

Line Thermal Printer

StarPRNT

Command Specifications

Rev. 4.00

Star Micronics Co., Ltd.  
Special Products Division

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This specification is a command specification for StarPRNT of line thermal printer.

Information contained herein applies to the following models.

< Applicable Models:>

- mPOP
- SM-L Series
  - SM-L200
  - SM-L300
- SM-S Series
  - SM-S210i (For Japanese market only)
  - SM-S220i (Other than Japanese market)
  - SM-S230i (Other than Japanese market)
- SM-L Series
  - SM-T300i
  - SM-T400i
- mC-Print3
  - MCP30, MCP31L, MCP31LB, MCP31C, MCP31CB (1st Generation)
  - MCP31CI, MCP31CBI (2nd Generation)
- mC-Print2
  - MCP20
  - MCP21
- TSP100IV Series
  - TSP100IV
  - TSP100IV SK
- mC-Label3
- BSC10II
- mC-Label2

For the command support status of each model, refer to “5. COMMAND LIST FOR EACH MODEL”.

## 1. COMMAND FUNCTION LIST

### • Font style and character set

| Commands | Name                                                 |
|----------|------------------------------------------------------|
| 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 &    | Register/delete 12 x 24 dot font download characters |
| ESC %    | Set/cancel download characters                       |

### • Chinese characters

| Commands | Name                                             |
|----------|--------------------------------------------------|
| ESC p    | Set to JIS Kanji character mode                  |
| ESC q    | Cancel JIS Kanji character mode                  |
| ESC \$   | Set/cancel JIS Kanji character modes             |
| ESC s    | Set two bytes Kanji characters left/right spaces |
| ESC t    | Set 1 byte Kanji characters left/right spaces    |
| ESC r    | Register Chinese download characters             |

- 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.

### • Print modes

| Commands           | Name                                                             |
|--------------------|------------------------------------------------------------------|
| ESC GS ) E (fn=48) | Basic print size setting for ANK characters and Kanji characters |
| 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                              |
| 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                                      |

• Horizontal direction position

| Commands | Name                                           |
|----------|------------------------------------------------|
| ESC I    | 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                     |

• Line spacing

| Commands | Name                         |
|----------|------------------------------|
| LF       | 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             |

• Page control commands

| Commands  | Name                           |
|-----------|--------------------------------|
| FF        | Form feed                      |
| ESC C     | Set page length to n lines     |
| ESC C NUL | Set page length in 24 mm units |

• Top margin

| Commands | Name           |
|----------|----------------|
| ESC RS T | Set top margin |

• Page Function

| Commands   | Name        |
|------------|-------------|
| ESC GS h 0 | Invert 180° |

• Cutter control

| Commands | Name                     |
|----------|--------------------------|
| ESC d    | Paper cutter instruction |

• Reduced Printing Function Command

| Commands     | Name                 |
|--------------|----------------------|
| ESC GS c h v | Set reduced printing |

### • Page Mode Commands

| Commands   | Name                                                   |
|------------|--------------------------------------------------------|
| ESC GS P 0 | Selects page mode                                      |
| ESC GS P 1 | Cancels page mode                                      |
| ESC GS P 2 | Select printing direction                              |
| ESC GS P 3 | Set print region in page mode                          |
| ESC GS P 4 | Specify character vertical direction absolute position |
| ESC GS P 5 | Specify character vertical direction relative position |
| ESC GS P 6 | Prints                                                 |
| ESC GS P 7 | Cancel printing and page mode                          |
| ESC GS P 8 | Cancel print data                                      |

### • Bit image Graphics

| Commands | Name                                          |
|----------|-----------------------------------------------|
| ESC K    | Standard density bit image                    |
| ESC L    | High density bit image                        |
| ESC k    | Fine bit image                                |
| ESC X    | Fine bit image                                |
| ESC GS S | Graphics Raster data printing                 |
| ESC GS X | Graphics Raster data printing (Compress data) |

### • Logos

| Commands              | Name                                                       |
|-----------------------|------------------------------------------------------------|
| ESC GS ( L (fn=0, 48) | Register logo data                                         |
| ESC GS ( L (fn=3, 51) | Send key code of the registered NV graphics                |
| ESC GS ( L (fn=64)    | Send all key code of the NV graphics                       |
| ESC GS ( L (fn=65)    | Erase entire NV graphics data                              |
| ESC GS ( L (fn=66)    | Erase the specified NV graphics data                       |
| ESC GS ( L (fn=67)    | Set the specified NV graphics data                         |
| ESC GS ( L (fn=69)    | Print the specified NV graphics data                       |
| ESC GS 8 L (fn=0, 48) | Register logo data                                         |
| ESC GS 8 L (fn=3, 51) | Send key code of the registered NV graphics                |
| ESC GS 8 L (fn=64)    | Send all key code of the NV graphics                       |
| ESC GS 8 L (fn=65)    | Erase entire NV graphics data                              |
| ESC GS 8 L (fn=66)    | Erase the specified NV graphics data                       |
| ESC GS 8 L (fn=67)    | Set the specified NV graphics data                         |
| ESC GS 8 L (fn=69)    | Print the specified NV graphics data                       |
| ESC GS ) L (fn=48)    | Send the registered individual logo CRC                    |
| ESC GS ) L (fn=49)    | Send the registered individual NV graphics memory capacity |
| ESC GS ) L (fn=50)    | all key code of the registered NV graphics                 |
| ESC GS ) L (fn=51)    | Send the registered NV graphics data                       |

### • Bar code

| Commands     | Name           |
|--------------|----------------|
| ESC b n1 ... | Print bar code |

#### ● QR Code commands

| Commands    | Name                                 |
|-------------|--------------------------------------|
| 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                        |

#### ● PDF417 commands

| Commands    | Name                               |
|-------------|------------------------------------|
| 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              |

#### ● 2D GS1 code, Compound symbol Commands

| Commands                | Name                                                                         |
|-------------------------|------------------------------------------------------------------------------|
| ESC GS ( k(cn=51,fn=67) | Set 2D module siz                                                            |
| ESC GS ( k(cn=51,fn=71) | Set The maximum width of the 2D GS1DataBar Expanded Stacked                  |
| ESC GS ( k(cn=51,fn=80) | Store data in 2D symbol saving region                                        |
| ESC GS ( k(cn=51,fn=81) | Print 2D symbol data of symbol saving region                                 |
| ESC GS ( k(cn=52,fn=67) | Compound symbol: Set module size                                             |
| ESC GS ( k(cn=52,fn=71) | Compound symbol: Set The maximum width of the 2D GS1DataBar Expanded Stacked |
| ESC GS ( k(cn=52,fn=72) | Compound symbol: Set HRI Font                                                |
| ESC GS ( k(cn=52,fn=80) | Compound symbol: Store data in symbol saving region                          |
| ESC GS ( k(cn=52,fn=81) | Compound symbol: Print symbol data of symbol saving region                   |

#### ● Initialization Command

| Commands     | Name                    |
|--------------|-------------------------|
| ESC @        | Command initialization  |
| ESC ACK CAN  | Real-time printer reset |
| ESC ? LF NUL | Reset printer           |

#### ● Memory Switch Command

| Commands | Name              |
|----------|-------------------|
| ESC GS # | Set memory switch |

### ● Status

| Commands             | Name                                  |
|----------------------|---------------------------------------|
| ESC RS a             | Set status transmission conditions    |
| ESC ACK SOH          | Real-time printer status (ASB Status) |
| ETB                  | Update ETB status                     |
| ESC RS E             | Clear ETB counter, ETB status         |
| ESC GS ETX (s=0,1,2) | Send print end counter and initialize |
| ESC GS ETX (s=3,4)   | Print data cancel function            |
| ESC GS ETX (s=5)     | Data time out setting                 |
| ESC # *              | Printer version inquiry               |
| ESC GS ) I (fn = 48) | Transmit multibyte font kind          |
| ESC GS ) I (fn = 49) | Transmit Printer information          |
| ESC GS ) I (fn = 50) | Transmit Remaining battery power      |
| ESC GS ) I (fn = 51) | Transmit installed I/F kind           |
| ESC GS ) I (fn = 52) | Transmit external device information  |
| ESC GS J (fn = 48)   | Send log information                  |
| ESC GS J (fn = 49)   | Clear log information                 |

### ● Print settings

| Commands | Name                  |
|----------|-----------------------|
| ESC RS A | Printing area setting |
| ESC RS d | Set print density     |
| ESC RS r | Set printing speed    |

### ● Special Commands

| Commands | Name                                                           |
|----------|----------------------------------------------------------------|
| ESC RS R | Specify the special location of use                            |
| ESC GS m | Cleaning notification / parts replacement notification control |

### ● UTF Commands

| Commands             | Name                                       |
|----------------------|--------------------------------------------|
| ESC GS ) U (fn = 48) | Selects UTF code                           |
| ESC GS ) U (fn = 64) | Setting of the Unicode ambiguous character |
| ESC GS ) U (fn = 65) | Set the UTF-8 CJK Unified Ideograph font   |

### ● Black mark Commands

| Commands  | Name                           |
|-----------|--------------------------------|
| ESC d     | Paper cut instruction          |
| FF        | Form feed                      |
| ESC C     | Set page length to n lines     |
| ESC C NUL | Set page length in 24 mm units |

### ● 2 color printing related commands

| Commands | Name                                                          |
|----------|---------------------------------------------------------------|
| 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 |

#### • External device drive

| Commands      | Name                                           |
|---------------|------------------------------------------------|
| 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 EM DC1 | External buzzer drive pulse condition settings |
| ESC GS EM DC2 | External buzzer drive execution                |

#### • Melody Speaker Command

| Commands   | Name                      |
|------------|---------------------------|
| ESC GS s R | Playback of received data |

#### • Barcode Reader Command

| Commands   | Name                          |
|------------|-------------------------------|
| ESC GS B 0 | Send data to a barcode reader |
| ESC GS B 1 | Status Request                |
| ESC GS B 2 | Barcode data request          |
| ESC GS B 3 | Buffer clear                  |

#### • Magnetic Card Reader Commands

| Commands | Name                     |
|----------|--------------------------|
| ESC M C  | Read ISO track           |
| ESC M D  | Read ISO track           |
| ESC M E  | Read ISO 2 tracks        |
| ESC M F  | Read ISO 3 tracks        |
| ESC M G  | Read ISO track (Track 3) |
| ESC M J  | Read JIS II track        |
| EOT      | Cancel MSR mode          |

#### • Customer Display Command

| Commands   | Name                            |
|------------|---------------------------------|
| ESC GS B @ | Send data to a customer display |
| ESC RS B A | Status request                  |
| ESC GS B B | Customer display data request   |
| ESC GS B C | Buffer clear                    |

#### • Network command

| Commands             | Name                                  |
|----------------------|---------------------------------------|
| ESC GS ) N (fn = 48) | Set acquisition method for IP address |
| ESC GS ) N (fn = 49) | Set IP Address                        |
| ESC GS ) N (fn = 50) | Set subnet mask                       |
| ESC GS ) N (fn = 51) | Set default gateway                   |
| ESC GS ) N (fn = 52) | Set DHCP timeout                      |
| ESC GS ) N (fn = 53) | Set 9100 multi session                |
| ESC GS ) N (fn = 54) | Set 9100 data timeout                 |

| Commands              | Name                                   |
|-----------------------|----------------------------------------|
| ESC GS ) N (fn = 55)  | Set disconnect message                 |
| ESC GS ) N (fn = 57)  | Set Steady LAN                         |
| ESC GS ) N (fn = 58)  | Set DNS 1                              |
| ESC GS ) N (fn = 59)  | Set DNS 2                              |
| ESC GS ) N (fn = 64)  | Send acquisition method for IP address |
| ESC GS ) N (fn = 65)  | Send IP Address                        |
| ESC GS ) N (fn = 66)  | Send subnet mask                       |
| ESC GS ) N (fn = 67)  | Send default gateway                   |
| ESC GS ) N (fn = 68)  | Send DHCP timeout                      |
| ESC GS ) N (fn = 69)  | Send 9100 multi session                |
| ESC GS ) N (fn = 70)  | Send 9100 data timeout                 |
| ESC GS ) N (fn = 71)  | Set disconnect message                 |
| ESC GS ) N (fn = 73)  | Send Steady LAN                        |
| ESC GS ) N (fn = 74)  | Send DNS 1                             |
| ESC GS ) N (fn = 75)  | Send DNS 2                             |
| ESC GS ) N (fn = 80)  | Set TCP#9100                           |
| ESC GS ) N (fn = 81)  | Send TCP#9100                          |
| ESC GS ) N (fn = 82)  | Set TCP#9101                           |
| ESC GS ) N (fn = 83)  | Send TCP#9101                          |
| ESC GS ) N (fn = 84)  | Set LPR                                |
| ESC GS ) N (fn = 85)  | Send LPR                               |
| ESC GS ) N (fn = 86)  | Set UDP#22222                          |
| ESC GS ) N (fn = 87)  | Send UDP#22222                         |
| ESC GS ) N (fn = 88)  | Set Telnet                             |
| ESC GS ) N (fn = 89)  | Send Telnet                            |
| ESC GS ) N (fn = 90)  | Set TCP#80                             |
| ESC GS ) N (fn = 91)  | Send TCP#80                            |
| ESC GS ) N (fn = 92)  | Set TCP#443                            |
| ESC GS ) N (fn = 93)  | Send TCP#443                           |
| ESC GS ) N (fn = 94)  | Set TCP#22222                          |
| ESC GS ) N (fn = 95)  | Send TCP#22222                         |
| ESC GS ) N (fn = 112) | Save network parameters                |
| ESC GS ) N (fn = 113) | Initialize network parameters          |
| ESC GS ) N (fn = 114) | Execute Login                          |
| ESC GS ) N (fn = 115) | Send Login Status                      |
| ESC GS ) N (fn = 116) | Execute Logout                         |
| ESC GS ) N (fn = 128) | Set Login Password                     |
| ESC GS ) N (fn = 129) | Send Login Password Change Status      |
| ESC GS ) N (fn = 130) | Set Star CloudPRNT Cloud Service       |
| ESC GS ) N (fn = 131) | Send Star CloudPRNT Cloud Service      |
| ESC GS ) N (fn = 132) | Set Star CloudPRNT Service URL         |
| ESC GS ) N (fn = 133) | Send Star CloudPRNT Service URL        |
| ESC GS ) N (fn = 134) | Set Star CloudPRNT Polling time        |
| ESC GS ) N (fn = 135) | Send Star CloudPRNT Polling time       |
| ESC GS ) N (fn = 136) | Set Star CloudPRNT User Name           |
| ESC GS ) N (fn = 137) | Send Star CloudPRNT User Name          |
| ESC GS ) N (fn = 138) | Set Star CloudPRNT Password            |

| Commands              | Name                                               |
|-----------------------|----------------------------------------------------|
| ESC GS ) N (fn = 139) | Send Star CloudPRNT Password                       |
| ESC GS ) N (fn = 140) | Set Star CloudPRNT TLS trust level                 |
| ESC GS ) N (fn = 141) | Send Star CloudPRNT TLS trust level                |
| ESC GS ) N (fn = 142) | Set Star CloudPRNT NTP Server                      |
| ESC GS ) N (fn = 143) | Send Star CloudPRNT NTP Server                     |
| ESC GS ) N (fn = 144) | Set Star CloudPRNT Cipher Suites Encryption Level  |
| ESC GS ) N (fn = 145) | Send Star CloudPRNT Cipher Suites Encryption Level |
| ESC GS ) N (fn = 146) | Set Star CloudPRNT TLS1.3                          |
| ESC GS ) N (fn = 147) | Send Star CloudPRNT TLS1.3                         |
| ESC GS ) N (fn = 150) | Decrypt and send strings                           |
| ESC GS ) N (fn = 152) | Set Star CloudPRNT HTTP Response Timeout           |
| ESC GS ) N (fn = 153) | Send Star CloudPRNT HTTP Response Timeout          |

- Command related to paper hold control

| Commands             | Name                                     |
|----------------------|------------------------------------------|
| ESC SYN DC3          | Paper hold control settings              |
| ESC SYN DC4          | Paper hold status control settings       |
| ESC GS ) s (fn = 48) | Send paper hold sensor installation data |

- Spooler

| Commands              | Name                                            |
|-----------------------|-------------------------------------------------|
| ESC GS ) SP (fn = 48) | Store print data in spooler                     |
| ESC GS ) SP (fn = 49) | Acquire job information with specified job ID   |
| ESC GS ) SP (fn = 50) | Job information list (specified number of jobs) |

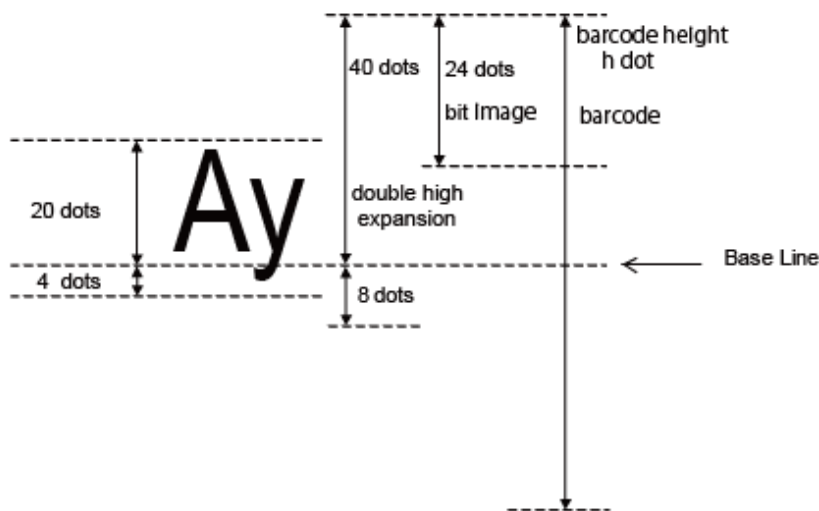
- Star Configuration

| Commands             | Name                                  |
|----------------------|---------------------------------------|
| ESC GS ) # (fn = 48) | Register Star Configuration Json file |
| ESC GS ) # (fn = 49) | Read Star Configuration Json file     |

## 2. COMMAND DETAILS

### 2.1. 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
  - For SM-S and T series, the base line is the upper end of each data.
  - For the expansion position of the print data in page mode, refer to "Appendix 6 Explanation of Page Mode".



- ASB Function  
Sends the automatic status to the host each time the printer's status changed.
- NSB Function  
When the printer uses a parallel I/F or USB I/F, sends the automatic status each time the reverse transfer mode is entered. When the printer uses Ethernet I/F or wireless I/F, sends the automatic status when the printer is connected to the print port (TCP#9100). The ASB and NSB status formats are the same.

## 2.2. 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 the data following the ESC code is a code that is not defined as a command, ESC 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.

When the data following ESC is FS, and the data following that is not defined as a command, ESC FS and the code which follows (total 3 bytes) are discarded.

When the data following ESC is GS, and the data which follows it is a code that is not defined as a command, ESC GS and the code which follows it (total 3 bytes) is read and discarded.

When the data following ESC is RS, and the data which follows it is a code that is not defined as a command, ESC RS and the 2-byte code which follows it (total 4 bytes) is read and discarded.

### 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.

(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.

## 2.3. Standard Command Details

### 2.3.1. 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] Spec. 1  $0 \leq n \leq 1$   
 Spec. 2  $0 \leq n \leq 2$

[Initial Value] n = 0  
 [Function] Selects a font

| n | Font                  |
|---|-----------------------|
| 0 | Font-A (12 x 24 dots) |
| 1 | Font-B (9 x 24 dots)  |
| 2 | Font-C (9 x 17 dots)  |

## 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] Spec. 1  
For SBCS  
 $0 \leq n \leq 21, 32 \leq n \leq 34, 64 \leq n \leq 79, 96 \leq n \leq 98, n=102, 255$

Spec. 2  
For SBCS  
 $0 \leq n \leq 21, 32 \leq n \leq 34, 64 \leq n \leq 79, 96 \leq n \leq 98, n=102, n=255$

Spec. 3  
For SBCS  
 $0 \leq n \leq 15, 19 \leq n \leq 32, n=255$

[Initial Value] Memory switch / Star Configuration setting

[Function] Specifies code page

| 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)               |
| 32 | Codepage 1252 (Windows Latin-1)   |
| 33 | Codepage 1250 (Windows Latin-2)   |
| 34 | Codepage 1251 (Windows Cyrillic)  |

| n   | Code Page                      |
|-----|--------------------------------|
| 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)        |
| 96  | Thai Character Code 42 (Thai)  |
| 97  | Thai Character Code 11 (Thai)  |
| 98  | Thai Character Code 13 (Thai)  |
| 102 | Thai Character Code 18 (Thai)  |
| 255 | User Setting (Blank Code Page) |

When UTF-8 code is valid with SBCS setting, the UTF-8 becomes invalid by this command.

## ESC GS = n1 n2 da1 da2...dak db1 db2...dbk dc1 dc2...dck

|        |                            |     |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |
|--------|----------------------------|-----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| [Name] | Write blank code page data |     |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |
| [Code] | ASCII                      | ESC | GS | =  | n1 | n2 | da1 | da2 | ... | dak | db1 | db2 | ... | Dbk | dc1 | dc2 | ... | dck |
|        | Hex.                       | 1B  | 1D | 3D | n1 | n2 | da1 | da2 | ... | dak | db1 | db2 | ... | Dbk | dc1 | dc2 | ... | dck |
|        | Decimal                    | 27  | 29 | 61 | n1 | n2 | da1 | da2 | ... | dak | db1 | db2 | ... | Dbk | dc1 | dc2 | ... | dck |

[Defined Area]

Spec. 1

n1 = 0

n2 = 48

$1 \leq (n1 + n2 \times 256)$

$0 \leq da \leq 255$  (Font-A data)

$0 \leq db \leq 255$  (Font-B data)

ak = 6144

bk = 6144

ck = 0 (Do not send Font-C data)

Spec. 2

n1 = 0

n2 = 48

$1 \leq (n1 + n2 \times 256)$

$0 \leq da \leq 255$  (Font-A data)

$0 \leq db \leq 255$  (Font-B data)

$0 \leq dc \leq 255$  (Font-C data)

ak = 6144

bk = 6144

ck = 4352

[Initial Value] - - -

[Function] Writes data into a blank code page.

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 following is the data written to the blank code page.

Font-A: 1 character = 48 bytes 6144 bytes = 48 bytes x 128 characters

Font-B: 1 character = 48 bytes 6144 bytes = 48 bytes x 128 characters

Font-C: 1 character = 34 bytes 4352 bytes = 34 bytes x 128 characters

Send Font-A, Font-B and Font-C data continuously.

For models that do not support Font-C, only send Font-A / Font-B data.

The printer is reset when writing with this command is completed.

[Font-A Data Format Vertical 24 dots \* Horizontal 12 dots]

| MSB  | LSB | MSB  | 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

[Font-B Data Format Vertical 24 dots \* Horizontal 9 dots]

| MSB  | LSB | MSB  | 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

[Font-C Data Format Vertical 17 dots \* Horizontal 9 dots]

| MSB  | LSB | MSB  | 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 | ○   |

● = 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] | Spec.1                                                                                   |
|                | $0 \leq n \leq 14$ , $n = 64$                                                            |
|                | $48 \leq n \leq 57$ ("0" $\leq n \leq$ "9"), $65 \leq n \leq 69$ ("A" $\leq n \leq$ "E") |
|                | Spec.2                                                                                   |
|                | $0 \leq n \leq 14$ , $n = 18$ , $n = 64$                                                 |
|                | $48 \leq n \leq 57$ ("0" $\leq n \leq$ "9"), $65 \leq n \leq 69$ ("A" $\leq n \leq$ "E") |

|                 |                                                                                 |
|-----------------|---------------------------------------------------------------------------------|
| [Initial Value] | Memory switch / Star Configuration setting                                      |
|                 | When installed with Japanese language characters and MBCS setting: Fixed at n=8 |
|                 | When installed with Hangeul language characters and MBCS setting: Fixed at n=13 |

|            |                                                                                             |
|------------|---------------------------------------------------------------------------------------------|
| [Function] | Specifies international characters                                                          |
|            | When installed with Japanese language characters and MBCS setting, this command is ignored. |
|            | When installed with Hangeul language characters and MBCS setting, this command is ignored.  |

| 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                  |
| 18     | India                    |
| 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 / Star Configuration 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<br>48≤n≤57 ("0"≤n≤"9")<br>65≤n≤70 ("A"≤n≤"F")                                                                                                                                                                                                                                                     |
| [Initial Value] | Memory switch / Star Configuration setting                                                                                                                                                                                                                                                               |
| [Function]      | Specify the right space amount of ANK characters in n dots.<br>The ANK character width is "left space amount" + "ANK font dot count" + right space amount."<br>(See the information on character specifications in the appropriate product specifications manual for details on the ANK font dot count.) |

Standard mode and page mode can be set independently of each other.  
When specified to expand the basic print size for ANK characters and Kanji characters by 1.5 times vertically and 1.5 times horizontally,  
the right space amount increases to 1.5 times (values after the decimal point discarded).

## ESC & c1 c2 n d1...d48

|        |                                  |     |    |    |    |   |    |     |     |  |
|--------|----------------------------------|-----|----|----|----|---|----|-----|-----|--|
| [Name] | Register ANK 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 the download characters of the currently selected font (Font-A or Font-B) 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.

FONT-A data format 24 dots vertically x 12 dots horizontally

| MSB  | LSB      | MSB  | 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

FONT-B data format 24 dots vertically x 9 dots horizontally

| MSB  | LSB      | MSB  | 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 & c1 c2 n

[Name] Delete ANK 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 the download characters of the currently selected font (Font-A or Font-B) that are registered in 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

### 2.3.2. 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 / Star Configuration.

This command is ignored when UTF-8 is specified (command: ESC GS t 128) for MBCS.

#### **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

This command is ignored when UTF-8 is specified (command: ESC GS t 128) for MBCS.

#### **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 / Star Configuration 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 / Star Configuration.

This command is ignored when UTF-8 is specified (command: ESC GS t 128) for MBCS.

|       |                                          |
|-------|------------------------------------------|
| 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 Full-Size 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 / Star Configuration setting

[Function] Adds n1 dots left space amount and n2 dots right space amount to Kanji characters.  
The Kanji character width is "left space amount" + "Kanji font dot count" + "right space amount."  
(See the information on character specifications in the appropriate printer specifications manual for details on the Kanji font dot count.)  
This command is ignored for models not equipped with Kanji fonts (for overseas) and when the specification for the location of use is specified as SBCS (single byte countries) by the memory switch / Star Configuration.

Standard mode and page mode can be set independently of each other.

When specified to expand the basic print size for ANK characters and Kanji characters by 1.5 times vertically and 1.5 times horizontally,  
the left space amount and right space amount each increases to 1.5 times (values after the decimal point discarded).

## ESC t n1 n2

|        |                                                 |     |     |    |    |
|--------|-------------------------------------------------|-----|-----|----|----|
| [Name] | Set Half-Size 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 / Star Configuration setting

[Function] Adds n1 dots left space amount and n2 dots right space amount to half-size Kanji characters.  
The half-size Kanji character width is "left space amount" + "half-size Kanji font dot count" + "right Space amount."  
(See the information on character specifications in the appropriate printer specifications manual for details on the half-size Kanji font dot count.)  
This command is ignored for models not equipped with Kanji fonts (for overseas) and when the specification for the location of use is specified as SBCS (single byte countries) by the memory switch / Star Configuration.

Standard mode and page mode can be set independently of each other.

When specified to expand the basic print size for ANK characters and Kanji characters by 1.5 times vertically and 1.5 times horizontally,  
the left space amount and right space amount each increases to 1.5 times (values after the decimal point discarded).

## ESC r c1 c2 d1...dk

[Name] Register Kanji 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]  $0 \leq d \leq 255$

k=72

c1 and c2 differ according to specifications and code type (see table below).

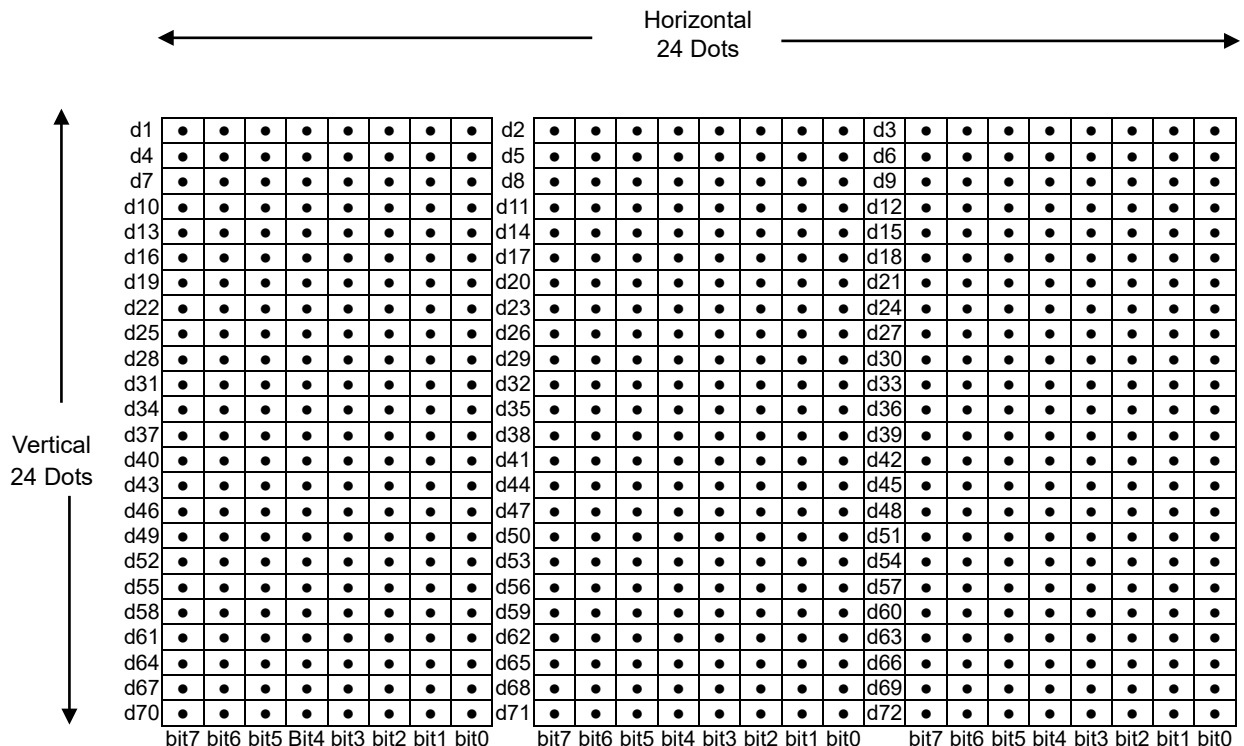
[Initial Value] All spaces

[Function] Registers Kanji 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 Kanji fonts (for overseas) and when the specification for the location of use is specified as SBCS (single byte countries) by the memory switch / Star Configuration, the printer discards up to d1 and dk.

| Specification                 | c1     | c2                                               | Registration count |
|-------------------------------|--------|--------------------------------------------------|--------------------|
| Japanese char./JIS type       | c1=77h | $21h \leq c2 \leq 7Eh$                           | 94 characters      |
| Japanese char./Shift JIS type | c1=EC  | $40h \leq c2 \leq 7Eh$<br>$80h \leq c2 \leq 9Eh$ | 94 characters      |
| Kanji characters              | c1=FEh | $A1h \leq c2 \leq FEh$                           | 94 characters      |
| Taiwan char./JIS type         | c1=FEh | $A1h \leq c2 \leq FEh$                           | 94 characters      |
| Hangeul char./JIS type        | c1=FEh | $A1h \leq c2 \leq FEh$                           | 94 characters      |

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



### 2.3.3. Print Mode

#### **ESC GS ) E pL pH fn [parameter]**

[Name] Basic print size setting

[Code] ASCII ESC GS ) E pL pH fn [parameter]

Hex. 1B 1D 29 45 pL pH fn [parameter]

Decimal 27 29 41 69 pL pH fn [parameter]

[Function]

Executes processes related to the basic character size.

- With "pL" and "pH", the parameter count after "fn" is specified as (pL + pH × 256) bytes.
- For [parameter], see the function specifications.

| fn | Function No. | Function name                                                    |
|----|--------------|------------------------------------------------------------------|
| 48 | Function 48  | Basic print size setting for ANK characters and Kanji characters |

## <Function 48> ESC GS ) E pL pH fn m (fn=48)

[Name] Basic print size setting for ANK characters and Kanji characters

[Code] ASCII ESC GS ) E pL pH fn m  
Hex. 1B 1D 29 45 pL pH fn m  
Decimal 27 29 41 69 pL pH fn m

[Defined Area] pL = 2, pH = 0  
fn = 48  
m = 0, 1

[Initial Value] m = 0

[Function] Configures the basic print size setting for ANK characters and Kanji characters.

| m | Basic print size                                             |
|---|--------------------------------------------------------------|
| 0 | Base size (no vertical or horizontal expansion)              |
| 1 | Vertical 1.5 times expansion, horizontal 1.5 times expansion |

When m=1 is specified, the ANK characters and Kanji characters expanded to 1.5 times vertically and expanded to 1.5 times horizontally are set as the basic print size.

When m=1 is specified, the print size of ANK characters and Kanji characters on a printer with 300 dpi resolution can be expanded to approximately the same as the results from a 203 dpi printer.

However, character expansion may cause deterioration of the print quality.

## 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]  $0 \leq n1 \leq 5$   
 $48 \leq n1 \leq 53$  ("0"  $\leq n1 \leq$  "5")  
 $0 \leq n2 \leq 5$   
 $48 \leq n2 \leq 53$  ("0"  $\leq n2 \leq$  "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 |

[Model limitation]

SM-L200 : 4x high expansion, 5x high expansion, and 6x high expansion are not supported in the expanded high that is specified with n1.  
 $0 \leq n1 \leq 2$ ,  $48 \leq n1 \leq 50$  ("0"  $\leq n1 \leq$  "2")

## ESC W n

[Name] Specify/cancel expanded wide

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

[Defined Area]     $0 \leq n \leq 5$   
                        $48 \leq n \leq 53$  ("0"  $\leq n \leq$  "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]     $0 \leq n \leq 5$   
                        $48 \leq n \leq 53$  ("0"  $\leq n \leq$  "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 |

[Model limitation]

SM-L200 : 4x high expansion, 5x high expansion, and 6x high expansion are not supported.  
 $0 \leq n_1 \leq 2, 48 \leq n_1 \leq 50$  ("0"  $\leq n_1 \leq$  "2")

## 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 and Kanji 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 and Kanji 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.)

When the basic print size is specified as vertical 1.5 times expansion, horizontal 1.5 times expansion, 3 dots under line occurs.

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  | 5 | n |
|        |                          |     | F |   |
|        | Decimal                  | 27  | 9 | n |
|        |                          |     | 5 |   |

[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.)

When the basic print size is specified as vertical 1.5 times expansion, horizontal 1.5 times expansion, 3 dots upper line occurs.

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.<br>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

This command setting does not affect page mode. When page mode is selected, only the setting of this command is enabled.

## 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.

This command setting does not affect page mode. When page mode is selected, only the setting of this command is enabled.

### 2.3.4. Horizontal Direction Printing Position

#### **ESC I n**

|        |                 |     |     |   |
|--------|-----------------|-----|-----|---|
| [Name] | Set left margin |     |     |   |
| [Code] | ASCII           | ESC | I   | n |
|        | Hex.            | 1B  | 6C  | n |
|        | Decimal         | 27  | 108 | n |

[Defined Area]  $0 \leq n \leq 255$

[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.

Setting this command partway will take affect from the next line.

This command setting does not affect page mode. When page mode is selected, only the setting of this command is enabled.

#### **ESC Q n**

|        |                  |     |    |   |
|--------|------------------|-----|----|---|
| [Name] | Set right margin |     |    |   |
| [Code] | ASCII            | ESC | Q  | n |
|        | Hex.             | 1B  | 51 | n |
|        | Decimal          | 27  | 81 | n |

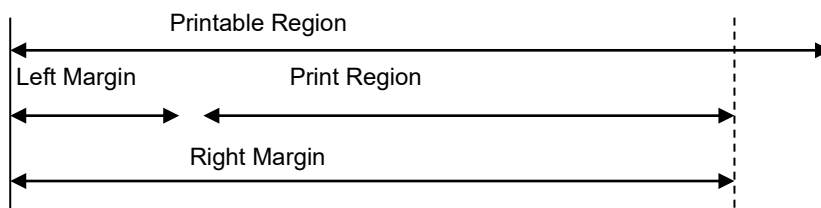
[Defined Area]  $0 \leq n \leq 255$

[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.

Setting this command partway will take affect from the next line.

This command setting does not affect page mode. When page mode is selected, only the setting of this command is enabled.



## HT

|        |                     |    |  |
|--------|---------------------|----|--|
| [Name] | Move horizontal tab |    |  |
| [Code] | ASCII               | HT |  |
|        | Hex.                | 09 |  |
|        | Decimal             | 9  |  |

[Defined Area] - - -

[Initial Value] No setting

[Function] Move print position to next horizontal tab position.  
When a horizontal tab is not set, this command is ignored.  
In standard mode, when the current position is the same as or to the right of the rightmost horizontal tab position, this command is ignored.  
In page mode, when the current position is the same as or to the right of the rightmost horizontal tab position that is set in the print area, a line feed is performed.

## 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]  $1 \leq n \leq 255$

$0 \leq k \leq 16$

[Initial Value] Standard mode : - - -

Page mode : 8, 16, 24 ... (16, one every 8 characters at the initially selected ANK character pitch)

[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

The tab position must satisfy the following conditions. If the condition is not satisfied, the 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.

-  $k \leq 16$

-  $1 < n1 < n2 \dots < nk$

-  $nk \leq \text{Printable region}$  (Only Standard mode)

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.

Standard mode and page mode can be set independently of each other.

## 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.  
Standard mode and page mode can be set independently of each other.

## 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]      $0 \leq n1 \leq 255$   
 $0 \leq n2 \leq 255$

[Initial Value]     - - -

[Function]         Moves the printing position from the left margin to the  $(n1 + n2 \times 256)$  position.  
This command is ignored if the print region is exceeded.  
If print data is overlapped when moved to the left, the old print data is overwritten by new data.

## 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]      $0 \leq n1 \leq 255$   
 $0 \leq n2 \leq 255$

[Initial Value]     - - -

[Function]         Moves the printing position from the current position to the  $(n1 + n2 \times 256)$  position.  
This command is ignored if the print region is exceeded.  
When  $(n1 + n2 \times 256) \geq 32768$ , it moves  $\{65536 - (n1 + n2 \times 256)\}$  dots in the left direction.  
When  $(n1 + n2 \times 256) < 32768$ , it moves  $(n1 + n2 \times 256)$  dots in the right direction.  
If print data is overlapped when moved to the left, the old print data is overwritten by new data.

## 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]      $0 \leq n \leq 2$   
 $48 \leq n \leq 50$  ("0"  $\leq n \leq$  "2")

[Initial Value]      $n = 0$

[Function]         Specifies the alignment position in the printing region that has been set.  
This command setting does not affect page mode. When page mode is selected, only the setting of this command is enabled.

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

### 2.3.5. 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.  
Initial value for line feed amount is determined by the memory switch Star Configuration setting .

#### **ESC a n**

|        |                    |     |    |   |
|--------|--------------------|-----|----|---|
| [Name] | Feed paper n lines |     |    |   |
| [Code] | ASCII              | ESC | a  | n |
|        | Hex.               | 1B  | 61 | n |
|        | Decimal            | 27  | 97 | n |

[Defined Area]  $1 \leq n \leq 127$

[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.  
Initial value for line feed amount is determined by the memory switch Star Configuration setting .

## ESC z n

[Name] Select line feed amount  
[Code] ASCII ESC z n  
Hex. 1B 7A n  
Decimal 27 122 n

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

[Initial Value] Memory switch / Star Configuration setting

[Function] Specifies the line feed amount.

Standard mode and page mode can be set independently of each other.

When specified to expand the basic print size for ANK characters and Kanji characters by 1.5 times vertically and 1.5 times horizontally, the line feed amount increases to 1.5 times.

Spec. 1

| n     | Line feed amount                          |
|-------|-------------------------------------------|
| 0, 48 | Specifies 3 mm line feed amount (24 dots) |
| 1, 49 | Specifies 4 mm line feed amount (32 dots) |

Spec. 2

| n     | Line feed amount                             |
|-------|----------------------------------------------|
| 0, 48 | Specifies 2.03 mm line feed amount (24 dots) |
| 1, 49 | Specifies 2.70 mm line feed amount (32 dots) |

## ESC 0

[Name] Specify line spacing to 24 dots  
[Code] ASCII ESC 0  
Hex. 1B 30  
Decimal 27 48

[Defined Area] - - -

[Initial Value] Memory switch / Star Configuration setting

[Function]

Spec. 1

Specifies the line feed amount to 3 mm (24 dots).

Spec. 2

Specifies the line feed amount to approximately 2.03 mm (24 dots).

Standard mode and page mode can be set independently of each other.

When specified to expand the basic print size for ANK characters and Kanji characters by 1.5 times vertically and 1.5 times horizontally, the line feed amount increases to 1.5 times.

## ESC J n

|        |                          |     |    |   |
|--------|--------------------------|-----|----|---|
| [Name] | Line feed in 2 dot units |     |    |   |
| [Code] | ASCII                    | ESC | J  | n |
|        | Hex.                     | 1B  | 4A | n |
|        | Decimal                  | 27  | 74 | n |

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

[Initial Value] - - -

[Function]

Spec. 1

Executes a n/4mm paper feed. ( $2n \times 25.4/203$  mm)

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.

Spec. 2

Executes an approximate n/5.9mm paper feed. ( $2n \times 25.4/300$ mm)

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] | Line feed in 1 dot units |     |    |   |
| [Code] | ASCII                    | ESC | I  | n |
|        | Hex.                     | 1B  | 49 | n |
|        | Decimal                  | 27  | 73 | n |

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

[Initial Value] - - -

[Function]

Spec. 1

Executes a n/8mm paper feed. ( $n \times 25.4/203$  mm)

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.

Spec. 2

Executes an approximate n/11.8mm paper feed. ( $n \times 25.4/300$ mm)

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.

### 2.3.6. 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.

Invalid in page mode.

#### **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).

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.
- Error cancel operations: Sets position when quitting error cancellation operations at top of page.

#### **ESC C NUL n**

|        |                                    |     |    |     |   |
|--------|------------------------------------|-----|----|-----|---|
| [Name] | Set page length to n x 24 mm units |     |    |     |   |
| [Code] | ASCII                              | ESC | C  | NUL | n |
|        | Hex.                               | 1B  | 43 | 00  | n |
|        | Decimal                            | 27  | 67 | 0   | n |

[Defined Area]  $1 \leq n \leq 22$

[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).

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.
- Error cancel operations: Sets position when quitting error cancellation operations at top of page.

### 2.3.7. Top margin

#### **ESC RS T n**

|        |                |     |    |    |   |
|--------|----------------|-----|----|----|---|
| [Name] | Set top margin |     |    |    |   |
| [Code] | ASCII          | ESC | RS | T  | n |
|        | Hex.           | 1B  | 1E | 54 | n |
|        | Decimal        | 27  | 30 | 84 | n |

[Defined Area] Spec. 1  
n = 0,  $2 \leq n \leq 11$

Spec. 2  
n = 0, 11

Spec. 3  
n = 0, 3, 11

Spec. 4  
n = 0, 3, 10

[Initial Value] Memory switch / Star Configuration setting

[Function] Sets the top margin at n mm from the top edge of the paper.  
When n=0, the standard top margin for that model is set.

[Model limitation]  
mC-Print3 : When the top margin is set to 10 mm or less, the paper length (cut length) should not exceed 50mm.  
(If the cut paper remains at the paper-exit, a paper jam may occur. There is no limitation when the cut paper is removed.)

### 2.3.8. Page Function

#### ESC GS h 0 k m n

|        |                         |     |    |     |    |   |   |   |
|--------|-------------------------|-----|----|-----|----|---|---|---|
| [Name] | 180° Inversion Function |     |    |     |    |   |   |   |
| [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]  | $0 \leq k \leq 1, m = 0, n = 0$               |
| [Initial Value] | Memory switch / Star Configuration setting    |
| [Function]      | Enables/disables the 180° inversion function. |

| k | 180° Inversion Function |
|---|-------------------------|
| 0 | Disable                 |
| 1 | Enable                  |

#### <180° Inversion Function>

Enables/disables the 180° inversion function.

When the 180° inversion function is enabled, a 180° inversion is executed by the 180° inversion trigger.

However, this function is executed for the print data that fits in the image buffer length.

In case with print data longer than the image buffer length, the 180° inversion function is ignored.

Also, when printing is started by other than the 180° inversion trigger described below, when the print startup control setting is set for each line, during the page mode, or while a macro is being executed, the 180° inversion function is ignored.

This setting will not be cleared by <ESC> @ command.

#### 180° inversion trigger

- Cutter command : <ESC> d n
- FF command : <FF>
- BM detection command : <ESC> d n, <FF>

#### Example of usage

- 1) 180° inversion function enabled : <ESC> <GS> h 0 k m n (k=0x01, m=0x00, n=0x00)
- 2) Print data transmission : Print data (Print length must be within the image buffer length.)
- 3) Trigger command transmission : <ESC> d n (Cutter command is the 180° inversion trigger.)

### 2.3.9. Cutter Control

#### ESC d n

|        |             |     |     |   |
|--------|-------------|-----|-----|---|
| [Name] | Auto-cutter |     |     |   |
| [Code] | ASCII       | ESC | d   | n |
|        | Hex.        | 1B  | 64  | n |
|        | Decimal     | 27  | 100 | n |

[Defined Area]       $0 \leq n \leq 3$   
 $48 \leq n \leq 51$  ("0"  $\leq n \leq$  "3")  
 $n = 116$  ("t")

[Initial Value]      - - -

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

##### Spec. 1

| n     | Auto cutter                                                                                                                                                                               |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0, 48 | Full cut at the current position.<br>If there is print data remaining in the line buffer, printing of line buffer is executed prior to the operation described above.                     |
| 1, 49 | Partial cut at the current position.<br>If there is print data remaining in the line buffer, printing of line buffer is executed prior to the operation described above.                  |
| 2, 50 | Paper is fed to cutting position, then a full cut.<br>If there is print data remaining in the line buffer, printing of line buffer is executed prior to the operation described above.    |
| 3, 51 | Paper is fed to cutting position, then a partial cut.<br>If there is print data remaining in the line buffer, printing of line buffer is executed prior to the operation described above. |
| 116   | Feed paper to the tear bar position.<br>If there is print data remaining in the line buffer, printing of line buffer is executed prior to the operation described above.                  |

##### Spec. 2

| n     | Auto cutter                                                                                                                                                                               |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0, 48 | Full cut at the current position.<br>If there is print data remaining in the line buffer, printing of line buffer is executed prior to the operation described above.                     |
| 1, 49 | Partial cut at the current position.<br>If there is print data remaining in the line buffer, printing of line buffer is executed prior to the operation described above.                  |
| 2, 50 | Paper is fed to cutting position, then a full cut.<br>If there is print data remaining in the line buffer, printing of line buffer is executed prior to the operation described above.    |
| 3, 51 | Paper is fed to cutting position, then a partial cut.<br>If there is print data remaining in the line buffer, printing of line buffer is executed prior to the operation described above. |

- (\*) 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.
- (\*) The printer which is not equipped with an auto-cutter works in the following ways.
- Command for full cut at the current position : Executes printing
  - Command for feeding paper to cutting position: Executes printing and feeds paper to the tear bar position.

### 2.3.10. Reduced Printing Function Command Details

#### **ESC GS c h v**

|        |                      |     |    |    |   |   |
|--------|----------------------|-----|----|----|---|---|
| [Name] | Set reduced printing |     |    |    |   |   |
| [Code] | ASCII                | ESC | GS | c  | h | v |
|        | Hexadecimal          | 1B  | 1D | 63 | h | v |
|        | Decimal              | 27  | 29 | 99 | h | v |

Spec.1

|                |          |
|----------------|----------|
| [Defined Area] | h = 0, 1 |
|                | v = 0    |

Spec.2

|                |             |
|----------------|-------------|
| [Defined Area] | h = 0, 1    |
|                | v = 0, 1, 2 |

[Initial Value] Memory switch / Star Configuration setting

|          |                                           |
|----------|-------------------------------------------|
| h        | Set horizontal direction reduced printing |
| 0        | Invalid                                   |
| 1        | Valid (67%)                               |
| 2 to 255 | Command ignored                           |

|          |                                         |
|----------|-----------------------------------------|
| v        | Set vertical direction reduced printing |
| 0        | Invalid                                 |
| 1        | Valid (50%)                             |
| 2        | Valid (75%)                             |
| 3 to 255 | Command ignored                         |

- Reduced printing in the horizontal direction compresses the entire horizontal direction.
- Reduced printing in the horizontal direction with the 3-inch model is enabled when the printing region is 72 mm.
- Disabled in Page Mode.

### 2.3.11. Page Mode Command Details

#### **ESC GS P 0**

[Name] Selects page mode

|        |             |     |    |    |    |
|--------|-------------|-----|----|----|----|
| [Code] | ASCII       | ESC | GS | P  | 0  |
|        | Hexadecimal | 1B  | 1D | 50 | 30 |
|        | Decimal     | 27  | 29 | 80 | 48 |

[Function] Switches from standard mode to page mode.

- Valid only when input at the top of the line.
- Invalid when input in page mode.
- Returns to standard mode after running this command.
  - ESC GS P 1 (selects standard mode)
  - ESC GS P 7 (prints in page mode and recovers)
- The character expansion position uses the starting point specified by ESC GS P2 (selection of character print direction in page mode) in the print region specified by ESC GS P 3 (set print region in page mode).
- Switches the following command setting values that have independent values for both page and standard modes to the setting values of page mode.
  - Set space amount : ESC SP, ESC s, ESC t
  - Set the line feed amount t : ESC z, ESC 0
  - Set horizontal tab : ESC D
- The following commands are valid in page mode.
  - ESC GS a : Move absolute position
  - SI : Select upside-down printing
  - ESC I : Set left margin
  - ESC Q : Set right margin
- The following commands are invalid in page mode.
  - FF : Form feed
  - ESC GS c : Reduced Printing
  - ESC RS m : BM setting
  - ESC RS A : Printing Region Setting
  - ESC GS M : Maintenance counter control
  - ESC GS r : Get CRC
  - ESC RS C : Set printing mode
  - ESC RS r : Set print speed
  - ESC GS S : Print raster graphics data
- Recover to standard mode using ESC @ (initialize printer).

## ESC GS P 1

[Name] Cancel page mode

[Code] ASCII ESC GS P 1  
Hexadecimal 1B 1D 50 31  
Decimal 27 29 80 49

[Function]

Cancels page mode.

- Valid only when input in page mode.
- Data expanded in page mode is erased.
- After execution, the top of the line is positioned at the next print starting position.
- Print region set by ESC GS P 3 (Set print region in page mode) is initialized.
- Switches the following command setting values that have independent values for both standard and page modes to the setting values of standard mode.
  - Set space amount : ESC SP, ESC s, ESC t
  - Set the line feed amount : ESC z, ESC 0
  - Set horizontal tab : ESC D
- The following commands are valid only when set in standard mode.
  - ESC GS P 3 : Set print region in page mode
  - ESC GS P 2 : Select character print direction in page mode
- The following commands are ignored in standard mode.
  - ESC GS P 4 : Specify character vertical direction absolute position in page mode
  - ESC GS P 5 : Specify character vertical direction relative position in page mode
  - ESC GS P 6 : Print data in page mode
  - ESC GS P 7 : Print in page mode and recover
  - ESC GS P 8 : Cancel print data in page mode
- When power is turned on and when a reset is implemented, standard mode is selected when

executing

initialization (ESC @) of the printer.

## ESC GS P 2 n

[Name] Select character print direction in page mode

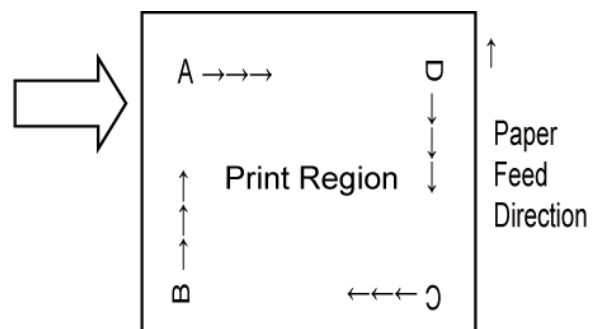
[Code] ASCII ESC GS P 2  
Hexadecimal 1B 1D 50 32  
Decimal 27 29 80 50

[Defined Area]  $0 \leq n \leq 3, 48 \leq n \leq 51$

[Initial Value]  $n = 0$

[Function] Select character print direction and starting point in page mode.

| N     | Printing Direction | Starting Point                       |
|-------|--------------------|--------------------------------------|
| 0, 48 | Left to Right      | Upper Left<br>(Drawing at Right A)   |
| 1, 49 | Bottom to Top      | Bottom Left<br>(Drawing at Right B)  |
| 2, 50 | Right to Left      | Bottom Right<br>(Drawing at Right C) |
| 3, 51 | Top to Bottom      | Top Right<br>(Drawing at Right D)    |



- When standard mode is selected, only internal printer flag operations are executed when this command is entered. In that case, printing in standard mode is unaffected.
- The starting point in the print region specified by ESC GS P 3 (Set print region in page mode) is used for the start of character expansion.

## ESC GS P 3 xL xH yL yH dxL dxH dyL dyH

[Name] Set print region in page mode

|        |             |     |    |    |    |
|--------|-------------|-----|----|----|----|
| [Code] | ASCII       | ESC | GS | P  | 3  |
|        | Hexadecimal | 1B  | 1D | 50 | 33 |
|        | Decimal     | 27  | 29 | 80 | 51 |

[Defined Area]  $0 \leq xL, xH, yL, yH, dxL, dxH, dyL, dyH \leq 255$   
However, this excludes  $dxL = dxH = 0$  or  $dyL = dyH = 0$ .

[Initial Value]  $xL = xH = yL = yH = 0$

For  $dxL, dxH, dyL$ , and  $dyH$ , refer to "Page Mode Print Maximum Region" listed in Appendix 6.

[Function] Set print region in page mode

Spec. 1

Sets the position and size of the print region.

- Horizontal starting point =  $[(xL + xH \times 256) \times 1/8]$  mm
- Vertical starting point =  $[(yL + yH \times 256) \times 1/8]$  mm
- Horizontal direction length =  $[(dxL + dxH \times 256) \times 1/8]$  mm
- Vertical direction length =  $[(dyL + dyH \times 256) \times 1/8]$  mm

Spec. 2

- Horizontal starting point =  $[(xL + xH \times 256) \times 25.4/300]$  mm
- Vertical starting point =  $[(yL + yH \times 256) \times 25.4/300]$  mm
- Horizontal direction length =  $[(dxL + dxH \times 256) \times 25.4/300]$  mm
- Vertical direction length =  $[(dyL + dyH \times 256) \times 25.4/300]$  mm

- When standard mode is selected, only internal printer flag operations are executed when this command is entered. Has no affect on printing.
- If the horizontal or vertical starting point is outside of the print region, invalidate all settings.
- If the horizontal or vertical length direction is 0, invalidate all settings.
- The character expansion stating point is the one specified by the selection of the character printing direction (ESC GS P 2) in page mode in the print region.
- If the (horizontal direction starting point + horizontal direction length) exceeds the horizontal direction printable region, the (horizontal direction printable region – horizontal direction starting point) becomes the horizontal direction length.
- If the (vertical direction starting point + vertical direction length) exceeds the vertical direction printable region, the (vertical direction printable region – vertical direction starting point) becomes the vertical direction length.
- If the calculated results is a fraction that is corrected to the minimum mechanical pitch and excess is discarded.

See [Appendix 5](#) for details on the maximum and minimum of the specified print region.

## ESC GS P 4 nL nH

[Name] Specify character vertical direction absolute position in page mode

|        |             |     |    |    |    |
|--------|-------------|-----|----|----|----|
| [Code] | ASCII       | ESC | GS | P  | 4  |
|        | Hexadecimal | 1B  | 1D | 50 | 34 |
|        | Decimal     | 27  | 29 | 80 | 52 |

[Defined Area]  $0 \leq nL \leq 255, 0 \leq nH \leq 255$

[Initial Value] - - -

[Function] Specify the position for character vertical direction of the data expansion starting position in page mode with the absolute position that uses the starting point as a reference.

Spec. 1

The position of the character vertical direction of the starting position for subsequent data expansion uses the position from the starting point  $[(nL + nH \times 256) \times 1/8]$  mm.

Spec. 2

The position of the character vertical direction of the starting position for subsequent data expansion uses the position from the starting point  $[(nL + nH \times 256) \times 25.4/300]$  mm.

- This command is ignored when page mode is not selected.
- Absolute position specifications that exceed the specified print region are ignored.
- The position of the character horizontal direction of the data expansion starting position does not move.
- Specify the reference starting point using ESC GS P 2.
- The following operations will occur depending on the starting point of ESC GS P 2 (select character print direction in page mode).
  - a. When the starting point is "upper left" or "bottom right," specify the absolute position of the paper feed direction.
  - b. When the starting point is "upper right" or "bottom left," specify the absolute position of the perpendicular direction to the paper feed.
- If the calculated results is a fraction that is corrected to the minimum mechanical pitch and excess is discarded.

## ESC GS P 5 nL nH

[Name] Specify character vertical direction relative position in page mode

|        |             |     |    |    |    |
|--------|-------------|-----|----|----|----|
| [Code] | ASCII       | ESC | GS | P  | 5  |
|        | Hexadecimal | 1B  | 1D | 50 | 35 |
|        | Decimal     | 27  | 29 | 80 | 53 |

[Defined Area]  $0 \leq nL \leq 255, 0 \leq nH \leq 255$

[Initial Value] - - -

[Function] Specify the position for character vertical direction of the data expansion starting position in page mode with the relative position that uses the current position as a reference.

Spec. 1

The subsequent data expansion starting position uses the position moved  $[(nL + nH \times 256) \times 1/8]$  mm from the current position.

Spec. 2

The subsequent data expansion starting position uses the position moved  $[(nL + nH \times 256) \times 25.4/300]$  mm from the current position.

- This command is ignored when page mode is not selected.
- When specifying the characters downward from the current position the value is positive (plus); when specifying upward, the value is negative (minus).
- Negative numbers are represented by a complement of 65536. For example, use the following to move upward N pitches.  

$$nL + nH \times 256 = 65536 - N$$
- Relative position specifications that exceed the specified print region are ignored.
- The following operations will occur depending on the ESC GS P 2 (select character print direction in page mode).
  - a. When the starting point is "upper left" or "bottom right," specify the absolute position of the paper feed direction.
  - b. When the starting point is "upper right" or "bottom left," specify the relative position of the perpendicular direction to the paper feed.
- If the calculated results are a fraction that is corrected to the minimum mechanical pitch and excess is discarded.

## ESC GS P 6

[Name] Print data in page mode

|        |             |     |    |    |    |
|--------|-------------|-----|----|----|----|
| [Code] | ASCII       | ESC | GS | P  | 6  |
|        | Hexadecimal | 1B  | 1D | 50 | 36 |
|        | Decimal     | 27  | 29 | 80 | 54 |

[Function] Lump-prints data expanded to the entire print region in page mode.

- Valid only when page mode is selected.
- After printing, the following information is maintained.
  - a. Expanded data
  - b. Selection of character print direction in page mode (ESC GS P 2)
  - c. Setting of print region in page mode (ESC GS P 3)
  - d. Character expansion position

[Model Limitations] SM-L, S and T Series : After printing, the information of “a. Expanded data” and “d. Character expansion position is cleared.

## ESC GS P 7

[Name] Print in page mode and recover

|        |             |     |    |    |    |
|--------|-------------|-----|----|----|----|
| [Code] | ASCII       | ESC | GS | P  | 7  |
|        | Hexadecimal | 1B  | 1D | 50 | 37 |
|        | Decimal     | 27  | 29 | 80 | 55 |

[Function] Lump-prints data expanded to the entire print region and recovers to standard mode.

- All expanded data is erased after printing.
- Print region set by ESC GS P 3 (Set print region in page mode) is initialized.
- No paper cut is executed.
- After execution, the top of the line is positioned at the next print starting position.
- Valid only when page mode is selected.

## ESC GS P 8

[Name] Cancel print data in page mode

|        |             |     |    |    |    |
|--------|-------------|-----|----|----|----|
| [Code] | ASCII       | ESC | GS | P  | 8  |
|        | Hexadecimal | 1B  | 1D | 50 | 38 |
|        | Decimal     | 27  | 29 | 80 | 56 |

[Function] Erases all data in presently set print region, in page mode.

- Valid only when page mode is selected.
- Portion included in the currently set print region is deleted even if data of the print region set previously.

### 2.3.12. Bit Image Graphics

#### **ESC K n1 n2 d1...dk**

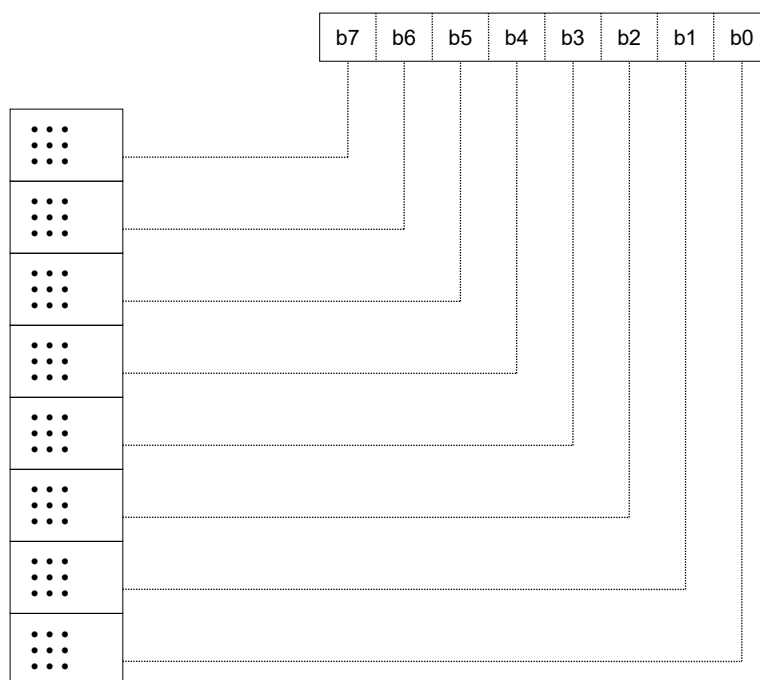
|        |                            |     |    |    |    |    |     |    |
|--------|----------------------------|-----|----|----|----|----|-----|----|
| [Name] | Standard density bit image |     |    |    |    |    |     |    |
| [Code] | ASCII                      | ESC | K  | n1 | n2 | d1 | ... | dk |
|        | Hex.                       | 1B  | 4B | n1 | n2 | d1 | ... | dk |
|        | Decimal                    | 27  | 75 | n1 | n2 | d1 | ... | dk |

[Defined Area]  $1 \leq \{(n1 + n2 \times 256) \times 3\} \leq \text{printable region}$   
 $k = (n1 + n2 \times 256)$   
 $0 \leq d \leq 255$

[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  $\{(n1 + n2 \times 256) \times 3\}$  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.
- In standard mode, if the current position already exceeds the print region, this command discards all data.
- In page mode, if the current position already exceeds the print region, printing is performed after a line feed.



## 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]  $1 \leq (n1 + n2 \times 256) \leq \text{printable region}$

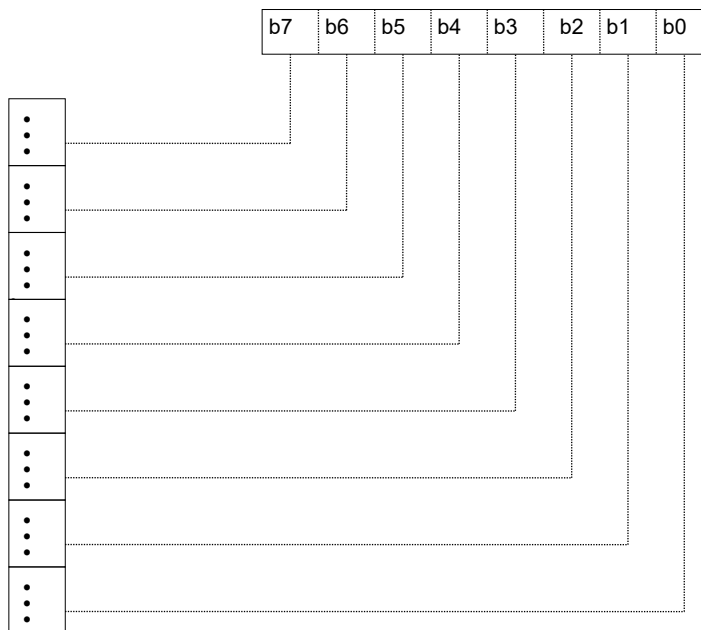
$k = (n1 + n2 \times 256)$

$0 \leq d \leq 255$

[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  $(n1 + n2 \times 256)$  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.
- In standard mode, if the current position already exceeds the print region, this command discards all data.
- In page mode, if the current position already exceeds the print region, printing is performed after a line feed.



## 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

$1 \leq \{(n1 + n2 \times 256) \times 8\} \leq \text{printable region}$

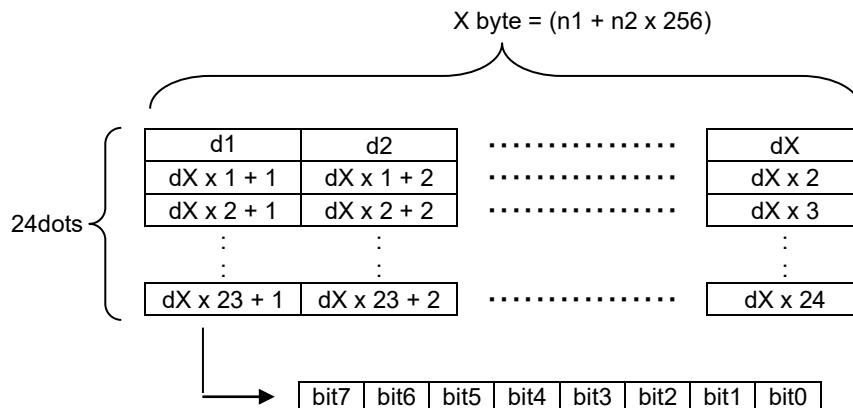
$k = \{(n1 + n2 \times 256) \times 24\}$

$0 \leq d \leq 255$

[Initial Value] - - -

[Function] Prints bit images using 1 dot wide and 1 dot high per 1 dot of input data.  
The following shows the data processing in this command.

- When  $\{(n1 + n2 \times 256) \times 8\}$  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.
- In standard mode, if the current position already exceeds the print region, this command discards all data.
- In page mode, if the current position already exceeds the print region, printing is performed after a line feed.



## 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]  $1 \leq (n1 + n2 \times 256) \leq \text{printable region}$   
 $k = \{(n1 + n2 \times 256) \times 3\}$   
 $0 \leq d \leq 255$

[Initial Value] - - -

[Function]

Spec. 1

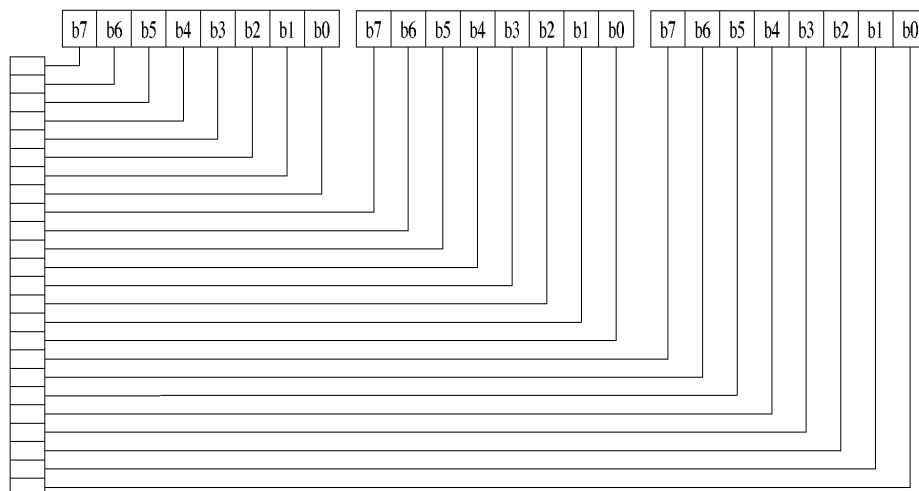
Prints input bit images with 8 dots/mm resolution for both horizontal and vertical.

The following shows the data processing in this command.

Spec. 2

Prints input bit images with approximately 11.8 dots/mm resolution for both horizontal and vertical.

- When  $\{(n1 + n2 \times 256) \times 3\}$  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.
- In standard mode, if the current position already exceeds the print region, this command discards all data.
- In page mode, if the current position already exceeds the print region, printing is performed after a line feed.



## ESC GS S m xL xH yL yH n [d1 d2...dk]

[Name] Print raster graphics data

[Code] ASCII ESC GS S m xL xH yL yH n d1 d2 ... dk  
Hex. 1B 1D 53 m xL xH yL yH n d1 d2 ... dk  
Decimal 27 29 83 m xL xH yL yH n d1 d2 ... dk

[Defined Area] m=1 n=0  
 $0 \leq xL \leq 255, 0 \leq xH \leq 1, 0 \leq yL \leq 255, 0 \leq yH \leq 255$   
m=1, 2 :  $1 \leq (xL + xH \times 256) \leq 128$   
 $1 \leq (yL + yH \times 256) \leq 65535$   
 $0 \leq d \leq 255$   
 $k = (xL + xH \times 256) \times (yL + yH \times 256)$

[Initial Value] - - -

[Function] Print raster graphics data  
"m" specifies the number of transfer blocks and the tone.  
Disabled in Page Mode.

| m | Number of transfer blocks  | Tones                                        |
|---|----------------------------|----------------------------------------------|
| 1 | 1Block (when single color) | Monochrome printing (2 tones): 1 bit / 1 dot |

n: Print color

| n | Print color |
|---|-------------|
| 0 | Black       |

$(xL + xH \times 256)$  specifies the number of horizontal data bytes ((a number of dots x a number of bits per dot\*/8, +1 if not divisible).

$(yL + yH \times 256)$  specifies the number of dots in the vertical direction.

k indicates the number of data.

(d1 d2.....dk) specifies the image data to define.

• 2 tones: 0 /1 (OFF/ON)

When parameter is disabled:

- parameter m: Command processing end (ESC GS S m).

- parameter n: n=0

- parameter xL, xH, yL, yH: Command processing end (ESC GS S m xL xH yL yH)

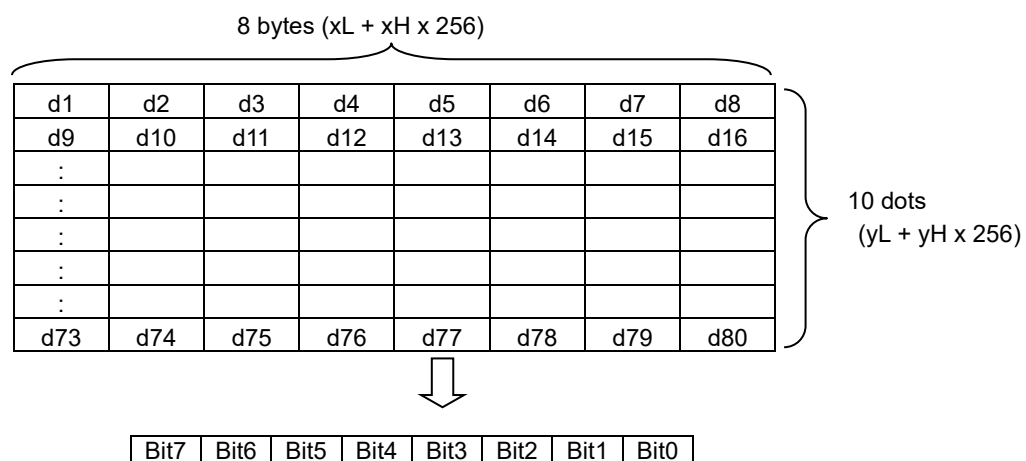
[Model Limitation]

SM-L series : The maximum value for the number of data dots in the vertical direction is 3200 dots.  
( $1 \leq (yL + yH \times 256) \leq 3200$ )

<Example of Command Transmission>

Monochrome printing (2 tones), data (horizontal:64 dot, vertical:10 dot)

ESC GS S m xL xH yL yH n [d1 d2. . . . . dk] (m=1,n=0)  
2 tones, black data



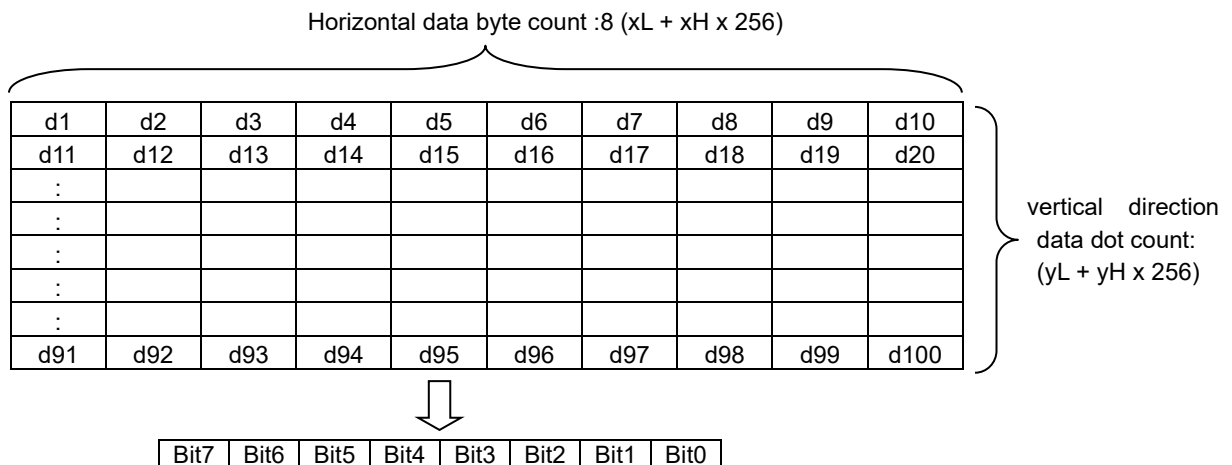
## ESC GS X m xL xH yL yH p1 p2 p3 p4 n [d1 d2...dk]

|        |                                               |     |    |    |   |    |    |    |    |    |    |    |    |   |    |    |     |    |
|--------|-----------------------------------------------|-----|----|----|---|----|----|----|----|----|----|----|----|---|----|----|-----|----|
| [Name] | Graphics Raster data printing (Compress data) |     |    |    |   |    |    |    |    |    |    |    |    |   |    |    |     |    |
| [Code] | ASCII                                         | ESC | GS | X  | m | xL | xH | yL | yH | p1 | p2 | p3 | p4 | n | d1 | d2 | ... | dk |
|        | Hexadecimal                                   | 1B  | 1D | 58 | m | xL | xH | yL | yH | p1 | p2 | p3 | p4 | n | d1 | d2 | ... | dk |
|        | Decimal                                       | 27  | 29 | 88 | m | xL | xH | yL | yH | p1 | p2 | p3 | p4 | n | d1 | d2 | ... | dk |

[Defined Region]     $m = 1, n = 0$   
 $0 \leq xL \leq 255, xH = 0, 0 \leq yL \leq 255, 0 \leq yH \leq 9$   
 $1 \leq (xL + xH \times 256) \leq 128$   
 $1 \leq (yL + yH \times 256) \leq 800$   
 $0 \leq d \leq 255$   
 $k = (p1 + p2 \times 256 + p3 \times 65536 + p4 \times 16777216)$

[Function]    Graphics Raster data printing (Compress data)  
 "m" specifies the number of transfer blocks.  
 "n" specifies the Print color  
 $(xL + xH \times 256)$  specifies the number of horizontal data bytes before compression ((a number of dots x a number of bits per dot\*/8, +1 if not divisible).  
 $(yL + yH \times 256)$  specifies the number of dots in the vertical direction before compression.  
 K: Compressed data count  
 d1 d2 . . . dk specifies the compressed data.

<Data>



<Algorithm of compression>

Data after compression is composed of a packet containing a byte header and subsequent data.

| Header Byte (h) | Data following the header byte                                  |
|-----------------|-----------------------------------------------------------------|
| 0 to 127        | (1+h) pieces of discontinuous byte data                         |
| -1 to -127      | A byte data repeated (1-h) times in the data before compression |
| -128            | None (Treat the next byte as a header byte)                     |

Data (before compression):

00 00 00 00 08 00 00 80 00 08 00 00 80 00 08 00 00 80 FF FF FF FF FF FF FF FF FF FF FF FF FF

Compressed data:

FD 00 00 08 FF 00 02 80 00 08 FF 00 02 80 00 08 FF 00 00 80 F3 FF

### 2.3.13. Logo

#### ESC GS ( L pL pH m fn [parameter]

#### ESC GS 8 L p1 p2 p3 p4 m fn [parameter]

[Name] Specify graphics data

[Code] ASCII ESC GS ( L pL pH m fn [parameter]  
Hexadecimal 1B 1D 28 4C pL pH m fn [parameter]  
Decimal 27 29 40 76 pL pH m fn [parameter]

[Name] Specify graphics data

[Code] ASCII ESC GS 8 L p1 p2 p3 p4 m fn [parameter]  
Hexadecimal 1B 1D 38 4C p1 p2 p3 p4 m fn [parameter]  
Decimal 27 29 56 76 p1 p2 p3 p4 m fn [parameter]

(\*) Use the ESC GS ( L code to explain each function.

- ESC GS ( L and ESC GS 8 L are the same function.

- If [parameter] in each function exceeds 65533 bytes, use ESC GS 8 L.

[Function] Runs the process related to the graphics data specified by the function code (fn).

| Fn   | Code                                                                    | Function No. | Function                                   |
|------|-------------------------------------------------------------------------|--------------|--------------------------------------------|
| 0,48 | ESC GS ( L pL pH m fn                                                   | 48           | Send NV graphics memory capacity           |
| 3,51 | ESC GS ( L pL pH m fn                                                   | 51           | Send remaining NV Graphics memory capacity |
| 64   | ESC GS ( L pL pH m fn d1 d2                                             | 64           | Send NV graphics key code                  |
| 65   | ESC GS ( L pL pH m fn d1 d2 d3                                          | 65           | Batch all delete NV graphics data          |
| 66   | ESC GS ( L pL pH m fn kc1 kc2                                           | 66           | Delete the specified NV graphics data      |
| 67   | ESC GS ( L pL pH m fn a kc1 kc2 b xL xH yL yH [c d1...dk]1 [c d1...dk]b | 67           | Define NV graphics data                    |
| 69   | ESC GS ( L pL pH m fn kc1 kc2 x y                                       | 69           | Print the specified NV graphics data       |

## <Function 48> ESC GS ( L pL pH m fn (fn=48)

## <Function 48> ESC GS 8 L p1 p2 p3 p4 m fn (fn=48)

[Name] Send NV graphics memory capacity

[Code] ASCII ESC GS ( L pL pH m fn  
Hexadecimal 1B 1D 28 4C pL pH m fn  
Decimal 27 29 40 76 pL pH m fn

[Code] ASCII ESC GS 8 L p1 p2 p3 p4 m fn  
Hexadecimal 1B 1D 38 4C p1 p2 p3 p4 m fn  
Decimal 27 29 56 76 p1 p2 p3 p4 m fn

[Defined Region] • Parameter for ESC GS ( L  
(pL+pH×256)=2 (pL=2, pH=0)  
• Parameter for ESC GS 8 L  
(p1+p2×256+p3×65536+p4×16777216)=2 (p1=2, p2=0, p3=0, p4=0)  
• Parameter are shared by for ESC GS ( L and ESC GS 8 L.  
m = 48,  
fn = 0, 48

[Function] Sends the entire capacity of NV graphics area in bytes.

[Details] • The byte count is sent in the following format:

| Transmission data | Hex        | Decimal  | Data length |
|-------------------|------------|----------|-------------|
| Header            | 37H        | 55       | 1 Byte      |
| Identifier        | 30H        | 48       | 1 Byte      |
| Total capacity *1 | 30H to 39H | 48 to 57 | 1 to 8 Byte |
| NUL               | 00H        | 0        | 1 Byte      |

\*1 The total capacity is the total number of bytes in this region.

The decimal value indicating the total capacity is converted to text data and sent in order from the MSB.

Ex.: When the total capacity is 1200 bytes:

“1200” (Hex:31H, 32H, 30H, 30H, Decimal:49, 50, 48, 48) is converted to 4-bytes of data.

- This command is used when sending total capacity, and the total byte capacity of the region is sent regardless of the current setting for the NV graphics data. This total capacity includes the information region.
- When the value that indicates the entire capacity is “0” (Hex:30H, Decimal:48), it is not possible to use the NV graphics function.

[Note] • Data transmission process: Function 48, 51, 64  
Observe the following rules when using these functions.  
• When the host PC sends this command, the printer sends response data or the status to the PC.  
The PC does not send any more data until it receives response data or status from the printer.  
• When the amount of data exceeds the capacity of the transmission buffer, data is erased.  
• Transmission information of each function can be identified as other transmission data by specific data (identifier) of the transmission data string.  
When the header sent by the printer is [Hex = 37H/Decimal = 55], data up to NUL  
[Hex = 00H/Decimal = 0] is handled as one group and identified by corresponding to the combination of the header and identifier.

## <Function 51> ESC GS ( L pL pH m fn (fn=51)

## <Function 51> ESC GS 8 L p1 p2 p3 p4 m fn (fn=51)

[Name] Send NV graphics memory capacity

[Code] ASCII ESC GS ( L pL pH m fn  
Hexadecimal 1B 1D 28 4C pL pH m fn  
Decimal 27 29 40 76 pL pH m fn

[Code] ASCII ESC GS 8 L p1 p2 p3 p4 m fn  
Hexadecimal 1B 1D 38 4C p1 p2 p3 p4 m fn  
Decimal 27 29 56 76 p1 p2 p3 p4 m fn

[Defined Region]

- Parameter for ESC GS ( L  
(pL+pH×256)=2 (pL=2, pH=0)
- Parameter for ESC GS 8 L  
(p1+p2×256+p3×65536+p4×16777216)=2 (p1=2, p2=0, p3=0, p4=0)
- Parameter are shared by for ESC GS ( L and ESC GS 8 L.  
m = 48,  
fn = 3, 51

[Function] Sends the remaining capacity (or unused area) of NV graphics area in bytes.

[Details] • Sends the number of bytes in the following format.:

| Transmission data | Hex        | Decimal  | Data length |
|-------------------|------------|----------|-------------|
| Header            | 37H        | 55       | 1 Byte      |
| Identifier        | 31H        | 49       | 1 Byte      |
| Total capacity *1 | 30H to 39H | 48 to 57 | 1 to 8 Byte |
| NUL               | 00H        | 0        | 1 Byte      |

\*1 The unused capacity is the total number of bytes of the unused region.

The decimal value indicating the unused capacity is converted to text data and sent in order from the MSB.

Ex.: When the unused capacity is 120 bytes:

“120” (Hex:31H, 32H, 30H, Decimal:49, 50, 48) is converted to 3-bytes of data.

- Information region is also included in the use capacity.
- See the Note for <Function 48> for a detailed explanation of the sending process.

[Reference] ESC GS ( L / ESC GS 8 L <Function 48>

## <Function 64> ESC GS ( L pL pH m fn d1 d2 (fn=64)

## <Function 64> ESC GS 8 L p1 p2 p3 p4 m fn d1 d2 (fn=64)

[Name] Send a key code list of predefined NV graphics

[Code] ASCII ESC GS ( L pL pH m fn d1 d2  
Hexadecimal 1B 1D 28 4C pL pH m fn d1 d2  
Decimal 27 29 40 76 pL pH m fn d1 d2

[Code] ASCII ESC GS 8 L p1 p2 p3 p4 m fn d1 d2  
Hexadecimal 1B 1D 38 4C p1 p2 p3 p4 m fn d1 d2  
Decimal 27 29 56 76 p1 p2 p3 p4 m fn d1 d2

[Defined Region] • Parameter for ESC GS ( L  
(pL+pH×256)=4 (pL=4, pH=0)  
• Parameter for ESC GS 8 L  
(p1+p2×256+p3×65536+p4×16777216)=4 (p1=4, p2=0, p3=0, p4=0)  
• Parameter are shared by for ESC GS ( L and ESC GS 8 L.  
m = 48,  
fn = 64  
d1 = 75, d2 = 67

[Function] Sends the defined NV graphics key code list.

[Details] • Sends the key code in the following format:

| Transmission data           | Hex        | Decimal   | Data length  |
|-----------------------------|------------|-----------|--------------|
| Header                      | 37H        | 55        | 1 Byte       |
| Identifier                  | 72H        | 114       | 1 Byte       |
| Identifier information*1, 2 | 40H/41H    | 64/65     | 1 Byte       |
| Data                        | 20H to 7EH | 32 to 126 | 2 to 80 Byte |
| NUL                         | 00H        | 0         | 1 Byte       |

\*1 Send one block with identification information (3rd byte) as 40Hex, when the defined NV graphics data count is less than 40.

\*2 Send one block with identification information (3rd byte) as 41Hex, when the defined NV graphics data count is over 40.

• If there is no defined NV graphics key code list, it sends the following format.

| Transmission data      | Hex | Decimal | Data length |
|------------------------|-----|---------|-------------|
| Header                 | 37H | 55      | 1 Byte      |
| Identifier             | 72H | 114     | 1 Byte      |
| Identifier information | 40H | 64      | 1 Byte      |
| NUL                    | 00H | 0       | 1 Byte      |

• See the Note for <Function 48> for a detailed explanation of the sending process.

[Reference] ESC GS ( L / ESC GS 8 L <Function 48>

## <Function 65> ESC GS ( L pL pH m fn d1 d2 d3 (fn=65)

## <Function 65> ESC GS 8 L p1 p2 p3 p4 m fn d1 d2 d3 (fn=65)

[Name] Erase entire NV graphics data

|        |             |     |    |    |    |    |    |   |    |    |    |    |
|--------|-------------|-----|----|----|----|----|----|---|----|----|----|----|
| [Code] | ASCII       | ESC | GS | (  | L  | pL | pH | m | fn | d1 | d2 | d3 |
|        | Hexadecimal | 1B  | 1D | 28 | 4C | pL | pH | m | fn | d1 | d2 | d3 |
|        | Decimal     | 27  | 29 | 40 | 76 | pL | pH | m | fn | d1 | d2 | d3 |

|        |             |     |    |    |    |    |    |    |    |   |    |    |    |    |
|--------|-------------|-----|----|----|----|----|----|----|----|---|----|----|----|----|
| [Code] | ASCII       | ESC | GS | 8  | L  | p1 | p2 | p3 | p4 | m | fn | d1 | d2 | d3 |
|        | Hexadecimal | 1B  | 1D | 38 | 4C | p1 | p2 | p3 | p4 | m | fn | d1 | d2 | d3 |
|        | Decimal     | 27  | 29 | 56 | 76 | p1 | p2 | p3 | p4 | m | fn | d1 | d2 | d3 |

[Defined Region]

- Parameter for ESC GS ( L  
(pL+pH×256)=5 (pL=5, pH=0)
- Parameter for ESC GS 8 L  
(p1+p2×256+p3×65536+p4×16777216)=5 (p1=5, p2=0, p3=0, p4=0)
- Parameter are shared by for ESC GS ( L and ESC GS 8 L.  
m = 48,  
fn = 65  
d1 = 67, d2 = 76, d3 = 82

[Function]

Erases all NV graphics data defined by Function 67.

- The erased area is set to be an “unused area.”
- All key codes become undefined.

[Details]

- Effective only at the top of the line in standard mode.
- Data for this parameter is discarded in page mode.
- Do not use this function for macro definition because this function is not compatible with the macros.
- If you use this function, all NV graphics data is erased.  
Take special care if NV graphics data is used in multiple applications.

[Reference] ESC GS ( L / ESC GS 8 L <Function 67>

## <Function 66> GS ( L pL pH m fn kc1 kc2 (fn=66)

## <Function 66> GS 8 L p1 p2 p3 p4 m fn kc1 kc2 (fn=66)

[Name] Erase the specified NV graphics data

|        |             |     |    |    |    |    |    |   |    |     |     |
|--------|-------------|-----|----|----|----|----|----|---|----|-----|-----|
| [Code] | ASCII       | ESC | GS | (  | L  | pL | pH | m | fn | kc1 | kc2 |
|        | Hexadecimal | 1B  | 1D | 28 | 4C | pL | pH | m | fn | kc1 | kc2 |
|        | Decimal     | 27  | 29 | 40 | 76 | pL | pH | m | fn | kc1 | kc2 |

|        |             |     |    |    |    |    |    |    |    |   |    |     |     |
|--------|-------------|-----|----|----|----|----|----|----|----|---|----|-----|-----|
| [Code] | ASCII       | ESC | GS | 8  | L  | p1 | p2 | p3 | p4 | m | fn | kc1 | kc2 |
|        | Hexadecimal | 1B  | 1D | 38 | 4C | p1 | p2 | p3 | p4 | m | fn | kc1 | kc2 |
|        | Decimal     | 27  | 29 | 56 | 76 | p1 | p2 | p3 | p4 | m | fn | kc1 | kc2 |

[Defined Region]

- Parameter for ESC GS ( L  
(pL+pH×256)=4 (pL=4, pH=0)
- Parameter for ESC GS 8 L  
(p1+p2×256+p3×65536+p4×16777216)=4 (p1=4, p2=0, p3=0, p4=0)
- Parameter are shared by for ESC GS ( L and ESC GS 8 L.  
m = 48,  
fn = 66  
 $32 \leq kc1 \leq 126$   
 $32 \leq kc2 \leq 126$

[Function]

Erases the NV graphics data defined by key codes kc1 and kc2.

- The erased area is set to be an “unused area.”
- The erased key code becomes undefined.

[Details]

- Effective only at the top of the line in standard mode.
- Data for this counter is discarded in page mode.
- Do not use this function for macro definition because this function is not compatible with the macros.

[Reference] ESC GS ( L / ESC GS 8 L <Function 67>

**<Function 67> ESC GS ( L pL pH m fn a kc1 kc2 b xL xH y L yH [c d1 ... dk] 1 ... [c d1 ... dk] b (fn=67)**

**<Function 67> ESC GS 8 L p1 p2 p3 p4 m fn a kc1 kc2 b xL xH y L yH [c d1 ... dk] 1 ... [c d1 ... dk] b (fn=67)**

|        |                                    |     |    |    |    |    |    |    |    |    |     |      |     |     |             |
|--------|------------------------------------|-----|----|----|----|----|----|----|----|----|-----|------|-----|-----|-------------|
| [Name] | set the specified NV graphics data |     |    |    |    |    |    |    |    |    |     |      |     |     |             |
| [Code] | ASCII                              | ESC | GS | (  | L  | pL | pH | m  | fn | a  | kc1 | kc2  | b   |     |             |
|        |                                    |     |    |    | xL | xH | yL | yH | [c | d1 | ... | dk]1 | ... | [c  | d1 ... dk]b |
|        | Hexadecimal                        | 1B  | 1D | 28 | 4C | pL | pH | m  | fn | a  | kc1 | kc2  | b   |     |             |
|        |                                    |     |    |    | xL | xH | yL | yH | [c | d1 | ... | dk]1 | ... | [c  | d1 ... dk]b |
|        | Decimal                            | 27  | 29 | 40 | 76 | pL | pH | m  | fn | a  | kc1 | kc2  | b   |     |             |
|        |                                    |     |    |    | xL | xH | yL | yH | [c | d1 | ... | dk]1 | ... | [c  | d1 ... dk]b |
|        |                                    |     |    |    |    |    |    |    |    |    |     |      |     |     |             |
| [Code] | ASCII                              | ESC | GS | 8  | L  | p1 | p2 | p3 | p4 | m  | fn  | a    | kc1 | kc2 |             |
|        |                                    |     |    |    | xL | xH | yL | yH | [c | d1 | ... | dk]1 | ... | [c  | d1 ... dk]b |
|        | Hexadecimal                        | 1B  | 1D | 38 | 4C | p1 | p2 | p3 | p4 | m  | fn  | a    | kc1 | kc2 |             |
|        |                                    |     |    |    | xL | xH | yL | yH | [c | d1 | ... | dk]1 | ... | [c  | d1 ... dk]b |
|        | Decimal                            | 27  | 29 | 56 | 76 | p1 | p2 | p3 | p4 | m  | fn  | a    | kc1 | kc2 |             |
|        |                                    |     |    |    | xL | xH | yL | yH | [c | d1 | ... | dk]1 | ... | [c  | d1 ... dk]b |

- [Defined Region]
- Parameter for ESC GS ( L
 
$$12 \leq (pL+pH \times 256) \leq 65535 \quad (0 \leq pL \leq 255, 0 \leq pH \leq 255)$$
  - Parameter for ESC GS 8 L
 
$$12 \leq (p1+p2 \times 256+p3 \times 65536+p4 \times 16777216) \leq 4294967295 \quad (0 \leq p1 \leq 255, 0 \leq p2 \leq 255, 0 \leq p3 \leq 255, 0 \leq p4 \leq 255)$$
  - Parameter are shared by for ESC GS ( L and ESC GS 8 L.
 
$$m = 48, fn = 67, a = 48$$

$$32 \leq kc1 \leq 126$$

$$32 \leq kc2 \leq 126$$

$$b = 1, 2$$

$$1 \leq (xL+xH \times 256) \leq 8192, (0 \leq xL \leq 255, 0 \leq xH \leq 32)$$

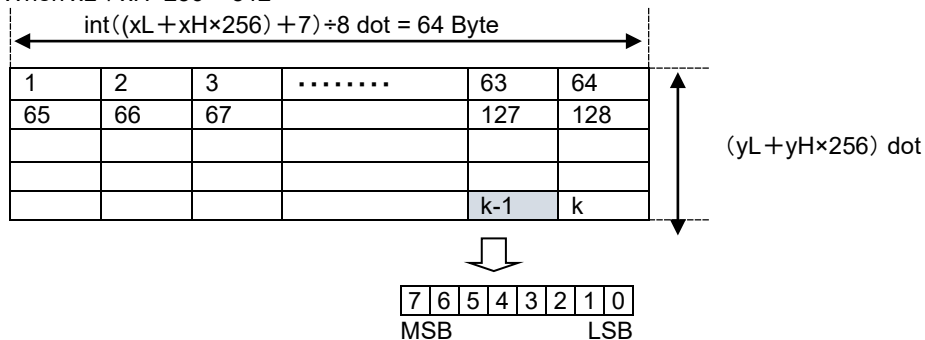
$$1 \leq (yL+yH \times 256) \leq 2304, (0 \leq yL \leq 255, 0 \leq yH \leq 9)$$
 Spec. 1
 
$$1 \leq (yL+yH \times 256) \leq 2304 \quad (0 \leq yL \leq 255, 0 \leq yH \leq 9)$$
 Spec. 2
 
$$1 \leq (yL+yH \times 256) \leq 3408$$
- $c = 49$  (Single-color),  $c = 49, 50$  (2-color)  
 $0 \leq d \leq 255$   
 $k = \text{int}(((xL + xH \times 256) + 7) \div 8) \times (yL + yH \times 256)$   
 Spec. 1
  - Maximum registered capacity: 512 kB
 Spec. 2
  - Maximum registered capacity: 896 kB
  - Maximum registered quantity: 9025 pcs

[Function] Defines the NV graphics data (in raster format) as the record specified by key codes kc1 and kc2.

- “b” specifies a number of colors of the definition data.
- “xL” and “xH” specify the horizontal size of definition data to “xL + xH x 256” dots.
- “yL” and “yH” specify the vertical size of definition data to “yL + yH x 256” dots.
- “c” specifies the definition data color as follows.  
c=49: Black  
c=50: Red
- “d” specifies the definition data (in raster format).
- If the specified key code already exists in memory, it is overwritten by the specified one.

- [Details]
- NV graphics are image data defined in the non-volatile memory of the printer.  
Data definitions for NV graphics data generated by using this command are valid until redefined by this command.
  - This command is used to define NV graphics data.
  - This function is defined by the raster format.
  - Valid only at the top of the line in standard mode.
  - When page mode is selected, counter data is received and discarded.
  - Do not use this function when defining a macro because it is not compatible with macros.
  - If there is not an adequate amount of space in nonvolatile memory to store the NV graphics data, this function cannot be used.  
Use Function 51 to check the available space that can be used.
  - k byte data d1 ... dk are processed as one item of the defined NV graphics data.  
Bits that correspond to the dots to print are “1,” and the bits that correspond to the dots that are not printed are “0.”
  - When single-color (b=1) is selected, this is defined as one data group [c d1 ... dk].
  - When 2-color (b=2) is selected, this is defined as two data groups [c d1 ... dk].  
When a color (c) is specified, it is important to specify a color different from the data group.  
At that time, the vertical and horizontal sizes of the data are the same.
  - NV graphics data is printed using Function 69.
  - The relationship of NV graphics data (raster format) and printing results are shown below.

When  $xL + xH \times 256 = 512$



- [Notes]
- When the specification of (xL + xH × 256), and (yL + yH × 256) exceed the remaining capacity of the NV graphics region, this function does not operate.
  - This function uses the NV graphics area of “Number of data sets (k) + Management data (14 bytes)”.

[Model Limitation]

|                                                     |                     |
|-----------------------------------------------------|---------------------|
| Registration capacity / Maximum registered quantity |                     |
| SM-L200 :                                           | 512 KByte / 64 pcs  |
| SM-L300 :                                           | 512 KByte / 512 pcs |
| SM-S, T series :                                    | 512 KByte / 512 pcs |

[Reference] ESC GS ( L / ESC GS 8 L <Function 51>, <Function 69>

## <Function 69> ESC GS ( L pL pH m fn kc1 kc2 x y (fn=69)

## <Function 69> ESC GS 8 L p1 p2 p3 p4 m fn kc1 kc2 x y (fn=69)

[Name] Print the specified NV graphics data

|        |             |     |    |    |    |    |    |   |    |     |     |   |   |
|--------|-------------|-----|----|----|----|----|----|---|----|-----|-----|---|---|
| [Code] | ASCII       | ESC | GS | (  | L  | pL | pH | m | fn | kc1 | kc2 | x | y |
|        | Hexadecimal | 1B  | 1D | 28 | 4C | pL | pH | m | fn | kc1 | kc2 | x | y |
|        | Decimal     | 27  | 29 | 40 | 76 | pL | pH | m | fn | kc1 | kc2 | x | y |

|        |             |     |    |    |    |    |    |    |    |   |    |     |     |   |   |
|--------|-------------|-----|----|----|----|----|----|----|----|---|----|-----|-----|---|---|
| [Code] | ASCII       | ESC | GS | 8  | L  | p1 | p2 | p3 | p4 | m | fn | kc1 | kc2 | x | y |
|        | Hexadecimal | 1B  | 1D | 38 | 4C | p1 | p2 | p3 | p4 | m | fn | kc1 | kc2 | x | y |
|        | Decimal     | 27  | 29 | 56 | 76 | p1 | p2 | p3 | p4 | m | fn | kc1 | kc2 | x | y |

[Defined Region]

- Parameter for ESC GS ( L  
(pL+pH×256)=6 (pL=6, pH=0)
- Parameter for ESC GS 8 L  
(p1+p2×256+p3×65536+p4×16777216)=6 (p1=6, p2=0, p3=0, p4=0)
- Parameter are shared by for ESC GS ( L and ESC GS 8 L.  
m = 48  
fn = 69  
32 ≤ kc1 ≤ 126  
32 ≤ kc2 ≤ 126  
x = 1, 2  
y = 1, 2

[Function]

Prints the NV graphics data defined by key codes kc1 and kc2.

- Selected data can be printed in the “horizontal x-times” by “vertical y-times” scale.

[Details]

- This function is used to print the NV graphics data defined by Function 67.
- The printer prints data only when the NV graphics data that matches the specified key code is defined.  
If data with the specified key code is not found, the data of this counter is discarded.
- This command is effective only when no data exists in the print buffer in standard mode.  
If any data exists in the print buffer, the data for this counter is discarded.
- Data for this counter is discarded in page mode.
- If graphics that exceeds the print area size is specified, the data within the print area is printed out but the excess data is not printed out.
- The horizontal and vertical size of NV graphics can be specified by “x” and “y”.
- Excluding upside-down printing, print modes (emphasized printing, overlap printing, underlines, character sizes, black/white inverted printing, and 90 degree rotation) are unaffected.
- When normal mode or double-width mode is specified, the paper is fed for the number of dots (the height of NV graphics) and when double-height mode or 4x mode is specified, the paper is fed for the number of dots (NV graphics height multiplied by 2) regardless of the settings of default line spacing (ESC 2) and line feed amount (ESC 3).
- After these graphics are printed, the next printing starts at the beginning of a line (the printer is at the “beginning of the line” and has “no print data”), and subsequent data is processed as normal data.
- This command is affected by the following command settings:
  - Move to absolute position (ESC GS A n1 n2)
  - Move to relative position (ESC GS R n1 n2)
  - Set print area (ESC RS A n)
  - Horizontal tab (HT)
  - Upside-down printing (SI)

[Model Limitation] SM-S and T series: Prints up to 30 cm when the expanded high mode is specified.

[Reference] ESC GS ( L/ESC GS 8 L , ESC GS A , ESC GS R , ESC RS A , HT , SI

## ESC GS ) L pL pH fn [parameter]

|        |                   |     |    |    |    |    |    |    |             |  |
|--------|-------------------|-----|----|----|----|----|----|----|-------------|--|
| [Name] | Set graphics data |     |    |    |    |    |    |    |             |  |
| [Code] | ASCII             | ESC | GS | )  | L  | pL | pH | fn | [parameter] |  |
|        | Hexadecimal       | 1B  | 1D | 29 | 4C | pL | pH | fn | [parameter] |  |
|        | Decimal           | 27  | 29 | 41 | 76 | pL | pH | fn | [parameter] |  |

- [Function] Executes graphics data processing.
- pL and pH specify the parameter count (pL + pH x 256) in bytes after fn.
  - See the function specifications for details on [parameter].

| Fn | Function No | Function Name                                              |
|----|-------------|------------------------------------------------------------|
| 48 | Function 48 | Send the registered individual logo CRC                    |
| 49 | Function 49 | Send the registered individual NV graphics memory capacity |
| 50 | Function 50 | Send all key code of the registered NV graphics            |
| 51 | Function 51 | Transmit the registered NV graphics data                   |

## <Function 48> ESC GS ) L pL pH fn kc1 kc2

[Name] Send the registered individual logo CRC

| [Code]      | ASCII | ESC | GS | )  | L  | pL | pH | fn | kc1 | kc2 |
|-------------|-------|-----|----|----|----|----|----|----|-----|-----|
| Hexadecimal |       | 1B  | 1D | 29 | 4C | pL | pH | fn | kc1 | kc2 |
| Decimal     |       | 27  | 29 | 41 | 76 | pL | pH | fn | kc1 | kc2 |

[Defined Region] pL = 3, pH = 0  
fn = 48  
32 ≤ kc1 ≤ 126, 32 ≤ kc2 ≤ 126

[Function] Sends a CRC of the logo already stored in the printer.

[Details]

- The CRC operation is used only for the logo graphics data currently stored in the printer.
- The key codes, size and color information are excluded from the CRC operation.
- When the printer receives the command, it calculates the CRC and sends it.
- If a logo containing multiple colors is stored, the logo data of the “n+1” color is added after the logo data of the “n-th” color and calculated.
- The CRC operation is as follows.
 

CRC16: P olynomial =  $x^{16}+x^{15}+x^2+x^0$   
 Initial value: FFFF (Hex)  
 Shift direction: Right  
 Output XOR: FFFF (Hex)

\* See the sample codes for concrete implementation examples.

- The CRC of only the stored logo can be sent by the “ESC GS ( L” or “ESC GS 8 L” command.
- When logo data is stored, the CRC of the received data is operated.
- If the logo data exceeds the horizontal print area, the CRC is operated based on the data that is received when logo data is stored.

The CRC is sent in the following format:

ESC GS ) L pL pH fn kc1 kc2 [CRC-data] LF NUL

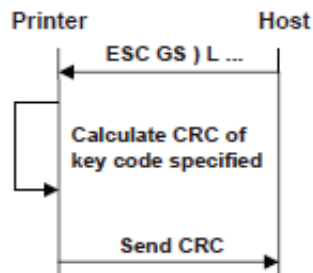
Note) The CRC data is converted into a character string and sent.

Ex.: When [CRC data] is fixed at 4 bytes and CRC is 01AB (HEX), this is “01AB” (Hex: 30H, 31H, 41H, 42H; Decimal: 48, 49, 65, 66) 4-byte data.

If a unregistered key code is specified, the following data is sent instead:

ESC GS ) L pL pH fn kc1 kc2 LF NUL

### <Command processing flow>



<CRC calculation procedure, sample codes, C language>

```
#define CRC16 0xA001

unsigned int CalcCrc16( int size, unsigned char data[] )
{
    unsigned int result;
    int i,j;

    result = 0xFFFF;

    for( i=0 ; i<size; i++)
    {
        result ^= data[i];
        for(j = 0x0001; j < 0x0100; j = j << 1)
        {
            if( result & 0x0001 )
            {
                result >>= 1;
                result ^= CRC16;
            }
            else
            {
                result >>= 1;
            }
        }
    }
    result = (~result) & 0xFFFF;
    return result;
}
```

[Reference]      ESC GS ( L, ESC GS 8 L

## <Function 49> ESC GS ) L pL pH fn kc1 kc2

|        |                                                             |     |    |    |    |    |    |    |     |     |
|--------|-------------------------------------------------------------|-----|----|----|----|----|----|----|-----|-----|
| [Name] | Transmit capacity used by registered individual NV graphics |     |    |    |    |    |    |    |     |     |
| [Code] | ASCII                                                       | ESC | GS | )  | L  | pL | pH | fn | kc1 | kc2 |
|        | Hexadecimal                                                 | 1B  | 1D | 29 | 4C | pL | pH | fn | kc1 | kc2 |
|        | Decimal                                                     | 27  | 29 | 41 | 76 | pL | pH | fn | kc1 | kc2 |

[Defined range] pL = 3, pH = 0  
fn = 49  
 $32 \leq kc1 \leq 126, 32 \leq kc2 \leq 126$

[Function] Transmits the capacity used by the individual NV graphics data registered in the printer.

[Detail]

- The used capacity is the total number of bytes of the used area.
- The used capacity includes the management data (14 bytes).
- Only the capacity used by NV graphics data registered with the "ESC GS ( L" or "ESC GS 8 L" command can be transmitted.

The used capacity is transmitted in the following format:

ESC GS ) L pL pH fn kc1 kc2 [used capacity] LF NUL

Example: When the used capacity is 1200 bytes, [used capacity] will be

"1200" converted into four-byte data (Hex 31h, 32h, 30h, 30h; Decimal: 49, 50, 48, 48).

If an unregistered key code is specified, the following data is transmitted instead:

ESC GS ) L pL pH fn kc1 kc2 LF NUL

[Reference] ESC GS ( L , ESC GS 8 L

## <Function 50> ESC GS ) L p L p H f n d 1 d 2

|        |                                                 |     |    |    |    |    |    |    |    |    |
|--------|-------------------------------------------------|-----|----|----|----|----|----|----|----|----|
| [Name] | Send all key code of the registered NV graphics |     |    |    |    |    |    |    |    |    |
| [Code] | ASCII                                           | ESC | GS | )  | L  | pL | pH | fn | d1 | d2 |
|        | Hexadecimal                                     | 1B  | 1D | 29 | 4C | pL | pH | fn | d1 | d2 |
|        | Decimal                                         | 27  | 29 | 41 | 76 | pL | pH | fn | d1 | d1 |

[Defined Region] pL = 3, pH = 0  
fn = 50  
d1 = 0, d2 = 0

[Function] Send all key code of NV graphics already stored in the printer.

[Details] - If NV graphics are registered with "ESC GS ( L" or "ESC GS 8 L" command, all of their key codes can be sent.

All key codes are sent in the following format.

ESC GS ) L pL pH fn k1 k2 [key-code key-code ...] LF NUL

Up to 512 key codes can be sent, but logo key codes exceeding this limit are not sent.

k1 and k2 represent the number of transmission data bytes ( $k1+k2 \times 256$ ) after the key codes.

Example: If NV graphics of key codes 01 and 02 are registered, k1=6 and k2=0. [key-code key-code...] is "0102" (30h, 31h, 30h, 32h in Hex; and 48, 49, 48, 50 in Decimal).

If NV graphics are not registered, the following data is sent.

ESC GS ) L pL pH fn k1 k2 LF NUL (where, k1=2 and k2=0)

If the USB interface is used, the NSB must be made invalid.

[Reference] ESC GS ( L , ESC GS 8 L

## <Function 51> ESC GS ) L pL pH fn kc1 kc2

|        |                                                     |     |    |    |    |    |    |    |     |     |
|--------|-----------------------------------------------------|-----|----|----|----|----|----|----|-----|-----|
| [Name] | Transmit the registered individual NV graphics data |     |    |    |    |    |    |    |     |     |
| [Code] | ASCII                                               | ESC | GS | )  | L  | pL | pH | fn | kc1 | kc2 |
|        | Hexadecimal                                         | 1B  | 1D | 29 | 4C | pL | pH | fn | kc1 | kc2 |
|        | Decimal                                             | 27  | 29 | 41 | 76 | pL | pH | fn | kc1 | kc2 |

[Defined Region] pL = 3, pH = 0  
fn = 51  
 $32 \leq kc1 \leq 126$ ,  $32 \leq kc2 \leq 126$

[Function] Transmit the individual NV graphics data registered in the printer.

[Details] • NV graphics data registered by ESC GS ( L or ESC GS 8 L <Function 67> is transmitted.  
• Specified key codes kc1 and kc2 are acquired by the following transmit command: all key code of the registered NV graphics.

The registered data is transmitted in the format below.  
ESC GS ) L pL pH fn kc1 kc2 b xL xH yL yH [c d1 ... dk]1 ... [c d1 ... dk]b LF NUL

Data below shall become as the parameter defined by the NV graphics data definition command corresponding to the specified key codes kc1 and kc2.

- "b" specifies the number of colors in definition data. b = 1, 2
- "xL" and "xH" specifies the horizontal direction size (xL + xH × 256) dot counts in definition data.
- "yL" and "yH" specifies the vertical direction size (yL + yH × 256) dot counts in definition data.
- "c" specifies the color information in definition data. c = 49: Black; c = 50: Red
- "d" specifies the definition data (in raster format).

If a unregistered key code is specified, the following data is transmitted instead:  
ESC GS ) L pL pH fn kc1 kc2 LF NUL

[Reference] ESC GS ( L / ESC GS 8 L <Function 67>

### 2.3.14. Bar Code

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

[Name] Barcode Printing

[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]  $0 \leq n1 \leq 13$ ,  $48 \leq n1 \leq 57$  ("0"  $\leq n \leq$  "9"),  $65 \leq n1 \leq 68$  ("A"  $\leq n \leq$  "D")  
n2 (Under-bar character selection), n3 (bar code mode) d (bar code data), k (bar code data count)  
definitions differ according to the type of bar code.  
 $1 \leq n2 \leq 14$ ,  $48 \leq n2 \leq 57$  ("0"  $\leq n \leq$  "9"),  $65 \leq n2 \leq 69$  ("A"  $\leq n \leq$  "E")  
 $1 \leq n4 \leq 255$

[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                        |
| 9, 57  | GS1-128                     |
| 10, 65 | GS1 DataBar Omnidirectional |
| 11, 66 | GS1 DataBar Truncated       |
| 12, 67 | GS1 DataBar Limited         |
| 13, 68 | GS1 DataBar Expanded        |

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

| n2     | Under-bar character type                                              |                                 |                          |                      |                                 |                          |
|--------|-----------------------------------------------------------------------|---------------------------------|--------------------------|----------------------|---------------------------------|--------------------------|
|        | UPC-E, UPC-A, JAN/EAN8, JAN/EAN13, Code128, Code93, Code39, NW-7, ITF |                                 |                          | GS1-128, GS1 DataBar |                                 |                          |
|        | Font                                                                  | Position of under-bar character | line feed after printing | Font                 | Position of under-bar character | line feed after printing |
| 1, 49  | - - -                                                                 | None                            | Execute                  | - - -                | None                            | Execute                  |
| 2, 50  | Font A                                                                | Under position                  | Execute                  | Font A               | Under position                  | Execute                  |
| 3, 51  | - - -                                                                 | -                               | not execute              | - - -                | None                            | not execute              |
| 4, 52  | Font A                                                                | Under position                  | not execute              | Font A               | Under position                  | not execute              |
| 5, 53  | - - -                                                                 | - - -                           | - - -                    | Font A               | Upper                           | Execute                  |
| 6, 54  | - - -                                                                 | - - -                           | - - -                    | Font A               | Upper                           | not execute              |
| 7, 55  | - - -                                                                 | - - -                           | - - -                    | Font A               | Upper, Under                    | Execute                  |
| 8, 56  | - - -                                                                 | - - -                           | - - -                    | Font A               | Upper, Under                    | not execute              |
| 9, 57  | - - -                                                                 | - - -                           | - - -                    | Font B               | Under                           | Execute                  |
| 10, 65 | - - -                                                                 | - - -                           | - - -                    | Font B               | Under                           | not execute              |
| 11, 66 | - - -                                                                 | - - -                           | - - -                    | Font B               | Upper                           | Execute                  |
| 12, 67 | - - -                                                                 | - - -                           | - - -                    | Font B               | Upper                           | not execute              |
| 13, 68 | - - -                                                                 | - - -                           | - - -                    | Font B               | Upper, Under                    | Execute                  |
| 14, 69 | - - -                                                                 | - - -                           | - - -                    | Font B               | Upper, Under                    | not execute              |

## • n3 bar code mode selection Spec. 1

| n3    | Bar code type                                              |               |               |                         |
|-------|------------------------------------------------------------|---------------|---------------|-------------------------|
|       | UPC-E, UPC-A,<br>JAN/EAN8<br>JAN/EAN13, Code128,<br>Code93 | Code39, NW-7  | ITF           | GS1-128,<br>GS1 DataBar |
|       | Minimum module                                             | Narrow : Wide | Narrow : Wide | Minimum module          |
| 1, 49 | 2 dots                                                     | 2 : 6 dots    | 2 : 5 dots    | 1 dots                  |
| 2, 50 | 3 dots                                                     | 3 : 9 dots    | 4 : 10 dots   | 2 dots                  |
| 3, 51 | 4 dots                                                     | 4 : 12 dots   | 6 : 15 dots   | 3 dots                  |
| 4, 52 | ---                                                        | 2 : 5 dots    | 2 : 4 dots    | 4 dots                  |
| 5, 53 | ---                                                        | 3 : 8 dots    | 4 : 8 dots    | 5 dots                  |
| 6, 54 | ---                                                        | 4 : 10 dots   | 6 : 12 dots   | 6 dots                  |
| 7, 55 | ---                                                        | 2 : 4 dots    | 2 : 6 dots    | ---                     |
| 8, 56 | ---                                                        | 3 : 6 dots    | 3 : 9 dots    | ---                     |
| 9, 57 | ---                                                        | 4 : 8 dots    | 4 : 12 dots   | ---                     |

## • n3 bar code mode selection Spec. 3

| n3    | Bar code type  |                                                    |               |               |                         |
|-------|----------------|----------------------------------------------------|---------------|---------------|-------------------------|
|       | Code128        | UPC-E, UPC-A,<br>JAN/EAN8,<br>JAN/EAN13,<br>Code93 | Code39, NW-7  | ITF           | GS1-128,<br>GS1 DataBar |
|       | Minimum module | Minimum module                                     | Narrow : Wide | Narrow : Wide | Minimum module          |
| 0, 48 | 1 dot          | ---                                                | ---           | ---           | ---                     |
| 1, 49 | 2 dots         | 2 dots                                             | 2 : 6 dots    | 2 : 5 dots    | 1 dot                   |
| 2, 50 | 3 dots         | 3 dots                                             | 3 : 9 dots    | 4 : 10 dots   | 2 dots                  |
| 3, 51 | 4 dots         | 4 dots                                             | 4 : 12 dots   | 6 : 15 dots   | 3 dots                  |
| 4, 52 | ---            | ---                                                | 2 : 5 dots    | 2 : 4 dots    | 4 dots                  |
| 5, 53 | ---            | ---                                                | 3 : 8 dots    | 4 : 8 dots    | 5 dots                  |
| 6, 54 | ---            | ---                                                | 4 : 10 dots   | 6 : 12 dots   | 6 dots                  |
| 7, 55 | ---            | ---                                                | 2 : 4 dots    | 2 : 6 dots    | ---                     |
| 8, 56 | ---            | ---                                                | 3 : 6 dots    | 3 : 9 dots    | ---                     |
| 9, 57 | ---            | ---                                                | 4 : 8 dots    | 4 : 12 dots   | ---                     |

## • n3 bar code mode selection Spec. 4

| n3     | Bar code type                                          |               |               |                      |
|--------|--------------------------------------------------------|---------------|---------------|----------------------|
|        | UPC-E, UPC-A<br>JAN/EAN8, JAN/EAN13<br>Code128, Code93 | Code39, NW-7  | ITF           | GS1-128, GS1 DataBar |
|        | Minimum module                                         | Narrow : Wide | Narrow : Wide | Minimum module       |
| 1, 49  | 2 dots                                                 | 2: 6 dots     | 2: 5 dots     | 1 dot                |
| 2, 50  | 3 dots                                                 | 3: 9 dots     | 4: 10 dots    | 2 dots               |
| 3, 51  | 4 dots                                                 | 4: 12 dots    | 6: 15 dots    | 3 dots               |
| 4, 52  | 5 dots                                                 | 2: 5 dots     | 2: 4 dots     | 4 dots               |
| 5, 53  | 6 dots                                                 | 3: 8 dots     | 4: 8 dots     | 5 dots               |
| 6, 54  | ---                                                    | 4: 10 dots    | 6: 12 dots    | 6 dots               |
| 7, 55  | ---                                                    | 2: 4 dots     | 2: 6 dots     | ---                  |
| 8, 56  | ---                                                    | 3: 6 dots     | 3: 9 dots     | ---                  |
| 9, 57  | ---                                                    | 4: 8 dots     | 4: 12 dots    | ---                  |
| 10, 65 | ---                                                    | 5: 15 dots    | ---           | ---                  |
| 11, 66 | ---                                                    | 5: 13 dots    | ---           | ---                  |
| 12, 67 | ---                                                    | 5: 10 dots    | ---           | ---                  |
| 13, 68 | ---                                                    | 6: 18 dots    | ---           | ---                  |
| 14, 69 | ---                                                    | 6: 15 dots    | ---           | ---                  |
| 15, 70 | ---                                                    | 6: 12 dots    | ---           | ---                  |

[Note] The bar codes that are printed do not conform to each standard, so you should confirm before actual use.  
Particularly, if 1dot is specified, the bar code is not guaranteed.

- n4 bar code height (dot count)  
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                       | $11 \leq k \leq 12$                                                            | $48 \leq d \leq 57$ ("0" $\leq d \leq$ "9")                                                                                                                                                                                                 |
| UPC-A                       | $11 \leq k \leq 12$                                                            | $48 \leq d \leq 57$ ("0" $\leq d \leq$ "9")                                                                                                                                                                                                 |
| JAN/EAN8                    | $7 \leq k \leq 8$                                                              | $48 \leq d \leq 57$ ("0" $\leq d \leq$ "9")                                                                                                                                                                                                 |
| JAN/EAN13                   | $12 \leq k \leq 13$                                                            | $48 \leq d \leq 57$ ("0" $\leq d \leq$ "9")                                                                                                                                                                                                 |
| Code39                      | $1 \leq k$                                                                     | $48 \leq d \leq 57$ ("0" $\leq d \leq$ "9")<br>$65 \leq d \leq 90$ ("A" $\leq d \leq$ "Z")<br>32, 36, 37, 43, 45, 46, 47 (SP, "\$", "%", "+", "-", ".", "/")                                                                                |
| ITF                         | $1 \leq k$<br>When an odd number:<br>0 is automatically<br>applied to the top. | $48 \leq d \leq 57$ ("0" $\leq d \leq$ "9")                                                                                                                                                                                                 |
| Code128                     | $1 \leq k$                                                                     | $0 \leq d \leq 127$                                                                                                                                                                                                                         |
| Code93                      | $1 \leq k$                                                                     | $0 \leq d \leq 127$                                                                                                                                                                                                                         |
| NW-7                        | $1 \leq k$                                                                     | $48 \leq d \leq 57$ ("0" $\leq d \leq$ "9")<br>$65 \leq d \leq 68$ ("A" $\leq d \leq$ "D")<br>36, 43, 45, 46, 47, 58 ("\$", "+", "-", ".", "/", ".")<br>97, 98, 99, 100 ("a", "b", "c", "d")                                                |
| GS1-128                     | $2 \leq k \leq 255$                                                            | $0 \leq d \leq 127$                                                                                                                                                                                                                         |
| GS1 DataBar Omnidirectional | $k = 13$                                                                       | $48 \leq d \leq 57$                                                                                                                                                                                                                         |
| GS1 DataBar Truncated       | $k = 13$                                                                       | $48 \leq d \leq 57$                                                                                                                                                                                                                         |
| GS1 DataBar Limited         | $k = 13$                                                                       | $48 \leq d \leq 57$ [However, $48 \leq d1 \leq 49$ ]                                                                                                                                                                                        |
| GS1 DataBar Expanded        | $2 \leq k \leq 255$                                                            | $32 \leq d \leq 34$ , $37 \leq d \leq 63$ , $65 \leq d \leq 90$ , $d = 95$ ,<br>$97 \leq d \leq 122$ , $d = 123$<br>[However, $d1 = 40$ , $48 \leq d2 \leq 57$ , $48 \leq d3 \leq 57$ , or<br>$48 \leq d1 \leq 57$ , $48 \leq d2 \leq 57$ ] |

- UPC – E: k = 11 (or 12)  
The 12<sup>th</sup> 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 12<sup>th</sup> check digit is automatically applied, so it is specified and ignored.
- JAN/EAN – 8: k = 7 (or 8)  
The 8<sup>th</sup> check digit is automatically applied, so it is specified and ignored.
- JAN/EAN -13: k = 12 (or 13)  
The 13<sup>th</sup> 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).
- GS1DataBar Omnidirectional, Truncated, Limited: k = 13  
The 14<sup>th</sup> check digit is automatically applied
- GS1DataBar Expanded: k is freely set, and maximum value differs according to the mode and the print character type.
- GS1-128: k is freely set, and maximum value differs according to the mode and the print character type.

### 2.3.15. Two-Dimensional Bar Code QR Code Command Details

Note) QR code is a registered trademark of DENSO WEB.

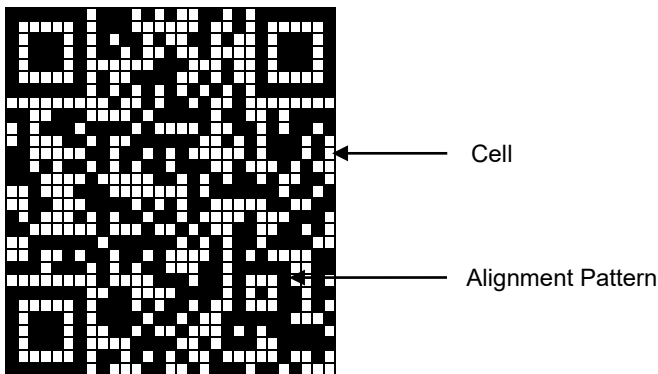
This command is for printing 2-dimensional bar code QR codes. There are four functions of the commands relating to the 2-dimensional bar code QR codes, shown below.

- |                       |                      |
|-----------------------|----------------------|
| (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") |

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 4](#) 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.

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

## (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).

= 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> @)
  - 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) is 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 19 0  | "2005, January, 1 (SAT)"                     |
|                          |         | Sets bar code data (Data automatic analysis) |
|                          |         | Sets bar code data (Data manual analysis)    |
| • <ESC> <GS> "y" "D" "2" | 9 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

|                      |       |
|----------------------|-------|
| <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] Spec. 1  $1 \leq n \leq 2$   
Spec. 2  $n = 2$

[Initial Value]  $n = 2$

[Function] Sets the model.

### • Parameter details

| n | Model settings |
|---|----------------|
| 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]  $0 \leq n \leq 3$

[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] Spec. 1  $1 \leq n \leq 8$   
Spec. 2  $1 \leq n \leq 12$

[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  $3 \leq n$ .

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

$0 \leq nL \leq 255, 0 \leq nH \leq 255$

$1 \leq nL + nH \times 256 \leq 7089$  (k = nL + nH x 256)

$0 \leq d \leq 255$

[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 update

d each time either command is executed.

[Model Limitations] SM-L200 : Not supported with versions 10 to 40.

## 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 | d21 | d22 | ... | d2K | ml  | ... | dkl |     |     |     |

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

[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 | “, “\$”, “%”, “+”, “-”, “.”, “/”, “.”<br>“0” to “9”, “A” to “Z”, “a” to “z”                        |
| 3 | Binary             | 0x00 to 0xFF                                                                                       |
| 4 | Kanji (Shift JIS)  | 0x8140 to 0x9FFC, 0xE040 to 0xEBBF<br>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.
- When data type is set to alphanumeric (m=2) and data of alphabet characters "a" to "z" is sent, they are converted into uppercase alphabet characters "A" to "Z" and their barcode data is generated.

[Model Limitations] SM-L200 : Not supported with versions 10 to 40.

## ESC GS y P

|        |               |     |    |     |    |
|--------|---------------|-----|----|-----|----|
| [Name] | Print QR code |     |    |     |    |
| [Code] | ASCII         | ESC | GS | y   | P  |
|        | 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.

### 2.3.16. Two-Dimensional Bar Code PDF417 Command Details

This command prints two-dimensional bar code PDF417.

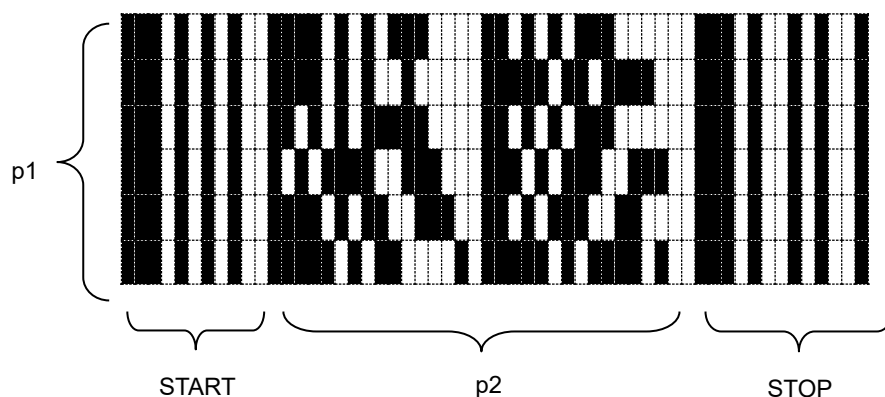
There are four types of commands, according to functions, for two-dimensional bar code PDF417.

- (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")

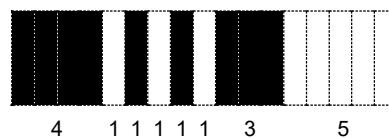
The following describes the functions in detail.

#### (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.

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.

## (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).

= 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> @)
  - The power is turned off
- Sending (3) 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

<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:  $1 \leq p1 \leq 99, 1 \leq p2 \leq 99$   
When n = 1:  $p1 = 0$  or  $3 \leq p1 \leq 90, p2 = 0$  or  $1 \leq p2 \leq 30$  (However, this excludes  $p1 = p2 = 0$ )  
[Initial Value] n = 0, p1 = 1, p2 = 2  
[Function] Parameter details

| n<br>(Specify Method to Specify Bar Code Size) |                                                                             | p1, p2<br>(Size Specification)                                                                                                                                                           |
|------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0                                              | USE_LIMITS<br>(Specify ratio of bar code horizontally and vertically)       | p1: p2: Proportions of Vertical (p1) and Horizontal (p2)<br>However, p1: p2 = 1: 99 to 10 : 1 (p1/p2 = 0.01 to 10)                                                                       |
| 1                                              | USE_FIXED<br>(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, $p1 * p2 \leq 928$<br>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]  $0 \leq n \leq 8$   
[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] Spec. 1  $1 \leq n \leq 10$   
Spec. 2  $1 \leq n \leq 15$   
[Initial Value] n = 2  
[Function] Parameter details  
• n: Sets the module X direction size (x-dim). Units: Dots  
It is recommended that  $2 \leq n$  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]  $1 \leq n \leq 10$

[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  $2 \leq n$  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]  $0 \leq nL \leq 255, 0 \leq nH \leq 255$

$1 \leq (nL + nH \times 256) \leq 1024$

$0 \leq d \leq 255$

$1 \leq k \leq 1024$

[Initial Value] - - -

[Function] Parameter details

- $nL + nH \times 256$  : Bar code data count
- $d1...dk$  : Bar code data (Maximum 1024 data)

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

[Model Limitations] SM-L200: Maximum settable barcode data count 128 byte

$1 \leq (nL + nH \times 256) \leq 128, 1 \leq k \leq 128$

## 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.

### 2.3.17. GS1 2D Code, Compound symbol Command Details

#### **ESC GS ( k pL pH cn fn [parameter]**

|        |                      |     |    |    |     |    |    |    |    |   |
|--------|----------------------|-----|----|----|-----|----|----|----|----|---|
| [Name] | Set and print symbol |     |    |    |     |    |    |    |    |   |
| [Code] | ASCII                | ESC | GS | (  | k   | pL | pH | cn | fn | n |
|        | Hex.                 | 1B  | 1D | 28 | 6B  | pL | pH | cn | fn | n |
|        | Decimal              | 27  | 29 | 40 | 107 | pL | pH | cn | fn | n |

|            |                                                                                                                                                                                                                                                                                                 |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [Function] | Runs processes related to symbol.                                                                                                                                                                                                                                                               |
|            | <ul style="list-style-type: none"> <li>• pL and pH specify the parameter count (pL + pH x 256) in bytes after cn.</li> <li>• Specifies the type of symbol with cn.</li> <li>• Specifies the function with fn.</li> <li>• See the function specifications for details on [parameter].</li> </ul> |

| cn | Type of Symbol                                                                                             |
|----|------------------------------------------------------------------------------------------------------------|
| 51 | 2D GS1 DataBar<br>(GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional, GS1 DataBar Expanded Stacked) |
| 52 | GS1 compound symbol (2-dimensional code)                                                                   |

| cn | fn | Function No. | Function Name                                                                |
|----|----|--------------|------------------------------------------------------------------------------|
| 51 | 67 | Function 367 | 2D GS1 DataBar: Set module size                                              |
|    | 71 | Function 371 | 2D GS1 DataBar: Set The maximum width of the 2D GS1DataBar Expanded Stacked  |
|    | 80 | Function 380 | 2D GS1 DataBar: Store data in symbol saving region                           |
|    | 81 | Function 381 | 2D GS1 DataBar: Print symbol data of symbol saving region                    |
| 52 | 67 | Function 467 | Compound symbol: Set module size                                             |
|    | 71 | Function 471 | Compound symbol: Set The maximum width of the 2D GS1DataBar Expanded Stacked |
|    | 72 | Function 472 | Compound symbol: Set HRI Font                                                |
|    | 80 | Function 480 | Compound symbol: Store data in symbol saving region                          |
|    | 81 | Function 481 | Compound symbol: Print symbol data of symbol saving region                   |

### <Function 367> ESC GS ( k pL pH cn fn n (cn=51, fn=67)

|                 |                                                                                                                                                                                                                                                                                                                                                                                      |     |    |    |     |    |    |    |    |   |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|-----|----|----|----|----|---|
| [Name]          | 2D GS1 DataBar: Set module siz                                                                                                                                                                                                                                                                                                                                                       |     |    |    |     |    |    |    |    |   |
| [Code]          | ASCII                                                                                                                                                                                                                                                                                                                                                                                | ESC | GS | (  | k   | pL | pH | cn | fn | n |
|                 | Hex.                                                                                                                                                                                                                                                                                                                                                                                 | 1B  | 1D | 28 | 6B  | pL | pH | cn | fn | n |
|                 | Decimal                                                                                                                                                                                                                                                                                                                                                                              | 27  | 29 | 40 | 107 | pL | pH | cn | fn | n |
| [Defined Area]  | <p>pL = 3, pH = 0</p> <p>cn = 51</p> <p>fn = 67</p> <p>Spec. 1</p> <p><math>2 \leq n \leq 8</math></p> <p>Spec. 2</p> <p><math>2 \leq n \leq 12</math></p>                                                                                                                                                                                                                           |     |    |    |     |    |    |    |    |   |
| [Initial Value] | n = 2                                                                                                                                                                                                                                                                                                                                                                                |     |    |    |     |    |    |    |    |   |
| [Function]      | Sets 2D GS1 DataBar module width to n dots.                                                                                                                                                                                                                                                                                                                                          |     |    |    |     |    |    |    |    |   |
| [Details]       | <p>The setting of this function affects processes of Functions 081 and 082.</p> <p>This setting is valid until ESC @ is executed, the printer is reset or the power is turned off.</p> <p>Set in units of 1 dot.</p> <p>Spec. 1</p> <p>The width is set in 0.125 mm (1/203 inches) units.</p> <p>Spec. 2</p> <p>The width is set in approximately 0.0847mm (1/300 inches) units.</p> |     |    |    |     |    |    |    |    |   |
| [Reference]     | ESC GS ( k Function 381, ESC @                                                                                                                                                                                                                                                                                                                                                       |     |    |    |     |    |    |    |    |   |

### <Function 371> ESC GS ( k pL pH cn fn nL nH (cn=51, fn=71)

|                 |                                                                                                                                                                                                                                                                                                                                                                               |     |    |    |     |    |    |    |    |       |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|-----|----|----|----|----|-------|
| [Name]          | 2D GS1 DataBar: Set The maximum width of the 2D GS1DataBar Expanded Stacked                                                                                                                                                                                                                                                                                                   |     |    |    |     |    |    |    |    |       |
| [Code]          | ASCII                                                                                                                                                                                                                                                                                                                                                                         | ESC | GS | (  | k   | pL | pH | cn | fn | nL nH |
|                 | Hex.                                                                                                                                                                                                                                                                                                                                                                          | 1B  | 1D | 28 | 6B  | pL | pH | cn | fn | nL nH |
|                 | Decimal                                                                                                                                                                                                                                                                                                                                                                       | 27  | 29 | 40 | 107 | pL | pH | cn | fn | nL nH |
| [Defined Area]  | <p>pL = 4, pH = 0</p> <p>cn = 51</p> <p>fn = 71</p> <p><math>106 \leq n \leq 3952</math></p>                                                                                                                                                                                                                                                                                  |     |    |    |     |    |    |    |    |       |
| [Initial Value] | (nL + nH x 256) = 141 (nL = 141, nH = 0)                                                                                                                                                                                                                                                                                                                                      |     |    |    |     |    |    |    |    |       |
| [Function]      | The maximum width of the 2D GS1DataBar Expanded Stacked is set to n dots.                                                                                                                                                                                                                                                                                                     |     |    |    |     |    |    |    |    |       |
| [Details]       | <p>The setting for this function affects the processing of function 381.</p> <p>This setting is enabled until ESC@ is executed, the printer is reset, or the power is turned off.</p> <p>The set unit is 1 dot.</p> <p>Spec. 1</p> <p>The width is set as 0.125 mm (1/203 inches).</p> <p>Spec. 2</p> <p>The width is set in approximately 0.0847mm (1/300 inches) units.</p> |     |    |    |     |    |    |    |    |       |
| [Reference]     | ESC GS ( k Function 381 , ESC @                                                                                                                                                                                                                                                                                                                                               |     |    |    |     |    |    |    |    |       |

## <Function 380> ESC GS ( k pL pH cn fn m n d1...dk (cn=51, fn=80)

[Name] 2D GS1 DataBar: Store data in symbol saving region

[Code] ASCII ESC GS ( k pL pH cn fn m n d1 ... dk  
Hex. 1B 1D 28 6B pL pH cn fn m n d1 ... dk  
Decimal 27 29 40 107 pL pH cn fn m n d1 ... dk

[Defined Area]  $4 \leq (pL + pH \times 256) \leq 259$  ( $0 \leq pL \leq 255$ ,  $pH = 0, 1$ )  
cn = 51  
fn = 80  
m = 48  
n = 72, 73, 76  
 $0 \leq d \leq 255$   
 $k = (pL + pH \times 256) - 4$

[Function] Symbol data (d1...dk) for the 2D GS1 DataBar is stored in the symbol saving region.

| n  | Type of Symbol                      | Data (k)            | ASCII                                                                            | Data (d)                                                                                                                                                                                                                                           |
|----|-------------------------------------|---------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 72 | GS1 Databar Stacked                 | $k = 13$            | "0" to "9"                                                                       | $48 \leq d \leq 57$                                                                                                                                                                                                                                |
| 73 | GS1 Databar Stacked Omnidirectional | $k = 13$            | "0" to "9"                                                                       | $48 \leq d \leq 57$                                                                                                                                                                                                                                |
| 76 | GS1 Databar Expanded Stacked        | $2 \leq k \leq 255$ | 0~9, A~Z, a~z, SP, !, ", %, \$, ', (, ), *, +, ,, -, ., /, :, ;, <, =, >, ?, _ { | $48 \leq d \leq 57, 65 \leq d \leq 90, 97 \leq d \leq 122$ ,<br>$32 \leq d \leq 34, 37 \leq d \leq 47, 58 \leq d \leq 63$ ,<br>d = 95, 123<br>[However $d1 = 40, 48 \leq d2 \leq 57, 48 \leq d3 \leq 57, 48 \leq d1 \leq 57, 48 \leq d2 \leq 57$ ] |

[Details] Data stored in the symbol saving region by this function is processed using function 381.  
After processing functions 381 and 382, data in the saving region is maintained.  
k bytes for d1...dk are processed as symbol data.  
This setting is valid until this function is reset, ESC@ is executed, the printer is reset, or the power is off.

[Reference] ESC GS ( k Function 381 , ESC @

## <Function 381> ESC GS ( k pL pH cn fn m (cn=51, fn=81)

|        |                                                           |     |    |    |     |    |    |    |    |   |
|--------|-----------------------------------------------------------|-----|----|----|-----|----|----|----|----|---|
| [Name] | 2D GS1 DataBar: Print symbol data of symbol saving region |     |    |    |     |    |    |    |    |   |
| [Code] | ASCII                                                     | ESC | GS | (  | k   | pL | pH | cn | fn | m |
|        | Hex.                                                      | 1B  | 1D | 28 | 6B  | pL | pH | cn | fn | m |
|        | Decimal                                                   | 27  | 29 | 40 | 107 | pL | pH | cn | fn | m |

[Defined Area]      pL = 3, pH = 0  
                             cn = 51  
                             fn = 81  
                             m = 48

[Function]            Executes encoding and printing of the symbol data stored in the symbol saving region by ESC GS ( k function 380.

[Note]                The user must secure the quiet zone.

[Reference]          ESC GS ( k Function 380

[Details]            This command prints bar code data or deploys it to the image buffer.  
                             This command is ignored when one of the following errors occurs:  
                             - Error that occurs when the bar code is generated due to the combination of each barcode setting command.  
                             - When the generated bar code data exceeds the printable size for the GS1 DataBar.  
                             - When the print data exceeds the current set print area.  
                             Make sure you check the printed bar code before actual use.

For standby mode:

- If unprinted data still exists in the line buffer, the buffered data is printed out, the command is executed, and then the bar code is printed. Therefore, you cannot print mixed data (characters, bit images, bar codes) on the same line.

For page mode:

- This command only deploys bar code data to the image buffer.

## <Function 467> ESC GS ( k pL pH cn fn n (cn=52, fn=67)

[Name] Compound symbol: Set module width

| [Code]  | ASCII | ESC | GS | (  | k   | pL | pH | cn | fn | n |
|---------|-------|-----|----|----|-----|----|----|----|----|---|
| Hex.    |       | 1B  | 1D | 28 | 6B  | pL | pH | cn | fn | n |
| Decimal |       | 27  | 29 | 40 | 107 | pL | pH | cn | fn | n |

[Defined Area] pL = 3, pH = 0  
cn = 52  
fn = 67  
Spec. 1  $2 \leq n \leq 8$   
Spec. 2  $2 \leq n \leq 12$

[Initial Value] n = 2

[Function] The width of one module for compound symbols is set to n dots.

[Details] The setting for this function affects the processing of function 481.  
This setting is enabled until ESC@ is executed, the printer is reset, or the power is turned off.  
The set unit is 1 dot.  
Spec. 1  
The width is set as 0.125 mm (1/203 inches).  
Spec. 2  
The width is set in approximately 0.0847mm (1/300 inches) units.

[Reference] ESC GS ( k Function 481, ESC @

## <Function 471> ESC GS ( k pL pH cn fn nL nH (cn=52, fn=71)

[Name] Compound symbol: Set The maximum width of the 2D GS1DataBar Expanded Stacked

| [Code]  | ASCII | ESC | GS | (  | k   | pL | pH | cn | fn | nL | nH |
|---------|-------|-----|----|----|-----|----|----|----|----|----|----|
| Hex.    |       | 1B  | 1D | 28 | 6B  | pL | pH | cn | fn | nL | nH |
| Decimal |       | 27  | 29 | 40 | 107 | pL | pH | cn | fn | nL | nH |

[Defined Area] pL = 4, pH = 0  
cn = 52  
fn = 71  
 $106 \leq n \leq 3952$

[Initial Value] (nL + nH x 256) = 141 (nL = 141, nH = 0)

[Function] The maximum width of the GS1DataBar Expanded Stacked in compound symbols is set to n dots.

[Details] The setting for this function affects the processing of function 481.  
This setting is enabled until ESC@ is executed, the printer is reset, or the power is turned off.  
The set unit is 1 dot.  
Spec. 1  
The width is set as 0.125 mm (1/203 inches).  
Spec. 2  
The width is set in approximately 0.0847mm (1/300 inches) units.

[Reference] ESC GS ( k Function 481, ESC @

## <Function 472> ESC GS ( k pL pH cn fn n (cn=52, fn=72)

[Name] Compound symbol: Set the HRI font

| [Code]  | ASCII | ESC | GS | (  | k   | pL | pH | cn | fn | n |
|---------|-------|-----|----|----|-----|----|----|----|----|---|
| Hex.    |       | 1B  | 1D | 28 | 6B  | pL | pH | cn | fn | n |
| Decimal |       | 27  | 29 | 40 | 107 | pL | pH | cn | fn | n |

[Defined Area] pL = 3, pH = 0  
cn = 52  
fn = 72  
 $0 \leq n \leq 2, 48 \leq n \leq 50$

[Initial Value] n = 0

[Function] Select the font for HRI characters when printing combined symbols.

| n     | HRI font                       |
|-------|--------------------------------|
| 0, 48 | not printed                    |
| 1, 49 | printed (Select font A(12x24)) |
| 2, 50 | printed (Select font B(9x24))  |

[Details] Data stored in the symbol saving region by this function is processed using function 481.  
When "Print" HRI is selected, HRI is printed under 1D bar codes.  
When the combined symbol uses a 2D code (GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional, GS1 DataBar Expanded Stacked), this setting is not affected and HRI is not printed.  
This setting is valid until this function is reset, ESC@ is executed, the printer is reset, or the power is off.

[Reference] ESC GS ( k Function 481, ESC @

## <Function 480> ESC GS ( k pL pH cn fn m a b d1...dk (cn=52, fn=80)

[Name] Compound symbol: Store data in symbol saving region

[Code] ASCII ESC GS ( k pL pH cn fn m a b d1 ... dk  
Hex. 1B 1D 28 6B pL pH cn fn m a b d1 ... dk  
Decimal 27 29 40 107 pL pH cn fn m a b d1 ... dk

[Defined Area]  $7 \leq (pL + pH \times 256) \leq 2366$  ( $0 \leq pL \leq 255$ ,  $0 \leq pH \leq 9$ )

cn = 52

fn = 80

m = 48

a = 48,49

$65 \leq b \leq 77$  (a=48)

b = 65,66 (a=49)

$0 \leq d \leq 255$

k = (pL + pH × 256) - 5

[Function] Symbol data (d1...dk) for the Compound symbol is stored in the symbol saving region.

a = 48

| b  | Bar Code Type                         | Data (k)            | ASCII                                                                                             | Data (d)                                                                                                                                                                                                                                                                  |
|----|---------------------------------------|---------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 65 | EAN8                                  | k = 7,8             | "0"to"9"                                                                                          | $48 \leq d \leq 57$                                                                                                                                                                                                                                                       |
| 66 | EAN13                                 | k = 12,13           | "0"to"9"                                                                                          | $48 \leq d \leq 57$                                                                                                                                                                                                                                                       |
| 67 | UPC-A                                 | k = 11,12           | "0"to"9"                                                                                          | $48 \leq d \leq 57$                                                                                                                                                                                                                                                       |
| 69 | UPC-E (11-digit version (0 included)) | k = 11,12           | "0"to"9"                                                                                          | $48 \leq d \leq 57$                                                                                                                                                                                                                                                       |
| 70 | GS1 DataBar Omnidirectional           | k = 13              | "0"to"9"                                                                                          | $48 \leq d \leq 57$                                                                                                                                                                                                                                                       |
| 71 | GS1 DataBar Truncated                 | k = 13              | "0"to"9"                                                                                          | $48 \leq d \leq 57$                                                                                                                                                                                                                                                       |
| 72 | GS1 DataBar Stacked                   | k = 13              | "0"to"9"                                                                                          | $48 \leq d \leq 57$                                                                                                                                                                                                                                                       |
| 73 | GS1 DataBar Stacked Omnidirectional   | k = 13              | "0"to"9"                                                                                          | $48 \leq d \leq 57$                                                                                                                                                                                                                                                       |
| 74 | GS1 DataBar Limited                   | k = 13              | "0"to"9"                                                                                          | $48 \leq d \leq 57$ [However d1 = 48,49]                                                                                                                                                                                                                                  |
| 75 | GS1 DataBar Expanded                  | $2 \leq k \leq 255$ | 0~9, A~Z, a~z<br>SP, !, ", %, \$, ',<br>(, ), *, +, ,, -, .,<br>, : , ; , < , = , > , ? ,<br>_, { | $48 \leq d \leq 57$ , $65 \leq d \leq 90$ , $97 \leq d \leq 122$ ,<br>$32 \leq d \leq 34$ , $37 \leq d \leq 47$ , $58 \leq d \leq 63$ ,<br>d = 95,123<br>[However d1 = 40, $48 \leq d2 \leq 57$ ,<br>$48 \leq d3 \leq 57$ , $48 \leq d1 \leq 57$ , $48 \leq d2 \leq 57$ ] |
| 76 | GS1 DataBar Expanded Stacked          | $2 \leq k \leq 255$ | 0~9, A~Z, a~z<br>SP, !, ", %, \$, ',<br>(, ), *, +, ,, -, .,<br>, : , ; , < , = , > , ? ,<br>_, { | $48 \leq d \leq 57$ , $65 \leq d \leq 90$ , $97 \leq d \leq 122$ ,<br>$32 \leq d \leq 34$ , $37 \leq d \leq 47$ , $58 \leq d \leq 63$ ,<br>d = 95,123<br>[However d1 = 40, $48 \leq d2 \leq 57$ , $48 \leq d3 \leq 57$ ,<br>$48 \leq d1 \leq 57$ , $48 \leq d2 \leq 57$ ] |
| 77 | GS1-128                               | $2 \leq k \leq 255$ |                                                                                                   | $0 \leq d \leq 127$                                                                                                                                                                                                                                                       |

a = 49

| b  | Type of Symbol                                            | Data (k)             | Data (d)             |
|----|-----------------------------------------------------------|----------------------|----------------------|
| 65 | CC-A, CC-B, CC-C Automatic distinction by a digit number. | $3 \leq k \leq 2361$ | $32 \leq d \leq 127$ |
| 66 | fixing to CC-C                                            | $3 \leq k \leq 2361$ | $32 \leq d \leq 127$ |

[Details] Data stored in the symbol saving region by this function is processed using function 481.

After processing functions 481, data in the saving region is maintained.

k bytes for d1...dk are processed as symbol data.

This setting is valid until this function is reset, ESC@ is executed, the printer is reset, or the power is off.

[Reference] ESC GS ( k Function 481, ESC @

## <Function 481> ESC GS ( k pL pH cn fn m (cn=52, fn=81)

[Name] Compound symbol: Printe data in symbol saving region

|        |         |     |    |    |     |    |    |    |    |   |
|--------|---------|-----|----|----|-----|----|----|----|----|---|
| [Code] | ASCII   | ESC | GS | (  | k   | pL | pH | cn | fn | m |
|        | Hex.    | 1B  | 1D | 28 | 6B  | pL | pH | cn | fn | m |
|        | Decimal | 27  | 29 | 40 | 107 | pL | pH | cn | fn | m |

[Defined Area] pL = 3, pH = 0  
cn = 52  
fn = 81  
m = 48

[Function] Executes encoding and printing of the symbol data stored in the symbol saving region by GS ( k function 480.

[Note] The user must secure the quiet zone.

[Reference] GS ( k Function 480

[Details] This command prints bar code data or deploys it to the image buffer.

This command is ignored when one of the following errors occurs:

- Error that occurs when the bar code is generated due to the combination of each barcode setting command.
  - When the generated bar code data exceeds the printable size for the GS1 DataBar.
  - When the print data exceeds the current set print area.
- Make sure you check the printed bar code before actual use.

For standby mode:

- If unprinted data still exists in the line buffer, the buffered data is printed out, the command is executed, and then the bar code is printed. Therefore, you cannot print mixed data (characters, bit images, bar codes) on the same line.

For page mode:

- This command only deploys bar code data to the image buffer.

### 2.3.18. Initialization Command

#### **ESC @**

|        |                        |     |    |
|--------|------------------------|-----|----|
| [Name] | Command initialization |     |    |
| [Code] | ASCII                  | ESC | @  |
|        | Hex.                   | 1B  | 40 |
|        | Decimal                | 27  | 64 |

[Defined Area] - - -

[Initial Value] - - -

[Function] In standard mode, the commands are initialized after the data in the line buffer was printed.  
However, printers with memory switch/ Star Configuration settings are initialized to those settings.  
In case of the model with DIPSW, DIPSW re-reading is not performed.  
In page mode, the entire print region is cleared and the mode changes back to standard mode.

- 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
- Line feed amount
- Set upside-down, position alignment
- Left/right margins
- Top margin

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
- Media type settings

## 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.

[Limitations by model]

mPOP, mC-Print2, mC-Print3, mC-Label3 :

Execution of this command during printing may be delayed.

Reconnection is required, because the connection between printer and host is disconnected by the execution of this command.

## 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] Spec. 1: Hardware resets the printer and executes on self print.  
 Spec. 2: Perform printer software reset, then perform self-printing once.  
 After sending this command, the next data is not sent until the printer is online (in a state wherein it can receive data).

### 2.3.19. Memory Switch Setting Command

**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]

$48 \leq n1 \leq 57$  ("0"  $\leq n1 \leq$  "9"),  $65 \leq n1 \leq 70$  ("A"  $\leq n1 \leq$  "F"),  $97 \leq n1 \leq 102$  ("a"  $\leq n1 \leq$  "f")  
 $48 \leq n2 \leq 57$  ("0"  $\leq n2 \leq$  "9"),  $65 \leq n2 \leq 70$  ("A"  $\leq n2 \leq$  "F"),  $97 \leq n2 \leq 102$  ("a"  $\leq n2 \leq$  "f")  
 $48 \leq n3 \leq 57$  ("0"  $\leq n3 \leq$  "9"),  $65 \leq n3 \leq 70$  ("A"  $\leq n3 \leq$  "F"),  $97 \leq n3 \leq 102$  ("a"  $\leq n3 \leq$  "f")  
 $48 \leq n4 \leq 57$  ("0"  $\leq n4 \leq$  "9"),  $65 \leq n4 \leq 70$  ("A"  $\leq n4 \leq$  "F"),  $97 \leq n4 \leq 102$  ("a"  $\leq n4 \leq$  "f")

$m = 87, 84, 44, 43, 45, 64, 42$  ( $m =$  "W", "T", " ", "+", "-", "@", "\*")  
 $48 \leq N \leq 57$  ("0"  $\leq N \leq$  "9"),  $65 \leq N \leq (*)70$  ("A"  $\leq N \leq (*)$  "F"),  $97 \leq N \leq (*) 102$ , ("a"  $\leq N \leq (*)$  "f")  
 $N = 85$  ( $N =$  "U") User defined area  
 (\*) 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.

You can register any 16 bit data by specifying N = 85 ("U").

You can load the default settings by specifying  $m = 42$  (\*).

Consider the life of the non-volatile memory and avoid excessive use of this command.

| 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 bit initialized)          | Definition | " @ " | Fixed at "0" | Fixed at "0000" |
| Definition data (load default settings)        | 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<br>m = ("+" ) Bit number to set<br>m = ("-") Bit number to clear |

[Model Limitations]

SM-L200, SM-S/T series: The m=42 (m="\*") data definition (load default settings) function is not supported.

## 2.3.20. 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]  $0 \leq n \leq 3$ ,  $48 \leq n \leq 51$  ("0"  $\leq n \leq$  "3")  
 $n=16, n=255$

[Initial Value] Memory switch / Star Configuration setting

[Function] Sets the status transmission conditions.

See [Appendix 2](#) for details regarding ASB status.

Settings of this command are unaffected by the ESC @ command.

See each printer's product specifications manual for details on the memory switch settings.

The command functions can be selected using the memory switch.

Therefore, the command specifications vary depending on the memory switch setting as follows.

When command function selection by memory switches is unsupported, Status Transmission Condition Setting Function is fixed.

| n     | Command function selection by memory switches                                                                        |                     |
|-------|----------------------------------------------------------------------------------------------------------------------|---------------------|
|       | Status transmission conditions                                                                                       | Status transmission |
| 0, 48 | ASB Invalid • NSB Invalid                                                                                            | Status transmission |
| 1, 49 | ASB Valid • NSB Invalid                                                                                              |                     |
| 2, 50 | ASB Invalid • NSB Valid                                                                                              |                     |
| 3, 51 | ASB Valid • NSB Valid                                                                                                |                     |
| 16    | Returns the ASB and NSB settings to the initial state set by the memory switches or specified by Star Configuration. |                     |
| 255   | Sends the ASB status information.                                                                                    |                     |

### 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.

## ETB

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

[Defined Area] - - -

[Initial Value] - - -

[Function] 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 of ABS Status.

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).

### ■ Precautions when using Ethernet

When multi-session is valid the ASB (ETB counter) sent by <ETB> is sent to all hosts that are connected.

For that reason, sending ETB from multiple sessions, can cause misrecognition of the ETB counter.

Therefore, we recommend the <ESC><GS><ETX> commands to confirm the print end counter.

See the Command List by Model.

## 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.

## ESC GS ETX s n1 n2

[Name] Send print-end counter, initialize  
[Code] ASCII ESC GS ETX s n1 n2  
Hex. 1B 1D 03 s n1 n2  
Decimal 27 29 3 s n1 n2

[Defined Area] Spec. 1:  $0 \leq s \leq 4$   
Spec. 2:  $0 \leq s \leq 5$   
Spec. 3:  $0 \leq s \leq 4$   
 $0 \leq n1 \leq 255, 0 \leq n2 \leq 255$

[Function] This command is run when reading from the reception buffer. Processes the print end counter according to the s parameter.

| s | Name                                                                                                                                                                          | Function                                                                                                                                                                                                                                                                                                                                                                                  |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 | Print end counter reference                                                                                                                                                   | Sends the current print end counter to the host.<br>(Does not wait for print end. Does not count up.)                                                                                                                                                                                                                                                                                     |
| 1 | Print end counter update                                                                                                                                                      | Runs the following operations.<br>(1) Prints data in line buffer, if data exists.<br>(2) Waits until printing ends (motor stops).<br>(3) Updates the print end counter (increments by 1).<br>(4) Sends print end counter to host.                                                                                                                                                         |
| 2 | Print end counter clear                                                                                                                                                       | Returns the print end counter to its default value (zero clear).<br>(Does not wait for print end. Does not send the print end counter to the host.)                                                                                                                                                                                                                                       |
| 3 | Spec.1, 2<br>Start document<br><br>Spec. 3<br>When spooler function is invalid<br>Start document<br>When spooler function is valid<br>Start spooler storage<br><br>n1, n2 = 0 | Spec.1, 2<br>(1) Sets data intake mode<br>(2) Initialize<br><br>Spec. 3<br>When spooler function is invalid<br>1. Sets data intake mode<br>2. Initialize<br>When spooler function is valid<br>Start spooler storage with retry disabled and set to no timeout setting                                                                                                                     |
| 4 | Spec.1, 2<br>End document<br><br>Spec 3.<br>When spooler function is invalid<br>End document<br>When spooler function is valid<br>End spooler storage<br><br>n1, n2 = 0       | Spec.1, 2<br>(1) Prints data in line buffer, if data exists.<br>(2) Waits until printing ends (motor stops).<br>(3) Cancels data intake mode<br><br>Spec. 3<br>When spooler function is invalid<br>1. Prints data in line buffer, if data exists.<br>2. Waits until printing ends (motor stops).<br>3. Cancels data intake mode.<br>When spooler function is valid<br>End spooler storage |
| 5 | Data timeout setting                                                                                                                                                          | n1=0: Initializes to the content of memory switch / Star Configuration.<br>(n2=0)<br>n1=1: Data timeout setting<br>n2=0: Timeout disabled<br>Others: n2 = Data timeout time (units: seconds 1 to 255 seconds)<br>n1=2: Sends the current timeout setting to the host. (n2=0)                                                                                                              |

The data formats sent to the host when s = 0 or s =1 is shown below.

#### <Returned Data Formats>

| [Code] | ASCII       | ESC | GS | ETX | s | n1 | n2 | [Print end counter] | NUL |
|--------|-------------|-----|----|-----|---|----|----|---------------------|-----|
|        | Hexadecimal | 1B  | 1D | 03  | s | n1 | n2 | [Print end counter] | 00  |
|        | Decimal     | 27  | 30 | 3   | s | n1 | n2 | [Print end counter] | 0   |

Note) Echoes back the specified contents from the host as is until ESC GS ETX s n1 n2, and then sends the print end counter value and NUL.

When [Print end counter] is 1 byte in length, the initial value is 0x00.

When s = 1, increments by 1 each time the command is processed. After 0xFF, returns to 0x00.

There is one [Print end counter] in the printer that is unrelated to the n1, n2 values.

(There is no counter for the n1, n2 values.)

(Reference Information) Differences between the ETB command and this command

| Item                                                                       | ESC GS ETX s n1 n2                                           | ETB                                                 |
|----------------------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|
| Affect on ASB (ETB Status)                                                 | None                                                         | Yes                                                 |
| ASB occurrence                                                             | None                                                         | Yes                                                 |
| Affect of ASB valid/invalid setting                                        | None                                                         | Yes                                                 |
| Affect of the ESC RS E n command                                           | None                                                         | Yes                                                 |
| Status transmission destination in Ethernet (When multi-sessions is valid) | Send only when in the print session (host) that is connected | Send ASB to all sessions (hosts) that are connected |

Note) This print end counter and the ETB counter sent by the ETB command are separate.

They have no affect on each other.

The following shows a communication example of this command.

#### Communication Example 1

| Host Transmission Data                        | Printer return data                                              |
|-----------------------------------------------|------------------------------------------------------------------|
| ESC GS ETX <b>0x00</b> 0x00 0x00              | →                                                                |
|                                               | ← ESC GS ETX <b>0x00</b> 0x00 0x00 0x00 0x00 (Reference Counter) |
| Print Data + ESC GS ETX <b>0x01</b> 0x00 0x00 | →                                                                |
|                                               | ← ESC GS ETX <b>0x01</b> 0x00 0x00 0x01 0x00 (Reference Update)  |
| Print Data + ESC GS ETX <b>0x01</b> 0x00 0x00 | →                                                                |
|                                               | ← ESC GS ETX <b>0x01</b> 0x00 0x00 0x02 0x00 (Reference Update)  |

#### Communication Example 2

| Host Transmission Data                        | Printer return data                                             |
|-----------------------------------------------|-----------------------------------------------------------------|
| ESC GS ETX <b>0x02</b> 0x02 0x00              | →                                                               |
| ESC GS ETX <b>0x00</b> 0x02 0x00              | ←                                                               |
|                                               | →                                                               |
| Print Data + ESC GS ETX <b>0x01</b> 0x02 0x11 | →                                                               |
|                                               | ← ESC GS ETX <b>0x01</b> 0x02 0x11 0x01 0x00 (Reference Update) |
| Print Data + ESC GS ETX <b>0x01</b> 0x02 0x12 | →                                                               |
|                                               | ← ESC GS ETX <b>0x01</b> 0x02 0x12 0x02 0x00 (Reference Update) |
| Print Data + ESC GS ETX <b>0x01</b> 0x02 0x13 | →                                                               |
|                                               | ← ESC GS ETX <b>0x01</b> 0x02 0x13 0x03 0x00 (Reference Update) |
| Print Data + ESC GS ETX <b>0x01</b> 0x02 0x14 | →                                                               |
|                                               | ← ESC GS ETX <b>0x01</b> 0x02 0x14 0x04 0x00 (Reference Update) |

#### <Example using n1, n2>

- Specify n1+n2 x 256 as the document ID and check the compatibility with the document ID in the same way.
- When it is not possible to check compatibility of the source and returned data, fix at n1 = 0, n2 = 0.

When  $s = 3$ , and  $s = 4$  (Document start command + document end command), printer operates as though in data cancel mode.

If there is an error after receiving the document start command, reception data is received and discarded until the document end command is received when the printer is recovered from the error.

If the document end command cannot be recognized, all reception data is destroyed. (data intake mode)

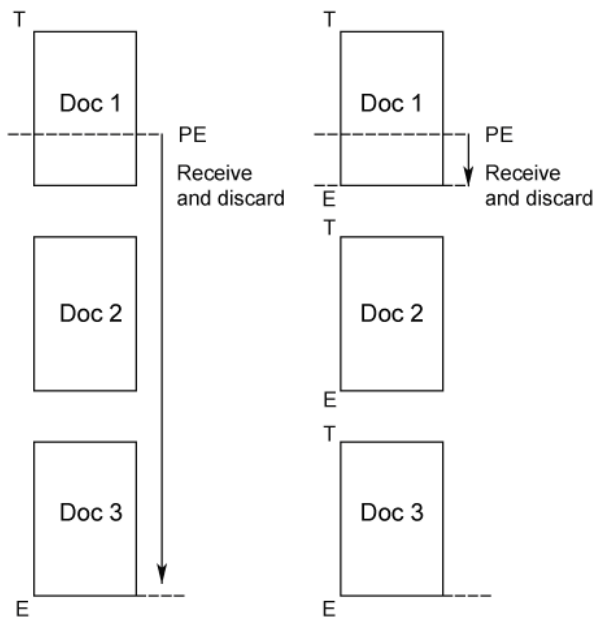
Data receiving timeout is 10 seconds. When no data is received continuously for 10 seconds, data intake mode is automatically canceled.

#### Restrictions

- 1) Sleep mode decrease
- 2) Erroneous printing occurs if the same data as the End command is contained in the raster data or bit image data.
- 3) Invalid when in Page mode

When  $S=3$  is specified, an initialization processing is executed as same as `<ESC> "@"`.

`<T:TOP Command/E:END Command>`



The interface disconnection detection function through data reception timeout is controlled when  $s=5$  is specified.

When this function is enabled, the interface is determined to have been disconnected when no data is received for a specified period of time at the data read section of the printer.

When a disconnection is detected during a command execution, the command parsing is stopped.

$n1=0$  and  $n2=0$ : Initializes the interface disconnection detection function through data reception timeout.  
(Returns to the memory switch / Star Configuration settings. The initial value for the timeout time is 3 seconds.)

$n1=1$  : Set enable/disable and the timeout time for data reception timeouts.  
When  $n2$  is 0, the disconnection detection function is disabled due to data reception timeouts.  
When  $n2$  is anything except for 0, the data reception timeout is set. (Units: seconds, 1 to 255 seconds)

$n1=2$  and  $n2=0$ : Sends the current setting to the host.  
The data format returned to the host is as shown below.

`<Returned Data Formats>`

| [Code]  | ASCII | ESC | GS | ETX | s | n1 | n2 | [timeout setting] | NUL |
|---------|-------|-----|----|-----|---|----|----|-------------------|-----|
| Hex.    |       | 1B  | 1D | 03  | s | n1 | n2 | [timeout setting] | 00  |
| Decimal | 27    |     | 29 | 3   | s | n1 | n2 | [timeout setting] | 0   |

Note) Echoes back the specified contents from the host as is until ESC GS ETX s n1 n2, and then sends the print end counter value and NUL.

This function is invalid at the time of program rewriting.

## **ESC # \* LF NUL**

[Name] Get printer version

|        |         |     |    |    |    |     |
|--------|---------|-----|----|----|----|-----|
| [Code] | ASCII   | ESC | #  | *  | LF | NUL |
|        | Hex.    | 1B  | 23 | 2A | 0A | 00  |
|        | Decimal | 27  | 35 | 42 | 10 | 0   |

[Defined range] ---

[Initial Value] ---

[Function] Transmits the printer version.  
ESC # \* , "printer version" LF NUL  
<Example for mPOP Ver1.0: ESC # \* , mPOP Ver1.0 LF NUL >

## **ESC GS ) I pL pH fn [parameter]**

[Name] Transmit printer information

|        |         |     |    |    |    |    |    |    |             |
|--------|---------|-----|----|----|----|----|----|----|-------------|
| [Code] | ASCII   | ESC | GS | )  | I  | pL | pH | fn | [parameter] |
|        | Hex.    | 1B  | 1D | 29 | 49 | pL | pH | fn | [parameter] |
|        | Decimal | 27  | 29 | 41 | 73 | pL | pH | fn | [parameter] |

[Function] Executes printer information processing.  
- "pL" and "pH" specify the number of parameters after "fn" as "pL + pH \* 256" bytes.  
- See the function specifications for details on [parameter].

| fn | Function No. | Function Name                         |
|----|--------------|---------------------------------------|
| 48 | Function 48  | Transmit all types of multibyte fonts |
| 49 | Function 49  | Transmit printer information          |
| 50 | Function 50  | Transmit the remaining battery power  |
| 51 | Function 51  | Transmit installed I/F kind           |
| 52 | Function 52  | Transmit external device information  |

## <Function 48> ESC GS ) I pL pH fn d1 d2

[Name] Transmit all types of multibyte fonts

| [Code]  | ASCII | ESC | GS | )  | I  | pL | pH | fn | d1 | d2 |
|---------|-------|-----|----|----|----|----|----|----|----|----|
| Hex.    |       | 1B  | 1D | 29 | 49 | pL | pH | fn | d1 | d2 |
| Decimal |       | 27  | 29 | 41 | 73 | pL | pH | fn | d1 | d2 |

[Defined range] pL = 3, pH = 0  
fn = 48  
d1 = 0, d2 = 0

[Function] Transmits all types of multibyte fonts installed in the printer.

[Detail] Information is transmitted in the following format:  
ESC GS ) I pL pH fn k1 k2 [multibyte font type 1, multibyte font type 2, ...] LF NUL  
Where, k1 and k2 indicate the number of data bytes (k1+k2x256) transmitted after the multibyte font type.  
When two or more multibyte fonts are installed, the fonts are transmitted separated by a separator (2Ch).

The multibyte font type is transmitted as a character string.

| Multibyte font type        | Transmitted character string |
|----------------------------|------------------------------|
| Japanese                   | KANJI JAPANESE               |
| Simplified Chinese GB2312  | CHINA GB2312                 |
| Simplified Chinese GB18030 | CHINA GB18030                |
| Traditional Chinese BIG5   | TAIWAN BIG-5                 |
| Korean                     | KOREA C-5601C                |

Example: When simplified Chinese GB18030 and standard Chinese BIG5 are installed, the following is transmitted.

ESC GS ) I pL pH fn k1 k2 CHINA GB18030 , TAIWAN BIG-5 , LF NUL (Where, k1 = 29, k2 = 0)

When no multibyte font is installed, the following is transmitted.

ESC GS ) I pL pH fn k1 k2 LF NUL

## <Function 49> ESC GS ) I pL pH fn

[Name] Transmit Printer Information

|        |         |     |    |    |    |    |    |    |
|--------|---------|-----|----|----|----|----|----|----|
| [Code] | ASCII   | ESC | GS | )  | I  | pL | pH | fn |
|        | Hex.    | 1B  | 1D | 29 | 49 | pL | pH | fn |
|        | Decimal | 27  | 29 | 41 | 73 | pL | pH | fn |

[Defined range] pL = 1, pH = 0  
fn = 49

[Function] Transmit the printer information.

[Detail] Information is transmitted in the following format:

ESC GS ) I pL pH fn [Tag name = parameter, Tag name = parameter,...] LF NUL

Each parameter is accompanied by the tag name on the top and sent correspondingly to its tag name.

The tag name is followed by an equal sign and the subsequent part is the parameter.

Each set of a tag and a parameter is separated by a delimiter “,” (2CH).

The number of parameters varies depending on the printer which is transmitting information.

Information (a set of a tag and a parameter) is transmitted in order from the top of the list shown below only if it corresponds to the printer.

LF NUL represents a termination, and the tag and its parameter are not transferred afterward.

The parameter is transmitted as a character string.

When HW Ver = 1.0

ESC GS ) I pL pH fn PrHwV=1.0 LF NUL

When information can't be acquired, the data below is sent.

ESC GS ) I pL pH fn LF NUL

| Sent order | Tag     | Parameter information               |                                                                      | Spec                                           |
|------------|---------|-------------------------------------|----------------------------------------------------------------------|------------------------------------------------|
| ↓          | PrHwV   | Printer HW Ver.                     | *1                                                                   | Spec.1, 2, 3, 4, 5, 7, 8, 9, 10,11,12,13,14    |
| ↓          | PrSrN   | Product Serial Number               | Fixed 16 digits<br>("NUL" is filled when less than 16 digits.)       | Spec.1, 2, 3, 4, 5, 6, 7, 8, 9, 10,11,12,13,14 |
| ↓          | BtDvN   | Bluetooth Device Name               | Fixed 16 digits<br>("NUL" is filled when less than 16 digits.)<br>*3 | Spec.1, 2, 3, 4, 5, 8, 9,11,12,13,14           |
| ↓          | BtAtC   | Bluetooth AutoConnection            | AutoConnection<br>invalid: BtAtC=00 valid: BtAtC=01<br>*2, *3        | Spec.1, 2, 3, 4, 5, 8, 9,11,12,13,14           |
| ↓          | BtIpN   | Bluetooth iOS Port Name             | Fixed 16 digits<br>("NUL" is filled when less than 16 digits.)<br>*3 | Spec.1, 2, 3, 4, 5, 8, 9,11,12,13,14           |
| ↓          | BtNpP   | Bluetooth New Pairing               | New Pairing<br>invalid: BtNpP=00 valid: BtNpP=01<br>*3               | Spec.1, 2, 8,12                                |
| ↓          | BtDsC   | Bluetooth Search Permission Setting | Search prohibited: BtDsC=00;<br>Search permitted: BtDsC=01 *3        | Spec.3, 4, 5, 9,11,12,13,14                    |
| ↓          | BtAdS   | Bluetooth Address                   | Fixed 12 digits *3                                                   | Spec.3, 4, 5, 9,11,12,13,14                    |
| ↓          | LaNmA   | LAN MAC Address                     | Fixed 12 digits                                                      | Spec.3, 4, 5, 7, 9, 10,11,13,14                |
| ↓          | UsSrN   | USB Serial Number                   | Maximum 16 digits                                                    | Spec.3, 4, 5, 7, 8, 9,10,11,12,13, 14          |
| ↓          | PrFnV   | Font File Ver.                      | Maximum 16 digits                                                    | Spec.2, 5, 7, 8, 10,11,12,13,14                |
| ↓          | PrMdL   | Printer Model Name                  |                                                                      | Spec.10,11,12,13,14                            |
| ↓          | WLanMac | WLAN MAC Address                    | Fixed 12 digits *4                                                   | Spec.13,14                                     |
| ↓          | CutEq   | Cutter Mounting Information         | Cutter not mounted: CutEq =00<br>Cutter mounted: CutEq =01           | Spec.14                                        |

[Model limitation]

\*1 :

mPOP: Handling of Printer Hardware Version depending on the FW version.

< F/W Ver1.3 or older >

1.0 is returned.

< F/W Ver.2.0 or later >

If a circuit board which supports DK ports is equipped, 2.0 or 3.0 is returned.

If a circuit board which does not support DK ports is equipped, 1.0 or 4.0 is returned.

\*2 :

mC-Print : LB model only

Tag is not returned by models which do not support Bluetooth or CB models.

\*3 :

Models supporting Bluetooth only

Tag is not returned by models which do not support it.

\*4 :

Models supporting WLAN only

Tag is not returned by models which do not support it.

## <Function 50> ESC GS ) I pL pH fn

|        |                                      |     |    |    |    |    |    |    |
|--------|--------------------------------------|-----|----|----|----|----|----|----|
| [Name] | Transmit the remaining battery power |     |    |    |    |    |    |    |
| [Code] | ASCII                                | ESC | GS | )  | I  | pL | pH | fn |
|        | Hex.                                 | 1B  | 1D | 29 | 49 | pL | pH | fn |
|        | Decimal                              | 27  | 29 | 41 | 73 | pL | pH | fn |

[Defined range] pL = 1, pH = 0  
fn = 50

[Function] Transmit the remaining battery power.

[Detail] Information is transmitted in the following format:  
ESC GS ) I pL pH fn [Tag name = parameter, Tag name = parameter,...] LF NUL

Each parameter is accompanied by the tag name on the top and sent correspondingly to its tag name.

The tag name is followed by an equal sign and the subsequent part is the parameter.

Each set of a tag and a parameter is separated by a delimiter “,” (2CH).

The number of parameters varies depending on the printer which is transmitting information.

Information (a set of a tag and a parameter) is transmitted in order from the top of the list shown below only if it corresponds to the printer.

LF NUL represents a termination, and the tag and its parameter are not transferred afterward.

The parameter is transmitted as a character string.

When a battery is empty.

ESC GS ) I pL pH fn PrBtY=Empty LF NUL

When information can't be acquired, the data below is sent.

ESC GS ) I pL pH fn LF NUL

| ent order | Tag         | Parameter information   |                         |
|-----------|-------------|-------------------------|-------------------------|
|           |             | Remaining battery power | Near Empty: PrBtY=Empty |
| ↓         | PrBtY       |                         | Low: PrBtY=Low          |
|           |             |                         | High: PrBtY=High        |
|           |             |                         | Full: PrBtY=Full        |
|           |             |                         |                         |
| ↓         | (Undefined) | (Undefined)             | (Undefined)             |
| ↓         | (Undefined) | (Undefined)             | (Undefined)             |

## <Function 51> ESC GS ) I pL pH fn d1 d2

[Name] Transmit installed I/F kind

[Code] ASCII ESC GS ) I pL pH fn d1 d2  
Hex. 1B 1D 29 49 pL pH fn d1 d2  
Decimal 27 29 41 73 pL pH fn d1 d2

[Defined range] pL = 3, pH = 0  
fn = 51  
d1 = 0, d2 = 0

[Function] All kinds of I/F installed in the printer are transmitted.  
I/F represents the StarPRNT command reception port.

[Detail] Information is transmitted in the following format:  
ESC GS ) I pL pH fn k1 k2 [I/F type1, I/F type2, .....] LF NUL  
k1 and k2 indicate the number of transmission data bytes (k1+k2x256) after the I/F types.  
When there are multiple I/F types in the printer, they are delimited by commas (2Ch).  
The kind of I/F type is sent as character string data.

| I/F Type                      | Transmitting string |
|-------------------------------|---------------------|
| USB-B                         | USB-B               |
| USB-A(iOS)                    | USB-A               |
| Bluetooth                     | BT-I                |
| Ethernet                      | ETHERNET            |
| USB-C                         | USB-C               |
| Bluetooth (iOS not supported) | BT                  |
| USB-A(Android)                | USB-A-AOA           |
| USB-C (iOS)                   | USB-C-I             |
| WLAN                          | WLAN                |

Example:

When USB-B, USB-A, Bluetooth and Ethernet are installed in the printer:  
ESC GS ) I pL pH fn k1 k2 USB-B,USB-A,BT-I,ETHERNET,LF NUL  
(However, k1 = 28, k2 =0)

## <Function 52> ESC GS ) I pL pH fn d1 d2

[Name] Transmit external device information

[Code] ASCII ESC GS ) I pL pH fn d1 d2  
Hex. 1B 1D 29 49 pL pH fn d1 d2  
Decimal 27 29 41 73 pL pH fn d1 d2

[Defined range] pL = 3, pH = 0  
fn = 52  
d1 = 0, d2 = 0

[Function] Transmits information about the external device connected to the printer.

[Detail] Information is transmitted in the following format:  
ESC GS ) I pL pH fn k1 k2 [external device information1, external device information 2 , .....] LF  
NUL  
k1 and k2 indicate the number of transmission data bytes (k1+k2x256) after the external device information.  
When there are a lot of information about external devices, they are delimited by commas (2Ch).

Example: When a MCS10 is connected to the external device and the MCS10 FW version is 1.0.  
ESC GS ) I pL pH fn k1 k2 DkMdl=MCS10 , DkVer=1.0 , LF NUL (k1 = 24, k2 =0)

When an external device is not connected or when a connected external device is not supported by this function, only the tags related to the corresponding external device are transmitted.

Example: When an external device is not connected to the external device connection terminal of a model that supports tags DkMdl and DkVer.

ESC GS ) I pL pH fn k1 k2 DkMdl=, DkVer=, LF NUL

| Tag   | Parameter information                                                       |                                                                                                                                  |
|-------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| DkMdl | External device connection terminal<br>Connected device model information   | Model Name: MCS10 : DkMdl=MCS10<br>When these tags are transmitted from the printer, the data for tag DkVer is also transmitted. |
| DkVer | External device connection terminal<br>Connected device version information | When these tags are transmitted from the printer, the data for tag DkMdl is also transmitted.                                    |

## ESC GS J pL pH fn [parameter]

[Name] Printer information (JSON format) control

[Code] ASCII      ESC    GS    J    pL   pH   fn   [parameter]  
Hex.          1B    1D   4A   pL   pH   fn   [parameter]  
Decimal       27    29   74   pL   pH   fn   [parameter]

[Function] Controls printer information (JSON format).

- pL and pH specify the parameter count (pL+pH×256) in bytes after fn.
- For [parameter], see the function specifications.

| fn | Function No. | Function name         |
|----|--------------|-----------------------|
| 48 | Function 48  | Send log information  |
| 49 | Function 49  | Clear log information |

## <Function 48> ESC GS J pL pH fn d1 d2

[Name] Send log information

[Code]    ASCII    ESC   GS    J    pL   pH   fn   d1   d2  
           Hex.       1B   1D   4A   pL   pH   fn   d1   d2  
           Decimal    27   29   74   pL   pH   fn   d1   d2

[Defined Area]    pL = 3, pH = 0  
                       fn = 48  
                        $0 \leq d1 \leq 1$   
                       d2 = 0

[Function]        Sends subject log information in JSON format.

[Details]         The subject log information is sent in the format below.  
                       ESC GS J p1 p2 p3 p4 fn j1 j2 ... jk  
                       When sending, p1, p2, p3, and p4 indicate the number of transmission bytes after fn.

| d1 | Control content                     |
|----|-------------------------------------|
| 0  | Send all log data                   |
| 1  | Send interface information log data |

When values outside the defined range for each are set in d1 and d2, information is sent in the format below.

ESC GS J 1 0 0 0 fn (fn = 48)

## <Function 49> ESC GS J pL pH fn m d1 d2 d3

[Name] Clear log information

[Code] ASCII ESC GS J pL pH fn m d1 d2 d3  
Hex. 1B 1D 4A pL pH fn m d1 d2 d3  
Decimal 27 29 74 pL pH fn m d1 d2 d3

[Defined Area] pL = 5, pH = 0  
fn = 49  
 $0 \leq m \leq 1$   
d1 = 67('C'), d2 = 76('L'), d3 = 82('R')

[Function] Clears subject log information.

[Details] The subject log information is cleared.

|   |                                      |
|---|--------------------------------------|
| m | Control content                      |
| 0 | Clear all log data                   |
| 1 | Clear interface information log data |

After this command is received, logs are not saved until the power is turned off and on again.

### 2.3.21. Print Settings

#### **ESC RS A n**

[Name] Print area setting

|        |         |     |    |    |   |
|--------|---------|-----|----|----|---|
| [Code] | ASCII   | ESC | RS | A  | n |
|        | Hex.    | 1B  | 1E | 41 | n |
|        | Decimal | 27  | 30 | 65 | n |

[Defined Area]  $0 \leq n \leq 255$

[Initial Value] Memory switch / Star Configuration setting

[Function] Sets the print area according to n.

Set n to be the same as the print area setting in the memory switch.

For the print area selected with n, refer to the product specifications of that printer or to "Appendix 10 Print Area Setting".

When this command is processed, if print data that has not been printed exists in the image buffer, printing is performed first, and then the print area is set.

When this command is processed, if printing is being performed, the printer waits for a stoppage of printing, and then the print area is set.

The settings related to horizontal position described below are initialized.

- Left margin
- Right margin
- Current position

This command setting will not be initialized by the ESC @ command.

This command setting is initialized by a printer reset.

"n" of this command is the same as with the memory switch. However, caution is necessary because not all print areas described in the memory switch are guaranteed with the product.

Transmission example of this command (Because the horizontal position related settings are initialized by this command, after sending this command, settings must be performed.)

ESC @ → Print area setting command → Each setting command → Print data

This command is disabled in page mode.

## 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] | Spec. 1 | $0 \leq n \leq 6$ | $48 \leq n \leq 54$ | ("0" $\leq$ n "6") |
|                | Spec. 2 | $0 \leq n \leq 3$ | $48 \leq n \leq 51$ | ("0" $\leq$ n "3") |
|                | Spec. 3 | $0 \leq n \leq 3$ | $48 \leq n \leq 51$ | ("0" $\leq$ n "3") |
|                | Spec. 4 | $0 \leq n \leq 2$ | $48 \leq n \leq 50$ | ("0" $\leq$ n "2") |
|                | Spec. 5 | $0 \leq n \leq 7$ | $48 \leq n \leq 55$ | ("0" $\leq$ n "7") |

[Initial Value] Memory switch / Star Configuration 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.

Spec. 1

| n     | Single Color Printing Mode        | 2-color Printing Mode Red Print Density *1 |
|-------|-----------------------------------|--------------------------------------------|
| 0, 48 | Print density + 3                 | —                                          |
| 1, 49 | Print density + 2                 | —                                          |
| 2, 50 | Print density + 1                 | —                                          |
| 3, 51 | Standard print density (Standard) | —                                          |
| 4, 52 | Print density - 1                 | —                                          |
| 5, 53 | Print density - 2                 | —                                          |
| 6, 54 | Print density - 3                 | —                                          |

Spec. 2

| n     | Single Color Printing Mode        | 2-color Printing Mode Red Print Density *1 |
|-------|-----------------------------------|--------------------------------------------|
| 0, 48 | Print density + 3                 | —                                          |
| 1, 49 | Print density + 2                 | —                                          |
| 2, 50 | Print density + 1                 | —                                          |
| 3, 51 | Standard print density (Standard) | —                                          |

Spec. 3

| n     | Single Color Printing Mode | 2-color Printing Mode Red Print Density *1 |
|-------|----------------------------|--------------------------------------------|
| 0, 48 | Medium                     | —                                          |
| 1, 49 | Low                        | —                                          |
| 2, 50 | High                       | —                                          |
| 3, 51 | Special                    | —                                          |

Spec. 4

| n     | Single Color Printing Mode | 2-color Printing Mode Red Print Density *1 |
|-------|----------------------------|--------------------------------------------|
| 0, 48 | Medium                     | —                                          |
| 1, 49 | Low                        | —                                          |
| 2, 50 | High                       | —                                          |

Spec. 5

| n     | Single Color Printing Mode        |
|-------|-----------------------------------|
| 0, 48 | Print density + 3                 |
| 1, 49 | Print density + 2                 |
| 2, 50 | Print density + 1                 |
| 3, 51 | Standard print density (Standard) |
| 4, 52 | Print density - 1                 |
| 5, 53 | Print density - 2                 |
| 6, 54 | Print density - 3                 |
| 7, 55 | Print density +4                  |

\*1) See the appropriate printer specifications manual for details on the print modes that are available.

## 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] | Spec. 1 | $0 \leq n \leq 2$ | $48 \leq n \leq 50$ | ("0" $\leq$ n $\leq$ "2") |
|                | Spec. 2 | n=0, 2            | n=48, 50            | (n="0", "2")              |
|                | Spec. 3 | $0 \leq n \leq 2$ | $48 \leq n \leq 50$ | ("0" $\leq$ n $\leq$ "2") |

[Initial Value] Memory switch / Star Configuration setting

[Function] Sets print speed.  
This command stops printing to be executed.  
Because two-color print 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 to the single color print mode.  
Invalid in page mode.

Spec. 1

| n     | Single Color Printing Mode | 2-color Printing Mode *1 |
|-------|----------------------------|--------------------------|
| 0, 48 | High speed                 | —                        |
| 1, 49 | Mid-speed                  | —                        |
| 2, 50 | Low speed                  | —                        |

Spec. 2

| n     | Single Color Printing Mode | 2-color Printing Mode *1 |
|-------|----------------------------|--------------------------|
| 0, 48 | High speed                 | —                        |
| 1, 49 | —                          | —                        |
| 2, 50 | Low speed                  | —                        |

Spec. 3

| n     | Single Color Printing Mode | 2-color Printing Mode *1 |
|-------|----------------------------|--------------------------|
| 0, 48 | Mideum                     | —                        |
| 1, 49 | Low                        | —                        |
| 2, 50 | High                       | —                        |

\*1) See the appropriate printer specifications manual for details on the print modes that are available.

## 2.3.22. Special Command

### **ESC RS R n**

|        |                                     |     |    |    |   |
|--------|-------------------------------------|-----|----|----|---|
| [Name] | Selects the special location of use |     |    |    |   |
| [Code] | ASCII                               | ESC | RS | R  | n |
|        | Hex.                                | 1B  | 1E | 52 | n |
|        | Decimal                             | 27  | 30 | 82 | n |

[Defined Area]  $0 \leq n \leq 7$

[Initial Value] Memory switch / Star Configuration setting

[Function] Select the special location of use.

This command is enabled only when at the top of the line.

Set the printer to its default settings by this command.

If choose destination that is currently selected, executes initialization of various settings.

The printer reset or initialize-command initializes the setting of this command.

Invalid in page mode.

| n | location of use | Changes from the standard                                                                                                             | Note                                                                                                |
|---|-----------------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 0 | Standard        | -                                                                                                                                     | -                                                                                                   |
| 1 | Thai            | - Thai precomposed characters are supported.<br>- ANK fonts specialized for Thai are selected.<br>- The baseline for Thai is adopted. | The below settings are invalid<br>Page mode, International<br>characters, slash 0 and large<br>font |
| 2 | (Reserved)      |                                                                                                                                       |                                                                                                     |
| 3 | (Reserved)      |                                                                                                                                       |                                                                                                     |
| 4 | (Reserved)      |                                                                                                                                       |                                                                                                     |
| 5 | (Reserved)      |                                                                                                                                       |                                                                                                     |
| 6 | (Reserved)      |                                                                                                                                       |                                                                                                     |
| 7 | (Reserved)      |                                                                                                                                       |                                                                                                     |

### **ESC GS m p k n**

[Name] Cleaning notification / parts replacement notification control

|        |         |     |    |     |   |   |   |
|--------|---------|-----|----|-----|---|---|---|
| [Code] | ASCII   | ESC | GS | m   | p | k | n |
|        | Hex.    | 1B  | 1D | 6D  | p | k | n |
|        | Decimal | 27  | 29 | 109 | p | K | n |

[Defined Area]  $p=0$   
 $0 \leq k \leq 1$   
 $n=0$

[Initial Value] - - -

[Function] Controls the cleaning notification and parts replacement notification.

• p specifies the subject part.

|   |              |
|---|--------------|
| p | Subject part |
| 0 | All          |

• k specifies the subject notification type.

|   |                                |
|---|--------------------------------|
| k | Subject notification type      |
| 0 | Cleaning notification          |
| 1 | Parts replacement notification |

• n specifies the control content.

|   |                     |
|---|---------------------|
| n | Control content     |
| 0 | Cancel notification |

### 2.3.23. UTF Command

#### **ESC GS ) U pL pH fn [parameter]**

|        |             |     |    |    |    |    |    |    |             |
|--------|-------------|-----|----|----|----|----|----|----|-------------|
| [Name] | Set Unicode |     |    |    |    |    |    |    |             |
| [Code] | ASCII       | ESC | GS | )  | U  | pL | pH | fn | [parameter] |
|        | Hex.        | 1B  | 1D | 29 | 55 | pL | pH | fn | [parameter] |
|        | Decimal     | 27  | 29 | 41 | 85 | pL | pH | fn | [parameter] |

[Function] Runs processes related to Unicode.  
 •pL and pH specify the parameter count (pL + pH x 256) in bytes after fn.  
 •See the function specifications for details on [parameter].

| Fn | Function No. | Function Name                           |
|----|--------------|-----------------------------------------|
| 48 | Function 48  | Select UTF Code                         |
| 64 | Function 64  | Set 1byte priority or 2byte priority    |
| 65 | Function 65  | Set the UTF8 CJK Unified Ideograph font |

#### **<Function 48> ESC GS ) U pL pH fn m (fn=48)**

|        |                 |     |    |    |    |    |    |    |   |
|--------|-----------------|-----|----|----|----|----|----|----|---|
| [Name] | Select UTF Code |     |    |    |    |    |    |    |   |
| [Code] | ASCII           | ESC | GS | )  | U  | pL | pH | fn | m |
|        | Hex.            | 1B  | 1D | 29 | 55 | pL | pH | fn | m |
|        | Decimal         | 27  | 29 | 41 | 85 | pL | pH | fn | m |

[Defined range] pL = 2, pH = 0  
 fn = 48  
 m = 0, 1

[Initial Value] Invalid (At the time of shipment: m = 0)

[Function] Select UTF Code

| m | Function Name |
|---|---------------|
| 0 | Invalid       |
| 1 | UTF8 Valid    |

When the UTF is valid, code page characters and Kanji characters are specified by the selected UTF code. Only Kanji character types which are installed on the printer and selected can be printed by the UTF code.

## <Function 64> ESC GS ) U pL pH fn m (fn=64)

[Name] Setting of the Unicode ambiguous character

[Code] ASCII        ESC GS ) U pL pH fn m  
Hex.            1B 1D 29 55 pL pH fn m  
Decimal        27 29 41 85 pL pH fn m

[Defined range]    pL = 2, pH = 0  
                          fn = 64  
                          m = 0, 1

[Initial Value]    Spec. 1 : m = 0  
                          Spec. 2 : According to setting of memory switch / Star Configuration (Specification for the location of use (SBCS / MBCS))  
                                  MSW0-4=0: m=0  
                                  MSW0-4=1: m=1

[Function]            Specifies the 1byte or 2byte priority for ambiguous width characters (1byte/2byte) of Unicode.

| m | Function Name   |
|---|-----------------|
| 0 | 1 byte priority |
| 1 | 2 byte priority |

## <Function 65> ESC GS ) U pL pH fn n1 n2 n3 n4 (fn=65)

[Name] Set the UTF-8 CJK Unified Ideograph font

[Code] ASCII ESC GS ) U pL pH fn n1 n2 n3 n4  
Hex. 1B 1D 29 55 pL pH fn n1 n2 n3 n4  
Decimal 27 29 41 85 pL pH fn n1 n2 n3 n4

[Defined range] pL = 5, pH = 0  
fn = 65  
 $0 \leq n1, n2, n3, n4 \leq 4$

[Initial Value] Memory switch / Star Configuration.

MSW0-8 to 0-A (multi-byte character setting) / configurations[<num>].character.character\_code

0-8~0-A (Multi-byte character setting)

| Memory Switch / Star Configuration Setting* |        |        |                              | Initial Value of parameter |    |    |    | Priority Order                                                                                   |
|---------------------------------------------|--------|--------|------------------------------|----------------------------|----|----|----|--------------------------------------------------------------------------------------------------|
| MSW0-A                                      | MSW0-9 | MSW0-8 | Multi-byte character         | n1                         | n2 | n3 | n4 |                                                                                                  |
| 0                                           | 0      | 0      | Simplified Chinese           | 2                          | 3  | 1  | 4  | Simplified Chinese<br>→Traditional Chinese<br>→Japanese language characters<br>→Hangeul language |
| 0                                           | 0      | 1      | Japanese language characters | 1                          | 2  | 3  | 4  | Japanese language characters<br>→Simplified Chinese<br>→Traditional Chinese<br>→Hangeul language |
| 0                                           | 1      | 0      | Traditional Chinese (BIG5)   | 3                          | 2  | 1  | 4  | Traditional Chinese<br>→Simplified Chinese<br>→Japanese language characters<br>→Hangeul language |

\* For the multi-byte character setting with Star Configuration, refer to the Star Configuration Format Specifications.

[Function] Set the font for the output language for Unicode CJK Unified Ideographs.  
Set the font language for parameter n1 from the following table.  
If the character to be output is not in the font specified in n1, then the next parameter which specifies a font that possesses the character will be used, in order of preference.  
If the character does not exist in any of the specified fonts, then a dummy “.” character will be used.

However, if n1, n2, n3, and n4 are all set to 0, then the characters will be output according to the default language preferences.

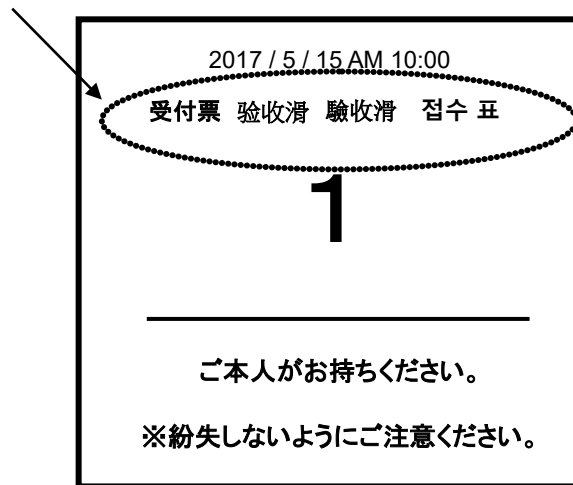
| N | Output font                  |
|---|------------------------------|
| 0 | None                         |
| 1 | Japanese language characters |
| 2 | Simplified Chinese           |
| 3 | Traditional Chinese          |
| 4 | Hangeul language             |

Example 1) Parameter settings for output using the following language preferences: Japanese → Simplified Chinese → Traditional Chinese → Hangul  
n1 = 1, n2 = 2, n3 = 3, n4 = 4

Example 2) Parameter setting when outputting only Japanese kanji.  
n1 = 1, n2 = 0, n3 = 0, n4 = 0

The following is an example of how this command can be used in print.

Print Example) Printing multiple languages in one line, starting with “受付票”.



Transmit the command before each word and change the language to specify

Japanese for "受付票", Simplified Chinese for "验收滑", Traditional Chinese for "驗收滑", and Hangul for "접수 표".

Specifically, the n parameters of this command are sent to the printer with the values and positions shown in examples ① through ⑤ below.

Print Data 「①受付票②验收滑③驗收滑④접수 표⑤<LF>」

- ① n1 = 1, n2 = 0, n3 = 0, n4 = 0 : To output Japanese only
- ② n1 = 2, n2 = 0, n3 = 0, n4 = 0 : To output Simplified Chinese only
- ③ n1 = 3, n2 = 0, n3 = 0, n4 = 0 : To output Traditional Chinese only
- ④ n1 = 4, n2 = 0, n3 = 0, n4 = 0 : Hangul only
- ⑤ n1 = 1, n2 = 0, n3 = 0, n4 = 0 : To output Japanese only (\*Japanese is specified because we want to print the following characters in that language)

Printing results

受付票 验收滑 驗收滑 접수 표

If the command is not transmitted when changing the font.

Print Example 2) Print Data 「①受付票 验收滑 驗收滑 접수 표<LF>」

- ① n1 = 1, n2 = 2, n3 = 3, n4 = 4 : Japanese → Simplified Chinese → Traditional Chinese → Hangul

Printing results

受付票 验收滑 驗收滑 접수 표

Except for the Hangul characters and “驗”, all characters are output using the highest preference, Japanese (Gothic). In order for the font to be consistent within each word, the highest preference must be specified for each location where the language changes, as shown in Sending Example 1.

### 2.3.24. 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]  $0 \leq d \leq 3$   
 $48 \leq d \leq 51$  ("0"  $\leq d \leq$  "3")  
n = 116 ("t")

[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.<br>If there is print data remaining in the line buffer, printing of line buffer is executed before the operation described above.                                 |
| 1, 49 | Partial cut at the current position.<br>If there is print data remaining in the line buffer, printing of line buffer is executed before the operation described above.                              |
| 2, 50 | After executing top of form, paper is fed to cutting position, then a full cut.<br>Print data in line buffer is printed before the operation described above.                                       |
| 3, 51 | After executing top of form, paper is fed to cutting position, then a partial cut.<br>Print data in line buffer is printed before the operation described above.                                    |
| 116   | After executing top of form, feed paper to the tear bar position.<br>If there is print data remaining in the line buffer, printing of line buffer is executed before the operation described above. |

(\*) 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.

(\*) The printer which is not equipped with an auto-cutter works in the following ways.

- Command for full cut at the current position : Executes printing
- Command for feeding paper to cutting position : Executes printing and feeds paper to the tear bar position.

## **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]  | $1 \leq n \leq 127$                                    |     |    |   |
| [Initial Value] | (Form feed amount initial value x 42)                  |     |    |   |
| [Function]      | When black mark is effective, this command is ignored. |     |    |   |

## **ESC C NUL n**

|                 |                                                        |     |    |     |   |
|-----------------|--------------------------------------------------------|-----|----|-----|---|
| [Name]          | Set page length to n x 24 mm units                     |     |    |     |   |
| [Code]          | ASCII                                                  | ESC | C  | NUL | n |
|                 | Hex.                                                   | 1B  | 43 | 0   | n |
|                 | Decimal                                                | 27  | 67 | 0   | n |
| [Defined Area]  | $1 \leq n \leq 22$                                     |     |    |     |   |
| [Initial Value] | (Form feed amount initial value x 42)                  |     |    |     |   |
| [Function]      | When black mark is effective, this command is ignored. |     |    |     |   |

### 2.3.25. 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]  $0 \leq n \leq 1$

$48 \leq n \leq 49$  ("0"  $\leq n \leq$  "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 @.

However, print color is initialized to black by the ESC @ 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]  | $0 \leq n \leq 2$<br>$48 \leq n \leq 50$ ("0" $\leq n \leq$ "2") |
| [Initial Value] | n = 0, 48                                                        |
| [Function]      | Select/cancel 2 color print mode                                 |

| N     | Select/cancel 2 color print mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0, 48 | <p>Cancel 2-color printing mode</p> <p>When in 2-color print mode, the 2-color print mode is canceled by this command.</p> <p>This command is ignored when the 2-color print mode is already cancelled.</p> <p>The specification of this command is not cleared by ESC @.</p> <p>The following processes are executed by canceling the 2-color print mode using this command.</p> <ul style="list-style-type: none"> <li>• Prints data in line buffer in 2-color print mode, if unprinted data exists in the line buffer.</li> <li>• Waits to stop printing when printing in 2-color print mode.</li> <li>• Recovers logo print setting to single color mode setting.</li> </ul>                                                                    |
| 1, 49 | <p>Select 2-color printing mode</p> <p>When in single color print mode, the 2-color print mode is selected by this command.</p> <p>This command is ignored already in the 2-color print mode.</p> <p>The specification of this command is not cleared by ESC @.</p> <p>The following processes are executed by selecting the 2-color print mode using this command.</p> <ul style="list-style-type: none"> <li>• Prints data in line buffer in the single color print mode, if unprinted data exists in the line buffer.</li> <li>• Waits to stop printing when printing in single-color print mode.</li> <li>• Initializes print color setting (2-color print mode setting)</li> <li>• Sets logo print setting to 2 color mode setting.</li> </ul> |

Invalid in page mode.

## ESC 4

[Name] Specifying white/black inversion

|        |         |     |    |
|--------|---------|-----|----|
| [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] Cancellation of 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.

### 2.3.26. 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]  $1 \leq n1 \leq 127$

$1 \leq n2 \leq 127$

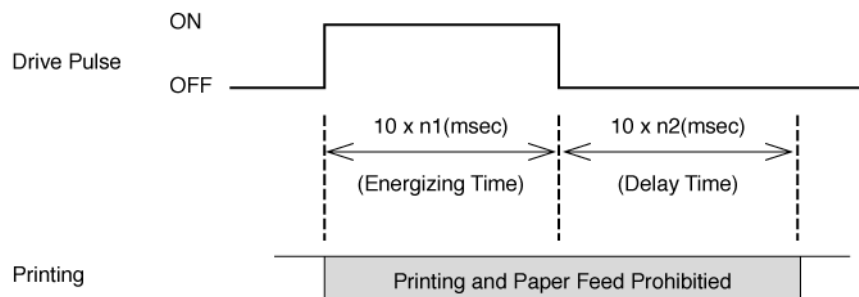
[Initial Value] n1 = 20 (Energizing time: 200 msec)

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)



[Model limitation]

mPOP: This is handled differently depending on the FW version.

<F/W Ver1.0 to Ver.1.3>

This command is ignored.

<F/W Ver.2.0 or later>

- If the hardware supports DK ports, this command is set as the drive condition of the external drawer.

- If the hardware does not support DK ports, this command is ignored.

## 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.  
For the additional specifications when a melody speaker is connected, refer to Appendix 9.  
For the melody speaker specifications, refer to the melody speaker product specifications.

[Model limitation] mPOP : This is handled differently depending on the FW version.  
<F/W Ver1.0 to Ver.1.3>  
The internal drawer is driven by this command.  
<F/W Ver.2.0 or later>  
- If the hardware supports DK ports, drawers (internal/external) subject to driving follow the memory switch settings.  
- If the hardware does not support DK ports, the internal drawer is driven.

## 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.  
For the additional specifications when a melody speaker is connected, refer to Appendix 9.  
For the melody speaker specifications, refer to the melody speaker product specifications.

[Model limitation] mPOP : This is handled differently depending on the FW version.  
<F/W Ver1.0 to Ver.1.3>  
The internal drawer is driven by this command.  
<F/W Ver.2.0 or later>  
- If the hardware supports DK ports, drawers (internal/external) subject to driving follow the memory switch settings.  
- If the hardware does not support DK ports, the internal drawer is driven.

## 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.  
For the additional specifications when a melody speaker is connected, refer to Appendix 9.  
For the melody speaker specifications, refer to the melody speaker product specifications.

[Model limitation]

mPOP : This is handled differently depending on the FW version.

<F/W Ver1.0 to Ver.1.3>  
This command is ignored.

<F/W Ver.2.0 or later>

- If the hardware supports DK ports, drawers (internal/external) subject to driving follow the memory switch settings.  
When the external drawer is driven, it applies the drive setting conditions from the setting command (ESC BEL n1 n2) of the external drive device pulse width.
- If the hardware does not support DK ports, this command is ignored.

## 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.  
For the additional specifications when a melody speaker is connected, refer to Appendix 9.  
For the melody speaker specifications, refer to the melody speaker product specifications.

[Model limitation]

mPOP: This is handled differently depending on the FW version.

<F/W Ver1.0 to Ver.1.3>

This command is ignored.

<F/W Ver.2.0 or later>

- If the hardware supports DK ports, drawers (internal/external) subject to driving follow the memory switch settings.

When the external drawer is driven, it applies the drive setting conditions from the setting command (ESC BEL n1 n2) of the external drive device pulse width.

- If the hardware does not support DK ports, this command is ignored.

## 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]  $1 \leq m \leq 2$   $49 \leq m \leq 50$

$0 \leq n1 \leq 255$

$0 \leq n2 \leq 255$

[Initial Value] n1=0, n2=0

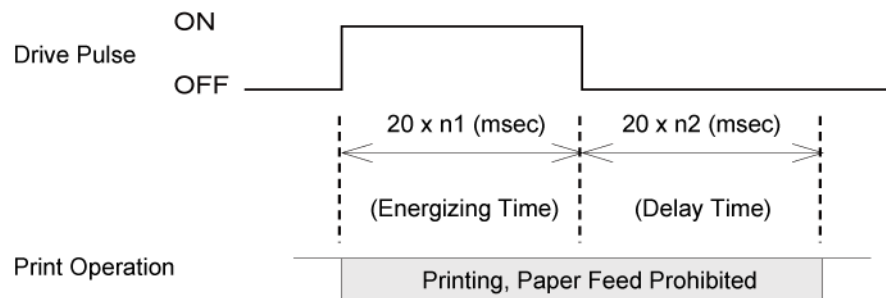
[Function] Sets external buzzer derive pulse condition.  
m specifies the buzzer drive terminal to perform the condition settings.

| 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> “@”.

## ESC GS EM DC2 m n1 n2

[Name] External buzzer drive execution

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

[Defined Area]  $1 \leq m \leq 2, 49 \leq m \leq 50$

$1 \leq n1 \leq 20$

$n2=0$

[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 n1 n2.

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  $(n2 \times 256 + n1)$ .

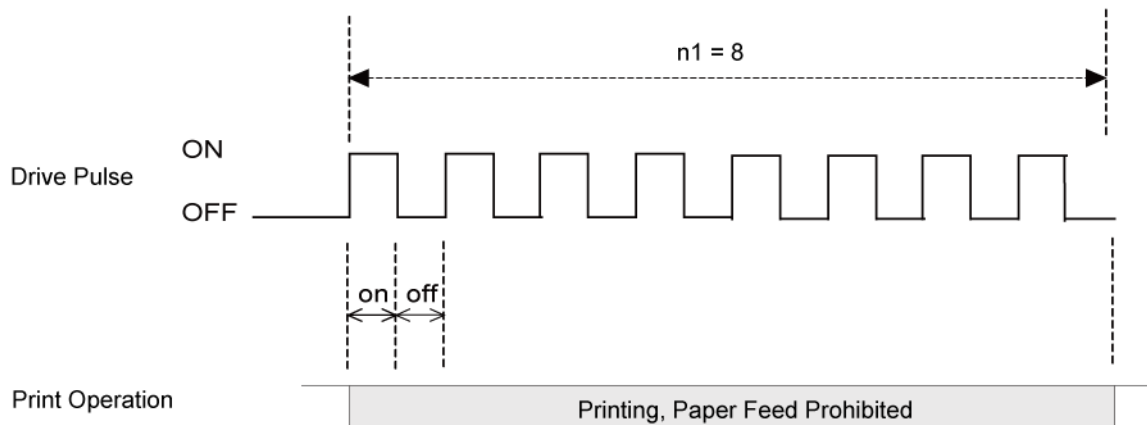
The buzzer will not ring while printing.

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.)

**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.

For the additional specifications when a melody speaker is connected, refer to Appendix 9.  
For the melody speaker specifications, refer to the melody speaker product specifications.

### 2.3.27. Melody Speaker Commands

#### **ESC GS s R z n k1 k2 k3 d1...dk**

[Name] Playback of received data

|        |         |     |    |     |    |   |   |    |    |    |    |     |    |
|--------|---------|-----|----|-----|----|---|---|----|----|----|----|-----|----|
| [Code] | ASCII   | ESC | GS | s   | R  | z | n | k1 | k2 | k3 | d1 | ... | dk |
|        | Hex.    | 1B  | 1D | 73  | 52 | z | n | k1 | k2 | k3 | d1 | ... | dk |
|        | Decimal | 27  | 29 | 115 | 82 | z | n | k1 | k2 | k3 | d1 | ... | dk |

[Defined Area]  $1 \leq z \leq 2$   
 $0 \leq n \leq 15, n=255$   
 $1 \leq (k=k1+k2 \times 256 + k3 \times 65536) \leq 128000$   
 $0 \leq d \leq 255$

[Initial Value] - - -

[Function]

If melody speaker playback is in progress when processing of this command is started, playback for this command is started after the playback in progress ends.

The sound data is played once as it is received and is not registered in nonvolatile memory.

z specifies the sampling frequency and number of quantizing bits of the sound data for playback.

The maximum number of seconds of the sound data that can be played varies depending on the sampling frequency and number of quantizing bits of the sound data for playback.

| z | Sampling frequency | Quantizing bits | Maximum number of seconds that can be registered |
|---|--------------------|-----------------|--------------------------------------------------|
| 1 | 12.8kHz            | 8bit            | 10 sec                                           |
| 2 | 12.8kHz            | 16bit           | 5 sec                                            |

n specifies the sound volume for playback.

| n   | volume                                     |
|-----|--------------------------------------------|
| 0   | OFF                                        |
| 1   | -27.31dB                                   |
| 2   | -17.44dB                                   |
| 3   | -12.94dB                                   |
| 4   | -9.99dB                                    |
| 5   | -7.79dB                                    |
| 6   | -6.04dB                                    |
| 7   | -4.58dB                                    |
| 8   | -3.34dB                                    |
| 9   | -2.25dB                                    |
| 10  | -1.28dB                                    |
| 11  | -0.41dB                                    |
| 12  | 0.00dB                                     |
| 13  | +1.45dB                                    |
| 14  | +2.40dB                                    |
| 15  | +2.98dB                                    |
| 255 | Determined by melody speaker DSW2 setting. |

The number of sound data bytes is specified by  $k1 + k2 \times 256 + k3 \times 65536$ .

d is PCM format sound data with a monaural code and the sampling frequency and number of quantizing bits specified by z.

The maximum size that can be played is 128000 bytes.

This command is ignored if the melody speaker is not connected when the printer power is turned on.

Use of this command when a drawer is connected to the external device connection terminal is prohibited because it may damage the drawer.

### 2.3.28. Barcode Reader Command

#### Barcode reader which corresponds

See each printer's product specifications manual

#### ESC GS B 0

|                 |                                                  |     |    |    |    |    |    |    |     |    |
|-----------------|--------------------------------------------------|-----|----|----|----|----|----|----|-----|----|
| [Name]          | Send data to a barcode reader                    |     |    |    |    |    |    |    |     |    |
| [Code]          | ASCII                                            | ESC | GS | B  | 0  | n1 | n2 | d1 | ... | dk |
|                 | Hex.                                             | 1B  | 1D | 42 | 30 | n1 | n2 | d1 | ... | dk |
|                 | Decimal                                          | 27  | 29 | 66 | 48 | n1 | n2 | d1 | ... | dk |
| [Defined Area]  | n1+n2x256 : BYTE count ( $1 \leq d \leq 65535$ ) |     |    |    |    |    |    |    |     |    |
|                 | K : n1+ n2x256                                   |     |    |    |    |    |    |    |     |    |
| [Initial Value] | ---                                              |     |    |    |    |    |    |    |     |    |
| [Function]      | The serial command is sent to a barcode reader.  |     |    |    |    |    |    |    |     |    |

#### ESC GS B 1

|                 |                             |     |    |    |    |
|-----------------|-----------------------------|-----|----|----|----|
| [Name]          | Status request              |     |    |    |    |
| [Code]          | ASCII                       | ESC | GS | B  | 1  |
|                 | Hex.                        | 1B  | 1D | 42 | 31 |
|                 | Decimal                     | 27  | 29 | 66 | 49 |
| [Defined Area]  | ---                         |     |    |    |    |
| [Initial Value] | ---                         |     |    |    |    |
| [Function]      | Receives the printer status |     |    |    |    |

The barcode data transmission format from the printer  
<ESC> <GS> B 1 n

| Bit (n) | Status                                        |
|---------|-----------------------------------------------|
| 0       | 0: No data in barcode buffer                  |
|         | 1: Data exists in barcode buffer              |
| 1       | 0: No connection of barcode reader            |
|         | 1: Barcode reader is connected to the printer |
| 2 – 7   | Reserved                                      |

## ESC GS B 2

[Name] Barcode data request

|        |         |     |    |    |    |
|--------|---------|-----|----|----|----|
| [Code] | ASCII   | ESC | GS | B  | 2  |
|        | Hex.    | 1B  | 1D | 42 | 32 |
|        | Decimal | 27  | 29 | 66 | 50 |

[Defined Area] - - -

[Initial Value] - - -

[Function] Acquire barcode data or the cereal command from a barcode reader.

The barcode data transmission format from the printer

<ESC><GS> B 2 n1 n2 d1...dk

n1+n2x256 : BYTE count ( $1 \leq d \leq 65535$ )

k : n1 + n2 x 256

## ESC GS B 3

[Name] Buffer clear

|        |         |     |    |    |    |
|--------|---------|-----|----|----|----|
| [Code] | ASCII   | ESC | GS | B  | 3  |
|        | Hex.    | 1B  | 1D | 42 | 33 |
|        | Decimal | 27  | 29 | 66 | 51 |

[Defined Area] - - -

[Initial Value] - - -

[Function] A barcode buffer of a printer is cleared.

### 2.3.29. Magnetic Card Reader Commands

#### Applicable Magnetic Card Readers

Refer to the printer's specification manuals.

Refer to Appendix 8 Specifications of Magnetic Cards for the readable formats.

#### **ESC M C**

|        |                |     |    |    |
|--------|----------------|-----|----|----|
| [Name] | Read ISO track |     |    |    |
| [Code] | ASCII          | ESC | M  | C  |
|        | Hex.           | 1B  | 4D | 43 |
|        | Decimal        | 27  | 77 | 67 |

[Function] Reads track data.

[Note] The printer waits to read a card.  
When reading is successful, the printer sends data to the host and exits the MSR mode.

#### **ESC M D**

|        |                |     |    |    |
|--------|----------------|-----|----|----|
| [Name] | Read ISO track |     |    |    |
| [Code] | ASCII          | ESC | M  | D  |
|        | Hex.           | 1B  | 4D | 44 |
|        | Decimal        | 27  | 77 | 68 |

[Function] Reads track data.

[Note] The printer waits to read a card.  
When reading is successful, the printer sends data to the host and exits the MSR mode.

#### **ESC M E**

|        |                   |     |    |    |
|--------|-------------------|-----|----|----|
| [Name] | Read ISO 2 tracks |     |    |    |
| [Code] | ASCII             | ESC | M  | E  |
|        | Hex.              | 1B  | 4D | 45 |
|        | Decimal           | 27  | 77 | 69 |

[Function] Reads data of 2 tracks simultaneously.

[Note] The printer waits to read a card.  
When reading is successful, the printer sends data to the host and exits the MSR mode.

## **ESC M F**

[Name] Read ISO 3 tracks  
 [Code] ASCII       ESC   M   F  
          Hex.       1B 4D 46  
          Decimal    27 77 70

[Function] Reads data of 3 tracks simultaneously.

[Note] The printer waits to read a card.  
 When reading is successful, the printer sends data to the host and exits the MSR mode.

## **ESC M G**

[Name] Read ISO track 3  
 [Code] ASCII       ESC   M   G  
          Hex.       1B 4D 47  
          Decimal    27 77 71

[Function] Reads data of ISO track 3

[Note] The printer waits to read a card.  
 When reading is successful, the printer sends data to the host and exits the MSR mode.

## **ESC M J**

[Name] Read JIS-II track  
 [Code] ASCII       ESC   M   J  
          Hex.       1B 4D 4A  
          Decimal    27 77 74

[Function] Reads data of JIS-II (JIS) cards

[Note] The printer waits to read a card.  
 When reading is successful, the printer sends data to the host and exits the MSR mode.

## **EOT**

[Name] Cancel MSR mode  
 [Code] ASCII       EOT  
          Hex.       04  
          Decimal    4

[Function] Stops reading and exits the MSR mode.

### 2.3.30. Customer display Commands

### Applicable Customer display

Refer to the printer's specification manuals.

**ESC GS B @**

[Name]    Send data to a customer display

|        |         |     |    |    |    |    |    |    |     |    |
|--------|---------|-----|----|----|----|----|----|----|-----|----|
| [Code] | ASCII   | ESC | GS | B  | @  | n1 | n2 | d1 | ... | dk |
|        | Hex.    | 1B  | 1D | 42 | 40 | n1 | n2 | d1 | ... | dk |
|        | Decimal | 27  | 29 | 66 | 64 | n1 | n2 | d1 | ... | dk |

|                |                                                  |
|----------------|--------------------------------------------------|
| [Defined Area] | n1+n2x256 : BYTE count ( $1 \leq d \leq 65535$ ) |
|                | k : n1+ n2x256                                   |

[Initial Value]                    - - -

[Function] The customer display command is sent to a customer display.

**ESC RS B A**

[Name]      Status request

|        |         |     |    |    |    |
|--------|---------|-----|----|----|----|
| [Code] | ASCII   | ESC | RS | B  | A  |
|        | Hex.    | 1B  | 1E | 42 | 41 |
|        | Decimal | 27  | 30 | 66 | 65 |

[Defined Area] - - -

[Initial Value] - - -

|            |                             |
|------------|-----------------------------|
| [Function] | Receives the printer status |
|------------|-----------------------------|

The customer display status transmission format from the printer  
<ESC> <RS> B A n

| Bit (n) | Status                                          |
|---------|-------------------------------------------------|
| 0       | 0: No data in customer display buffer           |
|         | 1: Data exists in customer display buffer       |
| 1       | 0: No connection of customer display            |
|         | 1: Customer display is connected to the printer |
| 2 to 7  | Reserved                                        |

## ESC GS B B

|        |                               |     |    |    |    |
|--------|-------------------------------|-----|----|----|----|
| [Name] | Customer display data request |     |    |    |    |
| [Code] | ASCII                         | ESC | GS | B  | B  |
|        | Hex.                          | 1B  | 1D | 42 | 42 |
|        | Decimal                       | 27  | 29 | 66 | 66 |

[Defined Area] - - -

[Initial Value] - - -

[Function] Acquire customer display data from a customer display.

The customer display data transmission format from the printer

<ESC><GS> B B n1 n2 d1...dk

n1+n2x256 : BYTE count ( $1 \leq d \leq 65535$ )

k : n1 + n2 x 256

## ESC GS B C

|        |              |     |    |    |    |
|--------|--------------|-----|----|----|----|
| [Name] | Buffer clear |     |    |    |    |
| [Code] | ASCII        | ESC | GS | B  | C  |
|        | Hex.         | 1B  | 1D | 42 | 43 |
|        | Decimal      | 27  | 29 | 66 | 67 |

[Defined Area] - - -

[Initial Value] - - -

[Function] A customer display buffer of a printer is cleared.

### 2.3.31. Network Commands

#### **ESC GS ) N pL pH fn [parameter]**

[Name] Set network parameters

[Code] ASCII ESC ) N pL pH fn [parameter]  
Hex. 1B 29 4E pL pH fn [parameter]  
Decimal 27 41 78 pL pH fn [parameter]

[Function] Executes actions related to the network parameter.  
- With "pL" and "pH", the parameter count after "fn" is specified to (pL + pH × 256) bytes.  
- For [parameter], see the specification by function.

Some functions require login, and some require login password change.

| fn | Code                              | Function                                   | Login         | Login password change |
|----|-----------------------------------|--------------------------------------------|---------------|-----------------------|
| 48 | ESC GS ) N pL pH fn m n           | Set acquisition method for IP address      | Not necessary | Not necessary         |
| 49 | ESC GS ) N pL pH fn m d1 d2 d3 d4 | Set IP Address                             | Not necessary | Not necessary         |
| 50 | ESC GS ) N pL pH fn m d1 d2 d3 d4 | Set subnet mask                            | Not necessary | Not necessary         |
| 51 | ESC GS ) N pL pH fn m d1 d2 d3 d4 | Set default gateway                        | Not necessary | Not necessary         |
| 52 | ESC GS ) N pL pH fn m n           | Set DHCP Timeout                           | Not necessary | Not necessary         |
| 53 | ESC GS ) N pL pH fn m n           | Set 9100 Multi Session                     | Not necessary | Not necessary         |
| 54 | ESC GS ) N pL pH fn m n1 n2       | Set 9100 Data Timeout                      | Not necessary | Not necessary         |
| 55 | ESC GS ) N pL pH fn m n           | Set disconnect Message                     | Not necessary | Not necessary         |
| 57 | ESC GS ) N pL pH fn m n           | Set SteadyLAN                              | Not necessary | Not necessary         |
| 58 | ESC GS ) N pL pH fn m d1 d2 d3 d4 | Set DNS 1                                  | Necessary     | Necessary             |
| 59 | ESC GS ) N pL pH fn m d1 d2 d3 d4 | Set DNS 2                                  | Necessary     | Necessary             |
| 64 | ESC GS ) N pL pH fn m             | Transmit acquisition method for IP address | Not necessary | Not necessary         |
| 65 | ESC GS ) N pL pH fn m             | Send IP Address                            | Not necessary | Not necessary         |
| 66 | ESC GS ) N pL pH fn m             | Send subnet mask                           | Not necessary | Not necessary         |
| 67 | ESC GS ) N pL pH fn m             | Send default gateway                       | Not necessary | Not necessary         |
| 68 | ESC GS ) N pL pH fn m             | Send DHCP Timeout                          | Not necessary | Not necessary         |
| 69 | ESC GS ) N pL pH fn m             | Send 9100 Multi Session                    | Not necessary | Not necessary         |
| 70 | ESC GS ) N pL pH fn m             | Send 9100 Data Timeout                     | Not necessary | Not necessary         |
| 71 | ESC GS ) N pL pH fn m             | Send disconnect Message                    | Not necessary | Not necessary         |
| 73 | ESC GS ) N pL pH fn m             | Send SteadyLAN                             | Not necessary | Not necessary         |
| 74 | ESC GS ) N pL pH fn m             | Send DNS 1                                 | Necessary     | Necessary             |
| 75 | ESC GS ) N pL pH fn m             | Send DNS 2                                 | Necessary     | Necessary             |
| 80 | ESC GS ) N pL pH fn m n           | Set TCP#9100                               | Not necessary | Not necessary         |
| 81 | ESC GS ) N pL pH fn m             | Send TCP#9100                              | Not necessary | Not necessary         |
| 82 | ESC GS ) N pL pH fn m n           | Set TCP#9101                               | Not necessary | Not necessary         |
| 83 | ESC GS ) N pL pH fn m             | Send TCP#9101                              | Not necessary | Not necessary         |
| 84 | ESC GS ) N pL pH fn m n           | Set LPR                                    | Not necessary | Not necessary         |
| 85 | ESC GS ) N pL pH fn m             | Send LPR                                   | Not necessary | Not necessary         |
| 86 | ESC GS ) N pL pH fn m n           | Set UDP#22222                              | Not necessary | Not necessary         |
| 87 | ESC GS ) N pL pH fn m             | Send UDP#22222                             | Not necessary | Not necessary         |

| fn  | Code                              | Function                                                   | Login         | Login password change |
|-----|-----------------------------------|------------------------------------------------------------|---------------|-----------------------|
| 88  | ESC GS ) N pL pH fn m n           | Set Telnet                                                 | Not necessary | Not necessary         |
| 89  | ESC GS ) N pL pH fn m             | Send Telnet                                                | Not necessary | Not necessary         |
| 90  | ESC GS ) N pL pH fn m n           | Set TCP#80                                                 | Not necessary | Not necessary         |
| 91  | ESC GS ) N pL pH fn m             | Send TCP#80                                                | Not necessary | Not necessary         |
| 92  | ESC GS ) N pL pH fn m n           | Set TCP#433                                                | Not necessary | Not necessary         |
| 93  | ESC GS ) N pL pH fn m             | Send TCP#433                                               | Not necessary | Not necessary         |
| 94  | ESC GS ) N pL pH fn m n           | Set TCP#22222                                              | Not necessary | Not necessary         |
| 95  | ESC GS ) N pL pH fn m             | Send TCP#22222                                             | Not necessary | Not necessary         |
| 112 | ESC GS ) N pL pH fn m             | Save network parameters                                    | *1            | *1                    |
| 113 | ESC GS ) N pL pH fn m             | Initialize network parameters                              | *1            | *1                    |
| 114 | ESC GS ) N pL pH fn m d1 ... dk   | Execute login                                              | Not necessary | Not necessary         |
| 115 | ESC GS ) N pL pH fn m             | Send login status                                          | Not necessary | Not necessary         |
| 116 | ESC GS ) N pL pH fn m n           | Execute logout                                             | Necessary     | Not necessary         |
| 128 | ESC GS ) N pL pH fn m d1 ... dk   | Set login password                                         | Necessary     | Not necessary         |
| 129 | ESC GS ) N pL pH fn m             | Send login password change status                          | Necessary     | Not necessary         |
| 130 | ESC GS ) N pL pH fn m n           | Set Star CloudPRNT Cloud Service                           | Necessary     | Necessary             |
| 131 | ESC GS ) N pL pH fn m             | Send Star CloudPRNT Cloud Service                          | Necessary     | Necessary             |
| 132 | ESC GS ) N pL pH fn m d1 ... dk   | Set Star CloudPRNT Service URL                             | Necessary     | Necessary             |
| 133 | ESC GS ) N pL pH fn m             | Send Star CloudPRNT Service URL                            | Necessary     | Necessary             |
| 134 | ESC GS ) N pL pH fn m n1 n2       | Set Star CloudPRNT Polling time                            | Necessary     | Necessary             |
| 135 | ESC GS ) N pL pH fn m             | Send Star CloudPRNT Polling time                           | Necessary     | Necessary             |
| 136 | ESC GS ) N pL pH fn m d1 ... dk   | Set Star CloudPRNT User Name                               | Necessary     | Necessary             |
| 137 | ESC GS ) N pL pH fn m             | Send Star CloudPRNT User Name                              | Necessary     | Necessary             |
| 138 | ESC GS ) N pL pH fn m d1 ... dk   | Set Star CloudPRNT Password                                | Necessary     | Necessary             |
| 139 | ESC GS ) N pL pH fn m             | Send Star CloudPRNT Password                               | Necessary     | Necessary             |
| 140 | ESC GS ) N pL pH fn m n d1 ... dk | Set Star CloudPRNT TLS trust level                         | Necessary     | Necessary             |
| 141 | ESC GS ) N pL pH fn m             | Send Star CloudPRNT TLS trust level                        | Necessary     | Necessary             |
| 142 | ESC GS ) N pL pH fn m n d1 ... dk | Set Star CloudPRNT NTP Server                              | Necessary     | Necessary             |
| 143 | ESC GS ) N pL pH fn m             | Send Star CloudPRNT NTP Server                             | Necessary     | Necessary             |
| 144 | ESC GS ) N pL pH fn m n           | Set Star CloudPRNT TLS1.2 Cipher Suite Encryption Level    | Necessary     | Necessary             |
| 145 | ESC GS ) N pL pH fn m             | Send Star CloudPRNT TLS1.2 Cipher Suite Encryption Level I | Necessary     | Necessary             |
| 146 | ESC GS ) N pL pH fn m n           | Set Star CloudPRNT TLS1.3                                  | Necessary     | Necessary             |
| 147 | ESC GS ) N pL pH fn m             | Send Star CloudPRNT TLS1.3                                 | Necessary     | Necessary             |
| 150 | ESC GS ) N pL pH fn m d1 ... dk   | Decrypt and send strings                                   | Not necessary | Not necessary         |
| 151 | Reserved                          |                                                            |               |                       |
| 152 | ESC GS ) N pL pH fn m n1 n2       | Set Star CloudPRNT HTTP Response Timeout                   | Necessary     | Necessary             |
| 153 | ESC GS ) N pL pH fn m             | Send Star CloudPRNT HTTP Response Timeout                  | Necessary     | Necessary             |

\*1: For details, refer to the relevant specification for each function.

The following shows an example of actual command transmission.

Example 1: When setting a network parameter that does not require login

| fn  | Host transmission data                                | Printer response data                                        |                                                                                                                               |
|-----|-------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| 64  | ESC GS ) N 0x02 0x00 0x40 0x01                        | ESC GS ) N 0x02 0x00 0x40 0x01<br>0x00 LF NUL                | "Sending IP Address Acquisition Method"<br>Send command<br>Setting value of acquisition method of<br>IPAddress. Return "DHCP" |
| 65  | ESC GS ) N 0x02 0x00 0x41 0x01                        | ESC GS ) N 0x02 0x00 0x41 0x01<br>0x00 0x00 0x00 0x00 LF NUL | "Sending IP Address"<br>Send command<br>IP Address setting value<br>Return "0.0.0.0"                                          |
| 66  | ESC GS ) N 0x02 0x00 0x42 0x01                        | ESC GS ) N 0x02 0x00 0x42 0x01<br>0x00 0x00 0x00 0x00 LF NUL | "Subnet Mask transmission"<br>Send command<br>Subnet Mask setting value<br>Return "0.0.0.0"                                   |
| 67  | ESC GS ) N 0x02 0x00 0x43 0x01                        | ESC GS ) N 0x02 0x00 0x43 0x01<br>0x00 0x00 0x00 0x00 LF NUL | "Send Default Gateway"<br>Send command<br>IDefault Gateway settings<br>Return "0.0.0.0"                                       |
| 68  | ESC GS ) N 0x02 0x00 0x44 0x01                        | ESC GS ) N 0x02 0x00 0x44 0x01<br>0x01 LF NUL                | "Send DHCP Timeout"<br>Send command<br>DHCP Timeout setting value<br>Return "Valid"                                           |
| 69  | ESC GS ) N 0x02 0x00 0x45 0x01                        | ESC GS ) N 0x02 0x00 0x45 0x01<br>0x00 LF NUL                | "Sending 9100 Multi Session"<br>Send command<br>9100 Multi Session setting values<br>Return "Invalid"                         |
| 70  | ESC GS ) N 0x02 0x00 0x46 0x01                        | ESC GS ) N 0x02 0x00 0x46 0x01<br>0x00 LF NUL                | "Sending 9100 Data Timeout"<br>Send command<br>9100 Data Timeout setting value<br>Return "0 Sec."                             |
| 71  | ESC GS ) N 0x02 0x00 0x47 0x01                        | ESC GS ) N 0x02 0x00 0x47 0x01<br>0x00 LF NUL                | "Sending Disconnect Message"<br>Send command<br>Disconnect Message Settings<br>Return "Invalid"                               |
| 73  | ESC GS ) N 0x02 0x00 0x49 0x01                        | ESC GS ) N 0x02 0x00 0x49 0x01<br>0x00 LF NUL                | "Sending SteadyLAN"<br>Send command<br>Disconnect Message Settings<br>Return "Valid (For iOS)"                                |
| 48  | ESC GS ) N 0x03 0x00 0x30 0x01 0x01                   |                                                              | Set IP Address acquisition method to "Static"                                                                                 |
| 49  | ESC GS ) N 0x06 0x00 0x31 0x01 0xC0 0xA8<br>0x01 0x0A |                                                              | Set IP Address to "192.168.1.10" *1                                                                                           |
| 50  | ESC GS ) N 0x06 0x00 0x32 0x01 0xFF 0xFF<br>0xFF 0x00 |                                                              | Set Subnet Mask to "255.255.255.0" *1                                                                                         |
| 51  | ESC GS ) N 0x06 0x00 0x33 0x01 0xC0 0xA8<br>0x01 0xFE |                                                              | Set Default Gateway to "192.168.1.254" *1                                                                                     |
| 52  | ESC GS ) N 0x03 0x00 0x34 0x01 0x00                   |                                                              | Set DHCPTimeout setting to "Invalid"                                                                                          |
| 53  | ESC GS ) N 0x03 0x00 0x35 0x01 0x01                   |                                                              | Set 9100 Multi Session setting to "Valid"                                                                                     |
| 54  | ESC GS ) N 0x03 0x00 0x36 0x01 0x1E 0x00              |                                                              | Set 9100 Data Timeout setting to "30 Sec."                                                                                    |
| 55  | ESC GS ) N 0x03 0x00 0x37 0x01 0x01                   |                                                              | Set Disconnect Message setting to "Valid"                                                                                     |
| 57  | ESC GS ) N 0x03 0x00 0x39 0x01 0x01                   |                                                              | Set SteadyLAN setting to "Valid (For iOS)"                                                                                    |
| 112 | ESC GS ) N 0x03 0x00 0x70 0x01                        |                                                              | Save the above settings *2                                                                                                    |

**Example 2: When setting a network parameter that requires login**

| fn  | Host transmission data                                                                                 | Host transmission data |                                                                                                   |
|-----|--------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------|
| 114 | ESC GS ) N 0x08 0x00 0x72 0x01 0x70 0x75 0x62<br>0x6C 0x69 0x63                                        |                        | Execute Login<br>Default password "public"                                                        |
| 115 | ESC GS ) N 0x02 0x00 0x73 0x01<br><br>ESC GS ) N 0x02 0x00 0x73 0x01<br>0x01 LF NUL                    |                        | "Send Login Status"<br>Send command<br>Return "Logged In"                                         |
| 129 | ESC GS ) N 0x02 0x00 0x81 0x01<br><br>ESC GS ) N 0x02 0x00 0x81 0x01<br>0x00 LF NUL                    |                        | "Send Login Password Change Status"<br>Send command<br>Return "Login Password Not Changed"        |
| 128 | ESC GS ) N 0x0A 0x00 0x80 0x01 0x61 0x62 0x63<br>0x64 0x31 0x32 0x33 0x34                              |                        | Set login password to "abcd1234"                                                                  |
| 131 | ESC GS ) N 0x02 0x00 0x83 0x01<br><br>ESC GS ) N 0x02 0x00 0x83 0x01<br>LF NUL                         |                        | "Send Star CloudPRNT Cloud Service"<br>Send command<br>Return "(Not Set)"                         |
| 133 | ESC GS ) N 0x02 0x00 0x85 0x01<br><br>ESC GS ) N 0x02 0x00 0x85 0x01<br>LF NUL                         |                        | "Send Star CloudPRNT Service URL"<br>Send command<br>Return "(Not Set)"                           |
| 135 | ESC GS ) N 0x02 0x00 0x87 0x01<br><br>ESC GS ) N 0x02 0x00 0x87 0x01<br>0x05 0x00 LF NUL               |                        | "Send Star CloudPRNT Polling time"<br>Send command<br>Return "5Sec."                              |
| 137 | ESC GS ) N 0x02 0x00 0x89 0x01<br><br>ESC GS ) N 0x02 0x00 0x89 0x01<br>LF NUL                         |                        | "Send Star CloudPRNT User Name"<br>Send command<br>Return "(Not Set)"                             |
| 139 | ESC GS ) N 0x02 0x00 0x8B 0x01<br><br>ESC GS ) N 0x02 0x00 0x8B 0x01<br>LF NUL                         |                        | "Send Star CloudPRNT Password"<br>Send command<br>Return "(Not Set)"                              |
| 141 | ESC GS ) N 0x02 0x00 0x8D 0x01<br><br>ESC GS ) N 0x02 0x00 0x8D 0x01<br>0x00 LF NUL                    |                        | "Send Star CloudPRNT TLS trust level"<br>Send command<br>Return "Use trusted CA-Certificate list" |
| 143 | ESC GS ) N 0x02 0x00 0x8F 0x01<br><br>ESC GS ) N 0x02 0x00 0x8F 0x01<br>0x30 0x2E ... 0x72 0x67 LF NUL |                        | "Send Star CloudPRNT NTP Server"<br>Send command<br>Return "0.pool.ntp.org"                       |
| 130 | ESC GS ) N 0x03 0x00 0x82 0x01 0x01                                                                    |                        | Set Star CloudPRNT Cloud Service to<br>"Enabled"                                                  |
| 132 | ESC GS ) N 0x09 0x00 0x84 0x01 0x61 0x61 0x61<br>0x2E 0x63 0x6F 0x6D                                   |                        | Set Star CloudPRNT Service URL to<br>"aaa.com"                                                    |
| 134 | ESC GS ) N 0x04 0x00 0x86 0x01 0x01 0x01                                                               |                        | Set Star CloudPRNT Polling time to<br>"1Sec."                                                     |
| 136 | ESC GS ) N 0x06 0x00 0x88 0x01 0x75 0x73 0x65<br>0x72                                                  |                        | Set Star CloudPRNT User Name to<br>"user"                                                         |
| 138 | ESC GS ) N 0x06 0x00 0x8A 0x01 0x70 0x61 0x73<br>0x73                                                  |                        | Set Star CloudPRNT Password to "pass"                                                             |
| 140 | ESC GS ) N pL pH 0x8C 0x01 0x01 d1 ... dk                                                              |                        | Set Star CloudPRNT TLS trust level to<br>"Use custom CA-Certificate"                              |
| 142 | ESC GS ) N 0x09 0x00 0x8E 0x01 0x62 0x62 0x62<br>0x2E 0x63 0x6F 0x6D                                   |                        | Set Star CloudPRNT NTP Server to<br>"bbb.com"                                                     |
| 112 | ESC GS ) N 0x03 0x00 0x70 0x01 0x00                                                                    |                        | Save the above settings.                                                                          |

## <Function 48> ESC GS ) N pL pH fn m n (fn=48)

[Name] Set acquisition method for IP address

[Code] ASCII ESC GS ) N pL pH fn m n  
Hex. 1B 1D 29 4E pL pH fn m n  
Decimal 27 29 41 78 pL pH fn m n

[Defined Area] pL = 3, pH = 0  
fn = 48  
Spec. 1 m = 1  
Spec. 2 m = 1,2  
n = 0, 1

[Initial Value] n = 0 / Star Configuration setting

[Function] Sets the acquisition method for IP address.

[Details] "n" specifies the acquisition method for IP address.

| n | IP address acquisition method |
|---|-------------------------------|
| 0 | DHCP                          |
| 1 | Static                        |

When n = 0 is specified, the following settings are initialized.

ESC GS ) N (fn=49) Set IP address  
ESC GS ) N (fn=50) Set subnet mask  
ESC GS ) N (fn=51) Set default gateway

Spec. 2

"m" specifies the target interface.

| m | Target Interface |
|---|------------------|
| 1 | Wired LAN        |
| 2 | Wireless LAN     |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 49> ESC GS ) N pL pH fn m d1 d2 d3 d4 (fn=49)

[Name] Set IP Address

[Code] ASCII ESC GS ) N pL pH fn m d1 d2 d3 d4  
Hex. 1B 1D 29 4E pL pH fn m d1 d2 d3 d4  
Decimal 27 29 41 78 pL pH fn m d1 d2 d3 d4

[Defined Area] pL = 6, pH = 0  
fn = 49  
Spec. 1 m = 1  
Spec. 2 m = 1,2  
 $0 \leq d1 \leq 255, 0 \leq d2 \leq 255, 0 \leq d3 \leq 255, 0 \leq d4 \leq 255$  [Initial Value]

[Initial Value] d1 = 0, d2 = 0, d3 = 0, d4 = 0 / Star Configuration setting

[Function] Set IP Address.

d1, d2, d3, and d4 specifies the IP address.

Example: When setting the IP address to 192.168.1.10

d1 = 192, d2 = 168, d3 = 1, d4 = 10

Spec. 2

"m" specifies the target interface.

| m | Target Interface |
|---|------------------|
| 1 | Wired LAN        |
| 2 | Wireless LAN     |

This command becomes valid only when n=1 (Static) is set by ESC GS ) N (fn=48).

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 50> ESC GS ) N pL pH fn m d1 d2 d3 d4 (fn=50)

|        |                 |     |    |    |    |    |    |    |   |    |    |    |    |
|--------|-----------------|-----|----|----|----|----|----|----|---|----|----|----|----|
| [Name] | Set Subnet Mask |     |    |    |    |    |    |    |   |    |    |    |    |
| [Code] | ASCII           | ESC | GS | )  | N  | pL | pH | fn | m | d1 | d2 | d3 | d4 |
|        | Hex.            | 1B  | 1D | 29 | 4E | pL | pH | fn | m | d1 | d2 | d3 | d4 |
|        | Decimal         | 27  | 29 | 41 | 78 | pL | pH | fn | m | d1 | d2 | d3 | d4 |

|                 |                                                                                                                                                                         |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [Defined Area]  | pL = 6, pH = 0<br>fn = 50<br>Spec. 1 m = 1<br>Spec. 2 m = 1,2<br>$0 \leq d1 \leq 255, 0 \leq d2 \leq 255, 0 \leq d3 \leq 255, 0 \leq d4 \leq 255$                       |
| [Initial Value] | d1 = 0, d2 = 0, d3 = 0, d4 = 0 / Star Configuration setting                                                                                                             |
| [Function]      | Sets the Subnet Mask<br>d1, d2, d3, and d4 specifies the Subnet Mask.<br>Example: When setting the Subnet Mask to 255.255.255.0<br>d1 = 255, d2 = 255, d3 = 255, d4 = 0 |

Spec. 2  
"m" specifies the target interface.

| m | Target Interface |
|---|------------------|
| 1 | Wired LAN        |
| 2 | Wireless LAN     |

This command becomes valid only when n=1 (Static) is set by ESC GS ) N (fn=48).

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 51> ESC GS ) N pL pH fn m d1 d2 d3 d4 (fn=51)

[Name] Set Default Gateway

|        |         |     |    |    |    |    |    |    |   |    |    |    |    |
|--------|---------|-----|----|----|----|----|----|----|---|----|----|----|----|
| [Code] | ASCII   | ESC | GS | )  | N  | pL | pH | fn | m | d1 | d2 | d3 | d4 |
|        | Hex.    | 1B  | 1D | 29 | 4E | pL | pH | fn | m | d1 | d2 | d3 | d4 |
|        | Decimal | 27  | 29 | 41 | 78 | pL | pH | fn | m | d1 | d2 | d3 | d4 |

[Defined Area] pL = 6, pH = 0  
fn = 51

Spec. 1 m = 1

Spec. 2 m = 1,2

$0 \leq d1 \leq 255, 0 \leq d2 \leq 255, 0 \leq d3 \leq 255, 0 \leq d4 \leq 255$

[Initial Value] d1 = 0, d2 = 0, d3 = 0, d4 = 0 / Star Configuration setting

[Function] Sets the Default Gateway

d1, d2, d3, and d4 specifies the Default Gateway.

Example: When setting the Default Gateway to 192.168.1.254

d1 = 192, d2 = 168, d3 = 1, d4 = 254

Spec. 2

"m" specifies the target interface.

| m | Target Interface |
|---|------------------|
| 1 | Wired LAN        |
| 2 | Wireless LAN     |

This command becomes valid only when n=1 (Static) is set by ESC GS ) N (fn=48).

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 52> ESC GS ) N pL pH fn m n (fn=52)

|        |                  |     |    |    |    |    |    |    |   |   |
|--------|------------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Set DHCP Timeout |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII            | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.             | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal          | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 52  
m = 1  
n = 0,1

[Initial Value] n = 1 / Star Configuration setting

[Function] Set DHCP Timeout  
n specifies the DHCP Timeout.

| n | DHCP Timeout |
|---|--------------|
| 0 | invalid      |
| 1 | valid        |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 53> ESC GS ) N pL pH fn m n (fn=53)

|        |                        |     |    |    |    |    |    |    |   |   |
|--------|------------------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Set 9100 Multi Session |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII                  | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.                   | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal                | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 53  
m = 1  
n = 0,1

[Initial Value] n = 0 / Star Configuration setting

[Function] Set 9100 Multi Session  
[Details] n specifies the 9100 Multi Session.

| n | 9100 Multi Session |
|---|--------------------|
| 0 | invalid            |
| 1 | valid              |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

### <Function 54> ESC GS ) N pL pH fn m n (fn=54)

[Name] Set 9100 Data Timeout

|        |         |     |    |    |    |    |    |    |   |    |    |
|--------|---------|-----|----|----|----|----|----|----|---|----|----|
| [Code] | ASCII   | ESC | GS | )  | N  | pL | pH | fn | m | n1 | n2 |
|        | Hex.    | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n1 | n2 |
|        | Decimal | 27  | 29 | 41 | 78 | pL | pH | fn | m | n1 | n2 |

[Defined Area] pL = 4, pH = 0  
fn = 54  
m = 1  
n = 0,30,40,60,120,180,300 ( n = n1 + n2x256 )

[Initial Value] n = 0 / Star Configuration setting

[Function] Set 9100 Data Timeout

[Details] n( n = n1 + n2x256 ) specifies the 9100 Data Timeout (Sec.).

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

### <Function 55> ESC GS ) N pL pH fn m n (fn=55)

[Name] Set Disconnect Message

|        |         |     |    |    |    |    |    |    |   |   |
|--------|---------|-----|----|----|----|----|----|----|---|---|
| [Code] | ASCII   | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.    | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 55  
m = 1  
n = 0,1

[Initial Value] n = 0

[Function] Set Disconnect Message

n specifies the Disconnect Message.

| n | Disconnect Message |
|---|--------------------|
| 0 | invalid            |
| 1 | valid              |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 57> ESC GS ) N pL pH fn m n (fn=57)

|        |               |     |    |    |    |    |    |    |   |   |
|--------|---------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Set SteadyLAN |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII         | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.          | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal       | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 57  
m = 1

Spec. 1 n = 0,1,2,3

Spec. 2 n = 0,1,2,3,128

Spec. 3 n = 0,1,2,3,128

[Initial Value] n = 0 / Star Configuration setting

[Function] Sets SteadyLAN.

[Details] n specifies the SteadyLAN setting.

Spec. 1

| n | SteadyLAN           |
|---|---------------------|
| 0 | Invalid             |
| 1 | Valid (For iOS)     |
| 2 | Valid (For Android) |
| 3 | Valid (For Windows) |

Spec. 2

| n   | SteadyLAN           |
|-----|---------------------|
| 0   | Invalid             |
| 1   | Valid (For all iOS) |
| 2   | Valid (For all iOS) |
| 3   | Valid (For all iOS) |
| 128 | Valid (For all iOS) |

Spec. 3

| n   | SteadyLAN           |
|-----|---------------------|
| 0   | Invalid             |
| 1   | Valid (For iOS)     |
| 2   | Valid (For Android) |
| 3   | Valid (For Windows) |
| 128 | Valid (For all OS)  |

Parameter n may or may not be supported depending on the model. The support relationship is as shown in the table below. If not supported, the command is ignored.

| n   | MCP31L        | MCP31C        | MCP30         | MCP21L        | MCP20         | MCL32     | MCP31CI   |
|-----|---------------|---------------|---------------|---------------|---------------|-----------|-----------|
| 0   | Supported     | Supported     | Not supported | Supported     | Not supported | Supported | Supported |
| 1   | Supported     | Not supported | Not supported | Supported     | Not supported | Supported | Supported |
| 2   | Not supported | Supported     | Not supported | Not supported | Not supported | Supported | Supported |
| 3   | Not supported | Supported     | Not supported | Not supported | Not supported | Supported | Supported |
| 128 | Not supported | Not supported | Not supported | Not supported | Not supported | Supported | Supported |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 58> ESC GS ) N pL pH fn m d1 d2 d3 d4 (fn=58)

|        |           |     |    |    |    |    |    |    |   |    |    |    |    |
|--------|-----------|-----|----|----|----|----|----|----|---|----|----|----|----|
| [Name] | Set DNS 1 |     |    |    |    |    |    |    |   |    |    |    |    |
| [Code] | ASCII     | ESC | GS | )  | N  | pL | pH | fn | m | d1 | d2 | d3 | d4 |
|        | Hex.      | 1B  | 1D | 29 | 4E | pL | pH | fn | m | d1 | d2 | d3 | d4 |
|        | Decimal   | 27  | 29 | 41 | 78 | pL | pH | fn | m | d1 | d2 | d3 | d4 |

[Defined Area] pL = 6, pH = 0  
fn = 58  
m = 1

$0 \leq d1 \leq 255, 0 \leq d2 \leq 255, 0 \leq d3 \leq 255, 0 \leq d4 \leq 255$

[Initial Value] d1 = 8, d2 = 8, d3 = 8, d4 = 8 / Star Configuration setting

[Function] Set DNS 1  
d1, d2, d3, and d4 specifies the DNS 1.  
Example: When setting the DNS 1 to 1.2.3.4  
d1 = 1, d2 = 2, d3 = 3, d4 = 4

This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 59> ESC GS ) N pL pH fn m d1 d2 d3 d4 (fn=59)

|        |           |     |    |    |    |    |    |    |   |    |    |    |    |
|--------|-----------|-----|----|----|----|----|----|----|---|----|----|----|----|
| [Name] | Set DNS 2 |     |    |    |    |    |    |    |   |    |    |    |    |
| [Code] | ASCII     | ESC | GS | )  | N  | pL | pH | fn | m | d1 | d2 | d3 | d4 |
|        | Hex.      | 1B  | 1D | 29 | 4E | pL | pH | fn | m | d1 | d2 | d3 | d4 |
|        | Decimal   | 27  | 29 | 41 | 78 | pL | pH | fn | m | d1 | d2 | d3 | d4 |

[Defined Area] pL = 6, pH = 0  
fn = 59  
m = 1

$0 \leq d1 \leq 255, 0 \leq d2 \leq 255, 0 \leq d3 \leq 255, 0 \leq d4 \leq 255$

[Initial Value] d1 = 8, d2 = 8, d3 = 4, d4 = 4 / Star Configuration setting

[Function] Set DNS 2  
d1, d2, d3, and d4 specifies the DNS 2.  
Example: When setting the DNS 2 to 1.2.3.4  
d1 = 1, d2 = 2, d3 = 3, d4 = 4

This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 64> ESC GS ) N pL pH fn m (fn=64)

[Name] Transmits the acquisition method for IP address.

[Code] ASCII ESC GS ) N pL pH fn m  
Hex. 1B 1D 29 4E pL pH fn m  
Decimal 27 29 41 78 pL pH fn m

[Defined Area] pL = 2, pH = 0  
fn = 64  
Spec. 1 m = 1  
Spec. 2 m = 1,2

[Initial Value] - - -

[Function] Transmits the acquisition method for IP address.  
The transmission is performed in the format below.  
ESC GS ) N pL pH fn m n LF NUL

| n | IP address acquisition method |
|---|-------------------------------|
| 0 | DHCP                          |
| 1 | Static                        |

Spec. 2  
"m" specifies the target interface.

| m | Target Interface |
|---|------------------|
| 1 | Wired LAN        |
| 2 | Wireless LAN     |

## <Function 65> ESC GS ) N pL pH fn m (fn=65)

[Name] Send IP Address

|        |         |     |    |    |    |    |    |    |   |
|--------|---------|-----|----|----|----|----|----|----|---|
| [Code] | ASCII   | ESC | GS | )  | N  | pL | pH | fn | m |
|        | Hex.    | 1B  | 1D | 29 | 4E | pL | pH | fn | m |
|        | Decimal | 27  | 29 | 41 | 78 | pL | pH | fn | m |

[Defined Area] pL = 2, pH = 0  
fn = 65  
Spec. 1 m = 1  
Spec. 2 m = 1,2

[Initial Value] - - -

[Function] Send IP Address  
The transmission is performed in the format below.  
ESC GS ) N pL pH fn m d1 d2 d3 d4 LF NUL

Spec. 2  
"m" specifies the target interface.

| m | Target Interface |
|---|------------------|
| 1 | Wired LAN        |
| 2 | Wireless LAN     |

Example 1: When the IP address acquisition method is set to Static, and IP address is set to 192.168.1.10  
d1 = 192, d2 = 168, d3 = 1, d4 = 10

Example 2: When the IP address acquisition method is set to DHCP, and IP address of 192.168.1.10 is already acquired from the DHCP server  
d1 = 192, d2 = 168, d3 = 1, d4 = 10

Example 3: When the IP address acquisition method is set to DHCP, and IP address could not be acquired from the DHCP server  
d1 = 0, d2 = 0, d3 = 0, d4 = 0

## <Function 66> ESC GS ) N pL pH fn m (fn=66)

[Name] Send subnet mask

| [Code]  | ASCII | ESC | GS | )  | N  | pL | pH | fn | m |
|---------|-------|-----|----|----|----|----|----|----|---|
| Hex.    |       | 1B  | 1D | 29 | 4E | pL | pH | fn | m |
| Decimal |       | 27  | 29 | 41 | 78 | pL | pH | fn | m |

[Defined Area] pL = 2, pH = 0  
fn = 66  
Spec. 1 m = 1  
Spec. 2 m = 1,2

[Initial Value] - - -

[Function] Send Subnet Mask  
The transmission is performed in the format below.  
ESC GS ) N pL pH fn m d1 d2 d3 d4 LF NUL

Spec. 2  
"m" specifies the target interface.

| m | Target Interface |
|---|------------------|
| 1 | Wired LAN        |
| 2 | Wireless LAN     |

Example 1: When the IP address acquisition method is set to Static, and Subnet Mask is set to 255.255.255.0  
d1 = 255, d2 = 255, d3 = 255, d4 = 0

Example 2: When the IP address acquisition method is set to DHCP, and Subnet Mask of 255.255.255.0 is already acquired from the DHCP server  
d1 = 255, d2 = 255, d3 = 255, d4 = 0

Example 3: When the IP address acquisition method is set to DHCP, and Subnet Mask could not be acquired from the DHCP server  
d1 = 0, d2 = 0, d3 = 0, d4 = 0

## <Function 67> ESC GS ) N pL pH fn m (fn=67)

|        |                      |     |    |    |    |    |    |    |   |  |
|--------|----------------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send default gateway |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII                | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.                 | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal              | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area] pL = 2, pH = 0  
fn = 67  
Spec. 1 m = 1  
Spec. 2 m = 1,2

[Initial Value] - - -

[Function] Send Default Gateway  
The transmission is performed in the format below.  
ESC GS ) N pL pH fn m d1 d2 d3 d4 LF NUL

Spec. 2  
"m" specifies the target interface.

| m | Target Interface |
|---|------------------|
| 1 | Wired LAN        |
| 2 | Wireless LAN     |

Example 1: When the IP address acquisition method is set to Static, and Default Gateway is set to 255.255.255.0  
d1 = 255, d2 = 255, d3 = 255, d4 = 0

Example 2: When the IP address acquisition method is set to DHCP, and Default Gateway of 255.255.255.0 is already acquired from the DHCP server  
d1 = 255, d2 = 255, d3 = 255, d4 = 0

Example 3: When the IP address acquisition method is set to DHCP, and Default Gateway could not be acquired from the DHCP server  
d1 = 0, d2 = 0, d3 = 0, d4 = 0

### <Function 68> ESC GS ) N pL pH fn m (fn=68)

[Name] Send DHCPTIMEOUT  
[Code] ASCII ESC GS ) N pL pH fn m  
Hex. 1B 1D 29 4E pL pH fn m  
Decimal 27 29 41 78 pL pH fn m

[Defined Area] pL = 2, pH = 0  
fn = 68  
m = 1

[Initial Value] - - -

[Function] Send DHCPTIMEOUT  
The transmission is performed in the format below.  
ESC GS ) N pL pH fn m n LF NUL

| n | DHCP Timeout |
|---|--------------|
| 0 | invalid      |
| 1 | valid        |

### <Function 69> ESC GS ) N pL pH fn m (fn=69)

[Name] Send 9100 Multi Session  
[Code] ASCII ESC GS ) N pL pH fn m  
Hex. 1B 1D 29 4E pL pH fn m  
Decimal 27 29 41 78 pL pH fn m

[Defined Area] pL = 2, pH = 0  
fn = 69  
m = 1

[Initial Value] - - -

[Function] 9100 Multi Session  
The transmission is performed in the format below.  
ESC GS ) N pL pH fn m n LF NUL

| n | 9100 Multi Session |
|---|--------------------|
| 0 | invalid            |
| 1 | valid              |

## <Function 70> ESC GS ) N pL pH fn m n (fn=70)

[Name] Send 9100 Data Timeout

|        |         |     |    |    |    |    |    |    |   |
|--------|---------|-----|----|----|----|----|----|----|---|
| [Code] | ASCII   | ESC | GS | )  | N  | pL | pH | fn | m |
|        | Hex.    | 1B  | 1D | 29 | 4E | pL | pH | fn | m |
|        | Decimal | 27  | 29 | 41 | 78 | pL | pH | fn | m |

[Defined Area] pL = 2, pH = 0  
fn = 70  
m = 1

[Initial Value] - - -

[Function] Send 9100 Data Timeout  
The transmission is performed in the format below.  
ESC GS ) N pL pH fn m n1 n2 LF NUL

n1 + ( n = n1 + n2x256 ) specifies the 9100 Data Timeout (Sec.).

Example 1: When the 9100 data timeout method is set 300 Sec.  
n1 = 44, n2 = 1

## <Function 71> ESC GS ) N pL pH fn m n (fn=71)

[Name] Send Disconnect Message

|        |         |     |    |    |    |    |    |    |   |
|--------|---------|-----|----|----|----|----|----|----|---|
| [Code] | ASCII   | ESC | GS | )  | N  | pL | pH | fn | m |
|        | Hex.    | 1B  | 1D | 29 | 4E | pL | pH | fn | m |
|        | Decimal | 27  | 29 | 41 | 78 | pL | pH | fn | m |

[Defined Area] pL = 2, pH = 0  
fn = 71  
m = 1

[Initial Value] - - -

[Function] Send Disconnect Message  
The transmission is performed in the format below.  
ESC GS ) N pL pH fn m n LF NUL

| n | Disconnect Message |
|---|--------------------|
| 0 | invalid            |
| 1 | valid              |

## <Function 73> ESC GS ) N pL pH fn m (fn=73)

|        |                |     |    |    |    |    |    |    |   |   |
|--------|----------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Send SteadyLAN |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII          | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.           | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal        | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 2, pH = 0  
fn = 73  
m = 1

[Initial Value] ---

[Function] Send SteadyLAN setting.  
The transmission is performed in the format below.  
ESC GS ) N pL pH fn m n LF NUL

Spec. 1

| n | SteadyLAN           |
|---|---------------------|
| 0 | Invalid             |
| 1 | Valid (For iOS)     |
| 2 | Valid (For Android) |
| 3 | Valid (For Windows) |

Spec. 2

| n   | SteadyLAN           |
|-----|---------------------|
| 0   | Invalid             |
| 1   | Valid (For all iOS) |
| 2   | Valid (For all iOS) |
| 3   | Valid (For all iOS) |
| 128 | Valid (For all iOS) |

Spec.3

| n   | SteadyLAN           |
|-----|---------------------|
| 0   | Invalid             |
| 1   | Valid (For iOS)     |
| 2   | Valid (For Android) |
| 3   | Valid (For Windows) |
| 128 | Valid (For all OS)  |

## <Function 74> ESC GS ) N pL pH fn m (fn=74)

[Name] Send DNS 1

|        |         |     |    |    |    |    |    |    |   |
|--------|---------|-----|----|----|----|----|----|----|---|
| [Code] | ASCII   | ESC | GS | )  | N  | pL | pH | fn | m |
|        | Hex.    | 1B  | 1D | 29 | 4E | pL | pH | fn | m |
|        | Decimal | 27  | 29 | 41 | 78 | pL | pH | fn | m |

[Defined Area] pL = 2, pH = 0  
fn = 74  
m = 1

[Initial Value] ---

[Function] Send DNS 1

The transmission is performed in the format below.

ESC GS ) N pL pH fn m d1 d2 d3 d4 LF NUL

Example: When setting the DNS 1 to 1.2.3.4

d1 = 1, d2 = 2, d3 = 3, d4 = 4

This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

At other times, transmission is performed in the format below.

ESC GS ) N pL pH fn m LF NUL

## <Function 75> ESC GS ) N pL pH fn m (fn=75)

[Name] Send DNS 2

|        |         |     |    |    |    |    |    |    |   |
|--------|---------|-----|----|----|----|----|----|----|---|
| [Code] | ASCII   | ESC | GS | )  | N  | pL | pH | fn | m |
|        | Hex.    | 1B  | 1D | 29 | 4E | pL | pH | fn | m |
|        | Decimal | 27  | 29 | 41 | 78 | pL | pH | fn | m |

[Defined Area] pL = 2, pH = 0  
fn = 75  
m = 1

[Initial Value] ---

[Function] Send DNS 2  
The transmission is performed in the format below.  
ESC GS ) N pL pH fn m d1 d2 d3 d4 LF NUL

Example: When setting the DNS 2 to 1.2.3.4  
d1 = 1, d2 = 2, d3 = 3, d4 = 4

This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

At other times, transmission is performed in the format below.  
ESC GS ) N pL pH fn m LF NUL

## <Function 80> ESC GS ) N pL pH fn m n (fn=80)

|        |              |     |    |    |    |    |    |    |   |   |
|--------|--------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Set TCP#9100 |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII        | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.         | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal      | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 80  
m = 1  
n = 0,1

[Initial Value] n = 1 / Star Configuration setting

[Function] Set the TCP#9100

[Details] n specifies TCP#9100 setting.

|   |          |
|---|----------|
| n | TCP#9100 |
| 0 | Invalid  |
| 1 | Valid    |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 81> ESC GS ) N pL pH fn m (fn=81)

|        |               |     |    |    |    |    |    |    |   |  |
|--------|---------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send TCP#9100 |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII         | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.          | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal       | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area] pL = 2, pH = 0  
fn = 81  
m = 1

[Initial Value] ---

[Function] Send TCP#9100 setting.

The transmission is performed in the format below.

ESC GS ) N pL pH fn m n LF NUL

|   |          |
|---|----------|
| N | TCP#9100 |
| 0 | Invalid  |
| 1 | Valid    |

## <Function 82> ESC GS ) N pL pH fn m n (fn=82)

|        |              |     |    |    |    |    |    |    |   |   |
|--------|--------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Set TCP#9101 |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII        | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.         | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal      | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 82  
m = 1  
n = 0,1

[Initial Value] n = 1 / Star Configuration setting

[Function] Set the TCP#9101

[Details] n specifies TCP#9101 setting.

|   |          |
|---|----------|
| n | TCP#9101 |
| 0 | Invalid  |
| 1 | Valid    |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 83> ESC GS ) N pL pH fn m (fn=83)

|        |               |     |    |    |    |    |    |    |   |  |
|--------|---------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send TCP#9101 |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII         | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.          | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal       | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area] pL = 2, pH = 0  
fn = 83  
m = 1

[Initial Value] ---

[Function] Send TCP#9101.

The transmission is performed in the format below.

ESC GS ) N pL pH fn m n LF NUL

|   |          |
|---|----------|
| N | TCP#9101 |
| 0 | Invalid  |
| 1 | Valid    |

## <Function 84> ESC GS ) N pL pH fn m n (fn=84)

|        |         |     |    |    |    |    |    |    |   |   |
|--------|---------|-----|----|----|----|----|----|----|---|---|
| [Name] | Set LPR |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII   | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.    | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 84  
m = 1  
n = 0,1

[Initial Value] n = 1

[Function] Set the LPR.

[Details] n specifies LPR setting.

|   |         |
|---|---------|
| n | LPR     |
| 0 | Invalid |
| 1 | Valid   |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 85> ESC GS ) N pL pH fn m (fn=85)

|        |          |     |    |    |    |    |    |    |   |  |
|--------|----------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send LPR |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII    | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.     | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal  | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area] pL = 2, pH = 0  
fn = 85  
m = 1

[Initial Value] ---

[Function] Send LPR setting.

The transmission is performed in the format below.

ESC GS ) N pL pH fn m n LF NUL

|   |         |
|---|---------|
| N | LPR     |
| 0 | Invalid |
| 1 | Valid   |

## <Function 86> ESC GS ) N pL pH fn m n (fn=86)

|        |               |     |    |    |    |    |    |    |   |   |
|--------|---------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Set UDP#22222 |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII         | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.          | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal       | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 86  
m = 1  
n = 0,1

[Initial Value] n = 1 / Star Configuration setting

[Function] Set the UDP#22222.

[Details] n specifies UDP#22222 setting.

|   |           |
|---|-----------|
| n | UDP#22222 |
| 0 | Invalid   |
| 1 | Valid     |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 87> ESC GS ) N pL pH fn m (fn=87)

|        |                |     |    |    |    |    |    |    |   |  |
|--------|----------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send UDP#22222 |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII          | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.           | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal        | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area] pL = 2, pH = 0  
fn = 87  
m = 1

[Initial Value] ---

[Function] Send UDP#22222 setting.

The transmission is performed in the format below.

ESC GS ) N pL pH fn m n LF NUL

|   |           |
|---|-----------|
| N | UDP#22222 |
| 0 | Invalid   |
| 1 | Valid     |

## <Function 88> ESC GS ) N pL pH fn m n (fn=88)

|        |            |     |    |    |    |    |    |    |   |   |
|--------|------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Set Telnet |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII      | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.       | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal    | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 88  
m = 1  
n = 0,1

[Initial Value] n = 1

[Function] Set the Telnet.

[Details] n specifies Telnet setting.

|   |         |
|---|---------|
| n | Telnet  |
| 0 | Invalid |
| 1 | Valid   |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 89> ESC GS ) N pL pH fn m (fn=89)

|        |             |     |    |    |    |    |    |    |   |  |
|--------|-------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send Telnet |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII       | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.        | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal     | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area] pL = 2, pH = 0  
fn = 89  
m = 1

[Initial Value] ---

[Function] Send Telnet setting.

The transmission is performed in the format below.

ESC GS ) N pL pH fn m n LF NUL

|   |         |
|---|---------|
| N | Telnet  |
| 0 | Invalid |
| 1 | Valid   |

## <Function 90> ESC GS ) N pL pH fn m n (fn=90)

|        |            |     |    |    |    |    |    |    |   |   |
|--------|------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Set TCP#80 |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII      | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.       | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal    | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 90  
m = 1  
n = 0,1

[Initial Value] n = 1

[Function] Set the TCP#80.

[Details] n specifies TCP#80 setting.

|   |         |
|---|---------|
| n | TCP#80  |
| 0 | Invalid |
| 1 | Valid   |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 91> ESC GS ) N pL pH fn m (fn=91)

|        |             |     |    |    |    |    |    |    |   |  |
|--------|-------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send TCP#80 |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII       | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.        | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal     | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area] pL = 2, pH = 0  
fn = 91  
m = 1

[Initial Value] ---

[Function] Send TCP#80 setting.

The transmission is performed in the format below.

ESC GS ) N pL pH fn m n LF NUL

|   |         |
|---|---------|
| N | TCP#80  |
| 0 | Invalid |
| 1 | Valid   |

## <Function 92> ESC GS ) N pL pH fn m n (fn=92)

|        |             |     |    |    |    |    |    |    |   |   |
|--------|-------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Set TCP#443 |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII       | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.        | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal     | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 92  
m = 1  
n = 0,1

[Initial Value] n = 1

[Function] Set the TCP#443.

[Details] n specifies TCP#443 setting.

|   |         |
|---|---------|
| n | TCP#443 |
| 0 | Invalid |
| 1 | Valid   |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 93> ESC GS ) N pL pH fn m (fn=93)

|        |              |     |    |    |    |    |    |    |   |  |
|--------|--------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send TCP#443 |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII        | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.         | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal      | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area] pL = 2, pH = 0  
fn = 93  
m = 1

[Initial Value] ---

[Function] Send TCP#443 setting.

The transmission is performed in the format below.

ESC GS ) N pL pH fn m n LF NUL

|   |         |
|---|---------|
| N | TCP#443 |
| 0 | Invalid |
| 1 | Valid   |

## <Function 94> ESC GS ) N pL pH fn m n (fn=94)

|        |               |     |    |    |    |    |    |    |   |   |
|--------|---------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Set TCP#22222 |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII         | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.          | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal       | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 94  
m = 1  
n = 0,1

[Initial Value] n = 1

[Function] Set the TCP#22222.

[Details] n specifies TCP#22222 setting.

|   |           |
|---|-----------|
| n | TCP#22222 |
| 0 | Invalid   |
| 1 | Valid     |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be reflected to the operation after a hardware reset is executed.

## <Function 95> ESC GS ) N pL pH fn m (fn=95)

|        |                |     |    |    |    |    |    |    |   |  |
|--------|----------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send TCP#22222 |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII          | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.           | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal        | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area] pL = 2, pH = 0  
fn = 95  
m = 1

[Initial Value] ---

[Function] Send TCP#22222 setting.

The transmission is performed in the format below.

ESC GS ) N pL pH fn m n LF NUL

|   |           |
|---|-----------|
| N | TCP#22222 |
| 0 | Invalid   |
| 1 | Valid     |

## <Function 96> ESC GS ) N pL pH fn m n (fn=96)

|        |                                       |     |    |    |    |    |    |    |   |   |
|--------|---------------------------------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Configures the wireless LAN function. |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII                                 | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.                                  | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal                               | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 94  
m = 1  
n=0,1

[Initial Value] n = 1

[Function] Configures the wireless LAN function.

[Details] n specifies the wireless LAN function setting.

| n | Wireless LAN function |
|---|-----------------------|
| 0 | Disabled              |
| 1 | Enabled               |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be applied to the operation after a hardware reset is executed.

## <Function 97> ESC GS ) N pL pH fn m (fn=97)

|        |                                    |     |    |    |    |    |    |    |   |  |
|--------|------------------------------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Wireless LAN function transmission |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII                              | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.                               | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal                            | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area] pL = 2, pH = 0  
fn = 95  
m = 1

[Initial Value] ---

[Function] Transmits the wireless LAN function settings.  
The transmission is performed in the format below.

ESC GS ) N pL pH fn m n LF NUL

| n | Wireless LAN function |
|---|-----------------------|
| 0 | Disabled              |
| 1 | Enabled               |

## <Function 112>ESC GS ) N pL pH fn m n (fn=112)

[Name] Save network parameter

| [Code]  | ASCII | ESC | GS | )  | N  | pL | pH | fn | m | n |
|---------|-------|-----|----|----|----|----|----|----|---|---|
| Hex.    |       | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
| Decimal |       | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 112  
m = 1  
n = 0, 1

[Initial Value] ---

[Function] In the cases above, the network parameter set by the command below is stored in the nonvolatile memory, and a hardware reset is executed.

|                     |                                                            |
|---------------------|------------------------------------------------------------|
| ESC GS ) N (fn=48)  | Set network parameters                                     |
| ESC GS ) N (fn=49)  | Set IP Address                                             |
| ESC GS ) N (fn=50)  | Set subnet mask                                            |
| ESC GS ) N (fn=51)  | Set default gateway                                        |
| ESC GS ) N (fn=52)  | Set DHCP Timeout                                           |
| ESC GS ) N (fn=53)  | Set 9100 Multi Session                                     |
| ESC GS ) N (fn=54)  | Set 9100 Data Timeout                                      |
| ESC GS ) N (fn=55)  | Set Disconnect Message                                     |
| ESC GS ) N (fn=57)  | Set SteadyLAN                                              |
| ESC GS ) N (fn=58)  | Set DNS 1 *1                                               |
| ESC GS ) N (fn=59)  | Set DNS 2 *1                                               |
| ESC GS ) N (fn=80)  | Set TCP#9100                                               |
| ESC GS ) N (fn=82)  | Set TCP#9101                                               |
| ESC GS ) N (fn=84)  | Set LPR                                                    |
| ESC GS ) N (fn=86)  | Set UDP#22222                                              |
| ESC GS ) N (fn=88)  | Set Telnet                                                 |
| ESC GS ) N (fn=90)  | Set TCP#80                                                 |
| ESC GS ) N (fn=92)  | Set TCP#433                                                |
| ESC GS ) N (fn=94)  | Set TCP#22222                                              |
| ESC GS ) N (fn=96)  | Set Wireless LAN function                                  |
| ESC GS ) N (fn=128) | Set log in password *1                                     |
| ESC GS ) N (fn=130) | Set Star CloudPRNT Cloud Service *1                        |
| ESC GS ) N (fn=132) | Set Star CloudPRNT Service URL *1                          |
| ESC GS ) N (fn=134) | Set Star CloudPRNT Polling time *1                         |
| ESC GS ) N (fn=136) | Set Star CloudPRNT User Name *1                            |
| ESC GS ) N (fn=138) | Set Star CloudPRNT Password *1                             |
| ESC GS ) N (fn=140) | Set Star CloudPRNT TLS trust level *1                      |
| ESC GS ) N (fn=142) | Set Star CloudPRNT NTP Server *1                           |
| ESC GS ) N (fn=144) | Set Star CloudPRNT TLS1.2 Cipher Suite Encryption Level *1 |
| ESC GS ) N (fn=146) | Set Star CloudPRNT TLS1.3 *1                               |
| ESC GS ) N (fn=152) | Set Star CloudPRNT HTTP Response Timeout *1                |

\*1 : Saved only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

After this command was sent, the next data must not be sent until the printer becomes online (becomes able to receive data).

"n" specifies whether or not the self print is performed after the hardware reset.

| n | Self print after hardware reset |
|---|---------------------------------|
| 0 | Without self print              |
| 1 | With self print                 |

## <Function 113>ESC GS ) N pL pH fn m n (fn=113)

[Name] Initialize network parameter

| [Code]  | ASCII | ESC | GS | )  | N  | pL | pH | fn | m | n |
|---------|-------|-----|----|----|----|----|----|----|---|---|
| Hex.    |       | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
| Decimal |       | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area]  
 pL = 3, pH = 0  
 fn = 113  
 m = 1  
 n = 0, 1

[Initial Value] ---

[Function] Initializes the network parameter stored in the nonvolatile memory, and executes a hardware reset.

|                     |                                                            |
|---------------------|------------------------------------------------------------|
| ESC GS ) N (fn=48)  | Set network parameters                                     |
| ESC GS ) N (fn=49)  | Set IP Address                                             |
| ESC GS ) N (fn=50)  | Set subnet mask                                            |
| ESC GS ) N (fn=51)  | Set default gateway                                        |
| ESC GS ) N (fn=52)  | Set DHCPTimeout                                            |
| ESC GS ) N (fn=53)  | Set 9100 Multi Session                                     |
| ESC GS ) N (fn=54)  | Set 9100 Data Timeout                                      |
| ESC GS ) N (fn=55)  | Set Disconnect Message                                     |
| ESC GS ) N (fn=57)  | Set SteadyLAN                                              |
| ESC GS ) N (fn=58)  | Set DNS 1 *1                                               |
| ESC GS ) N (fn=59)  | Set DNS 2 *1                                               |
| ESC GS ) N (fn=80)  | Set TCP#9100                                               |
| ESC GS ) N (fn=82)  | Set TCP#9101                                               |
| ESC GS ) N (fn=84)  | Set LPR                                                    |
| ESC GS ) N (fn=86)  | Set UDP#22222                                              |
| ESC GS ) N (fn=88)  | Set Telnet                                                 |
| ESC GS ) N (fn=90)  | Set TCP#80                                                 |
| ESC GS ) N (fn=92)  | Set TCP#433                                                |
| ESC GS ) N (fn=94)  | Set TCP#22222                                              |
| ESC GS ) N (fn=96)  | Set Wireless LAN function                                  |
| ESC GS ) N (fn=128) | Set log in password *1                                     |
| ESC GS ) N (fn=130) | Set Star CloudPRNT Cloud Service *1                        |
| ESC GS ) N (fn=132) | Set Star CloudPRNT Service URL *1                          |
| ESC GS ) N (fn=134) | Set Star CloudPRNT Polling time *1                         |
| ESC GS ) N (fn=136) | Set Star CloudPRNT User Name *1                            |
| ESC GS ) N (fn=138) | Set Star CloudPRNT Password *1                             |
| ESC GS ) N (fn=140) | Set Star CloudPRNT TLS trust level *1                      |
| ESC GS ) N (fn=142) | Set Star CloudPRNT NTP Server *1                           |
| ESC GS ) N (fn=144) | Set Star CloudPRNT TLS1.2 Cipher Suite Encryption Level *1 |
| ESC GS ) N (fn=146) | Set Star CloudPRNT TLS1.3 *1                               |
| ESC GS ) N (fn=152) | Set Star CloudPRNT HTTP Response Timeout *1                |

\*1 : Initialized only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

"n" specifies whether or not the self print is performed after the hardware reset.

|   |                                 |
|---|---------------------------------|
| n | Self print after hardware reset |
| 0 | Without self print              |
| 1 | With self print                 |

### <Function 114> ESC GS ) N pL pH fn m d1 ... dk (fn=114)

|        |               |     |    |    |    |    |    |    |   |    |     |    |
|--------|---------------|-----|----|----|----|----|----|----|---|----|-----|----|
| [Name] | Execute Login |     |    |    |    |    |    |    |   |    |     |    |
| [Code] | ASCII         | ESC | GS | )  | N  | pL | pH | fn | m | d1 | ... | dk |
|        | Hex.          | 1B  | 1D | 29 | 4E | pL | pH | fn | m | d1 | ... | dk |
|        | Decimal       | 27  | 29 | 41 | 78 | pL | pH | fn | m | d1 | ... | dk |

[Defined Area]  $3 \leq pL + pH \times 256 = k + 2 \leq 33$   
 $fn = 114$   
 $m = 1$   
 $k = (pL + pH \times 256)$   
 $32 \leq d \leq 126$

[Initial Value] ---

[Function] Execute login.  
d1 ... dk specifies the login password.  
Example: When specifying password "abcd1234"  
d1 = 97(0x61), d2 = 98(0x62), d3 = 99(0x63), d4 = 100(0x64), d5 = 49(0x31), d6 = 50(0x32),  
d7 = 51(0x33), d8 = 52(0x34)

Depending on the function, the network parameter setting command may be enabled only when logged in.

For details, refer to the network parameter setting command.

### <Function 115> ESC GS ) N pL pH fn m (fn=115)

|        |                   |     |    |    |    |    |    |    |   |  |
|--------|-------------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send Login Status |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII             | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.              | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal           | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area]  $pL = 2, pH = 0$   
 $fn = 115$   
 $m = 1$

[Initial Value] ---

[Function] Send Lgin status.  
The transmission is performed in the format below.  
ESC GS ) N pL pH fn m n LF NUL

|   |               |
|---|---------------|
| n | Login status  |
| 0 | Not logged in |
| 1 | Logged in     |

# <Function 116> ESC GS ) N pL pH fn m n (fn=116)

|        |                |     |    |    |    |    |    |    |   |   |
|--------|----------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Execute Logout |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII          | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.           | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal        | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 116  
m = 1  
n = 0

[Initial Value] ---

[Function] Execute Logout.

This command is enabled only when logged in with ESC GS ) N (fn=114).

Depending on the function, the network parameter setting command may be enabled only when logged in.

For details, refer to the network parameter setting command.

### <Function 128> ESC GS ) N pL pH fn m d1 ... dk (fn=128)

|                 |                                                                                                                                                                                                                                             |     |    |    |    |    |    |    |   |    |     |    |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|----|----|----|----|---|----|-----|----|
| [Name]          | Set Login Password                                                                                                                                                                                                                          |     |    |    |    |    |    |    |   |    |     |    |
| [Code]          | ASCII                                                                                                                                                                                                                                       | ESC | GS | )  | N  | pL | pH | fn | m | d1 | ... | dk |
|                 | Hex.                                                                                                                                                                                                                                        | 1B  | 1D | 29 | 4E | pL | pH | fn | m | d1 | ... | dk |
|                 | Decimal                                                                                                                                                                                                                                     | 27  | 29 | 41 | 78 | pL | pH | fn | m | d1 | ... | dk |
| [Defined Area]  | $3 \leq pL + pH \times 256 = k + 2 \leq 33$<br>$fn = 128$<br>$m = 1$<br>$pL + pH \times 256 = k + 2$<br>$32 \leq d \leq 126$                                                                                                                |     |    |    |    |    |    |    |   |    |     |    |
| [Initial Value] | "public"<br>$k = 6, d1 = 112(0x70), d2 = 117(0x75), d3 = 98(0x62), d4 = 108(0x6C), d5 = 105(0x69), d6 = 99(0x63)$                                                                                                                           |     |    |    |    |    |    |    |   |    |     |    |
| [Function]      | Set Login Password.<br>d1 ... dk specifies the login password.<br>Example: When setting password to "abcd1234"<br>$d1 = 97(0x61), d2 = 98(0x62), d3 = 99(0x63), d4 = 100(0x64), d5 = 49(0x31), d6 = 50(0x32), d7 = 51(0x33), d8 = 52(0x34)$ |     |    |    |    |    |    |    |   |    |     |    |

This command is enabled only when logged in with ESC GS ) N (fn=114).

The setting of this command is applied to operation when this command is processed, and is saved in nonvolatile memory by ESC GS ) N (fn=112).

Depending on the function, the network parameter setting command may be enabled only when the login password was changed.

For details, refer to the network parameter setting command.

### <Function 129> ESC GS ) N pL pH fn m (fn=129)

|        |                                   |     |    |    |    |    |    |    |   |  |  |
|--------|-----------------------------------|-----|----|----|----|----|----|----|---|--|--|
| [Name] | Send Login Password Change Status |     |    |    |    |    |    |    |   |  |  |
| [Code] | ASCII                             | ESC | GS | )  | N  | pL | pH | fn | m |  |  |
|        | Hex.                              | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |  |
|        | Decimal                           | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |  |

|                |                                           |
|----------------|-------------------------------------------|
| [Defined Area] | $pL = 2, pH = 0$<br>$fn = 129$<br>$m = 1$ |
|----------------|-------------------------------------------|

|                 |     |
|-----------------|-----|
| [Initial Value] | --- |
|-----------------|-----|

|            |                                                                                                                            |
|------------|----------------------------------------------------------------------------------------------------------------------------|
| [Function] | Send Login Password Change Status.<br>The transmission is performed in the format below.<br>ESC GS ) N pL pH fn m n LF NUL |
|------------|----------------------------------------------------------------------------------------------------------------------------|

|   |                              |
|---|------------------------------|
| n | Login password change status |
| 0 | Login password not changed   |
| 1 | Login password changed       |

This command is enabled only when logged in with ESC GS ) N (fn=114).

At other times, transmission is performed in the format below.

ESC GS ) N pL pH fn m LF NUL

### <Function 130> ESC GS ) N pL pH fn m n (fn=130)

|        |                                  |     |    |    |    |    |    |    |   |   |
|--------|----------------------------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Set Star CloudPRNT Cloud Service |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII                            | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.                             | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal                          | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 130  
m = 1  
n = 0,1

[Initial Value] n = 0 / Star Configuration setting

[Function] Set Star CloudPRNT Cloud Service.

[Details] n specifies the Star CloudPRNT Cloud Service setting.

|   |                              |
|---|------------------------------|
| n | Star CloudPRNT Cloud Service |
| 0 | Invalid                      |
| 1 | Valid                        |

This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

The setting of this command is saved in nonvolatile memory by ESC GS ) N (fn=112), and will be applied to operation after a hardware reset is executed.

### <Function 131> ESC GS ) N pL pH fn m (fn=131)

|        |                                   |     |    |    |    |    |    |    |   |  |
|--------|-----------------------------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send Star CloudPRNT Cloud Service |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII                             | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.                              | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal                           | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area] pL = 2, pH = 0  
fn = 131  
m = 1

[Initial Value] ---

[Function] Send Star CloudPRNT Cloud Service setting.  
The transmission is performed in the format below.

ESC GS ) N pL pH fn m n LF NUL

|   |                              |
|---|------------------------------|
| n | Star CloudPRNT Cloud Service |
| 0 | Invalid                      |
| 1 | Valid                        |

This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

At other times, transmission is performed in the format below.

ESC GS ) N pL pH fn m LF NUL

### <Function 132> ESC GS ) N pL pH fn m d1 ... dk (fn=132)

|        |                                |     |    |    |    |    |    |    |   |    |     |    |
|--------|--------------------------------|-----|----|----|----|----|----|----|---|----|-----|----|
| [Name] | Set Star CloudPRNT Service URL |     |    |    |    |    |    |    |   |    |     |    |
| [Code] | ASCII                          | ESC | GS | )  | N  | pL | pH | fn | m | d1 | ... | dk |
|        | Hex.                           | 1B  | 1D | 29 | 4E | pL | pH | fn | m | d1 | ... | dk |
|        | Decimal                        | 27  | 29 | 41 | 78 | pL | pH | fn | m | d1 | ... | dk |

[Defined Area]  $3 \leq pL + pH \times 256 = k + 2 \leq 513$   
 $fn = 132$   
 $m = 1$   
 $32 \leq d \leq 126$

[Initial Value] --- / Star Configuration setting

[Function] Set Star CloudPRNT Service URL.

[Details] d1 ... dk specifies the Star CloudPRNT Service URL.

This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

This command is enabled only when n=1 (Enabled) is set by ESC GS ) N (fn=130).

The setting of this command is saved in the nonvolatile memory by ESC GS ) N (fn=112), and will be applied to operation after a hardware reset is executed.

### <Function 133> ESC GS ) N pL pH fn m (fn=133)

|        |                                 |     |    |    |    |    |    |    |   |  |
|--------|---------------------------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send Star CloudPRNT Service URL |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII                           | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.                            | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal                         | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area]  $pL = 2, pH = 0$   
 $fn = 133$   
 $m = 1$

[Initial Value] ---

[Function] Send Star CloudPRNT Service URL.

The transmission is performed in the format below.

ESC GS ) N pL pH fn m d1 ... dk LF NUL

d1 ... dk indicates the Star CloudPRNT Service URL.

This command is enabled only when logged in with ESC GS ) N (fn=114) and the log in password was changed with ESC GS ) N (fn=128).

At other times, transmission is performed in the format below.

ESC GS ) N pL pH fn m LF NUL

### <Function 134> ESC GS ) N pL pH fn m n1 n2 (fn=134)

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |    |    |    |    |    |    |   |    |    |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|----|----|----|----|---|----|----|
| [Name]          | Set Star CloudPRNT Polling time                                                                                                                                                                                                                                                                                                                                                                                                                         |     |    |    |    |    |    |    |   |    |    |
| [Code]          | ASCII                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ESC | GS | )  | N  | pL | pH | fn | m | n1 | n2 |
|                 | Hex.                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n1 | n2 |
|                 | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 27  | 29 | 41 | 78 | pL | pH | fn | m | n1 | n2 |
| [Defined Area]  | pL = 4, pH = 0<br>fn = 134<br>m = 1<br>$1 \leq n1 + n2 \times 256 \leq 7200$                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |    |    |    |   |    |    |
| [Initial Value] | n1 = 5, n2 = 0 / Star Configuration setting                                                                                                                                                                                                                                                                                                                                                                                                             |     |    |    |    |    |    |    |   |    |    |
| [Function]      | Set Star CloudPRNT Polling time.                                                                                                                                                                                                                                                                                                                                                                                                                        |     |    |    |    |    |    |    |   |    |    |
| [Details]       | (n1+n2×256) specifies the Star CloudPRNT Polling time (sec.).<br>This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).<br>This command is enabled only when n=1 (Enabled) is set by ESC GS ) N (fn=130).<br><br>The setting of this command is saved in the nonvolatile memory by ESC GS ) N (fn=112), and will be applied to operation after a hardware reset is executed. |     |    |    |    |    |    |    |   |    |    |

### <Function 135> ESC GS ) N pL pH fn m (fn=135)

|                 |                                                                                                                                   |     |    |    |    |    |    |    |   |  |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------|-----|----|----|----|----|----|----|---|--|
| [Name]          | Send Star CloudPRNT Polling time                                                                                                  |     |    |    |    |    |    |    |   |  |
| [Code]          | ASCII                                                                                                                             | ESC | GS | )  | N  | pL | pH | fn | m |  |
|                 | Hex.                                                                                                                              | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|                 | Decimal                                                                                                                           | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |
| [Defined Area]  | pL = 2, pH = 0                                                                                                                    |     |    |    |    |    |    |    |   |  |
|                 | fn = 135                                                                                                                          |     |    |    |    |    |    |    |   |  |
|                 | m = 1                                                                                                                             |     |    |    |    |    |    |    |   |  |
| [Initial Value] | ---                                                                                                                               |     |    |    |    |    |    |    |   |  |
| [Function]      | Send Star CloudPRNT Polling time.                                                                                                 |     |    |    |    |    |    |    |   |  |
|                 | The transmission is performed in the format below.                                                                                |     |    |    |    |    |    |    |   |  |
|                 | ESC GS ) N pL pH fn m n1 n2 LF NUL                                                                                                |     |    |    |    |    |    |    |   |  |
|                 | (n1+n2×256) indicates the Star CloudPRNT Polling time.                                                                            |     |    |    |    |    |    |    |   |  |
|                 | This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128). |     |    |    |    |    |    |    |   |  |
|                 | At other times, transmission is performed in the format below.                                                                    |     |    |    |    |    |    |    |   |  |
|                 | ESC GS ) N pL pH fn m LF NUL                                                                                                      |     |    |    |    |    |    |    |   |  |

### <Function 136> ESC GS ) N pL pH fn m d1 ... dk (fn=136)

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |    |    |    |   |    |     |    |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|----|----|----|----|---|----|-----|----|
| [Name]          | Set Star CloudPRNT User Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |    |    |    |    |    |    |   |    |     |    |
| [Code]          | ASCII                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ESC | GS | )  | N  | pL | pH | fn | m | d1 | ... | dk |
|                 | Hex.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1B  | 1D | 29 | 4E | pL | pH | fn | m | d1 | ... | dk |
|                 | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 27  | 29 | 41 | 78 | pL | pH | fn | m | d1 | ... | dk |
| [Defined Area]  | $2 \leq pL + pH \times 256 = k + 2 \leq 65$<br>fn = 136<br>m = 1<br>$32 \leq d \leq 126$                                                                                                                                                                                                                                                                                                                                                                                                                          |     |    |    |    |    |    |    |   |    |     |    |
| [Initial Value] | --- / Star Configuration setting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |    |    |    |    |    |    |   |    |     |    |
| [Function]      | Set Star CloudPRNT User Name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |    |    |    |    |    |    |   |    |     |    |
| [Details]       | d1 ... dk specifies the Star CloudPRNT User Name.<br>When d is not entered, the value is not specified (default value).<br>This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).<br>This command is enabled only when n=1 (Enabled) is set by ESC GS ) N (fn=130).<br><br>The setting of this command is saved in the nonvolatile memory by ESC GS ) N (fn=112), and will be applied to operation after a hardware reset is executed. |     |    |    |    |    |    |    |   |    |     |    |

### <Function 137> ESC GS ) N pL pH fn m (fn=137)

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                |     |    |    |    |    |    |    |   |  |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|----|----|----|----|---|--|
| [Name]          | Send Star CloudPRNT User Name                                                                                                                                                                                                                                                                                                                                                                                                  |     |    |    |    |    |    |    |   |  |
| [Code]          | ASCII                                                                                                                                                                                                                                                                                                                                                                                                                          | ESC | GS | )  | N  | pL | pH | fn | m |  |
|                 | Hex.                                                                                                                                                                                                                                                                                                                                                                                                                           | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|                 | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                        | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |
| [Defined Area]  | pL = 2, pH = 0<br>fn = 137<br>m = 1                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |    |    |    |   |  |
| [Initial Value] | ---                                                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |    |    |    |   |  |
| [Function]      | Send Star CloudPRNT User Name.<br>The transmission is performed in the format below.<br>ESC GS ) N pL pH fn m d1 ... dk LF NUL<br><br>d1 ... dk indicatea the Star CloudPRNT User Name.<br>This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).<br>At other times, transmission is performed in the format below.<br>ESC GS ) N pL pH fn m LF NUL |     |    |    |    |    |    |    |   |  |

### <Function 138> ESC GS ) N pL pH fn m d1 ... dk (fn=138)

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |    |    |    |    |    |    |   |    |     |    |  |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|----|----|----|----|---|----|-----|----|--|
| [Name]          | Set Star CloudPRNT Password                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |    |    |    |    |    |    |   |    |     |    |  |
| [Code]          | ASCII                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ESC | GS | )  | N  | pL | pH | fn | m | d1 | ... | dk |  |
|                 | Hex.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1B  | 1D | 29 | 4E | pL | pH | fn | m | d1 | ... | dk |  |
|                 | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 27  | 29 | 41 | 78 | pL | pH | fn | m | d1 | ... | dk |  |
| [Defined Area]  | $2 \leq pL + pH \times 256 = k + 2 \leq 65$<br>fn = 138<br>m = 1<br>$32 \leq d \leq 126$                                                                                                                                                                                                                                                                                                                                                                                                                         |     |    |    |    |    |    |    |   |    |     |    |  |
| [Initial Value] | --- / Star Configuration setting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |    |    |    |    |    |    |   |    |     |    |  |
| [Function]      | Set Star CloudPRNT Password.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |    |    |    |    |    |    |   |    |     |    |  |
| [Details]       | d1 ... dk specifies the Star CloudPRNT Password.<br>When d is not entered, the value is not specified (default value).<br>This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).<br>This command is enabled only when n=1 (Enabled) is set by ESC GS ) N (fn=130).<br><br>The setting of this command is saved in the nonvolatile memory by ESC GS ) N (fn=112), and will be applied to operation after a hardware reset is executed. |     |    |    |    |    |    |    |   |    |     |    |  |

### <Function 139> ESC GS ) N pL pH fn m (fn=139)

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                              |     |    |    |    |    |    |    |   |  |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|----|----|----|----|---|--|
| [Name]          | Send Star CloudPRNT Password                                                                                                                                                                                                                                                                                                                                                                                                 |     |    |    |    |    |    |    |   |  |
| [Code]          | ASCII                                                                                                                                                                                                                                                                                                                                                                                                                        | ESC | GS | )  | N  | pL | pH | fn | m |  |
|                 | Hex.                                                                                                                                                                                                                                                                                                                                                                                                                         | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|                 | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                      | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |
| [Defined Area]  | pL = 2, pH = 0<br>fn = 139<br>m = 1                                                                                                                                                                                                                                                                                                                                                                                          |     |    |    |    |    |    |    |   |  |
| [Initial Value] | ---                                                                                                                                                                                                                                                                                                                                                                                                                          |     |    |    |    |    |    |    |   |  |
| [Function]      | Send Star CloudPRNT Password.<br>The transmission is performed in the format below.<br>ESC GS ) N pL pH fn m d1 ... dk LF NUL<br><br>d1 ... dk indicates the Star CloudPRNT Password.<br>This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).<br>At other times, transmission is performed in the format below.<br>ESC GS ) N pL pH fn m LF NUL |     |    |    |    |    |    |    |   |  |

## <Function 140> ESC GS ) N pL pH fn m n d1 ... dk (fn=140)

|        |                                    |     |    |    |    |    |    |    |   |   |    |     |    |
|--------|------------------------------------|-----|----|----|----|----|----|----|---|---|----|-----|----|
| [Name] | Set Star CloudPRNT TLS trust level |     |    |    |    |    |    |    |   |   |    |     |    |
| [Code] | ASCII                              | ESC | GS | )  | N  | pL | pH | fn | m | n | d1 | ... | dk |
|        | Hex.                               | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n | d1 | ... | dk |
|        | Decimal                            | 27  | 29 | 41 | 78 | pL | pH | fn | m | n | d1 | ... | dk |

[Defined Area] Spec. 1  
 $3 \leq pL + pH \times 256 = k + 3 \leq 4097$   
Spec. 2  
 $3 \leq pL + pH \times 256 = k + 3 \leq 61413$

fn = 140  
m = 1  
n = 0, 1, 2  
 $pL + pH \times 256 = k + 3$   
 $0 \leq d \leq 255$

[Initial Value] n = 0 / Star Configuration setting  
[Function] Set Send Star CloudPRNT TLS trust level.  
[Details] n specifies the Star CloudPRNT TLS trust level.

| n | Star CloudPRNT TLS trust level  |
|---|---------------------------------|
| 0 | Use trusted CA-Certificate list |
| 1 | Use custom CA-Certificate       |
| 2 | Accept all                      |

When n=1, d1 ... dk specifies the CA certificate (PEM format).

Spec. 1  
Only one CA certificate can be set as a d1...dk. No more certificates will be set.  
Spec. 2

The number of CA certificates that can be set is max. 15, as a d1...dk. No more certificates will be set.  
This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

The setting of this command is saved in nonvolatile memory by ESC GS ) N (fn=112), and will be applied to operation after a hardware reset is executed.

## <Function 141> ESC GS ) N pL pH fn m (fn=141)

|        |                                     |     |    |    |    |    |    |    |   |
|--------|-------------------------------------|-----|----|----|----|----|----|----|---|
| [Name] | Send Star CloudPRNT TLS trust level |     |    |    |    |    |    |    |   |
| [Code] | ASCII                               | ESC | GS | )  | N  | pL | pH | fn | m |
|        | Hex.                                | 1B  | 1D | 29 | 4E | pL | pH | fn | m |
|        | Decimal                             | 27  | 29 | 41 | 78 | pL | pH | fn | m |

[Defined Area] pL = 2, pH = 0  
fn = 141  
m = 1

[Initial Value] --- / Star Configuration setting

[Function] Send Send Star CloudPRNT TLS trust level.  
The transmission is performed in the format below.  
ESC GS ) N pL pH fn m n LF NUL

| n | Star CloudPRNT TLS trust level  |
|---|---------------------------------|
| 0 | Use trusted CA-Certificate list |
| 1 | Use custom CA-Certificate       |
| 2 | Accept all                      |

This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

At other times, transmission is performed in the format below.

ESC GS ) N pL pH fn m LF NUL

### <Function 142> ESC GS ) N pL pH fn m n d1 ... dk (fn=142)

|        |                               |     |    |    |    |    |    |    |   |   |    |     |    |
|--------|-------------------------------|-----|----|----|----|----|----|----|---|---|----|-----|----|
| [Name] | Set Star CloudPRNT NTP Server |     |    |    |    |    |    |    |   |   |    |     |    |
| [Code] | ASCII                         | ESC | GS | )  | N  | pL | pH | fn | m | n | d1 | ... | dk |
|        | Hex.                          | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n | d1 | ... | dk |
|        | Decimal                       | 27  | 29 | 41 | 78 | pL | pH | fn | m | n | d1 | ... | dk |

[Defined Area]  $3 \leq pL + pH \times 256 = k + 3 \leq 256$   
 $fn = 142$   
 $m = 1$   
 $n = 0, 1$   
 $pL + pH \times 256 = k + 3$   
 $32 \leq d \leq 126$

[Initial Value]  $n = 0$  ("0.pool.ntp.org") / Star Configuration setting

[Function] Set Star CloudPRNT NTP Server.

[Details] n specifies the NTP server.

|   |                       |
|---|-----------------------|
| n | NTP Server            |
| 0 | Use Star NTP service  |
| 1 | Use custom NTP server |

When  $n=1$ , d1 ... dk specifies the custom NTP Server.

This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

The setting of this command is saved in the nonvolatile memory by ESC GS ) N (fn=112), and will be applied to operation after a hardware reset is executed.

### <Function 143> ESC GS ) N pL pH fn m (fn=143)

|        |                                |     |    |    |    |    |    |    |   |
|--------|--------------------------------|-----|----|----|----|----|----|----|---|
| [Name] | Send Star CloudPRNT NTP Server |     |    |    |    |    |    |    |   |
| [Code] | ASCII                          | ESC | GS | )  | N  | pL | pH | fn | m |
|        | Hex.                           | 1B  | 1D | 29 | 4E | pL | pH | fn | m |
|        | Decimal                        | 27  | 29 | 41 | 78 | pL | pH | fn | m |

[Defined Area]  $pL = 2, pH = 0$   
 $fn = 143$   
 $m = 1$

[Initial Value] ---

[Function] Send Star CloudPRNT NTP Server.

The transmission is performed in the format below.

ESC GS ) N pL pH fn m n d1 ... dk LF NUL

|   |                       |
|---|-----------------------|
| n | NTP Server            |
| 0 | Use Star NTP service  |
| 1 | Use custom NTP server |

When  $n=0$ , d1 ... dk is not added.

When  $n=1$ , d1 ... dk indicates the custom NTP Server.

This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

At other times, transmission is performed in the format below.

ESC GS ) N pL pH fn m LF NUL

### <Function 144> ESC GS ) N pL pH fn m n (fn=144)

|        |                                                          |     |    |    |    |    |    |    |   |   |
|--------|----------------------------------------------------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Set Star CloudPRNT TLS1.2 Cipher Suites Encryption Level |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII                                                    | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.                                                     | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal                                                  | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 144  
m = 1  
n = 0,1

[Initial Value] n = 0 / Star Configuration setting

[Function] Set Star CloudPRNT Cipher Suites Encryption Level.

[Details] n specifies the Star CloudPRNT Cipher Suites Encryption Level setting.

| n | Cipher Suites Encryption Level |
|---|--------------------------------|
| 0 | HIGH + MEDIUM                  |
| 1 | MEDIUM                         |

This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

The setting of this command is saved in nonvolatile memory by ESC GS ) N (fn=112), and will be applied to operation after a hardware reset is executed.

### <Function 145> ESC GS ) N pL pH fn m (fn=145)

|        |                                                           |     |    |    |    |    |    |    |   |  |
|--------|-----------------------------------------------------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send Star CloudPRNT TLS1.2 Cipher Suites Encryption Level |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII                                                     | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.                                                      | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal                                                   | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area] pL = 2, pH = 0  
fn = 145  
m = 1

[Initial Value] ---

[Function] Send Star CloudPRNT Cipher Suites Encryption Level.

The transmission is performed in the format below.

ESC GS ) N pL pH fn m n LF NUL

| n | Cipher Suites Encryption Level |
|---|--------------------------------|
| 0 | HIGH + MEDIUM                  |
| 1 | MEDIUM                         |

This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

At other times, transmission is performed in the format below.

ESC GS ) N pL pH fn m LF NUL

### <Function 146> ESC GS ) N pL pH fn m n (fn=146)

|        |                           |     |    |    |    |    |    |    |   |   |
|--------|---------------------------|-----|----|----|----|----|----|----|---|---|
| [Name] | Set Star CloudPRNT TLS1.3 |     |    |    |    |    |    |    |   |   |
| [Code] | ASCII                     | ESC | GS | )  | N  | pL | pH | fn | m | n |
|        | Hex.                      | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n |
|        | Decimal                   | 27  | 29 | 41 | 78 | pL | pH | fn | m | n |

[Defined Area] pL = 3, pH = 0  
fn = 146  
m = 1  
n = 0,1

[Initial Value] n = 1 / Star Configuration setting

[Function] Set Star CloudPRNT TLS1.3.  
n specifies the Star CloudPRNT TLS1.3 setting.

|   |         |
|---|---------|
| n | TLS1.3  |
| 0 | Invalid |
| 1 | Valid   |

This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

The setting of this command is saved in nonvolatile memory by ESC GS ) N (fn=112), and will be applied to operation after a hardware reset is executed.

### <Function 147> ESC GS ) N pL pH fn m (fn=147)

|        |                            |     |    |    |    |    |    |    |   |  |
|--------|----------------------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send Star CloudPRNT TLS1.3 |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII                      | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.                       | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal                    | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

[Defined Area] pL = 2, pH = 0  
fn = 147  
m = 1

[Initial Value] ---

[Function] Send Star CloudPRNT TLS1.3.  
ESC GS ) N pL pH fn m n LF NUL

|   |         |
|---|---------|
| n | TLS1.3  |
| 0 | Invalid |
| 1 | Valid   |

This command is enabled only when logged in with ESC GS ) N (fn=114) and the login password was changed with ESC GS ) N (fn=128).

At other times, transmission is performed in the format below.

ESC GS ) N pL pH fn m LF NUL

# <Function 150> ESC GS ) N pL pH fn m d1 ... dk (fn=150)

[Name] Decrypt and send strings

[Code] ASCII ESC GS ) N pL pH fn m d1 ... dk  
Hex. 1B 1D 29 4E pL pH fn m d1 ... dk  
Decimal 27 29 41 78 pL pH fn m d1 ... dk

[Defined Area]  $3 \leq pL + pH \times 256 = k + 2 \leq 1026$

fn = 150

m = 1

$30 \leq d \leq 39$  ("0"  $\leq d \leq$  "9"),  $65 \leq d \leq 90$  ("A"  $\leq d \leq$  "Z"),  $97 \leq d \leq 122$  ("a"  $\leq d \leq$  "z"), d = 43, 47, 61 (d = "+", "!", "=")

[Initial Value] ---

[Function] Decrypt and send the encrypted string.  
d1 ... dk specifies an encrypted string.

If the decryption is successful, it will be sent in the following format.

ESC GS ) N pL pH fn m d1 ... dk LF NUL

| k                   | d                                                                                                                                                           |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Defined Area        | Defined Area                                                                                                                                                |
| $1 \leq k \leq 767$ | $30 \leq d \leq 39$ ("0" $\leq d \leq$ "9"), $65 \leq d \leq 90$ ("A" $\leq d \leq$ "Z"), $97 \leq d \leq 122$ ("a" $\leq d \leq$ "z"),<br>d = 45 (d = "-") |

d1 ... dk is the decrypted string.

If decryption fails, send in the following format.

ESC GS ) N pL pH fn m LF NUL

## <Function 152> ESC GS ) N pL pH fn m n1 n2 (fn=152)

|                 |                                                                                              |     |    |    |    |    |    |    |   |       |
|-----------------|----------------------------------------------------------------------------------------------|-----|----|----|----|----|----|----|---|-------|
| [Name]          | Set Star CloudPRNT HTTP Response Timeout                                                     |     |    |    |    |    |    |    |   |       |
| [Code]          | ASCII                                                                                        | ESC | GS | )  | N  | pL | pH | fn | m | n1 n2 |
|                 | Hex.                                                                                         | 1B  | 1D | 29 | 4E | pL | pH | fn | m | n1 n2 |
|                 | Decimal                                                                                      | 27  | 29 | 41 | 78 | pL | pH | fn | m | n1 n2 |
| [Defined Area]  | pL = 4, pH = 0                                                                               |     |    |    |    |    |    |    |   |       |
|                 | fn = 152                                                                                     |     |    |    |    |    |    |    |   |       |
|                 | m = 1                                                                                        |     |    |    |    |    |    |    |   |       |
|                 | n = 10, 20, 30, 40, 50, 60 (n = n1+n2×256)                                                   |     |    |    |    |    |    |    |   |       |
| [Initial Value] | n1 = 60, n2 = 0/Star Configuration setting                                                   |     |    |    |    |    |    |    |   |       |
| [Function]      | Set Star CloudPRNT HTTP Response Timeout.                                                    |     |    |    |    |    |    |    |   |       |
| [Details]       | (n1 + n2 x 256) specifies the setting value (sec.) for Star CloudPRNT HTTP Response Timeout. |     |    |    |    |    |    |    |   |       |
|                 | This command is enabled only when logged in with ESC GS ) N (fn=114)                         |     |    |    |    |    |    |    |   |       |
|                 | and the login password was changed with ESC GS ) N (fn=128)                                  |     |    |    |    |    |    |    |   |       |
|                 | and when n=1 (Enabled) is set by ESC GS ) N (fn=130).                                        |     |    |    |    |    |    |    |   |       |

The setting of this command is stored in the nonvolatile memory by ESC GS ) N (fn=112), and will be applied to the operation after a hardware reset is executed.

## <Function 153> ESC GS ) N pL pH fn m (fn=153)

|        |                                           |     |    |    |    |    |    |    |   |  |
|--------|-------------------------------------------|-----|----|----|----|----|----|----|---|--|
| [Name] | Send Star CloudPRNT HTTP Response Timeout |     |    |    |    |    |    |    |   |  |
| [Code] | ASCII                                     | ESC | GS | )  | N  | pL | pH | fn | m |  |
|        | Hex.                                      | 1B  | 1D | 29 | 4E | pL | pH | fn | m |  |
|        | Decimal                                   | 27  | 29 | 41 | 78 | pL | pH | fn | m |  |

|                 |                                            |  |  |  |  |  |  |  |  |  |
|-----------------|--------------------------------------------|--|--|--|--|--|--|--|--|--|
| [Defined Area]  | pL = 2, pH = 0                             |  |  |  |  |  |  |  |  |  |
|                 | fn = 153                                   |  |  |  |  |  |  |  |  |  |
|                 | m = 1                                      |  |  |  |  |  |  |  |  |  |
| [Initial Value] | ---                                        |  |  |  |  |  |  |  |  |  |
| [Function]      | Send Star CloudPRNT HTTP Response Timeout. |  |  |  |  |  |  |  |  |  |
|                 | It is sent in the format below.            |  |  |  |  |  |  |  |  |  |
|                 | ESC GS ) N pL pH fn m n1 n2 LF NUL         |  |  |  |  |  |  |  |  |  |

(n1+n2×256) indicates the set time (sec.) for Star CloudPRNT HTTP Response Timeout.  
Example: When the Star CloudPRNT HTTP Response Timeout setting is 60 sec.  
n1=60, n2=0

This command is enabled only when logged in with ESC GS ) N (fn=114)  
and the login password was changed with ESC GS ) N (fn=128).  
At other times, transmission is performed in the format below.  
ESC GS ) N pL pH fn m LF NUL

### 2.3.32. Command related to paper hold control

#### **ESC SYN DC3 n**

|        |                             |     |     |     |   |
|--------|-----------------------------|-----|-----|-----|---|
| [Name] | Paper hold control settings |     |     |     |   |
| [Code] | ASCII                       | ESC | SYN | DC3 | n |
|        | Hex.                        | 1B  | 16  | 13  | n |
|        | Decimal                     | 27  | 22  | 19  | n |

|                 |                                          |
|-----------------|------------------------------------------|
| [Defined Area]  | n = 0, 1, 48, 49, 255                    |
| [Initial Value] | Memory switch/Star Configuration setting |
| [Function]      | Sets paper hold control.                 |

|       |                                          |
|-------|------------------------------------------|
| n     | Paper hold control                       |
| 0, 48 | Invalid                                  |
| 1, 49 | Valid                                    |
| 255   | Memory switch/Star Configuration setting |

When this is set to valid and printing is performed, printing is executed when the paper hold sensor detects that there is no paper.

When the paper hold sensor detects paper, the next printing is put on hold until the paper is removed.

The hold time can be set with the memory switch, and it is possible to select automatic cancel when timeout occurs.

When this is set to invalid and printing is performed, printing is executed regardless of the paper hold sensor status.

Set to invalid when performing continuous printing.

If unprinted data exists in the image buffer when this command is processed, the data is printed out first and then the

command is executed.

However when in page mode, printing is not executed even when unprinted data exists in the image buffer.

If printing is in progress when this command is processed, the printer waits for printing to stop before executing this command process.

This command setting is not initialized by the ESC @ command.

The setting by this command is initialized by printer reset.

Sending of this command is prohibited in raster mode.

## ESC SYN DC4 n

|        |                                    |     |     |     |   |
|--------|------------------------------------|-----|-----|-----|---|
| [Name] | Paper hold status control settings |     |     |     |   |
| [Code] | ASCII                              | ESC | SYN | DC4 | n |
|        | Hex.                               | 1B  | 16  | 14  | n |
|        | Decimal                            | 27  | 22  | 20  | n |

|                 |                                            |
|-----------------|--------------------------------------------|
| [Defined Area]  | n = 0, 1, 48, 49, 255                      |
| [Initial Value] | Memory switch / Star Configuration setting |
| [Function]      | Sets control for paper hold status.        |

|       |                                          |
|-------|------------------------------------------|
| n     | Paper hold status control                |
| 0, 48 | Invalid                                  |
| 1, 49 | Valid                                    |
| 255   | Memory switch/Star Configuration setting |

When this is set to valid , it is possible to use the paper hold

When the paper hold sensor detects paper, the paper hold status is "paper present".

The hold time can be set with the memory switch , and it is possible to select automatic cancel of the "paper present"

status when timeout occurs.

When this is set to invalid , the paper hold sensor status is fixed at "no paper".

For information about the paper hold status, refer to Appendix 2 "Automatic status".

In line mode, if unprinted data exists in the image buffer, the data is printed out first and then this command is executed.

However printing is not executed in page mode.

If printing is in progress when this command is processed, the printer waits for printing to stop before executing this command process.

This command setting is not initialized by the ESC @ command.

The setting by this command is initialized by printer reset.

Sending of this command is prohibited in raster mode.

## ESC GS ) s pL pH fn m (fn = 48)

|        |                                          |     |    |    |     |    |    |    |   |  |
|--------|------------------------------------------|-----|----|----|-----|----|----|----|---|--|
| [Name] | Send paper hold sensor installation data |     |    |    |     |    |    |    |   |  |
| [Code] | ASCII                                    | ESC | GS | )  | s   | pL | pH | fn | m |  |
|        | Hex.                                     | 1B  | 1D | 29 | 73  | pL | pH | fn | m |  |
|        | Decimal                                  | 27  | 29 | 41 | 115 | pL | pH | fn | m |  |

|                |                |
|----------------|----------------|
| [Defined Area] | pL = 2, pH = 0 |
|                | fn = 48        |
|                | m = 1          |

|            |                                                                                                                |
|------------|----------------------------------------------------------------------------------------------------------------|
| [Function] | Paper hold sensor installation data is sent in the format below.<br><ESC> <GS> ")" "s" pL pH fn m n <LF> <NUL> |
|------------|----------------------------------------------------------------------------------------------------------------|

|   |                   |
|---|-------------------|
| n | Installation data |
| 0 | Not installed     |
| 1 | Installed         |

When outside the parameter definitions or when outside the specified sensor installation specifications, <ESC> <GS> ")" "s" <0> <0> fn <LF> <NUL> is returned.

This command is invalid in raster mode.

If unprinted data exists in the image buffer when this command is processed, the command is executed without executing printing first.

### 2.3.33. Spooler

#### **ESC GS ) SP p1 p2 p3 p4 fn [parameter]**

[Name] Spooler function

[Code] ASCII ESC GS ) SP p1 p2 p3 p4 fn [parameter]

Hex. 1B 1D 29 20 p1 p2 p3 p4 fn [parameter]

Decimal 27 29 41 32 p1 p2 p3 p4 fn [parameter]

[Function] Executes processes related to the spooler.

- With p1, p2, p3, and p4, the parameter count after "fn" is specified as  $(p1 + p2 \times 256 + p3 \times 65536 + p4 \times 16777216)$  bytes.
- For [parameter], see the function specifications.

| fn | Function No. | Function name                                   |
|----|--------------|-------------------------------------------------|
| 48 | Function 48  | Store print data in spooler                     |
| 49 | Function 49  | Acquire job information with specified job ID   |
| 50 | Function 50  | Job information list (specified number of jobs) |
|    |              |                                                 |

# <Function 48>ESC GS ) SP p1 p2 p3 p4 fn r t1 t2 a1 a2 ad1...adk

**d1 d2 d3 ... dn (fn = 48)**

|        |                             |     |    |    |    |    |    |    |    |    |   |    |    |    |    |     |     |     |     |     |
|--------|-----------------------------|-----|----|----|----|----|----|----|----|----|---|----|----|----|----|-----|-----|-----|-----|-----|
| [Name] | Store print data in spooler |     |    |    |    |    |    |    |    |    |   |    |    |    |    |     |     |     |     |     |
| [Code] | ASCII                       | ESC | GS | )  | SP | p1 | p2 | p3 | p4 | fn | r | t1 | t2 | a1 | a2 | ad1 | ad2 | ad3 | ... | adk |
|        |                             |     |    |    |    |    |    |    |    |    |   |    |    |    |    | d1  | d2  | d3  | ... | dn  |
|        | Hex.                        | 1B  | 1D | 29 | 20 | p1 | p2 | p3 | p4 | fn | r | t1 | t2 | a1 | a2 | ad1 | ad2 | ad3 | ... | adk |
|        |                             |     |    |    |    |    |    |    |    |    |   |    |    |    |    | d1  | d2  | d3  | ... | dn  |
|        | Decimal                     | 27  | 29 | 41 | 32 | p1 | p2 | p3 | p4 | fn | r | t1 | t2 | a1 | a2 | ad1 | ad2 | ad3 | ... | adk |
|        |                             |     |    |    |    |    |    |    |    |    |   |    |    |    |    | d1  | d2  | d3  | ... | dn  |

[Defined Area]

$$0 \leq r \leq 1$$

$$0 \leq (t1 + t2 \times 256) \leq 3600$$

$$k = 0 \leq (a1 + a2 \times 256) \leq 1024$$

$$(p1 + p2 \times 256 + p3 \times 65536 + p4 \times 16777216) \leq 8389638$$

$$1 \leq n \leq 8388608$$

$$n = (p1 + p2 \times 256 + p3 \times 65536 + p4 \times 16777216) - (6 + k)$$

$$fn = 48$$

[Function] Stores print data in spooler and starts printing via the spooler.

## [Detail]

r specifies whether retry is valid or invalid (0: invalid, 1: valid).  
If an error occurred during printing and retry is set to valid, then reprinting is executed after the error is canceled.  
t1 + t2 x 256 specifies the timeout time (Units: seconds, 0: No timeout, 1 to 3600).  
a1 + a2 x 256 specifies the ad data count k (0 - 1024 bytes).  
d1 to dn send printing data.

After the command process, the printer sends the execution results in the format below.

ESC GS ) SP p1 p2 p3 p4 fn id1 id2 d1 d2

|         |                          |
|---------|--------------------------|
| id1 id2 | Job ID (id1 + id2 x 256) |
|---------|--------------------------|

|    |                    |
|----|--------------------|
| d1 |                    |
| 0  | Receipt successful |
| 1  | Receipt failed     |

|    |                                    |
|----|------------------------------------|
| d2 |                                    |
| 0  | No error                           |
| 1  | Incorrect parameter                |
| 2  | Insufficient spool buffer capacity |
| 3  | Spooler invalid                    |

Do not send this command in d1 to dn. Operation is not guaranteed if it is sent.

Do not send the start/end document command (ESC GS ETX 3..., ESC GS ETX 4...) in d1 to dn. Operation is not guaranteed if it is sent.

## <Function 49>ESC GS ) SP p1 p2 p3 p4 fn id1 id2 (fn = 49)

[Name] Acquire specified job information

[Code] ASCII ESC GS ) SP p1 p2 p3 p4 fn id1 id2  
Hex. 1B 1D 29 20 p1 p2 p3 p4 fn id1 id2  
Decimal 27 29 41 32 p1 p2 p3 p4 fn id1 id2

[Defined Area] p1 = 3, p2 = 0, p3 = 0, p4 = 0, fn = 49

[Function] Sends job information for the job specified by the job ID.

[Detail]

The specified job information is sent in the format below.

ESC GS ) SP p1 p2 p3 p4 fn id1 id2 c s et1 et2 et3 et4 i r t1 t2 a1 a2 ad1 ... adk

|         |                          |
|---------|--------------------------|
| id1 id2 | Job ID (id1 + id2 x 256) |
|---------|--------------------------|

|   |                                          |
|---|------------------------------------------|
| c |                                          |
| 0 | Specified job information exists         |
| 1 | Specified job information does not exist |
| 2 | Spooler disabled                         |

|   |                                       |
|---|---------------------------------------|
| s | Status                                |
| 0 | Reserved                              |
| 1 | Received                              |
| 2 | Received: Timeout                     |
| 3 | Processing                            |
| 4 | Processing: Waiting for paper removal |
| 5 | Processing: Waiting for error reset   |
| 6 | Printing successful                   |
| 7 | Printing failed: Error                |
| 8 | Printing failed: Timeout              |
| 9 | Printing failed: Power OFF: Reset     |

|             |                                                         |
|-------------|---------------------------------------------------------|
| et1 ... et4 | Elapsed time after receiving was completed (units: sec) |
|-------------|---------------------------------------------------------|

|    |                         |
|----|-------------------------|
| i  | Job receiving interface |
| 0  | USB Printer             |
| 1  | USB AOA                 |
| 2  | USB IAP                 |
| 3  | BT                      |
| 4  | LAN Raw Socket          |
| 5  | Reserved                |
| 6  | Reserved                |
| 7  | Reserved                |
| 8  | Reserved                |
| 9  | Reserved                |
| 10 | CloudPRNT               |
| 11 | WebPRNT                 |
| 12 | SMCS                    |
| 13 | Reserved                |
| 14 | Reserved                |
| 15 | Reserved                |

|   |         |
|---|---------|
| r | Retry   |
| 0 | Invalid |
| 1 | Valid   |

|       |                           |
|-------|---------------------------|
| t1 t2 | Timeout time (units: sec) |
|-------|---------------------------|

|       |                                    |
|-------|------------------------------------|
| a1 a2 | Job additional information counter |
|-------|------------------------------------|

|             |                                                       |
|-------------|-------------------------------------------------------|
| ad1 ... adk | Job additional information $k = (a1 + a2 \times 256)$ |
|-------------|-------------------------------------------------------|

When printer power is turned OFF from the power switch, the receiving time for the held job information is cleared. The elapsed time for job information where the receiving time was cleared is sent as 0.

If the specified job does not exist, information is sent in the format below.

ESC GS ) SP p1 p2 p3 p4 fn id1 id2 c

## <Function 50>ESC GS ) SP p1 p2 p3 p4 fn n1 n2 (fn = 50)

[Name] Acquire the job information list

[Code] ASCII ESC GS ) SP p1 p2 p3 p4 fn id1 id2  
Hex. 1B 1D 29 20 p1 p2 p3 p4 fn id1 id2  
Decimal 27 29 41 32 p1 p2 p3 p4 fn id1 id2

[Defined Area] p1 = 3, p2 = 0, p3 = 0, p4 = 0, fn = 50

[Function] Sends job information for the specified number of jobs in the order of most recent receiving.

[Detail] The job information is sent in the format below.  
ESC GS ) SP p1 p2 p3 p4 fn n1 n2 c [id1 id2 s et1 et2 et3 et4 i r t1 t2 a1 a2 ad1...adk]1 [id1 id2 s et1 et2 et3 et4 i r t1 t2 a1 a2 ad1...adk]2 [id1 id2 s ...

n1 and n2 send the number which exists when the existing number of jobs is less than the specified value.

| c |                            |
|---|----------------------------|
| 0 | Reserved (spooler enabled) |
| 1 | Spooler disabled           |

| id1 id2 | Job ID (id1 + id2 x 256) |
|---------|--------------------------|
|---------|--------------------------|

| s | Status                                |
|---|---------------------------------------|
| 0 | Reserved                              |
| 1 | Received                              |
| 2 | Received: Timeout                     |
| 3 | Processing                            |
| 4 | Processing: Waiting for paper removal |
| 5 | Processing: Waiting for error reset   |
| 6 | Printing successful                   |
| 7 | Printing failed: Error                |
| 8 | Printing failed: Timeout              |
| 9 | Printing failed: Power OFF: Reset     |

| et1 ... et4 | Elapsed time after receiving was completed (units: sec) |
|-------------|---------------------------------------------------------|
|-------------|---------------------------------------------------------|

| i  | Job receiving interface |
|----|-------------------------|
| 0  | USB Printer             |
| 1  | USB AOA                 |
| 2  | USB IAP                 |
| 3  | BT                      |
| 4  | LAN Raw Socket          |
| 5  | Reserved                |
| 6  | Reserved                |
| 7  | Reserved                |
| 8  | Reserved                |
| 9  | Reserved                |
| 10 | CloudPRNT               |
| 11 | WebPRNT                 |
| 12 | SMCS                    |
| 13 | Reserved                |
| 14 | Reserved                |
| 15 | Reserved                |

|   |         |
|---|---------|
| r | Retry   |
| 0 | Invalid |
| 1 | Valid   |

|       |                           |
|-------|---------------------------|
| t1 t2 | Timeout time (units: sec) |
|-------|---------------------------|

|       |                                    |
|-------|------------------------------------|
| a1 a2 | Job additional information counter |
|-------|------------------------------------|

|             |                                                   |
|-------------|---------------------------------------------------|
| ad1 ... adk | Job additional information<br>k = (a1 + a2 x 256) |
|-------------|---------------------------------------------------|

If job information does not exist, information is sent in the format below.  
ESC GS ) SP p1 p2 p3 p4 fn n1 n2 c ( n1=0, n2=0, c=0 )

### 2.3.34. Star Configuration Commands

#### **ESC GS ) # p1 p2 p3 p4 fn [parameter]**

[Name] Star Configuration function

[Code] ASCII ESC GS ) # p1 p2 p3 p4 fn [parameter]

Hex. 1B 1D 29 23 p1 p2 p3 p4 fn [parameter]

Decimal 27 29 41 35 p1 p2 p3 p4 fn [parameter]

[Function] Executes processes related to Star Configuration.

- With p1, p2, p3, and p4, the parameter count after "fn" is specified as  $(p1 + p2 \times 256 + p3 \times 65536 + p4 \times 16777216)$  bytes.
- For [parameter], see the function specifications.

| fn | Function No. | Function name                         |
|----|--------------|---------------------------------------|
| 48 | Function 48  | Register Star Configuration Json file |
| 49 | Function 49  | Read Star Configuration Json file     |
|    |              |                                       |

# <Function 48>ESC GS ) # p1 p2 p3 p4 fn d1 d2 ... dn (fn = 48)

[Name] Register Star Configuration Json file

[Code] ASCII ESC GS ) # p1 p2 p3 p4 fn d1 d2 ... dn  
Hex. 1B 1D 29 23 p1 p2 p3 p4 fn d1 d2 ... dn  
Decimal 27 29 41 35 p1 p2 p3 p4 fn d1 d2 ... dn

[Defined Area]  $(p1 + p2 \times 256 + p3 \times 65536 + p4 \times 16777216) \leq 524289$   
fn = 48  
n  $\leq$  524288

[Function] Register Star Configuration Json file and execute printer settings.  
After the command process, the printer sends the execution results in the format below.  
ESC GS ) # p1 p2 p3 p4 fn d1 d2

| d1 | Setting status     |
|----|--------------------|
| 0  | Setting successful |
| 1  | Setting failed     |

| d2 |                                                 |
|----|-------------------------------------------------|
| 0  | No error (response after settings are applied)  |
| 1  | No error (response before settings are applied) |
| 2  | Reserved                                        |
| 3  | Reserved                                        |
| 4  | Reserved                                        |
| 5  | Star Configuration file error                   |
| 6  | Star Configuration format error                 |
| 7  | Star Configuration parameter error              |
| 8  | Reserved                                        |
| 9  | Reserved                                        |
| 10 | Incorrect password                              |
| 11 | Initial password has not been changed           |

## <Function 49>ESC GS ) # p1 p2 p3 p4 fn d1 d2 ... dn (fn = 49)

[Name] Read Star Configuration Json file

|        |         |     |    |    |    |    |    |    |    |    |    |    |     |    |
|--------|---------|-----|----|----|----|----|----|----|----|----|----|----|-----|----|
| [Code] | ASCII   | ESC | GS | )  | SP | p1 | p2 | p3 | p4 | fn | d1 | d2 | ... | dn |
|        | Hex.    | 1B  | 1D | 29 | 20 | p1 | p2 | p3 | p4 | fn | d1 | d2 | ... | dn |
|        | Decimal | 27  | 29 | 41 | 32 | p1 | p2 | p3 | p4 | fn | d1 | d2 | ... | dn |

[Defined Area]  $1 \leq (p1 + p2 \times 256 + p3 \times 65536 + p4 \times 16777216) \leq 32$   
 $fn = 49$   
 $0 \leq n \leq 31$   
 $0 \leq d \leq 255$  (However the defined area where the password can be used is  $32 \leq d \leq 126$ .)

[Function] Sends the Star Configuration Json file in the format below.  
ESC GS ) # p1 p2 p3 p4 fn j1 j2 ... jk  
When sending, p1, p2, p3, and p4 indicate the number of transmission bytes after fn.

When the password is not specified in d1 to dn, the JSON data except for the "password\_protected\_settings" block is sent.

When the correct password was specified in d1 to dn. the JSON data including the "password\_protected\_settings" block is sent.

If the specified password is incorrect, or if the password has not been changed from the initial value, the information key is added inside the password\_protected\_settings block, and that value indicates the reason why the password\_protected\_settings block cannot be read.

<Case of incorrect password>  
password\_protected\_settings {  
    **information: "wrong\_password"**  
}

<Case when the password has not been changed from the initial value>  
password\_protected\_settings {  
    **information: "password\_unchanged"**  
}

<When successful>  
password\_protected\_settings {  
    **information: "success",**  
cloudprnt {  
    service: true  
    ...  
    }  
    ...  
}

### 3. CHARACTER CODE TABLES

Refer to the separate "Character Code Tables".

## 4. APPENDIX

### 4.1. 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.  
The length (mm) of one character and Bar Codes width (mm) in the table are the values for a printer with 203 dpi resolution. With a 300 dpi printer, the values are those in the table multiplied by 203/300.

#### 4.1.1. 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.

#### 4.1.2. 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.

#### 4.1.3. 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 8<sup>th</sup> 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 13<sup>th</sup> 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 12<sup>th</sup> 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 12<sup>th</sup> digit differ, the calculated value has priority.

Data conversion to rectangles is automatic.

Data that cannot be shortened is processed as invalid data.

#### 4.1.4. Code 128

These are bar code symbols that can print ASCII 128 characters.

##### 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 2 characters 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 2 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

## &lt;Control Codes&gt;

| <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 |

## &lt;Control Codes&gt;

| Code  | Format     |
|-------|------------|
| % 25H | %0 25H 30H |

## &lt;Function Codes&gt;

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

## &lt;Start Codes&gt;

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

#### 4.1.5. 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 characters 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.

#### 4.1.6. NW7 (CODABAR)

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<br>(Normally mm)<br>(Width mm) | 3<br>3.5 | 4.5<br>5.25 | 6<br>7 | 2.75<br>3.125 | 4.25<br>5.125 | 5.5<br>6.25 | 2.5<br>2.75 | 3.75<br>4.125 | 5<br>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.

#### 4.1.7. GS1-128

##### Basic structure of data

|                     |      |           |      |               |                     |                |
|---------------------|------|-----------|------|---------------|---------------------|----------------|
| Start character     | FNC1 | AI        | Data | Check digit A | Check digit B       | Stop character |
| Added automatically |      | (d1...dn) |      |               | Added automatically |                |

##### Connection structure of data

|                     |      |           |      |               |      |    |      |               |                     |                |
|---------------------|------|-----------|------|---------------|------|----|------|---------------|---------------------|----------------|
| Start character     | FNC1 | AI        | Data | Check digit A | FNC1 | AI | Data | Check digit A | Check digit B       | Stop character |
| Added automatically |      | (d1...dn) |      |               |      |    |      |               | Added automatically |                |

The following four special characters operate as shown below.

| Special Characters |      |         |                                                                                                                                                                    |
|--------------------|------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characters         | Hex. | Decimal |                                                                                                                                                                    |
| SP                 | 20   | 32      | The first SP after d1 is the data division identifier for identifying (AI). The SP is reflected by the HRI but is not included in the encoding data.               |
| (                  | 28   | 40      | "(" is reflected by the HRI. This is useful when using "(,)" to highlight the AI. It is not included in encoding data.                                             |
| )                  | 29   | 41      | The first ")" after d1 is the data division identifier for identifying (AI). The ")" is reflected by the HRI but is not included in the encoding data.             |
| *                  | 2A   | 42      | The check digit calculated by modulus 10 is inserted automatically at the position specified in "**". The check digit is reflected in the HRI instead of the "**". |

Data added automatically is not entered in the HRI characters.

Special HRI characters are processed as shown below.

- Start characters (CODE A, CODE B, CODE C) are not printed in HRI characters.
- SP is used for HRI characters for function characters (FNC1 and FNC3) and control characters (00H to 1FH and 7FH).
- HRI characters for SP and "(,)" are printed as they are.
- The check digit is printed in the "\*\*" position.

The available data ranges for each code set (CODE A, CODE B, CODE C) are shown in the following table.

Bar code data for special characters (FNC1, FNC3) or "(,)", "\*\*", "{" sends double-byte characters as shown in the following table.

| d      |         | Character |        |        |
|--------|---------|-----------|--------|--------|
| Hex.   | Decimal | CODE A    | CODE B | CODE C |
| 00     | 0       | NUL       |        | 00     |
| 01     | 1       | SOH       |        | 01     |
| 02     | 2       | STX       |        | 02     |
| 03     | 3       | ETX       |        | 03     |
| 04     | 4       | EOT       |        | 04     |
| 05     | 5       | ENQ       |        | 05     |
| 06     | 6       | ACK       |        | 06     |
| 07     | 7       | BEL       |        | 07     |
| 08     | 8       | BS        |        | 08     |
| 09     | 9       | HT        |        | 09     |
| 0A     | 10      | LF        |        | 10     |
| 0B     | 11      | VT        |        | 11     |
| 0C     | 12      | FF        |        | 12     |
| 0D     | 13      | CR        |        | 13     |
| 0E     | 14      | SO        |        | 14     |
| 0F     | 15      | SI        |        | 15     |
| 10     | 16      | DLE       |        | 16     |
| 11     | 17      | DC1       |        | 17     |
| 12     | 18      | DC2       |        | 18     |
| 13     | 19      | DC3       |        | 19     |
| 14     | 20      | DC4       |        | 20     |
| 15     | 21      | NAK       |        | 21     |
| 16     | 22      | SYN       |        | 22     |
| 17     | 23      | ETB       |        | 23     |
| 18     | 24      | CAN       |        | 24     |
| 19     | 25      | EM        |        | 25     |
| 1A     | 26      | SUB       |        | 26     |
| 1B     | 27      | ESC       |        | 27     |
| 1C     | 28      | FS        |        | 28     |
| 1D     | 29      | GS        |        | 29     |
| 7B, 1E | 123, 30 | RS        |        | 30     |
| 1F     | 31      | US        |        | 31     |
| 20     | 32      |           |        |        |
| 21     | 33      | !         | !      | 33     |
| 22     | 34      | "         | "      | 34     |
| 23     | 35      | #         | #      | 35     |
| 24     | 36      | \$        | \$     | 36     |

| d      |         | Character |        |        |
|--------|---------|-----------|--------|--------|
| Hex.   | Decimal | CODE A    | CODE B | CODE C |
| 25     | 37      | %         | %      | 37     |
| 26     | 38      | &         | &      | 38     |
| 27     | 39      | '         | '      | 39     |
| 7B, 28 | 123, 40 | (         | (      | 40     |
| 7B, 29 | 123, 41 | )         | )      | 41     |
| 7B, 2A | 123, 42 | *         | *      | 42     |
| 2B     | 43      | +         | +      | 43     |
| 2C     | 44      | ,         | ,      | 44     |
| 2D     | 45      | -         | -      | 45     |
| 2E     | 46      | .         | .      | 46     |
| 2F     | 47      | /         | /      | 47     |
| 30     | 48      | 0         | 0      | 48     |
| 31     | 49      | 1         | 1      | 49     |
| 32     | 50      | 2         | 2      | 50     |
| 33     | 51      | 3         | 3      | 51     |
| 34     | 52      | 4         | 4      | 52     |
| 35     | 53      | 5         | 5      | 53     |
| 36     | 54      | 6         | 6      | 54     |
| 37     | 55      | 7         | 7      | 55     |
| 38     | 56      | 8         | 8      | 56     |
| 39     | 57      | 9         | 9      | 57     |
| 3A     | 58      | :         | :      | 58     |
| 3B     | 59      | ;         | ;      | 59     |
| 3C     | 60      | <         | <      | 60     |
| 3D     | 61      | =         | =      | 61     |
| 3E     | 62      | >         | >      | 62     |
| 3F     | 63      | ?         | ?      | 63     |
| 40     | 64      | @         | @      | 64     |
| 41     | 65      | A         | A      | 65     |
| 42     | 66      | B         | B      | 66     |
| 43     | 67      | C         | C      | 67     |
| 44     | 68      | D         | D      | 68     |
| 45     | 69      | E         | E      | 69     |
| 46     | 70      | F         | F      | 70     |
| 47     | 71      | G         | G      | 71     |
| 48     | 72      | H         | H      | 72     |
| 49     | 73      | I         | I      | 73     |

| d    |         | Character |        |        |
|------|---------|-----------|--------|--------|
| Hex. | Decimal | CODE A    | CODE B | CODE C |
| 4A   | 74      | J         | J      | 74     |
| 4B   | 75      | K         | K      | 75     |
| 4C   | 76      | L         | L      | 76     |
| 4D   | 77      | M         | M      | 77     |
| 4E   | 78      | N         | N      | 78     |
| 4F   | 79      | O         | O      | 79     |
| 50   | 80      | P         | P      | 80     |
| 51   | 81      | Q         | Q      | 81     |
| 52   | 82      | R         | R      | 82     |
| 53   | 83      | S         | S      | 83     |
| 54   | 84      | T         | T      | 84     |
| 55   | 85      | U         | U      | 85     |
| 56   | 86      | V         | V      | 86     |
| 57   | 87      | W         | W      | 87     |
| 58   | 88      | X         | X      | 88     |
| 59   | 89      | Y         | Y      | 89     |
| 5A   | 90      | Z         | Z      | 90     |
| 5B   | 91      | [         | [      | 91     |
| 5C   | 92      | ¥         | ¥      | 92     |
| 5D   | 93      | ]         | ]      | 93     |
| 5E   | 94      | ^         | ^      | 94     |
| 5F   | 95      | _         | _      | 95     |
| 60   | 96      | /         | `      | 96     |
| 61   | 97      | /         | a      | 97     |
| 62   | 98      | /         | b      | 98     |
| 63   | 99      | /         | c      | 99     |
| 64   | 100     | /         | d      | /      |
| 65   | 101     | /         | e      | /      |
| 66   | 102     | /         | f      | /      |
| 67   | 103     | /         | g      | /      |
| 68   | 104     | /         | h      | /      |
| 69   | 105     | /         | i      | /      |
| 6A   | 106     | /         | j      | /      |
| 6B   | 107     | /         | k      | /      |
| 6C   | 108     | /         | l      | /      |
| 6D   | 109     | /         | m      | /      |
| 6E   | 110     | /         | n      | /      |

| d      |          | Character |        |        |
|--------|----------|-----------|--------|--------|
| Hex.   | Decimal  | CODE A    | CODE B | CODE C |
| 6F     | 111      | /         | o      | /      |
| 70     | 112      | /         | p      | /      |
| 71     | 113      | /         | q      | /      |
| 72     | 114      | /         | r      | /      |
| 73     | 115      | /         | s      | /      |
| 74     | 116      | /         | t      | /      |
| 75     | 117      | /         | u      | /      |
| 76     | 118      | /         | v      | /      |
| 77     | 119      | /         | w      | /      |
| 78     | 120      | /         | x      | /      |
| 79     | 121      | /         | y      | /      |
| 7A     | 122      | /         | z      | /      |
| 7B, 7B | 123, 123 | /         | {      | /      |
| 7C     | 124      | /         |        | /      |
| 7D     | 125      | /         | }      | /      |
| 7E     | 126      | /         | ~      | /      |
| 7F     | 127      | /         | DEL    | /      |

| d      |         | Special Characters |        |        |
|--------|---------|--------------------|--------|--------|
| Hex.   | Decimal | CODE A             | CODE B | CODE C |
| 7B, 31 | 123, 49 | FNC1               | FNC1   | FNC1   |
| 7B, 33 | 123, 51 | FNC3               | FNC3   | /      |
| 20     | 32      | SP                 | SP     | SP     |
| 28     | 40      | (                  | (      | (      |
| 29     | 41      | )                  | )      | )      |
| 2A     | 42      | *                  | *      | *      |

#### 4.1.8. GS1 Databar Omnidirectional

Sends 13 digits of data except for AI (application identifiers) and check digits.

AI ("01") is added automatically.

One check digit is added automatically.

When HRI printing is enabled, 18 digits of ["(01)", (d1...d13), check digit] are printed by the HRI.

When the setting for the bar code height is smaller than [module width x33], the bar code height is printed at the [module width x33]. (Except for HRI heights)

#### 4.1.9. GS1 Databar Truncated

Sends 13 digits of data except for AI (application identifiers) and check digits.

AI ("01") is added automatically.

One check digit is added automatically.

When HRI printing is enabled, 18 digits of ["(01)", (d1...d13), check digit] are printed by the HRI.

When the setting for the bar code height is smaller than [module width x13], the bar code height is printed at the [module width x13]. (Except for HRI heights)

#### 4.1.10. GS1 Databar Limited

Sends 13 digits of data except for AI (application identifiers) and check digits.

When HRI printing is enabled, 18 digits of ["(01)", (d1...d13), check digit] are printed by the HRI.

When the setting for the bar code height is smaller than [module width x10], the bar code height is printed at the [module width x10]. (Except for HRI heights)

#### 4.1.11. GS1 Databar Expanded

When sending special characters (FNC1) or ("(", ")"), the following double-byte data is sent.

| Send data |       |         |          |
|-----------|-------|---------|----------|
| Data      | ASCII | Hex.    | Decimal  |
| FNC1      | { + 1 | 7B + 31 | 123 + 49 |
| (         | { + ( | 7B + 28 | 123 + 40 |
| )         | { + ) | 7B + 29 | 123 + 41 |

The special character ("(", ")") is processed as shown in the following table.

| Special characters |      |         |                                                                                                                           |
|--------------------|------|---------|---------------------------------------------------------------------------------------------------------------------------|
| character          | Hex. | Decimal |                                                                                                                           |
| (                  | 28   | 40      | "(" is entered in the HRI character. AI can be highlighted by using in combination with ")". " " is not encoded.          |
| )                  | 29   | 41      | The first ")" after d1 is handled as an AI and the data divider. ")" is entered in the HRI character. " " is not encoded. |

When HRI character printing is enabled, special characters are handled in the HRI as shown below.

- Control characters (FNC1) are not printed.
- Special characters ("(", ")") are printed.
- Bar code data [{" + ("(", ")")}] is printed as ("(", ")").

When the setting for the bar code height is smaller than [module width x34], the bar code height is printed at the [module width x34]. (Except for HRI heights)

## 4.2. Appendix 2: Status Specifications

### 4.2.1. 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 initial value for automatic status enabled/disabled is determined by the DIP SW or memory switch.

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" | mPOP                | L Series | S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at "0"              |        | -   | -                   | -        | -          | -                       | -         | -                       | -         | -                       | -       | -         |
| 6   | Printer Status Byte Count |        | -   | -                   | -        | -          | -                       | -         | -                       | OK        | -                       | -       | OK        |
| 5   | Printer Status Byte Count |        |     | OK                  | 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      | OK        |
| 2   | Printer Status Byte Count |        |     | OK                  | OK       | OK         | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        |
| 1   | Printer Status Byte Count |        |     | OK                  | 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<br>( $7 \leq n \leq 15$ ) | Header-1           | Model                                                                   |
|-----------------------------------------------------|--------------------|-------------------------------------------------------------------------|
| 7                                                   | 00001111B (0F Hex) |                                                                         |
| 8                                                   | 00100001B (21 Hex) |                                                                         |
| 9                                                   | 00100011B (23 Hex) | SM-L Series<br>SM-S, T Series                                           |
| 10                                                  | 00100101B (25 Hex) |                                                                         |
| 11                                                  | 00100111B (27 Hex) | mPOP<br>(FW Ver1.0 to 3.1)                                              |
| 12                                                  | 00101001B (29 Hex) | mC-Print2<br>mC-Print3 (1st Generation)<br>mPOP<br>(FW Ver4.0 or later) |
| 13                                                  | 00101011B (2B Hex) |                                                                         |
| 14                                                  | 00101101B (2D Hex) |                                                                         |
| 15                                                  | 00101111B (2F Hex) | TSP100IV<br>TSP100IV SK<br>mC-Print3 (2nd Generation)<br>BSC10II        |
| 16                                                  | 01000001B(41 Hex)  | mC-Label3<br>mC-Label2                                                  |

## 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"       | mPOP                | L Series | S, T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |
| 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      | OK        |
| 4   | Fixed at "0"            |              | -         | -                   | -        | -           | -                    | -         | -                       | -         | -                    | -       | -         |
| 3   | Version No.             |              |           | OK                  | OK       | OK          | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        |
| 2   | Version No.             |              |           | OK                  | OK       | OK          | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        |
| 1   | Version No.             |              |           | OK                  | 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                                     |
|-------------------------------------------------------------------------|-------------|--------------------------------------------|
| SM-L Series<br>SM-S, T Series                                           | 3 (06Hex)   | Up to printer status 7 (9th byte) loaded   |
| mPOP<br>(FW Ver1.0 to 3.1)                                              | 4 (08 Hex)  | Up to printer status 9 (11th byte) loaded  |
| mC-Print2<br>mC-Print3 (1st Generation)<br>mPOP<br>(FW Ver4.0 or later) | 5 (0A Hex)  | Up to printer status 10 (12th byte) loaded |
| TSP100IV<br>TSP100IV SK<br>mC-Print3 (2nd Generation)<br>BSC10II        | 6 (0CHex)   | Up to printer status 13 (15th byte) loaded |
| mC-Label3<br>mC-Label2                                                  | 7(0EHex)    | Up to printer status 14 (16th 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"      | mPOP                | L Series | S, T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at "0"            |                 | -        | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 6   | OFFLINE By Switch Input | No              | Yes      | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 5   | Cover Status            | Closed          | Open     | OK                  | 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      | OK        |
| 2   | Drawer status           | Closed          | Open     | OK                  | No       | No          | OK                      | OK        | OK                      | OK        | OK                      | OK      | No        |
| 1   | <ETB> Command           | Not<br>Executed | Executed | OK                  | 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).

- CashDrawer Status (Model limitation)

For mPOP, the restrictions differ as follows depending on the FW version.

<F/W Ver.1.0 to Ver.1.3 > Indicates the state of the internal drawer.

<F/W Ver.2.0 or later> If the hardware supports DK ports, OPEN indicates that either the internal drawer or external drawer are open, while CLOSE indicates that both are closed.

If the hardware does not support DK ports, it indicates the state of the internal drawer.

## &lt;Printer status 2: Error Information (Fourth Byte)&gt;

| Bit | Contents                         | Status      |         | Model Compatability |          |             |                         |           |                         |           |                         |         |           |
|-----|----------------------------------|-------------|---------|---------------------|----------|-------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|
|     |                                  | "0"         | "1"     | mPOP                | L Series | S, T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at "0"                     |             | -       | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 6   | Stopped by high head temperature | Not stopped | Stopped | OK                  | OK       | OK          | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        |
| 5   | Non-recoverable Error            | No          | Yes     | OK                  | OK       | No          | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        |
| 4   | Fixed at "0"                     |             | -       | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 3   | Auto-cutter Error                | No          | Yes     | OK                  | No       | No          | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        |
| 2   | Mechanical Error                 | No          | Yes     | No                  | No       | No          | No                      | No        | No                      | No        | No                      | No      | No        |
|     | Head Thermistor Error            | No          | Yes     | OK                  | No       | No          | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        |
| 1   | Not Used (Fixed at "0")          |             |         | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 0   | Fixed at "0"                     |             | -       | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |

## &lt;Printer status 3: Error Information (Fifth Byte)&gt;

| Bit | Contents                | Status |     | Model Compatability |          |             |                         |           |                                                         |           |                         |         |           |
|-----|-------------------------|--------|-----|---------------------|----------|-------------|-------------------------|-----------|---------------------------------------------------------|-----------|-------------------------|---------|-----------|
|     |                         | "0"    | "1" | mPOP                | L Series | S, T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK                                 | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at "0"            |        | -   | -                   | -        | -           | -                       | -         | -                                                       | -         | -                       | -       | -         |
| 6   | Reserved (Fixed at "0") |        | -   | -                   | -        | -           | -                       | -         | -                                                       | -         | -                       | -       | -         |
| 5   | Reserved (Fixed at "0") |        | -   | -                   | -        | -           | -                       | -         | -                                                       | -         | -                       | -       | -         |
| 4   | Fixed at "0"            |        | -   | -                   | -        | -           | -                       | -         | -                                                       | -         | -                       | -       | -         |
| 3   | BM Error                | No     | Yes | No                  | OK       | OK          | No                      | No        | No                                                      | OK        | No                      | No      | OK        |
| 2   | Paper Jam Error         | No     | Yes | -                   | -        | -           | -                       | -         | (TSP100IV)<br>FW Ver2.1<br>or later<br>(TSP100IV<br>SK) | OK        | -                       | -       | OK        |
| 1   | Electric Voltage Error  | No     | Yes | OK                  | No       | No          | OK                      | OK        | OK                                                      | OK        | OK                      | OK      | OK        |
| 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.

## &lt;Printer status 4: Sensor Information (Sixth Byte)&gt;

| Bit | Contents                    | Status |          | Model Compatability |          |             |                         |           |                         |           |                         |         |           |
|-----|-----------------------------|--------|----------|---------------------|----------|-------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|
|     |                             | "0"    | "1"      | mPOP                | L Series | S, T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at "0"                |        | -        | -                   | -        | -           | -                       | -         | -                       | -         | -                       | —       | -         |
| 6   | Not Used (Fixed at "0")     |        | -        | -                   | -        | -           | -                       | -         | -                       | -         | -                       | —       | -         |
| 5   | Paper Position Error        | No     | Yes      | -                   | -        | -           | -                       | -         | -                       | OK        | -                       | —       | -         |
| 4   | Fixed at "0"                |        | -        | -                   | -        | -           | -                       | -         | -                       | -         | -                       | —       | -         |
| 3   | Paper end                   | Paper  | No Paper | OK                  | OK       | OK          | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        |
| 2   | Paper Near-end (Inner Side) | Paper  | No Paper | No                  | No       | No          | OK                      | No        | No                      | No        | OK                      | No      | No        |
| 1   | Paper Near-end (Outer Side) | Paper  | No Paper | -                   | -        | -           | -                       | -         | -                       | -         | -                       | —       | -         |
| 0   | Fixed at "0"                |        | -        | -                   | -        | -           | -                       | -         | -                       | -         | -                       | —       | -         |

## &lt;Printer status 5: Sensor Information (Seventh Byte)&gt;

| Bit | Contents                | Status   |       | Model Compatability |          |             |                         |           |                                           |           |                         |         |           |
|-----|-------------------------|----------|-------|---------------------|----------|-------------|-------------------------|-----------|-------------------------------------------|-----------|-------------------------|---------|-----------|
|     |                         | "0"      | "1"   | mPOP                | L Series | S, T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK                   | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at "0"            |          | -     | -                   | -        | -           | -                       | -         | -                                         | -         | -                       | -       | -         |
| 6   | Not Used (Fixed at "0") |          | -     | -                   | -        | -           | -                       | -         | -                                         | -         | -                       | -       | -         |
| 5   | Not Used (Fixed at "0") |          | -     | -                   | -        | -           | -                       | -         | -                                         | -         | -                       | -       | -         |
| 4   | Fixed at "0"            |          | -     | -                   | -        | -           | -                       | -         | -                                         | -         | -                       | -       | -         |
| 3   | Reserved (Fixed at "0") |          | -     | -                   | -        | -           | -                       | -         | -                                         | -         | -                       | -       | -         |
| 2   | Reserved (Fixed at "0") |          | -     | -                   | -        | -           | -                       | -         | -                                         | -         | -                       | -       | -         |
| 1   | Paper Hold Sensor       | No Paper | Paper | -                   | -        | -           | -                       | -         | -<br>(TSP100IV)<br>OK<br>(TSP100IV<br>SK) | OK        | -                       | -       | OK        |
| 0   | Fixed at "0"            |          | -     | -                   | -        | -           | -                       | -         | -                                         | -         | -                       | -       | -         |

### <Printer status 6: ETB Counter (Eighth Byte)>

| Bit | Contents          | Status |     | Model Compatability |          |             |                         |           |                         |           |                         |         |           |
|-----|-------------------|--------|-----|---------------------|----------|-------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|
|     |                   | "0"    | "1" | mPOP                | L Series | S, T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at 0        |        | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 6   | ETB Counter Bit-4 |        |     | OK                  | OK       | OK          | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        |
| 5   | ETB Counter Bit-3 |        |     | OK                  | 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      | OK        |
| 2   | ETB Counter Bit-1 |        |     | OK                  | OK       | OK          | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        |
| 1   | ETB Counter Bit-0 |        |     | OK                  | 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

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

| Bit | Contents                | Status |     | Model Compatability |          |             |                         |           |                         |           |                         |         |           |
|-----|-------------------------|--------|-----|---------------------|----------|-------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|
|     |                         | "0"    | "1" | mPOP                | L Series | S, T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at "0"            |        | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 6   | Not Used (Fixed at "0") |        | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 5   | Not Used (Fixed at "0") |        | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 4   | Fixed at "0"            |        | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 3   | Reserved (Fixed at "0") |        | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 2   | Reserved (Fixed at "0") |        | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 1   | Reserved (Fixed at "0") |        | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 0   | Fixed at "0"            |        | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |

- This status is valid only on models provided with a presenter.

&lt;Printer status 8: Error Information (Tenth Byte)&gt;

| Bit | Contents                                     | Status   |       | Model Compatability |          |             |                         |           |                         |           |                         |         |           |
|-----|----------------------------------------------|----------|-------|---------------------|----------|-------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|
|     |                                              | "0"      | "1"   | mPOP                | L Series | S, T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at "0"                                 |          | -     | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 6   | Stopped printing due to high PCB temperature | No Stop  | Stop  | No                  | No       | No          | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        |
| 5   | Drawer open error                            | No error | Error | OK                  | No       | No          | No                      | No        | No                      | No        | No                      | No      | No        |
| 4   | Fixed at "0"                                 |          | -     | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 3   | FLASH access error                           | No error | Error | OK                  | No       | No          | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        |
| 2   | EEPROM access error                          | No error | Error | OK                  | No       | No          | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        |
| 1   | SRAM access error                            | No error | Error | No                  | No       | No          | No                      | No        | No                      | No        | No                      | No      | No        |
| 0   | Fixed at "0"                                 |          | -     | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |

&lt;Printer status 9: Error Information (11th Byte)&gt;

| Bit | Contents                                                  | Status   |       | Model Compatability |          |             |                         |           |                         |           |                         |         |           |
|-----|-----------------------------------------------------------|----------|-------|---------------------|----------|-------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|
|     |                                                           | "0"      | "1"   | mPOP                | L Series | S, T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at "0"                                              |          | -     | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 6   | PCB thermistor error                                      | No error | Error | No                  | No       | No          | No                      | No        | No                      | No        | No                      | No      | No        |
| 5   | Sensor adjustment error                                   | No error | Error | No                  | No       | No          | No                      | No        | No                      | No        | No                      | No      | No        |
| 4   | Fixed at "0"                                              |          | -     | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 3   | Printer Unit status                                       | Closed   | Open  | OK                  | No       | No          | No                      | No        | No                      | No        | No                      | No      | No        |
| 2   | Spooler buffer full<br>(When spooler command is not used) | No error | Error | -                   | -        | -           | -                       | -         | -                       | OK        | -                       | -       | -         |
| 1   | Reserved (Fixed at "0")                                   |          | -     | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 0   | Fixed at "0"                                              |          | -     | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |

## &lt;Printer status 10: I/F Information (12th Byte)&gt;

| Bit | Contents                 | Status |     | Model Compatability          |                 |                 |                         |                 |                                                                        |               |                         |         |           |
|-----|--------------------------|--------|-----|------------------------------|-----------------|-----------------|-------------------------|-----------------|------------------------------------------------------------------------|---------------|-------------------------|---------|-----------|
|     |                          | "0"    | "1" | mPOP                         | L Series        | S, T Series     | mC-Print3<br>(1st Gen.) | mC-Print2       | TSP100IV<br>TSP100IV SK                                                | mC-<br>Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at "0"             |        | -   | -                            | -               | -               | -                       | -               | -                                                                      | -             | -                       | -       | -         |
| 6   | During communication I/F |        | -   | Fixed at<br>"0"              | Fixed at<br>"0" | Fixed at<br>"0" | Fixed at<br>"0"         | Fixed at<br>"0" | Fixed at "0"<br>FW Ver.1.0<br>or later<br>OK<br>FW Ver.2.0<br>or later | OK            | OK                      | OK      | OK        |
| 5   | During communication I/F |        | -   | Fixed at<br>"0"              | Fixed at<br>"0" | Fixed at<br>"0" | Fixed at<br>"0"         | Fixed at<br>"0" | Fixed at "0"<br>FW Ver.1.0<br>or later<br>OK<br>FW Ver.2.0<br>or later | OK            | OK                      | OK      | OK        |
| 4   | Fixed at "0"             |        | -   | -                            | -               | -               | -                       | -               | -                                                                      | -             | -                       | -       | -         |
| 3   | During communication I/F |        | -   | OK<br>FW Ver.4.0<br>or later | No              | No              | OK                      | OK              | OK                                                                     | OK            | OK                      | OK      | OK        |
| 2   | During communication I/F |        | -   | OK<br>FW Ver.4.0<br>or later | No              | No              | OK                      | OK              | OK                                                                     | OK            | OK                      | OK      | OK        |
| 1   | During communication I/F |        | -   | OK<br>FW Ver.4.0<br>or later | No              | No              | OK                      | OK              | OK                                                                     | OK            | OK                      | OK      | OK        |
| 0   | Fixed at "0"             |        | -   | -                            | -               | -               | -                       | -               | -                                                                      | -             | -                       | -       | -         |

## During communication I/F

| Bit6 | Bit5 | Bit3 | Bit2 | Bit1 | During communication I/F (broad category) | During communication I/F                     |                                        |
|------|------|------|------|------|-------------------------------------------|----------------------------------------------|----------------------------------------|
| 0    | 0    | 0    | 0    | 0    | USB                                       | USB-B                                        | USB-B                                  |
| 0    | 0    | 0    | 0    | 1    | USB                                       | USB (iOS)                                    | USB (iOS)                              |
| 0    | 0    | 0    | 1    | 0    | Bluetooth                                 | Bluetooth                                    | Bluetooth                              |
| 0    | 0    | 0    | 1    | 1    | LAN                                       | Ethernet                                     | Ethernet                               |
| 0    | 0    | 1    | 0    | 0    | USB                                       | USB-C (Windows/Android USB PD not supported) | USB-C (Printer Class USB PD supported) |
| 0    | 0    | 1    | 0    | 1    | USB                                       | USB-C (Windows USB PD not supported)         | USB-C(Printer Class PD not supported)  |
| 0    | 0    | 1    | 1    | 0    | USB                                       | USB-A (Android)                              | USB-A (AOA)                            |
| 0    | 0    | 1    | 1    | 1    | USB                                       | USB (iOS)                                    | USB (iOS)                              |
| 0    | 1    | 0    | 0    | 0    | USB                                       | USB-C (Android USB PD not supported)         | USB-C (AOA USB PD not supported)       |
| 1    | 0    | 1    | 0    | 0    | LAN                                       | WLAN                                         | WLAN                                   |

<Printer status 11: Drawer Information (13th Byte)>

| Bit | Contents                | Status |         | Model Compatability |          |             |                         |           |                         |           |                         |         |           |
|-----|-------------------------|--------|---------|---------------------|----------|-------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|
|     |                         | "0"    | "1"     | mPOP                | L Series | S, T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at "0"            | —      | —       | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 6   | Cash Drawer Open method | Manual | Command | -                   | -        | -           | -                       | -         | OK                      | OK        | OK                      | OK      | -         |
| 5   | Cash Drawer Status      | CLOSE  | OPEN    | -                   | -        | -           | -                       | -         | OK                      | OK        | OK                      | OK      | -         |
| 4   | Fixed at "0"            | -      | -       | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 3   | Cash Drawer Open method | Manual | Command | -                   | -        | -           | -                       | -         | OK                      | OK        | OK                      | OK      | -         |
| 2   | Cash Drawer Status      | CLOSE  | OPEN    | -                   | -        | -           | -                       | -         | OK                      | OK        | OK                      | OK      | -         |
| 1   | Reserved (Fixed at "0") | -      | -       | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 0   | Fixed at "0"            | -      | -       | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |

- < Cash Drawer Open method > and < Cash Drawer Status >

By checking the status, you can see what caused the cash drawer to be opened.

| Bit6<br>Bit3 | Bit5<br>Bit2 | Cash Drawer status & control<br>method |
|--------------|--------------|----------------------------------------|
| 0            | 0            | CLOSE                                  |
| 0            | 1            | OPEN by hand                           |
| 1            | 0            | Does not occur                         |
| 1            | 1            | OPEN by Command                        |

Notes) - However if the cash door is opened or closed by hand while the cash drawer is being operated by a command, the status may become "Unstable". Therefore do not open or close the cash drawer by hand while the cash drawer is being operated by a command.

- Cash drawer open method and cash drawer status (Bit 6, Bit 5) and (Bit 3, Bit 2) are same values.

&lt;Printer status 12: Drawer Information (14th Byte)&gt;

| Bit | Contents                | Status |     | Model Compatability |          |             |                         |           |                         |           |                         |         |           |
|-----|-------------------------|--------|-----|---------------------|----------|-------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|
|     |                         | "0"    | "1" | mPOP                | L Series | S, T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at "0"            | -      | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 6   | Reserved (Fixed at "0") | -      | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 5   | Reserved (Fixed at "0") | -      | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 4   | Fixed at "0"            | -      | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 3   | Reserved (Fixed at "0") | -      | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 2   | Reserved (Fixed at "0") | -      | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 1   | Reserved (Fixed at "0") | -      | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 0   | Fixed at "0"            | -      | -   | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |

&lt;Printer status 13: External Device Information (15th Byte)&gt;

| Bit | Contents                               | Status       |           | Model Compatability |          |             |                         |           |                         |           |                         |         |           |
|-----|----------------------------------------|--------------|-----------|---------------------|----------|-------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|
|     |                                        | "0"          | "1"       | mPOP                | L Series | S, T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at "0"                           | -            | -         | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 6   | Connection status of External device 1 | disconnected | Connected | -                   | -        | -           | -                       | -         | OK                      | OK        | OK                      | OK      | -         |
| 5   | Connection status of External device 2 | disconnected | Connected | -                   | -        | -           | -                       | -         | OK                      | OK        | OK                      | OK      | -         |
| 4   | Fixed at "0"                           | -            | -         | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 3   | Reserved (Fixed at "0")                | -            | -         | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 2   | Reserved (Fixed at "0")                | -            | -         | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 1   | Reserved (Fixed at "0")                | -            | -         | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 0   | Fixed at "0"                           | -            | -         | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |

#### <Printer status 14 (16th Byte)>

| Bit | Contents                 | Status             |                        | Model Compatability |          |             |                         |           |                         |           |                         |         |           |
|-----|--------------------------|--------------------|------------------------|---------------------|----------|-------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|
|     |                          | "0"                | "1"                    | mPOP                | L Series | S, T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |
| 7   | Fixed at "0"             | -                  | -                      | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 6   | Replacement notification | No<br>notification | Notification<br>exists | -                   | -        | -           | -                       | -         | -                       | OK        | -                       | -       | OK        |
| 5   | Cleaning notification    | No<br>notification | Notification<br>exists | -                   | -        | -           | -                       | -         | -                       | OK        | -                       | -       | OK        |
| 4   | Fixed at "0"             | -                  | -                      | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |
| 3   | Paper width              | -                  | -                      | -                   | -        | -           | -                       | -         | -                       | OK        | -                       | -       | -         |
| 2   | Paper width              | -                  | -                      | -                   | -        | -           | -                       | -         | -                       | OK        | -                       | -       | -         |
| 1   | Paper width              | -                  | -                      | -                   | -        | -           | -                       | -         | -                       | OK        | -                       | -       | -         |
| 0   | Fixed at "0"             | -                  | -                      | -                   | -        | -           | -                       | -         | -                       | -         | -                       | -       | -         |

#### <Paper Width>

mC-Label3:

| Bit3 | Bit2 | Bit2 | Paper Width |
|------|------|------|-------------|
| 0    | 0    | 0    | 80.0mm      |
| 0    | 0    | 1    | 58.0mm      |
| 0    | 1    | 0    | 40.0mm      |
| 0    | 1    | 1    | 25.0mm      |

#### 4. Notes

While the automatic status is valid, do not use ESC ACK SOH. Before using these inquiry commands, first be sure to set the automatic status function invalid by DIPSW (memory switch) or ESC RS a n command.

#### 5. Status Identification Method

| Command/Function          | 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    |
| ASB (header 1)            | 0      | *    | *    | 0    | *    | *    | *    | 1    |
| ASB (Other than header 1) | 0      | *    | *    | 0    | *    | *    | *    | 0    |

0 = Indicates a bit fixed to "0". / 1 = Indicates a bit fixed to "1". / \* = Indicates a variable bit.

#### 4.2.2. Printer Status Transmission Specification for Ethernet I/F

Describes the printer status transmission specification for the Ethernet I/F

##### 1) Transmission format

- If you want to send only STAR ASB  
`[STAR ASB (2nd byte Bit-7=1)] + [Length]` (Length = 0x0000 )
- If you want to send printer status transmission other than STAR ASB  
`[STAR ASB (2nd byte Bit-7=1)] + [Length] + [Status Data]`

<Length details>

- 2-byte value indicating the number of bytes of status data ( $0x0000 \leq \text{Length} \leq 0x0200$ )
- If Status data is 10 bytes, Length = 0x000a
- If sending only STAR ASB, add Length = 0x0000
- If length is added to STAR ASB second byte Bit-7, then is set to Bit-7 = 1

Detect whether analysis of status detects all the bytes for ASB for the first byte STAR ASB, and length is added to the bit-7 for the 2nd byte for STAR ASB.

Furthermore by obtaining the number of bytes of subsequent Status Data with the length, analyzed status is possible.

##### 2) `[Status Data]` Transmission format

`[Status Type] + [delimiter 1] + [Data Type] + [Status Length] + Printer Status + [delimiter 2]`

1. Status Type (2byte or 4Byte)
  - < Header 1 (the second byte) >
  - It indicates the cause of printer status
2. Delimiter 1 (1 byte)  
 Transmit ":"
3. Data Type (1 byte)  
 Indicate the data type of the Printer Status, and send "B" (the binary type)
4. Status Length (2byte)  
 2-byte value that indicates the number of bytes in the Printer Status
5. Printer Status (variable length)  
 Status transmitted by the printer  
 Status contents are different due to the occurrence factor  
 For more information on status content, refer to cause of command, and automatic status
6. Delimiter 2 (1 byte)  
 Transmit ","

### 3) Status transmission specification list

| Status causes                                   | STAR<br>ASB | Length             | Status Data                                    |                |              |                    |                   |             |
|-------------------------------------------------|-------------|--------------------|------------------------------------------------|----------------|--------------|--------------------|-------------------|-------------|
|                                                 |             |                    | Status Type                                    | Delimiter<br>1 | Data<br>Type | Status<br>Length   | Printer<br>Status | Delimiter 2 |
|                                                 |             |                    | The first and second<br>byte occurrence factor |                |              |                    |                   |             |
| ASB<br>Automatic status (*1)                    | ASB         | 0x0000             | --                                             | --             | --           | --                 | --                | --          |
| ESC ACK SOH<br>Request printer status           | ASB         | 0x0000             | --                                             | --             | --           | --                 | --                | --          |
| ESC # *<br>Request printer version              | ASB         | Variable<br>length | "11"                                           | ","<br>.       | "B"          | Variable<br>length | Status            | ","<br>.    |
| ESC GS ETX s n1 n2<br>Request print end counter | ASB         | 0x000F             | "20"                                           | ","<br>.       | "B"          | 0x0008             | Status            | ","<br>.    |
| Request other command<br>response               | ASB         | Variable<br>length | "A1"                                           | ","<br>.       | "B"          | Variable<br>length | Block<br>Data     | ","<br>.    |

\*1) For automatic status it is delivered to all hosts in the TCP # 9100 port connection.

Note) Depending on a model, the installed memory switch region differs.

### 4.3. 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 |   |  |  |  |   |  |  |
|-----|---|---|---|---|---|---|---|-----|---|--|--|--|---|--|--|
| d1  |   |   |   |   |   |   |   |     |   |  |  |  |   |  |  |
| d3  |   |   |   |   | . | . | . | .   |   |  |  |  |   |  |  |
| d5  |   |   | . | . | . | . | . | .   |   |  |  |  |   |  |  |
| d7  |   |   | . | . |   |   |   |     |   |  |  |  |   |  |  |
| d9  | . | . |   |   |   |   |   |     |   |  |  |  |   |  |  |
| d11 | . | . |   |   |   |   |   |     |   |  |  |  |   |  |  |
| d13 | . | . |   |   |   |   |   |     |   |  |  |  |   |  |  |
| d15 |   |   |   |   |   |   |   |     |   |  |  |  |   |  |  |
| d17 |   |   |   |   |   |   |   |     |   |  |  |  |   |  |  |
| d19 |   |   |   |   |   |   |   |     |   |  |  |  |   |  |  |
| d21 |   |   |   |   |   |   |   |     |   |  |  |  | . |  |  |
| d23 |   |   |   |   |   |   |   | .   | . |  |  |  |   |  |  |
| d25 |   |   |   |   |   |   |   | .   | . |  |  |  |   |  |  |
| d27 |   |   |   |   |   | . | . |     |   |  |  |  |   |  |  |
| d29 |   |   |   |   | . | . | . |     |   |  |  |  |   |  |  |
| d31 |   |   |   | . | . | . |   |     |   |  |  |  |   |  |  |
| d33 |   |   |   | . | . |   |   |     |   |  |  |  |   |  |  |
| d35 |   |   | . | . |   |   |   |     |   |  |  |  |   |  |  |
| d37 | . | . | . |   |   |   |   |     |   |  |  |  |   |  |  |
| d39 | . | . | . | . | . | . | . |     |   |  |  |  |   |  |  |
| d41 | . | . | . | . | . | . | . |     |   |  |  |  |   |  |  |
| d43 |   |   |   |   |   |   |   |     |   |  |  |  |   |  |  |
| d45 |   |   |   |   |   |   |   |     |   |  |  |  |   |  |  |
| d47 |   |   |   |   |   |   |   |     |   |  |  |  |   |  |  |
| d2  |   |   |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d4  |   |   |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d6  | . | . |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d8  | . | . |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d10 |   | . | . |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d12 |   | . | . |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d14 |   | . | . |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d16 |   | . | . |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d18 | . | . |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d20 | . | . |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d22 | . |   |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d24 |   |   |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d26 |   |   |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d28 |   |   |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d30 |   |   |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d32 |   |   |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d34 |   |   |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d36 |   |   |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d38 |   |   |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d40 | . | . | . |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d42 | . | . | . |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d44 |   |   |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| d46 |   |   |   |   | 0 | 0 | 0 | 0   |   |  |  |  |   |  |  |
| 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

### 3. Example configuration of Font C data. (9 x 17 font)

|     | MSB |   |   | LSB |   |   |   |
|-----|-----|---|---|-----|---|---|---|
| d1  |     |   |   | .   | . | . |   |
| d3  |     |   | . | .   | . | . |   |
| d5  |     |   | . | .   |   | . | . |
| d7  |     | . | . |     |   | . | . |
| d9  |     | . | . |     |   | . | . |
| d11 |     | . | . |     |   | . | . |
| d13 |     |   |   |     |   | . | . |
| d15 |     |   |   |     |   | . | . |
| d17 |     |   |   |     | . | . | . |
| d19 |     |   |   | .   | . | . | . |
| d21 |     |   |   | .   | . | . | . |
| d23 |     |   | . | .   | . | . |   |
| d25 |     |   | . | .   | . |   |   |
| d27 |     |   | . | .   |   |   |   |
| d29 |     | . | . | .   |   |   |   |
| d31 |     | . | . | .   | . | . | . |
| d33 |     | . | . | .   | . | . | . |

|     | MSB |   |   |   | LSB |   |   |   |
|-----|-----|---|---|---|-----|---|---|---|
| d2  |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d4  |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d6  |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d8  |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d10 |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d12 |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d14 |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d16 |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d18 |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d20 |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d22 |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d24 |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d26 |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d28 |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d30 |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d32 |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |
| d34 |     | 0 | 0 | 0 | 0   | 0 | 0 | 0 |

Fig. A-3 9 x 17 Font

#### 4.4. Appendix 4 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   |

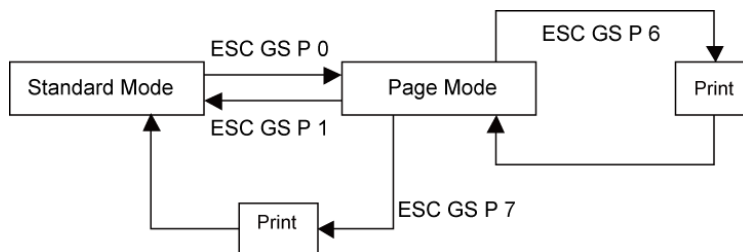
## 4.5. Appendix 5 Explanation of Page Mode

### 4.5.1. Overview

This printer is equipped with two print modes. They are standard and page mode.

In standard mode, the printer prints and feeds paper each time it receives the print and paper feed instructions, but the print and paper feed instructions received in page mode are executed on the print region on the specified memory and the printer does not operate. Then, when the ESC GS P6 or ESC GS P7 commands are executed, the printer batch expands data to the printing region and prints. In other words, when printing and performing a line feed for data of "ABCDEF" <LF>, in standard mode, "ABCDEF" is printed and paper is fed one line. In page mode, however, "ABCDEF" is written to the print region specified on the memory, and one line is moved on the memory to write the next print data. This printer will enter page mode using ESC GS P 0. Commands received thereafter are all processed as page mode. By running ESC GS P 6, you can lump-print received data. Also, by running ESC GS P 7, you can return to standard mode after lump printing received data. You can return to standard mode without printing page mode print data using ESC GS P 1. However, print data will be cleared.

<Transitioning to Standard Mode and Page Mode>



### 4.5.2. Setting Values Using Each Command in Standard Mode and Page Mode

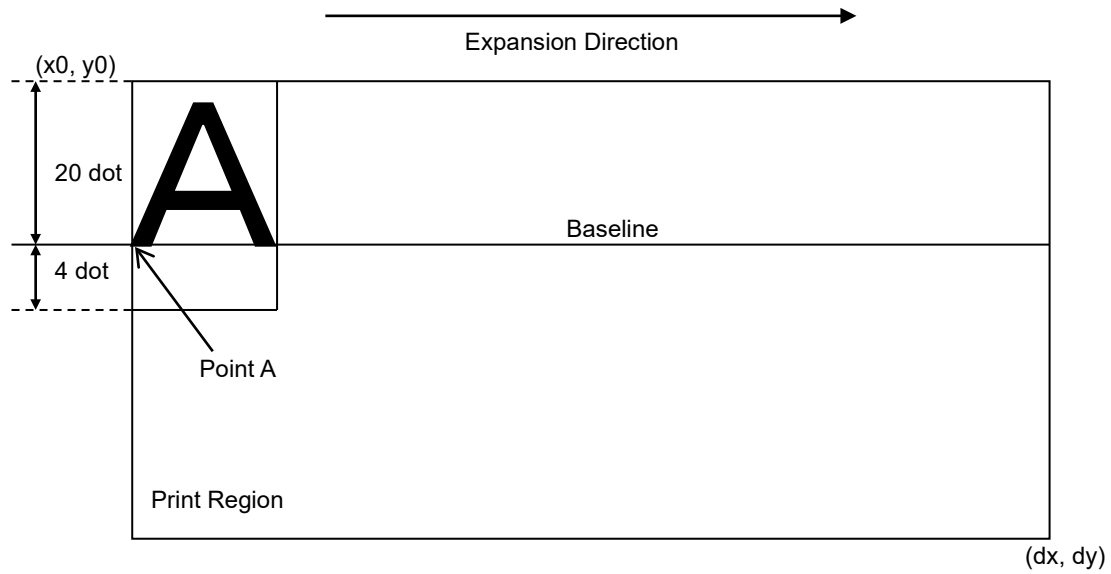
- The values set by each command are shared by both standard and page modes. However, only the settings of the following commands are independently set.  
-> ESC 0, ESC SP, ESC z, ESC D, ESC s, ESC t
- The following commands are invalid in page mode.  
-> ESC GS c, ESC RS m, ESC RS A, ESC GS M, ESC GS r, ESC RS C, ESC \*, ESC RS r, FF, ESC GS S
- The maximum number of dots is prescribed in standard mode, but the y directions (the x direction when there is no rotation) when printing is rotated 90 or 270° are larger than that. For details, see the setting (ESC GS P 3) command of the print region in page mode.

### 4.5.3. Print Data Expansion to the Print Region

Expanding print data to the print region is performed in the following way.

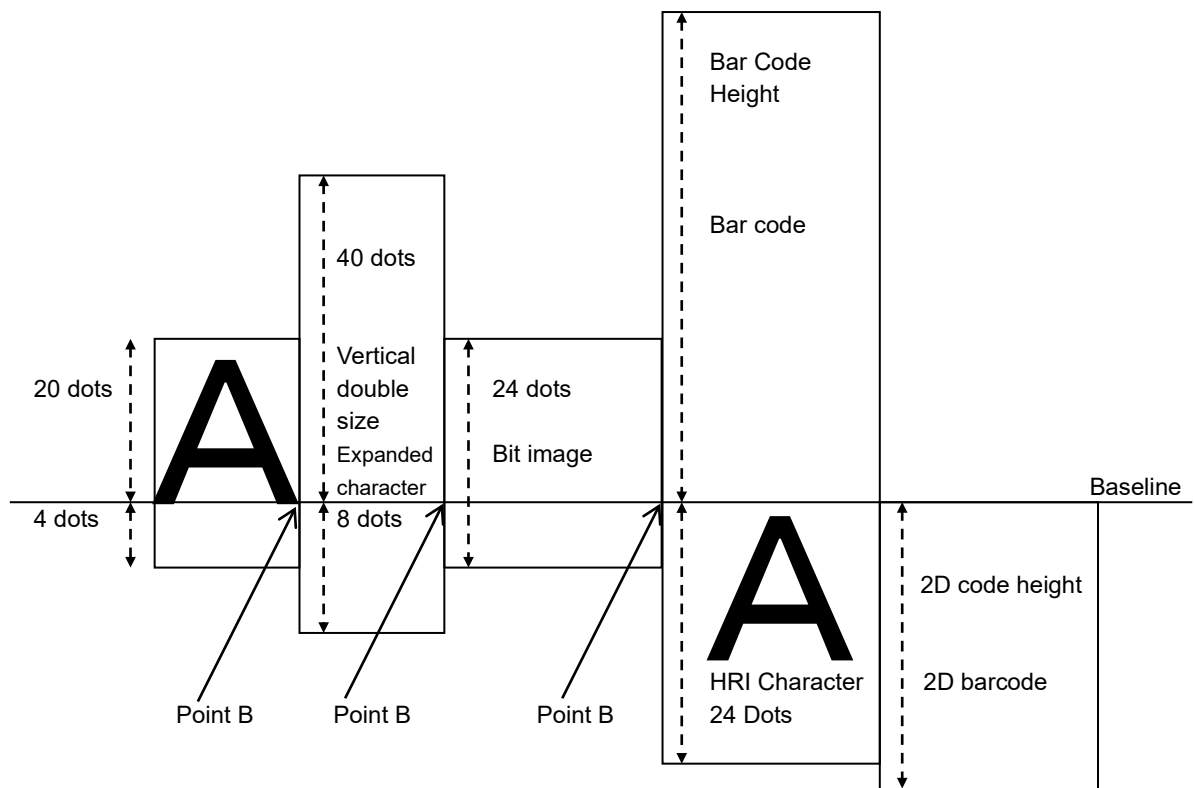
- (1) The print region is set by ESC GS P 3, but when all printing and paper feeds are ended before the printer receives ESC GS P 3 the left edge when facing the printer becomes the origin of the print region (x0, y0). The print region is a square shape using dx pitch for the x direction (horizontal direction) and dy pitch for the y direction (perpendicular direction) as sides, including the origin point from the origin points (x0, y0). (When ESC GS P 3 is not set, the initial value is the print region.)
- (2) When the print region is set by ESC GS P 3, and the printer receives print data after the print direction is set by ESC GS P 2, point A in Fig. 4.6.3.1 becomes the starting point initial value, and the print data is expanded in the print region. For characters, this starting point is the base line. The barcode is also expanded so that the bottom left point of the image data matches the baseline (point B in Fig. 4.6.3.2). However, HRI characters at the bottom of the barcode are printed below the baseline. When a character that is higher than the standard character height (expanded high characters) is expanded at the starting point, the portion above the standard character height will not be printed. When the basic print size is specified as vertical 1.5 times expansion, horizontal 1.5 times expansion, point A and point B are at the positions multiplied by 1.5 times in the print direction (Fig. 4.6.3.3 Point A, Fig. 4.6.3.4 Point B).
- (3) If the print data is out of the print region (including character right spaces) before receiving commands that accompany line feeds (LF, ESC J and the like), the line feed is automatically performed in the print region, and the expansion position of the print data is moved one line so the next expansion position is at the top of the line. The line feed amount at that time uses the line feed amount set by ESC 0.

< Fig. 4.6.3.1 Expansion Position of Character Data >

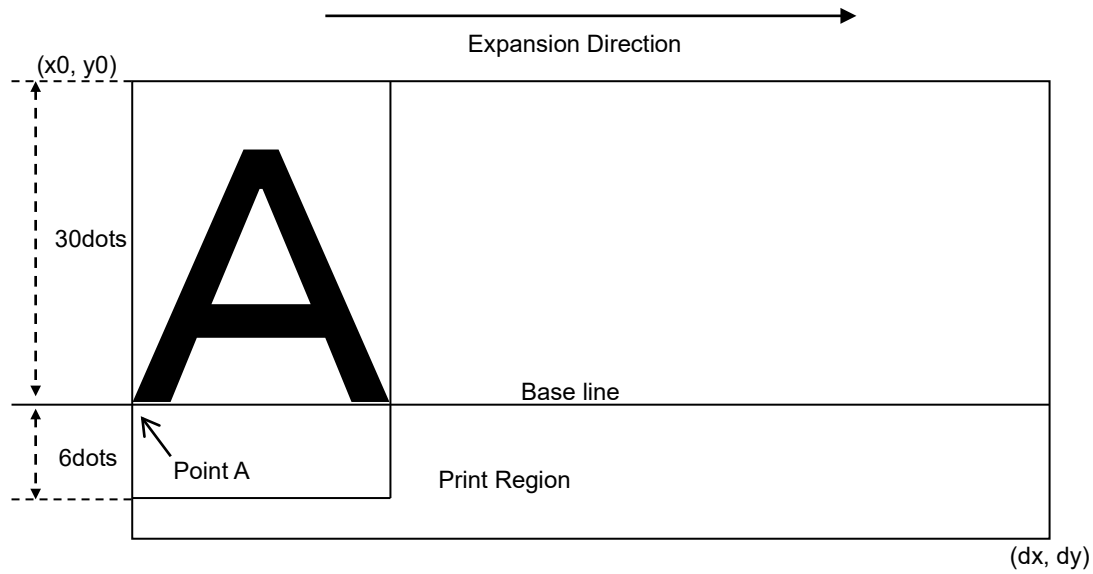


< Fig. 4.6.3.2 Expansion Position of Print Data >

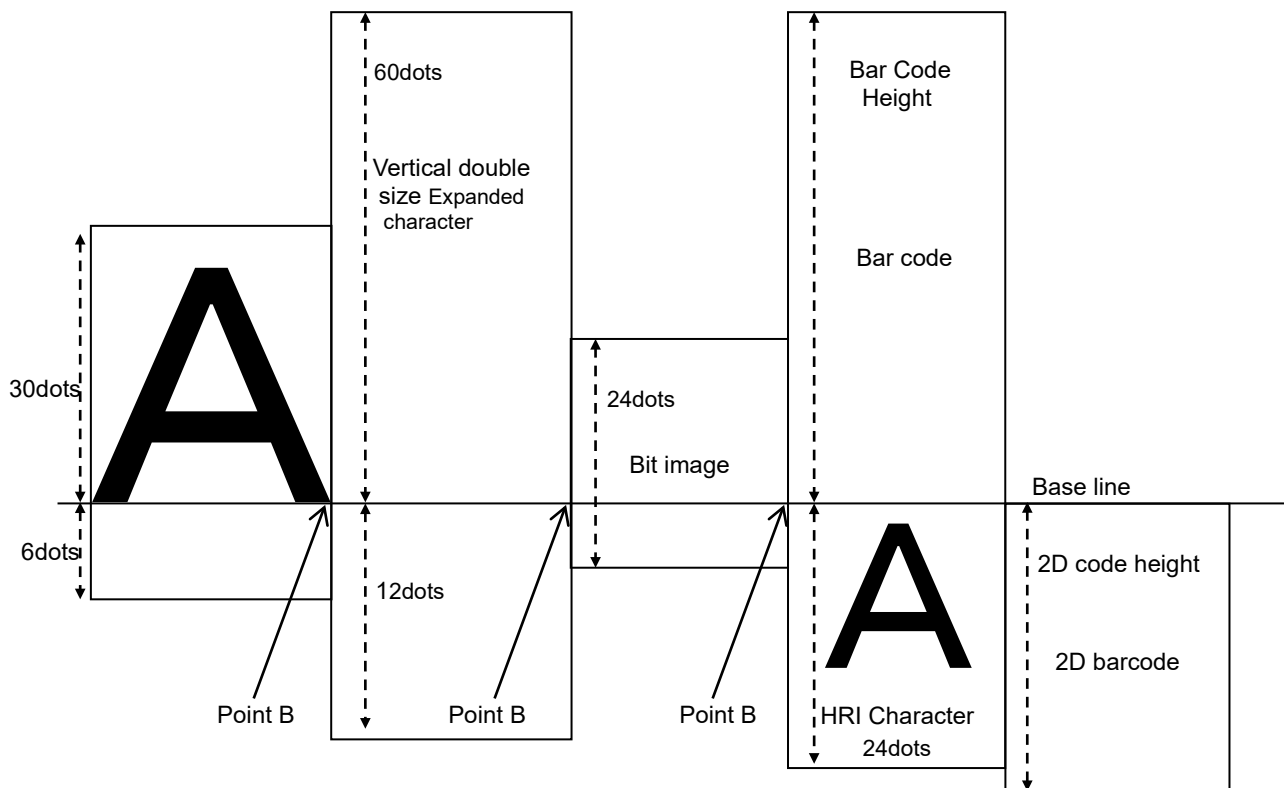
For SM-S and T series, the base line is the upper end of each data.



< Fig. 4.6.3.3 1.5 Times, Expansion Position of Character Data >



< Fig. 4.6.3.4 1.5 Times, Expansion Position of Print Data >



#### 4.5.4. Page Mode Print Maximum Region

Page mode print region initial value, Maximum Value.(ESC GS P 3 xL xH yL yH dxL dxH dyL dyH)

| Model                         | Print region | Initial Value |     |     |     |              |         | Maximum Value |        | Remarks                                                                                                             |
|-------------------------------|--------------|---------------|-----|-----|-----|--------------|---------|---------------|--------|---------------------------------------------------------------------------------------------------------------------|
|                               |              | dxL           | dxH | dyL | dyH | Print region |         | Print region  |        |                                                                                                                     |
|                               |              |               |     |     |     | X Dir.       | Y Dir.  | X Dir.        | Y Dir. |                                                                                                                     |
| mPOP<br>mC-Print2             | 48mm         | 128           | 1   | 170 | 3   | 48mm         | 117.3mm | 48mm          | 300mm  |                                                                                                                     |
|                               | 54mm         | 176           | 1   | 170 | 3   | 54mm         | 117.3mm | 54mm          | 300mm  |                                                                                                                     |
|                               | 50.8mm       | 150           | 1   | 170 | 3   | 50.8mm       | 117.3mm | 50.8mm        | 300mm  |                                                                                                                     |
| SM-L200                       | 48mm         | 128           | 1   | 96  | 9   | 48mm         | 117.3mm | 48mm          | 300mm  |                                                                                                                     |
| SM-L300                       | 72mm         | 64            | 2   | 96  | 9   | 72mm         | 117.3mm | 72mm          | 300mm  |                                                                                                                     |
| SM-S210<br>SM-S220<br>SM-S230 | 48mm         | 128           | 1   | 96  | 9   | 48mm         | 117.3mm | 48mm          | 300mm  |                                                                                                                     |
| SM-T300                       | 72mm         | 64            | 2   | 96  | 9   | 72mm         | 117.3mm | 72mm          | 300mm  |                                                                                                                     |
| SM-T400                       | 104mm        | 64            | 3   | 96  | 9   | 104mm        | 117.3mm | 104mm         | 300mm  |                                                                                                                     |
| mC-Print3                     | 72mm         | 64            | 2   | 170 | 3   | 72mm         | 117.3mm | 72mm          | 300mm  |                                                                                                                     |
|                               | 48mm         | 128           | 1   | 170 | 3   | 48mm         | 117.3mm | 48mm          | 300mm  |                                                                                                                     |
|                               | 50.8mm       | 150           | 1   | 170 | 3   | 50.8mm       | 117.3mm | 50.8mm        | 300mm  |                                                                                                                     |
| TSP100IV<br>BSC10II           | 72mm         | 64            | 2   | 170 | 3   | 72mm         | 117.3mm | 72mm          | 300mm  |                                                                                                                     |
|                               | 51mm         | 152           | 1   | 170 | 3   | 51 mm        | 117.3mm | 51mm          | 300mm  |                                                                                                                     |
|                               | 48mm         | 128           | 1   | 170 | 3   | 48mm         | 117.3mm | 48mm          | 300mm  |                                                                                                                     |
|                               | 50.8mm       | 150           | 1   | 170 | 3   | 50.8mm       | 117.3mm | 50.8mm        | 300mm  |                                                                                                                     |
| TSP100IV<br>SK                | 72mm         | 64            | 2   | 170 | 3   | 72mm         | 117.3mm | 72mm          | 300mm  |                                                                                                                     |
|                               | 51mm         | 152           | 1   | 170 | 3   | 51mm         | 117.3mm | 51mm          | 300mm  |                                                                                                                     |
|                               | 48mm         | 128           | 1   | 170 | 3   | 48mm         | 117.3mm | 48mm          | 300mm  |                                                                                                                     |
|                               | 50.8mm       | 150           | 1   | 170 | 3   | 50.8mm       | 117.3mm | 50.8mm        | 300mm  |                                                                                                                     |
|                               | 52mm         | 160           | 1   | 170 | 3   | 52mm         | 117.3mm | 52mm          | 300mm  |                                                                                                                     |
|                               | 34.5mm       | 20            | 1   | 170 | 3   | 34.5mm       | 117.3mm | 34.5mm        | 300mm  |                                                                                                                     |
|                               | 32mm         | 0             | 1   | 170 | 3   | 32mm         | 117.3mm | 32mm          | 300mm  |                                                                                                                     |
| mC-Label3                     | 72mm         | 64            | 2   | 170 | 3   | 72mm         | 117.3mm | 72mm          | 300mm  | The printing area can be set in 1 mm increments in the range of 15 to 72 mm. Only representative values are listed. |
|                               | 54mm         | 176           | 1   | 170 | 3   | 54mm         | 117.3mm | 54mm          | 300mm  |                                                                                                                     |
|                               | 48mm         | 128           | 1   | 170 | 3   | 48mm         | 117.3mm | 48mm          | 300mm  |                                                                                                                     |
|                               | 50.8mm       | 150           | 1   | 170 | 3   | 50.8mm       | 117.3mm | 50.8mm        | 300mm  |                                                                                                                     |
|                               | 34.5mm       | 20            | 1   | 170 | 3   | 34.5mm       | 117.3mm | 34.5mm        | 300mm  |                                                                                                                     |
|                               | 52.5mm       | 164           | 1   | 170 | 3   | 52.5mm       | 117.3mm | 52.5mm        | 300mm  |                                                                                                                     |

Basic calculated pitch initial value: X=1/203(inch),Y=1/203(inch)

| Model     | Print region | Initial Value |     |     |     |              |        | Maximum Value |        | Remarks                                                                                                               |
|-----------|--------------|---------------|-----|-----|-----|--------------|--------|---------------|--------|-----------------------------------------------------------------------------------------------------------------------|
|           |              | dxL           | dxH | dyL | dyH | Print region |        | Print region  |        |                                                                                                                       |
|           |              |               |     |     |     | X Dir.       | Y Dir. | X Dir.        | Y Dir. |                                                                                                                       |
| mC-Label2 | 48.7mm       | 55            | 2   | 170 | 3   | 48.7mm       | 79.4mm | 48.7mm        | 300mm  | The printing area can be set in 1 mm increments in the range of 15 to 56.9 mm. Only representative values are listed. |
|           | 54mm         | 126           | 2   | 170 | 3   | 54mm         | 79.4mm | 54mm          | 300mm  |                                                                                                                       |
|           | 48mm         | 56            | 2   | 170 | 3   | 48mm         | 79.4mm | 48mm          | 300mm  |                                                                                                                       |
|           | 50.8mm       | 88            | 2   | 170 | 3   | 50.8mm       | 79.4mm | 50.8mm        | 300mm  |                                                                                                                       |
|           | 56.9mm       | 160           | 2   | 170 | 3   | 56.9mm       | 79.4mm | 56.9mm        | 300mm  |                                                                                                                       |
|           | 34.5mm       | 152           | 1   | 170 | 3   | 34.5mm       | 79.4mm | 34.5mm        | 300mm  |                                                                                                                       |
|           | 52.5mm       | 108           | 2   | 170 | 3   | 52.5mm       | 79.4mm | 52.5mm        | 300mm  |                                                                                                                       |

Basic calculation pitch: X = 1/300 (inch), Y = 1/300 (inch)

#### 4.6. Appendix 6 Explanation of Print Startup Control Starting Printing When Set to Page Units

When print startup control is set to page units, printing starts when the image buffer length is full or the following commands are run.

If data with vertical movement such as line feed is received, printing starts after a 1-second timeout.

For details on image buffer length and how to set print startup control, see the product specifications manual.

Print starting trigger

- Cutter command : <ESC> d n
- FF command : <FF>
- BM detection command : <ESC> d n, <FF>

## 4.7. Appendix 7 Specifications of Magnetic Cards

### 4.7.1. Card Specifications

The following tables show the summary of data formats stored on the magnetic stripes.

|                    | ISO-1 Track (IATA) |
|--------------------|--------------------|
| Recording Density  | 210 BPI            |
| Recording Capacity | 79 characters      |
| Data Format        | Alphanumeric       |
| Data Capacity      | 76 characters      |

|                    | ISO-2 Track (ABA) |
|--------------------|-------------------|
| Recording Density  | 75 BPI            |
| Recording Capacity | 40 characters     |
| Data Format        | Numeric           |
| Data Capacity      | 37 characters     |

|                    | ISO-3 Track (MINTS) |
|--------------------|---------------------|
| Recording Density  | 210 BPI             |
| Recording Capacity | 107 characters      |
| Data Format        | Numeric             |
| Data Capacity      | 104 characters      |

|                    | JIS-II (JIS)  |
|--------------------|---------------|
| Recording Density  | 210 BPI       |
| Recording Capacity | 72 characters |
| Data Format        | Alphanumeric  |
| Data Capacity      | 69 characters |

#### 4.7.2. Magnetic Card Data Transmission Format

##### < 1 / 2 Track Version>

###### - Track 1

|                     |           |                 |
|---------------------|-----------|-----------------|
| 02h 43h 31h 31h 1Ch | DATA (76) | 1Ch 03h 0Dh 0Ah |
|---------------------|-----------|-----------------|

###### - Track 2

|                     |           |             |
|---------------------|-----------|-------------|
| 02h 44h 31h 31h 1Ch | DATA (37) | 03h 0Dh 0Ah |
|---------------------|-----------|-------------|

###### - Track 1, 2

|                         |           |     |           |                 |
|-------------------------|-----------|-----|-----------|-----------------|
| 02h 45h 31h 31h 1Ch 1Ch | DATA (76) | 1Ch | DATA (37) | 1Ch 03h 0Dh 0Ah |
|-------------------------|-----------|-----|-----------|-----------------|

##### < 2 / 3 Track Version >

###### - Track 2

|                     |           |                 |
|---------------------|-----------|-----------------|
| 02h 43h 31h 31h 1Ch | DATA (37) | 1Ch 03h 0Dh 0Ah |
|---------------------|-----------|-----------------|

###### - Track 3

|                     |            |             |
|---------------------|------------|-------------|
| 02h 44h 31h 31h 1Ch | DATA (104) | 03h 0Dh 0Ah |
|---------------------|------------|-------------|

###### - Track 2, 3

|                         |           |     |            |                 |
|-------------------------|-----------|-----|------------|-----------------|
| 02h 45h 31h 31h 1Ch 1Ch | DATA (37) | 1Ch | DATA (104) | 1Ch 03h 0Dh 0Ah |
|-------------------------|-----------|-----|------------|-----------------|

##### < 1 / 2 / 3 Track Version >

###### - Track 1

|                     |           |                 |
|---------------------|-----------|-----------------|
| 02h 43h 31h 31h 1Ch | DATA (76) | 1Ch 03h 0Dh 0Ah |
|---------------------|-----------|-----------------|

###### - Track 2

|                     |           |             |
|---------------------|-----------|-------------|
| 02h 44h 31h 31h 1Ch | DATA (37) | 03h 0Dh 0Ah |
|---------------------|-----------|-------------|

###### - Track 1, 2

|                         |           |     |           |                 |
|-------------------------|-----------|-----|-----------|-----------------|
| 02h 45h 31h 31h 1Ch 1Ch | DATA (76) | 1Ch | DATA (37) | 1Ch 03h 0Dh 0Ah |
|-------------------------|-----------|-----|-----------|-----------------|

###### - Track 1, 2, 3

|                         |           |     |           |     |            |                 |
|-------------------------|-----------|-----|-----------|-----|------------|-----------------|
| 02h 46h 31h 31h 1Ch 1Ch | DATA (76) | 1Ch | DATA (37) | 1Ch | DATA (104) | 1Ch 03h 0Dh 0Ah |
|-------------------------|-----------|-----|-----------|-----|------------|-----------------|

###### - Track 3

|                         |            |             |
|-------------------------|------------|-------------|
| 02h 47h 31h 31h 1Ch 1Ch | DATA (104) | 03h 0Dh 0Ah |
|-------------------------|------------|-------------|

##### < JIS-II(JIS) >

|                     |           |                 |
|---------------------|-----------|-----------------|
| F2h 4Ah 31h 31h 1Ch | DATA (69) | 1Ch F3h 0Dh 0Ah |
|---------------------|-----------|-----------------|

#### 4.8. Appendix 8 Specifications when a melody speaker is connected

The specifications for each command when a melody speaker is connected are indicated in the table below.

| Command       | Model Name |         |         |                |                       |           |           |                         |
|---------------|------------|---------|---------|----------------|-----------------------|-----------|-----------|-------------------------|
|               | mPOP       | SM-L200 | SM-L300 | SM-S, T Series | mC-Print3             | mC-Print2 | mC-Label3 | TSP100IV<br>TSP100IV SK |
| BEL           | -          | -       | -       | -              | *1<br>Ver1.3 or later | -         | -         | *1                      |
| FS            | -          | -       | -       | -              | *1<br>Ver1.3 or later | -         | -         | *1                      |
| SUB           | -          | -       | -       | -              | *2<br>Ver1.3 or later | -         | -         | *1                      |
| EM            | -          | -       | -       | -              | *2<br>Ver1.3 or later | -         | -         | *1                      |
| ESC GS EM DC2 | -          | -       | -       | -              | *1<br>Ver1.3 or later | -         | -         | *1                      |

- : Not supported

\*1) After a command is executed, the system waits until melody speaker playback is completed.

\*2) Command is ignored when a melody speaker is connected.

#### 4.9. Appendix 9 Print Area Setting

The print area that is selected by the print area select command ESC RS A n with each product is as shown below.

| n      | Model Name |            |            |                     |             |  |  |  |
|--------|------------|------------|------------|---------------------|-------------|--|--|--|
|        | mPOP       | mC-Print2  | mC-Print3  | TSP100IV<br>BSC10II | TSP100IV SK |  |  |  |
| 0, "0" | 48mm       | 48mm       | 72mm       | 72mm                | 72mm        |  |  |  |
| 1, "1" | 54mm       | 54mm       | (Reserved) | 51mm                | 51mm        |  |  |  |
| 2, "2" | (Reserved) | (Reserved) | 48mm       | 48mm                | 48mm        |  |  |  |
| 3, "3" | 50.8mm     | 50.8mm     | 50.8mm     | 50.8mm              | 50.8mm      |  |  |  |
| 4, "4" | (Reserved) | (Reserved) | (Reserved) | (Reserved)          | (Reserved)  |  |  |  |
| 5, "5" | (Reserved) | (Reserved) | (Reserved) | (Reserved)          | 34.5mm      |  |  |  |
| 6, "6" | (Reserved) | (Reserved) | (Reserved) | (Reserved)          | 32mm        |  |  |  |
| 7, "7" | (Reserved) | (Reserved) | (Reserved) | (Reserved)          | (Reserved)  |  |  |  |

| n      | Model Name |            |            |  |  |  |  |  |
|--------|------------|------------|------------|--|--|--|--|--|
|        | SM-L300    | mC-Label3  | mC-Label2  |  |  |  |  |  |
| 0, "0" | 72mm       | 72mm       | 48.7mm     |  |  |  |  |  |
| 1, "1" | (Reserved) | 54mm       | 54mm       |  |  |  |  |  |
| 2, "2" | (Reserved) | 48mm       | 48mm       |  |  |  |  |  |
| 3, "3" | 50.8mm     | 50.8mm     | 50.8mm     |  |  |  |  |  |
| 4, "4" | (Reserved) | (Reserved) | 56.9mm     |  |  |  |  |  |
| 5, "5" | (Reserved) | (Reserved) | (Reserved) |  |  |  |  |  |
| 6, "6" | (Reserved) | 34.5mm     | 34.5mm     |  |  |  |  |  |
| 7, "7" | (Reserved) | 52.5mm     | 52.5mm     |  |  |  |  |  |
| 8      | (Reserved) | (Reserved) | (Reserved) |  |  |  |  |  |
| :      | :          | :          | :          |  |  |  |  |  |
| 14     | (Reserved) | (Reserved) | (Reserved) |  |  |  |  |  |
| 15     | (Reserved) | 15mm       | 15mm       |  |  |  |  |  |
| 16     | (Reserved) | 16mm       | 16mm       |  |  |  |  |  |
| :      | :          | :          | :          |  |  |  |  |  |
| 29     | (Reserved) | 29mm       | 29mm       |  |  |  |  |  |
| 30     | 30mm       | 30mm       | 30mm       |  |  |  |  |  |
| 31     | 31mm       | 31mm       | 31mm       |  |  |  |  |  |
| 32     | 32mm       | 32mm       | 32mm       |  |  |  |  |  |
| :      | :          | :          | :          |  |  |  |  |  |
| 56     | 56mm       | 56mm       | 56mm       |  |  |  |  |  |
| 57     | 57mm       | 57mm       | (Reserved) |  |  |  |  |  |
| :      | :          | :          | :          |  |  |  |  |  |
| 70     | 70mm       | 70mm       | (Reserved) |  |  |  |  |  |
| 71     | 71mm       | 71mm       | (Reserved) |  |  |  |  |  |
| 72     | 72mm       | 72mm       | (Reserved) |  |  |  |  |  |
| 73     | (Reserved) | (Reserved) | (Reserved) |  |  |  |  |  |
| :      | :          | :          | :          |  |  |  |  |  |
| 127    | (Reserved) | (Reserved) | (Reserved) |  |  |  |  |  |

With SM-L200 and the SM-S, T Series, the print area is fixed and ESC RS A n is disabled.

## 5. COMMAND LIST FOR EACH MODEL

OK: Supported

No: Not supported

- : Not supported (the specification isn't satisfied)

●: Supported (\*depends on the model)

StarLine : TSP650II, TSP700II, TSP800II, FVP10, TUP900, TUP500

### ● Font style and character set

| Commands | Model Name |         |         |               |                      |           |                         |           |                      |         |           | StarLine |
|----------|------------|---------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|          | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC RS F | Spec. 1    | Spec. 2 | Spec. 2 | Spec. 2       | Spec. 1              | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 1   | ●        |
| ESC GS t | Spec. 1    | Spec. 2 | Spec. 2 | Spec. 3       | Spec. 1              | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 1   | OK       |
| ESC GS = | Spec. 1    | Spec. 2 | Spec. 2 | Spec. 2       | Spec. 1              | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 1   | OK       |
| ESC R    | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1              | Spec. 2 | Spec. 1   | OK       |
| ESC /    | OK         | OK      | OK      | OK            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | OK       |
| ESC SP   | OK         | OK      | OK      | OK            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | OK       |
| ESC &    | OK         | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | OK       |
| ESC %    | OK         | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | OK       |
| ESC M    | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | OK       |
| ESC P    | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | OK       |
| ESC :    | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | OK       |
| ESC g    | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | OK       |

### ● Chinese characters

| Commands | Model Name |         |         |               |                      |           |                         |           |                      |         |           | StarLine |
|----------|------------|---------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|          | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC p    | OK         | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | OK       |
| ESC q    | OK         | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | OK       |
| ESC \$   | OK         | OK      | OK      | OK            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | OK       |
| ESC s    | OK         | OK      | OK      | OK            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | OK       |
| ESC t    | OK         | OK      | OK      | OK            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | OK       |
| ESC r    | OK         | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | OK       |

# ● Print modes

| Commands           | Model Name |         |         |               |                         |           |                         |           |                         |         |           | StarLine |
|--------------------|------------|---------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|                    | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS ) E (fn=48) | No         | No      | No      | No            | No                      | No        | No                      | No        | No                      | No      | OK        | No       |
| ESC i              | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC W              | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC h              | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| SO                 | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| DC4                | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC SO             | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC DC4            | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC E              | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC F              | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC -              | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC _              | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC 4              | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC 5              | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| SI                 | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| DC2                | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC GS b           | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |

# ● Horizontal direction position

| Commands | Model Name |         |         |               |                         |           |                         |           |                         |         |           | StarLine |
|----------|------------|---------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|          | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC I    | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC Q    | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| HT       | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC D    | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC GS A | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC GS R | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC GS a | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |

### ● Line spacing

| Commands | Model Name |         |         |               |                         |           |                         |           |                         |         |           | StarLine |
|----------|------------|---------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|          | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| LF       | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| CR       | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC a    | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC z    | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1                 | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1                 | Spec. 1 | Spec. 2   | OK       |
| ESC 0    | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1                 | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1                 | Spec. 1 | Spec. 2   | OK       |
| ESC J    | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1                 | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1                 | Spec. 1 | Spec. 2   | OK       |
| ESC I    | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1                 | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1                 | Spec. 1 | Spec. 2   | OK       |

### ● Page control commands

| Commands  | Model Name |         |         |               |                         |           |                         |           |                         |         |           | StarLine |
|-----------|------------|---------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|           | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| FF        | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC C     | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| ESC C NUL | OK         | OK      | OK      | OK            | OK                      | OK        | OK                      | OK        | OK                      | OK      | OK        | OK       |
| VT        | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC B     | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |

### ● Top margin

| Commands | Model Name |         |         |               |                                               |           |                         |           |                         |         |           | StarLine |
|----------|------------|---------|---------|---------------|-----------------------------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|          | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.)                       | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC RS T | No         | No      | No      | No            | OK<br>Spec. 1<br>(MCP31)<br>Spec.2<br>(MCP30) | No        | Spec. 2                 | Spec. 3   | Spec. 1                 | Spec. 2 | Spec. 4   | No       |

● Page function

| Commands   | Model Name |         |         |               |                      |           |                         |           |                      |         |           | StarLine |
|------------|------------|---------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|            | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS h 0 | No         | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |
| ESC GS h 1 | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |

● Cutter control

| Commands | Model Name |         |         |               |                      |           |                                                   |           |                      |         |           | StarLine |
|----------|------------|---------|---------|---------------|----------------------|-----------|---------------------------------------------------|-----------|----------------------|---------|-----------|----------|
|          | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK                           | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC d    | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1<br>(TSP100IV)<br>Spec. 2<br>(TSP100IV SK) | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 1   | OK       |

● Reduced Printing

| Commands    | Model Name |         |         |               |                      |           |                         |           |                      |         |           | StarLine |
|-------------|------------|---------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|             | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS ch v | Spec. 1    | No      | No      | No            | Spec. 1              | Spec. 1   | Spec. 2                 | Spec. 1   | Spec. 1              | Spec. 2 | No        | ●        |

● Page Mode Commands

| Commands   | Model Name               |                          |         |               |                      |           |                         |           |                      |         |           | StarLine |
|------------|--------------------------|--------------------------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|            | mPOP                     | SM-L200                  | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS P 0 | V1.1 or later            | V1.1 or later            | OK      | OK            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |
| ESC GS P 1 | V1.1 or later            | V1.1 or later            | OK      | OK            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |
| ESC GS P 2 | V1.1 or later            | V1.1 or later            | OK      | OK            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |
| ESC GS P 3 | V1.1 or later<br>Spec. 1 | V1.1 or later<br>Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 2   | ●        |
| ESC GS P 4 | V1.1 or later<br>Spec. 1 | V1.1 or later<br>Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 2   | ●        |
| ESC GS P 5 | V1.1 or later<br>Spec. 1 | V1.1 or later<br>Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 2   | ●        |
| ESC GS P 6 | V1.1 or later            | V1.1 or later            | OK      | OK            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |
| ESC GS P 7 | V1.1 or later            | V1.1 or later            | OK      | OK            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |
| ESC GS P 8 | V1.1 or later            | V1.1 or later            | OK      | OK            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |

● Bit image Graphics

| Commands | Model Name |         |         |               |                      |           |                      |           |                      |         |           | StarLine |
|----------|------------|---------|---------|---------------|----------------------|-----------|----------------------|-----------|----------------------|---------|-----------|----------|
|          | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC K    | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | OK       |
| ESC L    | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | OK       |
| ESC k    | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | OK       |
| ESC X    | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 2   | OK       |
| ESC GS S | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS X | No         | OK      | OK      | No            | No                   | No        | No                   | No        | No                   | No      | No        | -        |

● Logos

| Commands            | Model Name |         |         |               |                      |           |                      |           |                      |         |           | StarLine |
|---------------------|------------|---------|---------|---------------|----------------------|-----------|----------------------|-----------|----------------------|---------|-----------|----------|
|                     | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS ( L (fn=48)  | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS ( L (fn=51)  | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS ( L (fn=64)  | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS ( L (fn=65)  | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS ( L (fn=66)  | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS ( L (fn=67)  | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 2   | ●        |
| ESC GS ( L (fn=69)  | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS 8 L (fn=48)  | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS 8 L (fn=51)  | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS 8 L (fn=64)  | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS 8 L (fn=65)  | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS 8 L (fn=66)  | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS 8 L (fn=67)  | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS 8 L (fn=69)  | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS ) L (fn= 48) | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS ) L (fn= 49) | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS ) L (fn= 50) | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS ) L (fn= 51) | No         | No      | No      | No            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | -        |
| ESC FS q            | -          | -       | -       | -             | -                    | -         | -                    | -         | -                    | -       | -         | OK       |
| ESC FS p            | -          | -       | -       | -             | -                    | -         | -                    | -         | -                    | -       | -         | OK       |
| ESC RS L            | -          | -       | -       | -             | -                    | -         | -                    | -         | -                    | -       | -         | ●        |

● Bar code

| Commands         | Model Name |         |         |               |                      |           |                      |           |                      |         |           | StarLine |
|------------------|------------|---------|---------|---------------|----------------------|-----------|----------------------|-----------|----------------------|---------|-----------|----------|
|                  | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC b (n1=0,48)  | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 4   | ●        |
| ESC b (n1=1,49)  | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 4   | ●        |
| ESC b (n1=2,50)  | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 4   | ●        |
| ESC b (n1=3,51)  | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 4   | ●        |
| ESC b (n1=4,52)  | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 4   | ●        |
| ESC b (n1=5,53)  | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 4   | ●        |
| ESC b (n1=6,54)  | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 3   | Spec. 1              | Spec. 1 | Spec. 4   | ●        |
| ESC b (n1=7,55)  | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 4   | ●        |
| ESC b (n1=8,56)  | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 4   | ●        |
| ESC b (n1=9,57)  | Spec. 1    | No      | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 4   | ●        |
| ESC b (n1=10,65) | Spec. 1    | No      | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 4   | ●        |
| ESC b (n1=11,66) | Spec. 1    | No      | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 4   | ●        |
| ESC b (n1=12,67) | Spec. 1    | No      | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 4   | ●        |
| ESC b (n1=13,68) | Spec. 1    | No      | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 4   | ●        |

\*SM-S230i only : Ver2.0 or later.

● 2D code, QR Commands

| Commands     | Model Name |         |         |               |                      |           |                      |           |                      |         |           | StarLine |
|--------------|------------|---------|---------|---------------|----------------------|-----------|----------------------|-----------|----------------------|---------|-----------|----------|
|              | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS y S 0 | Spec. 1    | Spec. 2 | Spec. 2 | Spec. 2       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 1   | ●        |
| ESC GS y S 1 | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS y S 2 | Spec. 1    | Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 2   | ●        |
| ESC GS y D 1 | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS y D 2 | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |
| ESC GS y P   | OK         | OK      | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | ●        |

● 2D code, PDF417 Commands

| Commands     | Model Name |                       |         |               |                      |           |                      |           |                      |         |           | StarLine |
|--------------|------------|-----------------------|---------|---------------|----------------------|-----------|----------------------|-----------|----------------------|---------|-----------|----------|
|              | mPOP       | SM-L200               | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS x S 0 | OK         | V1.1 or later         | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | OK       |
| ESC GS x S 1 | OK         | V1.1 or later         | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | OK       |
| ESC GS x S 2 | Spec. 1    | V1.1 or later Spec. 1 | Spec. 1 | Spec. 1       | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 2   | OK       |
| ESC GS x S 3 | OK         | V1.1 or later         | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | OK       |
| ESC GS x D   | OK         | V1.1 or later         | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | OK       |
| ESC GS x P   | OK         | V1.1 or later         | OK      | OK            | OK                   | OK        | OK                   | OK        | OK                   | OK      | OK        | OK       |

### ● 2D GS1 code, Compound symbol Commands

| Commands                | Model Name |         |         |               |                      |           |                         |           |                      |         |           | StarLine |
|-------------------------|------------|---------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|                         | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS (k (cn=51,fn=67) | Spec. 1    | No      | Spec. 1 | Spec. 2 *     | Spec. 1              | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 2   | ●        |
| ESC GS (k (cn=51,fn=71) | Spec. 1    | No      | Spec. 1 | Spec. 2 *     | Spec. 1              | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 2   | ●        |
| ESC GS (k (cn=51,fn=80) | OK         | No      | OK      | OK *          | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |
| ESC GS (k (cn=51,fn=81) | OK         | No      | OK      | OK *          | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |
| ESC GS (k (cn=52,fn=67) | Spec. 1    | No      | Spec. 1 | Spec. 2 *     | Spec. 1              | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 2   | ●        |
| ESC GS (k (cn=52,fn=71) | Spec. 1    | No      | Spec. 1 | Spec. 2 *     | Spec. 1              | Spec. 1   | Spec. 1                 | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 2   | ●        |
| ESC GS (k (cn=52,fn=72) | OK         | No      | OK      | OK *          | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |
| ESC GS (k (cn=52,fn=80) | OK         | No      | OK      | OK *          | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |
| ESC GS (k (cn=52,fn=81) | OK         | No      | OK      | OK *          | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |

\*SM-S230i only : Ver2.0 or later.

### ● Initialization Command

| Commands     | Model Name |         |         |               |                      |           |                         |           |                      |         |           | StarLine |
|--------------|------------|---------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|              | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| CAN          | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | OK       |
| ESC @        | OK         | OK      | OK      | OK            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | OK       |
| ESC ACK CAN  | OK         | OK      | OK      | OK            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |
| ESC ? LF NUL | Spec. 1    | OK      | OK      | OK            | Spec. 2              | Spec. 2   | Spec. 2                 | Spec. 2   | Spec. 2              | Spec. 2 | Spec. 2   | OK       |

### ● Memory Switch Command

| Commands   | Model Name |         |         |               |                      |           |                         |           |                      |         |           | StarLine |
|------------|------------|---------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|            | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS # m | OK         | OK      | OK      | OK            | OK                   | OK        | OK                      | No        | OK                   | OK      | No        | OK       |

## ● Status

| Commands             | Model Name                                                                                                                           |         |         |                                  |                                                                                          |                                                                                          |                                                                                                    |           |                         |          |           | StarLine |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------|---------|----------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------|-------------------------|----------|-----------|----------|
|                      | mPOP                                                                                                                                 | SM-L200 | SM-L300 | SM-S,T Series                    | mC-Print3<br>(1st Gen.)                                                                  | mC-Print2                                                                                | TSP100IV<br>TSP100IV SK                                                                            | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II  | mC-Label2 |          |
| ESC RS a             | OK                                                                                                                                   | OK      | OK      | OK                               | OK                                                                                       | OK                                                                                       | OK                                                                                                 | OK        | OK                      | OK       | OK        | OK       |
| ESC ACK SOH          | OK                                                                                                                                   | OK      | OK      | OK                               | OK                                                                                       | OK                                                                                       | OK                                                                                                 | OK        | OK                      | OK       | OK        | OK       |
| ENQ                  | -                                                                                                                                    | -       | -       | -                                | -                                                                                        | -                                                                                        | -                                                                                                  | -         | -                       | -        | -         | OK       |
| EOT                  | -                                                                                                                                    | -       | -       | -                                | -                                                                                        | -                                                                                        | -                                                                                                  | -         | -                       | -        | -         | OK       |
| ETB                  | OK                                                                                                                                   | OK      | OK      | OK                               | OK                                                                                       | OK                                                                                       | OK                                                                                                 | OK        | OK                      | OK       | OK        | OK       |
| ESC RS E             | OK                                                                                                                                   | OK      | OK      | OK                               | OK                                                                                       | OK                                                                                       | OK                                                                                                 | OK        | OK                      | OK       | OK        | OK       |
| ESC GS ETX           | Spec. 2                                                                                                                              | Spec. 2 | Spec. 2 | Spec. 2                          | Spec. 1                                                                                  | Spec. 1                                                                                  | Spec. 1                                                                                            | Spec. 3   | Spec. 1                 | Spec. 1  | Spec. 1   | OK       |
| ESC # *              | OK                                                                                                                                   | OK      | OK      | OK                               | OK                                                                                       | OK                                                                                       | OK                                                                                                 | OK        | OK                      | OK       | OK        | OK       |
| ESC GS ) I (fn = 48) | OK                                                                                                                                   | No      | No      | No                               | OK                                                                                       | OK                                                                                       | OK                                                                                                 | OK        | OK                      | OK       | OK        | ●        |
| ESC GS ) I (fn = 49) | Spec. 1<br>Ver.2.3 or<br>earlier<br>Spec. 2<br>Ver.3.0 or<br>later<br>Spec. 8<br>Ver.4.0 or later<br>Spec. 12<br>Ver.5.0 or<br>later | No      | No      | Spec. 6<br>Ver.4.1 or<br>later * | Spec. 3<br>Ver.2.4 or<br>earlier<br>Spec. 4<br>Ver.3.0<br>Spec. 5<br>Ver.3.1 or<br>later | Spec. 3<br>Ver.2.4 or<br>earlier<br>Spec. 4<br>Ver.3.0<br>Spec. 5<br>Ver.3.1 or<br>later | Spec. 7<br>(TSP100IV<br>V1.2 or earlier)<br>Spec. 10<br>V2.0 or later<br>Spec. 13<br>V3.0 or later | Spec. 9   | Spec. 11                | Spec. 10 | Spec. 14  | -        |
| ESC GS ) I (fn = 50) | No                                                                                                                                   | No      | OK      | OK                               | No                                                                                       | No                                                                                       | No                                                                                                 | No        | No                      | No       | No        | -        |
| ESC GS ) I (fn = 51) | No                                                                                                                                   | No      | No      | No                               | OK                                                                                       | OK                                                                                       | OK                                                                                                 | OK        | OK                      | OK       | OK        | -        |
| ESC GS ) I (fn = 52) | No                                                                                                                                   | No      | No      | No                               | V1.3 or later                                                                            | No                                                                                       | OK                                                                                                 | OK        | OK                      | OK       | OK        | -        |
| ESC GS J (fn=48)     | No                                                                                                                                   | No      | No      | No                               | No                                                                                       | No                                                                                       | No                                                                                                 | No        | OK                      | No       | OK        | -        |
| ESC GS J (fn=49)     | No                                                                                                                                   | No      | No      | No                               | No                                                                                       | No                                                                                       | No                                                                                                 | No        | OK                      | No       | OK        | -        |

\*SM-S230 only :Ver.1.5 or later

### ● Print settings

| Commands | Model Name |         |         |               |                                                                   |           |                         |           |                      |         |           | StarLine |
|----------|------------|---------|---------|---------------|-------------------------------------------------------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|          | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.)                                              | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC RS A | OK         | No      | OK      | No            | OK                                                                | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |
| ESC RS d | Spec. 2    | Spec. 3 | Spec. 3 | Spec. 4       | Spec. 1<br>Ver.2.4 or<br>earlier<br>Spec.5<br>Ver.3.0 or<br>later | Spec. 2   | Spec. 1                 | Spec. 1   | Spec. 5              | Spec. 1 | Spec. 1   | OK       |
| ESC RS r | Spec. 2    | No      | No      | Spec. 3       | Spec. 1                                                           | No        | Spec. 1                 | Spec. 1   | Spec. 1              | Spec. 1 | Spec. 1   | OK       |

### ● Special Commands

| Commands | Model Name     |         |         |               |                      |           |                         |           |                      |         |           | StarLine |
|----------|----------------|---------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|          | mPOP           | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC RS R | V.1.2 or later | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | Spec. 1   | -        |
| ESC GS m | No             | No      | No      | No            | No                   | No        | No                      | OK        | No                   | No      | OK        | No       |

### ● UTF Commands

| Commands           | Model Name                                                        |         |         |               |                      |           |                         |           |                      |         |           | StarLine |
|--------------------|-------------------------------------------------------------------|---------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|                    | mPOP                                                              | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS ) U (fn=48) | OK                                                                | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |
| ESC GS ) U (fn=64) | Spec. 1:<br>Ver.2.0 or<br>older<br>Spec. 2:<br>Ver2.1 or<br>later | No      | No      | No            | Spec. 2              | Spec. 2   | Spec. 2                 | Spec. 2   | Spec. 2              | Spec. 2 | Spec. 2   | ●        |
| ESC GS ) U (fn=65) | No                                                                | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | OK        | ●        |

### ● Black Mark Commands

| Commands  | Model Name |         |         |               |                      |           |                         |           |                      |         |           | StarLine |
|-----------|------------|---------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|           | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC d     | No         | OK      | OK      | OK            | No                   | No        | No                      | OK        | No                   | No      | OK        | ●        |
| FF        | No         | OK      | OK      | OK            | No                   | No        | No                      | OK        | No                   | No      | OK        | ●        |
| ESC C     | No         | OK      | OK      | OK            | No                   | No        | No                      | OK        | No                   | No      | OK        | ●        |
| ESC C NUL | No         | OK      | OK      | OK            | No                   | No        | No                      | OK        | No                   | No      | OK        | ●        |
| VT        | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |
| ESC B     | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |

### ● 2-Color Printing Related Commands

| Commands | Model Name |         |         |               |                      |           |                         |           |                      |         |           | StarLine |
|----------|------------|---------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|          | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC RS c | No         | No      | No      | No            | No                   | No        | No                      | No        | No                   | No      | No        | ●        |
| ESC RS C | No         | No      | No      | No            | No                   | No        | No                      | No        | No                   | No      | No        | ●        |
| ESC 4    | No         | No      | No      | No            | No                   | No        | No                      | No        | No                   | No      | No        | ●        |
| ESC 5    | No         | No      | No      | No            | No                   | No        | No                      | No        | No                   | No      | No        | ●        |

### ● External device drive

| Commands      | Model Name       |         |         |               |                      |           |                         |           |                      |         |           | StarLine |
|---------------|------------------|---------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|               | mPOP             | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC BEL       | Ver.2.0 or later | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | No        | ●        |
| BEL           | OK               | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | No        | ●        |
| FS            | OK               | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | No        | ●        |
| SUB           | Ver.2.0 or later | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | No        | ●        |
| EM            | Ver.2.0 or later | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | No        | ●        |
| ESC GS BEL    | No               | No      | No      | No            | No                   | No        | -                       | -         | -                    | -       | -         | ●        |
| ESC GS EM DC1 | Ver.2.0 or later | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | No        | ●        |
| ESC GS EM DC2 | Ver.2.0 or later | No      | No      | No            | OK                   | OK        | OK                      | OK        | OK                   | OK      | No        | ●        |

### ● Melody Speaker Command

| Commands   | Model Name |         |         |               |                         |           |                         |           |                         |         |           | StarLine |
|------------|------------|---------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|            | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS s R | No         | No      | No      | No            | V1.3 or later           | No        | OK                      | No        | OK                      | OK      | No        | -        |

### ● Barcode reader Command

| Commands   | Model Name |         |         |               |                         |           |                         |           |                         |         |           | StarLine |
|------------|------------|---------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|            | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS B 0 | OK         | No      | No      | No            | OK                      | OK        | OK                      | OK        | OK                      | No      | OK        | -        |
| ESC GS B 1 | OK         | No      | No      | No            | OK                      | OK        | OK                      | OK        | OK                      | No      | OK        | -        |
| ESC GS B 2 | OK         | No      | No      | No            | OK                      | OK        | OK                      | OK        | OK                      | No      | OK        | -        |
| ESC GS B 3 | OK         | No      | No      | No            | OK                      | OK        | OK                      | OK        | OK                      | No      | OK        | -        |

### ● Magnetic Card Reader Commands

| Commands | Model Name |               |         |               |                         |           |                         |           |                         |         |           | StarLine |
|----------|------------|---------------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|          | mPOP       | SM-L200       | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC M C  | No         | V1.1 or later | OK      | OK            | No                      | No        | No                      | No        | No                      | No      | No        | -        |
| ESC M D  | No         | V1.1 or later | OK      | OK            | No                      | No        | No                      | No        | No                      | No      | No        | -        |
| ESC M E  | No         | V1.1 or later | OK      | OK            | No                      | No        | No                      | No        | No                      | No      | No        | -        |
| ESC M F  | No         | V1.1 or later | OK      | OK            | No                      | No        | No                      | No        | No                      | No      | No        | -        |
| ESC M G  | No         | V1.1 or later | OK      | OK            | No                      | No        | No                      | No        | No                      | No      | No        | -        |
| ESC M J  | No         | V1.1 or later | OK      | OK            | No                      | No        | No                      | No        | No                      | No      | No        | -        |
| EOT      | No         | V1.1 or later | OK      | OK            | No                      | No        | No                      | No        | No                      | No      | No        | -        |

### ● Customer display Commands

| Commands   | Model Name    |         |         |               |                         |           |                         |           |                         |         |           | StarLine |
|------------|---------------|---------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|            | mPOP          | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS B @ | V2.0 or later | No      | No      | No            | OK                      | OK        | OK                      | OK        | OK                      | No      | OK        | -        |
| ESC RS B A | V2.0 or later | No      | No      | No            | OK                      | OK        | OK                      | OK        | OK                      | No      | OK        | -        |
| ESC GS B B | V2.0 or later | No      | No      | No            | OK                      | OK        | OK                      | OK        | OK                      | No      | OK        | -        |
| ESC GS B C | V2.0 or later | No      | No      | No            | OK                      | OK        | OK                      | OK        | OK                      | No      | OK        | -        |

# Raster Commands

| Commands           | Model Name |         |         |               |                         |           |                         |           |                         |         |           | StarLine |
|--------------------|------------|---------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|                    | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC * r R          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r A          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r B          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r C          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r D          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r E          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r F          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r P          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r Q          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r m l        | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r m r        | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r T          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r t          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r K          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| b n1 n2 d1. . . dk | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| k n1 n2 d1. . . dk | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r Y          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC FF NUL         | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC FF EOT         | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC * r N          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | •        |
| ESC * r V          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | •        |
| ESC * r S          | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | •        |
| ESC * r s 0        | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | •        |
| ESC * r s 1        | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | •        |
| ESC * r s 2        | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | •        |
| ESC * r s 3        | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | •        |

# Mark Commands

| Commands   | Model Name |         |         |               |                         |           |                         |           |                         |         |           | StarLine |
|------------|------------|---------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|            | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS * 0 | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC GS * 1 | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC GS * 2 | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC GS * W | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |
| ESC GS * C | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | OK       |

### ● Auto Logo Commands

| Commands   | Model Name |         |         |               |                         |           |                         |           |                         |         |           | StarLine |
|------------|------------|---------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|            | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS / W | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS / C | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS / 1 | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS / 2 | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS / 3 | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS / 4 | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS / 5 | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS / 6 | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |

### ● Text Search

| Commands           | Model Name |         |         |               |                         |           |                         |           |                         |         |           | StarLine |
|--------------------|------------|---------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|                    | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS ) B (fn=48) | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS ) B (fn=49) | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS ) B (fn=50) | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS ) B (fn=64) | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS ) B (fn=65) | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS ) B (fn=66) | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS ) B (fn=80) | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS ) B (fn=81) | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS ) B (fn=96) | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS ) B (fn=97) | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |

### ● Print starting trigger

| Commands   | Model Name |         |         |               |                         |           |                         |           |                         |         |           | StarLine |
|------------|------------|---------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|            | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS g 0 | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |
| ESC GS g 1 | -          | -       | -       | -             | -                       | -         | -                       | -         | -                       | -       | -         | ●        |

### ● Presenter Related Commands

| Commands       | Model Name |         |         |               |                      |           |                         |           |                      |         |           | StarLine |
|----------------|------------|---------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|                | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC SYN 0      | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |
| ESC SYN 1      | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |
| ESC SYN 3      | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |
| ESC SYN 4      | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |
| ESC GS SUB DC1 | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |
| ESC GS SUB DC2 | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |
| ESC GS SUB DC3 | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |

### ● Audio Commands

| Commands   | Model Name |         |         |               |                      |           |                         |           |                      |         |           | StarLine |
|------------|------------|---------|---------|---------------|----------------------|-----------|-------------------------|-----------|----------------------|---------|-----------|----------|
|            | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS s O | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |
| ESC GS s P | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |
| ESC GS s R | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |
| ESC GS s I | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |
| ESC GS s U | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |
| ESC GS s T | -          | -       | -       | -             | -                    | -         | -                       | -         | -                    | -       | -         | ●        |

### ● Network Command

| Commands           | Model Name |         |         |               |                      |           |                                                        |           |                      |         |           | StarLine |
|--------------------|------------|---------|---------|---------------|----------------------|-----------|--------------------------------------------------------|-----------|----------------------|---------|-----------|----------|
|                    | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3 (1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK                                | mC-Label3 | mC-Print3 (2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS ) N (fn=48) | No         | No      | No      | No            | OK                   | OK        | Spec. 1<br>V2.2 or earlier<br>Spec. 2<br>V3.0 or later | OK        | OK                   | OK      | No        | -        |
| ESC GS ) N (fn=49) | No         | No      | No      | No            | OK                   | OK        | Spec. 1<br>V2.2 or earlier<br>Spec. 2<br>V3.0 or later | OK        | OK                   | OK      | No        | -        |
| ESC GS ) N (fn=50) | No         | No      | No      | No            | OK                   | OK        | Spec. 1<br>V2.2 or earlier<br>Spec. 2<br>V3.0 or later | OK        | OK                   | OK      | No        | -        |
| ESC GS ) N (fn=51) | No         | No      | No      | No            | OK                   | OK        | Spec. 1<br>V2.2 or earlier<br>Spec. 2<br>V3.0 or later | OK        | OK                   | OK      | No        | -        |

| Commands           | Model Name |         |         |               |                          |                          |                                                        |           |                         |         |           | StarLine |
|--------------------|------------|---------|---------|---------------|--------------------------|--------------------------|--------------------------------------------------------|-----------|-------------------------|---------|-----------|----------|
|                    | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.)  | mC-Print2                | TSP100IV<br>TSP100IV SK                                | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS ) N (fn=52) | No         | No      | No      | No            | V1.4 or later            | V1.4 or later            | OK                                                     | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=53) | No         | No      | No      | No            | V1.4 or later            | V1.4 or later            | OK                                                     | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=54) | No         | No      | No      | No            | V1.4 or later            | V1.4 or later            | OK                                                     | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=55) | No         | No      | No      | No            | V1.4 or later            | V1.4 or later            | OK                                                     | No        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=57) | No         | No      | No      | No            | Spec. 1<br>V2.3 or later | Spec. 1<br>V2.3 or later | Spec. 1                                                | Spec. 2   | Spec. 3                 | No      | No        | -        |
| ESC GS ) N (fn=58) | No         | No      | No      | No            | V3.3 or later            | V3.3 or later            | OK                                                     | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=59) | No         | No      | No      | No            | V3.3 or later            | V3.3 or later            | OK                                                     | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=64) | No         | No      | No      | No            | OK                       | OK                       | Spec. 1<br>V2.2 or earlier<br>Spec. 2<br>V3.0 or later | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=65) | No         | No      | No      | No            | OK                       | OK                       | Spec. 1<br>V2.2 or earlier<br>Spec. 2<br>V3.0 or later | OK        | OK                      | OK      |           | -        |
| ESC GS ) N (fn=66) | No         | No      | No      | No            | OK                       | OK                       | Spec. 1<br>V2.2 or earlier<br>Spec. 2<br>V3.0 or later | OK        | OK                      | OK      |           | -        |
| ESC GS ) N (fn=67) | No         | No      | No      | No            | OK                       | OK                       | Spec. 1<br>V2.2 or earlier<br>Spec. 2<br>V3.0 or later | OK        | OK                      | OK      |           | -        |
| ESC GS ) N (fn=68) | No         | No      | No      | No            | V1.4 or later            | V1.4 or later            | OK                                                     | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=69) | No         | No      | No      | No            | V1.4 or later            | V1.4 or later            | OK                                                     | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=70) | No         | No      | No      | No            | V1.4 or later            | V1.4 or later            | OK                                                     | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=71) | No         | No      | No      | No            | V1.4 or later            | V1.4 or later            | OK                                                     | No        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=73) | No         | No      | No      | No            | Spec. 1<br>V2.3 or later | Spec.1<br>V2.3 or later  | Spec. 1                                                | Spec. 2   | Spec. 3                 | No      | No        | -        |
| ESC GS ) N (fn=74) | No         | No      | No      | No            | V3.3 or later            | V3.3 or later            | OK                                                     | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=75) | No         | No      | No      | No            | V3.3 or later            | V3.3 or later            | OK                                                     | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=80) | No         | No      | No      | No            | V3.6 or later            | V3.6 or later            | Ver1.1 or later                                        | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=81) | No         | No      | No      | No            | V3.6 or later            | V3.6 or later            | Ver1.1 or later                                        | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=82) | No         | No      | No      | No            | V3.6 or later            | V3.6 or later            | Ver1.1 or later                                        | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=83) | No         | No      | No      | No            | V3.6 or later            | V3.6 or later            | Ver1.1 or later                                        | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=84) | No         | No      | No      | No            | V3.6 or later            | V3.6 or later            | Ver1.1 or later                                        | No        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=85) | No         | No      | No      | No            | V3.6 or later            | V3.6 or later            | Ver1.1 or later                                        | No        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=86) | No         | No      | No      | No            | V3.6 or later            | V3.6 or later            | Ver1.1 or later                                        | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=87) | No         | No      | No      | No            | V3.6 or later            | V3.6 or later            | Ver1.1 or later                                        | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=88) | No         | No      | No      | No            | V3.6 or later            | V3.6 or later            | Ver1.1 or later                                        | No        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=89) | No         | No      | No      | No            | V3.6 or later            | V3.6 or later            | Ver1.1 or later                                        | No        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=90) | No         | No      | No      | No            | V3.81 or later           | V3.81 or later           | V2.2 or later                                          | No        | Ver5.1 or<br>later      | OK      | No        | -        |

| Commands            | Model Name |         |         |               |                                                     |                                                     |                         |           |                         |         |           | StarLine |
|---------------------|------------|---------|---------|---------------|-----------------------------------------------------|-----------------------------------------------------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|                     | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.)                             | mC-Print2                                           | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS ) N (fn=91)  | No         | No      | No      | No            | V3.81 or later                                      | V3.81 or later                                      | V2.2 or later           | No        | Ver5.1 or later         | OK      | No        | -        |
| ESC GS ) N (fn=92)  | No         | No      | No      | No            | V3.81 or later                                      | V3.81 or later                                      | V2.2 or later           | No        | Ver5.1 or later         | No      | No        | -        |
| ESC GS ) N (fn=93)  | No         | No      | No      | No            | V3.81 or later                                      | V3.81 or later                                      | V2.2 or later           | No        | Ver5.1 or later         | No      | No        | -        |
| ESC GS ) N (fn=94)  | No         | No      | No      | No            | V3.81 or later                                      | V3.81 or later                                      | V2.2 or later           | No        | Ver5.1 or later         | OK      | No        | -        |
| ESC GS ) N (fn=95)  | No         | No      | No      | No            | V3.81 or later                                      | V3.81 or later                                      | V2.2 or later           | No        | Ver5.1 or later         | OK      | No        | -        |
| ESC GS ) N (fn=96)  | No         | No      | No      | No            | No                                                  | No                                                  | No                      | No        | No                      | No      | No        | -        |
| ESC GS ) N (fn=97)  | No         | No      | No      | No            | No                                                  | No                                                  | No                      | No        | No                      | No      | No        | -        |
| ESC GS ) N (fn=112) | No         | No      | No      | No            | OK                                                  | OK                                                  | OK                      | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=113) | No         | No      | No      | No            | OK                                                  | OK                                                  | OK                      | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=114) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=115) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=116) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=128) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=129) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | OK      | No        | -        |
| ESC GS ) N (fn=130) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=131) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=132) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=133) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=134) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=135) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=136) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=137) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=138) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=139) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=140) | No         | No      | No      | No            | Spec. 1<br>V3.0 to V3.4<br>Spec. 2<br>V3.5 or later | Spec. 1<br>V3.0 to V3.4<br>Spec. 2<br>V3.5 or later | Spec. 2                 | Spec. 2   | Spec. 2                 | No      | No        | -        |
| ESC GS ) N (fn=141) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=142) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=143) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=144) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=145) | No         | No      | No      | No            | V3.0 or later                                       | V3.0 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=146) | No         | No      | No      | No            | V3.5 or later                                       | V3.5 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=147) | No         | No      | No      | No            | V3.5 or later                                       | V3.5 or later                                       | OK                      | OK        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=150) | No         | No      | No      | No            | V3.5 or later                                       | V3.5 or later                                       | OK                      | OK        | OK                      | No      | OK        | -        |
| ESC GS ) N (fn=152) | No         | No      | No      | No            | V3.81 or later                                      | V3.81 or later                                      | V2.2 or later           | No        | OK                      | No      | No        | -        |
| ESC GS ) N (fn=153) | No         | No      | No      | No            | V3.81 or later                                      | V3.81 or later                                      | V2.2 or later           | No        | OK                      | No      | No        | -        |

● Command related to paper hold control

| Commands             | Model Name |         |         |               |                         |           |                                         |           |                         |         |                                                                          | StarLine |
|----------------------|------------|---------|---------|---------------|-------------------------|-----------|-----------------------------------------|-----------|-------------------------|---------|--------------------------------------------------------------------------|----------|
|                      | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK                 | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2                                                                |          |
| ESC SYN DC3          | No         | No      | No      | No            | No                      | No        | No<br>(TSP100IV)<br>OK<br>(TSP100IV SK) | OK        | No                      | No      | OK<br>(MCL21CWBI<br>/ MCL21CI)<br>No<br>(MCL21CWBI LBL<br>/ MCL21CI LBL) | OK       |
| ESC SYN DC4          | No         | No      | No      | No            | No                      | No        | No<br>(TSP100IV)<br>OK<br>(TSP100IV SK) | OK        | No                      | No      | OK<br>(MCL21CWBI<br>/ MCL21CI)<br>No<br>(MCL21CWBI LBL<br>/ MCL21CI LBL) | OK       |
| ESC GS ) s (fn = 48) | No         | No      | No      | No            | No                      | No        | V2.0 or later                           | OK        | No                      | No      | OK<br>(MCL21CWBI<br>/ MCL21CI)<br>No<br>(MCL21CWBI LBL<br>/ MCL21CI LBL) | OK       |

● Spooler

| Commands              | Model Name |         |         |               |                         |           |                         |           |                         |         |           | StarLine |
|-----------------------|------------|---------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|                       | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS ) SP (fn = 48) | No         | No      | No      | No            | No                      | No        | No                      | OK        | No                      | No      | No        | -        |
| ESC GS ) SP (fn = 49) | No         | No      | No      | No            | No                      | No        | No                      | OK        | No                      | No      | No        | -        |
| ESC GS ) SP (fn = 50) | No         | No      | No      | No            | No                      | No        | No                      | OK        | No                      | No      | No        | -        |

● Star Configuration commands

| Commands             | Model Name |         |         |               |                         |           |                         |           |                         |         |           | StarLine |
|----------------------|------------|---------|---------|---------------|-------------------------|-----------|-------------------------|-----------|-------------------------|---------|-----------|----------|
|                      | mPOP       | SM-L200 | SM-L300 | SM-S,T Series | mC-Print3<br>(1st Gen.) | mC-Print2 | TSP100IV<br>TSP100IV SK | mC-Label3 | mC-Print3<br>(2nd Gen.) | BSC10II | mC-Label2 |          |
| ESC GS ) # (fn = 48) | No         | No      | No      | No            | No                      | No        | No                      | OK        | No                      | No      | OK        | -        |
| ESC GS ) # (fn = 49) | No         | No      | No      | No            | No                      | No        | No                      | OK        | No                      | No      | OK        | -        |