Line Thermal Printer

STAR Line Mode Command Specifications

Rev 0.10

Star Micronics Co., Ltd.
Special Products Division

Table of Contents

This specifications document describes the command specifications for the STAR LINE MODE on line thermal printers. Information contained herein applies to models with the following conditions.

- Line thermal printers
- Interfaces:
    - Parallel
    - RS-232C
    - USB
    - Ethernet
    - Wireless LAN

< Applicable Models:>
TSP700
TSP600
TSP800
TUP900
TSP1000
TSP828L
TSP700II
TSP650
TUP500

1. INTERFACE CONFIGURATION

1.1. RS-232 Serial Interface

1.1.1. Specifications (Conforming to RS-232)

Rating: RS-232C
Synch method: Start-Stop synchronization method
Handshake: DTR mode
Baud rates: 4800, 9600, 19200, 38400 bps (Set by DIP switches)
Bit length: 7, 8 bits (Set by DIP switches)
Parity: Yes/No (Set by DIP switches)
Parity bit: Odd/even (Set by DIP switches)
Stop bit: 1 bit (Fixed)
Signal polarity: Mark = logic 1 (-3 to -15 V)
Space = logic 0 (+3 to +15 V)

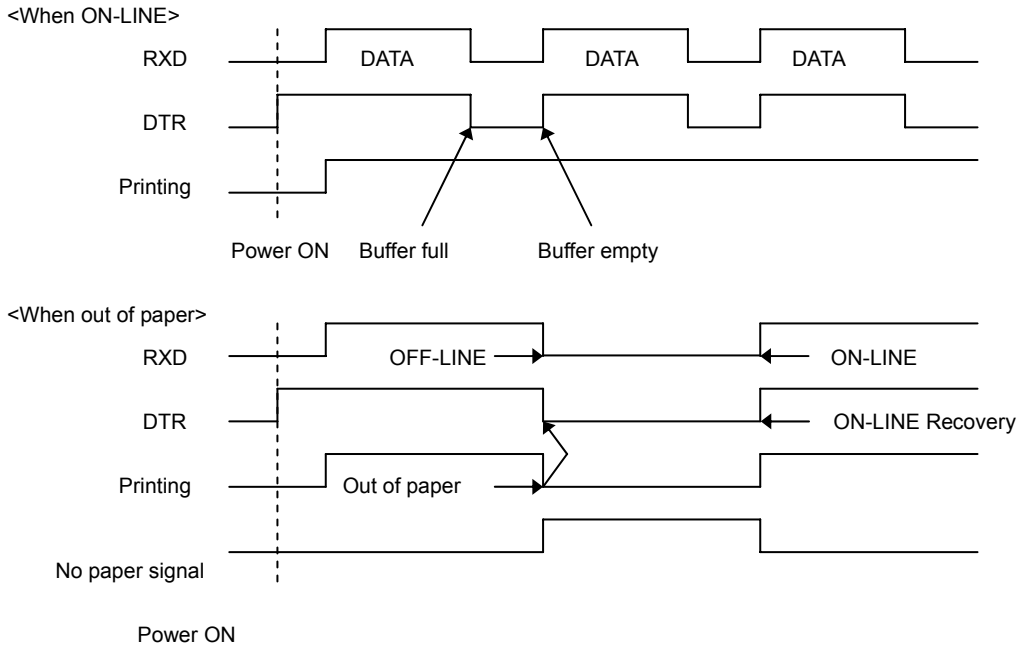
1.1.2. Signal array and explanations according to interface connector pin

<Signal Array and Functions>

Pin No.	Signal Name	Signal Direction	Remarks
1	FG	-	Frame ground
2	TXD	OUT	Transmission data
3	RXD	IN	Reception data
4	RTS	OUT	Same as DTR
5	N.C	-	Not used
6	DSR	IN	Not used
7	SG	-	Signal ground
8-19	N.C	-	Not used
20	DTR	OUT	Data terminal ready signal (SPACE: printer is ready to receive.) 1) When in DTR mode: When printer is ready to receive data: SPACE 2) When in XON/XOFF mode: Always SPACE except in the following conditions. 1. Until communication is possible after a reset. 2. When test printing
21-24	N.C		Signal ground
25	/INIT	IN	Signal ground

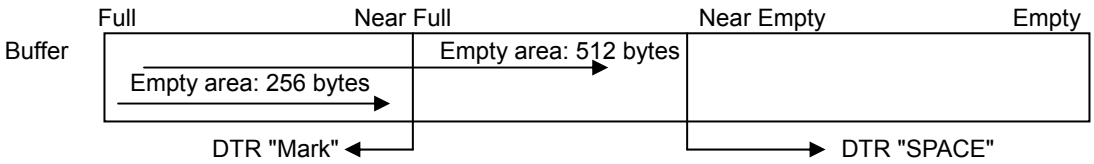
1.1.3. Communication Protocol

1) General description of operations in the DTR mode
This mode abides by the DIP switch settings. (Ex-factory settings)
This mode performs communication while handshaking with the DTR signals. In the operations to receive printer data, this mode controls the DTR signals by confirming the BUSY signal. A SPACE indicates that the printer is ready to receive data; conversely, a “mark” indicates that the printer cannot receive data.



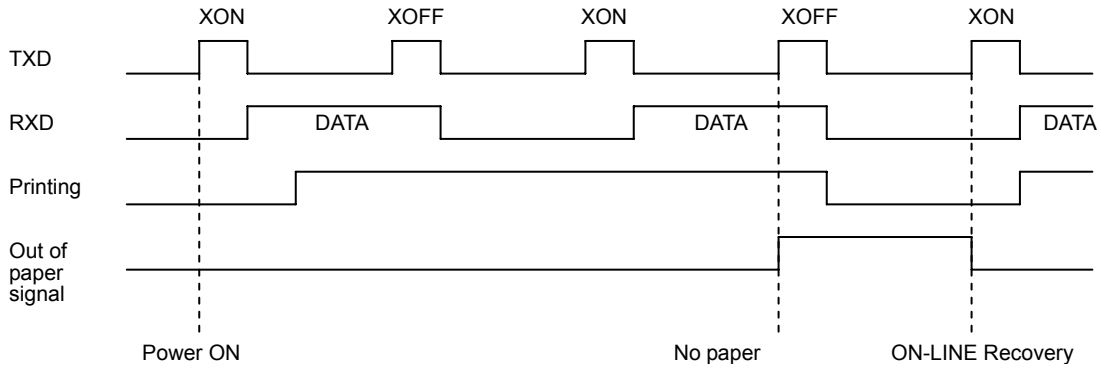
If there is no printer error after turning ON the power, the DTR signal line is set to a SPACE. When the host computer confirms that the DTR signal line is a SPACE, it sends the data text to the RXD signal line. The printer sets the DTR signal line to a “Mark” after the empty area of the data buffer reaches a maximum of 256 bytes. When the host computer confirms that the DTR signal line is a Mark, it stops the transmission of data text to the printer buffer, but at this point as well, the printer is still capable of receiving data, up to the amount of empty space in the data buffer. If the host computer ignores the DTR signal and transmits data, all data exceeding the amount of space in the data buffer is simply discarded. The printer sets the DTR signal line to SPACE again when the amount of empty space in the data buffer increased because of the printing and the data in the buffer is a maximum of 256 bytes. As the empty area in the data buffer increases because of printing, the printer sets the DTR signal line to “SPACE.”

2) Buffer full/Buffer full cancel in the DTR mode



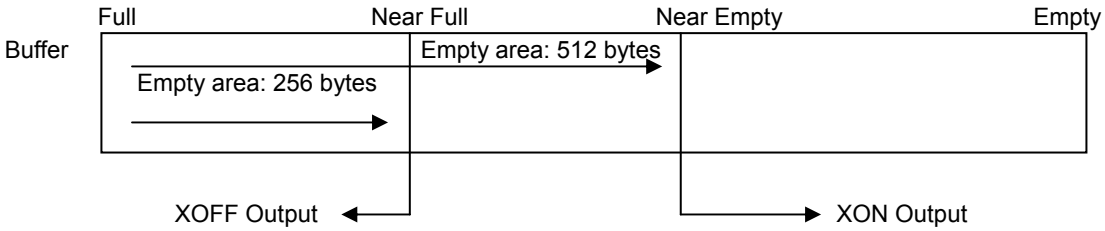
3) General description of operations in the XON/XOFF mode

This mode is set when DIPSW #1 to #3 are turned OFF. This mode notifies the host of the XON (DC1) data when the printer can receive data and the XOFF (DC3) data when the printer cannot receive data, using the TXD signals.
This functions so that XON outputs only 1 byte when the printer shifts from OFFLINE (printer busy) to ONLINE (printer ready) and; XOFF outputs 1 byte when the printer shifts from ONLINE (printer ready) to OFFLINE (printer busy) .



If there is no error after turning the power ON, XON (control code name: DC1; Hexadecimal name: 11H) is output by the TXD signal line. After the host computer receives the XON, it sends the data text to the RXD signal line. XOFF (DC 3; 13H) is output when the empty space in the data buffer is a maximum of 256 bytes. The host computer stops sending data text when it receives the XOFF, however, the printer is capable of receiving data at that time for the amount of empty space in the data buffer. Data exceeding the amount of empty space is discarded. As the empty space in the data buffer increases through printing, XON is output when the data in the buffer is a maximum of 256 bytes. When the empty area of the data buffer increases because of printing, the printer outputs XON.

4) Buffer full/Buffer full cancel in the XON/XOFF mode



1.2. Parallel Interfaces (Amphenol 36 pins)

1.2.1. Specifications (Conforming to IEEE1284)

Rating: Conforms to IEEE 1284
Mode: Compatibility Mode/Nibble Mode/Byte Mode
Data transfer speed: 1000 to 6000 CPS
Synch method: According to externally supplied strobe pulse
Handshake: According to ACK and BUSY signals
Logic level: Compatible to TTL

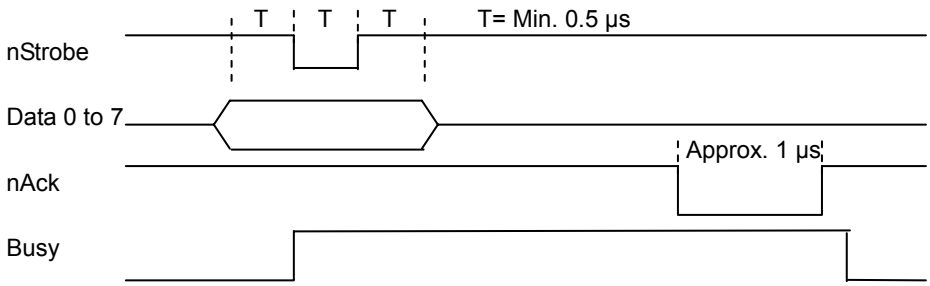
1.2.2. Signal array and explanations according to interface connector pin

<Signal Array and Functions>

Pin No.	Compatibility Mode Signal Name	Nibble Mode Signal Name	Byte Mode Signal Name
1	nStrobe	HostClk	HostClk
2 to 9	Data0 to 7	Data0 to 7	Data0 to 7
10	nAck	PtrClk	PtrClk
11	Busy	PtrBusy/Data3,7	PtrBusy
12	PError	AckDataReq/Data2,6	AckDataReq
13	Select	Xflag/Data1,5	Xflag
14	N/C	HostBusy	HostBusy
15	N/C	-	-
16	Signal GND	Signal GND	Signal GND
17	Frame GND	Frame GND	Frame GND
18	+5V	+5V	+5V
19 to 30	Twisted Pair Return	Twisted Pair Return	Twisted Pair Return
31	nInit	nInit	nInit
32	nFault	nDataAvail/Data0,4	nDataAvail
33	External GND	-	-
34	N/C	-	-
35	N/C	-	-
36	nSelectIn	1284Active	1284Active

1.2.3. Signal Output Timing

1) Compatibility mode



2) Nibble Mode/Byte Mode
Conforms to IEEE 1284 standard

1.2.4. Status Specification

See Appendix 2 for details.

1.3. USB Interface

Specifications:	Conforms to USB 2.0 Full Speed. Supports printer class and vendor class (Refer to each printer specifications manual for selections.)
Connector:	Type B

1.4. Ethernet Interface

Specifications:	Conforms to IEEE 802.3.
Cable:	10BASE-T/10BASE-TX
Connector:	RJ45

1.5. Wireless LAN Interface

Specifications:	Conforms to IEEE 802.11b.

2. COMMAND FUNCTION LIST

• Standard Commands

Class	Commands	Name
Font style And character set	ESC RS F	Select font
	ESC GS t	Specify code page
	ESC GS =	Write blank code page data
	ESC R	Specify international character set
	ESC /	Specify/cancel slash zero
	ESC SP	Set ANK right space
	ESC M	Specify ANK 12 dot pitch
	ESC P	Specify ANK 15 dot pitch
	ESC :	Specify ANK 16 dot pitch
	ESC g	Specify ANK 14 dot pitch
Character expansion settings	ESC i	Set/cancel the double wide/high printing
	ESC W	Set/cancel the double wide printing
	ESC h	Set/cancel the double high printing
	SO	Set double wide printing
	DC4	Cancel double wide printing
	ESC SO	Set printing magnified double character height
	ESC DC4	Cancel printing magnified character height
Print modes	ESC E	Select emphasized printing
	ESC F	Cancel emphasized printing
	ESC -	Select/cancels underling mode
	ESC _	Select/cancels upperline mode
	ESC 4	Select white/black inverted printing
	ESC 5	Cancel white/black inverted printing
	SI	Select upside-down printing
	DC2	Cancel upside-down printing
Line spacing	LF	Line feed
	CR	Carriage return (same as line feed)
	ESC a	Feed paper n lines
	ESC z	Select line feed amount
	ESC 0	Specify line spacing to 3 mm
	ESC J	n/4 mm line feed
	ESC I	n/8 mm line feed

Class	Commands	Name
Page control commands	FF	Form feed
	ESC C	Set page length to n lines
	ESC C 0	Set page length in 24 mm units
	VT	Feed paper to vertical tab position
	ESC B	Set vertical tab position
	ESC N	Set bottom margin to n lines
	ESC O	Cancel bottom margin
Horizontal direction position	ESC l	Set left margin
	ESC Q	Set right margin
	HT	Move print position to horizontal tab position
	ESC D	Set/cancel horizontal tab position
	ESC GS A	Move absolute position
	ESC GS R	Move relative position
	ESC GS a	Specify position alignment
Download	ESC &	Register/delete 12 x 24 dot font download characters
	ESC %	Set/cancel download characters
Bit image graphics	ESC K	Standard density bit image
	ESC L	High density bit image
	ESC k	Fine bit image
	ESC X	Fine bit image
Logos	ESC FS q	Register logo data
	ESC FS p	Print logo data
	ESC RS L	Print registered logo in batch/ Batch control of registered logos
Bar code	ESC b	Print bar code
Cutter control	ESC d	Paper cutter instruction
External device Drive	ESC BEL	Set pulse width for external device drive
	BEL	External device 1 drive instruction
	FS	External device 1 drive instruction
	SUB	External device 2 drive instruction
	EM	External device 2 drive instruction
	ESC GS BEL	Ring buzzer
	ESC GS EM DC1	External buzzer drive pulse condition settings
	ESC GS EM DC2	External buzzer drive execution
Print settings	ESC RS d	Set print density
	ESC RS r	Set printing speed
Status	ESC RS a	Set status transmission conditions
	ESC ACK SOH	Real-time printer status (ASB Status)
	ENQ	Real-time printer status (1)
	EOT	Real-time printer status (2)
	ESC ACK CAN	Real-time printer reset
	ETB	Update ETB status
	ESC RS E	Clear ETB counter, ETB status

Class	Commands	Name
Chinese characters	ESC p	Set to JIS Kanji character mode
	ESC q	Cancel JIS Kanji character mode
	ESC $	Set/cancel JIS Kanji character mode
	ESC s	Set two byte Kanji characters left/right spaces
	ESC t	Set 1 byte Kanji characters left/right spaces
	ESC r	Register Chinese download characters
Others	CAN	Cancel print data and initialize commands
	ESC @	Command initialization
	ESC GS #	Set memory switch
	ESC ?	Reset printer
	ESC GS r	Get CRC code
Macro	ESC GS +	Register macro

(*) Kanji character commands

- Kanji character control commands are ignored on printers not installed with Kanji character fonts (those intended for overseas).
- All Kanji character control commands are ignored if the specification for the location of use is specified as SBCS (single byte countries) by the memory switch.

• Raster related commands

Class	Commands	Name
Raster commands	ESC * r R	Initialize raster mode
	ESC * r A	Enter raster mode
	ESC * r B	Quit raster mode
	ESC * r C	Clear raster data
	ESC * r D	Drive drawer
	ESC * r E	Set EOT mode
	ESC * r F	Set FF mode
	ESC * r P	Set page length
	ESC * r Q	Set print quality
	ESC * r m l	Set left margin
	ESC * r m r	Set right margin
	ESC * r T	Set top margin
	ESC * r K	Set print color
	b n1 n2 d1...dk	Transfer raster data (auto line feed)
	k n1 n2 d1...dk	Transfer raster data
	ESC * r Y	Position movement in vertical direction (Line break at specified dot)
	ESC FF NUL	Execute form feed mode
	ESC FF EOT	Execute EOT mode
	ESC * r N	Discard data for specified byte count
	ESC * r V	Execute external buzzer drive

• Black mark related commands

Class	Commands	Name
Black mark Related Commands	ESC d	Paper cut instruction
	FF	Form feed
	ESC C	Set page length to n lines
	ESC C 0	Set page length in 24 mm units
	VT	Feed paper to vertical tab position
	ESC B	Set vertical tab position
	ESC N	Set n line bottom margin
	ESC O	Cancel bottom margin

• 2-Color Printing Related Commands

Class	Commands	Name
2-Color Printing Related commands	ESC RS c	Specify printing color in 2-color printing mode
	ESC RS C	Select/cancel 2-color printing mode
	ESC 4	Specify white/black inversion and printing color red
	ESC 5	Cancel white/black inversion and specify printing color black
	ESC FS q	Register logo
	ESC FS p	Print logo

• 2 color printing related commands

Class	Commands	Name
2 color printing Related Commands	ESC RS c	Specify printing color in 2 color printing mode
	ESC RS C	Select/cancel 2 color printing mode
	ESC 4	Specify white/black inversion and printing color red
	ESC 5	Cancel white/black inversion and specify printing color black
	ESC FS q	Register logo
	ESC FS p	Print logo

•Presenter related commands

Class	Commands	Name
Presenter related commands	ESC SYN 0	Execute presenter paper recovery
	ESC SYN 1	Set presenter automatic recovery function and recovery time
	ESC SYN 3	Acquire presenter paper counter
	ESC SYN 4	Initialize presenter paper counter
	ESC GS SUB DC1	Specify snout operation mode
	ESC GS SUB DC2	Specify snout LED ON/OFF time
	ESC GS SUB DC3	Snout LED output

•Mark commands

Class	Commands	Name
Mark commands	ESC GS * 0	Print mark
	ESC GS * 1	Specify mark height and line feed amount
	ESC GS * 2	Specify mark color and horizontal width in each mark number
	ESC GS * W	Register mark format in non-volatile memory
	ESC GS * C	Initialize mark format in non-volatile memory

•Auto Logo commands

Class	Commands	Name
Auto Logo commands	ESC GS / W	Register Auto Logo setting in non-volatile memory
	ESC GS / C	Initialize Auto Logo setting in non-volatile memory
	ESC GS / 1	ON/OFF setting of Auto Logo function
	ESC GS / 2	Command character setting
	ESC GS / 3	User macro 1 setting
	ESC GS / 4	User macro 2 setting
	ESC GS / 5	Command character rewriting method setting
	ESC GS / 6	Setting of partial cut just prior to Auto Logo printing

•PDF417 commands

Class	Commands	Name
PDF417 commands	ESC GS x S0	Set PDF417 bar code size
	ESC GS x S1	Set PDF417 ECC (security level)
	ESC GS x S2	Set PDF417 module X direction size
	ESC GS x S3	Set PDF417 module aspect ratio
	ESC GS x D	Set PDF417 bar code data
	ESC GS x P	Print PDF417 bar code
	ESC GS x I	Get PDF 417 bar code expansion information

•Print Starting Trigger Control commands

Class	Commands	Name
Print starting trigger	ESC GS g0	Print starting trigger
	ESC GS g1	Print starting timer setting

•QR Code commands

Class	Commands	Name
QR code	ESC GS y S0	Set QR code model
	ESC GS y S1	Set QR code mistake correction level
	ESC GS y S2	Set QR code cell size
	ESC GS y D1	Set QR code data
	ESC GS y D2	Set QR code data (Manual)
	ESC GS y P	Print QR code
	ESC GS y I	Get QR code expansion information

•Print Function commands

Class	Commands	Name
Page function	ESC GS h 0	180 degree turnover
	ESC GS h 1	Water mark

3. COMMAND DETAILS

3.1. Explanation of Terms

• Reception buffer
The buffer for storing data (reception data) received from the host, as it is called the reception buffer.
Reception data is temporarily stored in the reception buffer, then processed sequentially.

• Line buffer
The buffer for storing image data for printing is called the line buffer.

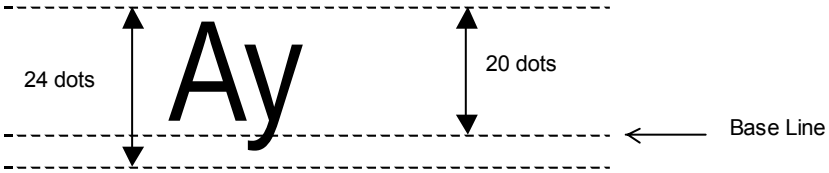
• Line buffer full
The state in which the buffer has no more space available is called line buffer full. When the buffer is full in standard mode, data in the line buffer is printed and a line feed is performed when new print data is processed. This is the same as a Line Feed. When the line buffer is full in the page mode, the printer move the print position to the head of the next line then starts with the new print data.

• Top of line
The top of line is a state that satisfies the following conditions.
- There is currently no print data in the line buffer.
- The position is not specified with the horizontal direction position command.

• Printable region
This is the maximum printable area with the printer's specifications.

• Print region
This is the printing area specified by a command. (Print region ≤ printable region)

• ANK character base line



3.2. Exception Processing

1) Undefined codes

Codes from <00>H to <1F>H are targeted. When codes not defined as commands in this region are received, they are discarded.

(Ex.) If processing the data string of <30>H<31>H<03>H<32>H<0A>H<33>H, the printer will discard <03>H as an undefined code.

2) Undefined commands

When data continuing the codes of ESC, FS, GS, DLE are codes not defined as commands, ESC, FS,GS and subsequent codes are discarded.

(Ex.) If processing the data string of <30>H<1B>H<22>H<31>H<32>H, the printer will read and discard <1B>H<22>H as an undefined command.

3) Settings outside of the defined area

Processing values outside of the defined area in commands accompanying arguments, those commands are ignored and the preset values are unchanged. The processing of commands is terminated at the point values outside of the defined region are processed in arguments having a plurality of commands. Data after that is processed as normal data.

(Ex.) If processing the data string of <1B>H<52>H<15>H, the printer will discard the data string of <1B>H<52>H<15>H because although <1B>H<52>H is defined as a commands (ESC R), the argument <15>H is outside of the definition. Therefore, the international character set that is already set experiences no change.

3.3. Standard Command Details

3.3.1. Font style and Character Set

ESC RS F n

[Name] Select font

[Code]

ASCII	ESC	RS	F	n
Hex.	1B	1E	46	n
Decimal	27	30	70	n

[Defined Region] 0≦n≦1, n = 16

[Initial Value] n = 0

[Function] Selects a font

n	Font
0	Font-A (12 x 24 dots)
1	Font-B (9 x 24 dots)
16	OCR-B (16 x 24 dots)

The following functions are disabled when OCR-B font is selected.
- Code page
- Blank code page
- International characters
- Slash zero

When using OCR-B font to read characters via a scanning operation, adornment, expansion and external characters are canceled.
OCR-B font should be checked by actually trying it first before use.

ESC GS t n

[Name] Select code page

[Code]

ASCII	ESC	GS	t	n
Hex.	1B	1D	74	n
Decimal	27	29	116	n

[Defined Region] 0≤n≤21
32≤n≤34
64≤n≤79

[Initial Value] Memory switch setting
When installed with Japanese language characters and DBCS setting: Fixed at n=2

[Function] Specifies code page
When installed with Japanese and Chinese language characters and DBCS setting, this command is ignored.

n	Code Page
0	Normal*
1	CodePage437 (USA, Std. Europe)
2	Katakana
3	CodePage437 (USA, Std. Europe)
4	Codepage 858 (Multilingual)
5	Codepage 852 (Latin-2)
6	Codepage 860 (Portuguese)
7	Codepage 861 (Icelandic)
8	Codepage 863 (Canadian French)
9	Codepage 865 (Nordic)
10	Codepage 866 (Cyrillic Russian)
11	Codepage 855 (Cyrillic Bulgarian)
12	Codepage 857 (Turkey)
13	Codepage 862 (Israel (Hebrew))
14	Codepage 864 (Arabic)
15	Codepage 737 (Greek)
16	Codepage 851 (Greek)
17	Codepage 869 (Greek)
18	Codepage 928 (Greek)
19	Codepage 772 (Lithuanian)
20	Codepage 774 (Lithuanian)
21	Codepage 874 (Thai)

n	Code Page
32	Codepage 1252 (Windows Latin-1)
33	Codepage 1250 (Windows Latin-2)
34	Codepage 1251 (Windows Cyrillic)
64	Codepage 3840 (IBM-Russian)
65	Codepage 3841 (Gost)
66	Codepage 3843 (Polish)
67	Codepage 3844 (CS2)
68	Codepage 3845 (Hungarian)
69	Codepage 3846 (Turkish)
70	Codepage 3847 (Brazil-ABNT)
71	Codepage 3848 (Brazil-ABICOMP)
72	Codepage 1001 (Arabic)
73	Codepage 2001 (Lithuanian-KBL)
74	Codepage 3001 (Estonian-1)
75	Codepage 3002 (Estonian-2)
76	Codepage 3011 (Latvian-1)
77	Codepage 3012 (Latvian-2)
78	Codepage 3021 (Bulgarian)
79	Codepage 3041 (Maltese)
255	User Setting Blank Code Page

ESC GS = n1 n2 da1 da2...dak db1 db2...dbk

[Name] Write blank code page data

[Code]

ASCII	ESC	GS	=	n1	n2	da1	da2	...	dak	db1	db2	…	dbk
Hex.	1B	1D	3D	n1	n2	da1	da2	...	dak	db1	db2	…	dbk
Decimal	27	29	61	n1	n2	da1	da2	...	dak	db1	db2	…	dbk

[Defined Area] n1= 0
n2 = 48
1≦(n1 + n2 x 256)
0≦da≦255 (Font-A data)
db = 0 (STAR mode is not installed with Font-B.)
k = (n1 + n2 x 256)

[Initial Value] - - -

[Function] A blank code page indicates a character code table where character codes from 80h to FFh are all blank.
A blank code page can be selected using the ESC GS t n command n = 255.
The printer is reset when writing with this command is completed.

Font-A Data Format Vertical 24 dots x Horizontal 12 dots]

	MSB							LSB									LSB			
Da1	•	•	•	•	•	•	•	•	Da2	•	•	•	•	○	○	○	○
Da3	•	•	•	•	•	•	•	•	Da4	•	•	•	•	○	○	○	○
Da5	•	•	•	•	•	•	•	•	Da6	•	•	•	•	○	○	○	○
Da7	•	•	•	•	•	•	•	•	Da8	•	•	•	•	○	○	○	○
Da9	•	•	•	•	•	•	•	•	Da10	•	•	•	•	○	○	○	○
Da11	•	•	•	•	•	•	•	•	Da12	•	•	•	•	○	○	○	○
Da13	•	•	•	•	•	•	•	•	Da14	•	•	•	•	○	○	○	○
Da15	•	•	•	•	•	•	•	•	Da16	•	•	•	•	○	○	○	○
Da17	•	•	•	•	•	•	•	•	Da18	•	•	•	•	○	○	○	○
Da19	•	•	•	•	•	•	•	•	Da20	•	•	•	•	○	○	○	○
Da21	•	•	•	•	•	•	•	•	Da22	•	•	•	•	○	○	○	○
Da23	•	•	•	•	•	•	•	•	Da24	•	•	•	•	○	○	○	○
Da25	•	•	•	•	•	•	•	•	Da26	•	•	•	•	○	○	○	○
Da27	•	•	•	•	•	•	•	•	Da28	•	•	•	•	○	○	○	○
Da29	•	•	•	•	•	•	•	•	Da30	•	•	•	•	○	○	○	○
Da31	•	•	•	•	•	•	•	•	Da32	•	•	•	•	○	○	○	○
Da33	•	•	•	•	•	•	•	•	Da34	•	•	•	•	○	○	○	○
Da35	•	•	•	•	•	•	•	•	Da36	•	•	•	•	○	○	○	○
Da37	•	•	•	•	•	•	•	•	Da38	•	•	•	•	○	○	○	○
Da39	•	•	•	•	•	•	•	•	Da40	•	•	•	•	○	○	○	○
Da41	•	•	•	•	•	•	•	•	Da42	•	•	•	•	○	○	○	○
Da43	•	•	•	•	•	•	•	•	Da44	•	•	•	•	○	○	○	○
Da45	•	•	•	•	•	•	•	•	Da46	•	•	•	•	○	○	○	○
Da47	•	•	•	•	•	•	•	•	Da48	•	•	•	•	○	○	○	○

• = Data region/○=Zero data

ESC R n

[Name] Specify international character set

[Code]

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

[Defined Area] 0≦n≦14
n = 64
48≦n≦57 (”0”≦n≦”9”)
65≦n≦69 (”A”≦n≦”E”)

[Initial Value] Memory switch setting
When installed with Japanese language characters and DBCS setting: Fixed at n=8

[Function] Specifies international characters

n	International Characters
0, 48	USA
1, 49	France
2, 50	Germany
3, 51	UK
4, 52	Denmark
5, 53	Sweden
6, 54	Italy
7, 55	Spain
8, 56	Japan
9, 57	Norway
10, 65	Denmark II
11, 66	Spain II
12, 67	Latin America
13, 68	Korea
14, 69	Ireland
64	Legal

ESC / n

[Name] Specify/cancel slash zero

[Code]

ASCII	ESC	/	n
Hex.	1B	2F	n
Decimal	27	47	n

[Defined Area] n = 0, 1, 48, 49

[Initial Value] Memory switch setting

[Function] Specifies and cancels slash zeros.

n	International Characters
0, 48	Cancels slash zero
1, 49	Specifies slash zero

ESC SP n

[Name] Set ANK right space

[Code]

ASCII	ESC	SP	n
Hex.	1B	20	n
Decimal	27	32	n

[Defined Area] 0≦n≦15
48≦n≦57 (”0”≦n≦”9”)
65≦n≦70 (”A”≦n≦”F”)

[Initial Value] Memory switch setting

[Function] Specifies the right space for ANK 12 x 24 dot fonts in n dots.
Character spacing can be specified also with the following commands.

- Specify 12 dot pitch (ESC M)
- Specify 14 dot pitch (ESC g)
- Specify 15 dot pitch (ESC P)
- Specify 16 dot pitch (ESC :)

ESC M

[Name] Specify 12 dot pitch

[Code]			
	ASCII	ESC	M
	Hex.	1B	4D
	Decimal	27	77

[Defined Area] - - -

[Initial Value] Memory switch setting

[Function] Specifies rights space for the ANK 12 x 24 dot fonts to 0 dots.

ESC P

[Name] Specify 15 dot pitch

[Code]			
	ASCII	ESC	P
	Hex.	1B	50
	Decimal	27	80

[Defined Area] - - -

[Initial Value] Memory switch setting

[Function] Specifies rights space for the ANK 12 x 24 dot fonts to 3 dots.

ESC :

[Name] Specify 16 dot pitch

[Code]			
	ASCII	ESC	:
	Hex.	1B	3A
	Decimal	27	58

[Defined Area] - - -

[Initial Value] Memory switch setting

[Function] Specifies rights space for the ANK 12 x 24 dot fonts to 4 dots.

ESC g

[Name] Specify 14 dot pitch

[Code]

ASCII	ESC	g
Hex.	1B	67
Decimal	27	103

[Defined Area] - - -

[Initial Value] Memory switch setting

[Function] Specifies rights space for the ANK 12 x 24 dot fonts to 2 dots.

Specification A

This command is enabled only when the memory switch setting is set for DBCS (2 byte countries). It is ignored when the memory switch setting is set for SBCS (1 byte countries).

Specification B

This command is enabled for both when the memory switch setting is set for either DBCS (2 byte countries) or SBCS (1 byte countries).

3.3.2. Character Expansion Settings

ESC i n1 n2

[Name] Set/cancel the double wide/high

[Code]	ASCII	ESC	i	n1	n2
	Hex.	1B	69	n1	n2
	Decimal	27	105	n1	n2

[Defined Area] 0≤n1≤5
48≤n1≤53 (”0”≤n1≤”5”)
0≤n2≤5
48≤n2≤53 (”0”≤n2≤”5”)

[Initial Value] n1 = 0 (Double high cancelled)
n2 = 0 (Double wide cancelled)

[Function] Specifies/cancels double high/wide for ANK characters and Kanji characters.
This command is ignored if either n1 or n2 is outside of the defined area.

n1	Expanded high
0, 48	Cancels expanded high
1, 49	Specifies 2x high expansion
2, 50	Specifies 3x high expansion
3, 51	Specifies 4x high expansion
4, 52	Specifies 5x high expansion
5, 53	Specifies 6x high expansion

n2	Expanded wide
0, 48	Cancels expanded wide
1, 49	Specifies 2x wide expansion
2, 50	Specifies 3x wide expansion
3, 51	Specifies 4x wide expansion
4, 52	Specifies 5x wide expansion
5, 53	Specifies 6x wide expansion

ESC W n

[Name] Specify/cancel expanded wide

[Code]

ASCII	ESC	W	n
Hex.	1B	57	n
Decimal	27	87	n

[Defined Area] 0≦n≦5
48≦n≦53 (”0”≦n≦”5”)

[Initial Value] n = 0 (Double wide cancelled)

[Function] Specifies/cancels double wide for ANK characters and Kanji characters.

n	Expanded wide
0, 48	Cancels expanded wide
1, 49	Specifies 2x wide expansion
2, 50	Specifies 3x wide expansion
3, 51	Specifies 4x wide expansion
4, 52	Specifies 5x wide expansion
5, 53	Specifies 6x wide expansion

ESC h n

[Name] Specify/cancel expanded high

[Code]

ASCII	ESC	h	n
Hex.	1B	68	n
Decimal	27	104	n

[Defined Area] 0≦n≦5
48≦n≦53 (”0”≦n≦”5”)

[Initial Value] n = 0 (Double high cancelled)

[Function] Specifies/cancels double high for ANK characters and Kanji characters.

n	Expanded high
0, 48	Cancels expanded high
1, 49	Specifies 2x expansion
2, 50	Specifies 3x expansion
3, 51	Specifies 4x expansion
4, 52	Specifies 5x expansion
5, 53	Specifies 6x expansion

SO

[Name] Set double wide
[Code] ASCII SO
Hex. 0E
Decimal 14

[Defined Area] - - -
[Initial Value] Cancels 2x wide expansion
[Function] Specifies double wide for ANK characters and Kanji characters.
This command is equivalent to ESC W n (n = 1).

DC4

[Name] Cancel expanded wide
[Code] ASCII DC4
Hex. 14
Decimal 20

[Defined Area] - - -
[Initial Value] - - -
[Function] Cancels expanded wide if the following commands specify expanded wide.
• Double wide specifying command (SO)
• Set/cancel double wide (ESC W)
• Set/cancel double wide/high (ESC i)
This command is equivalent to ESC W n (n = 0).

ESC SO

[Name] Set double high

[Code]

ASCII	ESC	SO
Hex.	1B	0E
Decimal	27	14

[Defined Area] - - -

[Initial Value] Double high expansion cancelled.

[Function] Specifies double high for ANK characters and Kanji characters.
This command is equivalent to ESC h n (n = 1).

ESC DC4

[Name] Cancel expanded high

[Code]

ASCII	ESC	DC4
Hex.	1B	14
Decimal	27	20

[Defined Area] - - -

[Initial Value] - - -

[Function] Cancels expanded high if the following commands specify expanded high.
• Double high specifying command (ESC SO)
• Set/cancel the double high (ESC h)
• Set/cancel double wide/high (ESC i)
This command is equivalent to ESC h n (n = 0).

3.3.3. Print Mode

ESC E

[Name] Select emphasized printing
[Code] ASCII ESC E
Hex. 1B 45
Decimal 27 69

[Defined Area] - - -
[Initial Value] Emphasized printing selected
[Function] Specifies emphasized printing for ANK characters.
IBM block ignores emphasized printing.

ESC F

[Name] Cancel emphasized printing
[Code] ASCII ESC F
Hex. 1B 46
Decimal 27 70

[Defined Area] - - -
[Initial Value] Emphasized printing cancelled.
[Function] Cancels emphasized printing for ANK characters.

ESC – n

[Name] Select/cancels underling mode

[Code]

ASCII	ESC	-	n
Hex.	1B	2D	n
Decimal	27	45	n

[Defined Area] n = 0, 1, 48, 49

[Initial Value] n = 0 (Underline cancelled)

[Function] Specifies underlining (2 dots).
Underlines are composed of 2 dot lines.
Underlines are not applied to horizontal tabs and to specified horizontal direction positions.
Underlines are expanded if the character expansion is specified. (When double high expansion is used, underlines are composed of 4 dots.)
Underlines are enabled for white/black inversion.
This command is enabled for ANK characters and Kanji characters.
IBM block ignores underlines.

n	Underline
0, 48	Cancels underline
1, 49	Specifies underline

ESC _ n

[Name] Specify/cancel upperline

[Code]

ASCII	ESC	_	n
Hex.	1B	5F	n
Decimal	27	95	n

[Defined Area] n = 0, 1, 48, 49

[Initial Value] n = 0 (Upperline cancelled)

[Function] Specifies upperlining (2 dots).
Upperlines are composed of 2 dot lines.
Upperlines are not applied to horizontal tabs and to specified horizontal direction positions.
Upperlines are expanded if the character expansion is specified. (When double high expansion is used, upperlines are composed of 4 dots.)
Upperlines are enabled for white/black inversion.
This command is enabled for ANK characters and Kanji characters.
IBM block ignores upperlines.

n	Upperline
0, 48	Cancels upperline
1, 49	Specifies upperline

ESC 4

[Name] Select white/black inverted printing

[Code]

ASCII	ESC	4
Hex.	1B	34
Decimal	27	52

[Defined Area] - - -

[Initial Value] White/black inversion cancelled

[Function] Specifies white/black inversion for ANK characters and Kanji characters.
IBM block ignores white/black inversion.

ESC 5

[Name] Cancel white/black inversion

[Code]

ASCII	ESC	5
Hex.	1B	35
Decimal	27	53

[Defined Area] - - -

[Initial Value] White/black inversion cancelled

[Function] Cancels white/black inversion for ANK characters and Kanji characters.

SI

[Name] Select upside-down printing
[Code] ASCII SI
Hex. 0F
Decimal 15

[Defined Area] - - -
[Initial Value] Upside-down cancelled
[Function] Specifies upside-down printing
This command is enabled only when at the top of the line.
Upside down and right-side up characters cannot both exist in the same line.
This command is enabled for following.
• ANK characters
• Kanji characters
• Bit images
• Logos
• Bar codes

DC2

[Name] Cancel upside-down printing
[Code] ASCII DC2
Hex. 12
Decimal 18

[Defined Area] - - -
[Initial Value] Upside-down printing cancelled
[Function] Cancels upside-down printing
This command is enabled only when at the top of the line.

3.3.4. Line Spacing

LF

[Name] Line feed
[Code] ASCII LF
Hex. 0A
Decimal 10

[Defined Area] - - -
[Initial Value] - - -
[Function] Feeds the currently specified amount of paper.
If print data exists in the line buffer, it prints that data.
The initial value for the amount of paper is set according to the memory switch settings.

CR

[Name] Carriage return (line feed)
[Code] ASCII CR
Hex. 0D
Decimal 13

[Defined Area] - - -
[Initial Value] - - -
[Function] When the CR code is enabled, the CR code functions in the same way as the LF code.
If the CR code is disabled, it ignores 1 byte.
Enabling and disabling the CR code is done using the memory switch settings.

ESC a n

[Name] Feed paper n lines

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

[Defined Area] $1 \leqq n \leqq 127$
[Initial Value] - - -
[Function] Executes a paper feed for (the currently specified line feed amount x n). If print data exists in the line buffer, it prints that data.
The initial value for the amount of paper is set according to the memory switch settings.

ESC z n

[Name] Select line feed amount

[Code]

ASCII	ESC	z	n
Hex.	1B	7A	n
Decimal	27	122	n

[Defined Area] n = 1, 49

[Initial Value] Memory switch setting

[Function] Specifies the line feed amount.

n	Line feed amount
1, 49	Specifies 4 mm line feed amount

ESC 0

[Name] Specify line spacing to 3 mm

[Code]

ASCII	ESC	0
Hex.	1B	30
Decimal	27	48

[Defined Area] - - -

[Initial Value] Memory switch setting

[Function] Specifies the line feed amount to 3 mm.

ESC J n

[Name] n/4 mm line feed

[Code]				
	ASCII	ESC	J	n
	Hex.	1B	4A	n
	Decimal	27	74	n

[Defined Area] 1≤n≤255

[Initial Value] - - -

[Function] Executes a n/4mm paper feed.
If print data exists in the line buffer, it prints that data.
Using this command will intermittently feed paper, therefore, it is normally recommended that this command not be used.

ESC I n

[Name] n/8mm line feed

[Code]				
	ASCII	ESC	I	n
	Hex.	1B	49	n
	Decimal	27	73	n

[Defined Area] 1≤n≤255

[Initial Value] - - -

[Function] Executes a n/8mm paper feed.
If print data exists in the line buffer, it prints that data.
Using this command will intermittently feed paper, therefore, it is normally recommended that this command not be used.

3.3.5. Page Control Commands

FF

[Name] Form feed
[Code] ASCII FF
Hex. 0C
Decimal 12

[Defined Area] - - -
[Initial Value] - - -
[Function] Executes a form feed.
If the current position is at the top of the page, it form feeds to the top of the next page.
If there is data existing in the line buffer when executing a form feed, it prints that data, then executes the form feed.
However, by printing data remaining in the buffer, and moving to the top of the next page, a form feed is considered to have been executed, so form feed is not performed.

ESC C n

[Name] Set page length to n lines
[Code] ASCII ESC C n
Hex. 1B 43 n
Decimal 27 67 n

[Defined Area] $1 \leq n \leq 127$
[Initial Value] (Form feed amount initial value x 42)
[Function] The position whereat this command is processed is considered the top of the page and sets the page length to (current form feed amount x n).
This command cancels the bottom margin setting when setting page length.
The page length set using this command is unaffected by changing the form feed amount later.
Moving to the top of the page is performed using the following commands.

- Form feed command (FF): Executes a form feed.
- Cutter command (ESC d n): Sets cutter position at top of page.
- Raster command (ESC * r B): Sets top of page when quitting raster mode.
- Error cancel operations: Sets position when quitting error cancellation operations at top of page.

ESC C 0 n

[Name] Set page length to n x 24 mm units

[Code]

ASCII	ESC	C	0	n
Hex.	1B	43	00	n
Decimal	27	67	0	n

[Defined Area] 1≦n≦22

[Initial Value] (Form feed amount initial value x 42)

[Function] The position whereat this command is processed is considered the top of the page and sets the page length to (n x 24 mm).

This command cancels the bottom margin setting when setting page length.

The page length set using this command is unaffected by changing the form feed amount later.

Moving to the top of the page is performed using the following commands.

- Form feed command (FF): Executes a form feed.
- Cutter command (ESC d n): Sets cutter position at top of page.
- Raster command (ESC * r B): Sets top of page when quitting raster mode.
- Error cancel operations: Sets position when quitting error cancellation operations at top of page.

VT

[Name] Feed paper to vertical tab position
[Code] ASCII VT
Hex. 0B
Decimal 11

[Defined Area] - - -
[Initial Value] - - -
[Function] Feeds paper to the next vertical tab position.
This command is ignored if there are no tabs set.
If a vertical tab is set, and the current position is the same as the vertical tab position, or if it is below that position, it feeds paper to the top of the next page.
If data exists in the line buffer when feeing paper to the vertical tab position, it executes the paper feed to the vertical tab position after printing that data. However, if moved to the vertical tab position by printing data remaining in the buffer, the move to the vertical tab position is considered to have been executed, so a move to the next vertical tab position is not performed.
There is no initial value for the vertical tab.

ESC B n1 n2...nk NUL

[Name] Set vertical tab position

[Code]

ASCII	ESC	B	n1	n2	...	nk	NUL
Hex.	1B	42	n1	n2	...	nk	00
Decimal	27	66	n1	n2	...	nk	0

[Defined Area] 1≦n≦255
0≦k≦16

[Initial Value] - - -

[Function] Sets the vertical tab to the (current form feed amount x n) position.
All other vertical tabs set before setting the vertical tab using this command are cancelled
A maximum of 16 vertical tabs can be set. However, the tab position must satisfy the condition of 1≦n1≦n2...□≦nk. When receiving such illegal codes, tabs up to the illegal code are set, but those after the illegal code are discarded up to the NUL code so illegal code tab are not set.
The vertical tab set using this command is unaffected by changing the form feed amount later.
Vertical tabs set using the ESC B NUL command are cleared.
There is no initial value for the vertical tab.

ESC B NUL

[Name] Clear vertical tab position

[Code]

ASCII	ESC	B	NUL
Hex.	1B	42	00
Decimal	27	66	0

[Defined Area] - - -

[Initial Value] - - -

[Function] Clears the currently set vertical tab.

3.3.6. Horizontal Direction Printing Position

ESC l n

[Name] Set left margin

[Code]

ASCII	ESC	l	n
Hex.	1B	6C	n
Decimal	27	108	n

[Defined Area] 0≦n≦255

[Initial Value] n = 0

[Function] Uses the left edge as a standard to set the left margin as (current ANK character pitch x n).
Character pitch includes the space between characters and expansion settings are enabled.
The left margin set using this command is unaffected by changing the character pitch.
This command is ignored if settings are for a printing region less than 36 mm.

Specification A
Setting this command partway will take affect from the next line.
Specification B
This command is enabled only when at the top of the line.

ESC Q n

[Name] Set right margin

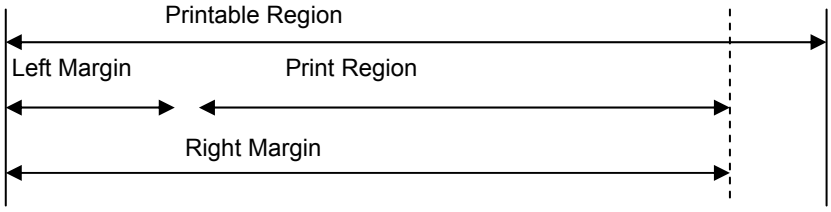
[Code]				
	ASCII	ESC	Q	n
	Hex.	1B	51	n
	Decimal	27	81	n

[Defined Area] 0≤n≤255

[Initial Value] - - -

[Function] Uses the left edge as a standard to set the print region as (current ANK character pitch x n).
Character pitch includes the space between characters and expansion settings are enabled.
The right margin set using this command is unaffected by changing the character pitch.
This command is ignored if settings are for a printing region less than 36 mm.

Specification A
Setting this command partway will take affect from the next line.
Specification B
This command is enabled only when at the top of the line.



HT

[Name] Move horizontal tab

[Code]		
	ASCII	HT
	Hex.	09
	Decimal	9

[Defined Area] - - -

[Initial Value] - - -

[Function] Move print position to next horizontal tab position.
This command is ignored with under the following conditions.
• When there is no horizontal tab set.
• When the current position is the same as the furthest right horizontal tab position or to the right of it.
There is no initial value for the horizontal tab.

ESC D n1 n2...nk NUL

[Name] Set horizontal tab

[Code]								
	ASCII	ESC	D	n1	n2	...	nk	NUL
	Hex.	1B	44	n1	n2	...	nk	00
	Decimal	27	68	n1	n2	...	nk	0

[Defined Area] 1≦n≦255
0≦k≦16

[Initial Value] - - -

[Function] Uses the left edge as a standard to set the horizontal tab to the position of (current ANK character pitch x n).
The horizontal tab reference point is the right edge of the paper, regardless of the left margin.
ANK character pitch includes the right space and expansion settings are enabled.
All other horizontal tabs set before setting the horizontal tab using this command are cancelled
A maximum of 16 horizontal tabs can be set.
However, the tab position must satisfy the following conditions.
If the following conditions are not met, data up to the NUL code is discarded.
Normal tabs that meet the conditions below are set and tabs after errors occur are not set.
• 1<n1 < n2... < nk
• nk ≦ Printable region
The horizontal tab set using this command is unaffected by changing the character pitch.
Horizontal tabs set using the ESC D NUL command are cleared.
There is no initial value for the horizontal tab.

ESC D NUL

[Name] Clear horizontal tab

[Code]				
	ASCII	ESC	D	NUL
	Hex.	1B	44	00
	Decimal	27	68	0

[Defined Area] - - -

[Initial Value] - - -

[Function] Clears the currently set horizontal tab.

ESC GS A n1 n2

[Name] Move absolute position

[Code]						
	ASCII	ESC	GS	A	n1	n2
	Hex.	1B	1D	41	n1	n2
	Decimal	27	29	65	n1	n2

[Defined Area] 0≤n1≤255
0≤n2≤255

[Initial Value] - - -

[Function] Moves the printing position from the left margin to the (n1 + n2 x 256) position.
This command is ignored if the print region is exceeded.

ESC GS R n1 n2

[Name] Move relative position

[Code]						
	ASCII	ESC	GS	R	n1	n2
	Hex.	1B	1D	52	n1	n2
	Decimal	27	29	82	n1	n2

[Defined Area] 0≤n1≤255
0≤n2≤255

[Initial Value] - - -

[Function] Moves the printing position from the current position to the (n1 + n2 x 256) position.
This command is ignored if the print region is exceeded.
When (n1 + n2 x 256) ≥ 32768, it moves {65536 – (n1 + n2 x 256)} dots in the left direction.
When (n1 + n2 x 256) < 32768, it moves (n1 + n2 x 256)} dots in the right direction.

ESC GS a n

[Name] Specify position alignment

[Code]

ASCII	ESC	GS	a	n
Hex.	1B	1D	61	n
Decimal	27	29	97	n

[Defined Area] 0≦n≦2
48≦n≦50 (”0”≦n≦”2”)

[Initial Value] n = 0

[Function] Specifies the alignment position in the printing region that has been set.

n	Position alignment
0, 48	Left alignment
1, 49	Center alignment
2, 50	Right alignment

3.3.7. Download

ESC & c1 c2 n d1...d48

[Name] Register 12 x 24 dot font download characters

[Code]									
	ASCII	ESC	&	c1	c2	n	d1	...	d48
	Hex.	1B	26	c1	c2	n	d1	...	d48
	Decimal	27	38	c1	c2	n	d1	...	d48

[Defined Area] c1 = 1, 49
c2 = 1, 49
32≤n≤127
0≤d≤255

[Initial Value] - - -

[Function] Registers 12 x 24 dot font download characters to the nth address.
Download characters can be registered to <20>H to <7F>H.
If one has been already registered to an address, it is overwritten.
When parameters c1 and c2 and n are outside of the defined area, subsequent data is handled as normal data.

Horizontal 12 Dots

Vertical 24 Dots

	bit7	bit6	bit5	bit4	bit3	bit2	bit1	Bit0		bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
d1	●	●	●	●	●	●	●	●	d2	●	●	●	●	○	○	○	○
d3	●	●	●	●	●	●	●	●	d4	●	●	●	●	○	○	○	○
d5	●	●	●	●	●	●	●	●	d6	●	●	●	●	○	○	○	○
d7	●	●	●	●	●	●	●	●	d8	●	●	●	●	○	○	○	○
d9	●	●	●	●	●	●	●	●	d10	●	●	●	●	○	○	○	○
d11	●	●	●	●	●	●	●	●	d12	●	●	●	●	○	○	○	○
d13	●	●	●	●	●	●	●	●	d14	●	●	●	●	○	○	○	○
d15	●	●	●	●	●	●	●	●	d16	●	●	●	●	○	○	○	○
d17	●	●	●	●	●	●	●	●	d18	●	●	●	●	○	○	○	○
d19	●	●	●	●	●	●	●	●	d20	●	●	●	●	○	○	○	○
d21	●	●	●	●	●	●	●	●	d22	●	●	●	●	○	○	○	○
d23	●	●	●	●	●	●	●	●	d24	●	●	●	●	○	○	○	○
d25	●	●	●	●	●	●	●	●	d26	●	●	●	●	○	○	○	○
d27	●	●	●	●	●	●	●	●	d28	●	●	●	●	○	○	○	○
d29	●	●	●	●	●	●	●	●	d30	●	●	●	●	○	○	○	○
d31	●	●	●	●	●	●	●	●	d32	●	●	●	●	○	○	○	○
d33	●	●	●	●	●	●	●	●	d34	●	●	●	●	○	○	○	○
d35	●	●	●	●	●	●	●	●	d36	●	●	●	●	○	○	○	○
d37	●	●	●	●	●	●	●	●	d38	●	●	●	●	○	○	○	○
d39	●	●	●	●	●	●	●	●	d40	●	●	●	●	○	○	○	○
d41	●	●	●	●	●	●	●	●	d42	●	●	●	●	○	○	○	○
d43	●	●	●	●	●	●	●	●	d44	●	●	●	●	○	○	○	○
d45	●	●	●	●	●	●	●	●	d46	●	●	●	●	○	○	○	○
d47	●	●	●	●	●	●	●	●	d48	●	●	●	●	○	○	○	○

●: Font data ○: Invalid data

ESC & c1 c2 n

[Name] Delete 12 x 24 dot font download characters

[Code]						
	ASCII	ESC	&	c1	c2	n
	Hex.	1B	26	c1	c2	n
	Decimal	27	38	c1	c2	n

[Defined Area] c1 = 1, 49
c2 = 0, 48
32≤n≤127

[Initial Value] - - -

[Function] Deletes 12 x 24 dot font download characters registered to the nth address.

ESC % n

[Name] Specifies/cancels ANK download characters

[Code]				
	ASCII	ESC	%	n
	Hex.	1B	25	n
	Decimal	27	37	n

[Defined Area] n=0, 1, 48, 49

[Initial Value] ANK download characters cancelled

[Function] Specifies/cancels ANK download characters

n	Download characters
0, 48	Cancels ANK download characters
1, 49	Specifies ANK download characters

<Print example of ANK download characters>
1. ANK download character register (ESC & c1 c2 n d1…d48)
2. Specify ANK download characters (ESC % n (n = 1))
3. Prints ANK download characters

3.3.8. Bit Image Graphics

ESC K n1 n2 d1...dk

[Name] Standard density bit image

[Code]

ASCII	ESC	K	n1	n2	d1	...	dk
Hex.	1B	4B	n1	n2	d1	...	dk
Decimal	27	75	n1	n2	d1	...	dk

[Defined Area] $1 \leq \{(n1 + n2 \times 256) \times 3\} \leq$ printable region

$k = (n1 + n2 \times 256)$

$0 \leq d \leq 255$

[Initial Value] - - -

[Function] Prints bit images using 3 dots wide and 3 dots high per 1 dot of input data.

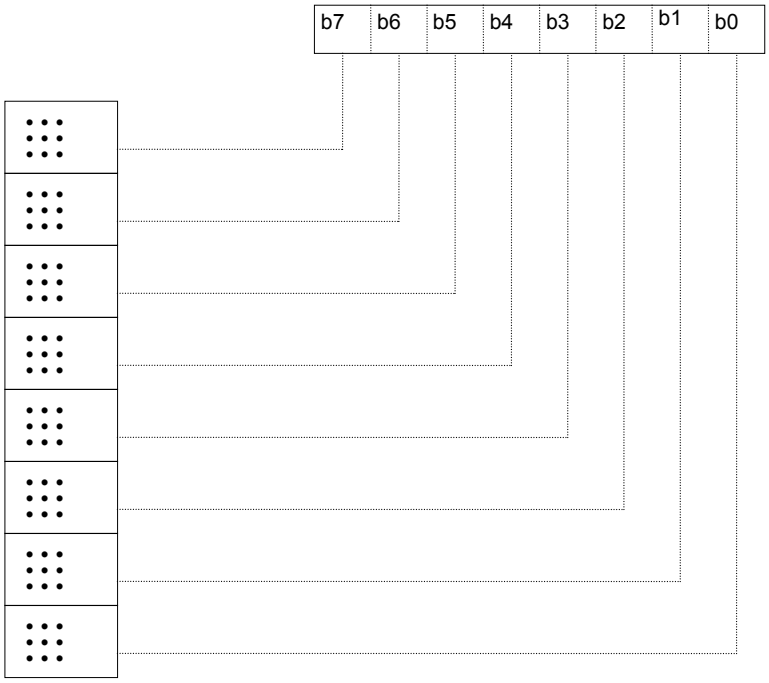
The following shows the data processing in this command.

• When {(n1 + n2 x 256) x 3} exceeds the printable region, data after d1 is handled as normal data.

• When {(n1 + n2 x 256) x 3} exceeds the printable region that is currently set, only the data in the printing region is printed.

At this time, all data for the print region is discarded.

• If the current position already exceeds the print region, this command discards all data.



ESC L n1 n2 d1...dk

[Name] Standard density bit image

[Code]

ASCII	ESC	L	n1	n2	d1	...	dk
Hex.	1B	4C	n1	n2	d1	...	dk
Decimal	27	76	n1	n2	d1	...	dk

[Defined Area] $1 \leq (n1 + n2 \times 256) \leq$ printable region

$k = (n1 + n2 \times 256)$

$0 \leq d \leq 255$

[Initial Value] - - -

[Function] Prints bit images using 1 dot wide and 3 dots high per 1 dot of input data.

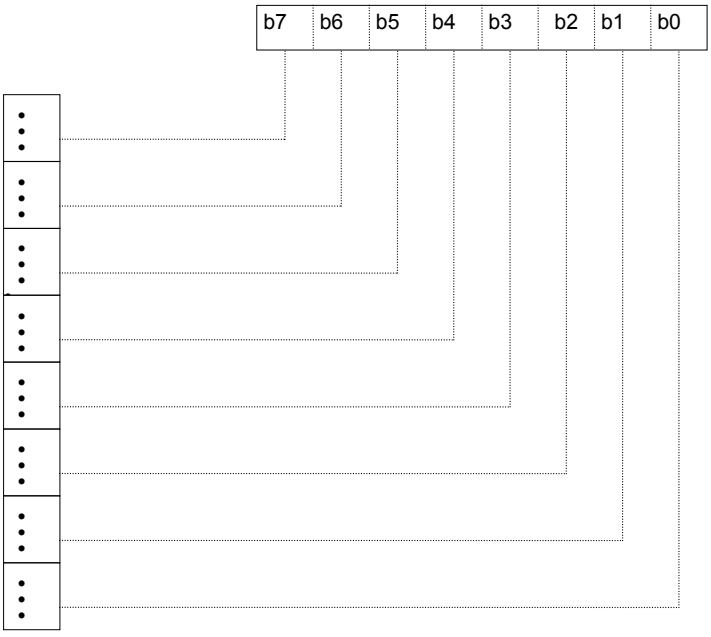
The following shows the data processing in this command.

• When (n1 + n2 x 256) exceeds the printable region, data after d1 is handled as normal data.

• When (n1 + n2 x 256) exceeds the printable region that is currently set, only the data in the printing region is printed.

At this time, all data for the print region is discarded.

• If the current position already exceeds the print region, this command discards all data.



ESC k n1 n2 d1...dk

[Name] Fine density bit image

[Code]

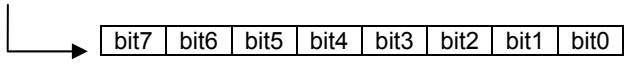
ASCII	ESC	k	n1	n2	d1	...	dk
Hex.	1B	6B	n1	n2	d1	...	dk
Decimal	27	107	n1	n2	d1	...	dk

[Defined Area] n2 = 0
1 ≦ {(n1 + n2 x 256) x 8} ≦ printable region
k = {(n1 + n2 x 256) x 24}
0≦d≦255

[Initial Value] - - -

[Function] Prints bit images using 1 dot wide and 1 dots high per 1 dot of input data.
The following shows the data processing in this command.
• When {(n1 + n2 x 256) x 8} exceeds the printable region, data after d1 is handled as normal data.
• When {(n1 + n2 x 256) x 8} exceeds the printable region that is currently set, only the data in the printing region is printed.
At this time, all data for the print region is discarded.
• If the current position already exceeds the print region, this command discards all data.

	X Bytes = (n1 + n2 x 256)			
24 Dots				
	d1	d2	• • • • • • •	dX
	dX x 1 + 1	dX x 1 + 2	• • • • • • •	dX x 2
	dX x 2 + 1	dX x 2 + 2	• • • • • • •	dX x 3
	•	•		•
	•	•		•
	•	•		•
	•	•		•
	dX x 23 + 1	dX x 23 + 2	• • • • • • •	dX x 24



ESC X n1 n2 d1...dk

[Name] Fine density bit image (Compatible with 24 bit wire dots)

[Code]								
	ASCII	ESC	X	n1	n2	d1	...	dk
	Hex.	1B	58	n1	n2	d1	...	dk
	Decimal	27	88	n1	n2	d1	...	dk

[Defined Area] $1 \leq (n1 + n2 \times 256) \leq$ printable region

$k = \{(n1 + n2 \times 256) \times 3\}$

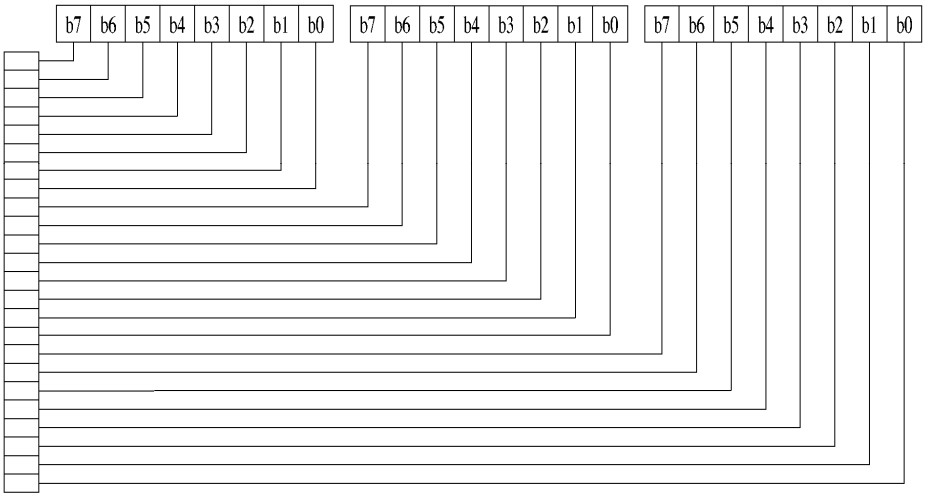
$0 \leq d \leq 255$

[Initial Value] - - -

[Function] Prints input bit images with 8 dots/mm resolution for both horizontal and vertical.

The following shows the data processing in this command.

- When {(n1 + n2 x 256) x 3} exceeds the printable region, data after d1 is handled as normal data.
- When {(n1 + n2 x 256) x 3} exceeds the printable region that is currently set, only the data in the printing region is printed.
  At this time, all data for the print region is discarded.
- If the current position already exceeds the print region, this command discards all data.



3.3.9. Logo

ESC FS q n [x11 x12 y11 y12 d1...dk]1...[xn1 xn2 yn1 yn2 d1...dk]n

[Name] Register logo

[Code]

ASCII	ESC	FS	q	n	[x11	x12	y11	y12	d1	... dk]1	...	[xn1	xn2	yn1	yn2	d1	... dk]n
Hex.	1B	1C	71	n	[x11	x12	y11	y12	d1	... dk]1	...	[xn1	xn2	yn1	yn2	d1	... dk]n
Decimal	27	28	113	n	[x11	x12	y11	y12	d1	... dk]1	...	[xn1	xn2	yn1	yn2	d1	... dk]n

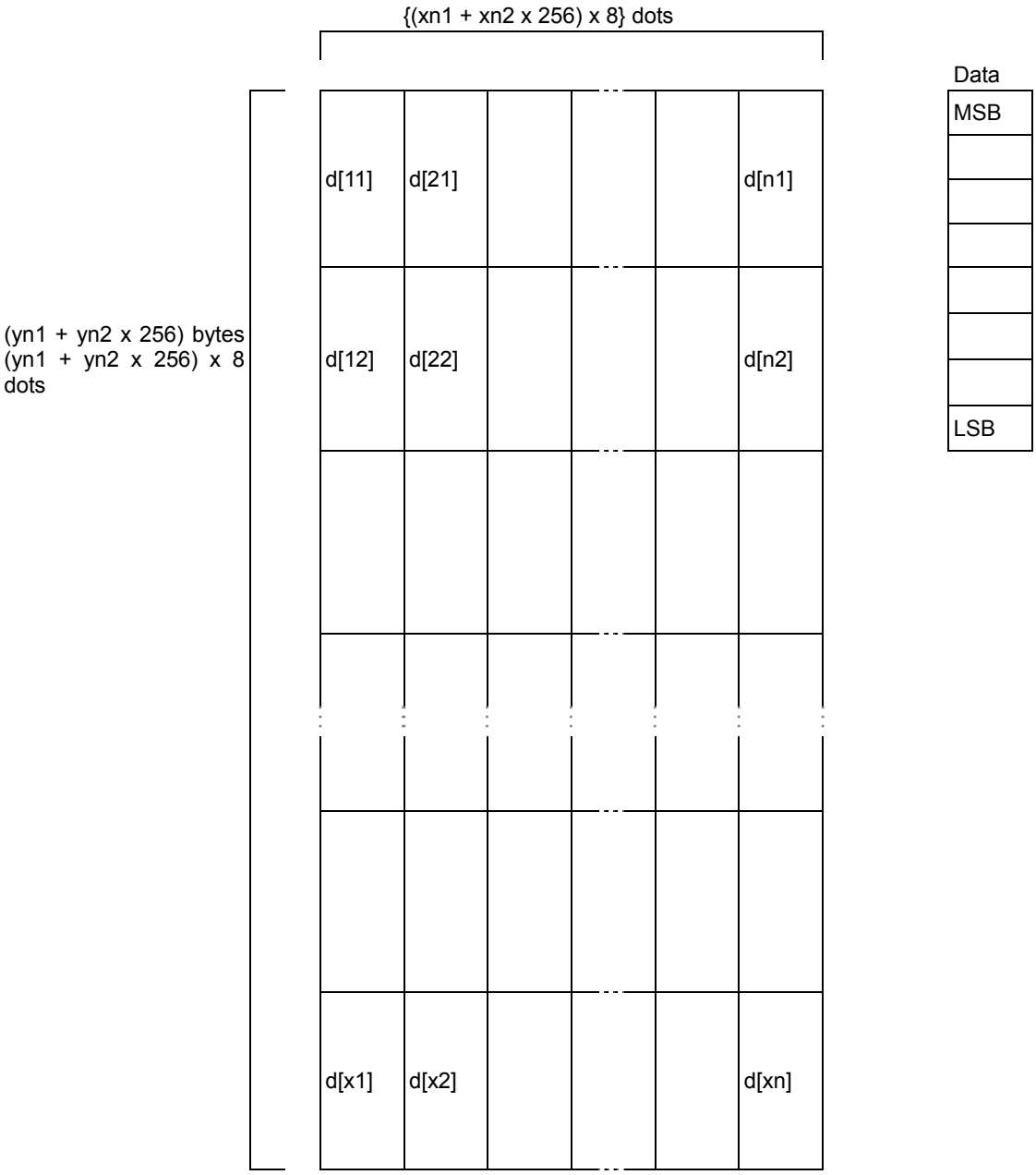
[Defined Area]
1≤n≤255
0≤xn1≤255, 0≤xn2≤3
1≤(xn1 + xn2 x 256)≤1023
0≤yn1≤255, 0≤yn2≤1
1≤yn1 + yn2 x 256)≤288
0≤d≤255
k = {(xn1 + xn2 x 256) x (yn1 + yn2 x 256) x 8}

[Initial Value] - - -

[Function]
Parameter details
- n: Specifies registered logo count
- xn1, xn2: Horizontal size of registered logo {(xn1 + xn2 x 256) x 8} dots
- yn1, yn2: Vertical size of registered logo {(yn1 + yn2 x 256) x 8} dots
- d: Registered logo data
- k: Logo data count

This command should be specified at the top of the line.
When the first parameter is determined to be free of error, the printer starts processing this command.
When logo register processing starts, all previously defined data is deleted.
(It is not possible to reregister a portion of a plurality of defined logo data.)
Logo registration numbers are defined in rising order from 1.
If the defined area specified by the parameter is not empty, or if there is an error in the parameter specification, register processing is aborted. (The pre-registered and complete data is effective.)
The printer should be initialized if logo registration is completed or register processing is aborted.
If an error occurs while performing register processing (the time from when the first parameter is OK until the printer initialization is completed after registering a logo), error processing, mechanical operation and status processing cannot be performed.
The relationships between input data and the actual print are shown on the next page.

Relationships of logo and registered data
xn = xn1 + xn2 x 256, yn = yn1 + yn2 x 256



ESC FS p n m

[Name] Print logo

[Code]

ASCII	ESC	FS	p	n	m
Hex.	1B	1C	70	n	m
Decimal	27	28	112	n	m

[Defined Area] 1≦n≦255
0≦m≦3
48≦m≦51 (”0”≦m≦”3”)

[Initial Value] - - -

[Function] Prints the logo of registration number n registered using the logo registration command (ESC FS q) according to the print mode m.

m	Logo print mode
0, 48	Normal mode
1, 49	Double wide mode
2, 50	Double high mode
3, 51	Double high/wide mode

If there is unprinted data in the line buffer, this command is executed after printing that data. Therefore, it is not possible to print with other data in the same line (characters, bit images, bar codes).
Form feed obeys the vertical print size of the logo.
If the logo horizontal print size exceeds the horizontal print region, the portion exceeding the area is not printed.
Logos are printed according to the following command settings.
• Left margin (ESC l n)
• Right margin (ESC Q n)
• Position alignment (ESC GS a n)
• Absolute position movement (ESC GS A n1 n2)
• Relative position movement (ESC GS R n1 n2)
• Upside-down printing (SI)

ESC RS L m

[Name] Spec. A Print logo in batch
Spec. B Batch control of registered logos

[Code]

ASCII	ESC	RS	L	m
Hex.	1B	1E	4C	m
Decimal	27	30	76	m

[Defined Area] Spec. A 0 ≦ m ≦ 3 48 ≦ m ≦ 51 (“0” ≦ m ≦ “3”)
Spec. B 0 ≦ m ≦ 3 48 ≦ m ≦ 51 (“0” ≦ m ≦ “3”),m=255

[Initial Value] - - -

[Function] Spec. A Prints all registered logos according to a print mode specified by m. Executes a printer reset after printing.
Spec. B Controls logos as specified by the parameter m.
After execution, this resets the printer.

Spec. A

m	Logo print mode
0, 48	Normal mode
1, 49	Double wide mode
2, 50	Double high mode
3, 51	Double high/wide mode

Spec. B

m	Logo Control Mode
0, 48	Normal mode Batch printing
1, 49	Double wide mode Batch printing
2, 50	Double high mode Batch printing
3, 51	Double high/wide mode Batch printing
255	Batch delete logos

3.3.10. Bar Code

ESC b n1 n2 n3 n4 d1...dk RS

[Name]

[Code]	ASCII	ESC	b	n1	n2	n3	n4	d1	...	dk	RS
	Hex.	1B	62	n1	n2	n3	n4	d1	...	dk	1E
	Decimal	27	98	n1	n2	n3	n4	d1	...	dk	30

[Defined Area] 0≦n1≦8, 48≦n1≦56 (”0□≦n1≦”8”)
1≦n2≦4, 49≦n2≦52 (”1”≦n2≦”4”)
1≦n4≦255
n3 (bar code mode), d (bar code data), k (bar code data count) definitions differ according to the type of bar code.

[Initial Value] - - -

[Function] Bar code printing is executed according to the following parameters.
If n1, n2, n3 and n4 are acquired and detected to be out of the defined area, data up to RS is discarded.

• n1 bar code type selection

n1	Bar code type
0, 48	UPC-E
1, 49	UPC-A
2, 50	JAN/EAN8
3, 51	JAN/EAN13
4, 52	Code39
5, 53	ITF
6, 54	Code128
7, 55	Code93
8, 56	NW-7

• n2 Under-bar character selection and added line feed selection

n2	Under-bar character selection and added line feed selection	
1, 49	No added under-bar characters	Executes line feed after printing a bar code
2, 50	Adds under-bar characters	Executes line feed after printing a bar code
3, 51	No added under-bar characters	Does not execute line feed after printing a bar code
4, 52	Adds under-bar characters	Does not execute line feed after printing a bar code

• n3 bar code mode selection

n3	Bar code type		
	UPC-E, UPC-A, JAN/EAN8 JAN/EAN13, Code128, Code93	Code39, NW-7	ITF
1, 49	Minimum module 2 dots	Narrow: Wide = 2:6 dots	Narrow: Wide = 2:5 dots
2, 50	Minimum module 3 dots	Narrow: Wide = 3:9 dots	Narrow: Wide = 4:10 dots
3, 51	Minimum module 4 dots	Narrow: Wide = 4:12 dots	Narrow: Wide = 6:15 dots
4, 52	- - -	Narrow: Wide = 2:5 dots	Narrow: Wide = 2:4 dots
5, 53	- - -	Narrow: Wide = 3:8 dots	Narrow: Wide = 4:8 dots
6, 54	- - -	Narrow: Wide = 4:10 dots	Narrow: Wide = 6:12 dots
7, 55	- - -	Narrow: Wide = 2:4 dots	Narrow: Wide = 2:6 dots
8, 56	- - -	Narrow: Wide = 3:6 dots	Narrow: Wide = 3:9 dots
9, 57	- - -	Narrow: Wide = 4:8 dots	Narrow: Wide = 4:12 dots

• n4 bar code height (dot count)
Specification A
When the height of the bar code is more than the form feed amount, the form feed amount is automatically doubled.
Specification B
Form feed at (Bar code height + underbar characters)

• k (Bar code data count), d (Bar code data)

Bar code type	Defined area of k	Defined area of d
UPC-E	11≦k≦12	48≦d≦57 (”0”≦d≦”9”)
UPC-A	11≦k≦12	48≦d≦57 (”0”≦d≦”9”)
JAN/EAN8	7≦k≦8	48≦d≦57 (”0”≦d≦”9”)
JAN/EAN13	12≦k≦13	48≦d≦57 (”0”≦d≦”9”)
Code39	1≦k	48≦d≦57 (”0”≦d≦”9”) 65≦d≦90 (”A”≦d≦”Z”) 32, 36, 37, 43, 45, 46, 47 (SP, ”$”, ”%”, ”+”, ”-“, ”.”, ”/”)
ITF	1≦k When an odd number: 0 is automatically applied to the top.	48≦d≦57 (“0”□≦d≦”9”)
Code128	1≦k	0≦d≦127
Code93	1≦k	0≦d≦127
NW-7	1≦k	48≦d≦57 (”0”≦d≦”9”) 65≦d≦68 (”A”≦d≦”D”) 36, 43, 45, 46, 47, 58 (”$”, ”+”, ”-“, ”.”, ”/”, ”:”) 97, 98, 99, 100 (”a”, ”b”, ”c”, ”d”)

• UPC – E: k = 11 (or 12)
The 12th check digit is automatically applied, so it is specified and ignored.
The command is ignored for data that cannot be shortened.
Automatically converts data to shortened form.
• UPC – A: k = 11 (or 12)
The 12th check digit is automatically applied, so it is specified and ignored.
• JAN/EAN – 8: k = 7 (or 8)
The 8th check digit is automatically applied, so it is specified and ignored.
• JAN/EAN -13: k = 12 (or 13)
The 13th check digit cannot be automatically applied, so it is specified and ignored.
• CODE 39: k is freely set, and maximum value differs according to the mode.
Start/stop code (“*”) is automatically applied.
• ITF: k is freely set, and maximum value differs according to the mode.
If data is oddly numbered, a 0 is applied to the top.
• CODE 128: k is freely set, and maximum value differs according to the mode and the print character type.
The check character is automatically applied.
• CODE 93: k is freely set, and maximum value differs according to the mode and the print character type.
The check character (“□”) is automatically applied.
• NW7: k is freely set, and maximum value differs according to the mode and the print character type.
Start/stop codes included in the data (not automatically applied).

3.3.11. Cutter Control

ESC d n

[Name] Auto-cutter

[Code]

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

[Defined Area] 0≦d≦3
48≦d≦51 (”0”≦d≦”3”)

[Initial Value] - - -

[Function] Executes the auto-cutter.
After auto-cutter is executed, the printer considers that to be the top of the page.

n	Auto cutter
0, 48	Full cut at the current position. Print data in line buffer is printed before a full cut. This command is ignored if the printer is not equipped with an auto-cutter.
1, 49	Partial cut at the current position. Print data in line buffer is printed before a partial cut. This command is ignored if the printer is not equipped with an auto-cutter.
2, 50	Paper is fed to cutting position, then a full cut. Print data in line buffer is printed before the operation described above. This command is ignored if the printer is not equipped with an auto-cutter.
3, 51	Paper is fed to cutting position, then a partial cut. Print data in line buffer is printed before the operation described above. This command is ignored if the printer is not equipped with an auto-cutter.

(*) The auto-cutter function operates in the following ways on models that only have a full cut or a partial cut.

- Models that perform only a full cut. Executes a full cut when there are instructions calling for a partial cut.
- Models that perform only a partial cut. Executes a partial cut when there are for instructions calling for a full cut.

(*) When connected with a presenter, executes a full cut when instructed for a partial cut.

3.3.12. External Device Drive

ESC BEL n1 n2

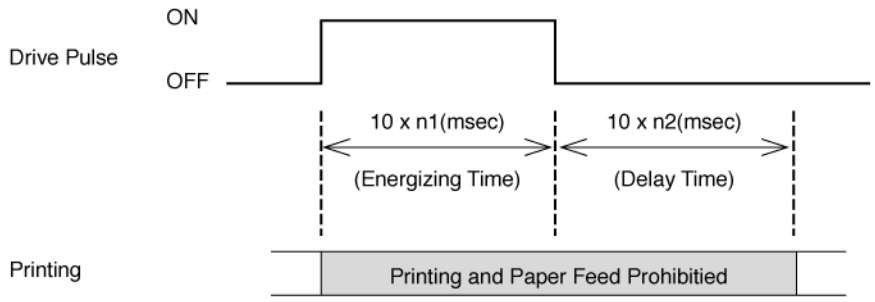
[Name] Set external drive device 1 pulse width

[Code]					
	ASCII	ESC	BEL	n1	n2
	Hex.	1B	07	n1	n2
	Decimal	27	7	n1	n2

[Defined Area] 1≦n1≦127
1≦n2≦127

[Initial Value] n1 = 20 (Energizing time: 200 msec)
n2 = 20 (Delay time: 200 msec)

[Function] Sets the energizing and delay times for drive of the external device.
• Energizing time = 10 x n1 (ms)
• Delay time = 10 x n2 (ms)



BEL

[Name] External device 1 drive instruction
[Code] ASCII BEL
Hex. 07
Decimal 7

[Defined Area] - - -
[Initial Value] - - -
[Function] Executes the external device drive conditions set according to the command to set the external drive device pulse width (ESC BEL n1 n2).
As with other commands, it temporarily stores data in the data buffer, then executes in the order received.
External device 1 and external device 2 cannot be executed simultaneously.

FS

[Name] External device 1 drive instruction
[Code] ASCII FS
Hex. 1C
Decimal 28

[Defined Area] - - -
[Initial Value] - - -
[Function] Executes the external device drive conditions set according to the command to set the external drive device pulse width (ESC BEL n1 n2).
As with other commands, it temporarily stores data in the data buffer, then executes in the order received.
External device 1 and external device 2 cannot be executed simultaneously.

SUB

[Name] External device 2 drive instruction
[Code] ASCII SUB
Hex. 1A
Decimal 26

[Defined Area] - - -
[Initial Value] - - -

[Function] Drives external device 2.
The energizing time and delay time for the external device 2 are fixed at 200 ms each.
As with other commands, it temporarily stores data in the data buffer, then executes in the order received.
External device 1 and external device 2 cannot be executed simultaneously.

EM

[Name] External device 2 drive instruction
[Code] ASCII EM
Hex. 19
Decimal 25

[Defined Area] - - -
[Initial Value] - - -
[Function] Drives external device 2.
The energizing time and delay time for the external device 2 are fixed at 200 ms each.
As with other commands, it temporarily stores data in the data buffer, then executes in the order received.
External device 1 and external device 2 cannot be executed simultaneously.

ESC GS BEL m t1 t2

[Name] Ring buzzer

[Code]

ASCII	ESC	GS	BEL	m	t1	t2
Hex.	1B	1D	07	m	t1	t2
Decimal	27	29	7	m	t1	t2

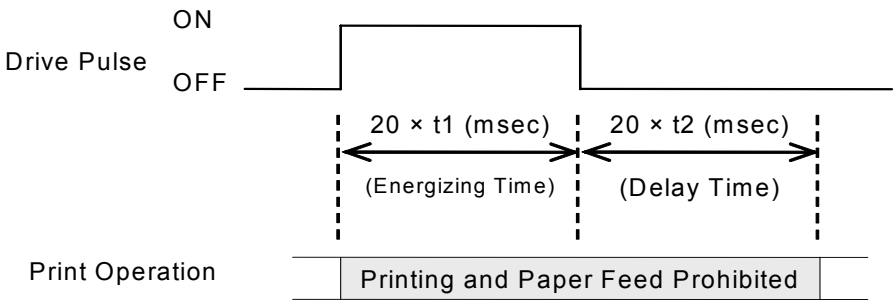
[Defined Area] 1≦m≦2, 49≦m≦50 (”1”≦m≦“2”)
1≦t1≦255
1≦t2≦255

[Initial Value] - - -

[Function] Rings the buzzer.
m specifies the drive terminal of the buzzer.

m	Buzzer Drive Terminal
1, 49	Buzzer Drive Terminal 1
2, 50	Buzzer Drive Terminal 2

t1 specifies energizing time; t2 specifies the delay time.
• Energizing time = 20 msec x t1
• Delay time = 20 msec x t2
The buzzer will not ring while printing.
Use of this command other than for ringing the buzzer is prohibited.
(There is the possibility of damage if using this command for driving the drawer on models that support external device terminals.)



ESC GS EM DC1 m n1 n2

[Name] External buzzer drive pulse condition settings

[Code]

ASCII	ESC	GS	EM	DC1	m	n1	n2
Hex.	1B	1D	19	11	m	n1	n2
Decimal	27	29	25	17	m	n1	n2

[Defined Area] 1 ≦ m ≦ 2 49 ≦ m ≦ 50
0 ≦ n1 ≦ 255
0 ≦ n2 ≦ 255

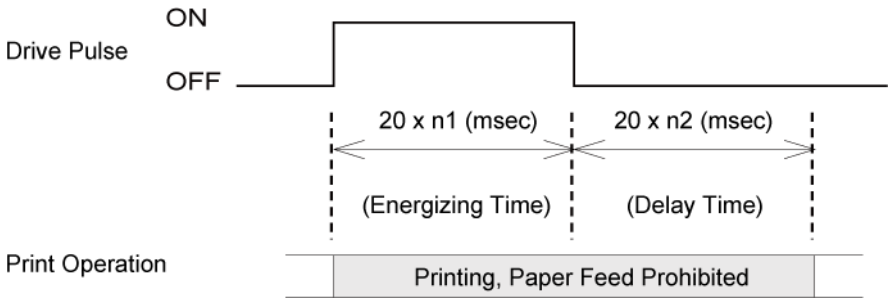
[Initial Value] n1=0 n2=0

[Function] Sets external buzzer derive pulse condition.
m specifies the buzzer drive terminal to perform the condition settings.

m	Buzzer Drive Terminal
1, 49	Buzzer Drive Terminal 1
2, 50	Buzzer Drive Terminal 2

n1 specifies the energizing time; n2 specifies the delay time.

- Energizing time: =20msec x n1
- Delay time: =20msec x n2



Drives for external buzzers set using this command is performed by <ESC> <GS> <EM> <DC2> m n1 n2.
The setting value is not initialized by <ESC> “@” and <CAN>.

ESC GS EM DC2 m n1 n2

[Name] External buzzer drive execution

[Code]

	ESC	GS	EM	DC2	m	n1	n2
ASCII							
Hex.	1B	1D	19	12	m	n1	n2
Decimal	27	29	25	18	m	n1	n2

[Defined Area] $1 \leqq m \leqq 2$ $49 \leqq m \leqq 50$

$1 \leqq n1 \leqq 20$

n2=0

[Initial Value] ---

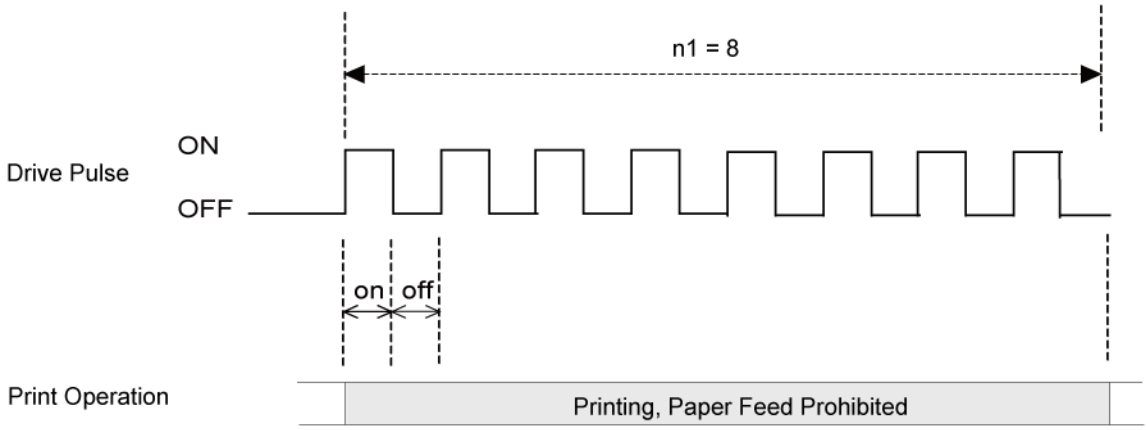
[Function] Repeatedly drives the buzzer according to the ON/OFF conditions set by the external buzzer drive pulse conditions command <ESC> <GS> <EM> <DC1> m t1 t2.

m specifies the buzzer drive terminal to drive.

m	Buzzer Drive Terminal
1, 49	Buzzer Drive Terminal 1
2, 50	Buzzer Drive Terminal 2

Specifies the number of repetitions of the buzzer drive with (n2 x 256 + n1).
The buzzer will not ring while printing.
This command is prohibited for uses other than to ring the buzzer.
(If this command is used to drive the cash drawer on models that have an external device terminal, the system will be damaged. Absolutely never use it for other purposes.)
The buzzer can be stopped by pressing the paper feed switch or opening the cover when it is ringing.

Example:



(Note) If the off time is set to 0 (zero), it is possible to ring the buzzer continuously for the amount of n1. For example, if on = 5 seconds, off = 0, and n1 = 20 times, the buzzer will ring for 100 seconds.

3.3.13. Print Settings

ESC RS d n

[Name] Set print density

[Code]

ASCII	ESC	RS	d	n
Hex.	1B	1E	64	n
Decimal	27	30	100	n

[Defined Area] 0≦n≦ 6
48≦n≦57 (”0”≦n≦”6”)

[Initial Value] Memory switch setting

[Function] Sets print density.
This command executes after stopping the printing operation.
When in 2-color mode, only print density for red printing can be set by this command.
When in energy conservation mode, print density using this command is invalid.

n	Print Density	
	Single Color Printing Mode	Two Color Printing Mode Red Print Density Double Resolution Mode (*) Installed print mode depends on the model.
0, 48	Print density 1.3	Print density 1.2
1, 49	Print density 1.2	Print density 1.2
2, 50	Print density 1.1	Print density 1.0
3, 51	Print density 1.0	Print density 1.0
4, 52	Print density 0.9	Print density 1.0
5, 53	Print density 0.8	Print density 0.8
6, 54	Print density 0.7	Print density 0.8

ESC RS r n

[Name] Set print speed

[Code]

ASCII	ESC	RS	r	n
Hex.	1B	1E	72	n
Decimal	27	30	114	n

[Defined Area] 0≦n≦3
48≦n≦51 (”0”≦n≦”3”)

[Initial Value] Memory switch setting

[Function] Sets print speed.
This command stops printing to be executed.
Because two-color print mode, power conservation mode, and double resolution mode print in one speed, the speed settings with this command are invalid.
This command setting becomes valid when returned from the two-color print mode, power conservation mode, and double resolution mode to the single color print mode.

Spec. A

n	Print Speed	
	Single Color Printing Mode	Two Color Printing Mode Power Conservation Mode Double Resolution (*) Installed print mode depends on the model.
0, 48	High speed	Each print mode speed
1, 49	Mid-speed	Each print mode speed
2, 50	Slow speed	Each print mode speed
3, 51	Option-speed (*) Print speed depends on the model.	Each print mode speed

Spec. B

n	Print Speed	
	Single Color Printing Mode	Two Color Printing Mode Power Conservation Mode Double Resolution (*) Installed print mode depends on the model.
0, 48	Standard	Each print mode speed
1, 49	Mid-speed	Each print mode speed
2, 50	Slow speed	Each print mode speed
3, 51	High speed	Each print mode speed

3.3.14. Status

ESC RS a n

[Name] Set status transmission conditions

[Code]	ASCII	ESC	RS	a	n
	Hex.	1B	1E	61	n
	Decimal	27	30	97	n

[Defined Area] For Specifications A and B
0≦n≦3, 48≦n≦51(”0”≦n≦”3”)
For Specification C
0≦n≦3, 48≦n≦51(”0”≦n≦”3”)

[Initial Value] Set by DIP switches and memory switches.

[Function] Sets the status transmission conditions.
See Appendix 2 for details regarding ASB status.
Settings of this command are unaffected by the ESC @ command.

Specification A

n	Status transmission conditions
0, 48	ASB invalid
1, 49	ASB valid

Specification B

n	Status transmission condition settings
0, 48	ASB invalid
1, 49	ASB valid

ESC ACK SOH

[Name] Real-time printer status (ASB status)

[Code]				
	ASCII	ESC	ACK	SOH
	Hex.	1B	06	01
	Decimal	27	6	1

[Defined Area] - - -

[Initial Value] - - -

[Function] Sends ASB status information to the host.
This command is not used when ASB is valid.
See Appendix 2, Automatic Status for details regarding ASB status.

ENQ

[Name] Real-time printer status (1)

[Code]		
	ASCII	ENQ
	Hex.	05
	Decimal	5

[Defined Area] - - -

[Initial Value] - - -

[Function] Sends 1 byte of the following the printer status
This command is not used when ASB is valid.
See Appendix 2, ENQ Command Status for details regarding status.

EOT

[Name] Real-time printer status (2)

[Code]		
	ASCII	EOT
	Hex.	04
	Decimal	4

[Defined Area] - - -

[Initial Value] - - -

[Function] Sends 1 byte of the following the printer status
This command is not used when ASB is valid.
See Appendix 2, EOT Command Status for details regarding status.

ESC ACK CAN

[Name] Execute real-time printer reset

[Code]				
	ASCII	ESC	ACK	CAN
	Hexadecimal	1B	06	18
	Decimal	27	6	24

[Defined Area] ---

[Initial Value] ---

[Function] Execute real-time printer reset.

ETB

[Name] Update ASB ETB status
[Code] ASCII ETB
Hex. 17
Decimal 23

[Defined Area] - - -
[Initial Value] - - -
[Function] (1) Specifications
Sets the ASB ETB status when reading this command from the reception buffer, then sends ASB.
See Appendix 2, ASB Status for details.

(2) Specifications
Sets the ASB ETB status when reading this command from the reception buffer. Then, after updating the ASB ETB counter, sends the ASB status.
See Appendix 2, ASB Status for details.
The following outlines the details of processes in this command.
(1) Reads ETB command from reception buffer.
(2) Waits for printing of the print data before the ETB command to end.
(3) Increments the ASB ETB counter by 1 after checking that printing has ended, then sets the ASB ETB status.
(4) Sends ASB (only when ASB is enabled).

ESC RS E n

[Name] Initialize ASB ETB counter and ETB status
[Code] ASCII ESC RS E n
Hex. 1B 1E 45 n
Decimal 27 30 69 n

[Defined Area] n = 0
n = 48 (“0”)
[Initial Value] ASB ETB counter = 0
[Function] Clears the ASB ETB counter to zero, then clears the ETB status.
However, ASB status is not send when clearing the ETB counter to zero using this command. The ETB counter and ETB status are initialized by the following command, not this command.
• Cancel print data and initialize command <CAN>

3.3.15. Kanji characters

ESC p

[Name] Specify JIS Kanji character mode
[Code] ASCII ESC p
Hex. 1B 70
Decimal 27 112

[Defined Area] - - -
[Initial Value] JIS Kanji character mode cancelled
[Function] Specifies JIS Kanji character mode
When in JIS Kanji character mode, character codes are all handled as 2 byte Kanji characters (First byte: upper code; second byte: lower code).
This command is ignored for models not equipped with Japanese and Kanji characters and when the specification for the location of use is specified as SBCS (single byte countries) by the memory switch. In such a case, this is handled as the ANK font 14 dot pitch specification command.

ESC q

[Name] Cancel JIS Kanji character mode
[Code] ASCII ESC q
Hex. 1B 71
Decimal 27 113

[Defined Area] - - -
[Initial Value] JIS Kanji character mode cancelled
[Function] Cancel JIS Kanji character mode

ESC $ n

[Name] Specify/cancel Shift JIS Kanji character mode

[Code]

ASCII	ESC	$	n
Hex.	1B	24	n
Decimal	27	36	n

[Defined Area] - - -

[Initial Value] Memory switch setting

[Function] Specifies and cancels the shift JIS Kanji character mode.
When in shift JIS Kanji character mode, character codes are all handled as 2 byte Kanji characters (First byte: upper code; second byte: lower code).
This command is ignored for models not equipped with Japanese and Kanji characters and when the specification for the location of use is specified as SBCS (single byte countries) by the memory switch.

n	Shift JIS Kanji character mode
0, 48	Cancels shift JIS Kanji character mode
1, 49	Specifies shift JIS Kanji character mode

ESC s n1 n2

[Name] Set 2 byte Kanji character left/right spaces

[Code]					
	ASCII	ESC	s	n1	n2
	Hex.	1B	73	n1	n2
	Decimal	27	115	n1	n2

[Defined Area] 0≤n1≤7
48≤n1≤55 (”0”≤n1≤”7”)
0≤n2≤15
48≤n2≤57 (”0”≤n2≤”9”)
65≤n2≤70 (”A”≤n2≤”F”)

[Initial Value] Memory switch setting

[Function] Adds n1 dot left space and n2 dot right space to Kanji characters.
This command is ignored for models not equipped with Chinese fonts (for overseas) and when the specification for the location of use is specified as SBCS (single byte countries) by the memory switch.

ESC t n1 n2

[Name] Set 1 byte Kanji character left/right spaces

[Code]					
	ASCII	ESC	t	n1	n2
	Hex.	1B	74	n1	n2
	Decimal	27	116	n1	n2

[Defined Area] 0≤n1≤7
48≤n1≤55 (”0”≤n1≤”7”)
0≤n2≤15
48≤n2≤57 (”0”≤n2≤”9”)
65≤n2≤70 (”A”≤n2≤”F”)

[Initial Value] Memory switch setting

[Function] Adds n1 dot left space and n2 dot right space to 1 byte characters.
This command is ignored for models not equipped with Chinese fonts (for overseas) and when the specification for the location of use is specified as SBCS (single byte countries) by the memory switch.

ESC r c1 c2 d1...dk

[Name] Register Chinese download characters

[Code]

ASCII	ESC	r	c1	c2	d1	...	dk
Hex.	1B	72	c1	c2	d1	...	dk
Decimal	27	114	c1	c2	d1	...	dk

[Defined Area] 0≦d≦255
k=72
c1 and c2 differ according to specifications and code type (see table below).

[Initial Value] All spaces

[Function] Registers Chinese download characters to c1 and c2 addresses.
Those already registered to these addresses are overwritten. If c1 and c2 are outside of the defined are or the printer is model not equipped with Chinese fonts (for overseas) and when the specification for the location of use is specified as SBCS (single byte countries) by the memory switch, the printer discards up to d1 and dk.
This command exists in models that have the specifications of A and B below. (See the "Special Appendix, Command Table per Model" for details.)

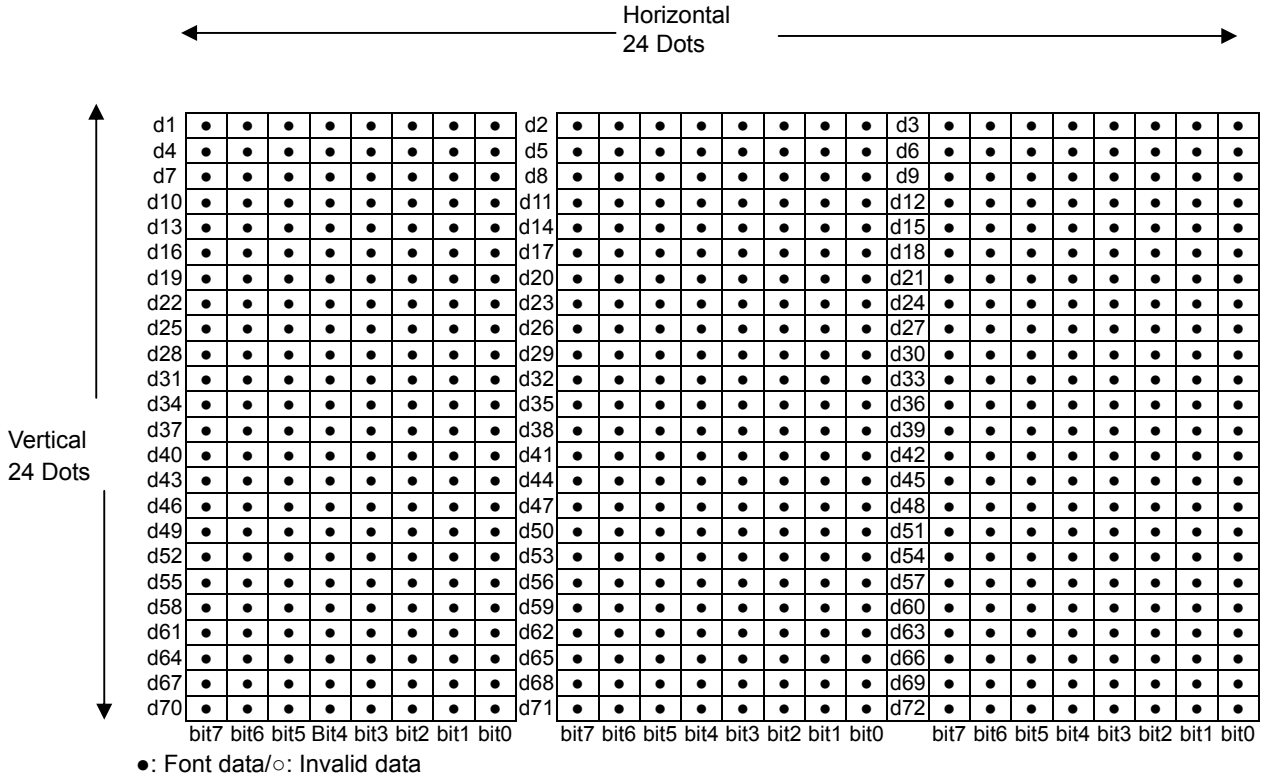
Specification A

Specification	c1	c2	Registration count
Japanese char./JIS type	c1=77h	30h≦c2≦4Fh	32 characters

Specification B

Specification	c1	c2	Registration count
Japanese char./JIS type	c1=77h	21h≦c2≦7Eh	94 characters
Japanese char./Shift JIS type	c1=ECh	40h≦c2≦7Eh 80h≦c2≦9Eh	94 characters
Kanji characters	c1=FEh	A1h≦c2≦FEh	94 characters

(*) The registration region is the same for Japanese characters in JIS or shift JIS.



●: Font data/○: Invalid data

3.3.16. Others

CAN

[Name] Cancel print data and initialize commands
[Code] ASCII CAN
Hex. 18
Decimal 24

[Defined Area] - - -
[Initial Value] - - -
[Function] When the reception buffer and line buffer are cleared, the set commands are initialized.
Immediately executed not when taking out from the reception buffer, but when received from the host.
DIPSW re-reading is not performed.
The following shows the specifications that are not initialized by this command.

- Set print density
- Set print speed
- Set 2 color print mode
- Print color in 2 color print mode
- External device drive condition

ESC @

[Name] Command initialization

[Code]

	ASCII	ESC	@
	Hex.	1B	40
	Decimal	27	64

[Defined Area] - - -

[Initial Value] - - -

[Function] Initializes each command after printing data in the line buffer.

However, printers with memory switch settings are initialized to the memory switch settings.

DIPSW re-reading is not performed.

- ANK characters, Kanji character adornment, expansion
- Kanji character mode
- ANK right space
- Kanji character left/right spaces
- Character pitch
- International characters
- Code page
- Set slash zero
- Set specify/cancel external character (external register character data is retained)
- Page length
- Current position (move to top of page, top of line)
- Horizontal tab/Vertical tab
- Line feed amount
- Set upside-down, position alignment
- Left/right margins

The following shows the specifications that are not initialized by this command.

- Set print density
- Set print speed
- Set 2 color print mode
- Print color in 2 color print mode
- External device drive condition

ESC GS # m N n1 n2 n3 n4 LF NUL

[Name] Set memory switch

[Code]

ASCII	ESC	GS	#	m	N	n1	n2	n3	n4	LF	NUL
Hex.	1B	1D	23	m	N	n1	n2	n3	n4	0A	00
Decimal	27	29	35	m	N	n1	n2	n3	n4	10	0

[Defined Area] m = 87, 84, 44, 43, 45, 64 (m = “W”, “T”, “,”, “+”, “-”, “@”)
48≦n1≦57 (“0”≦n1≦ “9”) , 65≦n1≦70 (“A”□≦n1≦ “F”), 97≦n1≦102 (“a”≦n1≦ “f”)
48≦n2≦57 (“0”≦n2≦ “9”) , 65≦n2≦70 (“A”≦n2≦ “F”), 97≦n2≦102 (“a”≦n2≦ “f”)
48≦n3≦57 (“0”≦n3≦ “9”) , 65≦n3≦70 (“A”≦n3≦ “F”), 97≦n3≦102 (“a”≦n3≦ “f”)
48≦n4≦57 (“0”≦n4≦ “9”) , 65≦n4≦70 (“A”≦n4≦ “F”), 97≦n4≦102 (“a”≦n4≦ “f”)

Spec. A
48 ≦ N ≦ 57 (”0” ≦ N ≦ “9”), 65 ≦ N ≦ (*)70 (”A” ≦ N ≦ (*)“F”), 97 ≦ N ≦ (*) 102, (“a” ≦ N ≦ (*)“f”)
Spec. B
48 ≦ N ≦ 57 (”0” ≦ N ≦ “9”), 65 ≦ N ≦ (*)70 (”A” ≦ N ≦ (*)“F”), 97 ≦ N ≦ (*) 102, (“a” ≦ N ≦ (*) “f”)
N = 85 (N = “U”) User defined region
(*) The memory switch defined area differs according to the model.

[Initial Value] - - -

[Function] Sends command to write after defining memory switch using the definition command specified by the following classes.
Memory switch information defined by the command to write is written to the volatile memory.
When writing to the volatile memory by the command to write, the printer executes a reset.
This command exists in models that have the specifications of A and B indicated in the above defined areas.
Models having specifications B can register any 16 bit data by specifying N = 85 (”U”). (See the “Special Appendix, Command Table per Model” for details per model.)

Functions	Class	m	N	n1 n2 n3 n4
Definition data write and reset	Write	“W”	Fixed at “0”	Fixed at “0000”
Definition data write and reset and self print	Write	“T”	Fixed at “0”	Fixed at “0000”
Data definition (data specification)	Definition	“, ”	N	n1 n2 n3 n4
Data definition (specify bit and set)	Definition	“+”	N	n1 n2 n3 n4
Data definition (specify bit and clear)	Definition	“-”	N	n1 n2 n3 n4
Definition data (all data initialized)	Definition	“@”	Fixed at “0”	Fixed at “0000”

- m: Mode selection
- N: Memory switch number to specify
- n1 n2 n3 n4: Specify data
  - m = (“,”) Specify data
  - m = (“+”) Bit number to set
  - m = (“-“) Bit number to clear

ESC ? LF NUL

[Name] Reset printer (execute self print)

[Code]

ASCII	ESC	?	LF	NUL
Hex.	1B	3F	0A	00
Decimal	27	63	10	0

[Defined Area] - - -

[Initial Value] - - -

[Function] Hardware resets the printer and executes on self print.

After sending this command, the next data is not sent until the printer is online (in a state wherein it can receive data).

When resetting the printer, the following processes are performed.

I/F	Mode	Process
Parallel	- - -	BUSY output
RS-232C	DTR mode	DTR mark output
	Xon/Xoff mode	Xoff output

ESC GS + m [t1 nL1 nH1 d11 d12 ... d1k] 1 [t2 nL2 nH2 d21 d22 ... d2k] 2 [tm nLm nHm dm1 dm2 ... dmk] m

[Name] Register macro

[Code]																			
	ASCII	ESC	GS	+	m	t1	nL1	nH1	d11	d12	..	d1k							
	Hex.	1B	1D	2B	m	t1	nL1	nH1	d11	d12	..	d1k							
	Decimal	27	29	43	m	t1	nL1	nH1	d11	d12	..	d1k							

[Code]																			
	ASCII	t2	nL2	nH2	d21	d22	..	d2k	..	tm	nLm	nHm	dm1	dm2	..	dmk	..		
	Hex.	t2	nL2	nH2	d21	d22	..	d2k	..	tm	nLm	nHm	dm1	dm2	..	dmk	..		
	Decimal	t2	nL2	nH2	d21	d22	..	d2k	..	tm	nLm	nHm	dm1	dm2	..	dmk	..		

[Defined Area] $1 \leqq m \leqq 9$, $0 \leqq t \leqq 8$
$k = (nL + nH \times 256)$, $0 \leqq k \leqq 7936$
$0 \leqq d \leqq 255$

[Initial Value] - - -

[Function] This command registers macro data in the following macro registration regions.

Registration Region	Registration Data Type	Registration Block No.	Size (Bytes)	Details
Registration Information	Initialization Macro	0	2	Registration data type 0 x 0000 = Initialization macro, 0xffff = No reg. data
			2	Registration data count
			4	Registration data address
			8	(Reserved)
	Macro	1	2	Registration data type 0 x 0001 to 0x 0008 = macro, 0xffff = No reg. data
			2	Registration data count
			4	Registration data address
			8	(Reserved)
		:		
		8	2	Registration data type 0 x 0001 to 0 x 0008= macro, 0xffff = No reg. data
			2	Registration data count
			4	Registration data address
			8	(Reserved)
Registration Data			7936	Registration Data

• m specifies the registration black count.
• t specifies the registration data type.

t	Registration Data Type
0	Initialization Macro
1 to 8	Macro (t is the macro number.)

• (nL + nH x 256) specifies the data count to be registered.
When (nL + nH x 256) = 0, the macro data specified by t is deleted.
• d is the macro data to be registered.
• After the macro data is written to the non-volatile memory, the printer is reset.
• If the volume of all macros exceeds the capacity for registration, it is written to the non-volatile memory up to the data block that exceed the capacity and the command analysis is ended after that.
• If there is unprinted data in the line buffer, this command is executed after the print data in the line buffer is printed.
• When registering, all of the current macro regions are cleared, so if previous macro data is necessary, rewrite it.
• When performing a Hex Dump, initialization macro region data is added in the same way as the current specifications.

3.4. Raster Graphics Command Details

Raster graphics are command types and incidental specifications that enable high speed and high quality printing of graphics.
The following shows the characteristics and specifications for raster graphics.

- Defines the raster mode command as the STAR line mode extension set.
  Basically no restrictions set in use of conventional STAR line mode.
  STAR Page Mode cannot be used.
- Handles high speed data transmission
  When using IEEE 1284, data transmission rate of 80 to 100 KB /sec ensured.
- Handles IEEE 1284, USB and Ethernet I/F (RS-232C not applicable)
- Handles both fixed length/variable length mode
- Print speed selectable
- Post printing cut operation selectable
- All settings possible by Raster commands.
  Most settings are possible without DIPSW/memory switch settings.
- Supports printer driver handling raster mode

The following shows the raster command details.
Note that if not specifically noted, the following commands are effective only in raster mode and the commands are ignored (4 bytes ignored) when other than the raster mode. The raster image buffer in the command details described below indicate the raster dedicated image buffer, the length thereof (vertical direction dot count) differing between models.

ESC * r R

[Name] Initialize raster mode

[Code]

ASCII	ESC	*	r	R
Hex.	1B	2A	72	52
Decimal	27	42	114	82

[Defined Area] - - -

[Initial Value] - - -

[Function] Initializes raster mode.

This command is also effective when not in the raster mode.

However, initialization of the raster mode with this command is executed when entering the raster mode.

The following settings are initialized using this command.

- Raster page length setting (ESC * r P n NUL)
- Raster print quality setting (ESC * Q n NUL)
- Raster print color setting (ESC * r K n NUL)
- Raster left margin setting (ESC * r m l n NUL)
- Raster right margin setting (ESC * r m r n NUL)
- Raster EOT mode setting (ESC FF EOT)
- Raster FF mode setting (ESC FF NUL)
- Raster image buffer clear

Note that when entering the raster mode, it executes the same process as initialization of the raster mode using this command.

However, because initialization is not performed when entering the raster mode only for the following settings, when initializing the following it sends this initialization command.

- Raster data print color setting (ESC * r K n NUL)

ESC * r A

[Name] Enter raster mode

[Code]

ASCII	ESC	*	r	A
Hex.	1B	2A	72	41
Decimal	27	42	114	65

[Defined Area] - - -

[Initial Value] - - -

[Function] Enters raster mode.

This command is ignored when in the raster mode.

The following shows the details regard processing of this command.

(1) Reception of this command.

(2) When using parallel I/F, IEEE 1284 reverse mode is prohibited.

(3) All data remaining in the reception buffer and image buffer is printed equivalent to the FF command.

(4) Initialize raster mode

(5) Enter raster mode

When in the raster mode, the raster mode is initialized.

The following shows the contents of the initialization.

- Raster page length setting (ESC * r P n NUL)
- Raster print quality setting (ESC * Q n NUL)
- Raster left margin setting (ESC * r m l n NUL)
- Raster right margin setting (ESC * r m r n NUL)
- Raster EOT mode setting (ESC FF EOT)
- Raster FF mode setting (ESC FF NUT)
- Raster image buffer clear

(*) Only raster data print color setting is not initialized when entering the raster mode.

ESC * r B

[Name] Quit raster mode

[Code]					
	ASCII	ESC	*	r	B
	Hex.	1B	2A	72	42
	Decimal	27	42	114	66

[Defined Area] - - -

[Initial Value] - - -

[Function] Quits raster mode.
When quitting the raster mode, if there is raster data remaining in the image buffer of the raster mode, it quits the raster mode after executing the raster EOT mode.
Note that with this command, IEEE 1284 reverse mode is allowed in parallel I/F and it sets the top of page with the line mode.

ESC * r C

[Name] Clear raster data

[Code]					
	ASCII	ESC	*	r	C
	Hex.	1B	2A	72	43
	Decimal	27	42	114	67

[Defined Area] - - -

[Initial Value] - - -

[Function] Clears image buffer data in the raster mode.

ESC * r D n NUL

[Name] Drawer drive

[Code]							
	ASCII	ESC	*	r	D	n	NUL
	Hex.	1B	2A	72	44	n	00
	Decimal	27	42	114	68	n	0

[Defined Area] 0≦n≦3

[Initial Value] n = 0

[Function] Drives the drawer in the raster mode.
Drawer drive conditions conform to setting command (<ESC> <BEL> n1 n2) of the line mode.
n is a decimal description (max. 255 digits) using ASCII characters.

n	Drive circuits
0	None
1	External device drive 1 drive
2	External device drive 2 drive
3	External device drive 1 drive and external device drive 2 drive

ESC * r E n NUL

[Name] Set raster EOT mode

[Code]

ASCII	ESC	*	r	E	n	NUL
Hex.	1B	2A	72	45	n	00
Decimal	27	42	114	69	n	0

[Defined Area] n = 0, 1, 2, 3, 8, 9, 12, 13, 36, 37

[Initial Value] Models handling full cut: n = 9

Models connected with a presenter: n = 37

[Function] Sets the raster EOT mode.

The EOT mode operates to execute using the raster document quit command (ESC FF EOT).

n is a decimal description (max. 255 digits) using ASCII characters.

Specification A <EOT mode setting format>

n	FormFeed	Cut Feed	Cutter	Presenter
0	Set To Default	Set To Default	Set To Default	Set To Default
1	○	--	--	--
2	○	○	--	--
3	○	TearBar	--	--
8	○	--	Full Cut	--
9	○	○	Full Cut	--
12	○	--	Partial Cut	--
13	○	○	Partial Cut	--
36	○	--	Full Cut	Eject
37	○	○	Full Cut	Eject

Specification B <EOT mode setting format>

n	FormFeed	Cut Feed	Cutter	Presenter
0	Set To Default	Set To Default	Set To Default	Set To Default
1	○ (*1)	--	--	--
2	○ (*1)	○	--	--
3	○ (*1)	TearBar	--	--
8	○ (*1)	--	Full Cut	--
9	○ (*1)	○	Full Cut	--
12	○ (*1)	--	Partial Cut	--
13	○ (*1)	○	Partial Cut	--
36	○ (*1)	--	Full Cut	Eject
37	○ (*1)	○	Full Cut	Eject

*1) Form Feed

When the printer is a model handling BM and is set for BM to be effective, the set raster mode page length is ignored and BM detecting is performed.

ESC * r F n NUL

[Name] Set raster FF mode

[Code]							
	ASCII	ESC	*	r	F	n	NUL
	Hex.	1B	2A	72	46	n	00
	Decimal	27	42	114	70	n	0

[Defined Area] n = 0, 1, 2, 3, 8, 9, 12, 13, 36, 37

[Initial Value] Models handling full cut: n = 9

Models connected with a presenter: n = 37

[Function] Sets raster FF mode.

The FF mode operates to execute using the raster document quit command (ESC FF NUL).

n is a decimal description (max. 255 digits) using ASCII characters.

Specification A <FF mode setting format>

n	FormFeed	Cut Feed	Cutter	Presenter
0	Set To Default	Set To Default	Set To Default	Set To Default
1	○	--	--	--
2	○	○	--	--
3	○	TearBar	--	--
8	○	--	Full Cut	--
9	○	○	Full Cut	--
12	○	--	Partial Cut	--
13	○	○	Partial Cut	--
36	○	--	Full Cut	Eject
37	○	○	Full Cut	Eject

Specification B <FF mode setting format>

n	FormFeed	Cut Feed	Cutter	Presenter
0	Set To Default	Set To Default	Set To Default	Set To Default
1	○ (*1)	--	--	--
2	○ (*1)	○	--	--
3	○ (*1)	TearBar	--	--
8	○ (*1)	--	Full Cut	--
9	○ (*1)	○	Full Cut	--
12	○ (*1)	--	Partial Cut	--
13	○ (*1)	○	Partial Cut	--
36	○ (*1)	--	Full Cut	Eject
37	○ (*1)	○	Full Cut	Eject

*1) Form Feed

When the printer is a model handling BM and is set for BM to be effective, the set raster mode page length is ignored and BM detecting is performed.

ESC * r P n NUL

[Name] Set raster page length

[Code]	ASCII	ESC	*	r	P	n	NUL
	Hex.	1B	2A	72	50	n	00
	Decimal	27	42	114	80	n	0

[Defined Area] - - -

[Initial Value] Raster image buffer length

[Function] Sets raster page length.
n is a decimal description (max. 255 digits) using ASCII characters.

n	
0	Continuous print mode (no page length setting)
1≤n	Specify page length

ESC * r Q n NUL

[Name] Set raster print quality

[Code]	ASCII	ESC	*	r	Q	n	NUL
	Hex.	1B	2A	72	51	n	00
	Decimal	27	42	114	81	n	0

[Defined Area] 0≦n≦2

[Initial Value] n = 0

[Function] Sets raster print quality.
n is a decimal description (max. 255 digits) using ASCII characters.

n	Print quality
0	Specify high speed printing
1	Normal print quality
2	High print quality

ESC * r m l n NUL

[Name] Set raster left margin

[Code]								
	ASCII	ESC	*	r	m	l	n	NUL
	Hex.	1B	2A	72	6D	6C	n	00
	Decimal	27	42	114	109	108	n	0

[Defined Area] - - -

[Initial Value] n = 0

[Function] Sets raster left margin.
This command sets the left margin to (n x 8).
When the left margin exceeds the printable area, or if the left margin specification eliminates the print area (printable region to right margin) to the left margin specified value, this command is ignored.
n is a decimal description (max. 255 digits) using ASCII characters.

ESC * r m r n NUL

[Name] Set raster right margin

[Code]								
	ASCII	ESC	*	r	m	r	n	NUL
	Hex.	1B	2A	72	6D	72	n	00
	Decimal	27	42	114	109	114	n	0

[Defined Area] - - -

[Initial Value] n = 0

[Function] Sets raster right margin.
This command sets the right margin to (n x 8).
When the right margin exceeds the printable area, or if the right margin specification eliminates the print area (printable region to left margin) to the right margin specified value, this command is ignored.
n is a decimal description (max. 255 digits) using ASCII characters.

ESC * r T n NUL

[Name] Set raster top margin

[Code]

ASCII	ESC	*	r	T	n	NUL
Hex.	1B	2A	72	54	n	00
Decimal	27	42	114	84	n	0

[Defined Area] 0≦n≦2

[Initial Value] ---

[Function] Sets the raster top margin.
n is a decimal description (max. 255 digits) using ASCII characters.

n	Top margin
0	Set To Default
1	Set top margin using reverse paper feed.
2	Set standard top margin.

(*) This differs according to the model handling this command.

The line mode top margin setting continues after entering the raster mode.
Also, the top margin setting of the raster mode continues after ending the raster mode, and returning to the line mode.

ESC * r K n NUL

[Name] Set raster print color

[Code]

ASCII	ESC	*	r	K	n	NUL
Hex.	1B	2A	72	4B	n	00
Decimal	27	42	114	75	n	0

[Defined Area] 0≦n≦3

[Initial Value] n = 0

[Function] Sets raster print color.
This command is effective only when specifying the 2 color mode using the line mode.
This command is ignored when not in the 2 color print mode.
n is a decimal description (max. 255 digits) using ASCII characters.

n	Print color
0	Black
1	Cyan
2	Magenta
3	Yellow

(*) This command is effective only when using a model handling 2 color printing. This command is ignored on non-compatible models.

b n1 n2 data

[Name] Send raster data (auto line feed)

[Code]								
	ASCII	b	n1	n2	d1	d2	...	dk
	Hex.	62	n1	n2	d1	d2	...	dk
	Decimal	98	n1	n2	d1	d2	...	dk

[Defined Area] 0≤n1≤255
0≤n2≤255
0≤d≤255
k= n1+n2 x 256
1≤k

[Initial Value] - - -

[Function] Sends raster data (auto line feed).
Raster data is sent in (n1 + n2 x 256) byte counts as binary data.
Raster data exceeding the print area currently set is discarded.
The image buffer expanded position is automatically line fed one dot row and moved to the left margin on the next line after expanded the image buffer data 1 dot row using this command.
Also, data expansion is duplicated on the data in the current image buffer (OR process).
The following shows expanded image buffer for the set raster print color.
n is a decimal description (max. 255 digits) using ASCII characters.

Print color	Expanded image buffer
Black	Image buffer for black
Cyan	Image buffer for color
Magenta	Image buffer for color
Yellow	Image buffer for color

k n1 n2 data

[Name] Transfer raster data

[Code]

ASCII	k	n1	n2	d1	d2	...	dk
Hex.	6B	n1	n2	d1	d2	...	dk
Decimal	107	n1	n2	d1	d2	...	dk

[Defined Area] 0≤n1≤255
0≤n2≤255
0≤d≤255
k≤ n1+n2 x 256
1≤k

[Initial Value] - - -

[Function] Sends raster data.
Raster data is sent in (n1 + n2 x 256) byte counts as binary data.
Raster data exceeding the print area currently set is discarded.
The image buffer expanded position returns to the head of the current dot row without an automatic line fed after expanding the image buffer data 1 dot row using this command.
Also, data expansion is duplicated on the data in the current image buffer (OR process).
The following shows expanded image buffer for the set raster print color.
n is a decimal description (max. 255 digits) using ASCII characters.

Print color	Expanded image buffer
Black	Image buffer for black
Cyan	Image buffer for black
Magenta	Image buffer for black
Yellow	Image buffer for black

ESC * r Y n NUL

[Name] Move vertical direction position (Line feed for specified dots)

[Code]

ASCII	ESC	*	r	Y	n	NUL
Hex.	1B	2A	72	59	n	00
Decimal	27	42	114	89	n	0

[Defined Area] - - -

[Initial Value] - - -

[Function] Moves vertical direction position.

Moves position n dots with this command.

When the current page length setting is in continuous print mode, and the n dots exceed the remaining dot count of the raster image buffer length, this moves up to the remaining dot count and ignores the overflow.

If the page length is set, it moves to the current page length and ignores the overflow.

Note that when there is overflow, this expands the next raster data after printing the raster image buffer data with the next raster data transfer and move vertical direction position command.

n is a decimal description (max. 255 digits) using ASCII characters.

ESC FF NUL

[Name] Execute FF mode

[Code]				
	ASCII	ESC	FF	NUL
	Hex.	1B	0C	00
	Decimal	27	12	0

[Defined Area] - - -

[Initial Value] - - -

[Function] Executes FF mode.
Executes operation specified by the FF mode setting command (ESC * r F n NUL).

ESC FF EOT

[Name] Execute EOT mode

[Code]				
	ASCII	ESC	FF	EOT
	Hex.	1B	0C	04
	Decimal	27	12	4

[Defined Area] - - -

[Initial Value] - - -

[Function] Executes EOT mode.
Executes operation specified by the EOT mode setting command (ESC * r E n NUL).

ESC * r N n NUL

[Name] Discard data for specified byte count

[Code]							
	ASCII	ESC	*	r	N	n	NUL
	Hex.	1B	2A	72	4E	n	0
	Decimal	27	42	114	78	n	0

[Defined Area] $1 \leq n \leq 255$

[Initial Value] - - -

[Function] Discards data for the specified byte count.
Discards data received after a byte count specified by n.
n is expressed in decimal (maximum 4 digits) using ASCII characters.
This command is effective only in raster mode.

ESC * r V m n NUL

[Name] Execute external buzzer drive

[Code]

ASCII	ESC	*	r	V	m	n	NUL
Hex.	1B	2A	72	56	m	n	0
Decimal	27	42	114	86	4m	n	0

[Defined Area] m=49,50
1≦n≦20

[Initial Value] - - -

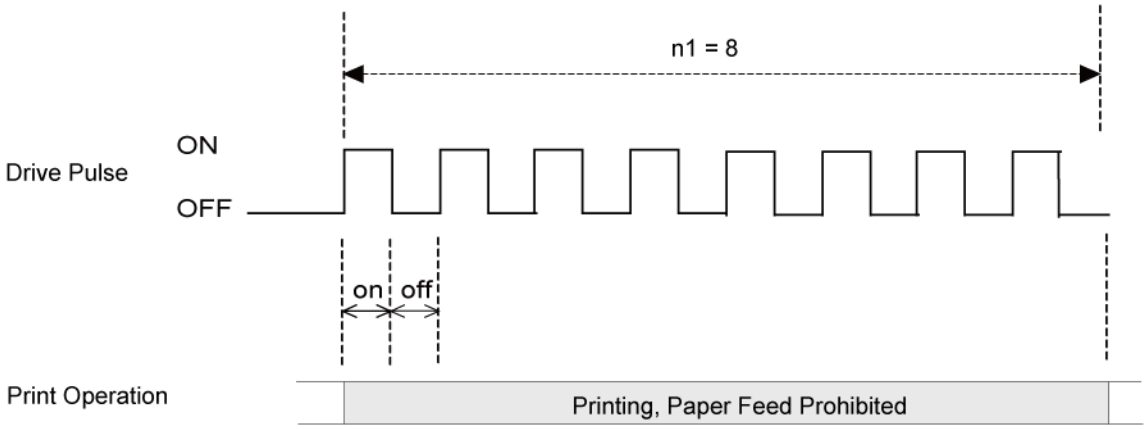
[Function] Repeatedly drives the buzzer according to the ON/OFF conditions set by the external buzzer drive pulse conditions command <ESC> <GS> <EM> <DC1> m n1 n2.

m specifies the buzzer drive terminal to drive.

m	Buzzer Drive Terminal
49	Buzzer Drive Terminal 1
50	Buzzer Drive Terminal 2

Specifies the number of repetitions of the buzzer drive with n.
The buzzer will not ring while printing.
This command is prohibited for uses other than to ring the buzzer.
(If this command is used to drive the cash drawer on models that have an external device terminal, the system will be damaged. Absolutely never use it for other purposes.)
The buzzer can be stopped by pressing the paper feed switch or opening the cover when it is ringing.
Conditions must not be set in advance with the external buzzer drive pulse condition command <ESC> <GS> <EM> <DC1> m n1 n2 prior to entering the raster mode.
n is expressed in decimal (maximum 255 digits) using ASCII characters.

Example:



(Note) If the off time is set to 0 (zero), it is possible to ring the buzzer continuously for the amount of n1. For example, if on = 5 seconds, off = 0, and n1 = 20 times, the buzzer will ring for 100 seconds.

3.5. Black Mark Related Command Details

The following commands control top of form functions using black mark paper.
The following commands are effective only when black mark is set to be effective.

ESC d n

[Name] Auto cutter

[Code]				
	ASCII	ESC	d	n
	Hex.	1B	64	n
	Decimal	27	100	n

[Defined Area] 0≦d≦3
48≦d≦51 (”0”□≦d≦”3”)

[Initial Value] - - -

[Function] Executes the auto-cutter.
After auto-cutter is executed, the printer considers that to be the top of the page.

n	Auto cutter
0, 48	Full cut at the current position. Print data in line buffer is printed before a full cut. This command is ignored if the printer is not equipped with an auto-cutter.
1, 49	Partial cut at the current position. Print data in line buffer is printed before a partial cut. This command is ignored if the printer is not equipped with an auto-cutter.
2, 50	After executing top of form, paper is fed to cutting position, then a full cut. Print data in line buffer is printed before the operation described above. This command is ignored if the printer is not equipped with an auto-cutter.
3, 51	After executing top of form, paper is fed to cutting position, then a partial cut. Print data in line buffer is printed before the operation described above. This command is ignored if the printer is not equipped with an auto-cutter.

(*) The auto-cutter function operates in the following ways on models that only have a full cut or a partial cut.

- Models that perform only a full cut: Executes a full cut when for instructions calling for a partial cut.
- Models that perform only a partial cut: Executes a partial cut when there are for instructions calling for a full cut.

(*) When connected with a presenter, executes a full cut when instructed for a partial cut.

FF

[Name] Execute top of form
[Code] ASCII FF
Hex. 0C
Decimal 12

[Defined Area] - - -
[Initial Value] - - -
[Function] Executes top of form.

ESC C n

[Name] Set page length to n lines
[Code] ASCII ESC C n
Hex. 1B 43 n
Decimal 27 67 n

[Defined Area] 1≦n≦127
[Initial Value] (Form feed amount initial value x 42)
[Function] When black mark is effective, this command is ignored.

ESC C 0 n

[Name] Set page length to n x 24 mm units

[Code]

ASCII	ESC	C	0	n
Hex.	1B	43	0	n
Decimal	27	67	0	n

[Defined Area] 1≦n≦22

[Initial Value] (Form feed amount initial value x 42)

[Function] When black mark is effective, this command is ignored.

VT

[Name] Feed paper to vertical table position

[Code]

ASCII	VT
Hex.	0B
Decimal	11

[Defined Area] - - -

[Initial Value] - - -

[Function] When black mark is effective, this command is ignored.

ESC B n1 n2...nk NUL

[Name] Set vertical tab position

[Code]

ASCII	ESC	B	n1	n2	...	nk	NUL
Hex.	1B	42	n1	n2	...	nk	00
Decimal	27	66	n1	n2	...	nk	0

[Defined Area] $1 \leq n \leq 255$

$0 \leq k \leq 16$

[Initial Value] - - -

[Function] When black mark is effective, this command is ignored.

ESC B NUL

[Name] Clear vertical tab position

[Code]

ASCII	ESC	B	NUL
Hex.	1B	42	00
Decimal	27	66	0

[Defined Area] - - -

[Initial Value] - - -

[Function] When black mark is effective, this command is ignored.

3.6. USB Related Command Details

The following commands control USB I/F functions.
There are no corresponding commands.

3.7. 2 Color Printing Command Details

The following commands control 2 color printing functions.
The following commands are effective only when using a model handling 2 color printing.

ESC RS c n

[Name] Set print color in 2 color print mode

[Code]

ASCII	ESC	RS	c	n
Hex.	1B	1E	63	n
Decimal	27	30	99	n

[Defined Area] 0≦n≦1
48≦n≦49 (”0”≦n≦”1”)

[Initial Value] n = 0, 48 (When in 2 color print mode)

[Function] Specifies print color in 2 color print mode.
This command is ignored when not in the 2 color print mode.
Specifies black for the print color when in 2 color print mode.
This command is cleared only when the printer is reset.
The specification of this command is not cleared by ESC @ CAN.
However, print color is initialized to black by the ESC @ and CAN only when in the compatible 2 color print mode.

n	Specifies 2 color print mode color
0, 48	Black
1, 49	Red

ESC RS C n

[Name] Select/cancel 2 color print mode

[Code]

ASCII	ESC	RS	C	n
Hex.	1B	1E	43	n
Decimal	27	30	67	n

[Defined Area] Specification A
0≦n≦2
48≦n≦50 (”0”≦n≦”2”)
Specification B
0≦n≦1
48≦n≦49 (”0”≦n≦”1”)
Specification C
0≦n≦2
48≦n≦50 (”0”≦n≦”2”)
n = 16, n = 32

[Initial Value] n = 0, 48

[Function] Specification A

n	Select/cancel 2 color print mode
0, 48	Cancel 2-color printing mode When in two-color print mode, this command cancels 2-color printing mode. This command is ignored when the 2-color print mode is already cancelled. The specification of this command is not cleared by ESC @, CAN. The following processes are executed by canceling the 2-color print mode using this command. • Prints data in line buffer in 2-color print mode, if unprinted data exists in the line buffer. • Waits to stop printing when printing in 2-color print mode. • Recovers logo print setting to single color mode setting.
1, 49	Select 2-color printing mode This command selects 2-color print mode, when in single color print mode. This command is ignored already in the 2-color print mode. The specification of this command is not cleared by ESC @, CAN. The following processes are executed by selecting the 2-color print mode using this command. • Prints data in line buffer in the single color print mode, if unprinted data exists in the line buffer. • Waits to stop printing when printing in single-color print mode. • Initializes print color setting (2-color print mode setting) • Sets logo print setting to 2 color mode setting.

Specification B

n	Select/cancel 2 color print mode
0, 48	Cancel 2-color printing mode When in two-color print mode, this command cancels 2-color printing mode. This command is ignored when the 2-color print mode is already cancelled. The specification of this command is not cleared by ESC @, CAN. The following processes are executed by canceling the 2-color print mode using this command. • Prints data in line buffer in 2-color print mode, if unprinted data exists in the line buffer. • Waits to stop printing when printing in 2-color print mode. • Recovers logo print setting to single color mode setting.
1, 49	Select 2-color printing mode This command selects 2-color print mode, when in single color print mode. This command is ignored already in the 2-color print mode. The specification of this command is not cleared by ESC @, CAN. The following processes are executed by selecting the 2-color print mode using this command. • Prints data in line buffer in the single color print mode, if unprinted data exists in the line buffer. • Waits to stop printing when printing in single-color print mode. • Initializes print color setting (2-color print mode setting) • Sets logo print setting to 2 color mode setting.

Specification C

n	Specify print mode
0, 48	Single color print mode
1, 49	2-color print mode
2, 50	Dot compatible 2-color mode
16	Low power consumption mode
32	Double resolution mode

• If set to the low power consumption mode using the DIP switches, this command is ignored.
• This command is not cleared by ESC @, CAN.
• When there is unprinted data in the line buffer, print the line buffer data.
• This command is processed after ending the current print job.

ESC 4

[Name] Select white/black inverted printing

[Code]

ASCII	ESC	4
Hex.	1B	34
Decimal	27	52

[Defined Area] - - -

[Initial Value] White/black inversion cancelled

[Function] Specifies white/black inversion for ANK characters and Kanji characters.
IBM block ignores white/black inversion.

ESC 5

[Name] Cancel white/black inversion

[Code]

ASCII	ESC	5
Hex.	1B	35
Decimal	27	53

[Defined Area] - - -

[Initial Value] White/black inversion cancelled

[Function] Cancels white/black inversion for ANK characters and Kanji characters.

ESC RS d n

[Name] Set print density

[Code]

ASCII	ESC	RS	d	n
Hex.	1B	1E	64	n
Decimal	27	30	100	n

[Defined Area] 0≦n≦15
48≦n≦57 (”0”≦n≦”9”)
65≦n≦70 (”0”≦n≦”F”)

[Initial Value] Memory switch setting

[Function] Sets print density.
This command stops printing to be executed.
When in two-color print mode, this can set the print density of red print.

n	Print Density	
	Single Color Printing Mode	Two Color Printing Mode Red Print Density
0, 48	Print density 1.3	Print density 1.2
1, 49	Print density 1.2	Print density 1.2
2, 50	Print density 1.1	Print density 1.0
3, 51	Print density 1.0	Print density 1.0
4, 52	Print density 0.9	Print density 1.0
5, 53	Print density 0.8	Print density 0.8
6, 54	Print density 0.7	Print density 0.8
7, 55	(Reserved)	(Reserved)
8, 56	(Reserved)	(Reserved)
9, 57	(Reserved)	(Reserved)
10, 65	(Reserved)	(Reserved)
11, 66	(Reserved)	(Reserved)
12, 67	(Reserved)	(Reserved)
13, 68	(Reserved)	(Reserved)
14, 69	(Reserved)	(Reserved)
15, 70	(Reserved)	(Reserved)

ESC RS r n

[Name] Set printing speed

[Code]

ASCII	ESC	RS	r	n
Hex.	1B	1E	72	n
Decimal	27	30	114	n

[Defined Area] 0≦n≦3
48≦n≦51 (”0”≦n≦”3”)

[Initial Value] Memory switch setting

[Function] Sets print speed.
This command stops printing to be executed.
Because two-color print mode prints in one speed, the speed settings with this command are invalid. This command setting becomes valid when returned from the two-color print mode to the single color print mode.

N	Print Speed	
	Single Color Printing Mode	Two Color Printing Mode
0, 48	High speed	Two Color Printing Mode Speed
1, 49	Mid-speed	Two Color Printing Mode Speed
2, 50	Slow speed	Two Color Printing Mode Speed
3, 51	Option speed (differs according to the model)	Two Color Printing Mode Speed

ESC FS q n [x11 x12 y11 y12 d1...dk]1...[xn1 xn2 yn1 yn2 d1...dk]n

[Name] Register logo

[Code]

ASCII	ESC	FS	q	n	[x11	x12	y11	y12	d1	… dk]1	…	[xn1	xn2	yn1	yn2	d1	... dk]n
Hex.	1B	1C	71	n	[x11	x12	y11	y12	d1	… dk]1	…	[xn1	xn2	yn1	yn2	d1	... dk]n
Decimal	27	28	113	n	[x11	x12	y11	y12	d1	… dk]1	…	[xn1	xn2	yn1	yn2	d1	... dk]n

[Defined Area]

1≦n≦255
0≦xn1≦255, 0≦xn2≦3
1≦(xn1 + xn2 x 256)≦1023
0≦yn1≦255, 0≦yn2≦1
1≦yn1 + yn2 x 256)≦288
0≦d≦255
k = {(xn1 + xn2 x 256) x (yn1 + yn2 x 256) x 8}

[Initial Value] - - -

[Function] Parameter details

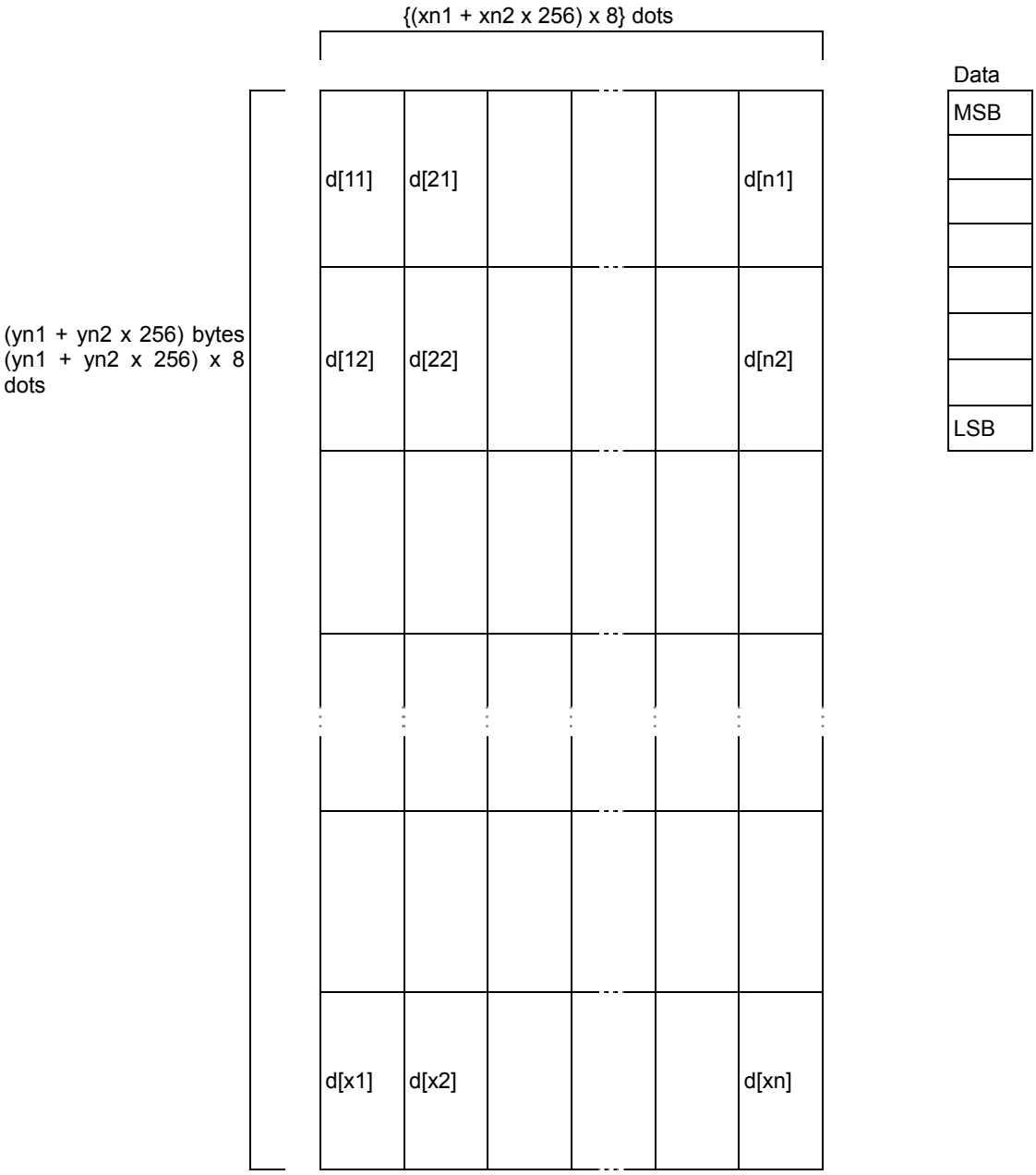
- n: Specifies registered logo count
- xn1, xn2: Horizontal size of registered logo {(xn1 + xn2 x 256) x 8} dots
- yn1, yn2: Vertical size of registered logo {(yn1 + yn2 x 256) x 8} dots
- d: Registered logo data
- k: Logo data count

This command should be specified at the top of the line.
When the first parameter is determined to be free of error, the printer starts processing this command.
When logo register processing starts, all previously defined data is deleted.
(It is not possible to reregister a portion of a plurality of defined logo data.)
Logo registration numbers are defined in rising order from 1.

If the defined area specified by the parameter is not empty, or if there is an error in the parameter specification, register processing is aborted. (The pre-registered and complete data is effective.)
The printer should be initialized if logo registration is completed or register processing is aborted.
If an error occurs while performing register processing (the time from when the first parameter is OK until th printer initialization is completed after registering a logo), error processing, mechanical operation and status processing cannot be performed.
The relationships between input data and the actual print are shown on the next page.

<When registering logos for 2 color printing>
Registration is possible regardless of the 2 color printing mode being specified or cancelled.
Register logos with the same capacity as the logo register number n (odd number) and n + 1 (even number).
If the capacity differs or the logo register number is 255, this command is ignored by the logo print command in the 2 color print mode.

Relationships of logo and registered data
xn = xn1 + xn2 x 256 yn = yn1 + yn2 x 256



ESC FS p n m

[Name] Print logo

[Code]						
	ASCII	ESC	FS	p	n	m
	Hex.	1B	1C	70	n	m
	Decimal	27	28	112	n	m

[Defined Area] 1≦n≦255
0≦m≦3
48≦m≦51 (”0”≦m≦”3”)

[Initial Value] - - -

[Function] Prints the logo of registration number n registered using the logo registration command (ESC FS q) according to the print mode m.

m	Logo print mode
0, 48	Normal mode
1, 49	Double wide mode
2, 50	Double high mode
3, 51	Double high/wide mode

If there is unprinted data in the line buffer, this command is executed after printing that data. Therefore, it is not possible to print with other data in the same line (characters, bit images, bar codes).
Form feed obeys the vertical print size of the logo.
Adornments other than upside-down printing and expansion settings are unaffected.
The horizontal printing start position conforms to the left margin position and the horizontal print area conforms to the left and right margin settings.
If the logo horizontal print size exceeds the horizontal print region, the portion exceeding the area is not printed.

<When using the 2 color print mode>
When the logo register number n is odd:
Register number n is printed in black; register number n + 1 is printed in red and overlapped.
The command is ignored when the capacity of the register number n and the capacity of the register number n + 1 are different.
The command is ignored when the register number n = 255 is specified.
When the logo register number n is even:
Register number n is printed in black; register number n - 1 is printed in red and overlapped.
The command is ignored when the capacity of the register number n and the capacity of the register number n - 1 are different.
The command is ignored when the register number n = 255 is specified.

3.8. Presenter Related Command Details

The following commands control the presenter functions.
The following commands are effective only on models equipped with a presenter.

ESC SYN 0 n

[Name] Execute presenter paper recovery

[Code]					
	ASCII	ESC	SYN	0	n
	Hex.	1B	16	30	n
	Decimal	27	22	48	n

[Defined Area] n = 0, n = 48 (“0”)
[Initial Value] - - -
[Function] Executes presenter paper recovery.
This command is ignored when a presenter is not connected.
Also, this command is executed when paper is supplied by the presenter, exists in the presenter and the paper has been cut. This command is ignored with under all other conditions. (Ignored when paper is being recovered.)

ESC SYN 1 n

[Name] Set presenter paper automatic recovery function and automatic recovery time

[Code]					
	ASCII	ESC	SYN	1	n
	Hex.	1B	16	31	n
	Decimal	27	22	49	n

[Defined Area] 0≦n≦255
[Initial Value] Memory switch setting
[Function] Sets presenter paper automatic recovery function and automatic recovery time.
This command is ignored when a presenter is not connected.
Settings using this command are effective from the next sheet when the printer processes this command and paper has already been supplied to the presenter.

N	Functions
n = 0	Paper automatic recovery function invalid.
1≦n≦255	Paper automatic recovery function valid. Automatic recovery time: n x 0.5 sec (0.5 sec to 127.5 sec)

ESC SYN 3 n

[Name] Acquire presenter paper counter

[Code]

ASCII	ESC	SYN	3	n
Hex.	1B	16	33	n
Decimal	27	22	51	n

[Defined Area] n = 0, 1
n = 48, 49 (”0”, “1”)

[Initial Value] - - -

[Function] Acquires presenter paper counter.
This command is ignored when a presenter is not connected.
Counter can count to 0xFFFFFFFF sheets.
Counter is cleared to zero when the following conditions are met.
• At a printer reset
• At the <CAN> command
• At the <ESC> <SYN> 4 n command
The paper counter using this command sends the counter value at the time this command is processed.
The counter is counted up when paper is completely recovered or when pulled out.
The counter counts from when the power is turned ON, excluding the following.
• When paper is discharged because of an error
• When printing using self-print
• When paper in the presenter is discharged when the power is turned ON

N	Counter
n = 0, 48	Acquires paper reel counter
n = 1, 49	Acquires paper recovery counter

<Counter transmission format from printer: When using the paper reel counter>
Printer transmission: ESC SYN 3 n c1 c2 c3 c4
Reel counter: c4 + (c3 x 256) + (c2 x 256 x 256) + (c1 x 256 x 256 x256)

ESC SYN 4 n

[Name] Initialize presenter paper counter

[Code]

ASCII	ESC	SYN	4	n
Hex.	1B	16	34	n
Decimal	27	22	52	n

[Defined Area] n = 0

[Initial Value] - - -

[Function] Initializes the presenter paper counter (paper reel counter/paper recovery counter).
Initialization of the paper counter using this command is executed when this command is processed.

ESC GS SUB DC1 m t1 t2

[Name] Specify snout operation mode

[Code]								
	ASCII	ESC	GS	SUB	DC1	m	t1	t2
	Hexadecimal	1B	1D	1A	11	m	t1	t2
	Decimal	27	29	26	17	m	t1	t2

[Defined Area] 0 ≦ m ≦ 3, 48 ≦ m ≦ 51 (“0” ≦ m ≦ “3”)
t1 = 0, t2 =0

[Initial Value] MSW Setting

[Function] Specify the snout operation mode using the m parameter.

m	Snout Operating Mode
0, 48	Snout LED output OFF
1, 49	Snout LED output ON (while printing, or during presenter operation)
2, 50	Snout LED output ON (during an error)
3, 51	Snout LED output ON (while printing, or during presenter operation or an error)

This command is valid when a presenter is connected.
When the snout is not connected, this command is prohibited from use.

ESC GS SUB DC2 m t1 t2

[Name] Specify Snout LED ON/OFF

[Code]								
	ASCII	ESC	GS	SUB	DC2	m	t1	t2
	Hexadecimal	1B	1D	1A	12	m	t1	t2
	Decimal	27	29	26	18	m	t1	t2

[Defined Area] 1 ≦ m ≦ 2, 49 ≦ m ≦ 50, (“1” ≦ m ≦ “2”)
0 ≦ t1 ≦ 255, 0 ≦ t2 ≦ 255

[Initial Value] t1 = 2, t2 = 2

[Function] Specify Snout LED ON/OFF times.
m specifies the snout operation mode.

m	Snout Operating Mode
1, 49	This command specifies the LED ON/OFF times while the presenter is operating. (LED lights in orange while the printer is printing.)
2, 50	This command specifies the LED ON/OFF times for recoverable and non-recoverable errors.

t1 specifies the snout LED ON time.
When 1 ≦ t1 ≦ 255: ON time = t1 x 50 msec
When t1 = 0: When ON time is default value (t1=2)
T2 specifies the snout LED OFF time.
When 1 ≦ t2 ≦ 255: OFF time = t2 x 50 msec
When t2 = 0: When OFF time is default value (t2=2)
This command is valid when a presenter is connected.
When the snout is not connected, this command is prohibited from use.

ESC GS SUB DC3 m t1 t2

[Name] Snout LED output

[Code]								
	ASCII	ESC	GS	SUB	DC3	m	t1	t2
	Hexadecimal	1B	1D	1A	13	m	t1	t2
	Decimal	27	29	26	19	m	t1	t2

[Defined Area] 1 ≦ m ≦ 2, 49 ≦ m ≦ 50, (“1” ≦ m ≦ “2”)
0 ≦ t1 ≦ 255, 0 ≦ t2 ≦ 255

[Initial Value] ---

[Function] Outputs Snout LED.
m specifies the snout LED output terminal.

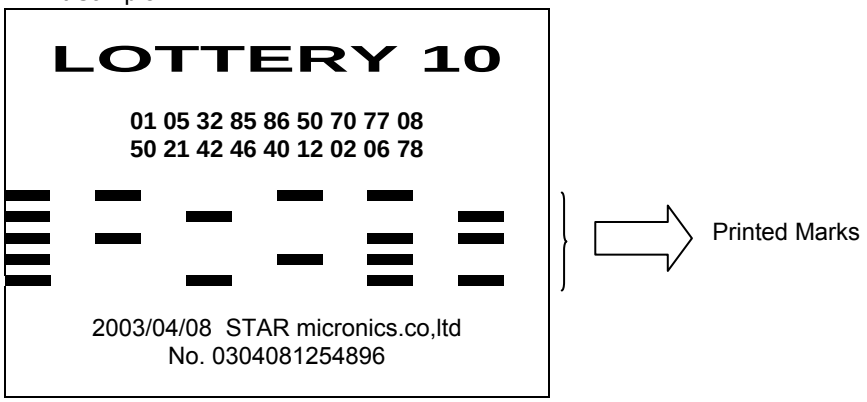
m	LED output terminal
1, 49	External output terminal 1
2, 50	External output terminal 2

t1 specifies the ON time for snout LED output.
When 1 ≦ t1 ≦ 255: ON time = t1 x 50 msec
When t1 = 0: When ON time is default value (t1=2)
t2 specifies the OFF time for snout LED output.
When 0 ≦ t2 ≦ 255: OFF time = t2 x 50 msec
When t2 = 0: When OFF time is default value (t2=2)
This command is valid when a presenter is connected.
When the snout is not connected, this command is prohibited from use.
This command has priority if received while outputting the snout LED in the operation mode specified by the <ESC><GS><EM><DC1> m t1 t2 command.

3.9. Mark Command Details

This command is specialized for printing mark sheets for lotteries. This command can print lines.

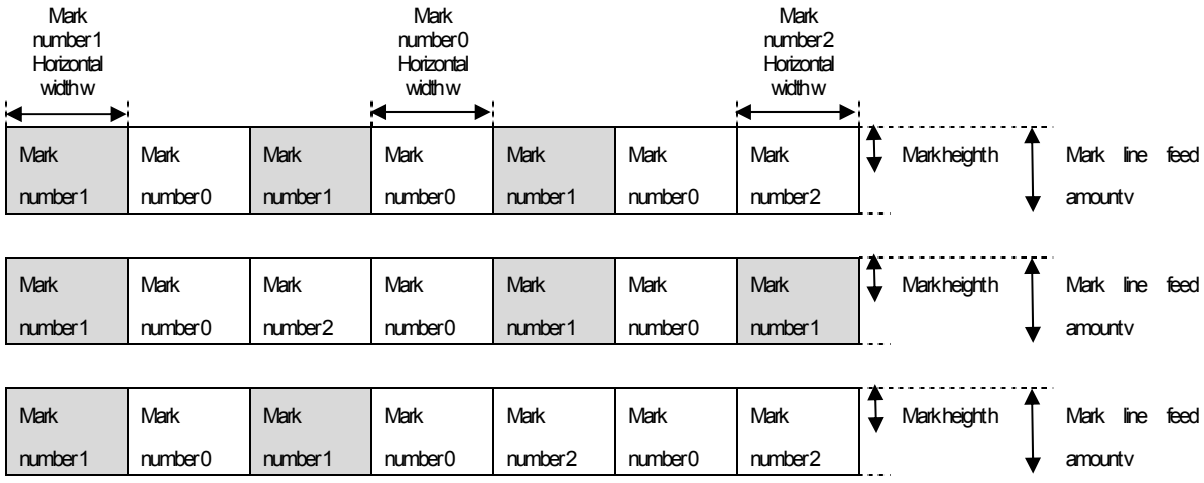
<Print Sample>



<Example of Command Transmission>

• Mark Format

Mark Height h = 10 dots, mark line feed amount v = 20 dots
Mark number 0: Mark Color c = White, Mark horizontal width w = 16 dots
Mark number 1: Mark Color c = Black, Mark horizontal width w = 40 dots
Mark number 2: Mark Color c = White, Mark horizontal width w = 40 dots



• Example Transmission

1. Mark height, Line feed amount setting
   <ESC> <GS> *1 h v (h = “010”, v = “020”)
2. Color of each mark number, Horizontal width setting
   <ESC> <GS> *2 m c w (Mark number 0 setting: m = “0”, c = “0”, w = “016”)
   <ESC> <GS> *2 m c w (Mark number 0 setting: m = “1”, c = “1”, w = “040”)
   <ESC> <GS> *2 m c w (Mark number 0 setting: m = “2”, c = “0”, w = “040”)
3. Register the mark format specified by 1 and 2 in advance in the non-volatile memory (it is possible to print marks that are not registered in the non-volatile memory.)
   <ESC> <GS> * W

4. Printing Marks

<ESC><GS> * 0 n m1 m2 m3 m4 m5 m6 m7
(n="007", m1="1", m2="0", m3="1", m4="0", m5="1", m6="0", m7="2")
<ESC><GS> * 0 n m1 m2 m3 m4 m5 m6 m7
(n="007", m1="1", m2="0", m3="2", m4="0", m5="1", m6="0", m7="1")
<ESC><GS> * 0 n m1 m2 m3 m4 m5 m6 m7
(n="007", m1="1", m2="0", m3="1", m4="0", m5="2", m6="0", m7="2")

ESC GS * 0 n m1 m2 m3 ... mk

[Name]	Print mark										
[Code]	ASCII	ESC	GS	*	0	n	m1	m2	m3	…	mk
	Hex.	1B	1D	2A	30	n	m1	m2	m3	…	mk
	Decimal	27	29	42	48	n	m1	m2	m3	…	mk

[Defined Area] “001” ≦ n ≦ ”255”
“0” ≦ m ≦ ”9”
k = n

[Initial Value] - - -

[Function] Prints the mark number specified by m, based on the mark format (mark height, mark line feed amount, each mark color, and each mark horizontal width) that is preset.
n indicates the number of marks to print; If the number of marks is 10 (m1 to m10), n = “010.”
m specifies the mark number to print.
n and m are ASCII character strings that are represented by decimals; They are composed of character codes “0” to “9.”
This command is ignored if there is print data in the image buffer. Therefore, other characters cannot be included (characters, bit images, bar codes, etc.).
If there is no mark specified in the remaining print region, the number of bytes specified by n are discarded.
Also, if the value of n is out of the defined range, subsequent data are processed as normal data.
This command is affected by position alignment, left margin, moved position, positions such as horizontal tab and upside down printing.

ESC GS * 1 h v

[Name] Specify mark height and line feed

[Code]							
ASCII	ESC	GS	*	1	h	v
Hex.	1B	1D	2A	31	h	v
Decimal	27	29	42	49	h	v

[Defined Area] “001” ≦ h ≦ ”255”
“001” ≦ v ≦ ”255”
h ≦ v

[Initial Value] Non-volatile memory

[Function] Specifies mark height and line feed amount
h is the mark height (number of dots); v is the line feed amount for the mark (number of dots)
h and v are ASCII character strings that are represented by decimals; They are composed of character codes “0” to “9.”
If a small line feed amount is specified, missing print can occur, so more than v = 16 dots is recommended.

ESC GS * 2 m c w

[Name] Specify mark color and mark horizontal width for each mark number

[Code]							
ASCII	ESC	GS	*	2	m	c	w
Hex.	1B	1D	2A	32	m	c	w
Decimal	27	29	42	50	m	c	w

[Defined Area] “0” ≦ m ≦ ”9”
“0” ≦ c ≦ ”1”
“001” ≦ w ≦ ”999”

[Initial Value] Non-volatile memory

[Function] Specifies mark color and mark horizontal width for each mark number.
m specifies the mark number.
c specifies the mark color.
w specifies the mark horizontal width (number of dots).
If w exceeds the currently set print region, this command is ignored.
m, c and w are ASCII character strings that are represented by decimals; They are composed of character codes “0” to “9.”

c	Mark Color
“0” (48)	White
“1” (49)	Black

ESC GS * W

[Name] Register mark format to non-volatile memory

[Code]

ASCII	ESC	GS	*	W
Hex.	1B	1D	2A	57
Decimal	27	29	42	87

[Defined Area] - - -

[Initial Value] - - -

[Function] Registers the mark format (mark height, mark line feed amount, each mark color, and each mark horizontal width) to the non-volatile memory.
After registering to the non-volatile memory, the printer is reset.

ESC GS * C

[Name] Initialize mark format in the non-volatile memory

[Code]

ASCII	ESC	GS	*	C
Hex.	1B	1D	2A	43
Decimal	27	29	42	67

[Defined Area] - - -

[Initial Value] - - -

[Function] Initializes the registered mark format (mark height, mark line feed amount, each mark color, and each mark horizontal width) in the non-volatile memory. After initialization, the printer is reset.

Initial Value of the Mark Format

- Mark Height:: “016” 16 dots
- Mark line feed amount:: “032” 32 dots
- Mark color: “0” (White → All mark numbers)
- Mark horizontal width: “080” 80 dots → All mark numbers)

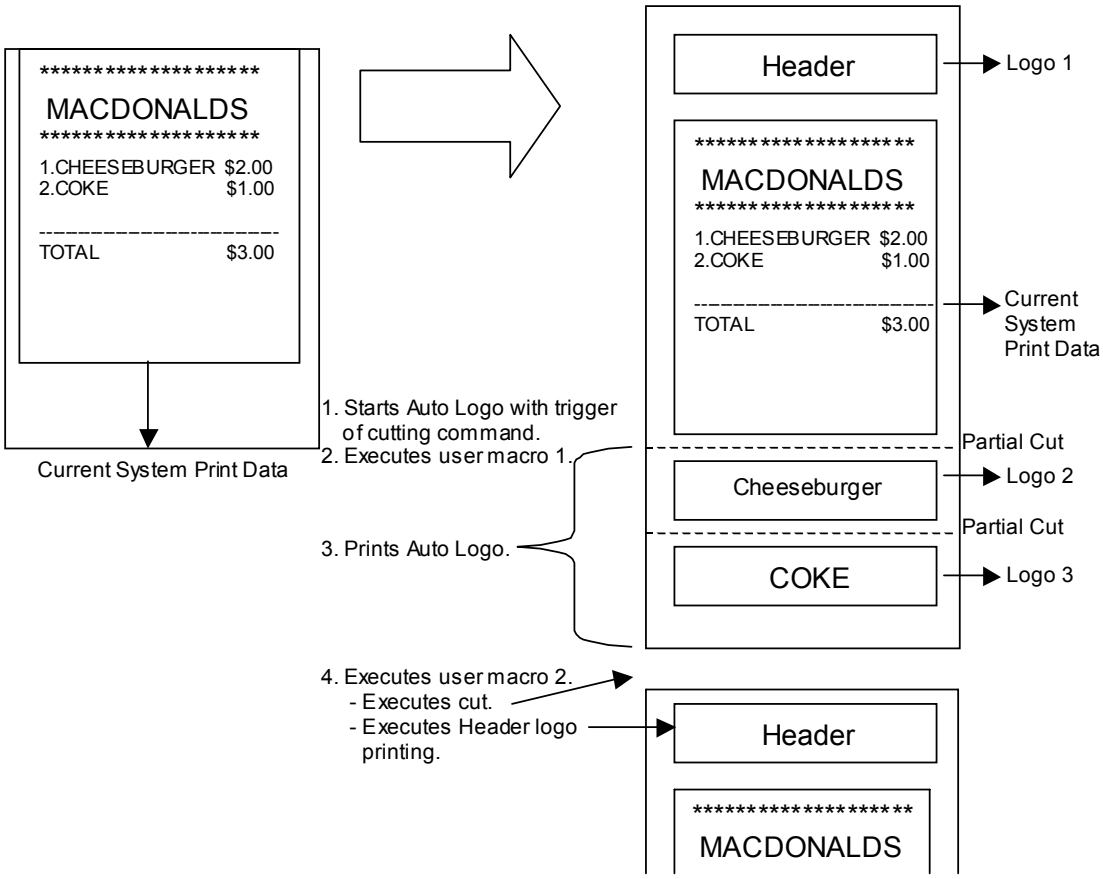
3.10. AUTO LOGO Function Command Details

This command functions to print logos, like the one below, by only changing the product name, when only product names can be changed in systems that are already in use. Also, this function has two operating modes.

1) Standard Auto Logo Function
The Auto Logo function is preset and executes the following operations using the print cut command under the current system as a trigger.

1. Starts up the Auto Logo function using the current system cut command as a trigger
2. Prints if there is print data in the image buffer
3. Executes user macro 1
4. Prints the Auto Logo
5. Executes user macro 2

Logo 2 is printed by #4 Auto Logo printing according to the command character "/" that was preset in the current print data and embedding the logo number "2" to print. Specifically, if the product is registered with "CHEESE BURGER/2" the logo 2 coupon ticket is automatically printed for the purchaser of a cheese burger. Also, Logo 1 for the header is used for company logos. By registering to the user macro 2 of #5, cut command + Logo 1 print command, the company logo of logo1 will be printed. User macro 1 of #3 is used when it is necessary to position the Auto Logo in the center. When doing so, register the left alignment command using the user macro 2 of #5 and return to its original setting.

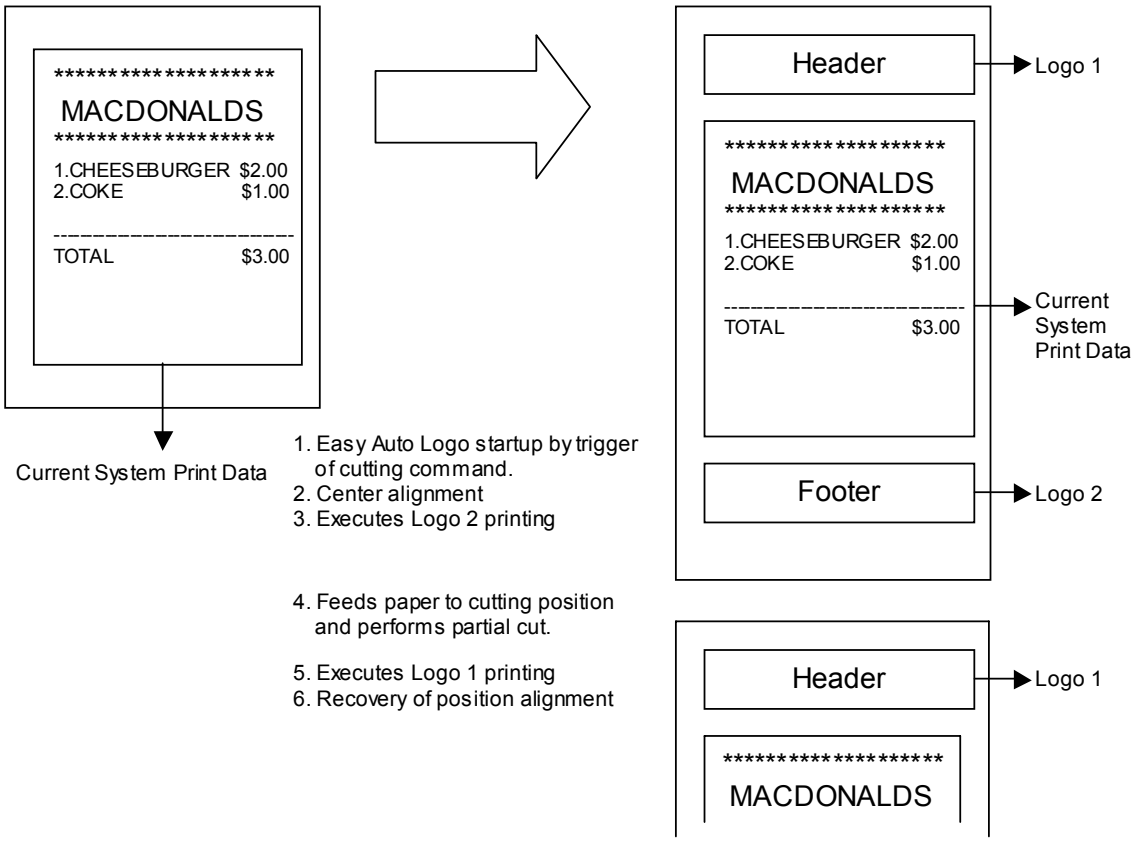


2) Simple Auto Logo Function

The simple Auto Logo function is preset and executes the following operations using the print cut command under the current system as a trigger.

1. Start up the simple Auto Logo function using the current system cut command as a trigger
2. Center alignment command process
3. Print Logo 2
4. Feed paper to cutting position and execute a partial cut
5. Print Logo 1
6. Recovers position alignment command to setting prior to execution of the simple Auto Logo

With the simple Auto Logo function, the logo number of the logo to be printed is decided in advance.



<Example of Command Transmission>

1) Set the Auto Logo function in advance and register it to the non-volatile memory.

ESC GS / 1 n (n=0x01)	Auto Logo Function ON
ESC GS / 2 n (n="/")	Specify Auto Logo Command Character ("/")
ESC GS / 3 nL nH d1 d2... dk	User Macro 1 Definition
nL=4 nH=0	Registered Macro Count = 4 Bytes
d1=0x1b d2=0x1d d2=0x61 d3=0x01	Registered Macro
	<ESC GS a 1: Center Alignment>
ESC GS / 4 nL nH d1 d2... dk	User Macro 2 Definition
nL=12 nH=0	Registered Macro Count = 12 Bytes
d1=0x1b d2=0x64 d3=0x03	Registered Macro
	<ESC d 3: Cutting position partial cut>
d4=0x1b d5=0x1c d6=0x70 d7=0x01 d8=0x00	<ESC FS p 1 0: Print Logo 1
d9=0x1b d10=0x1d d11=0x61 d12=0x00	<ESC GS a 0: Left Alignment>
ESC GS / 5 n (n=0x01)	Auto Logo Command Character, Space Switch
ESC GS / 6 n (n=0x01)	Partial Cut Before Auto Logo Printing Valid
ESC GS / W	Register Auto Logo Definition Data to Non-volatile Memory

2) Send registered command character embedded in print data

"CHEESE BURGER /2" →	"/" is recognized as a command character.
	Command characters are replaced by spaces.
	"2" specifies Logo 2.

ESC GS / W

[Name] Register Auto Logo setting to non-volatile memory

[Code]

	ESC	GS	/	W
ASCII				
Hex.	1b	1d	2f	57
Decimal	27	29	47	87

[Defined Area] - - -

[Initial Value] - - -

[Function] Registers Auto Logo setting to non-volatile memory
After registration, the printer is reset.
This command is ignored when Auto Logo is being executed.

ESC GS / C

[Name] Initialize Auto Logo setting to non-volatile memory

[Code]

	ESC	GS	/	C
ASCII				
Hex.	1b	1d	2f	43
Decimal	27	29	47	67

[Defined Area] - - -

[Initial Value] - - -

[Function] Initializes registered data in the non-volatile memory of the Auto Logo function.
After initialization, the printer is reset.
This command is ignored when Auto Logo is being executed.

The default values of the Auto Logo function are below.

Setting	Initial Value
Auto Logo Function	OFF
Command Character	None
User Macro 1	None
User Macro 2	None
Command Character Switch	No print
Partial Cut Before Auto Logo Printing	Disabled

ESC GS / 1 n

[Name] Auto Logo Function On/Off Setting

[Code]

ASCII	ESC	GS	/	1	n
Hex.	1b	1d	2f	31	n
Decimal	27	29	47	49	n

[Defined Area] $0 \leq n \leq 2$

[Initial Value] n = 0

[Function] Turns the Auto Logo function on and off.
This command is registered to the non-volatile memory by the <ESC> <GS> / W command.
When in raster mode, the Auto Logo function is invalid.
This command is ignored when Auto Logo is being executed.

n	Setting
0	Auto Logo Function OFF
1	Standard Auto Logo Function ON <Operation Specifications> 1. Start up the Auto Logo function using the current system cut command as a trigger 2. Prints if there is print data in the image buffer 3. Executes user macro 1 4. Prints the Auto Logo 5. Executes user macro 2
2	Simple Auto Logo Function ON <Operation Specifications> 1. Start up the Auto Logo function using the current system cut command as a trigger 2. Prints if there is print data in the image buffer 3. Execute center alignment 4. Print Logo 2 (When 2 color printing is set: Logo3) 5. Feed paper to cutting position and executes a partial cut 6. Print Logo 1 7. Recover position alignment setting Note: • With this setting, user macro and command character are invalid. (“/” is printed as a character if the command character is set to “/” when setting.)

The commands that are the triggers for the Auto Logo function are below.
When the standard Auto Logo Function is turned on by n = 1, the following trigger commands function only as triggers and do not cut paper. Therefore, it is necessary to register any cut command to the user macro 2.
When the simple Auto Logo Function is turned on by n = 2, the following cut commands are executed and are the triggers for the simple Auto Logo function.

- <ESC> d n: Cut command
- <FF>: When allocated to the cutting function

ESC GS / 2 n

[Name] Set command character

[Code]

ASCII	ESC	GS	/	3	n
Hex.	1b	1d	2f	32	n
Decimal	27	29	47	50	n

[Defined Area] 32 ≦ n ≦ 127, n = 0

[Initial Value] n = 0

[Function] Sets the Auto Logo function command character.
This command is registered to the non-volatile memory by the “<ESC> <GS> / W” command.
This command is ignored when Auto Logo is being executed.

n	Setting
32 to 127	Command Character
0	No Command Character Setting

A command character is a character that is a command for specifying the logo number to print with the Auto Logo printing.
When “/” is specified as the command character, “/2/3” is embedded in the print data.
The printer does not process the “/” as character data but as a command and stores number that follows at the end and prints it as an Auto Logo in the order that it is stored. Therefore, if “/2/3” is embedded, Auto Logo will print Logo2 and Logo3 in that order. If the specified logo has not been registered, logo printing will be ignored.
Also, if there is no set command character setting, a logo will not be printed.
Note that “/2/3” is processed as a command is not printed.
However, using the “<ESC> <GS> /5 n ” command it is possible to switch “/2/3” to a space.
In the same way as with “/2/3/2/2” if a logo is duplicated, only the initial logo is printed.
A maximum of 32 logos can be stored as Auto Logos.
Continuing after the command character, the following shows the defined area of the character d that specifies the logo number.
“1” ≦ d ≦ “9” (49 ≦ d ≦ 57) → Logo number 1 to 9
“A” ≦ d ≦ “F” (65 ≦ d ≦ 70) → Logo number 10 to 16

ESC GS / 3 nL nH d1 d2 ... dk

[Name] Set user macro 1

[Code]											
	ASCII	ESC	GS	/	3	nL	nH	d1	d2	...	dk
	Hex.	1b	1d	2f	33	nL	nH	d1	d2	...	dk
	Decimal	27	29	47	51	nL	nH	d1	d2	...	dk

[Defined Area] $1 \leqq n \leqq 64$
nH = 0
$1 \leqq (nL + nH \times 256) \leqq 64$
dk = (nL + nH x 256)
$0 \leqq d \leqq 255$

[Initial Value] No user macro 1 setting

[Function] Sets the user macro 1 of the Auto Logo function.
This command is registered to the non-volatile memory by the “<ESC> <GS> / W” command.
This command is ignored when Auto Logo is being executed.
Registers print data in user macro 1.
A maximum of 64 bytes of data can be registered.
Note that it is prohibited to register Auto Logo command characters in a user macro.

ESC GS / 4 nL nH d1 d2 ... dk

[Name] Set user macro 2

[Code]											
	ASCII	ESC	GS	/	4	nL	nH	d1	d2	...	dk
	Hex.	1b	1d	2f	34	nL	nH	d1	d2	...	dk
	Decimal	27	29	47	52	nL	nH	d1	d2	...	dk

[Defined Area] $1 \leqq nL \leqq 64$
nH = 0
$1 \leqq (nL + nH \times 256) \leqq 64$
dk = (nL + nH x 256)
$0 \leqq d \leqq 255$

[Initial Value] No user macro 2 setting

[Function] Sets the user macro 2 of the Auto Logo function.
This command is registered to the non-volatile memory by the “<ESC> <GS> / W” command.
This command is ignored when Auto Logo is being executed.
Registers print data in user macro 2.
A maximum of 64 bytes of data can be registered.
Note that it is prohibited to register Auto Logo command characters in a user macro.

ESC GS / 5 n

[Name] Set command character switching method

[Code]

ASCII	ESC	GS	/	5	n
Hex.	1b	1d	2f	35	n
Decimal	27	29	47	53	n

[Defined Area] $0 \leqq n \leqq 1$

[Initial Value] n = 0

[Function] Sets the Auto Logo function command character switching method.
This command is registered to the non-volatile memory by the “<ESC> <GS> / W” command.
This command is ignored when Auto Logo is being executed.

n	Setting
0	Does not print the command character and the following logo number
1	Switches the command character and the following logo number into a space character (0 x 20)

When “/” is specified as the command character, the “/2” embedded in the print data is not a character string, but processed as a command.
At this time, “/2” is processed as a command is not printed.
However, by specifying n = 1 in this command, it is possible to switch “/2” to a space.

ESC GS / 6 n

[Name] Set partial cut before Auto Logo printing

[Code]

ASCII	ESC	GS	/	6	n
Hex.	1b	1d	2f	36	n
Decimal	27	29	47	54	n

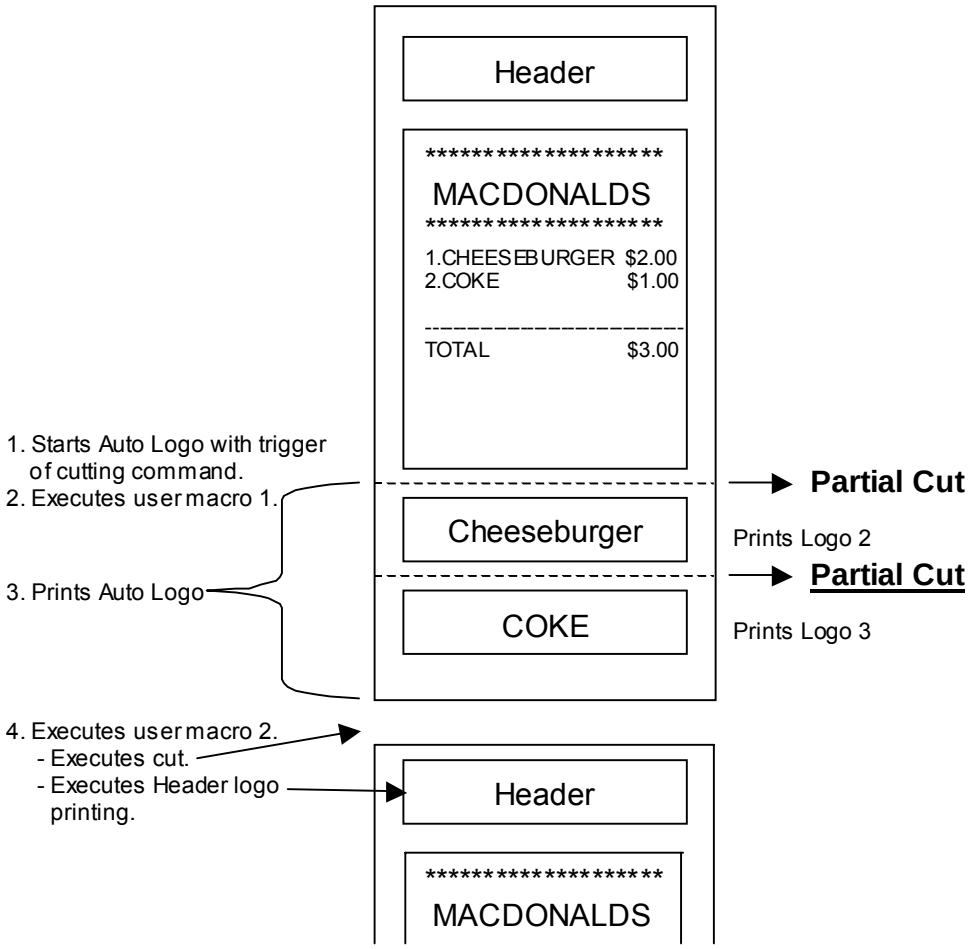
[Defined Area] $0 \leq n \leq 1$

[Initial Value] n = 0

[Function] Sets a partial cut before the Auto Logo printing.
This command is registered to the non-volatile memory by the "<ESC> <GS> / W" command.
This command is ignored when Auto Logo is being executed.

n	Setting
0	Does not execute a partial cut before the Auto Logo printing.
1	Executes a partial cut before the Auto Logo printing.

When printing Logo2 and Logo3 as Auto Logo printing like the one in the drawing below, this command selects to execute a partial cut before printing Logo2 of the Auto Logo and Logo3.
If a partial cut is executed using this function, it is possible to provide coupons, etc., that are printed using Auto Logo with a partial cut.



3.11. Two-dimensional Bar Code PDF417 Command Details

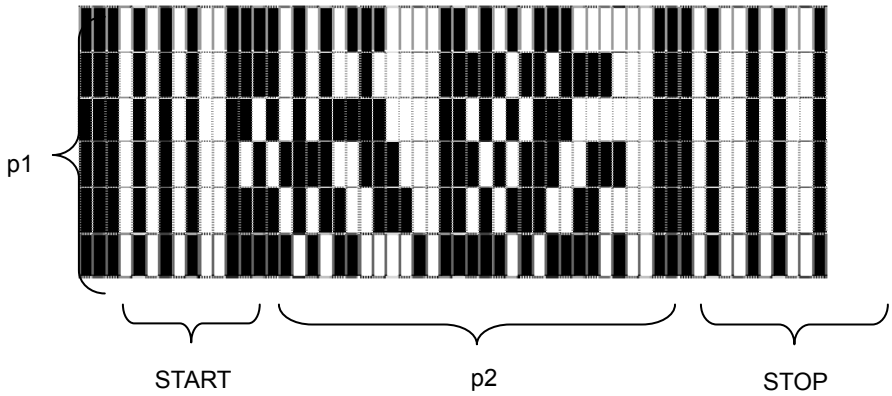
This command prints two-dimensional bar code PDF417.
There are four types of commands, according to functions, for two-dimensional bar code PDF417.

(1) Bar code type setting (<ESC> <GS> “x” “S”)
(2) Bar code data setting (<ESC> <GS> “x” “D”)
(3) Bar code printing (<ESC> <GS> “x” “P”)
(4) Bar code expansion information acquisition (<ESC> <GS> “x” “I”)

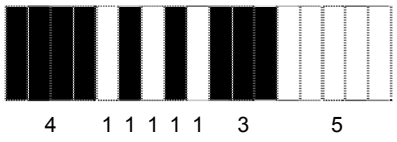
The following describes the functions in detail.

(1) Bar code type setting

These commands set the bar code type. Because these are all set with default values, they should be used only when it is necessary to change. (Refer to section below for details on each setting.)



PDF417 is configured by a fixed bar pattern for starting and stopping, and a bar pattern called a code word.
Code words are configured by 17 modules.



Code Word

<ESC> <GS> “x” “S” “0” specifies values of p1 and p2.
USE_LIMITS mode specify the ratio of p1 and p2. USE_FIXED mode specifies p1 (line count) and p2 (code word count per line).

<ESC> <GS> “x” “S” “1” specifies values of error correction levels.
PDF417 can read information even if a portion of the data is corrupted by using the error correction.
By increasing this level, the bar code size increases because there is more preparatory information.

<ESC> <GS> “x” “S” “2” and <ESC> <GS> “x” “S” “3” specify the size of the module that configures the code word.
The X direction size (in dot increments) is determined by <ESC> <GS> “x” “S” “2” for the module, and <ESC> <GS> “x” “S” “3” specifies the Y direction size from the aspect.
Module size setting is the basis for the bar code image that is generated, so the resulting print will vary according to that setting.

Printable size of bar code

Vertical Size [dots]	Horizontal Size [dots]
640	640

The settings above are set individually, so the errors described below may be generated even if there is no particular problem in those settings. In such case, if the bar code is generated the (3) print command (<ESC> <GS> “x” “P”) is ignored.

• Error is generated when generating a bar code, due to the combination of the bar code setting commands.
• The bar code data that is generated exceeds the printable size of PDF417.
• Print data exceeds the currently set print region.

It is recommended to use (4) Bar code expansion information acquisition (<ESC> <GS> “x” “I”) as a means for checking these errors prior to printing.

(2) Bar code data setting command

This command sets the print data of the bar code.

(3) Bar code print command

This command prints the bar code according to the settings of (1) and (2).

(4) Bar code expansion information acquisition

This command checks whether it is possible to print the bar code according to the settings of (1) and (2).

- Precautions for use of commands -

• Unless the following operations are performed, the setting values are maintained for (1) and (2).
• Sending of new setting commands
• Sending an initializing command (<ESC> @, <CAN>)
• The power is turned off
• Sending (3) and (4) when needed
• Printing
• When printing, position shifting according to the horizontal tab, absolute position specification, relative position specification, and position alignment is valid.
• Upside-down printing and two-color printing are possible.
• When a bar code is printed, always verify it by actual use.

Send the command transmission example last.

1. Bar code type setting

<ESC> <GS> “x” “S” “0” 0 2 3: Sets the bar code size to USE_LIMITS = 2:3
<ESC> <GS> “x” “S” “1” 3: Sets ECC level to 3
<ESC> <GS> “x” “S” “2” 3: Sets the module X direction size to 3 dots
<ESC> <GS> “x” “S” “3” 3: Sets module aspect ratio to 3

2. Bar code data setting

<ESC> <GS> “x” “D” 10 0 “0123456789”: Sets the bar code data

3. Printing bar code

To verify whether printing is possible with the current settings, check the bar code expansion information

<ESC> <GS> “x” “I”: Bar code expansion information check
<ESC> <GS> “x” “P”: Print

ESC GS x S 0 n p1 p2

[Name] Set PDF417 bar code size

[Code]	ASCII	ESC	GS	x	S	0	n	p1	p2
	Hex.	1B	1D	78	53	30	n	p1	p2
	Decimal	27	29	120	83	48	n	p1	p2

[Defined Area] n = 0, 1

When n = 0: 1 ≦ p1 ≦ 99, 1 ≦ p2 ≦ 99

When n = 1: p1 = 0 or 3 ≦ p1 ≦ 90, p2 = 0 or 1 ≦ p2 ≦ 30 (However, this excludes p1 = p2 = 0)

[Initial Value] n = 0, p1 = 1, p2 = 2

[Function] Parameter details

n (Specify Method to Specify Bar Code Size)		p1, p2 (Size Specification)
0	USE_LIMITS (Specify ratio of bar code horizontally and vertically)	p1: p2: Proportions of Vertical (p1) and Horizontal (p2) However, p1: p2 = 1: 99 to 10 : 1 (p1/p2 = 0.01 to 10)
1	USE_FIXED (Specifies number of lines and number of columns of bar code.)	p1: Number of lines (0, 3 to 90), p2: Number of columns (0, 1 to 30) However, p1 * p2 ≦ 928 When either p1 or p2 specifies 0, it indicates that that setting value is variable.

Setting the bar code size using this command specifies the general size of the bar code. The size will automatically be corrected according to the other settings.

ESC GS x S 1 n

[Name] Set PDF417 ECC (security level)

[Code]	ASCII	ESC	GS	x	S	1	n
	Hex.	1B	1D	78	53	31	n
	Decimal	27	29	120	83	49	n

[Defined Area] 0 ≦ n ≦ 8

[Initial Value] n = 1

[Function] Parameter details

• n: ECC level (0 to 8)

ESC GS x S 2 n

[Name] Set PDF417 module X direction size

[Code]	ASCII	ESC	GS	x	S	2	n
	Hex.	1B	1D	78	53	32	n
	Decimal	27	29	120	83	50	n

[Defined Area] 1 ≦ n ≦ 10

[Initial Value] n = 2

[Function] Parameter details

• n: Sets the module X direction size (x-dim). Units: Dots

It is recommended that 2 ≦ n when specifying using this command.

When using with n = 1, check by actual use.

ESC GS x S 3 n

[Name] Set PDF417 module aspect ratio

[Code]	ASCII	ESC	GS	x	S	3	n
	Hex.	1B	1D	78	53	33	n
	Decimal	27	29	120	83	51	n

[Defined Area] 1 ≦ n ≦ 10

[Initial Value] n = 3

[Function] Parameter details

• n: Sets the module aspect ratio (asp).

The module Y direction size (x-dim x asp) is set using this command.

It is recommended that 2 ≦ n when specifying using this command.
When using with n = 1, check by actual use.

ESC GS x D nL nH d1 d2 ... dk

[Name] Set PDF417 bar code data

[Code]	ASCII	ESC	GS	x	D	nL	nH	d1	d2	…	dk
	Hex.	1B	1D	78	44	nL	nH	d1	d2	…	dk
	Decimal	27	29	120	68	nL	nH	d1	d2	…	dk

[Defined Area] 0 ≦ nL ≦ 255, 0 ≦ nH ≦ 255
1 ≦ (nL + nH x 256) ≦ 1024
0 ≦ d ≦ 255
1 ≦ k ≦ 1024

[Initial Value] ---

[Function] Parameter details

• nL + nH x 256 : Bar code data count
• dk : Bar code data (Maximum 1024 data)

When [nL + nH x 256] is outside of the definition, data of [nL + nH x 256] bytes is discarded.

ESC GS x P

[Name] Print PDF417 bar code

[Code]	ASCII	ESC	GS	x	P
	Hex.	1B	1D	78	50
	Decimal	27	29	120	80

[Defined Area] ---

[Initial Value] ---

[Function] Prints the bar code data.

If there is unprinted data in the line buffer, this command is executed after printing that data in the line buffer. Therefore, it is not possible to print with other data in the same line (characters, bit images, bar codes).

Also, this command is ignored if the following errors occur.

• When an error is generated when generating a bar code, due to the combination of the bar code setting commands
• When the bar code data that is generated exceeds the printable size of PDF417
• When the print data exceeds the currently set print region

When a bar code is printed, always verify it by actual use.

ESC GS x I

[Name] Get PDF417 bar code expansion information

[Code]

ASCII	ESC	GS	x	I
Hex.	1B	1D	78	49
Decimal	27	29	120	73

[Defined Area] ---

[Initial Value] ---

[Function] When printing a bar code with the current settings and at the print starting position using this command, error information is sent to the printer. Therefore, it is possible to check whether it is possible to print before actually printing, by using this command.
If an error occurs, this command is discarded even if the print command (<ESC> <GS> “x” “P”) is sent.

If the following errors occur, “Error” information is sent to the printer.
• When an error is generated when generating a bar code, due to the combination of the bar code setting commands.
• When the bar code data that is generated exceeds the printable size of PDF417.
• When the print data exceeds the currently set print region

Transmission format: <ESC> <GS> “x” “I” n

n	
0	No Error
1	Error

3.12. Details of the Print Starting Trigger Control Command

This command is for models equipped with an expansion control function for page control of line unit commands, by controlling the image buffer by page.

ESC GS g 0 m n

[Name] Print starting trigger

[Code]							
	ASCII	ESC	GS	g	0	m	n
	Hex.	1B	1D	67	30	m	n
	Decimal	27	29	103	48	m	n

[Defined Area] m = 0, n = 0

[Initial Value] ---

[Function] Starts printing when there is unprinted data in the image buffer.
It is prohibited to send this command while in the raster mode.

ESC GS g 1 m n

[Name] Print starting timer

[Code]							
	ASCII	ESC	GS	g	1	m	n
	Hex.	1B	1D	67	31	m	n
	Decimal	27	29	103	49	m	n

[Defined Area] m = 0, 0 ≦ n ≦ 255

[Initial Value] Depends on the model

[Function] Sets the print starting timer specified at n x 10 msec.
The print starting timer starts measuring from the point where the print data reception stops, and measures up to the set print starting timer.
When the set print starting timer is reached, the printer starts printing if there is unprinted data in the image buffer.
It is prohibited to send this command while in the raster mode.

n	Operating Mode
0	Print starting timer = initial value
1 to 255	Print starting timer n x 10 msec.

3.13. Two-Dimensional Bar Code QR Code Command Details

* Note that QR code is a registered trademark of DENSO WEB.

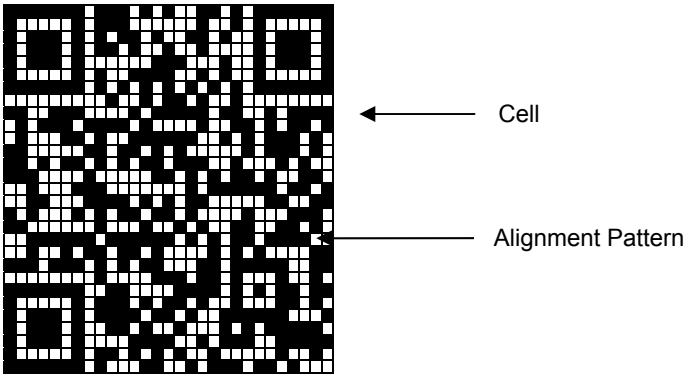
This command is for printing 2-dimensional bar code QR codes. There are four functions of the commands relating to the 2-dimensional bar code QR codes, shown below.

(1) Set bar code type	(<ESC> <GS> “y” “S”)
(2) Set bar code data	(<ESC> <GS> “y” “D”)
(3) Set page mode	(Reserved)
(4) Print Bar code	(<ESC> <GS> “y” “P”)
(5) Set bar code type	(<ESC> <GS> “y” “I”)

The details of each function are described below.

(1) Set bar code type

These commands set the bar code type. Because all initial values are set, use these only to make changes. (See the details for each setting below.)



<ESC> <GS> “y” “S” “0” Sets the model

Currently supported models are model 1 and model 2. Model 2 has a configuration including an alignment bar to improve its support of weight to handle skewing when codes are large.

<ESC> <GS> “y” “S” “1” Sets the error correction level

QR codes can be read even if a part of the data is corrupted, by using error correction. Raising this level increases the size of the bar code because there is an increase in preparatory information.

<ESC> <GS> “y” “S” “2” Specifies the size of the cell (One four squared region configuring the QR code)

The QR code is formed into a square of an equivalent size in the vertical and horizontal directions, but the size of the bar code image that is generated depends on the cell size setting. See Appendix 7 for details on the actual printed size of the QR code.

These settings are individual settings. Therefore, even though there may not be any particular problem in each of them, there is the potential for an error to be generated. (See the descriptions below.) In such cases, the bar code will not be generated and the (4) Print command (<ESC> <GS> “y” “P”) is ignored. With the (5) Get bar code expansion information command, an error code is returned.

• Error is generated when generating a bar code by the combination of each setting command.
• Print data exceeds the currently set print region

Therefore, it is recommended to use (5) Get bar code expansion information command (<ESC> <GS> “y” “I”) as a means for checking for these errors prior to printing.

(2) Set bar code data

This command sets the bar code print data. There are four types of data that can be set using QR codes. They are: numbers; English characters; binary; and Kanji. Furthermore, there are two types of data setting methods. One is to specify these along with the bar code data (data manual analysis), and the other is to specify only the bar code data (data automatic analysis).

(3) Set page mode
This command is not used.

(4) Print Bar code
This command prints bar codes based on the settings of (1) to (3).

(5) Set bar code type
This command confirms whether to print bar codes based on the settings of (1) to (3).

= Precautions on using these commands =
• The setting values for (1) to (3) are held unless any of the following operations are performed.

- Sending a new setting command
- Sending an initialize command (<ESC> @, <CAN>)
- Turning the power OFF

• When there is an error in sending a command with (2), the set data is cleared and the command itself is disabled.

• (4) and (5) are sent when necessary.

• Printing:
- When printing, position movement using specify absolute position, specify relative position, and align position are enabled.
- Upside down printing and 2-color printing are possible.

• Printed bar codes should always be checked in an actual use.

The following is an example showing the sending of the commands.

(1) Set bar code type

<ESC> <GS> “y” “S” “0” 1	Sets to model 1.
<ESC> <GS> “y” “S” “1” 0	Sets mistake correction level to L.
<ESC> <GS> “y” “S” “2” 3	Sets cell size to 3 dots.

(2) Set bar code data

• <ESC> <GS> “y” “D” “1” 0 20 0	“2005, January, 1 (SAT)” <LF>
	Sets bar code data (Data automatic analysis)
	Sets bar code data (Data manual analysis)

• <ESC> <GS> “y” “D” “2” 10	1 4 0 “2005” “,”
4 2 0	“Year” “,”
1 1 0	“1” “,”
4 2 0	“Month” “,”
1 1 0	“1” “,”
4 2 0	“Day” “,”
4 2 0	“(” “,”
2 3 0	“SAT” “,”
4 2 0	“)” “,”
3 1 0	<LF>

(3) Print bar code

To verify whether to print with the current settings, check the bar code expansion information.

<ESC> <GS> “y” “I”	Check bar code expansion information
<ESC> <GS> “y” “p”	Print

ESC GS y S 0 n

[Name] Set QR code model

[Code]							
	ASCII	ESC	GS	y	S	0	n
	Hex.	1B	1D	79	53	30	n
	Decimal	27	29	121	83	48	n

[Defined Area] 1 ≦ n ≦ 2

[Initial Value] n = 2

[Function] Sets the model.

• Parameter details

n	Set Model
1	Model 1
2	Model 2

ESC GS y S 1 n

[Name] Set QR code mistake correction level

[Code]							
	ASCII	ESC	GS	y	S	1	n
	Hex.	1B	1D	79	53	31	n
	Decimal	27	29	121	83	49	n

[Defined Area] 0 ≦ n ≦ 3

[Initial Value] n = 0

[Function] Sets the mistake correction level.

• Parameter details

n	Mistake Correction Level	Mistake Correction Rate (%)
0	L	7
1	M	15
2	Q	25
3	H	30

ESC GS y S 2 n

[Name] Set QR code cell size

[Code]							
	ASCII	ESC	GS	y	S	2	n
	Hex.	1B	1D	79	53	32	n
	Decimal	27	29	121	83	50	n

[Defined Area] 1 ≦ n ≦ 8

[Initial Value] n = 3

[Function] Sets the cell size.

• Parameter details

• n: Cell size (Units: Dots)

• It is recommended that the specification using this command be 3 ≦ n.
If n = 1 or 2, check by actually using.

ESC GS y D 1 m nL nH d1 d2 ... dk

[Name] Set QR code cell size (Auto Setting)

[Code]

ASCII	ESC	GS	y	D	1	m	nL	nH	d1	d2	…	dk
Hex.	1B	1D	79	44	31	m	nL	nH	d1	d2	…	dk
Decimal	27	29	121	68	49	m	nL	nH	d1	d2	…	dk

[Defined Area] m = 0
0 ≦ nL ≦ 255, 0 ≦ nH ≦ 255
1 ≦ nL + nH x 256 ≦ 7089 (k = nL + nH x 256)
0 ≦ d ≦ 255

[Initial Value] ---

[Function] Automatically expands the data type of the bar code and sets the data.
• Parameter details
• nL + nH x 256: Byte count of bar code data
• dk: Bar code data (Max. 7089 bytes)
• When using this command, the printer receives data for the number of bytes (k) specified by nL and nH. The data automatically expands to be set as the bar code data.
• Indicates the number bytes of data specified by the nL and nH.
Bar code data is cleared at this time.
• The data storage region of this command is shared with the manual setting command so data is updated each time either command is executed.

ESC GS y D 2 a m1 n1L n1H d11 d12 • • • d1k m2 n2L n2H d21 d22 • • • d2k ml • • • dlk

[Name] Set QR code cell size (Manual setting)

[Code]

ASCII	ESC	GS	y	D	2	a	m1	n1L	n1H	d11	d12	...	d1K
Hex.	1B	1D	79	44	32	a	m1	n1L	n1H	d11	d12	...	d1K
Decimal	27	29	121	68	50	a	m1	n1L	n1H	d11	d12	...	d1K

ASCII	m2	n2L	n2H	D21	d22	...	d2K	ml	...	dkl
Hex.	m2	n2L	n2H	D21	d22	...	d2K	ml	...	dkl
Decimal	m2	n2L	n2H	D11	d22	...	d2K	ml	...	dkl

[Defined Area] $1 \leqq a \leqq 255$
$1 \leqq m \leqq 4$
$0 \leqq nL \leqq 255$, $0 \leqq nH \leqq 255$
$1 \leqq nL + nH \times 256 \leqq 7089$ ($k = nL + nH \times 256$)
$0 \leqq d \leqq 255$
$1 \leqq l \leqq 255$

[Initial Value] ---

[Function] Specifies the bar code data type and sets the data.
• Parameter details
• a: Block count
• m: Input data type
• nL + nH x 256: Bar code data byte count
• dk: Bar code data (Max. 7089 bytes)

m	Data Type	Data Definition Region (d)
1	Numbers	“0” to “9”
2	English Characters	“”, “$”, “%” “*”, “+”, “-“ “.” “/”, “:”, “0” to “9”, “A” to “Z”,
3	Binary	0x00 to 0xFF
4	Kanji (Shift JIS)	0x8140 to 0x9FFC, 0xE040 to 0xEBBF However, the lower 8 bits are 0x40 to 0x7E, and 0x80 to 0xFC

• The printer receives the data type specified by m, and the data of the number of bytes (k) specified by nL and nH, based on the block count specified by a.
• 1 block specified by a indicates m1, n1L, n1H, d11 • • • d1k (data type + data count + bar code data), and by continuously sending these a multiple of times, one bar code data can mix data types.
• It is possible to set a maximum of 255 blocks with one command transmission.
• nL and nH specify the number of bytes of the data, so when using Kanji, calculate that 1 character has 2 bytes.
• If this command is outside of the definition region, immediately stop the command analysis process.
When doing so, the bar code data is cleared.
• This command data storage region is shared with the automatic setting command, so data is updated each time either command is executed.

ESC GS y P

[Name] Print QR code

[Code]

	ESC	GS	y	P
ASCII				
Hex.	1B	1D	79	50
Decimal	27	29	121	80

[Defined Area] ---

[Initial Value] ---

[Function] Prints bar code data.
When receiving this command, if there is unprinted data in the image buffer, the printer will print the bar code after printing the unprinted print data.
A margin of more than 4 cells is required around the QR code. The user should ensure that space.
Always check printed bar codes in actual use.

ESC GS y I

[Name] Get QR code expansion information

[Code]

	ESC	GS	y	I
ASCII				
Hex.	1B	1D	79	49
Decimal	27	29	121	73

[Defined Area] ---

[Initial Value] ---

[Function] Sends information on generated image sizes and errors in bar code expansion using the current settings. Therefore, it is possible to check whether printing is possible prior to actual printing. If there is an error in the expanded bar code, this command is ignored even if the expand command (<ESC> <GS> “y” “P”) is sent.

In the even that errors like the ones below occurs, “Error” information is sent to the printer.
• When there is an error in generating a bar code by the combination of bar code setting commands.
• When the generated bar code data exceeds the printable size

Sending Format: <ESC> <GS> “y” “I” n1 n2

n1 n2	Bar Code Information
0x0000	Error
0x0001 to 0xffff	Size around generated bar code (Units: Dots)

3.14. Page Function Command Details

ESC GS h 0 k m n

[Name] 180 degree turnover

[Code]								
	ASCII	ESC	GS	h	0	k	m	n
	Hex.	1B	1D	68	30	k	m	n
	Decimal	27	29	104	48	k	m	n

[Defined Area] 0 ≦ k ≦ 1, m = 0, n = 0

[Initial Value] ---

[Function] Sets 180 degree turnover function to be valid/invalid.

n	180 Degree Turnover Function
0	Invalid
1	Valid

<180 Degree Turnover Function>

When set to the 180 degree turnover function, that function is executed at the trigger.
However, this function is effective for print data that can be contained in the image buffer length.
Print data beyond the image buffer length is unaffected by this function.
Printing that is started other than the 180 degree turnover trigger ignores this function.

180 degree turnover triggers

- Cutter command: <ESC> d n
- FF command: <FF>
- BM detection command: <ESC> d n, <FF>
- Print start command: <ESC> <GS> g 0 m n
- Raster mode: When <FF> is executed.

Use example

1) When 180 degree turnover function is enabled: <ESC> <GS> h 0 k m n (k = 0x01, m = 0x00, n = 0x00)
2) Print data transfer: Print data (Print length is less than length of image buffer.)
3) Trigger command transfer: <ESC> d n (Cutter command is 180 degree turnover trigger.)

ESC GS h 1 k m n

[Name] Water mark function

[Code]								
	ASCII	ESC	GS	h	1	k	m	n
	Hex.	1B	1D	68	31	k	m	n
	Decimal	27	29	104	49	k	m	N

[Defined Area] 0 ≦ k ≦ 2, 0 ≦ m ≦ 2, 1 ≦ n ≦ 255

[Initial Value] ---

[Function] Sets the water mark function to be valid/invalid.

k	Water Mark Function
0	Invalid
1	Valid Prints one specified logo at a position centered horizontally and vertically.
2	Valid Repeats printing of the specified logo from the top edge to the bottom edge at positions centered horizontally.

• To set to an appropriate image as the water mark using this setting, set the method for forming The logo data to be printed as the water mark.
If it is not possible to set an appropriate image with this setting, form the logo data registered as the water mark into the appropriate data and reregister it.

m	Water Mark Data Forming
0	Prints the logo data specified by n as it is.
1	Prints the logo data specified by n thinned 25%.
2	Prints the logo data specified by n thinned 12.5%.

• Specify the registered logo in the water mark.

n	Logo Number
1 to 255	Registered logo numbers. If the specified logo number is not registered, the water mark will not be printed.

<Water Mark Function>
When the water mark function is valid, the water mark is printed by its trigger.
However, this function is effective for print data that can be contained in the image buffer length.
Print data beyond the image buffer length is unaffected by this function.
Printing that is started other than the water mark trigger ignores the water mark print.
When in 2-color printing, this function is ignored.
Water mark printing triggers
• Cutter command: <ESC> d n
• FF command: <FF>
• BM detection command: <ESC> d n, <FF>
• Print start command: <ESC> <GS> g 0 m n
• Raster mode: When <FF> is executed.
Use example
1) Register logo to use as water mark in logo number 1.
2) Water mark function is enabled: <ESC> <GS> h 1 k m n (k = 0x02, m = 0x01, n = 0x01)
2) Print data transfer: Print data (Print length is less than length of image buffer.)
3) Trigger command transfer: <ESC> d n (Cutter command is water mark printing trigger.)

4. CHARACTER CODE TABLES

Refer to the separate ”Character Code Tables” .

5. APPENDIX

5.1. Appendix 1: Bar Code Specification Details

Refer to the dedicated manuals for characteristics and methods of use for each bar code symbol.
This section describes precautions and methods for setting when printing with the printer.

Bar code widths are set for each bar code according to the mode. The following describes each mode and the dot counts.
The user must ensure the specified printing position and quiet zone at the position where the bar code begins.

5.1.1. Code 39

Code 39 represents numbers 0 to 9 and the letters of the alphabet from A to Z. These are the symbols most frequently used today in industry.

1. Length of characters in each mode

Items	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	Mode 7	Mode 8	Mode 9
Narrow Element Width	2 dots	3 dots	4 dots	2 dots	3 dots	4 dots	2 dots	3 dots	4 dots
Wide Element Width	6 dots	9 dots	12 dots	5 dots	8 dots	10 dots	4 dots	6 dots	8 dots
Ratio	1:3	1:3	1:3	1:2.5	1:2.7	1:2.5	1:2	1:2	1:2
Character Spacing	2 dots	3 dots	4 dots	2 dots	3 dots	4 dots	2 dots	3 dots	4 dots
Length of 1 Character	4 mm	6 mm	8 mm	3.625 mm	5.625 mm	7.25 mm	3.25 mm	4.875 mm	6.5 mm

(*) The length of 1 character includes the character spacing.

2. Regulations

The start and stop bar code (*) in Code 39 are automatically inserted.

5.1.2. Interleaved 2 of 5

Interleaved 2 of 5 represents numbers 0 to 9. Higher density of characters is possible and with JIS and EAN, and printing to cardboard for distribution has been standardized.

1) Narrow element width and length of symbols per 2 characters

Items	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	Mode 7	Mode 8	Mode 9
Narrow Element Width	2 dots	4 dots	6 dots	2 dots	4 dots	6 dots	2 dots	3 dots	4 dots
Wide Element Width	5 dots	10 dots	15 dots	4 dots	8 dots	12 dots	6 dots	9 dots	12 dots
Ratio	1:2.5	1:2.5	1:2.5	1:2	1:2	1:2	1:3	1:3	1:3
Length of 1 Character	4mm	8mm	12mm	3.5mm	7mm	10.5mm	4.5mm	6.75mm	9mm

2. Regulations

- By selecting interleaved 2 of 5 bar code symbols, start and stop patterns are automatically inserted.
- When the bar code data digit count is odd, a zero is added to the highest value digit.
- Details conform to standards for AIM, USS-12/5, ANSI and JIS x 0502.

5.1.3. JAN/EAN/UPC

Used numbers, not only the bar code symbols, are controlled using JAN, EAN and UPC as shared common commercial codes. Mainly, they are used for supermarkets such as shops and grocery stores.

1. Each mode and bar code width

Items		Mode 1	Mode 2	Mode 3
Module Width		2 dots	3 dots	4 dots
Bar code width (*)	JAN/EAN-8	16.75 mm	25.125 mm	33.5 mm
	JAN/EAN-13	23.75 mm	35.625 mm	47.5 mm
	UPC-A	23.75 mm	35.625 mm	47.5 mm
	UPC-E	12.75 mm	19.125 mm	25.5 mm

(*) Includes the guard bar (left/right/center) but not the white space.

2. Regulations

- JAN/EAN -8:
  Data is in 7 or 8 digits. The command is ignored for others.
  The check digit uses a modulus weight of 10/3 and is automatically applied.
  When the calculated value and the numerical value of the 8th digit differ, the calculated value has priority.
- JAN/EAN -13:
  Data is in 12 or 13 digits. The command is ignored for others.
  The check digit uses a modulus weight of 10/3 and is automatically applied.
  When the calculated value and the numerical value of the 13th digit differ, the calculated value has priority.
- UPC – A:
  Data is in 11 or 12 digits. The command is ignored for others.
  The check digit uses a modulus weight of 10/3 and is automatically applied.
  When the calculated value and the numerical value of the 12th digit differ, the calculated value has priority.
- UPC – E:
  Data is in 11 or 12 digits. The command is ignored for others.
  The check digit uses a modulus weight of 10/3 and is automatically applied.
  When the calculated value and the numerical value of the 12th digit differ, the calculated value has priority.
  Data conversion to rectangles is automatic.
  Data that cannot be shortened is processed as invalid data.

5.1.4. Code 128

These are bar code symbols that can print ASCII 128 characters. For that reason, use thereof is increasing.

1. Each module and module width

Items	Mode 1	Mode 2	Mode 3
Module Width	2 dots	3 dots	4 dots
Length of 1 Character (*)	2.75 mm	4.125 mm	5.5 mm

(*) Start and stop bars not included.

2. Regulations

When using <LF> with the command, control codes are not sent by the host PC, so the control codes are sent as data, as shown below.

• When sending the following data, it represents a 2 character set.
% (25H) represents %0 (25H 30H).
Control codes (00H to 1FH) represent 40H to 5FH applied behind %.
Control code (7FH) represents %5 (25H 35H).
Function codes represent 1 to 4 (31H to 34H) applied behind %.
Start codes represent 6 to 8 (36H to 38H) applied behind %.
• Stop code (SC)/Check character (CK) are automatically applied.
• When start code is omitted:
Uses START C when more than 4 digits continue after header.
Uses START A when initial data other than numbers are the control code.
Uses START B for other cases.

• 2 Character set code table

<Control Codes>

<Control Codes>

Code	Format
NUL 00H	%@ 25H 40H
SOH 01H	%A 25H 41H
STX 02H	%B 25H 42H
ETX 03H	%C 25H 43H
EOT 04H	%D 25H 44H
ENQ 05H	%E 25H 45H
ACK 06H	%F 25H 46H
BEL 07H	%G 25H 47H
BS 08H	%H 25H 48H
HT 09H	%I 25H 49H
LF 0AH	%J 25H 4AH
VT 0BH	%K 25H 4BH
FF 0CH	%L 25H 4CH
CR 0DH	%M 25H 4DH
SO 0EH	%N 25H 4EH
SI 0FH	%O 25H 4FH
DLE 10H	%P 25H 50H
DC1 11H	%Q 25H 51H
DC2 12H	%R 25H 52H
DC3 13H	%S 25H 53H
DC4 14H	%T 25H 54H
NAK 15H	%U 25H 55H
SYN 16H	%V 25H 56H
ETB 17H	%W 25H 57H
CAN 18H	%X 25H 58H
EM 19H	%Y 25H 59H
SUB 1AH	%Z 25H 5AH
ESC 1BH	%[25H 5BH
FS 1CH	% ¥25H 5CH
GS 1DH	%] 25H 5DH
RS 1EH	%^ 25H 5EH
US 1FH	%_ 25H 5FH
DEL 7FH	%5 25H 35H

<Control Codes>

Code	Format
% 25H	%0 25H 30H

<Function Codes>

Code	Format	
FNC1	%1 25H 31H	☆
FNC2	%2 25H 32H	☆
FNC3	%3 25H 33H	☆
FNC4	%4 25H 34H	☆

<Start Codes>

Code	Format	
START A	%6 25H 36H	☆
START B	%7 25H 37H	☆
START C	%8 25H 38H	☆

5.1.5. Code 93

1. Each mode and module width

Items	Mode 1	Mode 2	Mode 3
Module Width	2 dots	3 dots	4 dots
Length of 1 Character (*)	2.25 mm	3.375 mm	4.5 mm

(*) Start and stop bars not included.

2. Regulations
   - Start/stop codes are automatically applied.
   - Check character (C, K) is automatically applied.
   - 2 character set expression conforms to Code 128.

   However, items marked with a star are codes that can only be used with Code 128, and not with Code 93.

5.1.6. NW7 (CODERBAR)

NW7 normally uses either A through D as the start/stop codes and represents special symbols (- (minus sign)/$ (dollar sign)/: (colon)// (slash)/. (period)/+ (plus sign) between 0 to 9.
These are used as carrier package marking bar codes, DPE (photo prints) and for medical related industries (USA).

1. Length of 1 character in each mode

Items	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	Mode 7	Mode 8	Mode 9
Narrow Element Width	2	3	4	2	3	4	2	3	4
Wide Element Width	6	9	12	5	8	10	4	6	8
Ratio	1:3	1:3	1:3	1:2.5	1:2.7	1:2.5	1:2	1:2	1:2
Character Spacing (Dots)	2	3	4	2	3	4	2	3	4
Length of 1 Character (Normally mm) (Width mm)	3 3.5	4.5 5.25	6 7	2.75 3.125	4.25 5.125	5.5 6.25	2.5 2.75	3.75 4.125	5 5.5

- With NW7, lengths differ because narrow elements and wide elements are included according to the characters.
- Normal characters (narrow: 5, wide: 2) and numbers (0 to 9), - and $
- Wide characters (narrow: 4, wide: 3) ,/,.,+, A to D
- Character spaces are included in 1 character length.

5.2. Appendix 2: Status Specifications

5.2.1. ENQ Command Status

This status is the one the printer transmits using the ENQ command.

Bit	Contents	Status		Model Compatability									
		"0"	"1"	TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500	
7	Conversion SW	OPEN	CLOSE	OK	OK	OK	No	NO	NO	OK	OK	NO	
6	Overrun Error	No	Yes	OK	OK	OK	OK	OK	OK	OK	OK	OK	
5	Reception Buffer Empty	Has Data	Empty	OK	OK	OK	OK	OK	OK	OK	OK	OK	
4	Fixed at "0"		-	-	-	-	-	-	-	-	-	-	
3	Paper end	Paper	No Paper	OK	OK	OK	OK	OK	OK	OK	OK	OK	
2	Other Errors	No	Yes	OK	OK	OK	OK	OK	OK	OK	OK	OK	
1	Framing Error	No	Yes	OK	OK	OK	OK	OK	OK	OK	OK	OK	
0	Parity Error	No	Yes	OK	OK	OK	OK	OK	OK	OK	OK	OK	

• Overrun errors/Framing errors/Parity errors

These errors occur when using a serial I/F.

These errors are after holding the error and using this command to inquire the status and the error status is sent.

• Other Errors

Indicates non-recoverable errors and cover open errors.

5.2.2. EOT Command Status

This status is the one the printer transmits using the EOT command.

Bit	Contents	Status		Model Compatability									
		"0"	"1"	TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650		
7	Compulsion SW	OPEN	CLOSE -	OK	OK	OK	-	-	-	OK	OK		
6	Presenter Paper Jam Error	No	Yes	No	No	No	OK	No	NO	NO	NO		
5	Paper Near-end (Outer Side)	Paper	No Paper	No	No	No	No	No	NO	NO	NO		
4	Fixed at "1"		-	-	-	-	-	-	-	-	-		
3	Paper end	Paper	No Paper	OK	OK	OK	OK	OK	OK	OK	OK		
2	Paper Near-end (Inner Side)	Paper	No Paper	OK	OK	OK	OK	OK	NO	OK	OK		
1	BINDING MEDIA Error	No	Yes	No	No	No	OK	OK	OK	OK	NO		
0	Fixed at "0"		-	-	-	-	-	-	-	-	-		

• BM Error

On models that use a common PE and BM sensor, if a continuous error is detected beyond a determined amount, it indicates not a black mark error, but a paper out error.

5.2.3. Automatic Status

Automatic status is a group of states that are automatically returned from the printer to the host when the printer's status has changed. Automatic status is composed of "Header – 1," "Header – 2" and "plurality of bytes of the printer status and is continuously returned to the host. The host always uses an identifying method to identify the data for every byte received.
(It is possible that Xon/Xoff codes are exceptionally mixed in the automatic status in the Xon/Xoff mode (when using a serial I/F), so it is necessary to consider that on the receiving side.)
The valid/invalid conditions of the automatic status abide by the DIPSW settings for the initial values.
It is possible to change the conditions using the ESC RS a n command after turning ON the power.
Also, it is possible to get the automatic status using the ESC ACK SOH command, regardless of the valid/invalid conditions.

1. Header – 1

Header – 1 is the 1 byte length information transmitted at the head of the automatic status.
The table below shows the composition of the Header – 1. Header – 1 represents the entire status transmission byte count, including Header – 1, using bit 1 to bit 3 and bit 5. The host gets the transmission byte information and always receives the status data for that amount transmission bytes. For reference, the table below shows the relationship of actual transmission bytes and the Header – 1. Because the bit 0 that indicates that this is the Header – 1 is normally 1 (the second byte and beyond is 0), to detect the Header – 1, it is acceptable to verify that bit 0 is 1 and bit 4 = 0 for this data. Note that bit 6 is for future expansion and is ignored in host-side processes.

<Header – 1 (First Byte)>

Bit	Contents	Status		Model Compatability									
		"0"	"1"	TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500	
7	Fixed at "0"		-	-	-	-	-	-	-	-	-	-	
6	Reserved (Fixed at "0")		-	-	-	-	-	-	-	-	-	-	
5	Printer Status Byte Count			OK	OK	OK	OK	OK	OK	OK	OK	OK	
4	Fixed at "0"		-	-	-	-	-	-	-	-	-	-	
3	Printer Status Byte Count			OK	OK	OK	OK	OK	OK	OK	OK	OK	
2	Printer Status Byte Count			OK	OK	OK	OK	OK	OK	OK	OK	OK	
1	Printer Status Byte Count			OK	OK	OK	OK	OK	OK	OK	OK	OK	
0	Fixed at "1"	-		-	-	-	-	-	-	-	-	-	

Actual transmission byte count and header – 1 table

Transmission Byte Count n (7 ≤ n ≤15)	Header – 1
7	00001111B (0F Hex)
8	00100001B (21 Hex)
9	00100011B (23 Hex)
10	00100101B (25 Hex)
11	00100111B (27 Hex)
12	00101001B (29 Hex)
13	00101011B (2B Hex)
14	00101101B (2D Hex)
15	00101111B (2F Hex)

2. Header -2

Header -2 is the 1 byte length information transmitted from the second byte of the automatic status. The table below shows the composition of the Header -2.

Header -2 represents the automatic status version (called automatic status version below) using bit 1 to bit 3 and bit 5. For reference, the table below shows the relationship of actual version bytes and the Header -2. The automatic status version will be used as new information is added to the printer status bit positions that were empty, by adding new functions in the future.

When the host does not control the automatic status version, it is acceptable to ignore Header – 2 received.

<Header -2 (Second Byte)>

Bit	Contents	Status		Model Compatability									
		"0"	"1"	TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500	
7	ASB Status Expansion	No Expansion	Expansion	-	-	-	-	-	-	-	-	-	
6	Not Used (Fixed at "0")		-	-	-	-	-	-	-	-	-	-	
5	Version No.			OK	OK	OK	OK	OK	OK	OK	OK	OK	
4	Fixed at "0"		-	-	-	-	-	-	-	-	-	-	
3	Version No.			OK	OK	OK	OK	OK	OK	OK	OK	OK	
2	Version No.			OK	OK	OK	OK	OK	OK	OK	OK	OK	
1	Version No.			OK	OK	OK	OK	OK	OK	OK	OK	OK	
0	Fixed at "0"	-		-	-	-	-	-	-	-	-	-	

Actual automatic status version and header -2 table

Version No. n	Header -2
1	00000010B (02 Hex)
2	00000100B (04 Hex)
3	00000110B (06 Hex)
4	00001000B (08 Hex)
5	00001010B (0A Hex)
6	00001100B (0C Hex)
7	00001110B (0E Hex)
8	00100000B (20 Hex)
9	00100010B (22 Hex)
• • •	• • •
30	01101100B (6C Hex)
31	01101110B (6E Hex)

Printer Status Version

Model Name	Version No.	Status
TSP800	1 (02 Hex)	Up to printer status 5 (7th byte) loaded
	1 (02 Hex)	Up to printer status 6 (8th byte) loaded, Ver 4.0 and later
	3 (06 Hex)	Up to printer status 7 (9th byte) loaded, Ver 4.3 and later
TSP700	1 (02 Hex)	Up to printer status 5 (7th byte) loaded
	1 (02 Hex)	Up to printer status 6 (8th byte) loaded, Ver 3.0 and later
	3 (06 Hex)	Up to printer status 7 (9th byte) loaded, Ver 3.2 and later
TSP600	1 (02 Hex)	Up to printer status 5 (7th byte) loaded
	1 (02 Hex)	Up to printer status 6 (8th byte) loaded, Ver 3.0 and later
	3 (06 Hex)	Up to printer status 7 (9th byte) loaded, Ver 3.2 and later
TUP900	2 (04 Hex)	Up to printer status 6 (8th byte) loaded
	3 (06 Hex)	Up to printer status 7 (9th byte) loaded, Ver 1.2 and later
TSP1000, TSP800L, TSP700II, TSP650, TUP500	3 (06 Hex)	Up to printer status 7 (9th byte) loaded

3. Printer Status

Printer status is the status of the printer sent from the third byte of the automatic status.

Printer status is returned for (transmitted byte count – 2 in Header – 1).

Printer status is always updated for new information. (No log exists.) The following shows the composition of the status.

<Printer status 1 Printer status (Third Byte)>

Bit	Contents	Status		Model Compatability								
		"0"	"1"	TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
7	Fixed at "0"		-	-	-	-	-	-	-	-	-	-
6	OFFLINE By Switch Input	No	Yes	No	No	No	No	No	NO	NO	NO	-
5	Cover Status	Closed	Open	OK	OK	OK	OK	OK	OK	OK	OK	OK
4	Fixed at "0"		-	-	-	-	-	-	-	-	-	-
3	ONLINE/OFFLINE Status	ONLINE	OFFLINE	OK	OK	OK	OK	OK	OK	OK	OK	OK
2	Conversion SW	Open	Closed	OK	OK	OK	No	No	NO	OK	OK	NO
1	<ETB> Command	Not Executed	Executed	OK	OK	OK	OK	OK	OK	OK	OK	OK
0	Fixed at "0"		-	-	-	-	-	-	-	-	-	-

• <ETB> Command

Cleared when received at the host (by clearing bit 1 to 0, automatic status is not targeted to occur).

<Printer status 2 Error Information (Fourth Byte)>

Bit	Contents	Status		Model Compatability								
		"0"	"1"	TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
7	Fixed at "0"		-	-	-	-	-	-	-	-	-	-
6	Stopped by high head temperature	Not stopped	Stopped	OK	OK	OK	OK	OK	OK	OK	OK	OK
5	Non-recoverable Error	No	Yes	OK	OK	OK	OK	OK	OK	OK	OK	OK
4	Fixed at "0"		-	-	-	-	-	-	-	-	-	-
3	Auto-cutter Error	No	Yes	OK	OK	OK	OK	OK	NO	OK	OK	OK
2	Mechanical Error	No	Yes	No	No	No	No	No	NO	NO	NO	-
	Head Thermistor Error	No	Yes	-	-	-	-	-	-	-	-	OK
1	Not Used (Fixed at "0")			-	-	-	-	-	-	-	-	-
0	Fixed at "0"		-	-	-	-	-	-	-	-	-	-

<Printer status 3 Error Information (Fifth Byte)>

Bit	Contents	Status		Model Compatability								
		"0"	"1"	TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
7	Fixed at "0"		-	-	-	-	-	-	-	-	-	-
6	Receive Buffer Overflow	No	Yes	OK	OK	OK	OK	OK	OK	OK	OK	OK
5	Command Error (in Page Mode)	No	Yes	OK	No	No	No	No	NO	NO	NO	X
4	Fixed at "0"		-	-	-	-	-	-	-	-	-	-
3	BM Error	No	Yes	No	No	No	OK	OK	OK*	OK	NO	OK
2	Presenter Paper Jam Error	No	Yes	No	No	No	OK	No	NO	NO	NO	OK
1	Head Up Error	No	Yes	No	No	No	No	No	NO	NO	NO	-
	Electric Voltage Error	No	Yes	-	-	-	-	-	-	-	-	OK
0	Fixed at "0"		-	-	-	-	-	-	-	-	-	-

• Receive Buffer Overflow

Overflow errors cleared to 0 when returned to host.

• Command Error (in Page Mode)

Command errors cleared to 0 when returned to host.

• BM Error

On models that use a common PE and BM sensor, if a continuous error is detected beyond a determined amount, it indicates not a black mark error, but a paper out error.

(*) TSP828L (Label Printer) BM errors occur for the following reasons.

TSP828L Operation Mode	Sensor Used	Cause of BM Errors
Tear Bar Mode	Transmissive Type	Detected label paper over 400 mm Detected base paper over 400 mm Detected page error (When MSW is valid) When length error detected (When MSW is valid)
	Reflective Type	Detected label paper over 400 mm Detected page error (When MSW is valid) When length error detected (When MSW is valid)
Peel Mode	Transmissive Type	Detected label paper over 400 mm Detected base paper over 400 mm Detected page error When length error detected (When MSW is valid)
	Reflective Type	Detected label paper over 400 mm Detected page error When length error detected (When MSW is valid)

<Printer status 4 Sensor Information (Sixth Byte)>

Bit	Contents	Status		Model Compatability									
		"0"	"1"	TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500	
7	Fixed at "0"		-	-	-	-	-	-	-	-	-	-	
6	Not Used (Fixed at "0")		-	-	-	-	-	-	-	-	-	-	
5	Not Used (Fixed at "0")		-	-	-	-	-	-	-	-	-	-	
4	Fixed at "0"		-	-	-	-	-	-	-	-	-	-	
3	Paper end	Paper	No Paper	OK	OK	OK	OK	OK	OK	OK	OK	OK	
2	Paper Near-end (Inner Side)	Paper	No Paper	OK	OK	OK	OK	OK	NO	OK	OK	OK	
1	Paper Near-end (Outer Side)	Paper	No Paper	No	No	No	No	No	NO	NO	NO	NO	
0	Fixed at "0"		-	-	-	-	-	-	-	-	-	-	

<Printer status 5 Sensor Information (Seventh Byte)>

Bit	Contents	Status		Model Compatability									
		"0"	"1"	TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500	
7	Fixed at "0"		-	-	-	-	-	-	-	-	-	-	
6	Not Used (Fixed at "0")		-	-	-	-	-	-	-	-	-	-	
5	Not Used (Fixed at "0")		-	-	-	-	-	-	-	-	-	-	
4	Fixed at "0"		-	-	-	-	-	-	-	-	-	-	
3	Slip BOF Detector	Paper	No Paper	No	No	No	No	No	NO	NO	NO	No	
2	Slip TOF Detector	Paper	No Paper	No	No	No	No	No	NO	NO	NO	No	
1	Presenter Paper Detector	No Paper	Paper	No	No	No	No			NO	NO	No	
	Stack Sensor Detector	No Paper	Paper					OK		NO	NO	NO	
	Peel Sensor Detector	No Paper	Paper						OK	NO	NO	NO	
0	Fixed at "0"		-	-	-	-	-	-	-	-	-	-	

<Printer status 6 ETB Counter (Eighth Byte)>

Bit	Contents	Status		Model Compatability									
		"0"	"1"	TSP800 V. 4.0 or later	TSP700 V. 3.0 or later	TSP600 V. 3.0 or later	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500	
7	Fixed at 0		-	-	-	-	-	-	-	-	-	-	
6	ETB Counter Bit-4			OK	OK	OK	OK	OK	OK	OK	OK	OK	
5	ETB Counter Bit-3			OK	OK	OK	OK	OK	OK	OK	OK	OK	
4	Fixed at 0		-	-	-	-	-	-	-	-	-	-	
3	ETB Counter Bit-2			OK	OK	OK	OK	OK	OK	OK	OK	OK	
2	ETB Counter Bit-1			OK	OK	OK	OK	OK	OK	OK	OK	OK	
1	ETB Counter Bit-0			OK	OK	OK	OK	OK	OK	OK	OK	OK	
0	Fixed at 0		-	-	-	-	-	-	-	-	-	-	

(*) ETB Counter

This counter is the 5 bit ETB counter.
(It counts from 0 to 31. When the counter overflows, it counts up from 31 to 0.)
This counter is incremented by 1 using the <ETB> command.
The ETB counter is initialized by the following commands. When doing so, ASB ETB status is cleared.
However, when initializing the ETB counter, ASB is not transmitted.

<ETB Counter Initialization Commands>
• <ESC> <RS> E n : ETB Counter Initialization
• <CAN> : Cancel print data and initialize commands

<Printer status 7 Position for Presenter Paper (Ninth Byte)>

Bit	Contents	Status		By model									
		"0"	"1"	TSP800 Ver. 4.3 or later	TSP700 Ver. 3.2 or later	TSP600 Ver. 3.2 or later	TUP900 Ver. 1.2 or later	TSP1000	TSP828L	TSP700II	TSP650	TUP500	
7	Fixed at "0"		-	-	-	-	-	-	-	-	-	-	
6	Not Used (Fixed at "0")		-	NO	NO	NO	OK	NO	NO	NO	NO	NO	
5	Not Used (Fixed at "0")		-	NO	NO	NO	OK	NO	NO	NO	NO	NO	
4	Fixed at "0"		-	-	-	-	-	-	-	-	-	-	
3	Presenter Paper Position	(See table below)		NO	NO	NO	OK	NO	NO	NO	NO	OK	
2	Presenter Paper Position	(See table below)		NO	NO	NO	OK	NO	NO	NO	NO	OK	
1	Presenter Paper Position	(See table below)		NO	NO	NO	OK	NO	NO	NO	NO	OK	
0	Fixed at "0"		-	-	-	-	-	-	-	-	-	-	

• This status is valid only on models provided with a presenter. Models not provided with a presenter should send this status fixed at "0."

• This status is made valid and invalid using the memory switch only on models provided with a presenter. When valid, the presenter paper position status is updated, but when invalid, the presenter paper position status is fixed at "0" and there is no change in status.

• Details of the Presenter Paper Position

bit 3	bit 2	bit 1	Presenter Paper Position
0	0	0	Paper position 0 State where there is no paper in presenter
0	0	1	Paper position 1 State where paper is supplied (loop state)
0	1	0	Paper position 2 (Reserved)
0	1	1	Paper position 3 State where paper is discharged (Can be pulled out)
1	0	0	Paper position 4 (Reserved)
1	0	1	Paper position 5 (Reserved)
1	1	0	Paper position 6 State where paper is recovered
1	1	1	Paper position 7 State where paper is pulled out.

• Presenter operation mode: Paper position status transition

Operating Mode	Paper	Presenter paper position state transition
Loop Take-up Internal recovery	Recovery	Position 0 to Position 1 to (Paper cut) to Position 3 to (Paper recovery) to Position 6 to Position 0
	Pull out	Position 0 to Position 1 to (Paper cut) to Position 3 to (Paper pull out) to Position 7 to Position 0
Loop Take-up Front Discharge	Recovery	Position 0 to Position 1 to (Paper cut) to Position 3 to (Paper pull out) to Position 6 to Position 0
	Pull out	Position 0 to Position 1 to (Paper cut) to Position 3 to (Paper pull out) to Position 7 to Position 0
No Loop Internal recovery	Recovery	Position 0 to Position 1 to (Paper cut) to Position 3 to (Paper pull out) to Position 6 to Position 0
	Pull out	Position 0 to Position 1 to (Paper cut) to Position 3 to (Paper pull out) to Position 7 to Position 0
No Loop Front Discharge	Recovery	Position 0 to Position 1 to (Paper cut) to Position 3 to (Paper pull out) to Position 6 to Position 0
	Pull out	Position 0 to Position 1 to (Paper cut) to Position 3 to (Paper pull out) to Position 7 to Position 0
Recovery Invalid	Recovery	Position 0 to Position 1 to (Paper cut) to Position 6 to Position 0
	Pull out	Position 0 to Position 1 to (Paper cut) to Position 6 to Position 0

4. Note

Do not use ENQ, EOT, and ESC ACK SOH when automatic status is valid. Invalidate the automatic status in advance using the DIPSW (memory switch) or the ESC RS a n command to query these.

3) Status identification method

Command/Functions	Status							
	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
XON	0	0	0	1	0	0	0	1
XOFF	0	0	0	1	0	0	1	1
ENQ	*	*	*	0	*	*	*	*
EOT	*	*	*	1	*	*	*	0
ASB (Header – 1)	0	*	*	0	*	*	*	1
ASB (Other than Header – 1)	0	*	*	0	*	*	*	0

Indicates “0” bit is fixed at 0/Indicates 1 is fixed at 1/Indicates * variable bit.

5.2.4 Printer status transmission specification when using Ethernet I/F and Wireless LAN I/F

The following describes printer status transmission specifications when using an Ethernet I/F and wireless LAN I/F.

1) Transmission Format:

• When transmitting only STAR ASB:
STAR ASB (Second Byte Bit 7 = 1) + Length (Length = 0x0000)
• When transmitting printer status other than STAR ASB:
STAR ASB (Second Byte Bit 7 = 1) + Length + Status Data

<Length Details>
• 2 byte value indicating status data byte count (0x0000 ≦ Length ≦ 0x0200)
• When the status data is 10 bytes: Length = 0x000a
• Apply Length = 0x0000 to only transmit STAR ASB.
• When STAR ASB Second Byte Bit-7 is applied with Length, set to Bit-7 = 1

In analysis of printer statuses, the total number of bytes of the ASB according to the STAR ASB First byte is detected, and it is detected whether Length has been applied by the second byte Bit-7 of STAR ASB. Depending on the length, by acquiring subsequent status data byte counts, it is possible to analyze the status.

2) Status data transmission format

Status type + separator character 1 + data type + status length + *printer status* + separator character 2

1. Status Type (2byte or 4Byte)
• First and Second Bytes
Indicate the cause to generate a printer status.
• “00”: Reserved
• “01” to ”09”: Star real-time status request command
• ”10” to ”49”: Star status request command
• “50”: Reserved
• “51” to ”59”: Reserved
• “60” to ”99”: Reserved
• “A0” to “FF”: Reserved
• Third and Fourth Bytes
When a cause occurs, these indicate the command n parameter.
If there is no n parameter, the third and fourth bytes can be omitted.
<Ex.> When n = 0x31 using the ESC SYN 3 n command, the third and fourth bytes are “31.”

2. Separator character 1 (1 Byte)
Sends ":"

3. Data Type (1byte)
Indicate printer status data; sends "B" (binary type).

4. Status Length (2 bytes)
2 byte value indicating printer status byte count.

5. Printer Status (Variable length)
Status sent by printer.
Status differs according to the cause.
See the command causes and automatic status for details on the content of statuses.

6. Separator character 2 (1 Byte)
Sends ";"

3) Status Transmission Specification List

Status Cause	STAR ASB	Length	Status Data						
			Status Type		Separated Character 1	Data Type	Status Length	Printer Status	Separated Character 2
			First/Second Bytes Cause	Third/Fourth Bytes n Parameter					
ASB Automatic Status	ASB	0x0000	--	--	--	--	--	--	--
ESC ACK SOH Printer Status Request	ASB	0x0000	--	--	--	--	--	--	--
ENQ Printer Status Request	ASB	0x0008	"01"	Omitted	":"	"B"	0x0001	Status	";"
EOT Printer Status Request	ASB	0x0008	"02"	Omitted	":"	"B"	0x0001	Status	";"
ESC SYN 3 n Presenter Counter Request	ASB	0x0011	"13"	"00" ≦ n ≦ "01" "30" ≦ n ≦ "31"	":"	"B"	0x0008	Status	";"
ESC GS x I PDF417 Information Request	ASB	0x000C	"16"	Omitted	":"	"B"	0x0005	Status	";"
ESC GS y I QR Code Information Request	ASB	0x000D	"19"	Omitted	":"	"B"	0x0006	Status	";"

* Installed MSW region is different depending on the model.

5.3. Appendix 3: Blank Code Page Configuration

Blank code pages are character code tables that are empty from character code 80H to FFH. They can be specified using the command below.

- ESC GS t n (n=255)

Also, it is possible to write data to the blank code page area using the command below.

- ESC GS = ...

1. Example configuration of Font A data. (12 x 24 font)

	MSB							LSB		MSB							LSB
d1									d2					0	0	0	0
d3					•	•	•	•	d4					0	0	0	0
d5			•	•	•	•	•	•	d6	•	•			0	0	0	0
d7			•	•					d8	•	•			0	0	0	0
d9		•	•						d10		•	•		0	0	0	0
d11		•	•						d12		•	•		0	0	0	0
d13		•	•						d14		•	•		0	0	0	0
d15									d16		•	•		0	0	0	0
d17									d18	•	•			0	0	0	0
d19									d20	•	•			0	0	0	0
d21								•	d22	•				0	0	0	0
d23							•	•	d24					0	0	0	0
d25							•	•	d26					0	0	0	0
d27						•	•		d28					0	0	0	0
d29					•	•	•		d30					0	0	0	0
d31				•	•	•			d32					0	0	0	0
d33				•	•				d34					0	0	0	0
d35			•	•					d36					0	0	0	0
d37		•	•	•					d38					0	0	0	0
d39		•	•	•	•	•	•	•	d40	•	•	•		0	0	0	0
d41		•	•	•	•	•	•	•	d42	•	•	•		0	0	0	0
d43									d44					0	0	0	0
d45									d46					0	0	0	0
d47									d48					0	0	0	0

Fig. A-1 12 x 24 Font

2. Example configuration of Font B data. (9 x 24 font)
The STAR mode is not loaded with Font B. However, when registering data, Font A and Font B must be registered as a set. When doing so, Font B data can be zero data.

	MSB							LSB		MSB							LSB
d1									d2		0	0	0	0	0	0	0
d3				•	•	•			d4		0	0	0	0	0	0	0
d5			•	•	•	•	•		d6		0	0	0	0	0	0	0
d7			•	•		•	•	•	d8		0	0	0	0	0	0	0
d9		•	•				•	•	d10		0	0	0	0	0	0	0
d11		•	•				•	•	d12		0	0	0	0	0	0	0
d13		•	•				•	•	d14		0	0	0	0	0	0	0
d15							•	•	d16		0	0	0	0	0	0	0
d17							•	•	d18		0	0	0	0	0	0	0
d19							•	•	d20		0	0	0	0	0	0	0
d21						•	•	•	d22		0	0	0	0	0	0	0
d23					•	•	•	•	d24		0	0	0	0	0	0	0
d25					•	•	•		d26		0	0	0	0	0	0	0
d27				•	•	•			d28		0	0	0	0	0	0	0
d29			•	•	•				d30		0	0	0	0	0	0	0
d31			•	•					d32		0	0	0	0	0	0	0
d33			•	•					d34		0	0	0	0	0	0	0
d35		•	•	•					d36		0	0	0	0	0	0	0
d37		•	•	•					d38		0	0	0	0	0	0	0
d39		•	•	•	•	•	•	•	d40		0	0	0	0	0	0	0
d41		•	•	•	•	•	•	•	d42		0	0	0	0	0	0	0
d43									d44		0	0	0	0	0	0	0
d45									d46		0	0	0	0	0	0	0
d47									d48		0	0	0	0	0	0	0

Fig. A-2 9 x 24 Font

• TSP700II

Counter Type	Maintenance Counter	Estimated Life	Count Up Predetermined Times	Counter Maximum Value	EEPROM Writing Timing
Permanent Counter	Head Energizing Count	800 Million dot lines	For each 4,000 dot lines (500 mm)	0xF4240 (1 Million)	• When cutting paper • Every 10 minutes (when idling) from when power is turned on. However, one condition is that the count up predetermined count is exceeded.
	LF Motor Traveling Distance	100 km; 800 Million dot lines	For each 4,000 dot lines (500 mm)	0xF4240 (1 Million)	• When cutting paper • Every 10 minutes (when idling) from when power is turned on. However, one condition is that the count up predetermined count is exceeded.
	Cutter Drive Count	200,000 cuts	Every 10 cuts	0xF4240 (1 Million)	• When cutting paper • Every 10 minutes (when idling) from when power is turned on. However, one condition is that the count up predetermined count is exceeded.
User Counter	Head Energizing Count	800 Million dot lines	For each 4,000 dot lines (500 mm)	0xF4240 (1 Million)	• When cutting paper • Every 10 minutes (when idling) from when power is turned on. However, one condition is that the count up predetermined count is exceeded.
	LF Motor Traveling Distance	100 km; 800 Million dot lines	For each 4,000 dot lines (500 mm)	0xF4240 (1 Million)	• When cutting paper • Every 10 minutes (when idling) from when power is turned on. However, one condition is that the count up predetermined count is exceeded.
	Cutter Drive Count	200,000 cuts	Every 10 cuts	0xF4240 (1 Million)	• When cutting paper • Every 10 minutes (when idling) from when power is turned on. However, one condition is that the count up predetermined count is exceeded.

• The head energizing count is sometimes counted even when there is not energizing data. (Such as when blank space data is included in the font data.)

• The estimated life prescribes the number of count of the maintenance counter. It does not match the life specifications.

• When the permanent counter exceeds the counter maximum value, thereafter the permanent counter and user counter both count up and then stop.

• It is possible to clear the user counter, but it is not possible to clear the permanent counter.

5.4. Appendix 7 Maximum Number of Input Characters for Each Version of QR Code

1) Model 1 Version and Maximum Number of Input Characters

Version	Cell Count on One Side	Mistake Correction Level	Number of Characters	English Characters	Binary	Kanji
1	21	L	40	24	17	10
		M	33	20	14	8
		Q	25	15	11	6
		H	16	10	7	4
2	25	L	81	49	34	20
		M	66	40	28	17
		Q	52	31	22	13
		H	33	20	14	8
3	29	L	131	79	55	33
		M	100	60	42	25
		Q	81	49	34	20
		H	52	31	22	13
4	33	L	186	113	78	48
		M	138	84	58	35
		Q	114	69	48	29
		H	76	46	32	19
5	37	L	253	154	106	65
		M	191	116	80	49
		Q	157	95	66	40
		H	105	63	44	27
6	41	L	321	194	134	82
		M	249	151	104	64
		Q	201	122	84	51
		H	133	81	56	34
7	45	L	402	244	168	103
		M	311	188	130	80
		Q	253	154	106	65
		H	167	101	70	43
8	49	L	493	299	206	126
		M	378	229	158	97
		Q	301	183	126	77
		H	203	123	85	52
9	53	L	585	354	244	150
		M	441	267	184	113
		Q	369	223	154	94
		H	239	145	100	61
10	57	L	690	418	287	177
		M	526	319	219	135
		Q	433	262	180	111
		H	291	176	121	74
11	61	L	800	485	333	205
		M	608	368	253	156
		Q	493	299	205	126
		H	342	207	142	87
12	65	L	915	555	381	234
		M	694	421	289	178
		Q	579	351	241	148
		H	390	236	162	100
13	69	L	1030	624	429	264
		M	790	479	329	202
		Q	656	398	273	168
		H	454	275	189	116
14	73	L	1167	707	486	299
		M	877	531	365	225
		Q	738	447	307	189
		H	498	302	207	127

2) Model 2 Version and Maximum Number of Input Characters

Version	Cell Count on One Side	Mistake Correction Level	Number of Characters	English Characters	Binary	Kanji
1	21	L	41	25	17	10
		M	34	20	14	8
		Q	27	16	11	7
		H	17	10	7	4
2	25	L	77	47	32	20
		M	63	38	26	16
		Q	48	29	20	12
		H	34	20	14	8
3	29	L	127	77	53	32
		M	101	61	42	26
		Q	77	47	32	20
		H	58	35	24	15
4	33	L	187	114	78	48
		M	149	90	62	38
		Q	111	67	46	28
		H	82	50	34	21
5	37	L	255	154	106	65
		M	202	122	84	52
		Q	144	87	60	37
		H	106	64	44	27
6	41	L	322	195	134	82
		M	255	154	106	65
		Q	178	108	74	45
		H	139	84	58	36
7	45	L	370	224	154	95
		M	293	178	122	75
		Q	207	125	86	53
		H	154	93	64	39
8	49	L	461	279	192	118
		M	365	221	152	93
		Q	259	157	108	66
		H	202	122	84	52
9	53	L	552	335	230	141
		M	432	262	180	111
		Q	312	189	130	80
		H	235	143	98	60
10	57	L	652	395	271	167
		M	513	311	213	131
		Q	364	221	151	93
		H	288	174	119	74
11	61	L	772	468	321	198
		M	604	366	251	155
		Q	427	259	177	109
		H	331	200	137	85
12	65	L	883	535	367	226
		M	691	419	287	177
		Q	489	296	203	125
		H	374	227	155	96
13	69	L	1022	619	425	262
		M	796	483	331	204
		Q	580	352	241	149
		H	427	259	177	109
14	73	L	1101	667	458	282
		M	871	528	362	223
		Q	621	376	258	159
		H	468	283	194	120
15	77	L	1250	758	520	320
		M	991	600	412	254
		Q	703	426	292	180
		H	530	321	220	136

Version	Cell Count on One Side	Mistake Correction Level	Number of Characters	English Characters	Binary	Kanji
16	81	L	1408	854	586	361
		M	1082	656	450	277
		Q	775	470	322	198
		H	602	365	250	154
17	85	L	1548	938	644	397
		M	1212	734	504	310
		Q	876	531	364	224
		H	674	408	280	173
18	89	L	1725	1046	718	442
		M	1346	816	560	345
		Q	948	574	394	243
		H	746	452	310	191
19	93	L	1903	1153	792	488
		M	1500	909	624	384
		Q	1063	644	442	272
		H	813	493	338	208
20	97	L	2061	1249	858	528
		M	1600	970	666	410
		Q	1159	702	482	297
		H	919	557	382	235
21	101	L	2232	1352	929	572
		M	1708	1035	711	438
		Q	1224	742	509	314
		H	969	587	403	248
22	105	L	2409	1460	1003	618
		M	1872	1134	779	480
		Q	1358	823	565	348
		H	1056	640	439	270
23	109	L	2620	1588	1091	672
		M	2059	1248	857	528
		Q	1468	890	611	376
		H	1108	672	461	284
24	113	L	2812	1704	1171	721
		M	2188	1326	911	561
		Q	1588	963	661	407
		H	1228	744	511	315
25	117	L	3057	1853	1273	784
		M	2395	1451	997	614
		Q	1718	1041	715	440
		H	1286	779	535	330
26	121	L	3283	1990	1367	842
		M	2544	1542	1059	652
		Q	1804	1094	751	462
		H	1425	864	593	365
27	125	L	3514	2132	1465	902
		M	2701	1637	1125	692
		Q	1933	1172	805	496
		H	1501	910	625	385
28	129	L	3669	2223	1528	940
		M	2857	1732	1190	732
		Q	2085	1263	868	534
		H	1581	958	658	405
29	133	L	3909	2369	1628	1002
		M	3035	1839	1264	778
		Q	2181	1322	908	559
		H	1677	1016	698	430
30	137	L	4158	2520	1732	1066
		M	3289	1994	1370	843
		Q	2358	1429	982	604
		H	1782	1080	742	457

Version	Cell Count on One Side	Mistake Correction Level	Number of Characters	English Characters	Binary	Kanji
31	141	L	4417	2677	1840	1132
		M	3486	2113	1452	894
		Q	2473	1499	1030	634
		H	1897	1150	790	486
32	145	L	4686	2840	1952	1201
		M	3693	2238	1538	947
		Q	2670	1618	1112	684
		H	2022	1226	842	518
33	149	L	4965	3009	2068	1273
		M	3909	2369	1628	1002
		Q	2805	1700	1168	719
		H	2157	1307	898	553
34	153	L	5253	3183	2188	1347
		M	4134	2506	1722	1060
		Q	2949	1787	1228	756
		H	2301	1394	958	590
35	157	L	5529	3351	2303	1417
		M	4343	2632	1809	1113
		Q	3081	1867	1283	790
		H	2361	1431	983	605
36	161	L	5836	3537	2431	1496
		M	4588	2780	1911	1176
		Q	3244	1966	1351	832
		H	2524	1530	1051	647
37	165	L	6153	3729	2563	1577
		M	4775	2894	1989	1224
		Q	3417	2071	1423	876
		H	2625	1591	1093	673
38	169	L	6479	3927	2699	1661
		M	5039	3054	2099	1292
		Q	3599	2181	1499	923
		H	2735	1658	1139	701
39	173	L	6743	4087	2809	1729
		M	5313	3220	2213	1362
		Q	3791	2298	1579	972
		H	2927	1774	1219	750
40	177	L	7089	4296	2953	1817
		M	5596	3391	2331	1435
		Q	3993	2420	1663	1024
		H	3057	1852	1273	784

5.5. Appendix 8 TSP828L Cut Command Specifications

<Line Mode>

Command		Normal Thermal Paper	Label Paper	
			Tear Bar	Peel Mode
<FF>		Form Feed	Label Gap Detection	Label Gap Detection + Peeling Position Conveyance
<ESC> d n	n = 0, 48 n = 1, 49	Tear Bar Position Conveyance	Label Gap Detection + Tear Bar Position Conveyance	Label Gap Detection + Peeling Position Conveyance
	n = 2, 50 n = 3, 51 n = 116 (“t”)	Tear Bar Position Conveyance	Label Gap Detection + Tear Bar Position Conveyance	Label Gap Detection + Peeling Position Conveyance

<Raster Mode FF/EOT>

Command		Normal Thermal Paper	Label Paper	
			Tear Bar	Peel Mode
Form Feed	Valid	Print	Print + Label Gap Detection	Print + Label Gap Detection
	Invalid	Print	Print + Label Gap Detection	Print + Label Gap Detection
Cut Feed	Valid	Tear Bar Position Conveyance	Tear Bar Position Conveyance	Peeling Position Conveyance
	Invalid	---	---	Peeling Position Conveyance

6. SPECIAL APPENDIX COMMAND LIST FOR EACH MODEL IN EACH I/F

6.1. RS-232C I/F

• Standard Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Font Style and Character Set	ESC RS F	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC GS =	Ver. 3.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC R	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC /	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC SP	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC M	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC P	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC :	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC p (Not recommended)	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC g	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. A	Spec. A	Spec. B
Character expansion settings	ESC i	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC W	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC h	OK	OK	OK	OK	OK	OK	OK	OK	OK
	SO	OK	OK	OK	OK	OK	OK	OK	OK	OK
	DC4	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC SO	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC DC4	OK	OK	OK	OK	OK	OK	OK	OK	OK
Print Mode	ESC E	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC F	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC -	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC _	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC 4	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC 5	OK	OK	OK	OK	OK	OK	OK	OK	OK
	SI	OK	OK	OK	OK	OK	OK	OK	OK	OK
	DC2	OK	OK	OK	OK	OK	OK	OK	OK	OK
Line spacing	LF	OK	OK	OK	OK	OK	OK	OK	OK	OK
	CR	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC a	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC z	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC 0	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC J	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC I	OK	OK	OK	OK	OK	OK	OK	OK	OK
Page Control	FF	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC C	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC C 0	OK	OK	OK	OK	OK	OK	OK	OK	OK
	VT	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC B	OK	OK	OK	OK	OK	OK	OK	OK	OK
Horizontal direction position	ESC l	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. A	Spec. A	Spec. B
	ESC Q	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. A	Spec. A	Spec. B
	HT	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC D	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC GS A	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC GS R	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC GS a	OK	OK	OK	OK	OK	OK	OK	OK	OK
Download	ESC &	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC %	OK	OK	OK	OK	OK	OK	OK	OK	OK
Bit Image Graphics	ESC K	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC L	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC k	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC X	OK	OK	OK	OK	OK	OK	OK	OK	OK
Logo	ESC FS q	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC FS p	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC RS L	NO	NO	NO	NO	NO	NO	Spec. A for Ver. 1.2 or earier; Spec. B for Ver. 1.3 or later	Spec. B	Spec. B
Bar Codes	ESC b	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B
Cutter Control	ESC d	OK	OK	OK	OK	OK	OK	OK	OK	OK

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
External device drive	ESC BEL	OK	OK	OK	NO	NO	NO	NO	OK	NO
	BEL	OK	OK	OK	NO	NO	NO	NO	OK	NO
	FS	OK	OK	OK	NO	NO	NO	NO	OK	NO
	SUB	OK	OK	OK	NO	NO	NO	NO	OK	NO
	EM	OK	OK	OK	NO	NO	NO	NO	OK	NO
	ESC GS BEL	NO	Ver. 5.0 or later	NO	NO	OK	NO	NO	OK	NO
	ESC GS EM DC1	NO	NO	NO	NO	NO	NO	After Ver. 1.3	OK	NO
	ESC GS EM DC2	NO	NO	NO	NO	NO	NO	After Ver. 1.3	OK	NO
Print Setting	ESC RS d	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC RS r	Spec. A	Spec. A	Spec. A	Spec. A	Spec. A	Spec. A	Spec. A	Spec. A	Spec. B
Status	ESC RS a	Spec. A	Spec. A	Spec. A	Spec. A Ver. 1.2 or earlier Spec. B Ver. 1.2 or later	Spec. B	Spec. B	Spec. B	Spec. B	Spec. C
	ESC ACK SOH	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ENQ	OK	OK	OK	OK	OK	OK	OK	OK	OK
	EOT	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC ACK CAN	No	No	No	No	No	NO	OK	OK	OK
	ETB	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B
	ESC RS E	OK	OK	OK	OK	OK	OK	OK	OK	OK
Kanji character	ESC p	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC q	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC $	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC s	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC t	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC r	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B
Others	CAN	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC @	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC GS # m	Spec. A VER. 3.0 OR LATER	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B
	ESC ?	OK	OK	OK	OK	OK	OK	OK	OK	OK

• Raster Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Raster	ESC * r R	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC * r A	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC * r B	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC * r C	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC * r D	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC * r E	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC * r F	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC * r P	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC * r Q	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC * r m l	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC * r m r	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC * r T	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC * r K	NO	NO	NO	NO	OK	OK	OK	OK	OK
	b n1 n2 d1...dk	NO	NO	NO	NO	OK	OK	OK	OK	OK
	k n1 n2 d1...dk	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC * r Y	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC FF NUL	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC FF EOT	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC * r N	NO	NO	NO	NO	NO	NO	Ver. 1.3 or later	OK	OK
	ESC * r V	NO	NO	NO	NO	NO	NO	Ver. 1.3 or later	OK	OK

• Black Mark Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Black Mark Related Commands	ESC d	OK	OK	OK	OK	OK	OK	OK	NO	OK
	FF	OK	OK	OK	OK	OK	OK	OK	NO	OK
	ESC C	OK	OK	OK	OK	OK	OK	OK	NO	OK
	ESC C 0	OK	OK	OK	OK	OK	OK	OK	NO	OK
	VT	OK	OK	OK	OK	OK	OK	OK	NO	OK
	ESC B	OK	OK	OK	OK	OK	OK	NO	NO	OK

• 2-Color Printing Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
2-Color Printing Related Commands	ESC RS c	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK
	ESC RS C	Spec. A Ver. 4.0 or later	Spec. A Ver. 2.0 or later	Spec. A Ver. 2.0 or later	Spec. B	Spec. B	Spec. B	Spec. C	Spec. A	Spec. C
	ESC 4 (Not Recommended)	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	NO	NO	NO	NO	OK	NO
	ESC 5 (Not Recommended)	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	NO	NO	NO	NO	OK	NO
	ESC FS q	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK
	ESC FS p	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK

• Presenter Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Presenter Related Commands	ESC SYN 0	NO	NO	NO	OK	NO	NO	NO	NO	OK
	ESC SYN 1	NO	NO	NO	OK	NO	NO	NO	NO	OK
	ESC SYN 3	NO	NO	NO	OK	NO	NO	NO	NO	OK
	ESC SYN 4	NO	NO	NO	OK	NO	NO	NO	NO	OK
	ESC GS SUB DC1	NO	NO	NO	NO	NO	NO	NO	NO	OK
	ESC GS SUB DC2	NO	NO	NO	NO	NO	NO	NO	NO	OK
	ESC GS SUB DC3	NO	NO	NO	NO	NO	NO	NO	NO	OK

• Mark Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Mark Commands	ESC GS * 0	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK
	ESC GS * 1	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK
	ESC GS * 2	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK
	ESC GS * W	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK
	ESC GS * C	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK

• Auto Logo Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Auto Logo Commands	ESC GS / W	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / C	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 1	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 2	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 3	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 4	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 5	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 6	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO

• PDF417 Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
PDF417 Commands	ESC GS x S 0	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x S 1	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x S 2	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x S 3	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x D	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x P	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x I	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK

• Print Start Trigger Control Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Print Start Trigger Control	ESC GS g 0	NO	NO	NO	NO	Ver. 1.1 or later	OK	OK	OK	OK
	ESC GS g 1	NO	NO	NO	NO	Ver. 1.1 or later	OK	OK	OK	OK

• QR Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
QR Code	ESC GS y S 0	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	NO	OK
	ESC GS y S 1	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	NO	OK
	ESC GS y S 2	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	NO	OK
	ESC GS y D 1	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	NO	OK
	ESC GS y D 2	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	NO	OK
	ESC GS y P	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	NO	OK
	ESC GS y I	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	NO	OK

• Page Function Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Page Function	ESC GS h 0	NO	NO	NO	NO	NO	NO	OK	NO	OK
	ESC GS h 1	NO	NO	NO	NO	NO	NO	OK	NO	OK

6.2. Parallel I/F • USB I/F (Ver2.0)

• Standard Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Font Style and Character Set	ESC RS F	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC GS t	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC GS =	VER. 3.0 OR LATER	OK	OK	OK	OK	OK	OK	OK	OK
	ESC R	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC /	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC SP	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC M	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC P	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC :	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC p (Not recommended)	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC g	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. A	Spec. A	Spec. B
Character expansion settings	ESC i	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC W	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC h	OK	OK	OK	OK	OK	OK	OK	OK	OK
	SO	OK	OK	OK	OK	OK	OK	OK	OK	OK
	DC4	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC SO	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC DC4	OK	OK	OK	OK	OK	OK	OK	OK	OK
Print Mode	ESC E	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC F	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC -	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC _	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC 4	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC 5	OK	OK	OK	OK	OK	OK	OK	OK	OK
	SI	OK	OK	OK	OK	OK	OK	OK	OK	OK
	DC2	OK	OK	OK	OK	OK	OK	OK	OK	OK
Line spacing	LF	OK	OK	OK	OK	OK	OK	OK	OK	OK
	CR	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC a	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC z	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC 0	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC J	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC I	OK	OK	OK	OK	OK	OK	OK	OK	OK
Page Control	FF	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC C	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC C 0	OK	OK	OK	OK	OK	OK	OK	OK	OK
	VT	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC B	OK	OK	OK	OK	OK	OK	OK	OK	OK
Horizontal direction position	ESC l	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. A	Spec. A	Spec. B
	ESC Q	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. A	Spec. A	Spec. B
	HT	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC D	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC GS A	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC GS R	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC GS a	OK	OK	OK	OK	OK	OK	OK	OK	OK
Download	ESC &	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC %	OK	OK	OK	OK	OK	OK	OK	OK	OK
Bit Image Graphics	ESC K	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC L	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC k	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC X	OK	OK	OK	OK	OK	OK	OK	OK	OK
Logo	ESC FS q	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC FS p	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC RS L	NO	NO	NO	NO	NO	NO	Spec. A for Ver. 1.2 or Spec. B for Ver. 1.3 or later.	Spec. B	Spec. B
Bar Codes	ESC b	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B
Cutter Control	ESC d	OK	OK	OK	OK	OK	OK	OK	OK	OK

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
External device drive	ESC BEL	OK	OK	OK	NO	NO	NO	OK	OK	NO
	BEL	OK	OK	OK	NO	NO	NO	OK	OK	NO
	FS	OK	OK	OK	NO	NO	NO	OK	OK	NO
	SUB	OK	OK	OK	NO	NO	NO	OK	OK	NO
	EM	OK	OK	OK	NO	NO	NO	OK	OK	NO
	ESC GS BEL	NO	Ver. 5.0 or later	NO	NO	OK	NO	OK	OK	NO
	ESC GS EM DC1	NO	NO	NO	NO	NO	NO	Ver. 1.3 or later	OK	NO
	ESC GS EM DC2	NO	NO	NO	NO	NO	NO	Ver. 1.3 or later	OK	NO
Print Setting	ESC RS d	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC RS r	Spec. A	Spec. A	Spec. A	Spec. A	Spec. A	Spec. A	Spec. A	Spec. A	Spec. B
Status	ESC RS a	Spec. A	Spec. A	Spec. A	Spec. A Ver. 1.2 or earlier Spec. B Ver. 1.2 or later	Spec. B	Spec. B	Spec. B	Spec. B	Spec. C
	ESC ACK SOH	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ENQ	OK	OK	OK	OK	OK	OK	OK	OK	OK
	EOT	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC ASK CAN	NO	NO	NO	NO	NO	NO	OK	OK	OK
	ETB	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B
	ESC RS E	OK	OK	OK	OK	OK	OK	OK	OK	OK
Kanji character	ESC p	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC q	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC $	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC s	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC t	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC r	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B
Others	CAN	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC @	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC GS # m	Spec. A Ver. 3.0 or later	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B
	ESC ?	OK	OK	OK	OK	OK	OK	OK	OK	OK

• Raster Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Raster	ESC * r R	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r A	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r B	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r C	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r D	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r E	Spec. A Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r F	Spec. A Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r P	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r Q	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r m l	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r m r	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r T	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r K	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	b n1 n2 d1...dk	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	k n1 n2 d1...dk	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r Y	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC FF NUL	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC FF EOT	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r N	NO	NO	NO	NO	NO	NO	Ver. 1.3 or later	OK	OK
	ESC * r V	NO	NO	NO	NO	NO	NO	Ver. 1.3 or later	OK	OK

• Black Mark Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Black Mark Related Commands	ESC d	OK	OK	OK	OK	OK	OK	OK	OK	OK
	FF	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC C	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC C 0	OK	OK	OK	OK	OK	OK	OK	OK	OK
	VT	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC B	OK	OK	OK	OK	OK	OK	OK	OK	OK

• 2-Color Printing Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
2-Color Printing Related Commands	ESC RS c	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK
	ESC RS C	Spec. A Ver. 4.0 or later	Spec. A Ver. 2.0 or later	Spec. A Ver. 2.0 or later	Spec. B	Spec. B	Spec. B	Spec. A	Spec. A	Spec. C
	ESC 4 (Not Recommended)	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	NO	NO	NO	NO	OK	NO
	ESC 5 (Not Recommended)	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	NO	NO	NO	NO	OK	NO
	ESC FS q	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK
	ESC FS p	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK

• Presenter Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Presenter Related Commands	ESC SYN 0	NO	NO	NO	OK	NO	NO	NO	NO	OK
	ESC SYN 1	NO	NO	NO	OK	NO	NO	NO	NO	OK
	ESC SYN 3	NO	NO	NO	OK	NO	NO	NO	NO	OK
	ESC SYN 4	NO	NO	NO	OK	NO	NO	NO	NO	OK
	ESC GS SUB DC1	NO	NO	NO	NO	NO	NO	NO	NO	OK
	ESC GS SUB DC2	NO	NO	NO	NO	NO	NO	NO	NO	OK
	ESC GS SUB DC3	NO	NO	NO	NO	NO	NO	NO	NO	OK

• Mark Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Mark Commands	ESC GS * 0	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK
	ESC GS * 1	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK
	ESC GS * 2	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK
	ESC GS * W	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK
	ESC GS * C	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK

• Auto Logo Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Auto Logo Commands	ESC GS / W	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / C	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 1	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 2	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 3	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 4	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 5	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 6	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO

• PDF417 Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
PDF417 Commands	ESC GS x S 0	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x S 1	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x S 2	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x S 3	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x D	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x P	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x I	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK

• Print Start Trigger Control Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Print Start Trigger Control	ESC GS g 0	NO	NO	NO	NO	Ver. 1.1 or later	OK	OK	OK	OK
	ESC GS g 1	NO	NO	NO	NO	Ver. 1.1 or later	OK	OK	OK	OK

• QR Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
QR Code	ESC GS y S 0	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	NO	OK
	ESC GS y S 1	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	NO	OK
	ESC GS y S 2	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	NO	OK
	ESC GS y D 1	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	NO	OK
	ESC GS y D 2	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	NO	OK
	ESC GS y P	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	NO	OK
	ESC GS y I	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	NO	OK

• Page Function Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Page Function	ESC GS h 0	NO	NO	NO	NO	NO	NO	OK	NO	OK
	ESC GS h 1	NO	NO	NO	NO	NO	NO	OK	NO	OK

* In USB printer class, the status request command is ignored for the following models.

• TSP800, TSP700, TSP600, TUP900, TSP1000, TSP828L, TSP700II, TSP650

6.3. USB I/F (Ver1.0) • Ethernet I/F (Silex Ver1.0)

• Standard Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Font Style and Character Set	ESC RS F	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC GS t	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC GS =	Ver. 3.0 or later (*)	OK (*)	OK (*)	OK (*)	NO	NO	NO	NO	NO
	ESC R	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC /	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC SP	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC M	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC P	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC :	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC p (Not recommended)	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC g	Spec. A	Spec. A	Spec. A	Spec. B	NO	NO	NO	NO	NO
Character expansion settings	ESC i	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC W	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC h	OK	OK	OK	OK	NO	NO	NO	NO	NO
	SO	OK	OK	OK	OK	NO	NO	NO	NO	NO
	DC4	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC SO	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC DC4	OK	OK	OK	OK	NO	NO	NO	NO	NO
Print Mode	ESC E	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC F	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC -	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC _	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC 4	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC 5	OK	OK	OK	OK	NO	NO	NO	NO	NO
	SI	OK	OK	OK	OK	NO	NO	NO	NO	NO
	DC2	OK	OK	OK	OK	NO	NO	NO	NO	NO
Line spacing	LF	OK	OK	OK	OK	NO	NO	NO	NO	NO
	CR	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC a	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC z	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC 0	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC J	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC I	OK	OK	OK	OK	NO	NO	NO	NO	NO
Page Control	FF	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC C	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC C 0	OK	OK	OK	OK	NO	NO	NO	NO	NO
	VT	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC B	OK	OK	OK	OK	NO	NO	NO	NO	NO
Horizontal direction position	ESC l	Spec. A	Spec. A	Spec. A	Spec. B	NO	NO	NO	NO	NO
	ESC Q	Spec. A	Spec. A	Spec. A	Spec. B	NO	NO	NO	NO	NO
	HT	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC D	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC GS A	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC GS R	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC GS a	OK	OK	OK	OK	NO	NO	NO	NO	NO
Download	ESC &	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC %	OK	OK	OK	OK	NO	NO	NO	NO	NO
Bit Image Graphics	ESC K	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC L	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC k	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC X	OK	OK	OK	OK	NO	NO	NO	NO	NO
Logo	ESC FS q	OK	OK	OK(*)	OK(*)	NO	NO	NO	NO	NO
	ESC FS p	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC RS L	NO	NO	NO	NO	NO	NO	NO	NO	NO
Bar Codes	ESC b	Spec. A	Spec. A	Spec. A	Spec. B	NO	NO	NO	NO	NO
Cutter Control	ESC d	OK	OK	OK	OK	NO	NO	NO	NO	NO

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
External Device Drive	ESC BEL	OK	OK	OK	NO	NO	NO	NO	NO	NO
	BEL	OK	OK	OK	NO	NO	NO	NO	NO	NO
	FS	OK	OK	OK	NO	NO	NO	NO	NO	NO
	SUB	OK	OK	OK	NO	NO	NO	NO	NO	NO
	EM	OK	OK	OK	NO	NO	NO	NO	NO	NO
	ESC GS BEL	NO	Ver. 5.0 or later	NO	NO	NO	NO	NO	NO	NO
	ESC GS EM DC1	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC GS EM DC2	NO	NO	NO	NO	NO	NO	NO	NO	NO
Print Setting	EM	OK	OK	OK	NO	NO	NO	NO	NO	NO
	ESC RS r	Spec. A	Spec. A	Spec. A	Spec. A	NO	NO	NO	NO	NO
Status	ESC RS a	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC ACK SOH	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ENQ	NO	NO	NO	NO	NO	NO	NO	NO	NO
	EOT	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC ACK CAN	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ETB	Spec. A	Spec. A	Spec. A	Spec. B	NO	NO	NO	NO	NO
	ESC RS E	OK	OK	OK	OK	NO	NO	NO	NO	NO
Kanji character	ESC p	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC q	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC $	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC s	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC t	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC r	Spec. A	Spec. A	Spec. A	Spec. B	NO	NO	NO	NO	NO
Others	CAN	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC @	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC GS # m	Spec. A (*) Ver. 3.0 or later	Spec. A (*)	Spec. A (*)	Spec. B (*)	NO	NO	NO	NO	NO
	ESC ?	OK(*)	OK(*)	OK(*)	OK(*)	NO	NO	NO	NO	NO
Macro	ESC GS +	NO	NO	NO	NO	NO	NO	NO	NO	NO

• Raster Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Raster	ESC * r R	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC * r A	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC * r B	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC * r C	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC * r D	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC * r E	Spec. A Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC * r F	Spec. A Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC * r P	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC * r Q	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC * r m l	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC * r m r	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC * r T	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC * r K	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	b n1 n2 d1...dk	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	k n1 n2 d1...dk	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC * r Y	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC FF NUL	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC FF EOT	Ver. 2.0 or later	OK	OK	OK	NO	NO	NO	NO	NO
	ESC * r N	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC * r V	NO	NO	NO	NO	NO	NO	NO	NO	NO

• Black Mark Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Black Mark Related Commands	ESC d	OK	OK	OK	OK	NO	NO	NO	NO	NO
	FF	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC C	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC C 0	OK	OK	OK	OK	NO	NO	NO	NO	NO
	VT	OK	OK	OK	OK	NO	NO	NO	NO	NO
	ESC B	OK	OK	OK	OK	NO	NO	NO	NO	NO

• 2-Color Printing Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
2-Color Printing Related Commands	ESC RS c	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	OK	NO	NO	NO	NO	NO
	ESC RS C	Spec. A Ver. 4.0 or later	Spec. A Ver. 2.0 or later	Spec. A Ver. 2.0 or later	Spec. B	NO	NO	NO	NO	NO
	ESC 4 (Not recommended)	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	NO	NO	NO	NO	NO	NO
	ESC 5 (Not recommended)	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	NO	NO	NO	NO	NO	NO
	ESC FS q	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later (*)	OK (*)	NO	NO	NO	NO	NO
	ESC FS p	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	OK	NO	NO	NO	NO	NO

• Presenter Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Presenter Related Commands	ESC SYN 0	NO	NO	NO	OK	NO	NO	NO	NO	NO
	ESC SYN 1	NO	NO	NO	OK	NO	NO	NO	NO	NO
	ESC SYN 3	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC SYN 4	NO	NO	NO	OK	NO	NO	NO	NO	NO
	ESC GS SUB DC1	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC GS SUB DC2	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC GS SUB DC3	NO	NO	NO	NO	NO	NO	NO	NO	NO

• Mark Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Mark Commands	ESC GS * 0	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	NO	NO	NO	NO	NO
	ESC GS * 1	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	NO	NO	NO	NO	NO
	ESC GS * 2	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	NO	NO	NO	NO	NO
	ESC GS * W	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	NO	NO	NO	NO	NO
	ESC GS * C	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	NO	NO	NO	NO	NO

• Auto Logo Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Auto Logo Commands	ESC GS / W	NO	Ver. 4.0 or later	NO	NO	NO	NO	NO	NO	NO
	ESC GS / C	NO	Ver. 4.0 or later	NO	NO	NO	NO	NO	NO	NO
	ESC GS / 1	NO	Ver. 4.0 or later	NO	NO	NO	NO	NO	NO	NO
	ESC GS / 2	NO	Ver. 4.0 or later	NO	NO	NO	NO	NO	NO	NO
	ESC GS / 3	NO	Ver. 4.0 or later	NO	NO	NO	NO	NO	NO	NO
	ESC GS / 4	NO	Ver. 4.0 or later	NO	NO	NO	NO	NO	NO	NO
	ESC GS / 5	NO	Ver. 4.0 or later	NO	NO	NO	NO	NO	NO	NO
	ESC GS / 6	NO	Ver. 4.0 or later	NO	NO	NO	NO	NO	NO	NO

• PDF417 Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
PDF417 Commands	ESC GS x S 0	NO	NO	NO	Ver. 3.1 or later	NO	NO	NO	NO	NO
	ESC GS x S 1	NO	NO	NO	Ver. 3.1 or later	NO	NO	NO	NO	NO
	ESC GS x S 2	NO	NO	NO	Ver. 3.1 or later	NO	NO	NO	NO	NO
	ESC GS x S 3	NO	NO	NO	Ver. 3.1 or later	NO	NO	NO	NO	NO
	ESC GS x D	NO	NO	NO	Ver. 3.1 or later	NO	NO	NO	NO	NO
	ESC GS x P	NO	NO	NO	Ver. 3.1 or later	NO	NO	NO	NO	NO
	ESC GS x I	NO	NO	NO	Ver. 3.1 or later	NO	NO	NO	NO	NO

• Print Start Trigger Control Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Print Start Trigger Control	ESC GS g 0	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC GS g 1	NO	NO	NO	NO	NO	NO	NO	NO	NO

• QR Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
QR Code	ESC GS y S 0	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC GS y S 1	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC GS y S 2	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC GS y D 1	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC GS y D 2	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC GS y P	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC GS y I	NO	NO	NO	NO	NO	NO	NO	NO	NO

• Page Function Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Page Function	ESC GS h 0	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC GS h 1	NO	NO	NO	NO	NO	NO	NO	NO	NO

(*) It is necessary to turn the printer from off to on, because the printer hangs up after resetting the printer.

6.4. Ethernet I/F / Wireless LAN I/F

• Standard Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Font Style and Character Set	ESC RS F	NO	NO	NO	NO	OK	OK	OK	OK	OK
	ESC GS t	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC GS =	Ver. 3.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC R	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC /	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC SP	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC M	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC P	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC :	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC p (Not recommended)	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC g	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. A	Spec. A	Spec. B
Character expansion settings	ESC i	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC W	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC h	OK	OK	OK	OK	OK	OK	OK	OK	OK
	SO	OK	OK	OK	OK	OK	OK	OK	OK	OK
	DC4	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC SO	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC DC4	OK	OK	OK	OK	OK	OK	OK	OK	OK
Print Mode	ESC E	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC F	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC -	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC _	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC 4	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC 5	OK	OK	OK	OK	OK	OK	OK	OK	OK
	SI	OK	OK	OK	OK	OK	OK	OK	OK	OK
	DC2	OK	OK	OK	OK	OK	OK	OK	OK	OK
Line spacing	LF	OK	OK	OK	OK	OK	OK	OK	OK	OK
	CR	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC a	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC z	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC 0	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC J	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC I	OK	OK	OK	OK	OK	OK	OK	OK	OK
Page Control	FF	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC C	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC C 0	OK	OK	OK	OK	OK	OK	OK	OK	OK
	VT	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC B	OK	OK	OK	OK	OK	OK	OK	OK	OK
Horizontal direction position	ESC l	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. A	Spec. A	Spec. B
	ESC Q	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. A	Spec. A	Spec. B
	HT	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC D	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC GS A	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC GS R	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC GS a	OK	OK	OK	OK	OK	OK	OK	OK	OK
Download	ESC &	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC %	OK	OK	OK	OK	OK	OK	OK	OK	OK
Bit Image Graphics	ESC K	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC L	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC k	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC X	OK	OK	OK	OK	OK	OK	OK	OK	OK
Logo	ESC FS q	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC FS p	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC RS L	NO	NO	NO	NO	NO	NO	Ver. 1.2 or later Spec. A Ver. 1.3 or later Spec. B	Spec. B	Spec. B
Bar Codes	ESC b	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B
Cutter Control	ESC d	OK	OK	OK	OK	OK	OK	OK	OK	OK

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
External device drive	ESC BEL	OK	OK	OK	NO	NO	NO	OK	OK	NO
	BEL	OK	OK	OK	NO	NO	NO	OK	OK	NO
	FS	OK	OK	OK	NO	NO	NO	OK	OK	NO
	SUB	OK	OK	OK	NO	NO	NO	OK	OK	NO
	EM	OK	OK	OK	NO	NO	NO	OK	OK	NO
	ESC GS BEL	NO	Ver. 5.0 or later	NO	NO	OK	NO	OK	OK	NO
	ESC GS EM DC1	NO	NO	NO	NO	NO	NO	Ver. 1.3 or later	OK	NO
	ESC GS EM DC2	NO	NO	NO	NO	NO	NO	Ver. 1.3 or later	OK	NO
Print Setting	ESC RS d	OK	OK	OK	OK	OK	OK	OK	OK	NO
	ESC RS r	Spec. A	Spec. A	Spec. A	Spec. A	Spec. A	Spec. A	Spec. A	Spec. A	Spec. B
Status	ESC RS a	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ESC ACK SOH	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ENQ	OK	OK	OK	OK	OK	OK	OK	OK	OK
	EOT	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC ACK CAN	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ETB	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B
	ESC RS E	OK	OK	OK	OK	OK	OK	OK	OK	OK
Kanji character	ESC p	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC q	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC $	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC s	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC t	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC r	Spec. A	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B
Others	CAN	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC @	OK	OK	OK	OK	OK	OK	OK	OK	OK
	ESC GS # m	Spec. A VER. 3.0 OR LATER	Spec. A	Spec. A	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B	Spec. B
	ESC ?	OK	OK	OK	OK	OK	OK	OK	OK	OK

• Raster Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Raster	ESC * r R	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r A	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r B	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r C	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r D	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r E	Spec. A Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r F	Spec. A Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r P	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r Q	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r m l	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r m r	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r T	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r K	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	b n1 n2 d1...dk	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	k n1 n2 d1...dk	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r Y	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC FF NUL	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC FF EOT	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK	OK	OK
	ESC * r N	NO	NO	NO	NO	NO	NO	Ver. 1.3 or later	OK	OK
	ESC * r V	NO	NO	NO	NO	NO	NO	Ver. 1.3 or later	OK	OK

• Black Mark Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Black Mark Related Commands	ESC d	OK	OK	OK	OK	OK	OK	OK	NO	OK
	FF	OK	OK	OK	OK	OK	OK	OK	NO	OK
	ESC C	OK	OK	OK	OK	OK	OK	OK	NO	OK
	ESC C 0	OK	OK	OK	OK	OK	OK	OK	NO	OK
	VT	OK	OK	OK	OK	OK	OK	OK	NO	OK
	ESC B	OK	OK	OK	OK	OK	OK	OK	NO	OK

• 2-Color Printing Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
2-Color Printing Related Commands	ESC RS c	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK
	ESC RS C	Spec. A Ver. 4.0 or later	Spec. A Ver. 2.0 or later	Spec. A Ver. 2.0 or later	Spec. B	Spec. B	Spec. B	Spec. C	Spec. A	Spec. C
	ESC 4 (Not recommended)	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	NO	NO	NO	NO	OK	NO
	ESC 5 (Not recommended)	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	NO	NO	NO	NO	OK	NO
	ESC FS q	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK
	ESC FS p	Ver. 4.0 or later	Ver. 2.0 or later	Ver. 2.0 or later	OK	OK	OK	OK	OK	OK

• Presenter Related Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Presenter Related Commands	ESC SYN 0	NO	NO	NO	OK	NO	NO	NO	NO	OK
	ESC SYN 1	NO	NO	NO	OK	NO	NO	NO	NO	OK
	ESC SYN 3	NO	NO	NO	OK	NO	NO	NO	NO	OK
	ESC SYN 4	NO	NO	NO	OK	NO	NO	NO	NO	OK
	ECS GS SUB DC1	NO	NO	NO	NO	NO	NO	NO	NO	OK
	ECS GS SUB DC2	NO	NO	NO	NO	NO	NO	NO	NO	OK
	ECS GS SUB DC3	NO	NO	NO	NO	NO	NO	NO	NO	OK

• Mark Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Mark Commands	ESC GS * 0	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK
	ESC GS * 1	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK
	ESC GS * 2	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK
	ESC GS * W	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK
	ESC GS * C	NO	Ver. 4.0 or later	NO	Ver. 3.0 or later	OK	OK	OK	OK	OK

• Auto Logo Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Auto Logo Commands	ESC GS / W	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / C	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 1	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 2	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 3	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 4	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 5	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO
	ESC GS / 6	NO	Ver. 4.0 or later	NO	NO	NO	NO	OK	OK	NO

• PDF417 Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
PDF417 Commands	ESC GS x S 0	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x S 1	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x S 2	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x S 3	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x D	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x P	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK
	ESC GS x I	NO	NO	NO	Ver. 3.1 or later	OK	OK	OK	NO	OK

• Print Start Trigger Control Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Print Start Trigger Control	ESC GS g 0	NO	NO	NO	NO	Ver. 1.1 or later	OK	OK	OK	OK
	ESC GS g 1	NO	NO	NO	NO	Ver. 1.1 or later	OK	OK	OK	OK

• QR Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
QR Code	ESC GS y S 0	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	OK	OK
	ESC GS y S 1	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	OK	OK
	ESC GS y S 2	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	OK	OK
	ESC GS y D 1	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	OK	OK
	ESC GS y D 2	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	OK	OK
	ESC GS y P	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	OK	OK
	ESC GS y I	NO	NO	NO	NO	Ver. 1.2 or later	OK	OK	OK	OK

• Page Function Commands

Class	Commands	Model Name								
		TSP800	TSP700	TSP600	TUP900	TSP1000	TSP828L	TSP700II	TSP650	TUP500
Page Function	ESC GS h 0	NO	NO	NO	NO	NO	NO	OK	NO	OK
	ESC GS h 1	NO	NO	NO	NO	NO	NO	OK	NO	OK

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