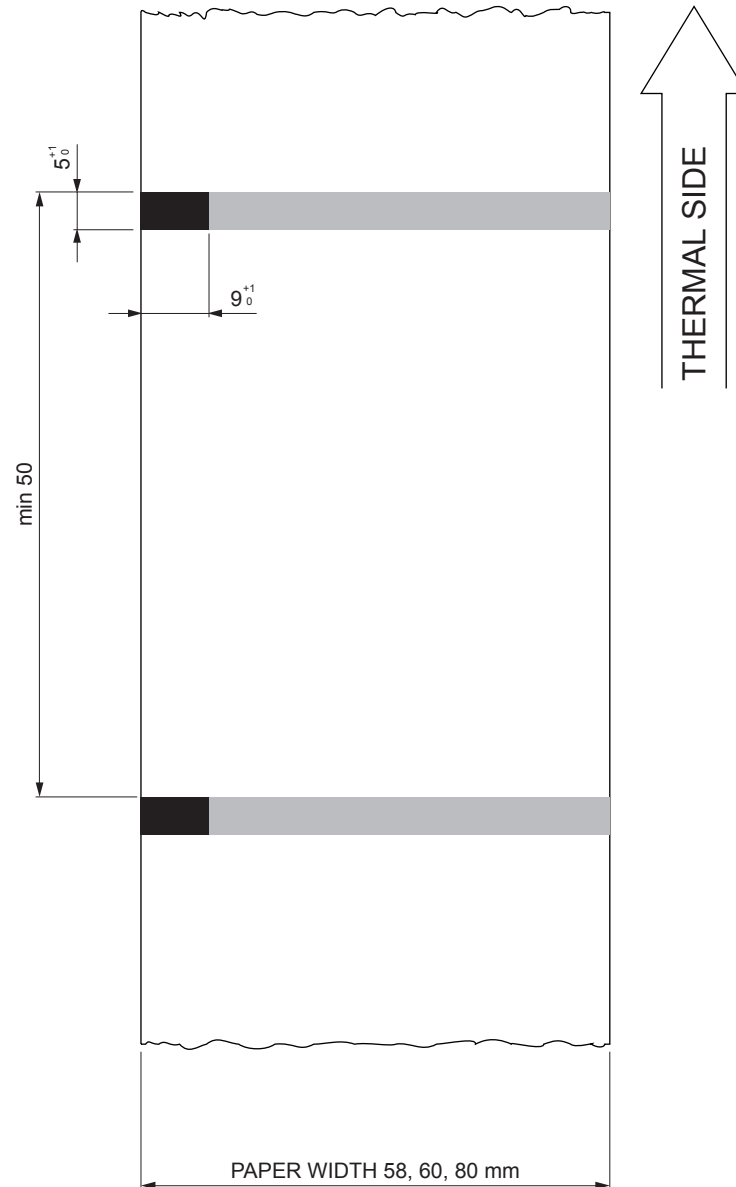




## Paper with black mark for mobile sensor

The following image shows the placement of the black mark on the thermal side of the paper. The notch can be placed anywhere on the whole width of the paper.

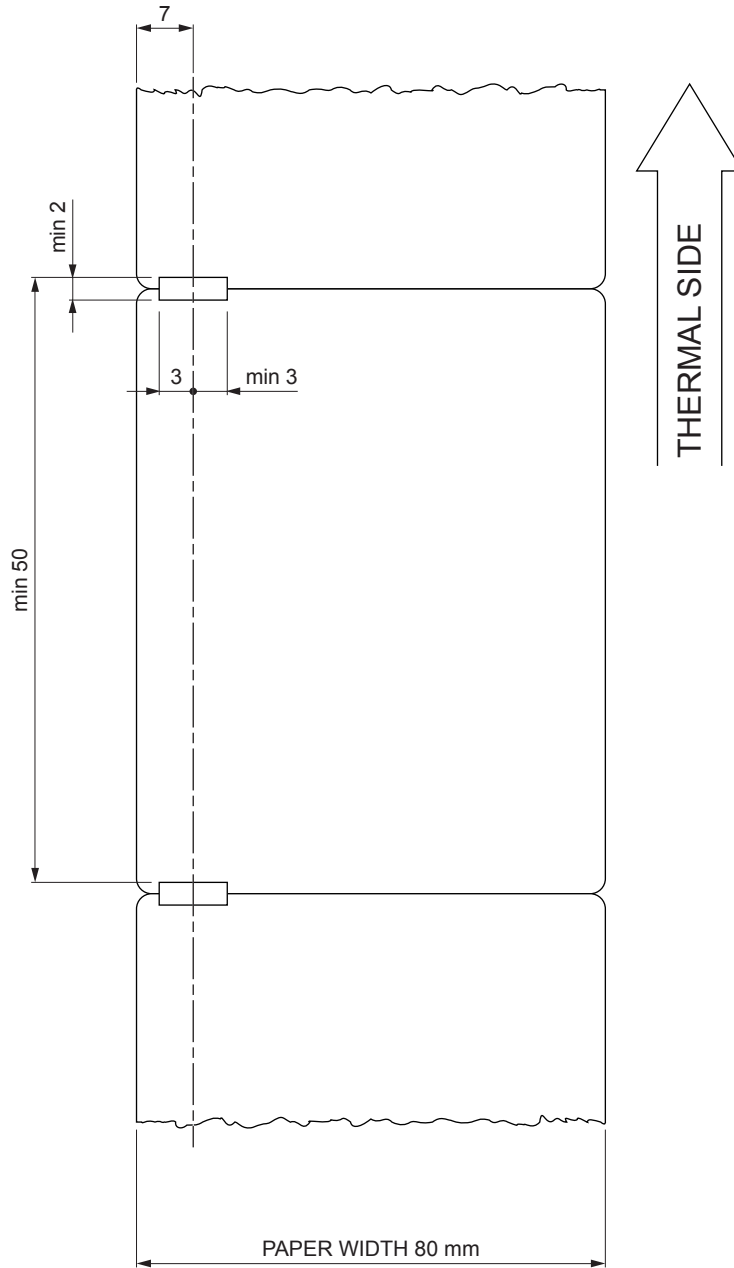
All the dimensions shown in following figures are in millimetres.



## Fanfold paper with hole

The following image shows the placement of the hole on the paper by referring to the thermal side.  
To manage tickets with hole, set the parameter “Notch / B.Mark position” to “Transparence”.

All the dimensions shown in following figures are in millimetres.



ESC/POS™ EMULATION



# COMMANDS LISTED IN ALPHANUMERIC ORDER

0x08	<BS>	57
0x09	<HT>	58
0x0A	<LF>	25
0x0C	<FF>	26
0x0D	<CR>	27
0x10 0x04	<DLE EOT>	80
0x10 0x05	<DLE ENQ>	133
0x10 0x14	<DLE DC4>	135
0x1B 0x0C	<ESC FF>	29
0x1B 0x20	<ESC SP>	35
0x1B 0x21	<ESC !>	36
0x1B 0x24	<ESC \$>	59
0x1B 0x25	<ESC %>	38
0x1B 0x26	<ESC &>	39
0x1B 0x28 0x76	<ESC (>	60
0x1B 0x2A	<ESC *>	70
0x1B 0x2D	<ESC ->	41
0x1B 0x30	<ESC 0>	32
0x1B 0x32	<ESC 2>	33
0x1B 0x33	<ESC 3>	34
0x1B 0x34	<ESC 4>	42
0x1B 0x3D	<ESC =>	136
0x1B 0x3F	<ESC ?>	43
0x1B 0x40	<ESC @>	137
0x1B 0x44	<ESC D>	61
0x1B 0x45	<ESC E>	44



0x1B 0x47	<ESC G>	45
0x1B 0x4A	<ESC J>	30
0x1B 0x4C	<ESC L>	138
0x1B 0x4D	<ESC M>	46
0x1B 0x52	<ESC R>	47
0x1B 0x53	<ESC S>	139
0x1B 0x54	<ESC T>	62
0x1B 0x56	<ESC V>	48
0x1B 0x57	<ESC W>	63
0x1B 0x5C	<ESC \>	64
0x1B 0x61	<ESC a>	65
0x1B 0x63 0x35	<ESC c>	140
0x1B 0x64	<ESC d>	31
0x1B 0x69	<ESC i>	130
0x1B 0x6D	<ESC m>	131
0x1B 0x6F	<ESC o>	141
0x1B 0x70	<ESC p>	142
0x1B 0x74	<ESC t>	49
0x1B 0x76	<ESC v>	85
0x1B 0x7B	<ESC {>	51
0x1B 0xC1		52
0x1B 0xFA		143
0x1B 0xFD		144
0x1B 0xFF		28
0x1C 0x26	<FS &>	53
0x1C 0x2E	<FS .>	54



0x1C 0x44	.<FS D>	145
0x1C 0x4D	.<FS M>	146
0x1C 0x65	.<FS e>	160
0x1C 0x66	.<FS f>	161
0x1C 0x70	.<FS p>	72
0x1C 0x71	.<FS q>	74
0x1C 0x93		147
0x1C 0xB0		149
0x1C 0xC0 0x07		150
0x1C 0xC0 0xFF		151
0x1C 0xEB		152
0x1D 0x21	.<GS !>	55
0x1D 0x24	.<GS \$>	66
0x1D 0x28 0x6B	.<GS (>	93
0x1D 0x28 0x6B [fn 065]	.<GS (>	103
0x1D 0x28 0x6B [fn 065]	.<GS (>	115
0x1D 0x28 0x6B [fn 065]	.<GS (>	95
0x1D 0x28 0x6B [fn 066]	.<GS (>	104
0x1D 0x28 0x6B [fn 066]	.<GS (>	96
0x1D 0x28 0x6B [fn 067]	.<GS (>	105
0x1D 0x28 0x6B [fn 067]	.<GS (>	116
0x1D 0x28 0x6B [fn 067]	.<GS (>	97
0x1D 0x28 0x6B [fn 068]	.<GS (>	117
0x1D 0x28 0x6B [fn 068]	.<GS (>	98
0x1D 0x28 0x6B [fn 069]	.<GS (>	106
0x1D 0x28 0x6B [fn 069]	.<GS (>	118
0x1D 0x28 0x6B [fn 069]	.<GS (>	99
0x1D 0x28 0x6B [fn 080]	.<GS (>	101



0x1D 0x28 0x6B [fn 080] . . . . .	<GS (> . . . . .	107
0x1D 0x28 0x6B [fn 080] . . . . .	<GS (> . . . . .	119
0x1D 0x28 0x6B [fn 081] . . . . .	<GS (> . . . . .	102
0x1D 0x28 0x6B [fn 081] . . . . .	<GS (> . . . . .	108
0x1D 0x28 0x6B [fn 081] . . . . .	<GS (> . . . . .	120
0x1D 0x28 0x6B [fn 365] . . . . .	<GS (> . . . . .	109
0x1D 0x28 0x6B [fn 366] . . . . .	<GS (> . . . . .	110
0x1D 0x28 0x6B [fn 367] . . . . .	<GS (> . . . . .	111
0x1D 0x28 0x6B [fn 368] . . . . .	<GS (> . . . . .	112
0x1D 0x28 0x6B [fn 380] . . . . .	<GS (> . . . . .	113
0x1D 0x28 0x6B [fn 381] . . . . .	<GS (> . . . . .	114
0x1D 0x2A . . . . .	<GS *> . . . . .	76
0x1D 0x2F . . . . .	<GS /> . . . . .	77
0x1D 0x3A . . . . .	<GS :> . . . . .	128
0x1D 0x42 . . . . .	<GS B> . . . . .	56
0x1D 0x48 . . . . .	<GS H> . . . . .	121
0x1D 0x49 . . . . .	<GS l> . . . . .	154
0x1D 0x4C . . . . .	.67	
0x1D 0x50 . . . . .	<GS P> . . . . .	155
0x1D 0x56 . . . . .	<GS V> . . . . .	132
0x1D 0x57 . . . . .	<GS W> . . . . .	68
0x1D 0x5C . . . . .	<GS \> . . . . .	69
0x1D 0x5E . . . . .	<GS ^> . . . . .	129
0x1D 0x66 . . . . .	<GS f> . . . . .	122
0x1D 0x68 . . . . .	<GS h> . . . . .	123
0x1D 0x6B . . . . .	<GS k> . . . . .	124
0x1D 0x72 . . . . .	<GS r> . . . . .	86
0x1D 0x76 0x30 . . . . .	<GS v 0> . . . . .	78



0x1D 0x77 . . . . .<GS w> . . . . .	127
0x1D 0x7C . . . . .	156
0x1D 0xD0 . . . . .	158
0x1D 0xE0 . . . . .	88
0x1D 0xE1 . . . . .	89
0x1D 0xE2 . . . . .	90
0x1D 0xE3 . . . . .	91
0x1D 0xE5 . . . . .	92
0x1D 0xE6 . . . . .	157
0x1D 0xE7 . . . . .	163
0x1D 0xF0 . . . . .	159
0x1D 0xF6 . . . . .	165
0x1D 0xF8 . . . . .	166





# COMMANDS LISTED BY FUNCTION

## PRINT COMMANDS

---

0x0A	<LF>	25
Print and line feed		
0x0C	<FF>	26
Print and return to standard mode in page mode		
0x0D	<CR>	27
Print and carriage return		
0x1B 0xFF		28
Receive the graphic page from the communication port		
0x1B 0x0C	<ESC FF>	29
Print data in page mode		
0x1B 0x4A	<ESC J>	30
Print and feed paper		
0x1B 0x64	<ESC d>	31
Print and feed paper n lines		

## LINE SPACING COMMANDS

---

0x1B 0x30	<ESC 0>	32
Select 1/8-inch line spacing		
0x1B 0x32	<ESC 2>	33
Select 1/6-inch line spacing		
0x1B 0x33	<ESC 3>	34
Set line spacing using minimum units		

## CHARACTER COMMANDS

---

0x1B 0x20	<ESC SP>	35
Set right-side character spacing		
0x1B 0x21	<ESC !>	36
Set print mode		
0x1B 0x25	<ESC %>	38
Select/cancel user-defined character set		
0x1B 0x26	<ESC &>	39
Defines user-defined characters		



0x1B 0x2D .....	<ESC -> .....	41
Turn underline mode on/off		
0x1B 0x34 .....	<ESC 4> .....	42
Set/reset italic mode		
0x1B 0x3F .....	<ESC ?> .....	43
Cancel user-defined characters		
0x1B 0x45 .....	<ESC E> .....	44
Select emphasized mode		
0x1B 0x47 .....	<ESC G> .....	45
Select double-strike mode		
0x1B 0x4D .....	<ESC M> .....	46
Select character font		
0x1B 0x52 .....	<ESC R> .....	47
Select international character set		
0x1B 0x56 .....	<ESC V> .....	48
Select print mode 90° turned		
0x1B 0x74 .....	<ESC t> .....	49
Select character code table		
0x1B 0x7B .....	<ESC {> .....	51
Set/cancel upside-down character printing		
0x1B 0xC1 .....		52
Set/cancel cpi mode		
0x1C 0x26 .....	<FS &> .....	53
Enable Chinese fonts		
0x1C 0x2E .....	<FS .> .....	54
Disable Chinese fonts		
0x1D 0x21 .....	<GS !> .....	55
Select character size		
0x1D 0x42 .....	<GS B> .....	56
Turn white/black reverse printing mode on/off		

## PRINT POSITION COMMAND

---

0x08 .....	<BS> .....	57
Back space		
0x09 .....	<HT> .....	58
Horizontal tab		
0x1B 0x24 .....	<ESC \$> .....	59
Set absolute print position		



0x1B 0x28 0x76 .....	<ESC (> .....	60
Set relative vertical print position		
0x1B 0x44 .....	<ESC D> .....	61
Set horizontal tab position		
0x1B 0x54 .....	<ESC T> .....	62
Select print direction in page mode		
0x1B 0x57 .....	<ESC W> .....	63
Set printing area in page mode		
0x1B 0x5C .....	<ESC \> .....	64
Set relative print position		
0x1B 0x61 .....	<ESC a> .....	65
Select justification		
0x1D 0x24 .....	<GS \$> .....	66
Set absolute vertical print position in page mode		
0x1D 0x4C .....	67	
Set left margin		
0x1D 0x57 .....	<GS W> .....	68
Set printing area width		
0x1D 0x5C .....	<GS \> .....	69
Set relative vertical print position in page mode		

## BIT IMAGE COMMANDS

---

0x1B 0x2A .....	<ESC *> .....	70
Select image print mode		
0x1C 0x70 .....	<FS p> .....	72
Print NV bit image		
0x1C 0x71 .....	<FS q> .....	74
Define NV bit image		
0x1D 0x2A .....	<GS *> .....	76
Define downloaded bit image		
0x1D 0x2F .....	<GS /> .....	77
Print downloaded bit image		
0x1D 0x76 0x30 .....	<GS v 0> .....	78
Print raster image		

## STATUS COMMANDS

---

0x10 0x04 .....	<DLE EOT> .....	80
Real-time status transmission		



0x1B 0x76 .....	<ESC v> .....	85
Transmit printer status		
0x1D 0x72 .....	<GS r> .....	86
Transmit status		
0x1D 0xE0 .....		88
Enable / disable automatic FULL STATUS back		
0x1D 0xE1 .....		89
Reading of length paper (cm) available before virtual paper-end		
0x1D 0xE2 .....		90
Reading number of cuts performed from the printer		
0x1D 0xE3 .....		91
Reading of length (cm) of printed paper		
0x1D 0xE5 .....		92
Reading number of power up		

## BARCODE COMMANDS

---

0x1D 0x28 0x6B .....	<GS (> .....	93
Print two-dimensional barcode		
0x1D 0x28 0x6B [fn 065] .....	<GS (> .....	95
Specify the number of columns of PDF417 barcode		
0x1D 0x28 0x6B [fn 066] .....	<GS (> .....	96
Specify the number of rows of PDF417 barcode		
0x1D 0x28 0x6B [fn 067] .....	<GS (> .....	97
Specify the width of a module of PDF417 barcode		
0x1D 0x28 0x6B [fn 068] .....	<GS (> .....	98
Specify the height of PDF417 barcode		
0x1D 0x28 0x6B [fn 069] .....	<GS (> .....	99
Specify the error correction level of PDF417 barcode		
0x1D 0x28 0x6B [fn 080] .....	<GS (> .....	101
Store the PDF417 barcode data in the barcode save area		
0x1D 0x28 0x6B [fn 081] .....	<GS (> .....	102
Encodes and prints the PDF417 barcode data in the barcode save area		
0x1D 0x28 0x6B [fn 065] .....	<GS (> .....	103
Specify encoding scheme of QRcode barcode		
0x1D 0x28 0x6B [fn 066] .....	<GS (> .....	104
Specify dot size of the module of the QRcode barcode		
0x1D 0x28 0x6B [fn 067] .....	<GS (> .....	105
Specify QRcode barcode size		



0x1D 0x28 0x6B [fn 069] . . . . .<GS (> . . . . .	106
Specify the error correction level of the QRcode barcode	
0x1D 0x28 0x6B [fn 080] . . . . .<GS (> . . . . .	107
Store the QRcode barcode data in the barcode save area	
0x1D 0x28 0x6B [fn 081] . . . . .<GS (> . . . . .	108
Prints the QRcode barcode data	
0x1D 0x28 0x6B [fn 365] . . . . .<GS (> . . . . .	109
Specify the encoding scheme of DATAMATRIX barcode	
0x1D 0x28 0x6B [fn 366] . . . . .<GS (> . . . . .	110
Set rotation of DATAMATRIX barcode	
0x1D 0x28 0x6B [fn 367] . . . . .<GS (> . . . . .	111
Set dot size of the module of DATAMATRIX barcode	
0x1D 0x28 0x6B [fn 368] . . . . .<GS (> . . . . .	112
Set size of DATAMATRIX barcode	
0x1D 0x28 0x6B [fn 380] . . . . .<GS (> . . . . .	113
Store the DATAMATRIX barcode data in the barcode save area	
0x1D 0x28 0x6B [fn 381] . . . . .<GS (> . . . . .	114
Encodes and prints the DATAMATRIX barcode data in the barcode save area	
0x1D 0x28 0x6B [fn 065] . . . . .<GS (> . . . . .	115
Specify encoding scheme of AZTEC barcode	
0x1D 0x28 0x6B [fn 067] . . . . .<GS (> . . . . .	116
Specify dot size of the module of the AZTEC barcode	
0x1D 0x28 0x6B [fn 068] . . . . .<GS (> . . . . .	117
Specify AZTEC barcode size	
0x1D 0x28 0x6B [fn 069] . . . . .<GS (> . . . . .	118
Specify the error correction level of the AZTEC barcode	
0x1D 0x28 0x6B [fn 080] . . . . .<GS (> . . . . .	119
Store the AZTEC barcode data in the barcode save area	
0x1D 0x28 0x6B [fn 081] . . . . .<GS (> . . . . .	120
Prints the AZTEC barcode data	
0x1D 0x48 . . . . .<GS H> . . . . .	121
Select printing position of Human Readable Interpretation ( HRI ) characters	
0x1D 0x66 . . . . .<GS f> . . . . .	122
Select font for HRI characters	
0x1D 0x68 . . . . .<GS h> . . . . .	123
Set bar code height	
0x1D 0x6B . . . . .<GS k> . . . . .	124
Print barcode	
0x1D 0x77 . . . . .<GS w> . . . . .	127
Set bar code width	



## MACRO FUNCTIONS

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0x1D 0x3A .....	<GS :> .....	128
Set start/end of macro definition		
0x1D 0x5E .....	<GS ^> .....	129
Execute macro		

## MECHANISM CONTROL

---

0x1B 0x69 .....	<ESC i> .....	130
Total cut		
0x1B 0x6D .....	<ESC m> .....	131
Partial cut		
0x1D 0x56 .....	<GS V> .....	132
Select cut mode		

## MISCELLANEOUS COMMANDS

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0x10 0x05 .....	<DLE ENQ> .....	133
Real-time request to printer		
0x10 0x14 .....	<DLE DC4> .....	135
Generate pulse at real-time		
0x1B 0x3D .....	<ESC => .....	136
Select peripherals device		
0x1B 0x40 .....	<ESC @> .....	137
Initialize printer		
0x1B 0x4C .....	<ESC L> .....	138
Select page mode		
0x1B 0x53 .....	<ESC S> .....	139
Select standard mode		
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---

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## ALIGNMENT COMMANDS

---

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# PRINT COMMANDS

## 0x0A

<LF>

### Print and line feed

Valid per	K3	
[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]		
<ul style="list-style-type: none"><li>• Sets the print position to the beginning of the line.</li><li>• If the buffer is empty, the printing feeds of (character height + spacing gap) dot. (default 32 dot).</li></ul>		
[Default]		
[Reference]		
0x1B 0x32, 0x1B 0x33, 0x0D		
[Example]		



## 0x0C

<FF>

### Print and return to standard mode in page mode

Valid per	K3	
[Format]	ASCII	FF
	Hex	0C
	Decimal	12
[Range]		
[Description]		
Prints the data in the buffer collectively and returns to standard mode.		
[Notes]		
<ul style="list-style-type: none"><li>• The buffer data is deleted after being printed.</li><li>• The printing area set by 0x1B 0x57 is reset to the default setting.</li><li>• The printer does not execute paper cutting.</li><li>• This command sets the print position to the beginning of the line.</li><li>• This command is enabled only in page mode.</li></ul>		
[Default]		
[Reference]		
0x1B 0x4C, 0x1B 0x53		
[Example]		



## 0x0D

<CR>

### Print and carriage return

Valid per	K3	
[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 0xFF

Receive the graphic page from the communication port

Valid per	K3					
-----------	----	--	--	--	--	--

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

[Range]	n = 1, 2 $0 \leq nL, nH \leq 255$
---------	--------------------------------------

[Description]	Receive $[nL + (nH \times 256)]$ 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
2	Save logo in the flash bank 2

[Notes]	<ul style="list-style-type: none"><li>• The images are saved in FlashDisk as Pict1.bmp (bank 1) and Pict2.bmp (bank 2).</li><li>• For serial communication, set parameter "RS232 handshaking" to "Hardware".</li><li>• The number of received data bytes is <math>[nL + (nH \times 256)] \times 2</math>.</li><li>• Every word is received first as MSByte and then as LSByte.</li><li>• If <math>[nL + (nH \times 256)]</math> is more than 65520, the following data are processed as normal data.</li><li>• In the horizontal dotline there are 36 words.</li><li>• The flash bank for graphic print dimensions are: 576 horizontal dots (72 bytes/line) ´ 910 vertical dots (65520 bytes).</li></ul>
---------	--

[Default]

[Reference]

[Example]



## 0x1B 0x0C

<ESC FF>

### Print data in page mode

Valid per	K3		
[Format]	ASCII	ESC	FF
	Hex	1B	0C
	Decimal	27	12
[Range]			
[Description]			
In page mode, prints all buffered data in the printing area collectively.			
[Notes]			
<ul style="list-style-type: none"><li>• This command is enabled only in page mode.</li><li>• After printing, the printer does not clear the buffered data, setting values for 0x1B 0x54 and 0x1B 0x57, and the position for buffering character data.</li></ul>			
[Default]			
[Reference]			
0x0C, 0x1B 0x4C, 0x1B 0x53			
[Example]			



# 0x1B 0x4A

<ESC J>

## Print and feed paper

Valid per	K3			
[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]	<ul style="list-style-type: none"><li>• After printing has been completed, this command sets the print starting position to the beginning of the line.</li><li>• The paper feed amount set by this command does not affect the values set by 0x1B 0x32 or 0x1B 0x33.</li><li>• The horizontal and vertical motion units are specified by 0x1D 0x50.</li><li>• 0x1D 0x50 can change the vertical (and horizontal) motion unit. However, the value cannot be less than the minimum vertical movement amount.</li><li>• In standard mode, the vertical motion unit is used.</li><li>• The maximum paper feed amount is 520 mm.</li></ul>			
[Default]				
[Reference]	0x1D 0x50			
[Example]				



## 0x1B 0x64

<ESC d>

### Print and feed paper n lines

Valid per	K3			
[Format]	ASCII	ESC	d	n
	Hex	1B	64	n
	Decimal	27	100	n
[Range]	$0 \leq n \leq 255$			
[Description]	Prints the data in the print buffer and feeds the paper n rows.			
[Notes]	<ul style="list-style-type: none"><li>• n rows paper feed is equivalent to (n x char height + line spacing set).</li><li>• Sets the print starting position at the beginning of the line.</li><li>• This command does not affect the line spacing set by 0x1B 0x32 or 0x1B 0x33.</li><li>• 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.</li></ul>			
[Default]				
[Reference]	0x1B 0x32, 0x1B 0x33			
[Example]				



# LINE SPACING COMMANDS

## 0x1B 0x30

<ESC 0>

Select 1/8-inch line spacing

Valid per	K3		
[Format]	ASCII	ESC	0
	Hex	1B	30
	Decimal	27	48
[Description]	Selects 1/8-inch line spacing.		
[Notes]			
[Default]			
[Reference]	0x1B 0x32, 0x1B 0x33		
[Example]			





## 0x1B 0x32

<ESC 2>

Select 1/6-inch line spacing

Valid per	K3		
[Format]	ASCII	ESC	2
	Hex	1B	32
	Decimal	27	50
[Range]			
[Description]			
Selects 1/6-inch line spacing.			
[Notes]			
[Default]			
[Reference]	0x1B 0x33		
[Example]			



## 0x1B 0x33

<ESC 3>

### Set line spacing using minimum units

Valid per	K3			
[Format]	ASCII	ESC	3	n
	Hex	1B	33	n
	Decimal	27	51	n
[Range]	$0 \leq n \leq 255$			
[Description]	Sets line spacing to [ n × (vertical or horizontal motion unit)] inches.			
[Notes]	<ul style="list-style-type: none"><li>• 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.</li><li>• The 0xD 0x50 command can change the horizontal (and vertical) motion unit. However, the value cannot be less than the minimum vertical movement amount.</li><li>• In standard mode, the vertical motion unit is used.</li><li>• The maximum spacing is 32,5 mm.</li></ul>			
[Default]	n = 64 (1/6 inch)			
[Reference]	0x1B 0x32, 0x1D 0x50			
[Example]				



# CHARACTER COMMANDS

## 0x1B 0x20

<ESC SP>

Set right-side character spacing

Valid per	K3			
[Format]	ASCII	ESC	SP	n
	Hex	1B	20	n
	Decimal	27	32	n
[Range]	$0 \leq n \leq 255$			
[Description]	Sets the character spacing for the right side of the character to [n x horizontal or vertical motion units].			
[Notes]	<ul style="list-style-type: none"><li>• 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.</li><li>• The horizontal and vertical motion units are specified by 0xD 0x50. Changing the horizontal or vertical motion units does not affect the current right side spacing.</li><li>• The 0x1D 0x50 command can change the horizontal (and vertical) motion unit. However, the value cannot be less than the minimum horizontal movement amount.</li><li>• The maximum right side character spacing is 32 mm.</li><li>• In standard mode, the horizontal motion unit is used.</li></ul>			
[Default]	n = 0			
[Reference]	0x1D 0x50			
[Example]				



## 0x1B 0x21

<ESC !>

### Set print mode

Valid per	K3			
[Format]	ASCII	ESC	!	n
	Hex	1B	21	n
	Decimal	27	33	n
[Range]	$0 \leq n \leq 255$			
[Description]	Selects print modes using n (see table below):			

BIT	OFF/ON	HEX	Decimal	FUNCTION	11/15 cpi	15/20 cpi
0	Off	00	0	Character font A selected.	18 x 24	13 x 24
	On	01	1	Character font B selected.	13 x 24	10 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 0x25

<ESC %>

Select/cancel user-defined character set

Valid per	K3			
[Format]	ASCII	ESC	%	n
	Hex	1B	25	n
	Decimal	27	37	n
[Range]	0 ≤ n ≤ 255			
[Description]	Selects or cancels the user-defined character set.			
	When the Least Significant Bit (LSB) of n is 0, the user-defined character set is cancelled.			
	When the LSB of n is 1, the user-defined character set is selected.			
[Notes]	• Only the LSB of n is applicable.			
	• When the user-defined character set is canceled, the internal character set is automatically selected.			
[Default]	n=0			
[Reference]	0x1B 0x26, 0x1B 0x3F			
[Example]				



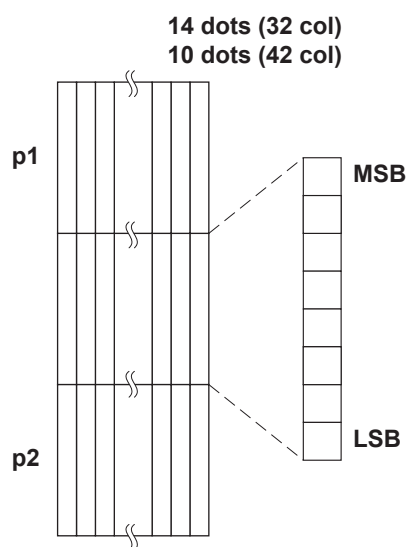
## 0x1B 0x26

<ESC &>

### Defines user-defined characters

Valid per	K3					
[Format]	ASCII	ESC	&	y	c1	c2
	Hex	1B	26	y	c1	c2
	Decimal	27	37	y	c1	c2
[Range]	y = 3					
	$32 \leq c1 \leq c2 \leq 126$					
	$0 \leq x \leq 16$ (Font ( 18 × 24))					
	$0 \leq x \leq 13$ (Font ( 13 × 24))					
	$0 \leq x \leq 10$ (Font 10 × 24)					
	$0 \leq d1 \dots d (y \times Xk) \leq 255$					
[Description]	k = c2 – c1 + 1					
	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.					
[Notes]	X specifies the number of dots in the horizontal direction.					
	• 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, 0x1B 0x3F. are executed or. The printer is reset or the power shut off.					
[Default]	Internal character set.					
[Reference]	0x1B 0x25, 0x1B 0x3F					

[Example]







## 0x1B 0x2D

<ESC ->

### Turn underline mode on/off

Valid per	K3			
[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 per	K3			
[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	Function		
	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

<ESC ?>

### Cancel user-defined characters

Valid per	K3			
[Format]	ASCII	ESC	?	n
	Hex	1B	3F	n
	Decimal	27	63	n
[Range]	$32 \leq n \leq 126$			
[Description]	Cancels user-defined characters.			
[Notes]	<ul style="list-style-type: none"><li>• This command cancels the pattern defined for the character code specified by n.</li><li>• This command deletes the pattern defined for the specified character code in the font selected by 0x1B 0x21.</li><li>• If the user-defined character has not been defined for the specified character code, the printer ignores this command.</li></ul>			
[Default]				
[Reference]	0x1B 0x26, 0x1B 0x25			
[Example]				



0x1B 0x45

<ESC E>

Select emphasized mode

Valid per	K3			
[Format]	ASCII	ESC	E	n
	Hex	1B	45	n
	Decimal	27	69	n
[Range]	$0 \leq n \leq 255$			
[Description]	Turns emphasized mode on/off.			
	<ul style="list-style-type: none"><li>• When the LSB of n is 0, the emphasized mode is off.</li><li>• When the LSB of n is 1, the emphasized mode is on.</li></ul>			
[Notes]	<ul style="list-style-type: none"><li>• Only the LSB of n is effective.</li></ul>			
	<ul style="list-style-type: none"><li>• 0x1B 0x21 also turns on and off the emphasized mode. However, the last received command is the effective one.</li></ul>			
[Default]	n = 0			
[Reference]	0x1B 0x21			
[Example]				



## 0x1B 0x47

<ESC G>

### Select double-strike mode

Valid per	K3			
[Format]	ASCII	ESC	G	n
	Hex	1B	47	n
	Decimal	27	71	n
[Range]	$0 \leq n \leq 255$			
[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

<ESC M>

Select character font

Valid per	K3			
-----------	----	--	--	--

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

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

[Description] Selects characters font.

CHAR/INCH.	n	FUNCTION
A=11 cpi	0, 48	Font 11 cpi (18 × 24)
B=15 cpi	1, 49	Font 15 cpi (13 × 24)
A=15 cpi	0, 48	Font 15 cpi (13 × 24)
B=20 cpi	1, 49	Font 20 cpi (10 × 24)

[Notes]

[Default]

[Reference] 0x1B 0xC1

[Example]



## 0x1B 0x52

<ESC R>

### Select international character set

Valid per	K3			
-----------	----	--	--	--

[Format]	ASCII	ESC	R	n
	Hex	1B	52	n
	Decimal	27	82	n

[Range]	$0 \leq n \leq 10$
---------	--------------------

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

	HEX	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
n	CHARACTERS 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	Norway	#	¤	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>

### Select print mode 90° turned

Valid per	K3			
-----------	----	--	--	--

[Format]	ASCII	ESC	V	n
	Hex	1B	56	n
	Decimal	27	86	n

[Range]	$0 \leq n \leq 1$ $48 \leq n \leq 49$
---------	--

[Description]	Turns 90° rotation mode on/off. n is used as follows:
---------------	---

n	FUNCTION
0, 48	Turns off 90° rotation mode
1, 49	Turns on 90° rotation mode

[Notes]	<ul style="list-style-type: none"><li>• When underlined mode is turned on, the printer does not underline 90° rotated characters. All the same it's possible select the underline mode.</li><li>• 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.</li><li>• This command is not available in Page mode.</li><li>• If this command is entered in Page mode, the printer all the same save the setting.</li></ul>
---------	---

[Default]	n = 0
-----------	-------

[Reference]	0x1B 0x21 , 0x1B 0x2D
-------------	-----------------------

[Example]	
-----------	--





## 0x1B 0x74

<ESC t>

### Select character code table

Valid per	K3			
[Format]	ASCII	ESC	t	n
	Hex	1B	74	n
	Decimal	27	116	n
[Range]	1 ≤ n ≤ 53 n = 255			
[Description]	Selects 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
12	PC853 - Turkish
13	PC857 - Turkish
14	PC737 - Greek
15	ISO8859-7 - Greek
16	WPC1252
17	PC866 - Cyrillic 2
18	PC852 - Latin 2
19	PC858 for Euro symbol at position 213
20	KU42 - Thai
21	TIS11 - Thai
26	TIS18 - Thai
30	TCVN_3 - Vietnamese
31	TCVN_3 - Vietnamese
32	PC720 - Arabic
33	WPC775 - Baltic Rim
34	PC855 - Cyrillic
35	PC861 - Icelandic
36	PC862 - Hebrew



37	PC864 - Arabic
38	PC869 - Greek
39	ISO8859-2 - Latin 2
40	ISO8859-15 - Latin 9
41	PC1098 - Farci
42	PC1118 - Lithuanian
43	PC1119 - Lithuanian
44	PC1125 - Ukranian
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
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.
- [Default] n = 0
- [Reference] See character code table.
- [Example] For printing Euro symbol (€), the command sequence is: 1B, 74, 13, D5

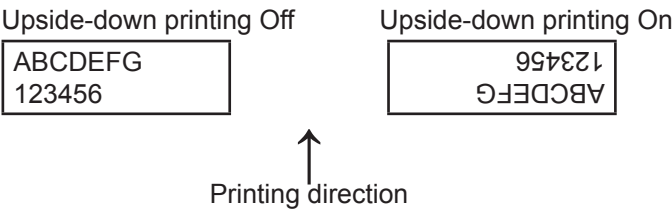


# 0x1B 0x7B

<ESC {>

## Set/cancel upside-down character printing

Valid per	K3			
[Format]	ASCII	ESC	{	n
	Hex	1B	7B	n
	Decimal	27	123	n
[Range]	$0 \leq n \leq 255$			
[Description]	Turns upside-down printing mode on or off.			
	<ul style="list-style-type: none"><li>• When the LSB of n is 0, the upside-down printing mode is off.</li><li>• When the LSB of n is 1, the upside-down printing mode is on.</li></ul>			
[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]				





# 0x1B 0xC1

## Set/cancel cpi mode

Valid per	K3									
[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:									
	<table><tr><th>n</th><th>FUNCTION</th></tr><tr><td>0, 48</td><td>Font A=11 cpi Font B=15 cpi</td></tr><tr><td>1, 49</td><td>Font A=15 cpi Font B=20 cpi</td></tr></table>				n	FUNCTION	0, 48	Font A=11 cpi Font B=15 cpi	1, 49	Font A=15 cpi Font B=20 cpi
n	FUNCTION									
0, 48	Font A=11 cpi Font B=15 cpi									
1, 49	Font A=15 cpi Font B=20 cpi									
[Notes]										
[Default]	n = 0									
[Reference]	0x1B 0x21									
[Example]										



## 0x1C 0x26

<FS &>

### Enable Chinese fonts

Valid per	K3		
[Format]	ASCII	FS	&
	Hex	1C	26
	Decimal	28	38
[Range]			
[Description]	Enable Chinese fonts.		
[Notes]	This command can be used only for the Simplified Chinese (GB2312), Traditional Chinese (BIG5) or Extended Chinese (GB18030-2000) models.		
	This command enable Chinese fonts in RAM. Does not intervene on the parameter set-up.		
[Default]			
[Reference]	See the command manual “Chinese fonts management”.		
[Example]			



0x1C 0x2E

<FS .>

Disable Chinese fonts

Valid per	K3		
[Format]	ASCII	FS	.
	Hex	1C	2E
	Decimale	28	46
[Range]			
[Description]			
Disable Chinese fonts.			
[Notes]	• This command can be used only for the Simplified Chinese (GB2312), Traditional Chinese (BIG5) or Extended Chinese (GB18030-2000) models.		
	This command disable Chinese fonts in RAM. Does not intervene on the parameter set-up.		
	• Disabling the use of Chinese fonts will restore the codepage used previously.		
[Default]			
[Reference]			
[Example]			



## 0x1D 0x21

<GS !>

### Select character size

Valid per	K3																																																															
[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: <ul style="list-style-type: none"><li>• Bits 0 to 3: to select character height (see table 2).</li><li>• Bits 4 to 7: to select character width (see table 1).</li></ul>																																																															
	<table><tr><th colspan="3">Table 1 Select Character Width</th><th colspan="3">Table 2 Select character height</th></tr><tr><th>HEX</th><th>Decimal</th><th>WIDTH</th><th>HEX</th><th>Decimal</th><th>HEIGHT</th></tr><tr><td>00</td><td>0</td><td>1 (normal)</td><td>00</td><td>0</td><td>1 (normal)</td></tr><tr><td>10</td><td>16</td><td>2 (width = 2x)</td><td>01</td><td>1</td><td>2 (height = 2x)</td></tr><tr><td>20</td><td>32</td><td>3 (width = 3x)</td><td>02</td><td>2</td><td>3 (height = 3x)</td></tr><tr><td>30</td><td>48</td><td>4 (width = 4x)</td><td>03</td><td>3</td><td>4 (height = 4x)</td></tr><tr><td>40</td><td>64</td><td>5 (width = 5x)</td><td>04</td><td>4</td><td>5 (height = 5x)</td></tr><tr><td>50</td><td>80</td><td>6 (width = 6x)</td><td>05</td><td>5</td><td>6 (height = 6x)</td></tr><tr><td>60</td><td>96</td><td>7 (width = 7x)</td><td>06</td><td>6</td><td>7 (height = 7x)</td></tr><tr><td>70</td><td>112</td><td>8 (width = 8x)</td><td>07</td><td>7</td><td>8 (height = 8x)</td></tr></table>				Table 1 Select Character Width			Table 2 Select character height			HEX	Decimal	WIDTH	HEX	Decimal	HEIGHT	00	0	1 (normal)	00	0	1 (normal)	10	16	2 (width = 2x)	01	1	2 (height = 2x)	20	32	3 (width = 3x)	02	2	3 (height = 3x)	30	48	4 (width = 4x)	03	3	4 (height = 4x)	40	64	5 (width = 5x)	04	4	5 (height = 5x)	50	80	6 (width = 6x)	05	5	6 (height = 6x)	60	96	7 (width = 7x)	06	6	7 (height = 7x)	70	112	8 (width = 8x)	07	7	8 (height = 8x)
Table 1 Select Character Width			Table 2 Select character height																																																													
HEX	Decimal	WIDTH	HEX	Decimal	HEIGHT																																																											
00	0	1 (normal)	00	0	1 (normal)																																																											
10	16	2 (width = 2x)	01	1	2 (height = 2x)																																																											
20	32	3 (width = 3x)	02	2	3 (height = 3x)																																																											
30	48	4 (width = 4x)	03	3	4 (height = 4x)																																																											
40	64	5 (width = 5x)	04	4	5 (height = 5x)																																																											
50	80	6 (width = 6x)	05	5	6 (height = 6x)																																																											
60	96	7 (width = 7x)	06	6	7 (height = 7x)																																																											
70	112	8 (width = 8x)	07	7	8 (height = 8x)																																																											
[Notes]	<ul style="list-style-type: none"><li>• This command is effective for all characters (except HRI characters).</li><li>• If n falls outside the defined range, this command is ignored.</li><li>• Characters enlarged to different heights on the same line are aligned at the baseline or topline.</li><li>• 0x1B 0x21 can also be used to select character size. However, the setting of the last received command is the effective one.</li></ul>																																																															
[Default]	n = 0																																																															
[Reference]	0x1B 0x21																																																															
[Example]																																																																



# 0x1D 0x42

<GS B>

## Turn white/black reverse printing mode on/off

Valid per	K3			
[Format]	ASCII	GS	B	n
	Hex	1D	42	n
	Decimal	29	66	n
[Range]	$0 \leq n \leq 255$			
[Description]	Turns white/black reverse printing mode on or off.			
	<ul style="list-style-type: none"><li>• When the LSB of n is 0, white/black reverse printing is turned off.</li><li>• When the LSB of n is 1, white/black reverse printing is turned on.</li></ul>			
[Notes]	<ul style="list-style-type: none"><li>• Only the LSB di n is effective.</li></ul>			
	<ul style="list-style-type: none"><li>• This command is available for both built-in and user-defined characters.</li></ul>			
	<ul style="list-style-type: none"><li>• This command does not affect bit image, downloaded bit image, bar code, HRI characters and spacing skipped by 0x09, 0x1B 0x24 and 0x1B 0x5C.</li></ul>			
	<ul style="list-style-type: none"><li>• This command does not affect white space between lines.</li></ul>			
	<ul style="list-style-type: none"><li>• 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.</li></ul>			
[Default]	n = 0			
[Reference]				
[Example]				





# PRINT POSITION COMMAND

**0x08**

**<BS>**

Back space

Valid per	K3	
[Format]	ASCII	BS
	Hex	08
	Decimal	8
[Range]		
[Description]		
Moves print position to previous character.		
[Notes]		
• Can be used to put two characters at the same position.		
[Default]		
[Reference]		
[Example]		



0x09

<HT>

Horizontal tab

Valid per	K3	
[Format]	ASCII	HT
	Hex	09
	Decimal	9
[Range]		
[Description]		
Moves the print position to the next horizontal tab position.		
[Notes]		
<ul style="list-style-type: none"><li>• Ignored unless the next horizontal tab position has been set.</li><li>• 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.</li><li>• Horizontal tab positions are set using 0x1B 0x44.</li></ul>		
[Default]		
[Reference]		
0x1B 0x44		
[Example]		



## 0x1B 0x24

<ESC \$>

### Set absolute print position

Valid per	K3				
[Format]	ASCII	ESC	\$	nL	nH
	Hex	1B	24	nL	nH
	Decimal	27	36	nL	nH
[Range]	$0 \leq nL \leq 255$				
	$0 \leq nH \leq 255$				
[Description]	<p>Sets the distance from the beginning of the line to the position at which subsequent characters are to be printed.</p> <p>The distance from the beginning of the line to the print position is <math>[(nL + nH \times 256) \times (\text{vertical or horizontal motion unit})]</math> inches.</p>				
[Notes]	<ul style="list-style-type: none"><li>• Settings outside the specified printable area are ignored.</li><li>• The horizontal and vertical motion unit are specified by 0x1D 0x50.</li><li>• 0x1D 0x50 can change the horizontal (and vertical) motion unit. However, the value cannot be less than the minimum horizontal movement amount.</li><li>• In standard mode, the horizontal motion unit (x) is used.</li><li>• 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.</li></ul>				
[Default]					
[Reference]	0x1B 0x5C, 0x1D 0x50				
[Example]					



0x1B 0x28 0x76

<ESC (>

Set relative vertical print position

Valid per	K3					
[Format]	ASCII	ESC	(	v	nL	nH
	Hex	1B	28	76	nL	nH
	Decimal	27	40	118	nL	nH
[Range]	$0 \leq nL \leq 255$					
	$0 \leq nH \leq 255$					
[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 $[(nL + nH \times 256) \times (\text{horizontal or vertical motion unit})]$ .					
[Notes]	• When the starting position is specified by N motion unit to the bottom: $nL + nH \times 256 = N$					
	• When the starting position is specified by N motion unit to the top (negative direction), use the complement of 65536: $nL + nH \times 256 = 65536 - N$					
	• 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 per	K3				
[Format]	ASCII	ESC	D	n1...nk	NUL
	Hex	1B	44	n1...nk	00
	Decimal	27	68	n1...nk	0
[Range]	$1 \leq n \leq 255$ $0 \leq k \leq 32$				
[Description]	Sets horizontal tab positions <ul style="list-style-type: none"> <li>• n specifies the column number for setting a horizontal tab position calculated from the beginning of the line.</li> <li>• k indicates the total number of horizontal tab positions to be set.</li> </ul>				
[Notes]	<ul style="list-style-type: none"> <li>• 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.</li> <li>• This command cancels previous tab settings.</li> <li>• When setting n = 8, the print position is moved to column 9 sending 0x09.</li> <li>• Up to 32 tab positions ( k = 32) can be set. Data exceeding 32 tab positions is processed as normal data.</li> <li>• 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.</li> <li>• 0x1B 0x44 00 cancels all horizontal tab positions.</li> <li>• The previously specified horizontal tab position does not change, even if the character width is modified.</li> </ul>				
[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 0x54

<ESC T>

### Select print direction in page mode

Valid per	K3			
[Format]	ASCII	ESC	T	n
	Hex	1B	54	n
	Decimal	27	84	n
[Range]	$0 \leq n \leq 3$			
	$48 \leq n \leq 51$			

[Description] Select the print direction and starting position in page mode. n specifies the print direction and starting position as follows :

n	PRINT DIRECTION	STARTING POSITION
0, 48	Left to right	Upper left
1, 49	Bottom to top	Lower left
2,50	Right to left	Lower right
3,51	Top to bottom	Upper right

[Notes]

- When the command is input in standard mode, the printer executes only internal flag operation. This command does not affect printing in standard mode.
- This command sets the position where data is buffered within the printing area set by 0x1B 0x57.
- Parameters for horizontal or vertical motion units ( x or y) differ as follows,depending on the starting position of the printing area:
  - 1) If the starting position is the upper left or lower right of the printing area, data is buffered in the direction perpendicular to the paper feed direction:  
 Commands using horizontal motion units: 0x1B 0x20, 0x1B 0x24, 0x1B 0x5C.  
 Commands using vertical motion units: 0x1B 0x33, 0x1B 0x4A, 0x1D 0x24, 0x1D 0x5C.
  - 2) If the starting position is the upper right or lower left of the printing area, data is buffered in the paper feed direction:  
 Commands using horizontal motion units: 0x1B 0x33, 0x1B 0x4A, 0x1D 0x24, 0x1D 0x5C.  
 Commands using vertical motion units: 0x1B 0x20, 0x1B 0x24, 0x1B 0x5C.

[Default] n = 0

[Reference] 0x1B 0x24, 0x1B 0x4C, 0x1B 0x57, 0x1B 0x5C, 0x1D 0x24, 0x1D 0x50, 0x1D 0x5C

[Example]



## 0x1B 0x57

<ESC W>

### Set printing area in page mode

Valid per	K3										
[Format]	ASCII	ESC	W	xL	xH	yL	yH	dxL	dxH	dyL	dyH
	Hex	1B	57	xL	xH	yL	yH	dxL	dxH	dyL	dyH
	Decimal	27	87	xL	xH	yL	yH	dxL	dxH	dyL	dyH
[Range]	$0 \leq xL, xH, yL, yH, dxL, dxH, dyL, dyH \leq 255$ (except $dxL = dxH = 0$ or $dyL = dyH = 0$ )										
[Description]	<p>The horizontal starting position, vertical starting position, printing area width, and printing area height are defined as x0, y0, dx (inch), dy (inch), respectively.</p> <p>Each setting for the printing area is calculated as follows:</p> $x0 = [(xL + xH \times 256) \times (\text{horizontal motion unit})]$ $y0 = [(yL + yH \times 256) \times (\text{vertical motion unit})]$ $dx = [dxL + dxH \times 256] \times (\text{horizontal motion unit})$ $dy = [dyL + dyH \times 256] \times (\text{vertical motion unit})$										
[Notes]	<ul style="list-style-type: none"> <li>• If this command is input in standard mode, the printer executes only internal flag operation. This command does not affect printing in standard mode.</li> <li>• If the horizontal or vertical starting position is set outside the printable area, the printer stops command processing and processes the following data as normal data.</li> <li>• If the printing area width or height is set to 0, the printer stops command processing and processes the following data as normal data.</li> <li>• This command sets the position where data is buffered to the position specified by 0x1B 0x54 within the printing area.</li> <li>• If (horizontal starting position + printing area width) exceeds the printable area, the printing area width is automatically set to (horizontal printable area - horizontal starting position).</li> <li>• If (vertical starting position + printing area height) exceeds the printable area, the printing area height is automatically set to (vertical printable area - vertical starting position).</li> <li>• The horizontal and vertical motion unit are specified by 0x1D 0x50. Changing the horizontal or vertical motion unit does not affect the current printing area.</li> <li>• 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 minimum horizontal movement amount.</li> <li>• Use the horizontal motion unit (x) for setting the horizontal starting position and printing area width, and use the vertical motion unit (y) for setting the vertical starting position and printing area height.</li> <li>• When the horizontal starting position, vertical starting position, printing area width, and printing area height are defined as X, Y, Dx, and Dy respectively, the printing area is set.</li> </ul>										
[Default]											
[Reference]											
[Example]											



## 0x1B 0x5C

<ESC I>

### Set relative print position

Valid per	K3				
[Format]	ASCII	ESC	\	nL	nH
	Hex	1B	5C	nL	nH
	Decimal	27	92	nL	nH
[Range]	$0 \leq nL \leq 255$ $0 \leq nH \leq 255$				
[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 $[(nL + nH \times 256) \times (\text{horizontal or vertical motion unit})]$ .				
[Notes]	<ul style="list-style-type: none"><li>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.</li><li>When the starting position is specified by N motion units to the right: <math>nL + nH \times 256 = N</math></li><li>When the starting position is specified by n motion units to the left (negative direction), use the complement of 65536: <math>nL + nH \times 256 = 65536 - N</math></li><li>If setting exceeds the printing area width, the left or right margin is set to the default value.</li><li>The horizontal and vertical motion unit are specified by 0x1D 0x50.</li><li>0x1D 0x50 can change the horizontal (and vertical) motion units. However, the value cannot be less than the minimum horizontal movement amount.</li><li>In standard mode, the horizontal motion unit is used.</li><li>Setting the right value, it's possible to print characters over the right edge.</li></ul>				
[Default]					
[Reference]	0x1B 0x24, 0x1D 0x50				
[Example]					





## 0x1B 0x61

<ESC a>

### Select justification

Valid per	K3			
-----------	----	--	--	--

[Format]	ASCII	ESC	a	n
	Hex	1B	61	n
	Decimal	27	97	n

[Range]	$0 \leq n \leq 2$ $48 \leq n \leq 50$
---------	--

[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]	<ul style="list-style-type: none"><li>• This command is only enabled when inserted at the beginning of a line.</li><li>• Lines are justified within the specified printing area.</li><li>• Spaces set by 0x09, 0x1B 0x24 and 0x1B 0x5C will be justified according to the previously-entered mode.</li></ul>
---------	--

[Default]	n = 0
-----------	-------

[Reference]	
-------------	--

[Example]	
-----------	--

Flush left	Centered	Flush right
<div>ABC ABCD ABCDE</div>	<div>ABC ABCD ABCDE</div>	<div>ABC ABCD ABCDE</div>



## 0x1D 0x24

<GS \$>

### Set absolute vertical print position in page mode

Valid per	K3				
[Format]	ASCII	GS	\$	nL	nH
	Hex	1D	24	nL	nH
	Decimal	29	36	nL	nH
[Range]	$0 \leq nL \leq 255, 0 \leq nH \leq 255$				
[Description]	<ul style="list-style-type: none"><li>Set the absolute vertical print starting position for buffer character data in page mode.</li><li>This command sets the absolute print position to <math>[(nL + nH \times 256) \times (\text{vertical or horizontal motion unit})]</math> inches.</li></ul>				
[Notes]	<ul style="list-style-type: none"><li>This command is effective only in page mode.</li><li>If the <math>[(nL + nH \times 256) \times (\text{vertical or horizontal motion unit})]</math> exceeds the specified printing area, this command is ignored.</li><li>The horizontal starting buffer position does not move.</li><li>The reference starting position is that specified by 0x1B 0x54.</li><li>This command operates as follows, depending on the starting position of the printing area specified by 0x1B 0x54:<ol style="list-style-type: none"><li>When the starting position is set to the upper left or lower right, this command sets the absolute position in the vertical direction.</li><li>When the starting position is set to the upper right or lower left, this command sets the absolute position in the horizontal direction.</li></ol></li><li>The horizontal and vertical motion unit are specified by 0x1D 0x50.</li><li>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.</li></ul>				
[Default]					
[Reference]	0x1B 0x24, 0x1B 0x54, 0x1B 0x57, 0x1B 0x5C, 0x1D 0x50, 0x1D 0x5C				
[Example]					

## 0x1D 0x4C

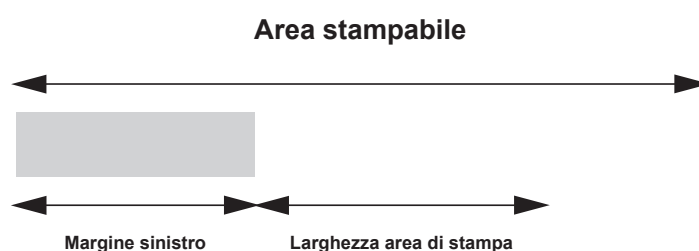
### Set left margin

Valid per	K3				
-----------	----	--	--	--	--

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

[Range]  $0 \leq nL, nH \leq 255$

[Description] Sets the left margin.  
 • The left margin is set to  $[(nL + nH \times 256) \times (\text{horizontal motion unit})]$  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]

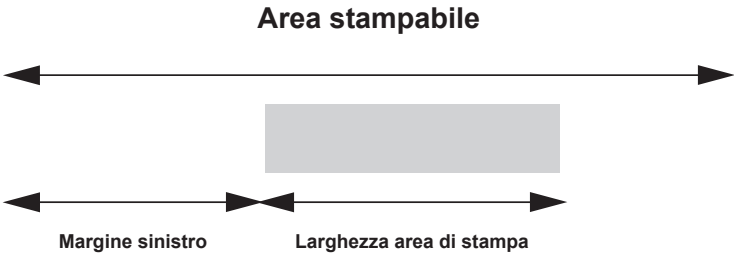


0x1D 0x57

<GS W>

Set printing area width

Valid per	K3				
[Format]	ASCII	GS	W	nL	nH
	Hex	1D	57	nL	nH
	Decimal	29	87	nL	nH
[Range]	$0 \leq nL, nH \leq 255$				
	$0 \leq nL + nH \times 256 \leq 832$				
[Description]	Sets the printing area width to the area specified by nL and nH.				
	• The left margin is set to $[(nL + nH \times 256) \times (\text{horizontal motion unit})]$ 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 0x5C

<GS \>

### Set relative vertical print position in page mode

Valid per	K3				
[Format]	ASCII	GS	\	nL	nH
	Hex	1D	5C	nL	nH
	Decimal	29	92	nL	nH
[Range]	$0 \leq nL \leq 255, 0 \leq nH \leq 255$				
[Description]	<ul style="list-style-type: none"> <li>• Sets the relative vertical print starting position from the current position in page mode.</li> <li>• This command sets the distance from the current position to <math>[(nL + nH \times 256) \times \text{vertical or horizontal motion unit}]</math> inches.</li> </ul>				
Notes]	<ul style="list-style-type: none"> <li>• This command is ignored unless page mode is selected.</li> </ul>				
	<ul style="list-style-type: none"> <li>• When N is specified to the movement downward: <math>nL + nH \times 256 = N</math></li> </ul>				
	<ul style="list-style-type: none"> <li>• When N is specified to the movement upward (the negative direction), use the complement of 65536.</li> </ul>				
	<ul style="list-style-type: none"> <li>• When N is specified to the movement upward: <math>nL + nH \times 256 = 65536 - N</math></li> </ul>				
	<ul style="list-style-type: none"> <li>• Any setting that exceeds the specified printing area is ignored.</li> </ul>				
	<ul style="list-style-type: none"> <li>• This command function as follows, depending on the print starting position set by 0x1B 0x54:               <ol style="list-style-type: none"> <li>1) When the starting position is set to the upper left or lower right of the printing, the vertical motion unit (y) is used.</li> <li>2) When the starting position is set to the upper right or lower left of the printing area, the horizontal motion unit (x) is used.</li> </ol> </li> </ul>				
[Default]	<ul style="list-style-type: none"> <li>• The horizontal and vertical motion unit are specified by 0x1D 0x50.</li> </ul>				
	<ul style="list-style-type: none"> <li>• 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.</li> </ul>				
[Reference]	0x1B 0x24, 0x1B 0x54, 0x1B 0x57, 0x1B 0x5C, 0x1D 0x24, 0x1D 0x50				
[Example]					



# BIT IMAGE COMMANDS

## 0x1B 0x2A

<ESC \*>

Select image print mode

Valid per	K3						
-----------	----	--	--	--	--	--	--

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

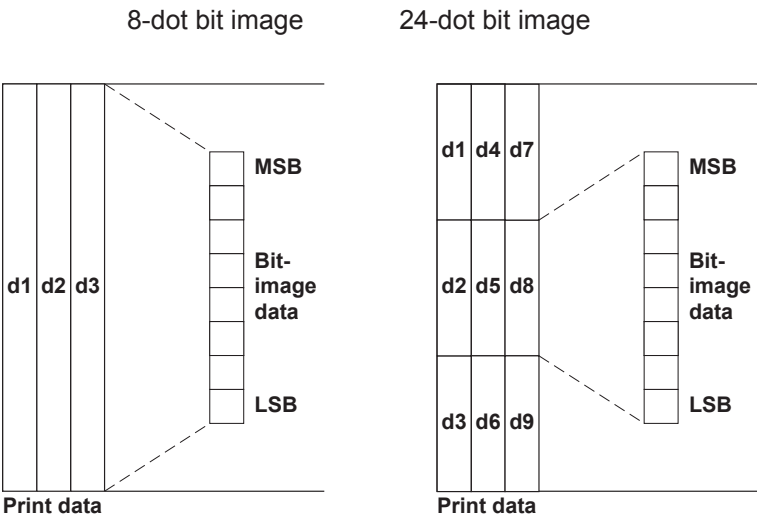
[Range] m = 0, 1, 32, 33  
0 ≤ nL ≤ 255  
0 ≤ nH ≤ 3  
0 ≤ d ≤ 255

[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:



[Default]

[Reference]

[Example]



## 0x1C 0x70

<FS p>

### Print NV bit image

Valid per	K3
-----------	----

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

[Range]	$1 \leq n \leq 255$
	$0 \leq m \leq 3$
	$48 \leq m \leq 51$

[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 height
3, 51	Quadruple

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

- [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.
  - 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 (one half dot for slip paper) in normal mode ( m=0, 48) and in double-height mode ( m=2, 50), and it means 2 dots (two half dots for slip paper) 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.
  - In page mode, this command is effective only if m = 0.





[Default]

[Reference]

[Example]



## 0x1C 0x71

<FS q>

### Define NV bit image

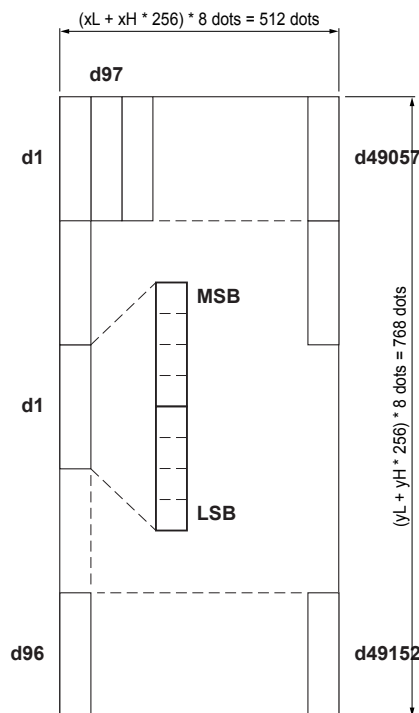
Valid per	K3			
[Format]	ASCII	FS	q	n [xL xH yL yH d1...dk] 1...[xL xH yL yH d1...dk] n
	Hex	1C	71	n [xL xH yL yH d1...dk] 1...[xL xH yL yH d1...dk] n
	Decimal	28	113	n [xL xH yL yH d1...dk] 1...[xL xH yL yH d1...dk] n
[Range]	$1 \leq n \leq 255$ $0 \leq xL \leq 255$ $0 \leq xH \leq 3$ (when $1 \leq (xL + xH \times 256) \leq 1023$ ) $0 \leq yL \leq 1$ (when $1 \leq (yL + yH \times 256) \leq 288$ ) $0 \leq d \leq 255$ $k = (xL + xH \times 256) \times (yL + yH \times 256) \times 8$ Total defined data area = 3M bits (384K bytes)			
[Description]	Define the NV bit image specified by n. <ul style="list-style-type: none"> <li>n specifies the number of the defined NV bit image.</li> <li>xL, xH specifies <math>(xL + xH \times 256) \times 8</math> dots in the horizontal direction for the NV bit image you are defining.</li> <li>yL, yH specifies <math>(yL + yH \times 256) \times 8</math> dots in the vertical direction for the NV bit image you are defining.</li> </ul>			
[Notes]	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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 prohibited to transmit the data including the real-time commands during the execution of this command.</li> <li>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.</li> <li>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.</li> <li>NV bit image means a bit image which is defined in a non-volatile memory by 0x1C 0x71 and printed by 0x1C 0x70.</li> <li>In standard mode, this command is effective only when processed at the beginning of the line.</li> <li>In page mode, this command is not effective.</li> <li>This command is effective when 7 bytes &lt;FS~yH&gt; is processed as a normal value.</li> <li>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.</li> <li>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.</li> <li>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.</li> </ul>			

- 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]. Therefore, 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  $([data: (xL + xH \times 256) \times (yL + yH \times 256) \times 8] + [header :4])$  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

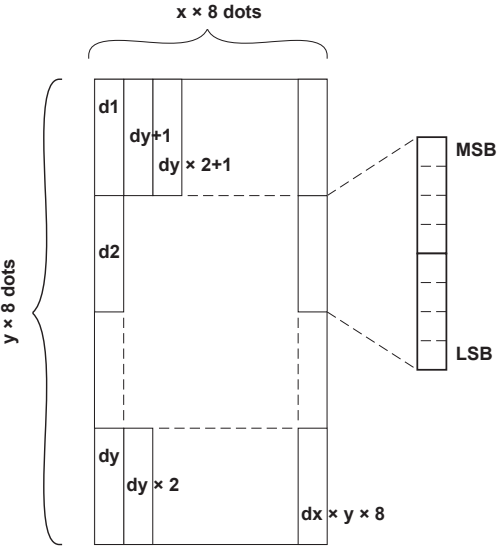




0x1D 0x2A

<GS \*>

Define dowloaded bit image

Valid per	K3					
[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]	$1 \leq x \leq 255$					
	$1 \leq y \leq 48$					
	$x \times y \leq 1536$					
	$0 \leq d \leq 255$					
[Description]	Defines a downloaded bit image using the number of dots specified by x and y. <ul style="list-style-type: none"><li>x specifies the number of dots in the horizontal direction.</li><li>y specifies the number of dots in the vertical direction.</li></ul>					
[Notes]	<ul style="list-style-type: none"><li>The number of dots in the horizontal direction is x × 8, in the vertical direction it is y × 8.</li><li>If x × y is out of the specified range, this command is disabled.</li><li>The d indicates bit-image data. Data ( d ) specifies a bit printed to 1 and not printed to 0.</li><li>The downloaded bit image definition is cleared when:<ol style="list-style-type: none"><li>0x1B 0x40 is executed.</li><li>0x1B 0x26 is executed.</li><li>Printer is reset or the power is turned off.</li></ol></li><li>The following figure shows the relationship between the downloaded bit image and the printed data.</li></ul>					
						
[Default]						
[Reference]	0x1D 0x5C					
[Example]						



## 0x1D 0x2F

<GS />

### Print downloaded bit image

Valid per	K3			
-----------	----	--	--	--

[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 the bit image horizontal size, the following processing is performed:
    - 1) The printing area width is extended toward the right side up to hold the bit image. In this case, printing does not exceed the printable area.
    - 2) If the printing area width cannot be extended toward the right side, because there's no more printing area, the left margin is reduced to accommodate the bit image.

#### [Default]

[Reference] 0x1D 0x2A

#### [Example]



## 0x1D 0x76 0x30

<GS v 0>

### Print raster image

Valid per	K3									
-----------	----	--	--	--	--	--	--	--	--	--

[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]	$0 \leq m \leq 3, 48 \leq m \leq 51$
	$0 \leq xL \leq 255$
	$0 \leq xH \leq 255 (1 \leq xL + xH \times 256 \leq 65535)$
	$0 \leq yL \leq 255$
	$0 \leq yH \leq 8 (1 \leq yL + yH \times 256 \leq 2047)$
	$0 \leq d \leq 255$
	$k = (xL + xH \leq 256) + (yL + yH \leq 256)$ (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 ( $xL + xH \times 256$ ) in the horizontal direction for the bit image.
- yL, yH selects the number of data bits ( $yL + yH \times 256$ ) 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]



# STATUS COMMANDS

## 0x10 0x04

<DLE EOT>

### Real-time status transmission

Valid per	K3
-----------	----

[Format]	ASCII	DLE	EOT	n
	Hex	10	04	n
	Decimal	16	4	n

[Range]	$1 \leq n \leq 4$ n = 17 n = 20 n = 21
---------	---

[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 = 17	transmit print status
n = 20	transmit FULL STATUS
n = 21	transmit printer ID

[Notes]	<ul style="list-style-type: none"><li>• Immediately executed even when the data buffer is full.</li><li>• This status is transmitted whenever data sequence 0x10 0x04 is received.</li></ul>
---------	--

[Default]
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[Reference]	See tables below.
-------------	-------------------

[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	Drawer kick-out signal level Low (pin 3).
	On	04	4	Drawer kick-out signal level High (pin 3).
3	Off	00	0	On-line.
	On	08	8	Off-line.
4	On	10	16	Not used. Fixed to On





5	-	-	-	RESERVED
6	-	-	-	RESERVED
7	Off	00	0	LF key released
	On	80	128	LF key pressed

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	Cover closed
	On	04	4	Cover opened
3	Off	00	0	Paper isn't feeded by FEED. key
	On	08	8	Paper is feeded by FEED. key
4	On	10	16	Not used. Fixed to On
5	Off	00	0	Paper present
	On	20	32	Printing stop 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	-	-	-	RESERVED
3	Off	00	0	Cutter ok
	On	08	8	Cutter error
4	On	10	16	Not used. Fixed to On
5	Off	00	0	No unrecoverable error.
	On	20	32	Unrecoverable error
6	Off	00	0	No auto-recoverable error
	On	40	64	Auto-recoverable error
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
2,3	Off	00	0	Paper present..
	On	0C	12	Near paper end.
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=17: Print 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	Paper drag motor off
	On	04	4	Paper drag motor on
3	-	-	-	RESERVED
4	On	10	16	Not used. Fixed to On
5	Off	00	0	Paper present
	On	20	32	Paper absent
6	-	-	-	RESERVED
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	-	-	-	RESERVED
6	-	-	-	RESERVED
7	-	-	-	RESERVED

4° byte = User status

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0,1	Off	00	0	Cover closed
	On	03	3	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	LF key released
	On	20	32	LF key pressed
6	Off	00	0	FF key released
	On	40	64	FF key pressed
7	-	-	-	RESERVED

5° byte = Recoverable error status

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	Off	00	0	Notch aligned
	On	80	128	Notch not aligned

6° byte = Unrecoverable error status

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0	Off	00	0	Cutter ok
	On	01	1	Cutter error
1	Off	00	0	Cutter cover ok
	On	02	2	Cutter cover open
2	Off	00	0	RAM ok
	On	04	4	RAM error
3	Off	00	0	EEPROM ok
	On	08	8	EEPROM error
4	-	-	-	RESERVED
5	-	-	-	RESERVED
6	-	-	-	RESERVED
7	-	-	-	RESERVED

n=21: transmit printer ID

1° byte = (refer to command 0x1D 0x49)



## 0x1B 0x76

<ESC v>

### Transmit printer status

Valid per	K3		
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[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.

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

[Default]

[Reference] 0x10 0x04

[Example]



## 0x1D 0x72

<GS r>

### Transmit status

Valid per	K3			
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[Format]	ASCII	GS	r	n
	Hex	1D	72	n
	Decimal	29	114	n

[Range]	$1 \leq n \leq 2$
	$49 \leq n \leq 50$

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

n	FUNCTION
1, 49	Transmits paper sensor status

Paper sensor status (n = 1, 49)

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0,1	Off	00	0	Not used. Fixed to Off.
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.

Drawer connector status (n = 2, 50)

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0,1	Off	00	0	Connector pin 3 at low level.
	On	01	1	Connector pin 3 at high level.
1	-	-	-	Undefined.
2	-	-	-	Undefined.
3	-	-	-	Undefined.
4	Off	00	0	Not used. Fixed to Off.
5	-	-	-	Undefined.
6	-	-	-	Undefined.
7	Off	00	0	Not used. Fixed to Off.



[Notes]	<ul style="list-style-type: none"><li>• 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.</li></ul>
[Default]	
[Reference]	0x10 0x04, 0x1B 0x76
[Example]	



## 0x1D 0xE0

### Enable / disable automatic FULL STATUS back

Valid per	K3			
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[Format]	ASCII	GS	0xE0	n
	Hex	1D	E0	n
	Decimal	29	224	n

[Range]	$0 \leq n \leq 255$
---------	---------------------

[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	-	-	-	Undefined
5	-	-	-	Undefined
6	-	-	-	Undefined
7	-	-	-	Undefined

[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:
---------	--

1° Byte = 0x10

2° Byte = n

Next byte (depends how many bits are active in in)

[Default]
-----------

[Reference]	0x10 0x04
-------------	-----------

[Example]
-----------





## 0x1D 0xE1

### Reading of length paper (cm) available before virtual paper-end

Valid per	K3		
[Format]	ASCII	GS	0xE1
	Hex	1D	E1
	Decimal	29	225
[Range]			
[Description]			
Reading of length (cm) paper available before virtual paper-end. The command return a string pointing out how much paper is available, for example if there are 5.1 m before the paper end, it will be: '510cm'.			
[Notes]			
<ul style="list-style-type: none"><li>• The length of residual paper reported is just as an indication because tolerances and other factors are not taken into consideration (paper thickness, roll core diameter, roll core thickness). The virtual paper-end limit is set by the command 0x1D 0xE6.</li><li>• To set virtual paper-end limit, measure the length of the paper from near paper end to the end of the roll, using several of them.</li></ul>			
[Default]			
[Reference]			
0x1D 0xE6			
[Example]			



# 0x1D 0xE2

## Reading number of cuts performed from the printer

Valid per	K3
-----------	----

[Format]	ASCII	GS	0xE2
	Hex	1D	E2
	Decimal	29	226

[Range]

[Description]      Reading the number of cuts performed from the printer.  
The command return a string that points out how many cuts are performed by the printer, for example if there are performed 2376 cuts, it will be: '2376 cuts'

[Notes]

[Default]

[Reference]

[Example]



## 0x1D 0xE3

### Reading of length (cm) of printed paper

Valid per	K3		
[Format]	ASCII	GS	0xE3
	Hex	1D	E3
	Decimal	29	227
[Range]			
[Description]			
Reading of length (cm) of printed paper.			
[Notes]			
The command return a string pointing out how much paper is printed, for example if the printer has print about 2515,5 m, it will be: '251550cm'.			
[Default]			
[Reference]			
[Example]			



# 0x1D 0xE5

## Reading number of power up

Valid per	K3		
[Format]	ASCII	GS	0xE5
	Hex	1D	E5
	Decimal	29	229
[Range]			
[Description]			
Reading number of power up of the printer.			
[Notes]			
• The command return a string pointing out the number of turning on of the printer, for example if the printer is turned on 512 times, it will be: '512on'.			
[Default]			
[Reference]			
[Example]			



# BARCODE COMMANDS

## 0x1D 0x28 0x6B

<GS (>

Print two-dimensional barcode

Valid per	K3
-----------	----

[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	
48	65	Function 065	PDF 417: Specify the number of columns
48	66	Function 066	PDF 417: Specify the number of rows
48	67	Function 067	PDF 417: Specify the width of module
48	68	Function 068	PDF 417: Specify the module height
48	69	Function 069	PDF 417: Specify the error correction level
48	80	Function 080	PDF 417: Store the received data in the barcode save area
48	81	Function 081	PDF 417: Print the barcode data in the barcode save area
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
51	65	Function 365	DATAMATRIX: Set encoding scheme
51	66	Function 366	DATAMATRIX: Set rotate
51	67	Function 367	DATAMATRIX: Set dot size of the module
51	68	Function 368	DATAMATRIX: Set size of barcode
51	80	Function 380	DATAMATRIX: Store the received data in the barcode save area



51	81	Function 381	DATAMATRIX: Print the barcode data in the barcode save area
52	65	Function 065	AZTEC: Specify encoding scheme
52	67	Function 067	AZTEC: Specify dot size of the module
52	68	Function 068	AZTEC: Specify size of barcode
52	69	Function 069	AZTEC: Specify the error correction level
52	80	Function 080	AZTEC: Store the received data in the barcode save area
52	81	Function 081	AZTEC: Print the barcode

[Notes]

[Default]

[Reference]

[Example]



## 0x1D 0x28 0x6B [fn 065]

<GS (>

Specify the number of columns of PDF417 barcode

Valid per	K3								
[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]	<p> <math>(pL + pH \times 256) = 3</math>      <math>(pL = 3, pH = 0)</math>  <math>cn = 48</math>  <math>fn = 65</math>  <math>0 \leq n \leq 30</math> </p>								
[Description]	<p>Specifies the number of columns of PDF417 barcode.</p> <ul style="list-style-type: none"> <li>• <math>n = 0</math> specifies auto processing</li> <li>• When <math>n</math> is not 0, specifies the number of columns of the data area as <math>n</math> code word.</li> <li>• When auto processing (<math>n = 0</math>) is specified, the maximum number of columns in the data area is 30 columns.</li> </ul>								
[Notes]	<ul style="list-style-type: none"> <li>• The following data is not included in the number of columns: <ul style="list-style-type: none"> <li>- start pattern and stop pattern</li> <li>- indicator code word of left and right</li> </ul> </li> <li>• Settings are effective until 0x1B 0x40 is executed, the printer is reset or the power is turned off.</li> </ul>								
[Default]	$n = 0$								
[Reference]	0x1D 0x28 0x6B								
[Example]	<p>To define 3 columns the command sequence is the following: 0x1D 0x28 0x6B 0x03 0x00 0x30 0x41 0x03</p>								



## 0x1D 0x28 0x6B [fn 066]

<GS (>

Specify the number of rows of PDF417 barcode

Valid per	K3								
[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 = 48 fn = 66 n = 0, 3 ≤ n ≤ 20								
[Description]	Specifies the number of rows of PDF417 barcode. <ul style="list-style-type: none"><li>• n = 0 specifies auto processing</li><li>• When n is not 0, specifies the number of rows of the data area as n rows.</li><li>• When auto processing (n = 0) is specified, the maximum number of rows is 20.</li></ul>								
[Notes]	• Settings are effective until 0x1B 0x40 is executed, the printer is reset or the power is turned off.								
[Default]	n = 0								
[Reference]	0x1D 0x28 0x6B								
[Example]	To define 3 rows the command sequence is the following: 0x1D 0x28 0x6B 0x03 0x00 0x30 0x42 0x03								





## 0x1D 0x28 0x6B [fn 067]

<GS (>

Specify the width of a module of PDF417 barcode

Valid per	K3								
[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 = 48 fn = 67 2 ≤ n ≤ 8								
[Description]	Specifies the width of a module of PDF417 barcode.								
[Notes]	<ul style="list-style-type: none"><li>• Settings are effective until 0x1B 0x40 is executed, the printer is reset or the power is turned off.</li><li>• pL and pH specify the number of successive bytes to be sent.</li></ul>								
[Default]	n = 3								
[Reference]	0x1D 0x28 0x6B								
[Example]	To define width 4 the command sequence is the following: 0x1D 0x28 0x6B 0x03 0x00 0x30 0x43 0x04								



0x1D 0x28 0x6B [fn 068]

<GS (>

Specify the height of PDF417 barcode

Valid per	K3								
[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 = 48 fn = 68 2 ≤ n ≤ 8								
[Description]	Specifies the height of PDF417 barcode.								
[Notes]	<ul style="list-style-type: none"><li>• Settings are effective until 0x1B 0x40 is executed, the printer is reset or the power is turned off.</li><li>• pL and pH specify the number of successive bytes to be sent.</li></ul>								
[Default]	n = 3								
[Reference]	0x1D 0x28 0x6B								
[Example]	To define height 4 the command sequence is the following: 0x1D 0x28 0x6B 0x03 0x00 0x30 0x44 0x04								



## 0x1D 0x28 0x6B [fn 069]

&lt;GS (&gt;

Specify the error correction level of PDF417 barcode

Valid per	K3									
[Format]	ASCII	GS	(	k	pL	pH	cn	fn	m	n
	Hex	1D	28	6B	pL	pH	cn	fn	m	n
	Decimal	29	40	107	pL	pH	cn	fn	m	n
[Range]	(pL+pH × 256) = 4      (pL = 4, pH = 0)									
	cn = 48									
	fn = 69									
	m = 48	48 ≤ n ≤ 56								
	m = 49	1 ≤ n ≤ 40								
[Description]	Specifies the error correction level of PDF417.									
	• The error correction level is specified by “level” when m = 48.									
	• The error correction level is specified by “ratio” when m = 49 [n × 10%].									
[Notes]	• Error correction level is specified by either “level” or “ratio”.									
	• Error correction level specified by “level” (m = 48) is as follows. The number of the error correction code word is fixed regardless of the number of code words on the data area.									

n	CORRECTION LEVEL	N. OF ERROR CORRECTION CODE WORD
48	Error correction level 0	2
49	Error correction level 1	4
50	Error correction level 2	8
51	Error correction level 3	16
52	Error correction level 4	32
53	Error correction level 5	64
54	Error correction level 6	128
55	Error correction level 7	256
56	Error correction level 8	512

• Error correction level specified by “ratio” (m = 49) is as follows. The error correction level is defined by the calculated value [number of data code word × n × 0.1 = (A)]. The number of the error correction code word is changeable in proportion to the number of the code words on the data area.

CALCULATED VALUE (A)	CORRECTION LEVEL	N. OF ERROR CORRECTION CODE WORD
0 - 3	Error correction level 1	4
4 - 10	Error correction level 2	8
11 - 20	Error correction level 3	16



21 - 45	Error correction level 4	32
46 - 100	Error correction level 5	64
101 - 200	Error correction level 6	128
201 - 400	Error correction level 7	256
> 400	Error correction level 8	512

- Settings are effective until 0x1B 0x40 is executed, the printer is reset or the power is turned off.

[Default]	m = 49, n = 1 [ratio: 10%]
[Reference]	0xD 0x28 0x6B
[Example]	To define error correction 0,2 the command sequence is the following: 0x1D 0x28 0x6B 0x03 0x00 0x30 0x45 0x30 0x02



## 0x1D 0x28 0x6B [fn 080]

<GS (>

Store the PDF417 barcode data in the barcode save area

Valid per	K3									
[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 = 48									
	fn = 80									
	m = 48									
	$0 \leq d \leq 255$									
	$k = (pL + pH \times 256) - 3$									
	<ul style="list-style-type: none"> <li>PDF417 barcode only with ASCII characters: <math display="block">4 \leq (pL + pH \times 256) \leq 1112 \quad (0 \leq pL \leq 255, 0 \leq pH \leq 4)</math> </li> </ul>									
	<ul style="list-style-type: none"> <li>PDF417 barcode only with alphanumeric characters: <math display="block">4 \leq (pL + pH \times 256) \leq 1854 \quad (0 \leq pL \leq 255, 0 \leq pH \leq 7)</math> </li> </ul>									
	<ul style="list-style-type: none"> <li>PDF417 barcode only with numeric characters: <math display="block">4 \leq (pL + pH \times 256) \leq 2729 \quad (0 \leq pL \leq 255, 0 \leq pH \leq 10)</math> </li> </ul>									
[Description]	Store the PDF417 barcode data (d1...dk) in the barcode save area.									
[Notes]	<ul style="list-style-type: none"> <li>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.</li> </ul>									
	<ul style="list-style-type: none"> <li>pL and pH specify the number of successive bytes to be sent</li> </ul>									
	<ul style="list-style-type: none"> <li>k bytes of d1...dk are processed as barcode data.</li> </ul>									
	<ul style="list-style-type: none"> <li>Specify only the data code word of the barcode with this function. Be sure not to include the control data in the data d1...dk because they are added automatically by the printer.</li> </ul>									
	<ul style="list-style-type: none"> <li>Settings are effective until ESC @ is executed, the printer is reset or the power is turned off.</li> </ul>									
[Default]										
[Reference]	0x1D 0x28 0x6B									
[Example]										



## 0x1D 0x28 0x6B [fn 081]

<GS (>

Encodes and prints the PDF417 barcode data in the barcode save area

Valid per	K3								
[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 = 48 fn = 81 m = 48								
[Description]	Encodes and prints the PDF417 barcode data in the barcode save area.								
[Notes]	<ul style="list-style-type: none"><li>• In standard mode, use this function when printer is “at the beginning of a line” or “there is no data in the print buffer”.</li><li>• pL and pH specify the number of successive bytes to be sent</li><li>• A barcode that size exceeds the printing area cannot be printed.</li><li>• If there is any error described below in the data of the barcode save area, it cannot be printer.<ul style="list-style-type: none"><li>- There is no data (Function 080 is not processed).</li><li>- If [(number of columns × number of rows) &lt; number of code word] when auto processing is specified for number of columns and number of rows.</li><li>- Number of code word exceeds 928 in the data area.</li></ul></li><li>• When auto processing (Function 065) is specified, the number of columns is calculated by the current printing area, module width (Function 067) and the code word in the data area. Maximum number of the columns is 30.</li></ul>								
[Default]									
[Reference]	0x1D 0x28 0x6B								
[Example]	To print the PDF417 barcode data the command sequence is : 0x1D 0x28 0x6B 0x03 0x00 0x30 0x51 0x30								



## 0x1D 0x28 0x6B [fn 065]

<GS (>

### Specify encoding scheme of QRcode barcode

Valid per	K3														
[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.														
	<table><tr><th>n</th><th>ENCODING SCHEME</th></tr><tr><td>0</td><td>QRcode</td></tr><tr><td>1</td><td>MicroQR</td></tr></table>									n	ENCODING SCHEME	0	QRcode	1	MicroQR
n	ENCODING SCHEME														
0	QRcode														
1	MicroQR														
[Notes]	<ul style="list-style-type: none"><li>• QRcode: Encode all extended ASCII characters data up to a maximum length of 7089 numeric digits, 4296 alphabetic characters or 2953 bytes of data.</li><li>• pL and pH specify the number of successive bytes to be sent</li><li>• 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.</li></ul>														
[Default]	n = 0														
[Reference]															
[Example]															



0x1D 0x28 0x6B [fn 066]

<GS (>

Specify dot size of the module of the QRcode barcode

Valid per	K3								
[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 = 0								
[Reference]									
[Example]									





## 0x1D 0x28 0x6B [fn 067]

<GS (>

Specify QRcode barcode size

Valid per	K3								
-----------	----	--	--	--	--	--	--	--	--

[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 version, 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 per	K3								
-----------	----	--	--	--	--	--	--	--	--

[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]	$(pL+pH \times 256) = 3$ $(pL = 3, pH = 0)$								
	cn = 49								
	fn = 69								
	$0 \leq n \leq 4$								

[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 per	K3									
[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									
	$0 \leq d \leq 255$									
	$k = (pL + pH \times 256) - 3$									
	<ul style="list-style-type: none"><li>QRcode barcode only with binary characters (8 bit): <math>4 \leq (pL + pH \times 256) \leq 2957</math> (<math>0 \leq pL \leq 255, 0 \leq pH \leq 11</math>)</li><li>QRcode barcode only with alphanumeric characters: <math>4 \leq (pL + pH \times 256) \leq 4300</math> (<math>0 \leq pL \leq 255, 0 \leq pH \leq 16</math>)</li><li>QRcode barcode only with numeric characters: <math>4 \leq (pL + pH \times 256) \leq 7093</math> (<math>0 \leq pL \leq 255, 0 \leq pH \leq 27</math>)</li></ul>									
[Description]	Store the QRcode barcode data (d1...dk) in the barcode save area.									
[Notes]	<ul style="list-style-type: none"><li>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.</li></ul>									
	<ul style="list-style-type: none"><li>pL and pH specify the number of successive bytes to be sent</li></ul>									
	<ul style="list-style-type: none"><li>k bytes of d1...dk are processed as barcode data.</li></ul>									
	<ul style="list-style-type: none"><li>Specify only the data code word of the barcode with this function.</li></ul>									
[Default]										
[Reference]										
[Example]										



0x1D 0x28 0x6B [fn 081]

<GS (>

Prints the QRcode barcode data

Valid per	K3								
[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]	<div>(pL+pH × 256) = 3      (pL = 3, pH = 0)</div> <div>cn = 49</div> <div>fn = 81</div> <div>m = 49</div>								
[Description]	Prints the QRcode barcode in the current position.								
[Notes]	<div>• pL and pH specify the number of successive bytes to be sent</div>								
[Default]									
[Reference]									
[Example]									

Valid per	K3																								
[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 = 51 fn = 65 0 ≤ n ≤ 6																								
[Description]	Set the encoding scheme specified by n as follows: <table><tr><th>n</th><th>ENCODING SCHEME</th></tr><tr><td>0</td><td>Ascii</td></tr><tr><td>1</td><td>C40</td></tr><tr><td>2</td><td>Text</td></tr><tr><td>3</td><td>X12</td></tr><tr><td>4</td><td>Edifact</td></tr><tr><td>5</td><td>Base256</td></tr><tr><td>6</td><td>AutoBest</td></tr></table>									n	ENCODING SCHEME	0	Ascii	1	C40	2	Text	3	X12	4	Edifact	5	Base256	6	AutoBest
n	ENCODING SCHEME																								
0	Ascii																								
1	C40																								
2	Text																								
3	X12																								
4	Edifact																								
5	Base256																								
6	AutoBest																								
[Notes]	• pL and pH specify the number of successive bytes to be sent																								
[Default]																									
[Reference]	0x1D 0x28 0x6B																								
[Example]	To set encoding = Ascii, the command sequence is: 0x1D 0x28 0x6B 0x03 0x00 0x33 0x41 0x00																								



## 0x1D 0x28 0x6B [fn 366]

<GS (>

### Set rotation of DATAMATRIX barcode

Valid per	K3														
[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 = 51 fn = 66 n = 0, 1														
[Description]	Set rotate by n as follows: <table><tr><th>n</th><th>ROTATION</th></tr><tr><td>0</td><td>No rotation</td></tr><tr><td>1</td><td>Rotation</td></tr></table>									n	ROTATION	0	No rotation	1	Rotation
n	ROTATION														
0	No rotation														
1	Rotation														
[Notes]	• pL and pH specify the number of successive bytes to be sent														
[Default]															
[Reference]	0x1D 0x28 0x6B														
[Example]															



## 0x1D 0x28 0x6B [fn 367]

<GS (>

Set dot size of the module of DATAMATRIX barcode

Valid per	K3								
[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 = 51 fn = 67 2 ≤ n ≤ 24								
[Description]	Set dot size of the module of the DATAMATRIX barcode. n = dot dimension								
[Notes]	• pL and pH specify the number of successive bytes to be sent								
[Default]	n = 6								
[Reference]	0x1D 0x28 0x6B								
[Example]	To set dot size = 6 the command sequence is : 0x1D 0x28 0x6B 0x03 0x00 0x33 0x43 0x06								



## 0x1D 0x28 0x6B [fn 368]

<GS (>

### Set size of DATAMATRIX barcode

Valid per	K3								
-----------	----	--	--	--	--	--	--	--	--

[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 = 51 fn = 68 1 ≤ n ≤ 29								
---------	---	--	--	--	--	--	--	--	--

[Description]	Set the size of DATAMATRIX barcode specified by n as follows:								
---------------	---	--	--	--	--	--	--	--	--

n	BARCODE SIZE
1	10 x 10
2	12 x 12
3	14 x 14
4	16 x 16
5	18 x 18
6	20 x 20
7	22 x 22
8	24 x 24
8	26 x 26
10	32 x 32
11	36 x 36
12	40 x 40
13	44 x 44
14	48 x 48
15	52 x 52

n	BARCODE SIZE
16	64 x 64
17	72 x 72
18	80 x 80
19	88 x 88
20	96 x 96
21	104 x 104
22	120 x 120
23	132 x 132
24	144 x 144
25	8 x 18
26	8 x 32
27	12 x 26
28	12 x 36
29	16 x 36

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

[Default]	DmtxSymbolSquareAuto
-----------	----------------------

[Reference]	0x1D 0x28 0x6B
-------------	----------------

[Example]	
-----------	--





## 0x1D 0x28 0x6B [fn 380]

<GS (>

Store the DATAMATRIX barcode data in the barcode save area

Valid per	K3									
[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 = 51									
	fn = 80									
	m = 51									
	$0 \leq d \leq 255$									
	k = (pL + pH × 256) - 3									
[Description]	<ul style="list-style-type: none"> <li>DATAMATRIX barcode only with ASCII characters (8 bit) :  <math>4 \leq (pL + pH \times 256) \leq 1560</math>    (<math>0 \leq pL \leq 255, 0 \leq pH \leq 6</math>)</li> <li>DATAMATRIX barcode only with alphanumeric characters:  <math>4 \leq (pL + pH \times 256) \leq 2339</math>    (<math>0 \leq pL \leq 255, 0 \leq pH \leq 9</math>)</li> <li>DATAMATRIX barcode only with numeric characters:  <math>4 \leq (pL + pH \times 256) \leq 3120</math>    (<math>0 \leq pL \leq 255, 0 \leq pH \leq 12</math>)</li> </ul>									
	Store the DATAMATRIX barcode data (d1...dk) in the barcode save area.									
	<ul style="list-style-type: none"> <li>Data stored in the barcode save area by this function are processed by Function 081. The data in the barcode save area reserved after processing Function 381.</li> <li>k bytes of d1...dk are processed as barcode data.</li> <li>Specify only the data code word of the barcode with this function. Be sure not to include the control data in the data d1...dk because they are added automatically by the printer.</li> <li>Settings are effective until ESC @ is executed, the printer is reset or the power is turned off.</li> </ul>									
[Default]										
[Reference]	0x1D 0x28 0x6B									
[Example]										



## 0x1D 0x28 0x6B [fn 381]

<GS (>

Encodes and prints the DATAMATRIX barcode data in the barcode save area

Valid per	K3								
[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 = 51 fn = 81 m = 51								
[Description]	Encodes and prints the DATAMATRIX barcode data in the barcode save area.								
[Notes]	<ul style="list-style-type: none"><li>• In standard mode, use this function when printer is “at the beginning of a line” or “there is no data in the print buffer”.</li><li>• pL and pH specify the number of successive bytes to be sent</li><li>• A barcode that size exceeds the printing area cannot be printed.</li><li>• If there is any error described below in the data of the barcode save area, it cannot be printer.<ul style="list-style-type: none"><li>• There is no data (Function 380 is not processed).</li><li>• If [(number of columns × number of rows) &lt; number of code word] when auto processing is specified for number of columns and number of rows.</li><li>• Number of code word exceeds 928 in the data area.</li></ul></li></ul>								
[Default]									
[Reference]	0x1D 0x28 0x6B								
[Example]	To print the DATAMATRIX barcode data the command sequence is : 0x1D 0x28 0x6B 0x03 0x00 0x33 0x51 0x33								



## 0x1D 0x28 0x6B [fn 065]

<GS (>

### Specify encoding scheme of AZTEC barcode

Valid per	K3														
[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 = 52 fn = 65 0 ≤ n ≤ 1														
[Description]	Specifies encoding type of AZTEC barcode.														
	<table><tr><td>n</td><td>ENCODING SCHEME</td></tr><tr><td>0</td><td>FULL AZTEC</td></tr><tr><td>1</td><td>AZTEC RUNE</td></tr></table>									n	ENCODING SCHEME	0	FULL AZTEC	1	AZTEC RUNE
n	ENCODING SCHEME														
0	FULL AZTEC														
1	AZTEC RUNE														
[Notes]	<ul style="list-style-type: none"><li>• Full Aztec: Encode all extended ASCII characters data up to a maximum length of approximately 3823 numeric or 3067 alphabetic characters or 1914 bytes of data.</li><li>• pL and pH specify the number of successive bytes to be sent</li><li>• Aztec Rune (Compact Aztec Code, sometimes called Small Aztec Code): Encode all numbers from 0 to 255 up to a maximum length of 3 numbers.</li></ul>														
[Default]	n = 0														
[Reference]															
[Example]															



0x1D 0x28 0x6B [fn 067]

<GS (>

Specify dot size of the module of the AZTEC barcode

Valid per	K3								
[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]	<p>(pL+pH × 256) = 3      (pL = 3, pH = 0)</p> <p>cn = 52</p> <p>fn = 67</p> <p>2 ≤ n ≤ 24</p>								
[Description]	Specifies numbers of dot for each pixel of AZTEC barcode.								
[Notes]	• pL and pH specify the number of successive bytes to be sent								
[Default]	n = 0								
[Reference]									
[Example]									



## 0x1D 0x28 0x6B [fn 068]

&lt;GS (&gt;

### Specify AZTEC barcode size

Valid per	K3										
[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 = 52										
	fn = 68										
	0 ≤ n ≤ 36										
[Description]	Specifies AZTEC barcode format (rows and columns), as follows:										
	n	FORMAT			n	FORMAT			n	FORMAT	
	0	AUTO			13	C53X53			26	C109X109	
	1	C15X15 Compact			14	C57X57			27	C113X113	
	2	C19X19 Compact			15	C61X61			28	C117X117	
	3	C23X23 Compact			16	C67X67			29	C121X121	
	4	C27X27 Compact			17	C71X71			30	C125X125	
	5	C19X19			18	C75X75			31	C131X131	
	6	C23X23			19	C79X79			32	C135X135	
	7	C27X27			20	C83X83			33	C139X139	
	8	C31X31			21	C87X87			34	C143X143	
	9	C37X37			22	C91X91			35	C147X147	
	10	C41X41			23	C95X95			36	C151X151	
	11	C45X45			24	C101X101					
	12	C49X49			25	C105X105					
[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 AZTEC barcode

Valid per	K3								
-----------	----	--	--	--	--	--	--	--	--

[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]	$(pL + pH \times 256) = 4$ $(pL = 4, pH = 0)$								
	cn = 52								
	fn = 69								
	$0 \leq n \leq 4$								

[Description] Specifies the ECC level (Error Correction Capacity) of AZTEC barcode.

N		ECC LEVEL
0	AUTO	
1	> 10 % + 3 codewords	
2	> 23 % + 3 codewords	
3	> 36 % + 3 codewords	
4	> 50 % + 3 codewords	

- It is not possible to select both barcode size and error correction capacity for the same barcode. If both options are selected then the error correction capacity selection will be ignored.

[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 AZTEC barcode data in the barcode save area

Valid per	K3									
[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 = 52 fn = 80 m = 52 $0 \leq d \leq 255$ $k = (pL + pH \times 256) - 3$ <ul style="list-style-type: none"><li>• AZTEC barcode only with ASCII characters: <math>4 \leq (pL + pH \times 256) \leq 1918 \quad (0 \leq pL \leq 255, 0 \leq pH \leq 7)</math></li><li>• AZTEC barcode only with alphanumeric characters: <math>4 \leq (pL + pH \times 256) \leq 3071 \quad (0 \leq pL \leq 255, 0 \leq pH \leq 11)</math></li><li>• AZTEC barcode only with numeric characters: <math>4 \leq (pL + pH \times 256) \leq 3836 \quad (0 \leq pL \leq 255, 0 \leq pH \leq 14)</math></li></ul>									
[Description]	Store the AZTEC barcode data (d1...dk) in the barcode save area.									
[Notes]	<ul style="list-style-type: none"><li>• 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.</li><li>• pL and pH specify the number of successive bytes to be sent</li><li>• k bytes of d1...dk are processed as barcode data.</li><li>• Specify only the data code word of the barcode with this function.</li></ul>									
[Default]										
[Reference]										
[Example]										



0x1D 0x28 0x6B [fn 081]

<GS (>

Prints the AZTEC barcode data

Valid per	K3								
[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]	<p>(pL+pH × 256) = 3      (pL = 3, pH = 0)</p> <p>cn = 52</p> <p>fn = 81</p> <p>m = 48</p>								
[Description]	Prints the AZTEC 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 per	K3													
[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 bar codes. n selects the printing positions as follows:													
	<table><tr><th>n</th><th>FUNCTION</th></tr><tr><td>0, 48</td><td>Not printed</td></tr><tr><td>1, 49</td><td>Above the bar code</td></tr><tr><td>2, 50</td><td>Below the bar code</td></tr><tr><td>3, 51</td><td>Both above the below the bar code</td></tr></table>				n	FUNCTION	0, 48	Not printed	1, 49	Above the bar code	2, 50	Below the bar code	3, 51	Both above the below the bar code
n	FUNCTION													
0, 48	Not printed													
1, 49	Above the bar code													
2, 50	Below the bar code													
3, 51	Both above the below the bar code													
[Notes]	• HRI characters are printed using the font specified by 0x1D 0x66.													
[Default]	n = 0													
[Reference]	0x1D 0x66, 0x1D 0x6B													
[Example]														



0x1D 0x66

<GS f>

Select font for HRI characters

Valid per	K3									
[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 bar code. n selects a font from the following table:									
	<table><tr><th>n</th><th>FONT</th></tr><tr><td>0, 48</td><td>Font A</td></tr><tr><td>1, 49</td><td>Font B</td></tr></table>				n	FONT	0, 48	Font A	1, 49	Font B
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 bar code height

Valid per	K3			
[Format]	ASCII	GS	h	n
	Hex	1D	68	n
	Decimal	29	104	n
[Range]	$1 \leq n \leq 255$			
[Description]	Sets the height of the bar code. 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 per	K3
-----------	----

[Format 1]	ASCII	GS	k	m	[d1..dk]NUL
	Hex	1D	6B	m	[d1..dk]00
	Decimal	29	107	m	[d1..dk]0

[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:	$0 \leq m \leq 8$ $m = 20$
	Format 2:	$65 \leq m \leq 73$ $m = 90$

[Description] Selects a bar code system and prints the bar code. m selects a bar code system as follows:

Format 1:

m	BARCODE SYSTEM	No. OF CHARACTERS	REMARKS
0	UPC-A	$11 \leq k \leq 12$	$48 \leq d \leq 57$
1	UPC-E	$11 \leq k \leq 12$	$48 \leq d \leq 57$
2	EAN13 (JAN)	$12 \leq k \leq 13$	$48 \leq d \leq 57$
3	EAN8 (JAN)	$7 \leq k \leq 8$	$48 \leq d \leq 57$
4	CODE39	$1 \leq k$	$48 \leq d \leq 57$ , $65 \leq d \leq 90$ , 32, 36, 37, 43, 45, 46, 47
5	ITF	$1 \leq k$ (even number)	$48 \leq d \leq 57$
6	CODABAR	$1 \leq k$	$48 \leq d \leq 57$ , $65 \leq d \leq 68$ , 36, 43, 45, 46, 47, 58
7	CODE93	$1 \leq k \leq 255$	$1 \leq d \leq 127$
8	CODE128	$2 \leq k \leq 255$	$1 \leq d \leq 127$
20	CODE32	$8 \leq k \leq 9$	$48 \leq d \leq 57$



#### Format 2:

m	BARCODE SYSTEM	No. OF CHARACTERS	REMARKS
65	UPC-A	$11 \leq n \leq 12$	$48 \leq d \leq 57$
66	UPC-E	$11 \leq n \leq 12$	$48 \leq d \leq 57$
67	EAN13 (JAN)	$12 \leq n \leq 13$	$48 \leq d \leq 57$
68	EAN8 (JAN)	$7 \leq n \leq 8$	$48 \leq d \leq 57$
69	CODE39	$1 \leq n \leq 255$	$48 \leq d \leq 57$ , $65 \leq d \leq 90$ , 32, 36, 37, 43, 45, 46, 47
70	ITF	$1 \leq n \leq 255$	$48 \leq d \leq 57$
71	CODABAR	$1 \leq n \leq 255$	$48 \leq d \leq 57$ , $65 \leq d1 \leq 68$ , 36, 43, 45, 46, 47, 58
72	CODE93	$1 \leq n \leq 255$	$1 \leq d \leq 127$
73	CODE128	$2 \leq n \leq 255$	$1 \leq d \leq 127$
90	CODE32	$8 \leq n \leq 9$	$48 \leq d \leq 57$

#### [Notes]

- If d is outside of the specified range, the printer prints the following message: "BAR CODE 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 bar code, regardless of the line spacing specified by 0x1B 0x32 or 0x1B 0x33.
- After printing the bar code, 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 bar code system used is UPC-A or UPC-E, the printer prints the bar code data after receiving 11 (without check digit) or 12 (with check digit) bytes bar code data.
- When the bar code system used is EAN13, the printer prints the bar code data after receiving 12 (without check digit) or 13 (with check digit) bytes bar code data.
- When the bar code system used is EAN8, the printer prints the bar code data after receiving 7 (without check digit) or 8 (with check digit) bytes bar code data.
- The number of data for ITF bar code 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 bar code 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											PRINTING 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 print the Bar Code 39:  
1D 6B 04 54 45 53 54 00

Format 2: Example of print the Bar Code 39:  
1D 6B 45 04 54 45 53 54



## 0x1D 0x77

<GS w>

### Set bar code width

Valid per	K3																	
[Format]	ASCII	GS	w	n														
	Hex	1D	77	n														
	Decimal	29	119	n														
[Range]	1 ≤ n ≤ 6																	
[Description]	Sets the horizontal size of the bar code. n specifies the bar code width (referred to the narrow bar) as follows:																	
	<table><tr><td>n</td><td>MODULE WIDTH ( mm )</td></tr><tr><td>1</td><td>0.125</td></tr><tr><td>2</td><td>0.25</td></tr><tr><td>3</td><td>0.375</td></tr><tr><td>4</td><td>0.5</td></tr><tr><td>5</td><td>0.625</td></tr><tr><td>6</td><td>0.75</td></tr></table>				n	MODULE WIDTH ( mm )	1	0.125	2	0.25	3	0.375	4	0.5	5	0.625	6	0.75
n	MODULE WIDTH ( mm )																	
1	0.125																	
2	0.25																	
3	0.375																	
4	0.5																	
5	0.625																	
6	0.75																	
[Notes]																		
[Default]	n = 3																	
[Reference]	0x1D 0x6B																	
[Example]																		



# MACRO FUNCTIONS

## 0x1D 0x3A

<GS :>

Set start/end of macro definition

Valid per	K3		
[Format]	ASCII	GS	:
	Hex	1D	3A
	Decimal	29	58
[Range]			
[Description]			
Starts or ends macro definition.			
[Notes]			
<ul style="list-style-type: none"><li>• Macro definition starts when this command is received during normal operation.</li><li>• When 0x1D 0x5E is received during macro definition, the printer ends macro definition and clears all definitions.</li><li>• Macros are not defined when power is turned on to the machine.</li><li>• Macro content is not cancelled by the 0x1B 0x40 command. Therefore, 0x1B 0x40 may be included in the content of macro definitions.</li><li>• If the printer receives 0x1D 0x3A a second time after previously receiving 0x1D 0x3A, the printer remains in macro undefined status.</li><li>• The contents of the macro can be defined up to 2048 bytes. If the macro definition exceeds 2048 bytes, excess data is not stored.</li></ul>			
[Default]			
[Reference]			
0x1D 0x5E			
[Example]			





## 0x1D 0x5E

<GS ^>

### Execute macro

Valid per	K3					
[Format]	ASCII	GS	^	r	t	m
	Hex	1D	5E	r	t	m
	Decimal	29	94	r	t	m
[Range]	$0 \leq r, t \leq 255$ $0 \leq m \leq 1$					
[Description]	<p>Executes a macro.</p> <ul style="list-style-type: none"><li>• r specifies the number of times to execute the macro.</li><li>• t specifies the waiting time for executing the macro. The waiting time is <math>t \times 100</math> msec. for each macro execution.</li><li>• m specifies macro executing mode: When the LSB of <math>m = 0</math>, the macro is executed r times continuously at the interval specified by t. When the LSB of <math>m = 1</math>, after waiting for the period specified 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.</li></ul>					
[Notes]	<ul style="list-style-type: none"><li>• This command has an interval of <math>(t \times 100 \text{ msec.})</math> after a macro is executed by t.</li><li>• If this command is received while a macro is being defined, the macro definition is aborted and the definition is cleared.</li><li>• If the macro is not defined or if r is 0, nothing is executed.</li><li>• When the macro is executed by pressing the FEED button (<math>m=1</math>), the paper cannot be fed using the FEED button.</li></ul>					
[Default]						
[Reference]	0x1D 0x3A					
[Example]						



# MECHANISM CONTROL

0x1B 0x69

<ESC i>

Total cut

Valid per	K3
-----------	----

[Format]	ASCII	ESC	i
	Hex	1B	69
	Decimal	27	105

[Range]

[Description] This command enables cutter operation.

[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 per	K3		
[Format]	ASCII	ESC	m
	Hex	1B	6D
	Decimal	27	109
[Range]			
[Description]			
This command enables cutter operation.			
[Notes]			
• The printer waits to complete all paper movement commands before it executes a total cut.			
[Default]			
[Reference]			
[Example]			



## 0x1D 0x56

<GS V>

### Select cut mode

Valid per	K3															
[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 = 0, 1, 48, 49														
	Format 2:	m = 65, 66 0 ≤ n ≤ 255														
[Description]	Selects cut mode and executes the cut command. m selects cut mode as follows:															
	<table><tr><th>n</th><th>FUNCTION</th></tr><tr><td>0, 48</td><td>Total cut.</td></tr><tr><td>1, 49</td><td>Partial cut.</td></tr><tr><td>65</td><td>Form feed (cut position + [ n × vertical motion unit]) and total cut.</td></tr><tr><td>66</td><td>Form feed (cut position + [ n × vertical motion unit]) and partial cut.</td></tr></table>						n	FUNCTION	0, 48	Total cut.	1, 49	Partial cut.	65	Form feed (cut position + [ n × vertical motion unit]) and total cut.	66	Form feed (cut position + [ n × vertical motion unit]) and partial cut.
n	FUNCTION															
0, 48	Total cut.															
1, 49	Partial cut.															
65	Form feed (cut position + [ n × vertical motion unit]) and total cut.															
66	Form feed (cut position + [ n × vertical motion unit]) and partial cut.															
[Notes]	<ul style="list-style-type: none"><li>• This command is only enabled if set at the beginning of the line.</li><li>• The horizontal and vertical motion units are specified by 0x1B 0x50.</li><li>• If you execute the command, disable the parameter “Total Cut”, the cut will be partial. If you want to effect a total cut you have to enable the parameter on the Set Up.</li></ul>															
[Default]																
[Reference]	0x1B 0x69, 0x1B 0x6D															
[Example]																



# MISCELLANEOUS COMMANDS

## 0x10 0x05

<DLE ENQ>

Real-time request to printer

Valid per	K3
-----------	----

[Format]	ASCII	DLE	ENQ	n
	Hex	10	05	n
	Decimal	16	5	n

[Range]	$1 \leq n \leq 2$
---------	-------------------

[Description] Responds to a request from the host computer, n specifies the request as follows:

n	Request
1	Recover from an error and restart printing from the line where the error occurred
2	Recover from an error after clearing the receive and print buffers

- [Notes]
- This command is effective only when an auto-cutter error occurs.
  - The printer starts processing data upon receiving this command.
  - This command is executed even when the printer is off-line, the receive buffer is full, or there is an error status.
  - This command can not be executed when the printer is busy.
  - The status is also transmitted whenever the data sequence of 0x10 0x05 n ( $1 \leq n \leq 2$ ) is received.

Example:

0x1B 0x2A *m nL nH* dk, d1 = 0x10, d2 = 0x05, d3 = 0x01

- This command should not be contained within another command that consists of two or more bytes.

Example:

If you attempt to transmit 0x1B 0x33 n to the printer, but DTR (DSR for the host computer) goes to MARK before n is transmitted, and 0x10 0x05 2 interrupts before n is received, the code 0x10 for 0x10 0x05 2 is processed as the code for 0x1B 0x33 0x10.

- 0x10 0x05 2 enables the printer to recover from an error after clearing the data in the receive buffer and the print buffer. The printer retains the settings (by 0x1B 0x21, 0x1B 0x33, etc.) that were in effect when the error occurred. The printer can be initialized completely by using this command and 0x1B 0x40. This command is enabled only for errors that have the possibility of recovery, except for print head temperature error.
- When the printer is disabled with 0x1B 0x3D (Select peripheral device), the error recovery functions (0x10 0x05 1 and 0x10 0x05 2) are enabled, and the other functions are disabled.



[Reference]      0x10 0x04

[Example]



## 0x10 0x14

<DLE DC4>

### Generate pulse at real-time

Valid per	K3					
[Format]	ASCII	DLE	DC4	n	m	t
	Hex	10	14	n	m	t
	Decimal	16	20	n	m	t
[Range]	n = 0, 1 m = indifferent $1 \leq t \leq 8$					
[Description]	Outputs the pulse specified by the connector pin 2 as follows. The pulse ON time is [ t x 100 ms ] and the OFF time is [ t x 100 ms ]. n=0 refers to the drawer 0 n=1 refers to the drawer 1					
[Notes]	<ul style="list-style-type: none"><li>• When the printer is in an error status when this command is processed, this command is ignored.</li><li>• When the pulse is output to the connector pin specified while 0x1B 0x70 or 0x10 0x14 is executed while this command is processed, this command is ignored.</li><li>• The printer executes this command upon receiving it.</li><li>• This command is executed even when the printer is off-line, the receive buffer is full, or there is an error status.</li><li>• This command cannot be executed when the printer is busy.</li><li>• If print data includes the same character strings as this command, the printer performs the same operation specified by this command. The user must consider this.</li><li>• This command should not be used within the data sequence of another command that consists of 2 or more bytes.</li><li>• This command is effective even when the printer is disabled with 0x1B 0x3D (Select peripheral device).</li></ul>					
[Reference]	0x1B 0x70					
[Example]						



0x1B 0x3D

<ESC =>

Select peripherals device

Valid per	K3			
-----------	----	--	--	--

[Format]	ASCII	ESC	=	n
	Hex	1B	3D	n
	Decimal	27	61	n

[Range]	$1 \leq n \leq 3$
---------	-------------------

[Description]	Select the device to which the host computer sends data, using n as follows:
---------------	--

n	FUNCTION
1, 3	Printer Enable
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-through function is enabled, all transmitted data are send to the second serial port.

[Default]	n = 1
-----------	-------

[Reference]
-------------

[Example]
-----------





## 0x1B 0x40

<ESC @>

### Initialize printer

Valid per	K3		
[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]			
<ul style="list-style-type: none"><li>• The data in the receiver buffer is not cleared.</li><li>• The macro definitions are not cleared.</li></ul>			
[Default]			
[Reference]			
[Example]			



## 0x1B 0x4C

<ESC L>

### Select page mode

Valid per	K3		
[Format]	ASCII	ESC	L
	Hex	1B	4C
	Decimal	27	76
[Range]			
[Description]	Switches from standard mode to page mode.		
[Notes]	<ul style="list-style-type: none"><li>• This command is enabled only when processed at the beginning of a line in standard mode.</li><li>• This command has no effect in page mode</li><li>• After printing by 0x0C is completed or by using 0x1B 0x53, the printer returns to standard mode.</li><li>• This command sets the position where data is buffered to the position specified by 0x1B 0x54 within the printing area defined by 0x1B 0x57.</li><li>• This command switches the settings for the following commands (in which the values can be set independently in standard mode and page mode) to those for page mode:<ol style="list-style-type: none"><li>1) Set right-side character spacing: 0x1B 0x20</li><li>2) Select default line spacing: 0x1B 0x32, 0x1B 0x33</li></ol></li><li>• Only value settings is possible for the following commands in page mode; these commands are not executed.<ol style="list-style-type: none"><li>1) Turn 90° clockwise rotation mode on/off: 0x1B 0x56</li><li>2) Select justification: 0x1B 0x61</li><li>3) Turn upside-down printing mode on/off: 0x1B 0x7B</li><li>4) Set left margin: 0x1D 0x4C</li><li>5) Set printable area width: 0x1D 0x57</li></ol></li><li>• The following command is not available in page mode:<ol style="list-style-type: none"><li>1) Print raster bit image: 0x1D 0x76 0x30</li></ol></li><li>• The printer returns to standard mode when power is turned on, the printer is reset, or 0x1B 0x40 is used.</li></ul>		
[Default]			
[Reference]	0x0C, 0x1B 0x53, 0x1B 0x54, 0x1B 0x57, 0x1D 0x24, 0x1D 0x5C		
[Example]			



## 0x1B 0x53

<ESC S>

### Select standard mode

Valid per	K3		
[Format]	ASCII	ESC	S
	Hex	1B	53
	Decimal	27	83
[Range]			
[Description]	Switches from page mode to standard mode.		
[Notes]	<ul style="list-style-type: none"><li>• This command is effective only in page mode.</li><li>• Data buffered in page mode are cleared.</li><li>• This command sets the print position to the beginning of the line.</li><li>• The printing area set by 0x1B 0x57 are initialized.</li><li>• This command switches the settings for the following commands (in which the values can be set independently in standard mode and page mode) to those for standard mode:<ol style="list-style-type: none"><li>1) Set right-side character spacing: 0x1B 0x20</li><li>2) Select default line spacing: 0x1B 0x32, 0x1B 0x33</li></ol></li><li>• The following commands are enabled only to set in standard mode.<ol style="list-style-type: none"><li>1) Set printing area in page mode: 0x1B 0x57</li><li>2) Select print direction in page mode: 0x1B 0x54</li></ol></li><li>• The following commands are ignored in standard mode.<ol style="list-style-type: none"><li>1) Set absolute vertical print position in page mode: 0x1D 0x24</li><li>2) Set relative vertical print position in page mode: 0x1D 0x5C</li></ol></li><li>• Standard mode is selected automatically when power is turned on, the printer is reset, or command 0x1B 0x40 is used.</li></ul>		
[Default]			
[Reference]	0x0C, 0x1B 0x20, 0x1B 0x4C		
[Example]			



0x1B 0x63 0x35

<ESC c>

Enable/Disable front panel keys

Valid per	K3				
[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]					
[Default]	n = 1				
[Reference]					
[Example]					



## 0x1B 0x6F

<ESC o>

Open the printer cover

Valid per	K3
-----------	----

[Format]	ASCII	ESC	o
	Hex	1B	6F
	Decimal	27	111

[Range]

[Description]      Open the printer cover.

[Notes]

[Default]

[Reference]

[Example]

## Generate pulse

Valid per	K3											
[Format]	ASCII	ESC	p	m	t1	t2						
	Hex	1B	70	m	t1	t2						
	Decimal	27	112	m	t1	t2						
[Range]	m = 0, 1, 48, 49 0 ≤ t1 ≤ 255 0 ≤ t2 ≤ 255											
[Description]	Outputs the pulse specified by t1 and t2 to connector pin m as follows:											
	<table><tr><th>m</th><th>CONNECTOR PIN</th></tr><tr><td>0, 48,</td><td>Drawer kick-out connector pin 2. (cash drawer 2)</td></tr><tr><td>1, 49</td><td>Drawer kick-out connector pin 2. (cash drawer 1)</td></tr></table>						m	CONNECTOR PIN	0, 48,	Drawer kick-out connector pin 2. (cash drawer 2)	1, 49	Drawer kick-out connector pin 2. (cash drawer 1)
m	CONNECTOR PIN											
0, 48,	Drawer kick-out connector pin 2. (cash drawer 2)											
1, 49	Drawer kick-out connector pin 2. (cash drawer 1)											
[Notes]	<ul style="list-style-type: none"><li>• The pulse ON time is [ t1 × 2 ms ] and the OFF time is [ t2 × 2 ms ].</li><li>• If t2 &lt; t1, the OFF time is [ t1 × 2 ms ].</li></ul>											
[Default]												
[Reference]												
[Example]												



## 0x1B 0xFA

### Print graphic (576x910)

Valid per	K3
-----------	----

[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]	$0 \leq n \leq 2$
	$0 \leq xH, xL, yH, yL \leq 255$

[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
2	Print logo 2 from flash

[Notes]	Printable maximum vertical dimension is 910.
	$xL + xH \times 256$ specifies the starting dotline ( $1 \div 910$ ).
	$yL + yH \times 256$ specifies the number of lines to print.
	• If $(xL + (xH \times 256)) > 910$ the printer does not execute the command.
	• If $(xL + (xH \times 256) + yL + (yH \times 256)) > 910$ the printer prints only $862 - xL + (xH \times 256) + 1$ dotline.

[Default]
-----------

[Reference]
-------------

[Example]
-----------



# 0x1B 0xFD

## Receive graphic page from communication port

Valid per	K3				
[Format]	ASCII	ESC	0xFD	nL	nH
	Hex	1B	FD	nL	nH
	Decimal	27	253	nL	nH
[Range]	$0 \leq nL, nH \leq 255$				
[Description]	Receives $[nL + (nH \times 256)]$ words from the port and puts them into the ram bank.				
[Notes]	<ul style="list-style-type: none"><li>• The number of data bytes received is <math>[nL + (nH \times 256)] \times 2</math>.</li><li>• Each word is first received as MSByte and then as LSByte.</li><li>• If <math>[nL + (nH \times 256)]</math> is greater than 32768, the data which follows is processed as normal data.</li><li>• The flash bank dimensions for the graphic print are 576 horizontal dots (72 bytes/dot line) <math>\times</math> 910 verticals dots (65520 bytes).</li></ul>				
[Default]					
[Reference]	0x1B 0xFA, 0x1B 0xFC, 0x1B 0xFE				
[Example]					





## 0x1C 0x44

<FS D>

### Printing head test

Valid per	K3		
[Format]	ASCII	FS	D
	Hex	1C	44
	Decimal	28	68
[Range]			
[Description]			
The printer returns two bytes that represent the number of printing head dots not working.			
[Notes]			
If the “Print Head Test” parameter of the printer setup is set on “Disabled”, the printer performs the printing head test before sending the answer, otherwise it returns the data of the test run at power up of the device.			
[Default]			
[Reference]			
[Example]			



0x1C 0x4D

<FS M>

Set mass storage

Valid per	K3			
-----------	----	--	--	--

[Format]	ASCII	FS	M	m
	Hex	1C	4D	m
	Decimal	28	77	m

[Range]	n = 0, 1
---------	----------

[Description]	Enable or disable the mass storage function in RAM according to m value:
---------------	--

m	FUNCTION
0	Disable mass storage
1	Enable mass storage

[Notes]
---------

[Default]	n = 0
-----------	-------

[Reference]
-------------

[Example]
-----------



## 0x1C 0x93

### Print logo

Valid per	K3								
-----------	----	--	--	--	--	--	--	--	--

[Format]	ASCII	FS	0x93	nH	nL	opt	sp	posH	posW
	Hex	1C	93	nH	nL	opt	sp	posH	posW
	Decimal	28	147	nH	nL	opt	sp	posH	posW

[Range]	$0 \leq nH, nL \leq 255$
---------	--------------------------

[Description]	Prints logo defined by n.								
	• n is the number of image to print;								
	• opt is the option byte that specifies justification and rotation as shown in the following table:								

BIT	DESCRIPTION	BIN		FUNCTION
0,1	Justification	00	Left	
		01	Center	
		10	Right	
		11	User Define (on the basis of position specified by posH and posW)	
2, 3	N.U.	00	Not used.	
4, 6	N.U.	00	Not used.	
7	Rotated print	0	Print normal.	
		1	Print rotate.	

- sp specifies the thickness of the image border.
- posH, posL specifies the logo's horizontal position (from the left border); used only with user-defined justification.

[Notes]

[Default]

[Reference]

[Example] Example 1:  
To print logo no.10 centered and rotated transmits :  
0x1C 0x93 0x00 0x0A 0x81 0x01 0x00 0x00

where

0xC 0x93	//print logo command
0x00 0x0A	//Logo no. 10
0x81	//printing rotated and centered
0x01	//1 pixel of image border
0x00 0x00	//Positioning not used



#### Example 2:

To print logo no.10 not rotated and with a user-defined printing position transmits:

0x1C 0x93 0x00 0x0A 0x03 0x01 0x00 0x50

where

0x1C 0x93 //print logo command

0x00 0x0A //Logo no. 10

0x03 //printing with a user define positioning and not rotated

0x01 //1 pixel of image border

0x00 0x50 //Printing 10mm from the left border



## 0x1C 0xB0

### Send commands to the display

Valid per	K3				
[Format]	ASCII	FS	0xB0	n	b1...bn
	Hex	1C	B0	n	b1...bn
	Decimal	28	176	n	b1...bn
[Range]	$0 \leq n \leq 255$				
[Description]	This command works as a pass through to the display for the n successive bytes to be sent. b1...bn commands for the display.				
[Notes]					
[Default]					
[Reference]	See commands manual for the display				
[Example]	0x1C 0xB0 0x06 0x0B 0x48 0x45 0x4C 0x4C 0x4F send 6 bytes to display HOME position + "HELLO" text				



# 0x1C 0xC0 0x07

Emits an acoustic signalling

Valid per	K3			
-----------	----	--	--	--

[Format]	ASCII	FS	0xC0	0x07
	Hex	1C	C0	07
	Decimal	28	192	7

[Range]

[Description] When this command is received the printer emits a beep as acoustic signalling.

[Note]

[Default]

[Reference]

[Example]



## 0x1C 0xC0 0xFF

Emits an acoustic signalling in base of printer status

Valid per	K3				
-----------	----	--	--	--	--

[Format]	ASCII	FS	0xC0	0xFF	n
	Hex	1C	C0	FF	n
	Decimal	28	192	255	n

[Range]

[Description] Transmits an acoustic signalling in base of printer status as indicated by n value:

BIT	OFF/ON	HEX	DECIMAL	FUNCTION
0	On	01	1	If a paper end is detected a 'beep' signal is emitted
1	On	02	2	If a near paper end is detected a 'beep' signal is emitted
2	On	04	4	If a cover open is detected a 'beep' signal is emitted
3	-	-	-	Not defined.
4	-	-	-	Not defined.
5	-	-	-	Not defined.
6	-	-	-	Not defined.
7	-	-	-	Not defined.

[Note] • The acoustic signalling is emitted when the event defined by n value is generated.

[Default]

[Reference]

[Example]



## 0x1C 0xEB

### Received, save and play melody

Valid per	K3
-----------	----

[Format 1]	ASCII	FS	EB	m	nh	nl	b1....bn
	Hex	1C	EB	m	nh	nl	b1....bn
	Decimal	28	235	m	nh	nl	b1....bn

[Format 2]	ASCII	FS	EB	m	s	nh	nl	osh osl
	Hex	1C	EB	m	s	nh	nl	osh osl
	Decimal	28	235	m	s	nh	nl	osh osl

[Range]

[Description] Format 1:

- This command is used for receiving and saving a melody.
- m selected one of the following modes:

m	DESCRIPTION
"r", "R"	Receive the notes and put them in the RAM (volatile memory)
"w", "W"	Receive the notes and put them in the EEPROM (no-volatile memory)

- "nh" and "nl" are the exact number of note to receive and must be inserted an even number.
- $bn = nh \times 256 + nl$

Format 2:

- This command needs to execute a melody
- m identifies, the following modes:

m	DESCRIPTION
"p", "P"	Play, execute one of 2 melodies (saved in RAM or EEPROM)

- s select one of the following mode:

s	DESCRIPTION
"r", "R"	Play the notes in the RAM
"e", "E"	Play the notes in the EEPROM

- "nh" and "nl" are the number of notes to play and must be an even number.
- "osh" and "osl" are offset and indicate to which note must begin playing.





[Note]

- The melody can have one's best an extension of 512 byte.
- every notes is composed from 2 bytes ( 1b for the note and 1b for the length that will be expressed in multiples of 5 ms).
- Follows the table with the respective notes to put into the byte of reference for the note (es. the byte 86 correspond of the note SI\_4) and the frequency of the note.

NOTE	BYTE OF REFERENCE	NOTE FREQUENCY	NOTE	BYTE OF REFERENCE	NOTE FREQUENCY
None	00	pause	DO_6	40	4186.0 Hz
LA_4	96	1760.0 Hz	DO_D_6	37	4434.9 Hz
LA_D_4	90	1864.6 Hz	RE_6	35	4698.6 Hz
SI_4	86	1975.5 Hz	RE_D_6	33	4978.0 Hz
DO_5	81	2093.0 Hz	MI_6	31	5274.0 Hz
DO_D_5	76	2217.5 Hz	FA_6	29	5587.6 Hz
RE_5	73	2349.3 Hz	FA_D_6	27	5919.9 Hz
RE_D_5	68	2489.0 Hz	SOL_6	25	6271.9 Hz
MI_5	64	2637.0 Hz	SOL_D_6	24	6644.9 Hz
FA_5	60	2793.8 Hz	LA_6	23	7040.0 Hz
FA_D_5	56	2959.9 Hz	LA_D_6	20	7902.1 Hz
SOL_5	53	3135.9 Hz	SI_6	19	8372.0 Hz
SOL_D_5	50	3322.4 Hz	DO_7	18	8869.8 Hz
LA_5	47	3520.0 Hz	DO_D_7	17	9397.2 Hz
LA_D_5	44	3729.3 Hz	RE_7	16	9956.0 Hz
SI_5	42	3951.0 Hz	RE_D_7	15	10548.0 Hz

[Default]

[Reference]

[Example]

- Follows an example of how is composed the buffer for the melody:

b1	b2	b3	b4	b5	b6	.....	b511	b512
n1	l10n	n2	l2	n3	l3	.....	n256	l256

Where:

- b is the number of the busy byte (b512 is the maximum byte to put into). It's not necessary that the melody must be composed from all 512 bytes.
- n is the byte that correspond to the note
- l is the length of the note
- Example of the save of one note in the Ram    1C EB 52 0 1 50 FF
- Example of the play of one note in the Ram    1C EB 50 72 0 1 0 0



## 0x1D 0x49

<GS />

### Transmit printer ID

Valid per	K3			
-----------	----	--	--	--

[Format]	ASCII	GS	I	n
	Hex	1D	49	n
	Decimal	29	73	n

[Range]	$1 \leq n \leq 3$
	$49 \leq n \leq 51$
	n=255

[Description]	Transmits the printer ID specified by n follows:
---------------	--

n	PRINTER ID	SPECIFICATION
1, 49	Printer model ID (1 byte)	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 0x0A

n = 2, 50 Type ID

BIT	OFF/ON	HEX	Decimal	FUNCTION
0	Off	00	0	2-byte character codes not supported
1	Off	00	0	Autocutter not supplied
				Autocutter supplied
2	Off	00	0	Thermal paper w/o label
				Thermal paper with label
3	-	-	-	Undefined.
4	Off	00	0	Not used. Fixed to Off.
5	-	-	-	Undefined.
6	-	-	-	Undefined.
7	Off	00	0	Not used. Fixed to Off.

[Notes]	<ul style="list-style-type: none"> <li>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.</li> </ul>
---------	--

[Default]

[Reference]

[Example]

0x1D 0x50

<GS P>

Set horizontal and vertical motion units

Valid per	K3				
[Format]	ASCII	GS	P	x	y
	Hex	1D	50	x	y
	Decimal	29	80	x	y
[Range]	0 ≤ nL, nH ≤ 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]	<ul style="list-style-type: none"><li>• The horizontal direction is perpendicular to the paper feed direction.</li><li>• In standard mode, the following commands use x or y, regardless of character rotation (upside-down or 90° clockwise rotation):</li></ul>				
	Commands using x: 0x1B 0x20, 0x1B 0x24, 0x1B 0x5C, 0x1D 0x4C, 0x1D 0x57				
	Commands using y: 0x1B 0x33, 0x1B 0x4A				
[Default]	<ul style="list-style-type: none"><li>• This command does not affect the previously specified values.</li><li>• 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.</li></ul>				
	x = 204, y = 408				
[Reference]	0x1B 0x20, 0x1B 0x24, 0x1B 0x5C, 0x1B 0x33, 0x1B 0x4A, 0x1D 0x4C, 0x1D 0x57				
[Example]					



## 0x1D 0x7C

### Set printing density

Valid per	K3			
-----------	----	--	--	--

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

[Range]	$0 \leq n \leq 8$
	$48 \leq n \leq 56$

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

n	PRINTING DENSITY
0, 48	- 50%
1, 49	- 37.5%
2, 50	- 25%
3, 51	- 12.5%
4, 52	0%
5, 53	+ 12.5%
6, 54	+ 25%
7, 55	+ 37.5%
8, 56	+ 50%

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

[Default]	n = 4
-----------	-------

[Reference]	0x1D 0x7C
-------------	-----------

[Example]	
-----------	--



## 0x1D 0xE6

### Virtual paper-end limit

Valid per	K3														
[Format]	ASCII	GS	0xE6	nH	nL										
	Hex	1D	E6	nH	nL										
	Decimal	29	230	nH	nL										
[Range]	0 ≤ nH, nL ≤ 255														
[Description]	This command sets the limit after which is pointed out the virtual paper-end.														
[Notes]	<ul style="list-style-type: none"><li>• The calculation limit of the near paper-end is in centimetres.</li><li>• This value is expressed as [(nH x 256)+nL]</li></ul>														
[Default]	nH = 0x00 nL = 0xF0														
[Reference]															
[Example]	<p>To see the virtual paper-end is pointed out after 15 metres from the first detection of near paper end it's necessary convert 15 metres in 1500 centimetres and then, calculate nH and nL value in the following mode:</p> $nH = 1500 / 256 = 5$ $nL = 1500 - (nH \times 256) = 1500 - (5 \times 256) = 220$ <p>and then send the following command:</p> <table><tr><td>Hex:</td><td>0x1D</td><td>0xE6</td><td>0x05</td><td>0xDC</td></tr><tr><td>Decimal:</td><td>29</td><td>230</td><td>5</td><td>220</td></tr></table>					Hex:	0x1D	0xE6	0x05	0xDC	Decimal:	29	230	5	220
Hex:	0x1D	0xE6	0x05	0xDC											
Decimal:	29	230	5	220											



## 0x1D 0xD0

### Set horizontal and vertical motion units

Valid per	K3						
[Format]	ASCII	GS	0xD0	xH	xL	yH	yL
	Hex	1D	D0	xH	xL	yH	yL
	Decimal	29	208	xH	xL	yH	yL
[Range]	$0 \leq (xH * 256) + xL \leq 2040$						
	$0 \leq (yH * 256) + yL \leq 4080$						
[Description]	Sets the horizontal and vertical motion units to $1/((xH * 256) + xL)$ inch and $1/((yH * 256) + yL)$ 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]	<ul style="list-style-type: none"><li>• The horizontal direction is perpendicular to the paper feed direction.</li><li>• In standard mode, the following commands use x or y, regardless of character rotation (upside-down or 90° clockwise rotation):</li></ul>						
	Commands using x : 0x1D 0x4C, 0x1D 0x57						
	Commands using y : 0x1B 0x4A, 0x1B 0x33						
	<ul style="list-style-type: none"><li>• This command does not affect the previously specified values.</li><li>• 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.</li></ul>						
[Default]	x = 204, y = 408						
[Reference]	0x1B 0x4A, 0x1D 0x4C, 0x1D 0x57, 0x1D 0xD0						
[Example]							



## 0x1D 0xF0

### Set printing speed

Valid per	K3			
[Format]	ASCII	GS	0xF0	n
	Hex	1D	F0	n
	Decimal	29	240	n
[Range]	0 ≤ n ≤ 2			
[Description]	Sets printing speed. n specifies the printing speed as follows:			
	n	PRINTING SPEED		
	0	High quality		
	1	Normal		
	2	High speed		
[Notes]	• Printing speed reverts to the default value when the printer is reset or turned off.			
[Default]	n = 1			
[Reference]				
[Esempio]				



# TRUE TYPE FONT

## 0x1C 0x65

<FS e>

### Enable/Disable encoding

Valid per	K3
-----------	----

[Format]	ASCII	FS	e	n
	Hex	1C	65	n
	Decimal	28	101	n

[Range] n = '0', '1', '2', 48, 49, 50

[Description] Enable/Disable the text encoding based on the following values of n:

n	ENCODING
0, 48	Disabled
1, 49	Enable UTF-8
2, 50	Enable UTF-16

[Notes]

- This command is valid only for TrueType fonts of monospace type.
- If the text encoding is disabled, manage the characters coding by 0x1B 0x52 and 0x1B 0x74 commands.
- If the text encoding is enabled, the character's addressing respects the UNICODE™ standard (see [www.unicode.org](http://www.unicode.org)).

[Default] Disabled.

[Reference] 0x1B 0x52, 0x1B 0x74, 0x1C 0x66

[Example]





## 0x1C 0x66

&lt;FS f&gt;

### True Type font management

Valid per	K3
-----------	----

[Format]	ASCII	FS	f	m	n	d[0]...d[n]
	Hex	1C	66	m	n	d[0]...d[n]
	Decimal	28	102	m	n	d[0]...d[n]

[Range]	$0 \leq m \leq 256$
	$0 \leq n \leq 64$

[Description]	Manage the TrueType fonts depending on the following values of m
---------------	--

m (BIT)	FUNCTION
0	Check glyph width
1	TTF enable hinting
2	Not used
3	Not used
4	Re-enable TrueType font
5	Disable TrueType font
6	De-init TrueType font
7	Clear all

n specifies the name length of the font to use.

d[0]...d[n] specifies the font name to use.

[Notes]	<ul style="list-style-type: none"> <li>• If “Check glyph width” is selected, for every character, printer checks if the glyph width is different from default width. In this case, the font will be not installed. The check may require some time (it depends on the characters number of the font).</li> <li>• For “Hinting” means the font adaptation to the grid. When hinting enabled, the characters are more legible but some characters may be too high (for example, the accented capital letters). This bit is active only when you install a new font.</li> <li>• “Re-enable” function re-enables a TrueType font previously disabled.</li> <li>• “Disable” function disables a TrueType font.</li> <li>• “De-init” function uninstalls a font and clears the memory used by the font. Use this function only when you intend to use the font more, otherwise use the “Disable” function to speed up operations.</li> <li>• “Clear all” function uninstalls all the installed fonts.</li> <li>• If command is successful the printer transmits the ACK (0x06), otherwise return NACK (0x015).</li> <li>• After “Disable”, “Re-enable” and “Clear-all” functions, do not pass the filename of the TrueType font.</li> </ul>
---------	---

[Default]

[Reference]



[Example]

- Select the TrueType font with dimensions check, without hinting:  
0x1C 0x66 0x02 0x0C "veramono.ttf"
- Return to use the embedded fonts:  
0x1C 0x66 0x20 0x00
- Select the font previously disabled:  
0x1C 0x66 0x10 0x00
- Uninstall a TrueType font:  
0x1C 0x66 0x40 0x0C



# ALIGNMENT COMMANDS

## 0x1D 0xE7

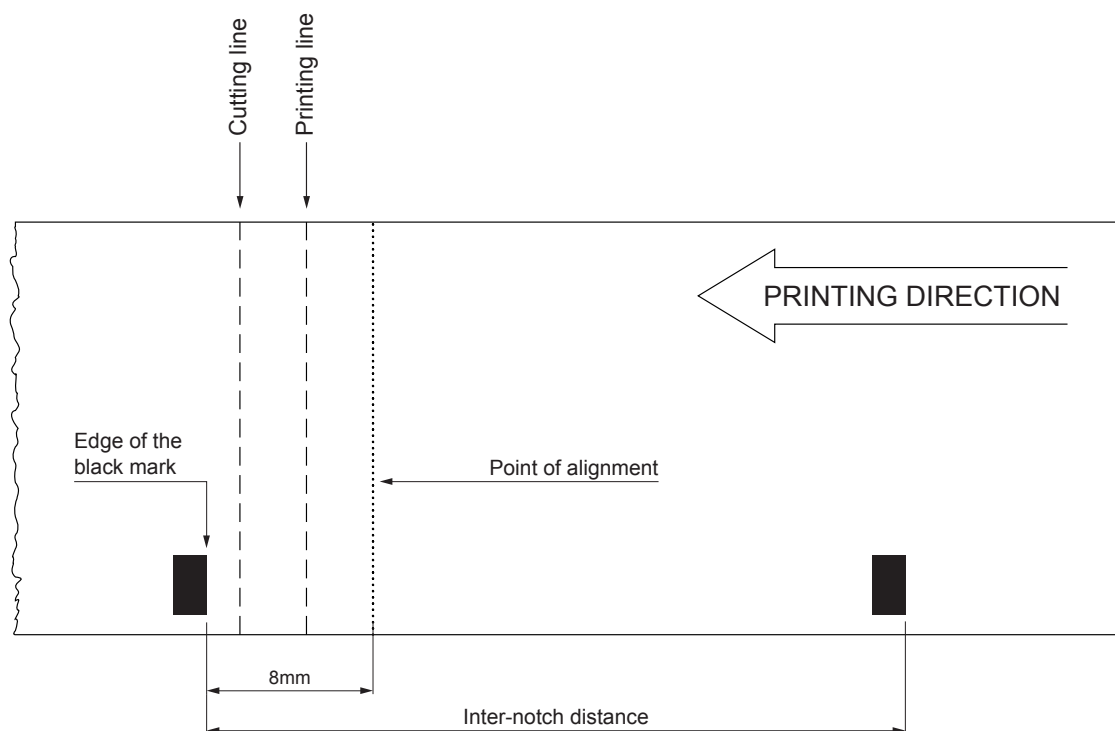
### Set notch distance

Valid per	K3				
[Format]	ASCII	GS	{ }	nH	nL
	Hex	1D	E7	nH	nL
	Decimal	29	231	nH	nL
[Range]	$0 \leq nH \leq 255$ $0 \leq nL \leq 255$				
[Description]	Sets notch distance in tenths of a mm from the point of alignment.				
[Notes]	<ul style="list-style-type: none"><li>• This value is expressed as <math>[(nH \times 256) + nL]</math></li><li>• It's possible to put in the notch distance maximum limit during the setup phase. The notch distance value range goes from 0 to 99,9 mm.</li><li>• The distance is saved in nonvolatile memory: it is therefore recommended not to send this command for each printed ticket, because the number of rewrites is limited. In many devices, however, is checked the diversity of the data before performing the rescue to avoid reaching the limit of rewrites.</li><li>• The distance defined by this command is the same that can be set with the value of the "Notch Distance" during the setup of the printer (see User Manual for further explanation).</li></ul>				
[Default]	nH = 0x00, nL = 0x00				
[Reference]					
[Example]	Send the command:  0x1D    0xE7    0x00    0x50 ↓        ↓ nH      nL				

Is set to notch a distance equal to 80 tenths of a mm  $[(nH \times 256) + nL]$  equal to 8.0 mm.



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



0x1D 0xF6

## Align at print

Valid per	K3		
[Format]	ASCII	GS	0xF6
	Hex	1D	F6
	Decimal	29	246
[Range]			
[Description]	This command aligns the edge of the black mark at the point of alignment (see chapter Alignment for further explanation).		
[Notes]	<ul style="list-style-type: none"> <li>• Use the command 0x1D 0xE7 to set an offset between the black mark and the point of alignment (0 to 99.9 mm).</li> <li>• Use this alignment command even to print more tickets without cutting.</li> </ul>		
[Default]			
[Reference]	0x1D 0xE7, 0x1D 0xF8		
[Example]	<p>EXAMPLE OF CONSECUTIVE PRINTS WITHOUT CUTTING</p> <p>0x1D 0xF6                      <i>Positioning ticket</i></p> <p>&lt;print ticket&gt;</p> <p>0x1D 0xF6                      <i>Positioning ticket</i></p> <p>&lt;print ticket&gt;</p> <p>...</p> <p>...</p> <p>...</p> <p>EXAMPLE OF PRINTS WITH ALIGNMENT AND CUT</p> <p>0x1D 0xF6                      <i>Positioning ticket</i></p> <p>&lt;print ticket&gt;</p> <p>0x1D 0xF8                      <i>Align ticket</i></p> <p>0x1B 0x69                      <i>Cut</i></p>		



# 0x1D 0xF8

## Align at cut

Valid per	K3		
[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]			
<ul style="list-style-type: none"><li>• Use the command 0x1D 0xE7 to set an offset between the black mark and the point of alignment (0 to 99.9 mm).</li><li>• To work properly, you must send this command just before the cut command.</li></ul>			
[Default]			
[Reference]			
0x1D 0xE7, 0x1D 0xF6			
[Example]	0x1D 0xF6		
	<print ticket>		
	0x1D 0xF8		
	0x1B 0x69		
		<i>Positioning ticket</i>	
		<i>Align ticket</i>	
		<i>Cut and presentation</i>	

ALIGNMENT







# ALIGNMENT COMMANDS

The device is equipped with sensors that allows the use of alignment notch to handle:

- rolls of tickets with pre-printed and fixed length fields;
- FanFold modules 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 notch (value of parameter “Notch 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.

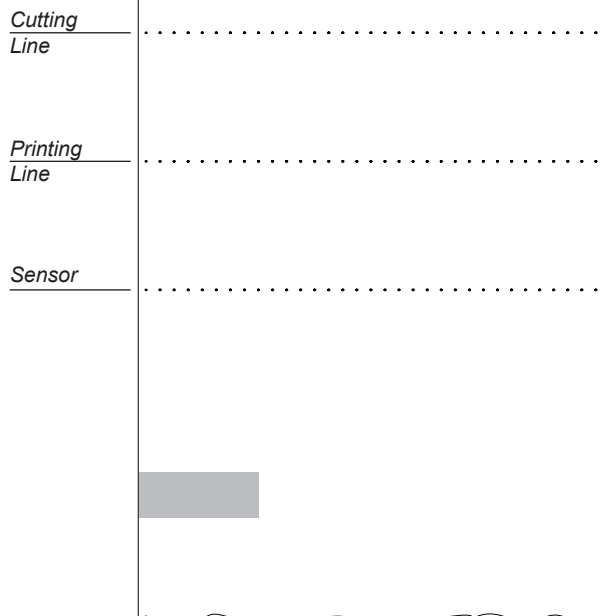
NOTE: The settings take effect from next ticket to the one already in the printer.

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

## EXAMPLE 1

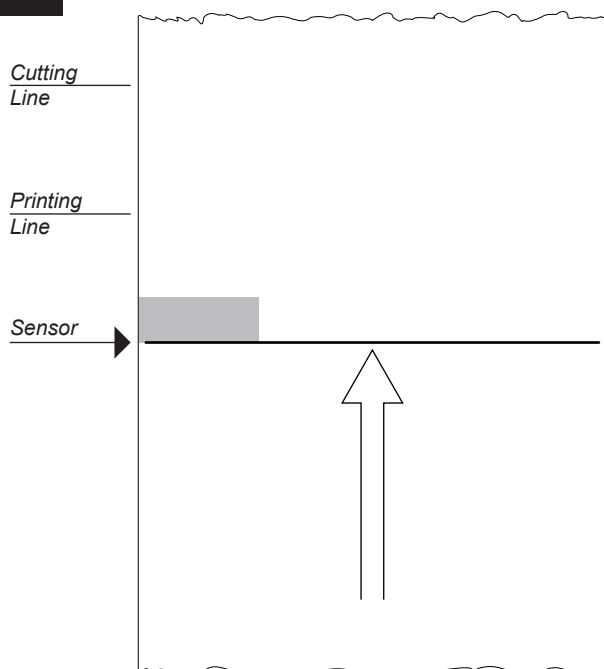
Commands sequence to print tickets with “alignment point” over the edge of the black mark (Notch Distance = 0mm set from SETUP).

1



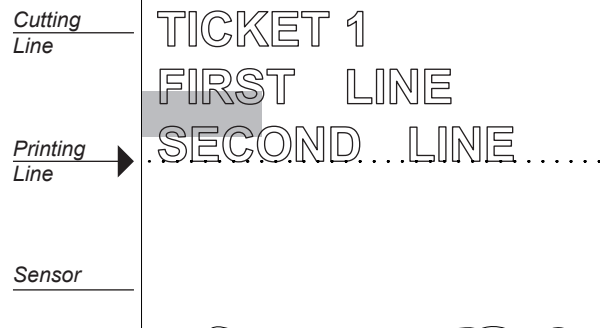
Start  
Paper with black mark not aligned

2



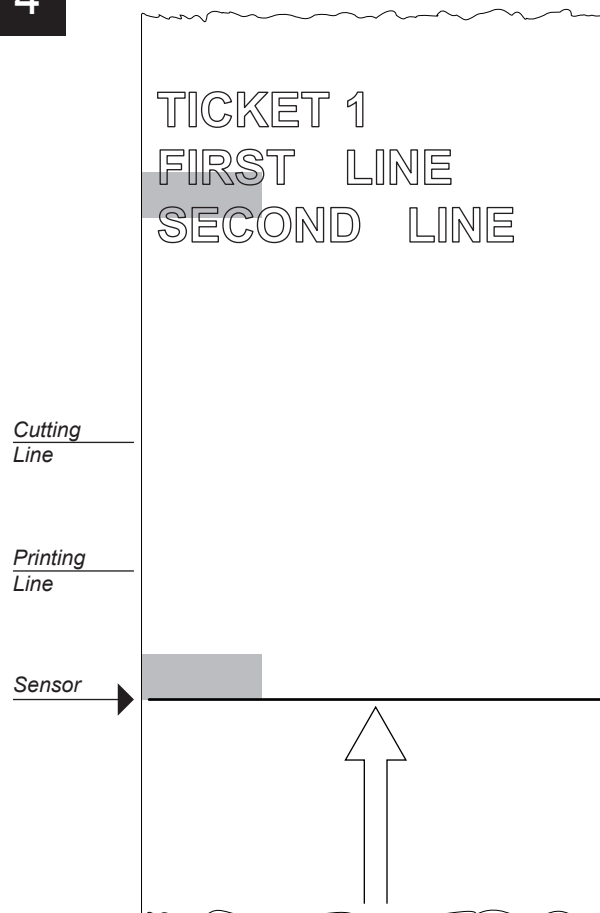
Alignment command 0x1D 0xF6  
Paper is fed. The black mark is recognized  
by the sensor and aligned under the sensor

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 sensor

5

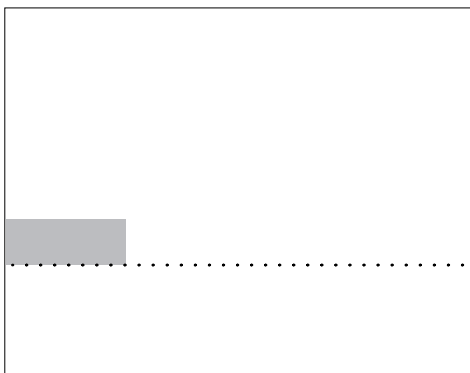
TICKET 1  
FIRST LINE  
SECOND LINE

Cutting  
Line



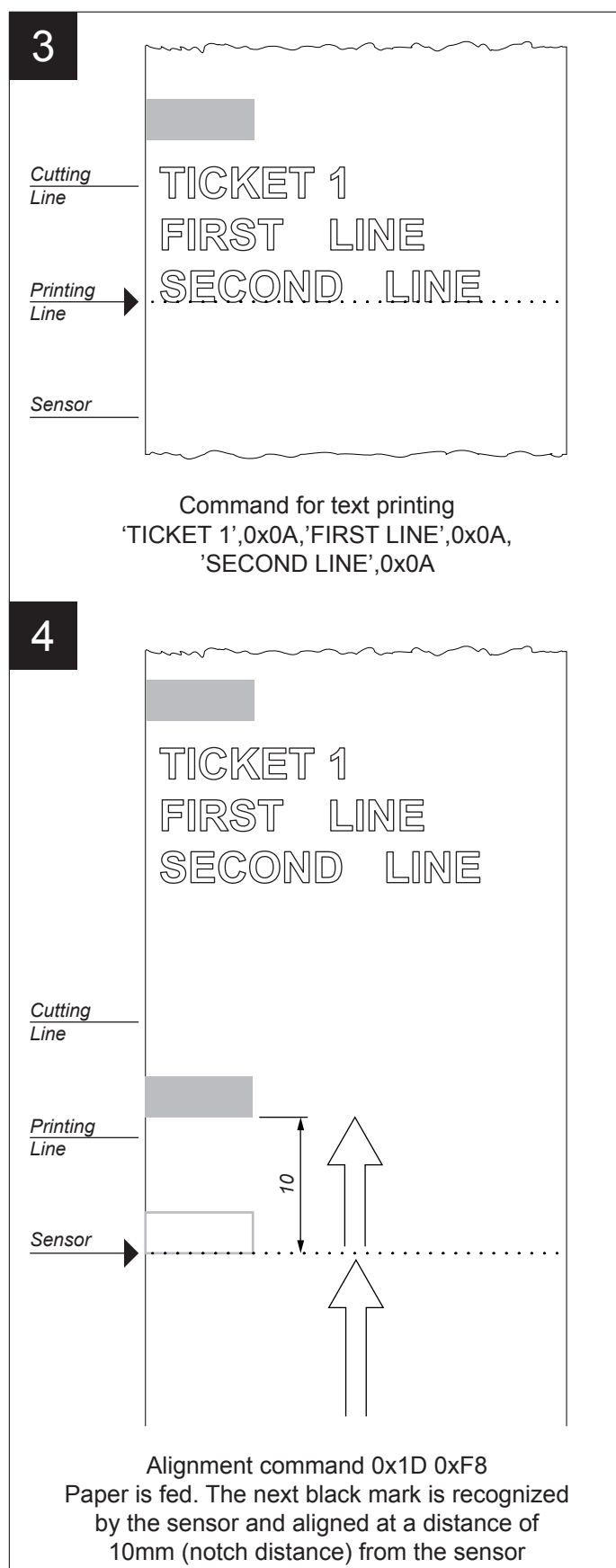
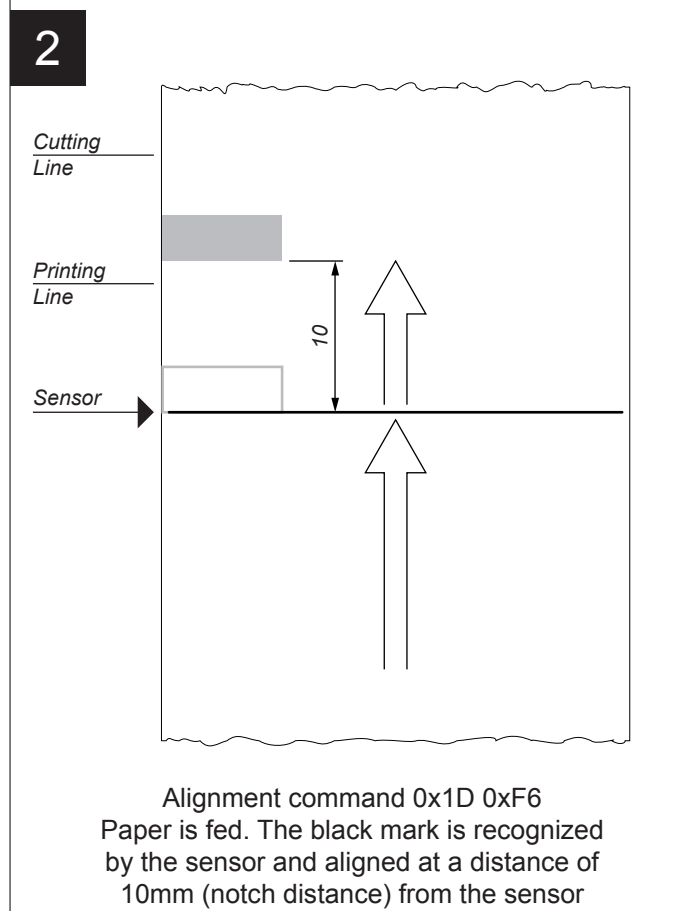
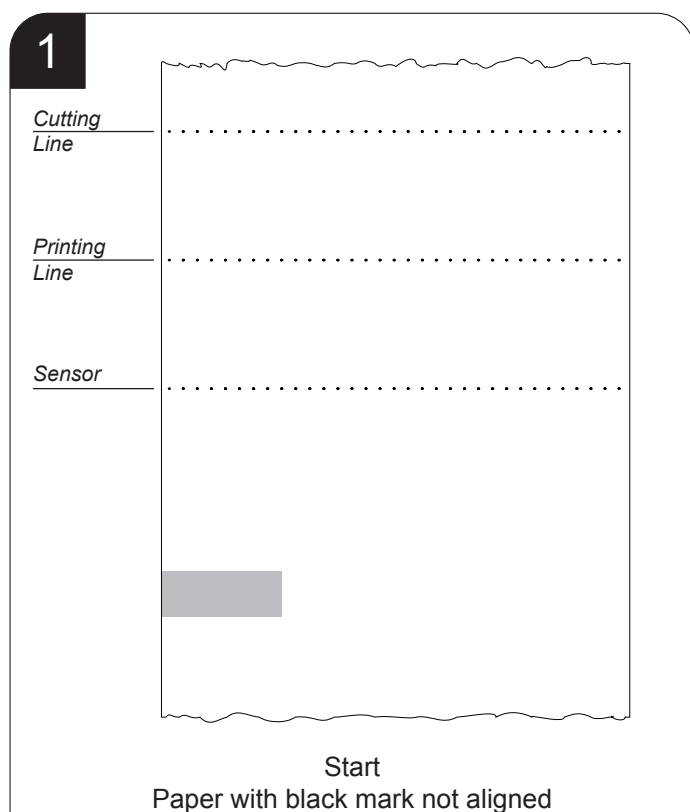
Printing  
Line

Sensor

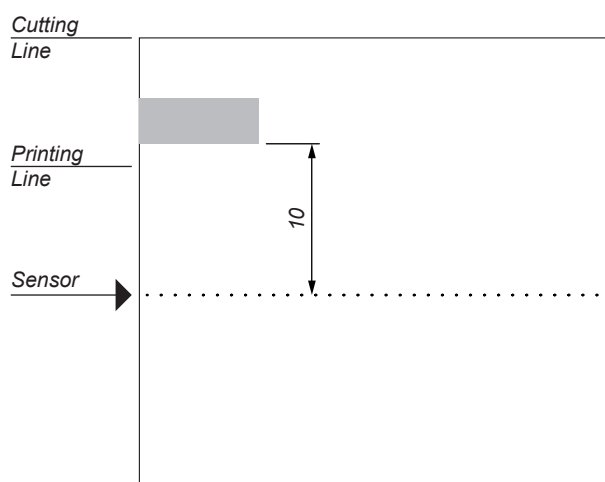
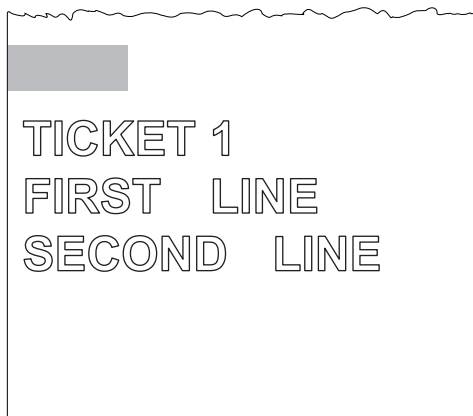


## EXAMPLE 2

Commands sequence to print tickets with “alignment point” moved 10mm compared to the edge of the black mark (Notch Distance = 10mm set from SETUP).



5



Cut command 0x1B 0x69

The paper is cut.

The paper is already aligned and ready for printing.







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